THE UK INNOVATION BLUEPRINT

NATIONAL STRATEGIES FOR ECONOMIC GROWTH



AMIR HEGAZI

THE UK INNOVATION BLUEPRINT

NATIONAL STRATEGIES FOR ECONOMIC GROWTH

THE UK INNOVATION BLUEPRINT

NATIONAL STRATEGIES FOR ECONOMIC GROWTH

AMIR HEGAZI

TRANSFORMENA
PUBLISHING

Copyright © 2026 Amir Hegazi
All rights reserved. Printed in the United Kingdom.

TRANSFORMENA
PUBLISHING

No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the publisher, except for brief quotations used in reviews or as otherwise permitted by applicable copyright law.

This book is provided for informational purposes only and does not constitute legal, financial, or investment advice. The views expressed are those of the featured individuals and do not necessarily reflect the views of any organisation referenced. While reasonable efforts have been made to ensure accuracy, the author assumes no responsibility for any errors or omissions or for any outcomes resulting from the use of this information.

Disclosures

Certain individuals featured in this book are affiliated with organisations that may have commercial interests in policy areas discussed. Opinions expressed are those shared by the individuals featured and do not necessarily reflect the views of their affiliated organisations, including where such organisations may have a commercial interest in policy areas discussed, such as capital markets development or the taxation of business asset sales.

Nothing in these chapters constitutes financial advice or a financial promotion. References to Hg Capital's track record, including examples of portfolio companies and their outcomes, reflect past experience and are provided for illustrative purposes only. Past performance is not a reliable indicator of future results, and individual investment outcomes may vary.

The chapters in this book were developed from recorded conversations, interviews, and correspondence between the editor and the individuals featured throughout the book. The ideas, examples, and arguments belong to those individuals. The chapters are editorially written syntheses intended to faithfully represent the featured individuals' thinking, rather than verbatim transcripts or formally authored essays.

Certain images included in this publication are used with permission.

For permissions and bulk orders, please contact the author.

Bibliographic Information

Hegazi, Amir. *The UK Innovation Blueprint*.

Hardcover ISBN: 978-1-0684760-3-7
Paperback ISBN: 978-1-0684760-4-4
E-book ISBN: 978-1-0684760-5-1

Categories

Business & Economics / Economic Policy / Entrepreneurship /
Political Science / Public Policy

First Edition

Cover design & interior design: meadencreative.com

Publisher: TRANSFORMENA PUBLISHING

For those who are building the future, quietly.

CONTENTS

Preface 1

Prologue: What We Keep Losing 5

Introduction 17

Featured Individuals at a Glance 23

The State of UK Innovation: Where We Stand and What's at Stake 27

PART I: MINDSET, AMBITION & NATIONAL STRATEGY 37

1 Dream Big Enough: Why the UK Must Stop Accepting Mediocrity — with Chris Ballance 43

2 Defeat Incumbents, Shape Regulation, and Find the Right Balance — with Bradley Tusk 49

3 Stop Misdiagnosing What Britain Is Good At — with Nick Clegg 57

4 Stop Managing Innovation. Start Delivering It. — with Kate Bingham 63

5 Recover the Political Will to Talk About Growth — with Nick Clegg 69

6 Make the Cabinet Office the Engine for Innovation Delivery — with Gerald Mullally 77

PART II: EDUCATION, TALENT & THE ENTREPRENEURIAL GENERATION 83

7 Fix the Exam System Before It Kills Everything Else — with Andreas Schleicher 89

8 Build an Equity Culture from the Classroom Up — with Nic Humphries 95

9 Win the Global Talent War — with Stan Boland 101

10 Make Every Student Build and Share Something Real — with Natalie Moore 107

11 Build Clear Youth Career Pathways into Tech Before the Drop-Offs Happen — with Chelsea Slater 113

PART III: CAPITAL, SCALE & THE GROWTH GAP 119

12 Fix the Capital Allocation Gap: Stop Subsidising Mediocrity, Start Funding Scale — with Stan Boland 125

13 Wind Down Subsidies That Trap Talent in Low-Impact Firms — with Stan Boland 135

14 Build the Firewall Between Politics and Public Capital — with Josh Lerner 141

15 Close the Scale-Up Gap Before Europe's Best Companies Leave — with Dr Hermann Hauser 147

16 Build UK Public Markets That Scale and Retain World-Class Companies — with Charlie Walker 155

17 Reconnect Domestic Capital to Domestic Companies — with Charlie Walker 161

18 Accept That Competitiveness Without Scale Is Not Competitiveness — with Nick Clegg 167

19 Win the Growth Stage: Protect Capital from Politics and Deploy It Where Markets Break — with Josh Lerner 175

20 Normalise Secondary Liquidity and Open Private Markets to Everyone — with Jeff Lynn 181

21 Back Bold Bets Early: Why Government Must Invest Before It Has Certainty — with Kate Bingham 189

22 Turn Private Equity into Productivity Engineering and Crack the US Market — with Nic Humphries 195

PART IV: DEEP TECH, QUANTUM & THE FRONTIER 201

23 Conquer the Error Correction Race and Establish Quantum Leadership — with Steve Brierley 205

24 Win the Deep Technology Race by Rolling Out, Not Just Inventing — with Dr Hermann Hauser 211

25 Turn Frontier Technology into Government-Grade Adoption — with Gerald Mullally 217

26 Fix the System That Surrounds the Team — with Kate Bingham 225

27 Find the Trapped Value, Cross the Chasm, and Win Through the Bowling Alley — with Geoffrey Moore 233

28 Win the Tornado or Watch Someone Else Set the Standard — with Geoffrey Moore 241

PART V: PLACES, CITIES & REGIONAL CLUSTERS 247

29 Build on What You Have: A Regional Innovation Strategy That Actually Works — with Neil Lee 251

30 Use Cities as First Deployment Platforms to Turn Innovation into Jobs — with Carlos Moedas 257

31 Build Safe-to-Scale Rules That Release Adoption with Trust — with Carlos Moedas 263

PART VI: PROCUREMENT, PILOTS & PUBLIC SECTOR INVESTMENT 267

32 Make Regulation a Launchpad, Not a Wall — with David Willetts 271

33 Design Pilots That Actually Scale — with Paul Miller 277

34 Shorten the Distance from Research to First Real Customer — with Ottoline Leyser 283

PART VII: ECOSYSTEMS, NETWORKS & SOCIAL CAPITAL 289

35 Make Mentorship Systematic, Outcome-Driven, and Give-First — with David Cohen 295

36 Build Mission-Driven Taskforces for Critical National Initiatives — with Kate Bingham 303

37 Think in Systems, Build in Networks, Invest in Social Capital — with David Cleevely 311

38 Wire the Public Funding Pipeline from Discovery to Procurement — with David Willetts 319

39 Build Regional Startup Communities, Not One National Ecosystem — with Brad Feld 327

PART VIII: FROM BLUEPRINT TO EXECUTION: TEN SHIFTS 335

Conclusion: The 2035 Fork 369

Featured Profiles 375

Acknowledgements 385

About the Author 387

Bibliography 389

Index 393

PREFACE

I did not set out to write this book. I set out to have a series of conversations with the people who know the UK's innovation economy from the inside: the founders who built companies here, the investors who backed them, the policymakers who tried to hold the system together, the ecosystem builders who worked quietly in the background while others took the spotlight. Those conversations, over two years, became this book.

The moment that prompted it happened to me.

I returned to London on a tourist visa three years ago. I had no intention of staying. Then something unplanned happened: I loved the city and didn't want to leave. So I tried to stay. I hired a top immigration law firm and spent over £10,000 in legal fees and thousands of pounds more in visa application processing fees and associated costs. I assembled months of paperwork with the precision of someone who needed to get this right. I put everything on hold and flew to my country of citizenship for two weeks to complete the process. I was granted a five-year Global Talent Visa, the UK's most selective visa, reserved for people who build things and contribute to its growth.

A year later, through a single administrative misunderstanding about an Immigration Health Surcharge (IHS) upfront versus renewal payment at the final step, I lost it.

I did not lose it because I stopped wanting to be here. I lost it because the system had no margin for error, no human checkpoint, no one to call, no moment where someone asked: is this what we intended?

Around the same time, I was in the UAE. I met the Minister of AI. He learned what I did, having spent two decades scaling tech startups to major exits, mentoring startups, advising ministers and policymakers on innovation strategy, and writing bestselling books on related topics. He instantly said: we want you here. Within five days, I had a ten-year Golden Visa in my hand.

I am not bitter. Frustrated, yes. I grew to love this country. I lived it. I loved it. Whatever my status on paper, London feels like home.

I am writing this book because the gap between what the UK is and what it makes people feel when they try to join it is not a minor administrative inconvenience. It is a policy choice, made by default, that costs this country people it cannot afford to lose. The founder who raises her Series B in San Francisco because no UK institution moved fast enough. The researcher who takes the American chair because the visa process took eight months. The LSE graduate who launches their business in Dubai to take advantage of its favourable startup tax structure. Me, an American who came as a tourist, decided to stay, and was met with administrative barriers. That gap, between what is built and what is kept, between what is possible and what the system allows, is what this book is about.

But the visa was not the story. It was the door into it. The deeper I looked, the more I found the same pattern repeating across every part of the UK's innovation system: extraordinary ingredients, and a set of structures quietly preventing them from becoming outcomes. Capital that stops before the scale stage. Education that tests compliance instead of building builders. Research that gets published but not deployed. Companies that reach the moment of maximum value and sell, not because their founders want to sell, but because the system gives them no credible alternative. This book is about all of it, the full system, examined by the people who have lived its failures and worked out what fixing it requires.

The input was those conversations, with the leading voices inside the UK's innovation ecosystem. The output is what follows: their insights, their recommendations, their proposals, identification of the

Conversion Gap, and the Ten Shifts laid out in detail. Together, they represent the findings. The action plan. What I have come to call: *The UK Innovation Blueprint*.

—AMIR HEGAZI
London, UK

PROLOGUE

What We Keep Losing

I. The Company That Runs the World

In 1990, twelve engineers spun out of Acorn Computers in Cambridge to form Advanced RISC Machines, a new company built around a processor architecture they had designed in the mid-1980s that would eventually power a substantial share of the world's smartphones. They were trying to save a failing company. They did not save it. What they built instead was ARM.

The genius of ARM was elegance. Where Intel designed chips to do everything, ARM designed chips to do only what was necessary, with the least possible energy. For two decades, this made ARM relevant in a narrow niche, embedded systems, mobile devices, early smartphones. Then the iPhone arrived, and everything changed. ARM architecture did not just run smartphones; it became the defining intellectual property of the mobile revolution, then the tablet revolution, then the cloud computing revolution. By the time Apple announced it was abandoning Intel for its own ARM-based M1 chips in 2020, the trajectory was clear: ARM was not a component supplier. It was the foundational layer beneath the entire global computing stack.

In 2016, Japan's SoftBank acquired ARM for £24 billion. At the time, this was the largest-ever acquisition of a European technology company. It felt, to many observers, like a triumph, proof that British

technology could command a global premium. Masayoshi Son, SoftBank's founder, met with Prime Minister Theresa May in July 2016 and publicly committed to doubling ARM's UK headcount within five years.

What happened next will be studied for a generation.

The artificial intelligence revolution that followed transformed ARM from a valuable chip designer into something closer to a strategically dominant position. A substantial share of AI accelerators, data centres, every edge device, every autonomous system relies on ARM architecture. When Nvidia's market capitalisation crossed three trillion dollars in 2024, it was ARM technology enabling the chips at the heart of that valuation. When Apple's M-series chips made the company the most profitable personal computing business in history, they ran on ARM. The AI infrastructure buildout that is currently consuming hundreds of billions of dollars of capital investment globally is, at its core, an ARM-dependent system.

ARM's Nasdaq listing in September 2023 valued the company at $54.5 billion, roughly double the sterling price SoftBank paid seven years earlier. As the AI infrastructure boom has intensified, ARM's valuation has kept climbing. Conservative estimates put it at £80–100 billion today. A substantial share of AI chips rely on ARM architecture, generating royalties across much of the global compute stack. The UK designed the architecture that collects that royalty. It sold the right to collect it for £24 billion in 2016.

The UK sold ARM for £24 billion. The company has since increased substantially in value as AI has expanded the importance of its architecture. The question is what long-term value might have been retained if alternative capital had been available.

The point is not that the sale was wrong by the logic of the moment. ARM's board and shareholders made a rational decision with the information available in 2016. The point is that the logic of the moment was too small. And the UK had no institutional mechanism to compete with SoftBank's cheque: no patient capital vehicle, no sovereign technology fund, no pension-backed growth instrument.

The decision to sell was made not by ambition but by the absence of alternatives.

The decision to sell was made not by ambition but by the absence of alternatives.

II. The Lab That Solved Biology

In 2010, three researchers, Demis Hassabis, Shane Legg, and Mustafa Suleyman, founded DeepMind in London. Their ambition, stated with the directness that British scientific culture typically discourages, was to solve intelligence. Not to build a product. Not to serve a niche. To solve intelligence itself, and use that solution to develop broad AI applications. They raised their first money in London. When they needed their second round, there was nothing in the UK large enough to give it to them.

Four years later, Google acquired DeepMind for approximately $500 million.[1] The price was, even at the time, widely regarded as low relative to the long-term potential of the technology. What DeepMind had built by 2014 was not yet commercially deployed, but it was among the most advanced artificial intelligence research programmes in the world, staffed by an exceptional concentration of talent. Google understood what it was acquiring. The UK lacked the institutional architecture, including patient capital at scale, domestic compute infrastructure, and a framework for evaluating strategic technology assets, that would have made an alternative outcome possible.

In 2020, DeepMind began publishing results from AlphaFold, a system that predicted the three-dimensional structure of proteins from their amino acid sequence. Protein structure prediction had been one of the central unsolved problems in biology for fifty years. Knowing a protein's shape, and therefore its function, and therefore how to design drugs that bind to it, had been considered a problem of such difficulty that most scientists did not expect it to be solved in

their lifetimes. AlphaFold represented one of the most consequential scientific advances in biology in recent decades. Within two years, it had predicted the structure of virtually every known protein. In 2024, Hassabis and his colleagues received the Nobel Prize in Chemistry.

The commercial consequences are still unfolding, but the direction is becoming clearer. Isomorphic Labs, the DeepMind spinout founded in 2021 to focus on AI-driven drug discovery, raised $600 million in its first external funding round, announced in early 2025. Many pharmaceutical companies are now integrating AI into their drug discovery pipelines. The foundational research behind these advances was developed in London, while much of the economic value is now captured by the organisations that own and scale the technology.

DeepMind today remains headquartered in London and employs thousands of researchers in the UK. This is held up, sometimes, as evidence that the acquisition was not a loss, the lab stayed, the science continued, the Nobel Prize came home. This argument misunderstands what was lost. What was lost was not the building or the talent or the publications. What was lost was ownership: the right to determine what the technology is used for, the right to capture the value it creates, the right to decide whether, when and to whom it is licensed. Those rights belong to Google. They were sold in 2014 for $500 million. Hassabis and his co-founders did not want to sell. The company needed capital at a scale the UK market could not provide. Google wrote the cheque instead.

At the time of the 2014 acquisition, access to large-scale compute infrastructure and growth capital was a binding constraint, and credible domestic alternatives were limited. In that context, the transaction reflected the available options rather than an obvious policy failure. Its implications would likely be assessed differently today, given the increased strategic importance of AI and growing concerns around technological sovereignty.

The UK retained much of the research prestige, while a significant share of the economic value accrued to US-owned firms. Intellectual

prestige for economic return: that is the most costly recurring transaction in British innovation history.

III. The Best Quantum Computer in the World

Oxford Ionics was founded in 2019 by Chris Ballance and Tom Harty, two physicists who had spent years building ion trap quantum computing systems at the University of Oxford. Ion trap is one of the five principal modalities for building quantum computers. In that modality, Oxford Ionics became one of the global leaders (Ballance is a lead featured individual in this book whom we will hear from directly shortly.)

The technical measure that matters most in quantum computing is fidelity, the precision with which a quantum operation can be performed without introducing errors. Oxford Ionics reported world-leading results across all three key performance metrics: single-qubit gate fidelity above 99.999 per cent, two-qubit gate fidelity above 99.97 per cent, and quantum state preparation and measurement above 99.999 per cent. At the time these results were published, no competitor in the ion trap space had matched these figures. By any rigorous technical measure, the company had built one of the highest-performing quantum computing systems in the world. That is not a marketing claim. It is a number. And while performance metrics in quantum computing are debated in context, these results represented the highest publicly disclosed benchmarks at the time.

IonQ is an American quantum computing company, listed on Nasdaq. Its technology is ion trap, the same as Oxford Ionics. Its fidelity metrics are lower. What IonQ had that Oxford Ionics did not was access to American public markets, which in 2023 and 2024 were valuing quantum computing companies at extraordinary premiums. IonQ's market capitalisation reached above $10 billion. The worse quantum computer was worth more. Not because the science was better. Because the capital market was American.

Using that public market valuation premium, IonQ agreed in June 2025 to acquire Oxford Ionics for $1B-plus, completing the transaction

in September 2025. The National Security and Investment Act gives the government powers to review and block foreign acquisitions of strategic technology. The Oxford Ionics acquisition was reviewed by the UK government and cleared with conditions before closing in September 2025. The world's best ion trap quantum computer is now an American subsidiary. The IP, the talent, the technical roadmap, and the entire future value of the platform belong to a Nasdaq-listed competitor whose own fidelity metrics are lower than the company it just bought.

The pattern this represents and what it has cost is set out in the Prologue. What this Part addresses is the mechanism: why deep technology is where the bowling-alley acquisition trap strikes hardest, and what it would take to hold through to the tornado. (The bowling alley and the tornado are Geoffrey Moore's terms for the two critical stages of technology market adoption: the bowling alley is the phase of winning early, specific markets before scale; the tornado is the breakthrough into mass-market demand. Moore is one of the anchor featured individuals in this book, and we will hear from him directly later.)

IV. The Pattern

Consider what has just been described.

The UK built the processor architecture that now runs a substantial share of AI accelerators, data centres, and smartphones globally. It sold that architecture in 2016 for £24 billion, years before the technology became the foundational layer of a multi-trillion-dollar global computing revolution. The UK built the artificial intelligence laboratory that solved one of the hardest problems in biology, earned a Nobel Prize, and is enabling a £100 billion annual drug discovery market. It sold that laboratory in 2014 for $500 million, by founders who needed capital and had nowhere in the UK to find it at the scale required. The UK built the world's highest-performing quantum computer, undisputed by every rigorous technical measure, and sold it in 2025 to an American competitor whose publicly published fidelity

benchmarks were lower, but which had access to a significant public market valuation premium, under legislation that provides powers of review and intervention.

Together, these cases suggest a recurring structural pattern.

It's not that the ecosystem is failing. It is producing the very outcomes it is designed to produce.

In each case, the UK did the hardest part. The science was real. The engineering was world-leading. The commercial trajectory was clear to anyone paying attention. What failed was not the technology. What failed was everything that should have surrounded it: the capital structures that could have sustained it, the institutional patience that could have held it, the policy architecture that could have kept it. The board of ARM did not make a bad decision in 2016; they made the only decision available to them. The founders of DeepMind did not fail the UK in 2014; the UK had no mechanism to keep them. The UK government did not block the Oxford Ionics acquisition in 2025 because it had no framework for deciding which technology assets were worth keeping, and no instrument for keeping them even if it had decided they were.

Geoffrey Moore, one of the featured individuals in this book, provides the framework that makes the pattern legible. Technology adoption moves through stages: the Bowling Alley, where a technology proves itself in a series of niche markets, each success enabling the next; and the tornado, where a technology achieves mass-market adoption and its value multiplies by orders of magnitude. The Bowling Alley is the phase that requires the most patient capital and the most institutional nerve. It is also, in the UK, where both have been most consistently absent. The UK's pattern is to sell at the Bowling Alley. Every time. Before the Tornado arrives.

ARM was sold at the Bowling Alley, in 2016, as mobile was maturing and just before AI made its architecture the among the

most strategically valuable forms of computing IP. DeepMind was sold prematurely, at what Geoffrey Moore coined the Bowling Alley stage, in 2014, before AI applications went horizontal and before AlphaFold transformed biology. Oxford Ionics was sold at the Bowling Alley, in 2025, just as quantum computing began its transition from research to commercial deployment. In each case, the tornado was visible. Not to everyone. But to enough people that it cannot be called unforeseeable. In each case, the UK did not look.

Hermann Hauser has spent four decades at the centre of British technology. He co-founded Acorn Computers, from whose work ARM was born. He has backed companies across quantum computing, genomics, semiconductor design, and artificial intelligence. He has watched, with the particular frustration of someone who has seen it happen not once but across an entire career, as the system repeated itself. Each one of the eleven unicorn companies he has personally backed ended up domiciled outside the United Kingdom, the majority in the United States. Not because they failed. Because they succeeded, and the UK had no mechanism to retain them when success made them attractive to someone with deeper pockets and longer patience. Eleven companies. One pattern. Thirty years. The question this book answers is not what went wrong. The question is what to do about it, and how fast.

V. The Cost, Stated Plainly

The cumulative cost of this pattern can be calculated, imprecisely but usefully, across three dimensions.

Direct Value Transfer

ARM is now worth conservatively £80–100 billion, a value appreciation of over £60 billion since the 2016 sale, with strategic AI-era value that no financial model fully captures. DeepMind was sold for $500 million; the AI-driven drug discovery market it is enabling is projected at over £100 billion annually by 2030, and Isomorphic Labs alone raised £600 million in a single 2024 round. Oxford Ionics

was sold for approximately £850 million ($1B-plus); the quantum computing market its technology could have led is projected to exceed £400 billion annually by 2040. These are not figures of what these companies "would have been worth" under hypothetical conditions. They are figures of what these technologies are worth, under current conditions, to the organisations that now own them.

The GDP Divergence

Hauser argues that a significant share of the divergence in economic growth between the United States and Europe over the past fifteen years can be attributed to the technology sector. Technology represents a substantially larger share of the US economy than of the UK's. Other sectors such as financial services, manufacturing, healthcare, and utilities are more broadly comparable between the two economies. The implication is that differences in technology scale and value capture contribute meaningfully to wider economic outcomes, including productivity, wages, and fiscal capacity.

10% vs 7%

US vs UK Digital Share

The Missing Sector

Official estimates put the digital sector at roughly 10% of US GDP and around 7% of UK GVA, highlighting a persistent gap in technology's economic weight.

THE COMPOUNDING COST

Lower productivity. Lower wages. Lower tax revenues. Every year the gap widens.

The Feedback Loop

The most expensive cost is the one that does not appear in any balance sheet. When British technology companies are acquired rather than scaled, the operators who built them, the people who know how to take a company from ten million to five hundred million in revenue, cash out, move on, and often leave the UK ecosystem. The investors who funded them deploy the proceeds cautiously, because the returns from early exits do not compound the way returns from scaled companies do. The founders of the next generation observe what happened to the previous generation and calibrate their ambitions accordingly. Stan Boland, one of this book's most important featured individuals, states this with precision: a cautious capital environment does not just fund smaller companies. It produces smaller founders. The feedback loop runs in both directions, and it has been running, in the wrong direction, for thirty years.

Add these three costs together, across three decades, across the full range of technologies and companies that have followed this pattern, and you arrive at a number that resists precise quantification but demands honest acknowledgement: the UK may have forgone substantial long-term economic value through a structural failure to retain the companies it builds. The loss is not primarily a matter of individual decisions made by individual founders or investors. It is a matter of systems. Systems that, unlike the companies they failed to keep, can be redesigned.

VI. What This Book Is About

This book is about the gap between what is built and what is kept. Between what is invented and what is scaled. Between the moment a technology is proven and the moment, always arriving too soon, when it is sold. That gap is the **Conversion Gap**, and it is the defining economic challenge of the UK in this decade. It is not a black box. Its causes are structural, visible, and known. Its costs are calculable. Its solutions, as the featured individuals in this book argue from direct experience, are available.

The individuals whose conversations shaped this book have founded the companies in these pages, funded them, built the networks around them, regulated the markets they operate in, and trained the people who staff them. Their perspectives derive not from theory but from the specific, accumulated experience and expertise of people who have spent decades inside the ecosystem, watching it succeed spectacularly at one thing and fail, with equal consistency, at another.

They are not pessimists. The UK has assets that no quantity of economic analysis fully captures: universities whose research output is disproportionate to their size; a legal system trusted globally; a language that gives its business community frictionless access to the largest consumer markets on earth; a culture of scepticism and precision that, when directed at problems rather than at possibilities, is among the most powerful problem-solving resources available to any economy. These assets are real. They are not sufficient, on their own, to close the Conversion Gap. But they are more than sufficient to build the ecosystem that could.

The decisions that will determine whether the UK closes or widens the Conversion Gap in this decade are being made now. The AI wave is not waiting. The capital markets are not waiting. The founders who could build the next ARM, the next DeepMind, the next Oxford Ionics are building right now, in London and Cambridge and Manchester and Edinburgh, and they are operating inside an ecosystem that will, unless it changes, do to them what it has done to a generation before them.

This book is an argument that the ecosystem can change. It is also an instruction manual for changing it.

The AI deployment wave is not a future event to be planned for. It is happening now, in the time between when this book was written and when you are reading it. The infrastructure decisions, the capital allocation choices, the regulatory frameworks being set in the next twenty-four months will determine which countries own the value this wave creates and which countries, as before, provide the science

and watch others capture the return. That window does not stay open. The tornado does not wait for the ecosystem to get ready.

Somewhere in the UK right now, a founder is eighteen months from the moment where she will need capital at a scale the domestic market cannot provide. She does not know yet that she will have to choose between moving to San Francisco, selling to a foreign acquirer, or scaling slowly in a market that will not wait for her. The ecosystem has not told her. Her options are not fixed. They are the product of decisions already being made by everyone who reads this book.

———

INTRODUCTION

Ten shifts separate where the UK innovation ecosystem is from where it needs to be. This book is the evidence base for all ten.

The shifts are not mere aspirations. They are structural changes: specific redirections of capital, authority, procurement practice, and measurement that would alter the ecosystem's output, many of which can begin within current institutional and fiscal constraints. They are named here at the outset because the chapters that follow are evidence for them.

The ten shifts that structure this book's argument:

1 Passive Subsidy to Active Capital

2 Visa Friction to Talent Magnetism

3 Pilot Theatre to Procurement That Scales

4 Strategy Documents to a Delivery Engine

5 Bowling Alley Exits to Tornado Retention

6 Compliance Assessment to Entrepreneurial Education

7 London Concentration to Smart Regional Specialisation

8 Institutional Reset to Compounding Ecosystems

9 Secondary Liquidity Stigma to Founder Financial Health

10 Invisible Accountability to a Published National Scorecard

The full delivery framework, sequenced, costed, and owned, appears in the final chapter. Everything between here and there is the argument for why each shift is necessary, what it would require, and what it would unlock.

THE TEN SHIFTS

The UK is one of the world's most productive generators of breakthrough technology, but among the least effective at converting that technology into lasting economic value. The gap between what the UK invents and what the UK keeps is the central fact of this book.

The gap is structural. Three failures produce it, reinforce each other, and have resisted incremental intervention for two decades.

The first failure is capital. UK institutions hold approximately £4.6 trillion in pension and insurance assets. UK venture capital investment totalled £9 billion in 2024. The United States deployed £110 billion in the same year. The shortfall is not a rounding error. It is the reason that companies with global potential must either accept an early acquisition or relocate to access the capital they need. The patient, growth-stage capital that keeps a company British when a foreign acquirer arrives with a cheque does not exist at the scale required.

In the absence of domestic capital, every global company becomes a potential export.

The second failure is institutional continuity. The UK has significantly higher turnover in science and technology leadership roles than comparable countries such as Germany. Frequent leadership changes trigger policy resets, disrupt continuity, and weaken institutional memory. Innovation ecosystems require consistent direction over long periods to compound.

The third failure is cultural. The UK has learned, over a generation, to celebrate the sale of a company rather than ask what was lost in the transaction. The ARM sale was reported as a British success story. It was a British exit at the beginning of the most valuable architectural moment in computing history. Part of the challenge lies in how these exits have historically been framed.

This book proposes specific remedies to each of these three failures, drawn not from theory but from the direct experience of the twenty-four founders, investors, policymakers, and ecosystem builders who contributed to it. They do not all agree. Where they disagree, this book says so. The disagreements are part of the argument.

What this book asks of you is a decision. The evidence in these pages is specific enough that by the final chapter, continued inaction is itself a position. The UK already has the science, the talent, and much of the capital. What it does not yet have is the will to keep what it builds.

The Prologue named three companies. This introduction names the system that produced them, failed to keep them, and needs to be redesigned before it happens again.

Innovation is not the product of individual genius. It is the product of ecosystems: how talent is trained and retained, how capital is allocated and recycled, how quickly institutions adopt new technologies. It depends on how procurement creates first markets, how regulation creates clarity rather than friction, how operators pass knowledge to the next generation, and how success feeds future success rather than being exported.

These elements do not operate independently. When they align, innovation compounds: builders gain experience, capital flows to better opportunities, institutions adopt more quickly, companies scale faster. When they misalign, progress fragments. Companies stall or relocate. Talent disperses. Capital becomes cautious. Activity increases while outcomes do not.

The problem is the middle. The phase where companies must scale requires experienced operators who know how to build organisations past fifty people, past two hundred, past a thousand. It requires growth capital aligned with longer time horizons than the UK's institutional investors have historically tolerated. It requires customers willing to adopt innovation before it is fully mature, and UK institutions, particularly in the public sector, are not good at this. It requires infrastructure that can support expansion into international markets without the company having to move.

These frictions are individually manageable. Together they are the Conversion Gap. And the Conversion Gap has been compounding for thirty years.

An innovation ecosystem is national infrastructure. Like roads or power grids, it determines what is possible, what is efficient, and what scales. Unlike roads, it is largely invisible until it fails. The infrastructure includes talent pipelines, capital markets, research institutions, procurement systems, regulatory frameworks, and regional clusters. And the less visible elements that shape decisions at the level where companies live or die: incentives, norms, networks, feedback loops.

Each chapter in this book addresses one lever in the ecosystem: education, talent, capital, research commercialisation, procurement, infrastructure, regulation, regional ecosystems, value capture, governance, and measurement. Each chapter draws on conversations with people who have directly built, scaled, funded, governed, or studied these ecosystems at the highest level. Each identifies a specific constraint, explains why it exists, and proposes concrete mechanisms to address it. The Editor's Synthesis sections that follow each featured individual piece translate those insights into UK-specific actions for the next twelve months.

Kate Bingham, former Chair of the UK Vaccine Taskforce and Managing Partner at SV Health Investors, contributes four chapters, more than anyone else in the book. Her significance here is not biographical: it is that she is the only featured individual whose authority comes from having already closed the Conversion Gap, at national scale, under the constraints that define it. The Vaccine Taskforce procured five effective vaccines in under a year not because the government was unusually capable, but because Bingham brought a venture capitalist's approach to risk and commitment into a context that normally runs on process compliance and specification-first logic. That combination, not either role alone, is what makes her chapters structurally different from every other contribution in this book.

David Willetts contributes three chapters addressing the institutional wiring that surrounds everything else in this book. As former Minister for Universities and Science, Chair of the Regulatory Innovation Office and Chair of the UK Space Agency, he is the only

featured individual who holds simultaneous operational positions across the full pipeline: from where research is funded to where technology reaches the market to how policy created the system in the first place. That vantage point is why his chapters address wiring failures rather than component failures: he can see the pipeline as a single system, and what he sees is that the parts do not connect.

The book is not designed to be read passively. It is designed to be used. Founders and operators can use it to understand the ecosystem they work inside. Investors and ecosystem leaders can identify where capital and experience are most likely to release scale. Policymakers can use it as an ecosystem map highlighting where small structural changes produce outsized results.

The UK's Conversion Gap is not a talent problem, a capital problem, or a culture problem taken in isolation. It is a sequencing problem. Fix education before capital and you produce graduates with nowhere to go. Fix capital before procurement and you fund companies that cannot find their first customer. The seven parts of this book are a sequence, not a menu. Each shift enables the next. And sequencing problems, unlike talent problems or culture problems, have precise solutions.

———

FEATURED INDIVIDUALS AT A GLANCE

The individuals featured in this book were selected for the originality, urgency, and actionability of their insights. They include serial founders who have built billion-dollar companies from British soil, venture capitalists and institutional investors who deploy capital at scale, policymakers who have shaped the UK's research and education systems, global experts whose frameworks define how technology is adopted and diffused, and ecosystem builders who have spent decades connecting the people and institutions that make innovation possible. Their profiles are presented alphabetically. They are the thinkers, builders, and policymakers whose conversations shaped this book.

FOUNDERS & OPERATORS

- Chris Ballance — Co-founder, Oxford Ionics — quantum computing pioneer; acquired by IonQ for $1B-plus, 2025
- Stan Boland — Serial deep tech founder — Element 14 (acquired by Broadcom, $640M), Icera (acquired by Nvidia, ~$400M), FiveAI
- Steve Brierley — Founder & CEO, Riverlane — the UK's leading quantum error correction company

INVESTORS & CAPITAL ALLOCATORS

- Charlie Walker — Deputy CEO, London Stock Exchange
- Hermann Hauser, FRS, KBE — Co-founder, Amadeus Capital Partners — co-founded Acorn Computers, from which ARM was spun out in 1990; 100+ technology investments
- Nic Humphries — Senior Partner, Hg Capital — $65 billion AUM technology-focused private equity; architect of the productivity engineering investment thesis
- Paul Miller, OBE — Managing Partner & CEO, Bethnal Green Ventures — Europe's leading mission-driven early-stage investor; 200+ portfolio companies

POLICYMAKERS & INSTITUTIONAL LEADERS

- Bradley Tusk — Founder, Tusk Ventures; former Deputy Governor of Illinois — built the field of regulatory strategy for startups; backed Uber, Lemonade, Bird
- Carlos Moedas — Mayor of Lisbon; former European Commissioner for Research, Science and Innovation — oversaw the €77 billion Horizon 2020 programme
- David Willetts, Rt Hon, FRS — Former Minister for Universities and Science; Chair, UK Research and Innovation; Chair, Regulatory Innovation Office
- Gerald Mullally — Specialist in public sector innovation delivery — procurement reform, government as strategic customer, frontier technology adoption
- Kate Bingham, DBE — Former Chair, UK Vaccine Taskforce 2020 — delivered five approved vaccines in under a year; Managing Partner, SV Health Investors

- Nick Clegg — Former UK Deputy Prime Minister; Former President, Global Affairs at Meta; General Partner, Hiro Capital
- Ottoline Leyser, DBE, FRS — Former Chief Executive, UK Research and Innovation — responsible for £8 billion annual investment in UK research and innovation

ECOSYSTEM BUILDERS & NETWORK ARCHITECTS

- Brad Feld — Co-founder, Techstars and Foundry — architect of the Boulder Thesis, the definitive framework for building twenty-year startup ecosystems
- David Cohen — Founder & CEO, Techstars — co-defined the global accelerator model; invested in 5,000+ companies across dozens of countries
- David Cleevely — Co-founder, Cambridge Network and Cambridge Angels — founder of Abcam; chairman or director of more than twenty technology companies
- Jeff Lynn — Co-founder, Seedrs and Reach Public Europe — pioneered the infrastructure that opens private markets and secondary liquidity to a broader investor base

ECONOMISTS & THOUGHT LEADERS

- Geoffrey Moore — Creator of the Crossing the Chasm framework — the definitive model for technology adoption from early market to mainstream
- Josh Lerner — Jacob H. Schiff Professor of Investment Banking, Harvard Business School — world's most cited scholar on venture capital and innovation policy

- Neil Lee — Professor of Economic Geography, London School of Economics — leads the Cities theme at the International Inequalities Institute; OECD and World Bank advisor

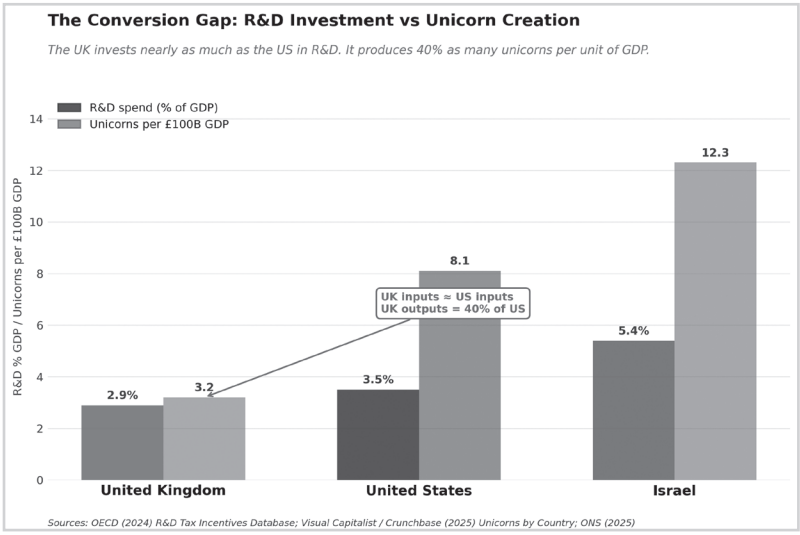
EDUCATION & TALENT BUILDERS

- Andreas Schleicher — Director for Education and Skills, OECD — architect of PISA, the world's largest international education assessment across 70+ countries
- Chelsea Slater — Founder & CEO, InnovateHer — equips young women aged 15–19 with digital skills, confidence, and agency to enter the technology economy
- Natalie Moore — CEO, Apps for Good — pioneered the model of every student shipping a real product before leaving school; reached hundreds of thousands of UK students

THE STATE OF UK INNOVATION: WHERE WE STAND AND WHAT'S AT STAKE

ARM was invented in the UK, sold in 2016 for £24 billion, and is now worth more than £80 billion because AI turned its chip architecture into the infrastructure of the modern economy. DeepMind was sold in 2014 for $500 million and has since produced AlphaFold, the most consequential scientific tool in a generation. Oxford Ionics was sold in 2025, before the quantum market reached commercial scale. In each case, the UK built the company. Another country captured the value. The venture capital shortfall relative to the size of the UK economy runs to approximately £13 billion a year. The UK is not failing at innovation. It is failing to keep what innovation produces.

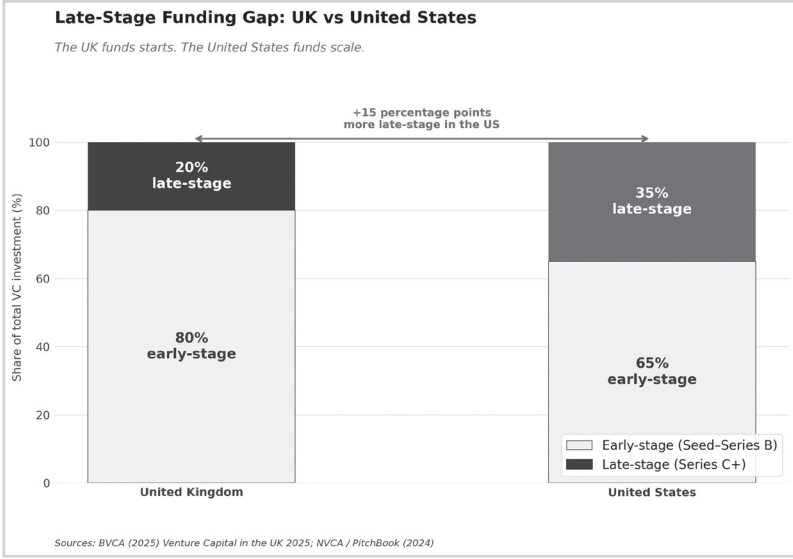
The Numbers & International Benchmarks



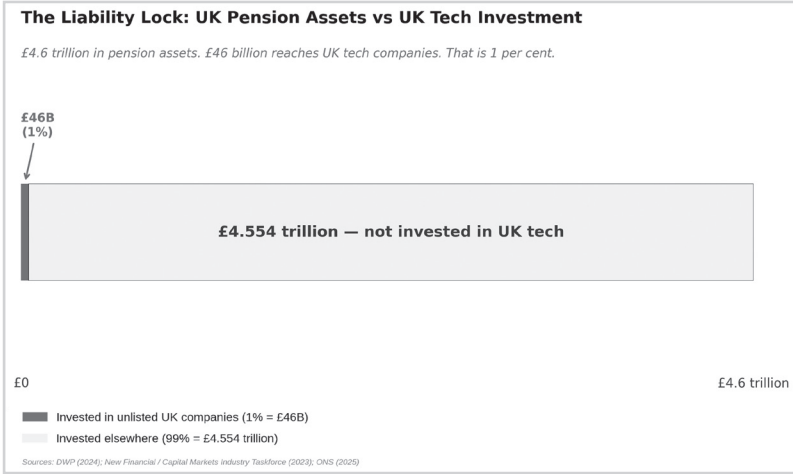
The UK invests at nearly the same R&D intensity as the United States, spending 2.9 per cent of GDP against the US rate of 3.5 per cent, yet produces 3.2 unicorns per £100 billion of GDP compared to 8.1 in the United States. The gap is not in research input. It is in the ecosystem that converts research into scaled companies.

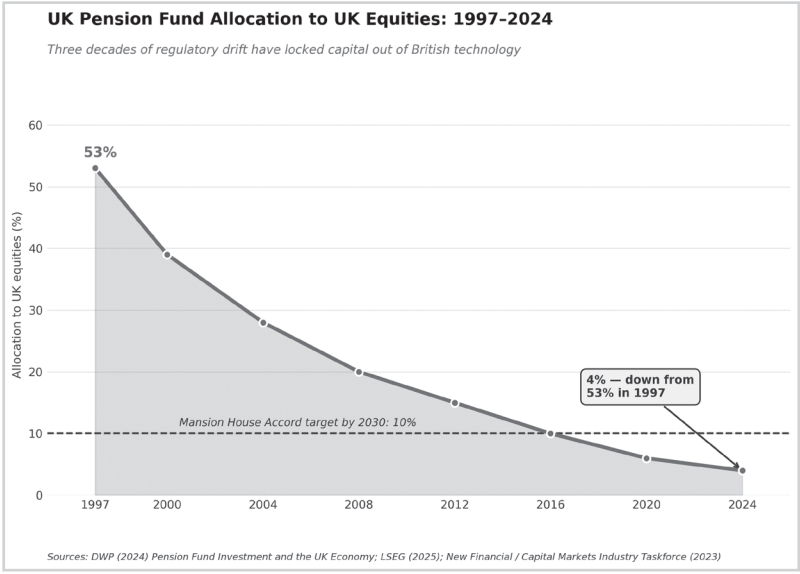
The gap is not between the UK and its European neighbours. It is between Europe as a whole and the United States, driven by pension systems geared toward liability matching rather than long-term equity investment.

One of the most frequently cited structural drivers sits in the pension and institutional investment system. UK pension funds have significantly reduced their allocation to domestic equities over the past three decades, while only a small proportion of total assets is invested in unlisted UK companies. As a result, growth stage capital is more constrained than in markets such as the United States, where a larger share of investment reaches later stage companies. Featured Individuals to this book argue that this imbalance increases the likelihood that companies will either seek capital abroad or accept early acquisition offers.



Four in five pounds of UK venture capital flows to early-stage companies. In the United States, more than a third reaches growth-stage firms. The UK ecosystem is designed to start companies. It is not designed to scale them.





The trend line tells the policy story: allocation has fallen continuously for twenty-seven years and continues to decline, while the Mansion House Accord's 10 per cent target relates separately to increasing defined-contribution investment in private markets. Reaching that target now would require reversing a structural trend in pension allocation that has run across multiple economic cycles, including periods of strong recovery, since before the financial crisis.

The UK's universities tell the same story from a different angle. Some global rankings, including QS, place four British universities in the top ten, though this varies by methodology and year. The UK has been estimated to produce roughly 6 per cent of the world's published research while representing less than one per cent of its population. Academic spinouts attracted £2.6 billion in equity investment in 2024, with Oxford and Cambridge ranking first and third in Europe for spinout creation value. Yet conversion from research to globally competitive companies remains weak. The science is world-leading, but the systems designed to commercialise it remain comparatively weaker.

The consequence of these two failures, capital and conversion, is a specific and predictable pattern: the UK builds the best technology in the world, runs out of patient capital at the moment it matters most, and sells. The prologue names the cases. They are not anomalies. They are the ecosystem working exactly as designed.

What Is Working

The picture is not uniformly bleak.

London remains Europe's leading technology hub. UK startups raised $16.1 billion in 2024, almost double France and Germany. AI companies attracted 30 per cent of all UK venture funding in the first half of 2025, with the sector pulling in a record $7.9 billion across the full year. DeepMind remains one of the world's leading AI research laboratories. Isomorphic Labs raised $600 million in the largest UK funding round of 2025. The UK AI Safety Institute has given the country a distinctive and respected voice in global AI governance.

Fintech remains a real strength. The UK captures approximately 11 per cent of the global fintech market. Revolut, valued at $65 billion, is the most valuable fintech company in Europe. The Financial Conduct Authority's regulatory sandbox was a world-leading initiative that directly enabled this cluster to form.

On policy, there are meaningful signals. The Mansion House Accord has secured commitments from seventeen of the UK's largest workplace pension providers to invest at least 10 per cent of their defined contribution default funds in private markets by 2030. Government has expanded EIS lifetime limits and raised gross asset thresholds. UK venture capital investment grew 35 per cent year-on-year in 2025 to $23.6 billion, the first annual growth in four years. These are not transformations. But they are movement, and movement matters.

What Is Broken

The failures are structural, not episodic, and they compound each other.

The gap between university research and commercial company formation remains the UK's most persistent innovation failure. World-leading science emerges from British laboratories and is either acquired by foreign companies at a fraction of its long-term value, or it stalls because no mechanism exists to connect it with the entrepreneurs and customers who could bring it to market. The people who could use the research cannot find each other.

The UK spends approximately £7.5 billion per year on R&D tax credits, with the Enterprise Investment Scheme, venture capital trusts, patent box, and Innovate UK grants adding billions more. Yet the pipeline of globally scaled companies emerging from this investment remains limited. Stan Boland argues that elements of the current subsidy system support companies unlikely to achieve global competitiveness, absorbing talent and public resources that could be deployed more effectively.

The NHS has more pilots than British Airways. Brilliant innovations prove their value in controlled pilots and die at the point of procurement because the pilot was never designed to scale. The NHS is not just the UK's largest employer. It is its largest single potential customer for innovation. Procurement reform that cannot work at NHS scale is not procurement reform.

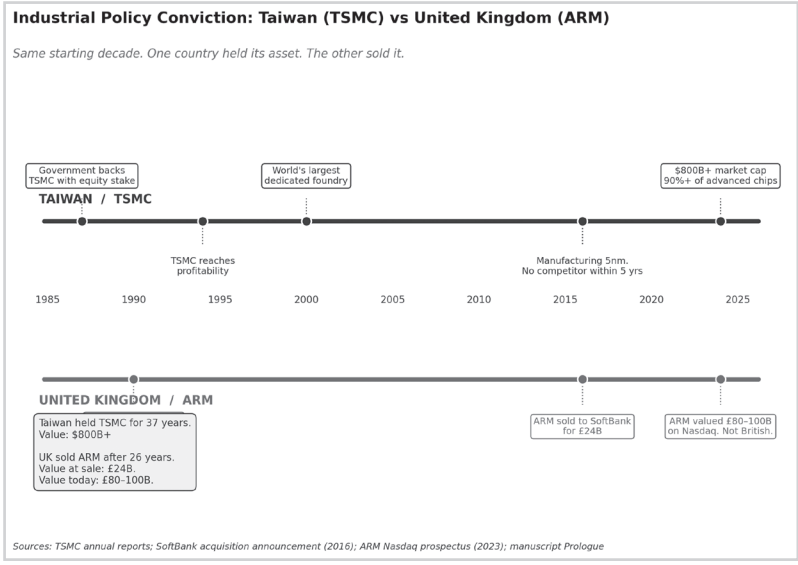
Immigration policy is sending precisely the wrong signals at precisely the wrong moment. A graduate from the Indian Institutes of Technology who wants to work for an AI startup in London faces approximately £10,000 in fees, months of processing, and material additional friction for family members. Changes to carried interest taxation, the abolition of non-domicile status, and increases in capital gains tax have compounded the message. The current US political environment has opened a window: talented people around the world are looking for an alternative to American uncertainty. The UK has

a natural advantage to be that alternative. Its policy environment is working against those advantages.

London accounts for 47 per cent of UK deal volume and 60 per cent of investment value. The rest of the country, Manchester, Birmingham, Leeds, Bristol, Glasgow, Edinburgh, Belfast, and dozens of smaller cities with real industrial depth, receives a disproportionately small share of innovation investment. The answer is not to replicate Silicon Valley everywhere. It is to build on existing strengths through smart specialisation and cities that function as first-deployment platforms for new technologies.

Why Now

Taiwan is the clearest illustration of what industrial policy conviction produces at national scale. In 1987, the Taiwanese government backed the creation of TSMC with a direct equity stake and a mandate to build a semiconductor foundry capable of competing with the best in the world. The decision was made by a small group of officials and implemented consistently across every subsequent administration. Thirty-seven years later, TSMC manufactures more than 90 per cent of the world's most advanced semiconductors. Its market capitalisation exceeds $800 billion. Taiwan, a country of 23 million people with no natural resources, controls the strategic chokepoint of the global technology supply chain. The lesson is not that the UK should replicate Taiwan's model. It is that the decisions that determine a country's technology position for a generation are made in a short window, by a small number of people, and then compounded by decades of consistent execution. The UK is in such a window now.



Illustrative comparison highlighting long-term policy continuity rather than direct equivalence

The timeline makes the divergence legible. Both countries created strategic technology assets in the same decade. Taiwan maintained its position through consistent institutional commitment over thirty-seven years; the result is a company worth more than £600 billion that controls the global semiconductor chokepoint. The UK sold its equivalent asset at year twenty-six, before its most valuable decade had begun.

The global competition for technical talent is intensifying. The UK has real advantages: English, common law, world-leading universities, a tolerant and diverse society, a time zone that bridges Asia and the Americas. What it lacks is a policy environment that makes use of them.

The Ecosystem

The failures documented in this section are not independent. They form an ecosystem: each constraint reinforces the others, and each intervention, attempted in isolation, is absorbed by the ecosystem without changing its outputs. The late-stage capital gap persists because pension fund allocation is misaligned. Pension fund allocation is misaligned because the regulatory incentive structure favours bonds. The NHS pilot failure persists because procurement processes are designed for maintenance, not adoption. Ministerial churn prevents the institutional continuity that any systemic fix requires. The chapters that follow address them as one ecosystem, in a sequence that reflects the dependency structure of the failures themselves.

Two structural failures in this ecosystem have names that carry analytical weight throughout the book. The **Bowling Alley exit** describes the pattern by which UK companies are acquired at the moment of maximum strategic value, just before a technology goes horizontal and the most extraordinary value creation begins. The **Liability Lock** describes the structural condition that makes bowling-alley exits inevitable: a pension system redesigned over thirty years to minimise accounting volatility rather than maximise long-run returns, which has become incapable of providing the growth-stage capital that would allow UK companies to stay independent through the tornado. The two failures are not equivalent in origin or remedy. But they are causally connected. The Liability Lock is the upstream condition; the Bowling Alley exit is the downstream consequence. Fixing the exit pattern without fixing the Lock produces better-priced acquisitions, not retained category leaders.

The featured individuals in this book believe the United Kingdom can lead. They do not always agree with one another, and in some cases their recommendations are in tension. That is a feature, not a flaw. What they share is a conviction that the UK's assets, its universities, its talent, its language, its legal system, and its cultural openness, are more than sufficient to build a global technology superpower. Across

their perspectives, recurring themes include the role of capital, coordination, institutional alignment, and speed of execution. This book is a synthesis of those perspectives into a practical blueprint.

Two of the most frequently cited featured individuals in this book illustrate different dimensions of the same structural challenge. Kate Bingham's experience with the Vaccine Taskforce is often referenced as evidence that the Conversion Gap can be closed in practice, particularly when procurement authority and risk frameworks are aligned with delivery. David Willetts, by contrast, focuses on the institutional conditions that make such outcomes difficult to sustain, pointing to issues such as pipeline fragmentation, regulatory barriers, and the way responsibilities are distributed across the ecosystem. Taken together, their perspectives suggest that the UK's challenge is not a lack of capability, but the difficulty of making successful models repeatable at ecosystem level.

The chapters that follow were developed from recorded conversations between the editor and each featured individual. The ideas, examples, and arguments belong to the featured individuals. The prose is intended to be a faithful compression of their thinking, not a verbatim transcript. They are a response to a specific, finite window, and the ten shifts they build toward are sequenced accordingly.

———

PART I

MINDSET, AMBITION & NATIONAL STRATEGY



A founder in Cambridge sets a target deadline she knows is achievable and is told, politely, that it sounds a little ambitious. The person who said it will be in a different role before the deadline arrives.

Ambition Is an Operational Choice

The chapters in this Part build the evidence for Shift 4 (the delivery engine the UK lacks) and Shift 10 (the accountability framework it has never built). Without both, every other shift runs into the same institutional wall.

As discussed, the UK has the research, the talent, and the institutions. What it has consistently lacked is the ambition to treat those assets as the foundation of a sustained national strategy rather than a series of individual interventions. The seven parts that follow are not a further diagnosis. They are a blueprint for what changes, in what order, and why. The first constraint is not capital, not regulation, and not infrastructure. It is the ceiling the ecosystem has placed on its own expectations.

If the UK does not raise its ambition ceiling in this decade, it will spend the next one funding the early stages of companies that others will own at scale.

The failure this Part addresses is not a failure of talent or technology. It is a failure of ceiling. The UK produces Nobel-grade research, technically excellent founders, and companies that reach real global significance. What it consistently fails to do is push those companies past the threshold where ambition, rather than caution, becomes the organising principle. Three featured individuals in this Part have each spent time inside that failure. What they share is the refusal to treat it as inevitable.

Chris Ballance built Oxford Ionics to the highest technical standard in quantum computing and watched it acquired before the market it was designed to lead had even formed. His point is not sentimental. Ambition, he contends, is not a personality trait. It is a decision, made daily, about what standard to aim for. The British default, he says, is to set targets that are achievable and then celebrate

when you hit them. That feedback loop, rewarding what is safe rather than what is possible, produces founders who have already processed the expected outcome before the company is old enough to know what it is capable of.

Ballance knows this from the inside. He built Oxford Ionics to the point where its ion trap computers held every world record in the field. He then watched it acquired before the quantum market it was designed to lead had formed. He is not bitter about it. He is precise about what it cost: not the company, but the compounding that stops when the acquirer sets the roadmap.

Bradley Tusk makes a related point from a different direction, and the tension between them is worth naming. Ballance believes the constraint is internal: a culture that has learned to manage expectations rather than exceed them. Tusk believes the constraint is external: regulation, incumbent political power, and the absence of founder-built political strategy in sectors where the rules of engagement are determined by people who do not want new entrants. Both are right. The interesting question is which one to fix first. My view is that Tusk's position is underrated. Founders who believe they can build something genuinely ambitious but are managing a regulatory environment designed to stop them will eventually go somewhere else. Conviction without political strategy is insufficient.

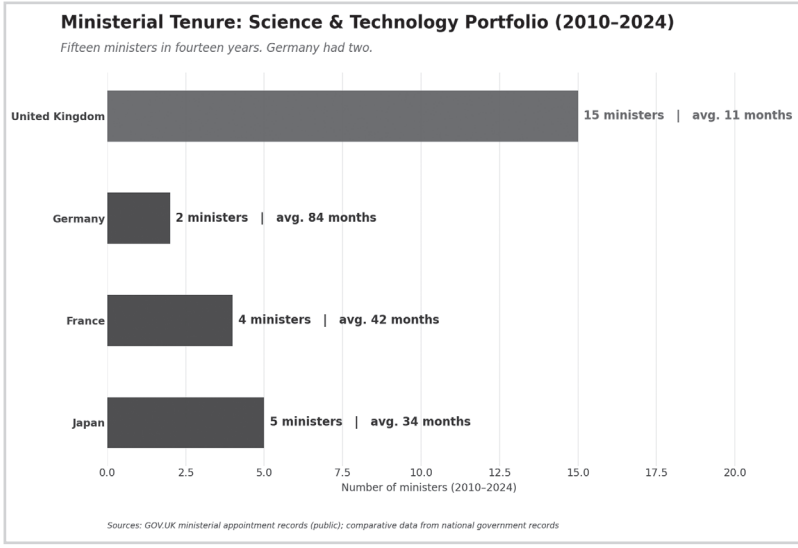
Gerald Mullally's contribution is the most institutionally specific, and it surprised me. His central point is that the UK's innovation strategy problem is not primarily a policy problem. It is a governance problem. The strategies exist. They are often good. What does not exist is the institutional architecture to sustain them across political cycles. An ecosystem that replaces its strategic priorities every fourteen months produces not progress but sediment: layers of well-intentioned initiatives, each superseding the last, each generating the same promises and a different outcome.

Nick Clegg's two chapters in this Part operate at a different altitude from the others. Where Ballance addresses the mindset of founders, Tusk the strategy of founders in regulated markets, and Bingham and

Mullally the institutional machinery of delivery, Clegg addresses the political economy that surrounds all of them. His first chapter makes an argument that is uncomfortable precisely because it is aimed at the political class rather than at founders or investors: Britain persistently misdiagnoses its own competitive strengths, and the incentive structure of British politics actively rewards that misdiagnosis. Talking about AI safety governance generates political reward. Talking about AI deployment through the NHS generates none. Yet it is the latter, not the former, that would constitute a genuine competitive advantage. His second chapter in this Part takes the argument one level higher: the political will to talk about growth has collapsed under the weight of fifteen years of sequential economic shocks, and until a new generational story is told, the machinery that Bingham and Mullally describe will have no political wind behind it.

The post-2008 period was not uniformly lost. The UK experienced a meaningful recovery phase between 2012 and 2016, with growth strengthening before the Brexit referendum and the political uncertainty that followed disrupted that trajectory.

Of the featured individuals in Part I, Clegg is the only one who has sat inside government at the Prime Ministerial level and watched this dynamic operate from the inside. That vantage point is what makes his diagnosis of the political incentive structure credible in a way that external critique cannot be.



The comparative data above sharpens the point. Germany's two ministers averaged seven years in post; France's four averaged three and a half. The UK's average tenure of eleven months is not a minor variation from international norms. It is a structural outlier that makes sustained policy execution categorically harder than in any comparable economy.

Where I push back is on the cultural point taken in isolation. Culture is real, but it is downstream of incentives. Founders in San Francisco do not project conviction into a vacuum. They project conviction into an environment that has spent sixty years rewarding the founders who did. The UK's founders are not less ambitious by nature. They are more realistic by experience. Change the experience and the culture changes. That means changing capital structures, procurement defaults, and regulatory design. The three chapters in this Part are the precondition. They do not deliver an innovation economy on their own. But nothing else in this book produces its maximum effect until the conditions they describe are in place.

The single highest-use intervention in this Part is one that Gerald Mullally identifies and the other two featured individuals

independently confirm: the UK needs an innovation delivery unit with a statutory ten-year mandate, performance milestones written into its founding terms, and authority over cross-departmental coordination. Not a strategy document. Not a new quango. A unit whose founding terms would make abandonment politically costly, regardless of who is minister. Trident is a fifty-two-billion-pound programme that spans administrations because the institutional design makes abandonment politically and legally costly. The question this book asks is why the same institutional design has never been applied to the technology economy that will determine whether Trident is affordable in twenty years.

Clegg's chapters add the precondition that the delivery unit cannot operate without: a political class that has diagnosed correctly what Britain is competing for, and a generational narrative capable of restoring the political will to pursue it.

———

1

DREAM BIG ENOUGH: WHY THE UK MUST STOP ACCEPTING MEDIOCRITY

Based on conversations with Chris Ballance, Co-founder of Oxford Ionics

Editor's Prelude

Chris Ballance co-founded Oxford Ionics and built the world's leading ion trap quantum computer, only to watch it acquired before the quantum market reached commercial scale. His chapter addresses a cultural problem, not a capital or policy one: the UK consistently rewards problem-finding over conviction, and treats world-leading ambition as exceptional rather than expected. His point is that every great company exists alongside a mountain of problems, and that the willingness to hold both the vision and the difficulties at once is the founding disposition that the featured individuals' evidence suggests the UK has not yet found a way to develop more widely.

Dreaming Big Is the Beginning

It starts with dreaming big enough and believing that outsized things are possible, even when you are staring at a mountain of problems.

Any great company that is running and thriving is never finished. It always has a tremendous number of problems that need solving. Any great idea for a company, no matter how compelling the vision looks from a distance, will reveal existential threats and seemingly insurmountable challenges when you examine it up close. To win, you need the ability to look past those problems and force through them with sheer force of will, rather than allowing them to define your ambition.

The British Problem

The British attitude has a tendency to look at all the reasons why something will not work, rather than asking: what if it does work? Will it not be remarkable if it does? And if we tackle these problems one by one, will it not be amazing what we can build? The willingness to dream about how much is possible, and then to swing hard enough to become the category leader rather than settling for a place in the pack, that is what separates companies that change the world from companies that merely exist.

I have done the vibe test many times. At a cocktail party in the Bay Area, someone will tell you with absolute conviction that they are building a world-leading company that will be the next powerful platform. Right now it is two people working part-time out of a garage. But you would never know it from the confidence and the vision they project. And people believe them, because they have seen it happen. They have seen, time and again, how a small group of irrationally determined people with a big vision can achieve things that rational analysis would declare impossible.

In the UK, the default assumption is different. There are boring large companies and there are small startups, and the expectation is that small startups do not become large, exciting companies. It is not the expected path. Because people do not believe it will happen to them, they do not aim for it. And because they do not aim for it, it becomes a self-fulfilling prophecy.

How Mindset Shows Up in Practice

The difference is not abstract. It manifests in an operational decision a company makes. Do you, as a small startup, believe you deserve to have the best talent in the industry? With the right mindset, you know that given a couple of years and strong execution, you will be one of the giants, and the people who join now will be fortunate to have been on the rocket ship from day one. You have the confidence to go out and sell that story to world-leading talent. The alternative mindset says: we are not quite there yet, we should be conservative, we will hire someone more like us, someone who thinks smaller.

The same dynamic applies to fundraising, to target-setting, to partnerships, to customer acquisition. If you do not show up telling the story of how you are going to win, everything in the organisation begins to underperform. Hiring becomes timid. Goals become incremental. Partnerships become cautious. Execution loses its edge. No one ever exceeds their vision. If you do not set big, hairy, audacious goals, you will still underachieve against whatever goals you set. It is just that your goals will be smaller, and your achievements smaller still.

Excellence as the Default Expectation

My approach, from the first day of building Oxford Ionics, was to drum into everyone that excellence is not just possible. It is the default expectation. If we are not excellent, we do not deserve to be here. Everyone must elevate everyone else. The scepticism that says 'we all know this is going to be a bit mediocre, and we just have to muddle through', that has to be eliminated.

This requires faith at the beginning, because there is no evidence yet that the impossible is achievable. But when people start seeing delivery of things that everyone doubted were possible, when what looked impossible last year becomes routine this year, when the drumbeat of exceptional talent arriving says 'this is world-leading', that is when the self-fulfilling prophecy flips from negative to positive. The

more you achieve, the more you attract people who believe outsized things are possible, and the more you achieve.

The tension in the direction will be toward mediocrity, regression to the mean. It requires substantial, constant effort to resist that pull. Accepting imperfection while maintaining a painful drive toward excellence is far harder than accepting mediocrity. But it is the only way to build something that matters.

Knowing What Excellent Looks Like at Each Phase

Excellence does not mean the same thing at every stage of a company's life. In the early stages, heroes are enormously valuable: individuals who hack together solutions that nobody thought were possible, faster than anyone imagined. A year later, those same behaviours, patching over holes rather than fixing underlying systems, can become actively damaging. The job of the founder is to evolve fast enough to stay ahead of the business, to know what excellent looks like in each new phase, and to broadcast those expectations rather than silently changing the standard and expecting people to intuit the shift.

The clarity of mission is equally critical. Any company, left to its own devices, will default into an unfocused blob that does a little bit of everything badly. A startup in its growth phase must have absolute clarity about the one thing it must do to win. Everyone needs to know: if we succeed on these three goals and fail on everything else, we win; if we excel at everything else but miss these three goals, we lose. That clarity tells people which corners to cut and which to protect. Without it, energy disperses and mediocrity creeps in.

A National Malaise

I believe what I am describing is part of a national malaise. If you look at the Victorian era, the British took for granted that they could be truly excellent at whatever they undertook, and they were willing to go and do it. The attitude of the past thirty or forty years has been: we will probably come in third place, and that is life. It is the culture of the

also-ran, of accepting a position in the pack rather than demanding to lead it.

The UK is in a strong competitive position to win in multiple frontier technology sectors. What it requires is people with an irrational desire to win and a belief, almost certainly irrational, but fervently held, that they are in the position to do so. Building a company is an irrational decision. If you ran the expected-value calculation, you would go and get a safe job as a software developer at Google. Every great company was founded by someone who ignored that calculation and bet on a future that rational analysis said was unlikely.

The UK's formidable engineering instincts, its ability to see problems pragmatically and avoid hiding from difficulty, are valuable. But they are a necessary condition for success, not a sufficient one. They must be coupled with a fervent belief that excellence is achievable, that extreme success is the expected outcome if you execute well, and that anything less than world-leading is not acceptable. Get that combination right, and the UK becomes unstoppable.

Editor's Synthesis

Ballance's position is uncomfortable for anyone who believes the UK's innovation deficit is primarily a resource problem. He is not asking for more funding, better policy, or improved infrastructure. He is asking for a different relationship with uncertainty and scale. The UK's institutional culture, across universities, accelerators, and public programmes, consistently treats the acknowledgement of problems as evidence of weakness, when in practice every company of consequence operates permanently in that condition. The practical implication is that the signals sent by institutions matter as much as the resources they provide. An accelerator that asks founders to minimise the risks in their pitch decks is not helping them. It is training them to deceive investors and, worse, themselves. The change Ballance describes starts before any

programme or policy: it starts with what the UK decides to celebrate and what it decides to fund.

———

2

DEFEAT INCUMBENTS, SHAPE REGULATION, AND FIND THE RIGHT BALANCE

Based on conversations with Bradley Tusk, CEO of Tusk Ventures and Political Strategist for Uber

Editor's Prelude

Bradley Tusk ran political strategy for Uber during the years when that fight was existential, and has since backed companies across insurance, fintech, crypto, and AI. His chapter addresses a consistent founder error: treating regulation as a technicality rather than as the central question of whether the business survives. He sets out a five-factor test for assessing regulated markets before committing to them, drawn from the political and consumer dynamics that determine whether a startup can beat the incumbents trying to stop it.

The Five-Factor Assessment for Defeating Incumbents

Startups tend to fall into one of two categories. Either they have found a better way to do something that already exists, in which case incumbents will use politics and regulation to stop them, or they are operating in a completely new space, such as crypto, AI, or autonomous vehicles, where there is no incumbent but also no

established regulatory framework.

When you are taking on an established industry, there are five factors you need to assess before you begin, and it is malpractice not to.

First, understand how people feel about the incumbent. The greatest opportunities arise when an industry has treated its customers badly. Taxis are the classic example, and this was true in London as much as anywhere else. They were expensive, unreliable, and the experience had not meaningfully improved in decades. When a dramatically better product appeared, there was not only massive product-market fit but enough consumer passion that people were willing to fight to keep it. If the incumbent's product is already decent and the industry is politically connected, you are facing a much harder opponent. But ask yourself honestly: if your product is not a meaningful step change over what exists, why are you building the company in the first place?

Second, determine whether your product is the kind of thing people will fight for. With Uber, users were passionate, passionate enough to contact their elected representatives unprompted. Other products may be excellent but do not generate that emotional response. A better home-cleaning service is unlikely to mobilise a political constituency. If users will not advocate for you at scale, you need a different strategy.

Third, confirm you have the scale in the right places. Airbnb tried to replicate Uber's political playbook and it failed, because their scale was on the wrong side. Airbnb's users are guests who are typically travelling from elsewhere. A guest visiting from abroad has no political use with local representatives. The hosts, meanwhile, lacked both numbers and willingness to raise their hands, since what they were doing was not always legal in their jurisdiction. You need passionate users who are also constituents in the places where decisions are being made.

Fourth, assess the political power of the incumbent. Have they made material political contributions? Do they have professional lobbyists with deep relationships in Whitehall or Westminster? How close is the relationship to the specific regulators who will make the decision? There is a large difference between an industry that has a lobbying presence and one whose executives are personally close to the decision-makers.

Fifth, understand where the media stands. Traditional media, social media, and public commentators all function as multipliers. If enough people who influence public opinion agree with you, they will amplify your case in ways that no amount of direct lobbying can achieve. If they do not, you are fighting alone.

What Founders Get Wrong About Regulation

The single most common mistake founders make is ignoring regulation entirely. They invest enormous effort understanding the engineering, the fundraising, the marketing, and then treat the regulatory environment as something they will deal with later. If you are building a pure B2B SaaS product with no regulatory exposure, that may be fine. But most things that touch a consumer, directly or indirectly, are regulated. The CMA, the FCA, Ofcom, the ICO, the UK has a sophisticated and demanding regulatory environment. You have to understand it before you begin, not after you have a problem.

A related mistake is assuming that being brilliant will be enough. Founders who graduated from top programmes, raised from elite funds, and built impressive products sometimes believe that when they explain to regulators how powerful their technology is, the regulators will simply get out of the way. That is not how it works. Politicians and regulators do not care what is good for you. They care what is good for them, their constituents, their mandate, their institutional credibility, their political survival. If you cannot translate what you need into language that serves their interests, they will ignore you or actively obstruct you.

And do not make the mistake of thinking your lawyers can handle this. Lawyers are happy to do the work because they can bill for it. But lawyers typically do not understand politics any better than you do. What they will do is work their way up through a bureaucracy from the bottom, which takes the longest, costs the most, and is the least likely to succeed, because career officials are often the people most resistant to change. You need people who understand political incentives, not legal process.

Calibrate the Risk Before You Move

Not every regulatory fight carries the same stakes, and founders need to assess the consequences of getting it wrong before deciding how to engage. If you are operating a crypto exchange without proper licences, the penalties are severe and potentially criminal. If you are deploying electric scooters and the worst that happens is the council impounds them, the risk calculus is entirely different. Some companies need to secure regulatory permission before they can operate at all, you cannot sell insurance in most jurisdictions without a licence. Others may be operating in a space that is technically legal but politically visible, in which case you can afford to move first and engage regulators once the product has established traction. The key is to understand where your company falls on that spectrum and make a rational choice, because no matter how great the opportunity, it is never worth risking criminal liability.

The Uber Lesson: What Consumer Power Actually Does

At Uber, the gap between the status quo and our product was so large that we barely needed to campaign. We simply let customers know that the thing they had fallen in love with was about to disappear. That consumer response opened the political door. It did not mean every regulator cooperated willingly. But it meant they could not simply make us go away because their donors told them to. They had to take us seriously, and from there a real negotiation could begin.

The politicians who were too slow to recognise the shift paid a real political price for it. That sent a signal to every other jurisdiction: ignoring a consumer movement backed by a superior product carries consequences. You do not need to be aggressive. But you do need to make clear that there are political costs to blocking innovation that the public visibly wants. That changes the calculation for every decision-maker who follows.

Regulating New Markets: The Balancing Act

When there is no incumbent and no existing framework, the challenge shifts from political combat to collaborative construction. The goal is regulation that allows innovation to develop while preventing the harms that unregulated technology can produce. Both extremes are wrong: the view that all regulation is inherently hostile to innovation, and the view that all new technology is inherently dangerous. Both are neutral concepts, as good or bad as they are applied in any given situation. Taking a dogmatic position on either side is not principled. It is unproductive.

The cautionary tale is social media. The liability protections that enabled the early internet to grow made complete sense when they were introduced. You could not have taken a nascent concept, burdened it with full liability, and expected it to flourish. But somewhere between ten and fifteen years later, it became apparent that social media had tremendous upside and tremendous downside. When an epidemic of teenage self-harm and suicide emerged, it was clear that intervention was needed. Yet governments on both sides of the Atlantic spent over a decade talking about reform and doing almost nothing, because they were too cautious about confronting the industry's political and economic power. The framework that was right on the front end became catastrophically wrong on the back end, and nobody updated it in time.

AI will require the same balancing act, multiplied by orders of magnitude. Because AI is generative, it will constantly evolve, and regulation must evolve with it. Social media was relatively static: the

basic concept did not change dramatically from its origins, even as scale exploded. AI is different. Its capabilities will shift continuously, which requires a continuous process of evaluation, sometimes tightening rules, sometimes loosening them, rather than a one-time legislative event followed by decades of neglect.

Mental health chatbots illustrate the point. There is enormous potential value in technology that can provide some level of emotional support to people who will never have access to a human therapist. But when a chatbot responds to a vulnerable teenager by affirming harmful intent, something has gone catastrophically wrong. Several jurisdictions responded by banning mental health chatbots entirely. That is the wrong answer. The right answer is to understand what led to that specific outcome, prevent it, and preserve access to a tool that could help millions of people. But the technology companies resist any regulation, and the politicians want to declare the problem solved, and neither outcome serves the public.

The same dynamic is playing out now with AI data centres and energy consumption. AI infrastructure is so energy-intensive that it risks imposing massive electricity costs on everyone else. You do not want to halt AI development, because the future of the economy depends on it. But you cannot make ordinary households pay dramatically more for their energy so that a handful of companies can capture all the value. The principle is simple: welcome innovation, but do not allow it to impose external costs on people who never chose to bear them. That constraint, applied consistently, forces better innovation, alternative forms of compute, on-site energy generation, microgrids, rather than suppressing it.

What the UK Should Learn

The UK has a real opportunity to get this right, because it sits between two instructive failures. Europe has often over-regulated to the point of suppression, there is a reason so few globally material technology companies have been built on the continent. And in other contexts, under-regulation has allowed technology to develop without

accountability until crisis forced blunt intervention. The UK can chart a different course: create frameworks on the front end that enable innovation, commit to a regular process of evaluation on the back end, and treat legislation as the beginning of a continuous governance process rather than a finished product.

But that requires two things that do not come naturally to any political system. The first is real expertise. Regulators must bring in people who understand the technology they are regulating, not rely solely on political staff whose instinct is to score points with a narrow constituency. The second is intellectual honesty. On any given issue, both the technology companies and the regulators will be partly right and partly wrong. The useful question is never who is good and who is bad. It is: what specific outcome are we trying to prevent, what specific outcome are we trying to enable, and what is the minimum intervention required to achieve both? If the UK can ask that question consistently and act on the answers, it will build the most innovation-friendly regulatory environment in the world. If it cannot, it will oscillate between neglect and overreaction, which is exactly how you lose.

Editor's Synthesis

Tusk's analysis is not theoretical. It derives from the specific conditions that made Uber's consumer movement work and from the specific conditions that made Airbnb's equivalent attempt fail. The distinction between the two is precise: Uber's users were riders who got into the back of a car, Airbnb's were guests who stayed in a home and often knew their host personally. The political dynamics were structurally different, and the founders who ignored that distinction paid for it. The five factors, how people feel about the incumbent, whether users will fight for the product, whether scale exists in the right places, the political power of the opposing industry, and where media stands, are not a checklist. They are a sequence of tests that, in Tusk's account, all

need to pass before a founder engages in political combat, because losing one of them reliably defeats the others. The UK's regulatory environment sits between Europe's over-restriction and the US's reluctance to act on AI. That position is an advantage only if founders and policymakers understand both the opportunity and its fragility.

The practical implication of Tusk's framework is that regulatory and political strategy belong at founding, not as an afterthought, and that founders in regulated markets are better placed when they bring in politically experienced operators as early as they bring in legal counsel.

Action Takeaway	Treat regulatory and political strategy as a founding capability, not an afterthought, assess the five factors before building in any regulated market, and bring in political or regulatory expertise as soon as possible, especially in new frontier technology fields.

3

STOP MISDIAGNOSING WHAT BRITAIN IS GOOD AT

Based on conversations with Nick Clegg, Former Deputy Prime Minister of the United Kingdom and Former President, Global Affairs at Meta

Editor's Prelude

Nick Clegg served as Deputy Prime Minister from 2010 to 2015 and spent the years that followed inside one of the largest technology platforms on earth, watching from both sides of the public-private divide. His chapter does not address a policy failure. It addresses a diagnostic failure: the UK political class consistently mistakes the things that generate political reward, AI safety leadership, AI infrastructure announcements, for the things that generate competitive advantage, and they are not the same thing. His argument is that the real competitive opportunity sits elsewhere entirely, in deployment through the UK's centralised public services, and that until the misdiagnosis is corrected, every other reform in this book will be applied to the wrong problem. Bingham's chapter that follows provides the operational architecture for exactly what that deployment would require.

———

The Fool's Errand of Infrastructure

Britain keeps doubling down on the things that generate headlines and calling it a strategy. It is not a strategy. It is a habit, and it is getting expensive.

Take AI safety. The UK's AI Safety Institute is probably the best of its kind in the world. It is genuinely respected globally. I am not saying it should not exist. I am saying that being the global thought leader on AI safety has no bearing whatsoever on competitive success in AI markets. Safety governance and commercial competitiveness are not on the same axis. You can be a world leader in one and irrelevant in the other. The UK is currently pursuing the first at the expense of the second and has managed to convince itself that this constitutes a technology strategy.

Then take AI infrastructure. The government has repeatedly announced data centre partnerships and called it a technology vision. The most recent example was during a US state visit, when a new tech partnership was trumpeted with data centres in the northeast of England at its heart. Impressive. Except for one thing: no AI foundation model developer is ever going to train their model in the UK. Not because of the infrastructure. Because of the copyright and IP regime.

The government made a rational choice. It decided to protect the creative industries, which are genuinely world-class and which represent real economic weight. That is a perfectly legitimate decision for an economy with a creative sector as powerful as ours. But if you make that decision, you cannot also have foundation model developers training their models here. They will not come, because they do not have the freedom on copyright and IP that they have elsewhere. Other than Mistral, nobody is training foundation models anywhere in Europe. The UK has higher energy costs than its competitors and a stricter IP regime. It does not matter how many sheds you build. Nobody is coming.

You cannot have both. The government chose the creative industries. Fine. But announcing data centre investment while that IP regime remains in place is not a strategy. It is a press release.

What Britain Actually Has to Offer

So what does Britain actually have? It has the English language, which is an enormous structural advantage. It has London, which is genuinely world-class as a global city, though we sometimes overstate exactly how exceptional it is. It has a science base from its research universities that is among the best on earth. It has a startup and venture capital ecosystem that, let me be clear, did not exist when I became Deputy Prime Minister. A significant part of what was built between 2010 and 2015, through fiscal changes, regulatory reform, and legal simplification, created the conditions for that ecosystem to develop. It is now relatively straightforward to raise a few million pounds in the UK if you have a good idea in a technology sector. That matters, and it was not always the case.

Britain also has a creative economy that is genuinely first rank. And it has a handful of verticals where it leads: pre-commercial quantum is one, though quantum is at the moment more of a science project than a commercial market. We will see whether the intellectual lead can be retained as commercialisation arrives.

These are real assets. They are not the assets the political class tends to advertise. Nobody gets a headline for saying that Britain's competitive advantage in the age of AI is its language, its location, its universities, and its ability to deploy technology at scale through existing public institutions. But that is actually what Britain has to offer.

The Deployment Opportunity Nobody Is Talking About

Here is the argument I would make that almost nobody in Whitehall is making. The UK has one of the most centralised public service infrastructures of any mature market economy. The NHS alone covers sixty-seven million people. State education touches every child in

the country. These are not just public services. They are potential technology deployment platforms at a scale that almost no private sector company could replicate.

It is a scandal, and I use that word deliberately, that AI is not more systematically deployed across health and education. The potential benefits to patients and to pupils are enormous, far greater than anything that data centres in the northeast would produce. If you could meaningfully improve diagnostic accuracy, administrative efficiency, or patient triage through AI deployment across the NHS, the economic and social value would dwarf anything the government has announced. The same is true in education.

What has Whitehall done? It has produced pilot schemes. It has generated speeches from the Secretary of State for Health. It has issued strategies. What it has not done is deploy. That is the gap between where Britain is and where it could be. Deployment, dissemination, adoption at scale through the institutions that already exist and already touch every citizen. That is where the UK could genuinely lead. Not in building the infrastructure somebody else will use. In being the country that shows the world how to use AI through the public sector at national scale.

67M

People covered by NHS England, the UK's largest potential AIdeployment platform

Despite covering 67 million people, NHS England remains at pilot stage for systematic AI deployment across clinical and administrative functions. Whitehall has produced strategies, speeches, and controlled trials. It has not produced deployment at scale. The UK's most centrally organised public infrastructure is also its most underused technology proving ground. Every year of delay is an opportunity cost measured in patients and pupils, not in policy documents.

Source: NHS England / ONS population data

The Media Loop and the Incentive Structure

There is a reason this misdiagnosis persists, and it is not stupidity. It is incentives.

The UK has a newspaper culture unlike almost any other democracy. It goes back to the late nineteenth century, to Fleet Street distributing papers overnight from London to Edinburgh. We are a print-obsessed country, and the newspapers have two structural incentives that push consistently in the wrong direction. First, emerging technology threatens their own business model, so they have a vested interest in treating it with suspicion. Second, fear and pessimism sell better than opportunity and growth. The result is that British people are among the most pessimistic about artificial intelligence and technology of any population on earth.

Politicians follow the incentive structure. Talking about AI safety, about risk, about the dangers of technology, generates political reward. Talking about AI deployment through the NHS generates almost none. The incentive structure in politics is to accentuate risk, because that is what gives you the political return. So the politicians spend their time talking about safety, the press amplifies the anxiety, the public becomes more pessimistic, and the politicians conclude that talking about safety is the right thing to do. The loop is self-reinforcing and the diagnosis stays wrong because the incentive is to keep it wrong.

Breaking that loop requires a different kind of honesty: about what Britain actually has to offer, about what it cannot win, and about where the genuine opportunity lies. That honesty is not currently rewarded in British politics or British media. It needs to be.

Editor's Synthesis

Clegg's chapter is not primarily an argument about policy. It is an argument about attention. The UK political class is not failing to act on its priorities. It is acting very energetically on the wrong ones, and

the incentive structure of British politics and British media makes correction difficult because the wrong priorities generate more political reward than the right ones. The implication for the rest of this book is structural: the reforms that follow, in capital, education, procurement, and talent, are necessary but not sufficient if they continue to be applied to a misdiagnosed strategic position. The specific opportunity Clegg names, deployment through centralised public services at the scale only the NHS and state education can provide, is the one no other featured individual in this Part addresses with the same insider credibility. Bingham's chapter provides the operational blueprint for exactly what that deployment would require.

Action Takeaway	Replace the UK's AI strategy headline metrics, data centre investment announced and AI Safety Institute funding allocated, with deployment metrics: the number of NHS trusts with AI integrated into clinical pathways, the number of schools with AI tools embedded in teaching, and the percentage of public service interactions handled with AI assistance. Set five-year targets for each. Publish progress quarterly and make departmental budget allocations conditional on meeting them.

4

STOP MANAGING INNOVATION. START DELIVERING IT.

Based on conversations with Kate Bingham, Former Chair, UK Vaccine Taskforce 2020; Managing Partner, SV Health Investors

Editor's Prelude

Kate Bingham ran the UK Vaccine Taskforce as its Chair in 2020, procuring five effective vaccines in under a year by applying the risk tolerance and commitment logic of venture capital to a government programme, a combination no career civil servant and no career investor would have brought to it alone.

Where Ballance makes the case for ambition and Tusk makes the case for regulatory strategy, Bingham provides the operational architecture. Her account is a direct refutation of the claim that government cannot move at speed. Her chapter addresses three concrete mechanisms: operational trust as a structural requirement not a preference, procurement instruments designed for uncertainty, and parallel ministerial review that compresses decision timelines from months to days. Mullally's chapter that follows addresses the Cabinet Office architecture that would make this the default rather than the exception.

The Team Is the Strategy

Most government programmes begin with a strategy document. The most effective ones begin with a team. The distinction sounds trivial. It is not. Strategy documents describe intentions. Teams make decisions. When a programme is moving fast, the ability to make good decisions quickly, and to trust that every member of the team is doing the same in their area, is the primary determinant of outcome.

The civil service model for assembling delivery teams is competitive appointment: advertise, assess, select on individual merit. This model selects for individual capability. It does not select for collective performance. A team of individually excellent people who have never worked together under pressure will not perform as well as a team of good people who have.

The most effective delivery teams are built around prior operational relationships – people who have worked together in conditions where failure had consequences, who have developed communication shortcuts, who know how each other thinks under pressure. In the VTF, the core team had been working together for over ten years in conditions where failure meant losing a company or a patient's life. That prior relationship was not incidental to our speed. It was the mechanism of our speed.

Future delivery units need to be staffed through time-limited industry secondments, with directors given explicit authority to build their teams around operational trust rather than competitive appointment. This authority needs to be written into the founding mandate, not negotiated case by case after the programme has already started.

Use Procurement Instruments Built for Uncertainty

The specific procurement challenge in a mission-driven programme is not how to run a competition. It is how to make commitments before the outcome is certain – because the value of early commitment is precisely that it is made before certainty arrives. A procurement process that requires a defined specification before commitment

cannot work for frontier technology. The specification is what you are trying to discover.

The instruments that make this kind of commitment possible already exist within current procurement law: framework agreements that allow multi-supplier commitment without a final selection; structured options that allow commitment to a development pathway without commitment to a specific outcome; direct award combined with a competitive pilot proposal where standard procedures are suspended for strategic necessity. The VTF used a two-year fill-finish contract placed before a single vaccine had been approved, not because we knew it would work, but because if we waited until we knew, someone else would have the capacity.

Replace Sequential Routing with Parallel Decision Authority

The standard process for high-value cross-departmental commitments routes approvals sequentially through each relevant department. Each department reviews, comments, seeks clarification, and approves in sequence. At each stage there is a risk of delay, a risk of modification, and a risk of the whole process restarting. A programme that needs to move in weeks is routed through a process designed for months.

This is not a governance requirement. It is a habit. At the VTF we had four ministers deciding simultaneously, not sequentially. The mechanism was a standing cross-departmental ministerial committee with authority to approve strategic technology commitments collectively. The time from decision request to ministerial approval went from months to days. Not because we bypassed governance, but because we ran the governance in parallel rather than in sequence.

A standing cross-departmental committee with authority to approve strategic technology commitments, meeting on a defined and rapid schedule, would produce the same compression for any equivalent programme. The mechanism is available. The authority structure needs to be pre-approved rather than negotiated under time pressure.

4 Ministers	**Ministers deciding simultaneously, not sequentially: how the VTF compressed months of approval into days** Sequential routing for complex cross-departmental commitments typically takes months. Each department reviews and approves in turn. A commitment that needs to be made in weeks to be strategically effective will arrive too late if it waits for sequential approval. The VTF ran four ministers simultaneously through a standing committee. The compression from months to days was not the result of bypassing governance. It was the result of running governance in parallel rather than in sequence. For designated strategic technology programmes, replace sequential departmental routing with a standing cross-departmental ministerial committee authorised to approve commitments collectively. Establish the committee at programme inception, with a defined meeting schedule and authority pre-approved across relevant departments.

Parliamentary Accountability as Programme Discipline

The select committee appearances were, in my experience, one of the most valuable features of the VTF model, not because I enjoyed them, but because they imposed a discipline of transparency that improved decision quality throughout the programme. Knowing that every major commitment would need to be explained and defended in

public, on the record, to people with standing to challenge it, focused the programme on decisions that were genuinely defensible rather than merely bureaucratically compliant.

Editor's Synthesis

Bingham's account of the Vaccine Taskforce is often interpreted as a story about exceptional leadership during a crisis. The deeper lesson is institutional. The programme worked because the delivery architecture was designed for speed rather than for process compliance.

Three structural choices explain most of the difference. A single accountable director replaced distributed responsibility. A team built through secondment replaced competitive appointment. Parallel ministerial decision making replaced sequential departmental approval. Each of these decisions reduced the time between evidence and action.

None of these mechanisms requires new legislation. They require a different default. Government programmes normally distribute authority, assemble teams through internal competition, and route approvals through departmental sequence. These defaults optimise for risk control rather than delivery speed.

The implication is clear. If the UK wants mission driven programmes to succeed outside emergency conditions, the institutional architecture used by the Vaccine Taskforce must become permanent rather than exceptional.

In practice this means establishing standing mission delivery units with pre authorised authority structures, secondment based staffing models, and defined ministerial oversight. Without those structural changes the next programme will repeat the same pattern of delayed authority negotiation that slows government action before delivery has even begun.

Action Takeaway	Staff delivery units through time-limited industry secondments, with directors given explicit authority to select for prior operational relationships. Mandate procurement instruments designed for uncertainty: framework agreements, structured options, direct award with competitive pilot. Replace sequential departmental routing with a standing cross-departmental ministerial committee for strategic technology approvals. Require quarterly public reporting against defined delivery milestones.

5

RECOVER THE POLITICAL WILL TO TALK ABOUT GROWTH

Based on conversations with Nick Clegg, Former Deputy Prime Minister of the United Kingdom and Former President, Global Affairs at Meta

Editor's Prelude

The chapters in Part I establish what ambition looks like in practice and how to deliver it. Clegg's second chapter in this Part asks the prior question: why has the British political class stopped wanting to. He is not describing a failure of competence. He is describing a failure of political economy, the sequence of shocks (the financial crisis, the Brexit referendum and its aftermath, the pandemic) from 2008 to the present that produced a zero-sum politics in which the only legible debate is about redistribution, not creation. Of the featured individuals in this Part, Clegg is the only one who has served in government at the Prime Ministerial level and watched this dynamic operate from the inside. His chapter asks what it would take to reverse the post-Brexit cycle of economic self-harm and restore the political will that precedes everything else. Mullally's chapter that follows addresses the institutional architecture that would make delivery durable once that will is restored.

———

What Has Gone Missing from British Politics

Something has gone missing from British politics that was not missing when I was in government, and its absence makes almost everything else in this book harder to achieve.

When I was Deputy Prime Minister, across the Conservative, Labour, and Liberal Democrat traditions, there was a shared assumption that the debate about how to generate wealth was at least as important as the debate about how to distribute it. You could disagree fiercely about how to distribute wealth. But the prior question, how do you create it, how do you build the companies and develop the industries and attract the capital that makes distribution possible in the first place, that question was taken seriously across the political spectrum. There were genuine voices, in all the main parties, who cared about where growth came from.

That has gone. The only debate now is about how to divide a shrinking cake. Nobody is making the unembarrassed, sustained case for wealth creation as a precondition for everything else the state wants to do. The advocates for the private sector, for innovation, for entrepreneurship as a genuine economic and social good, have either left politics or gone quiet. I do not think this happened because the politicians got stupider. I think it happened because the incentive structure changed.

Fifteen Years of Self-Harm

To understand why the political will to talk about growth has collapsed, you have to understand what Britain has been through since 2008. And it is a sequence that, when you lay it out in full, is genuinely extraordinary.

It started with the financial crisis, which was catastrophic almost everywhere but uniquely damaging for Britain. The reason was the City of London. For decades, the City had cross-subsidised the rest of the country. I saw this directly as an MP for twelve years in South Yorkshire. The local economy was sustained partly by revenues generated in London and redistributed through public spending. When the financial crisis hit, that transmission mechanism broke. Britain became permanently poorer, not just temporarily damaged.

Then came 2016. The decision to leave the world's largest borderless single market. I was opposed to it and remain opposed, but this is not primarily a Brexit argument. It is a sequencing argument. Britain had already taken the 2008 blow. It then chose to deliver a second one. Leaving the market on our doorstep, the only large market in our geographical hinterland, was a further self-inflicted wound on an economy that had not recovered from the first.

Then came the chaos years after the vote. Then Covid, which was a shared global shock but with specific British characteristics. Then the Ukraine war and the energy shock that followed. Then a second oil shock. Then sustained political instability. Some of those shocks were shared. The Covid pandemic, the Ukraine war. Others were uniquely British or uniquely bad for Britain. But the cumulative effect, fifteen years of sequential damage, is a country that has learned not to expect things to get better and a political class that has learned not to promise that they will.

15

Years of sequential economic shocks to the UK economy, 2008 to the present

The 2008 financial crisis hit the UK disproportionately hard given the City of London's role in national wealth distribution. The 2016 Brexit decision uncoupled Britain from its largest trading market. Covid, the Ukraine war, an energy shock, and sustained political instability followed. The cumulative effect has produced a political culture that debates redistribution rather than growth, because fifteen years of sequential damage have made expansive thinking about the future feel implausible to both politicians and the public they represent.

Source: ONS / HM Treasury / author's analysis

The Zero-Sum Waterhole

When the waterhole shrinks, animals fight over what remains. Nobody talks about finding a new waterhole. That is zero-sum politics, and it is what fifteen years of sequential economic damage produces.

The incentive structure is now very clear. If you talk about growth, about dynamism, about the opportunity that technology could create, the electorate hears you saying that their pain is not real, that the difficulties of the last fifteen years do not matter, that everything will be fine if they just believe a little harder. That is not a rewarding political message in a country where a large proportion of the population has experienced real material decline. So politicians do not send it. They talk instead about redistribution, about fairness, about protecting what exists rather than building what does not.

The regulatory state has compounded this. Just at the point when Britain most needs authentic voices advocating for the private sector and for innovation, the regulatory environment for building things has

become next to dysfunctional. University finances are being eroded. The planning system is broken. The tax environment for entrepreneurs has been made significantly less attractive. The message being sent, across multiple dimensions of policy simultaneously, is that Britain is not particularly interested in wealth creation.

The 1980s Parallel

There is a historical precedent for reversing this kind of zero-sum decline culture, and it is worth taking seriously even if the politics are uncomfortable.

The supply-side revolution of the 1980s reversed a comparable period of pessimism. The Winter of Discontent, the sense of ungovernable decline, the dominance of zero-sum distributional politics through the 1970s, all of this gave way, through a combination of genuine policy shock and a new political story, to a period of real economic dynamism. It was far from perfect. It produced brutal deindustrialisation in parts of the country. It generated inequality that we are still living with. But it produced the energy that British economic life has been drawing on ever since.

What reversed the cycle was not better management of the existing system. It was a new story about what the economy could become. The liberalisation of the City, the supply-side reforms, the opening of new sectors: these worked partly because they changed the material conditions and partly because they gave people something expansive to believe in. A sense that the waterhole could be made bigger, not just divided more fairly.

The equivalent story for this decade could be technological deployment at scale. Not AI safety governance. Not data centre infrastructure. Showing the world how a country with centralised public institutions can use AI to transform what it means to be a patient, a student, a citizen interacting with the state. That is a story with genuine popular appeal. It is also a story that nobody in British politics is currently telling.

Why the Regulatory State Has Become an Obstacle

I will say this bluntly because it needs to be said. Just at the point where Britain needs the regulatory environment to open up and make room for new things, it has moved in precisely the opposite direction. Regulations designed for a different era are being applied to technologies they were never intended to govern. Institutions that should be enabling innovation are adding friction. The people who understand technology well enough to regulate it intelligently are not in the regulatory bodies, because the regulatory bodies cannot offer competitive compensation.

There are no authentic voices left in mainstream British politics making the unembarrassed case that this needs to change. The conservatives who used to make that case with conviction have either left the field or moderated it to the point of incoherence. The Labour tradition that produced genuine pro-business voices has not found them in this generation. The liberal tradition that I came from has been reduced to marginal influence. This is not a party political point. It is a structural observation. The political system is not producing the voices it needs to make the case for what this book is about.

The Generational Shift That Politics Has Not Caught

There is one genuinely encouraging fact in this picture. Young people across Britain now want to be entrepreneurs in a way that was not true fifteen years ago. The aspiration has shifted. My own children, all of them, want to build something. They do not want to work for the government or a law firm. They want to start companies. That represents a genuine cultural shift that happened without any government programme producing it.

The political class has not caught up with this shift. A generation that wants to build is being governed by a political class whose instinct is to protect what exists. The task is to close that gap before the generational energy dissipates or relocates somewhere that wants it more.

A new pan-European project, an economy of bits built on hemispheric cooperation, could be the generational story that reverses the zero-sum cycle, just as the single market reversed the oil shock cycle of the 1970s. Big ideas, not micro-policies, are what break self-reinforcing loops. The idea that Britain could lead the creation of a European hemisphere for the digital economy is not implausible. It is ambitious. But it is the right scale of ambition for the moment.

———

Editor's Synthesis

Clegg's third chapter is the most politically uncomfortable in Part I because it names a failure not of policy design but of political will, and assigns responsibility for that failure to a structural process rather than to any individual government. The zero-sum politics argument is accurate in its diagnosis and sobering in its implication: the reforms across every other chapter in this book require a political class that believes wealth creation is worth pursuing, and the current political class does not reliably believe this, because the incentive structure does not reward it. The chapter's most actionable implication is not a specific policy. It is a narrative: the story of what technological deployment at national scale could make possible is waiting to be told, and whoever tells it has access to something that has not been available in British politics for fifteen years, a genuinely expansive vision of what Britain could become. Mullally's chapter that follows describes the institutional architecture that would allow whoever tells that story to actually deliver on it.

Action Takeaway	Task the Cabinet Office with producing within six months a public account of the economic value generated by UK-founded technology companies in the past decade, covering direct employment, tax contribution, supply chain effects, and secondary ecosystem growth. Publish it as the opening chapter of a renewed national growth narrative, not as a statistical appendix. Make it the baseline against which every subsequent industrial strategy decision is explicitly measured, and require that every major regulatory proposal include a published assessment of its effect on that baseline.

6

MAKE THE CABINET OFFICE THE ENGINE FOR INNOVATION DELIVERY

Based on conversations with Gerald Mullally, Former Senior Civil Servant and Quantum Technology Executive

Editor's Prelude

Gerald Mullally spent eight years inside the Cabinet Office building delivery capability, and his central observation is that the UK is not failing at strategy: it is failing at execution. His view is that the Cabinet Office has never settled its own purpose and that the crisis management function reliably absorbs the innovation function whenever both compete for the same resource. His chapter proposes structural separation of the two, with an innovation delivery unit that operates on Defence-style procurement timelines, phased milestones, and transparent public reporting.

The Centre Has Never Decided What It Is For

The Cabinet Office has a couple of recognised roles. One is coordination across government. The other is ensuring that certain standards and processes are maintained. But beyond those functions, it has never had

a settled sense of its own purpose. It oscillates between three modes: hierarchical coordination, where the centre directs departments and expects compliance; crisis management, where Number 10 responds to whatever emergency has surfaced and the Cabinet Office marshals the rest of government to address it; and residual policy, where it picks up whatever nobody else wants to own.

The relationship between the centre and the rest of government has historically been somewhat hierarchical. The centre is perceived as the seat of authority, and when it speaks, departments are expected to respond. That dynamic is almost the opposite of what an engine of innovation requires. Innovation needs permission to experiment, tolerance for failure, and collaborative rather than directive relationships. If the Cabinet Office is to produce innovation across government, the way it relates to other departments would need to shift.

Crisis Consumes Everything

The practical barrier is that crisis management absorbs the centre's capacity. A crisis can be anything from a real national emergency to a political difficulty that requires rapid coordination. When a crisis surfaces, the Cabinet Office pivots to managing it, which means heavily coordinating or even directing other departments. That mode of operation is legitimate and sometimes essential. But it leaves almost no space for the sustained, long-horizon work that innovation requires.

Any attempt to position the Cabinet Office as an innovation engine would need to segment the organisation so that the innovation function is structurally protected from the crisis management function. They cannot coexist in the same team with the same leadership, because crisis will always win in the short term. A dedicated unit, with its own mandate and its own protection from being raided whenever the next emergency arrives, would be essential.

Lead Frontier Technologies from the Centre

One of the most valuable things the Cabinet Office could do is take ownership of how frontier technologies are adopted across all government departments. At present, quantum computing, AI, and other powerful technologies sit primarily within DSIT. But these technologies are not relevant to one department. They are relevant to defence, healthcare, energy, transport, and every other mission-driven part of government. No single department is going to drive cross-departmental adoption. That is inherently a function for the centre.

The framing would be straightforward: the Cabinet Office takes responsibility for ensuring that the most strategically important frontier technologies are understood, tested, and adopted across government. It does not replace DSIT's role in supporting the technology ecosystem. It ensures that the rest of government, the departments that actually have missions and budgets and procurement capability, is actively engaged in adopting what that ecosystem produces. Without someone at the centre driving that agenda, each department makes its own calculation about whether to engage, and most conclude that it is easier not to.

The Talent Problem

The civil service contains some of the most capable people I have ever worked with. That is not the problem. The problem is that the system frustrates many of its best people to the point where they either leave or lose the drive that made them effective. The structural barriers, constant reorganisation, ministerial churn, the inability to see projects through to completion, wear people down over time.

If the UK wants to attract and retain the calibre of talent needed to drive an innovation agenda from the centre of government, it needs to compete more effectively with the private sector. One practical approach would be to restructure the compensation model: shift the balance away from generous pension provisions and toward higher direct pay. The current model attracts people who value long-term

security, which is not necessarily wrong, but it does not compete for the people who could command sharply higher salaries in technology, finance, or consulting. Creating a path where exceptional civil servants are compensated at a level that reflects the opportunity cost of their choice would make it easier to attract and keep the people who are most likely to drive meaningful change.

Execute Strategies, Do Not Just Rewrite Them

Government is surprisingly good at laying out long-term strategies. The challenge is execution. Strategies get written, launched with considerable fanfare, and then quietly set aside as the next administration or the next minister commissions a fresh one. The fundamental content rarely changes dramatically. What changes is the framing, the language, and the political emphasis. The result is a cycle where every few years the same ideas are restated in slightly different words, and little progress is measured against the original ambitions.

The fix is to treat innovation strategies the way Defence treats major procurement programmes: with phased milestones, measurable progress indicators, and regular accountability reviews. If the Cabinet Office's innovation unit had a ten-year mandate with defined milestones. This technology adopted by this department by this date, this number of sovereign companies scaled to this level by this year. It would be far harder to quietly shelve the agenda when political attention moved elsewhere.

The risk, and it is a real one, is that innovation budgets are always the first to be cut in a fiscal tightening. Nobody notices immediately when innovation spending disappears, because the consequences take years to materialise. Protecting the innovation function requires an explicit, long-term mandate, ideally spanning at least a decade, with ring-fenced resources and the kind of political commitment that makes it costly to dismantle. Without that protection, any innovation engine built inside the Cabinet Office will be dismantled the first time budgets come under pressure.

Measure What Matters

One of the most effective ways to protect an innovation agenda is to make its progress visible and measurable. If the Cabinet Office published regular, transparent assessments of how frontier technology adoption was progressing across government, which departments had engaged, which had not, what milestones had been met, what had been missed. It would be sharply harder for any administration to quietly defund the effort. Measurement creates accountability, and accountability creates political cost for abandonment.

This is something that government consistently fails to do. A policy is announced, a press release is issued, and the political system treats the problem as solved. The follow-through, checking whether the programme is delivering, whether the original assumptions were correct, whether the strategy needs adapting, almost never happens with the same energy or visibility. Building that discipline into the innovation function from the outset would be one of the most important things the Cabinet Office could do.

Editor's Synthesis

Mullally's diagnosis is structural rather than political. He is not suggesting that the current government is unusually bad at innovation delivery. His point is that the institution responsible for cross-departmental coordination has never had a settled sense of what it is for beyond coordination and standards maintenance. Every strategy gets written, every press release gets issued, and then the administration changes and the strategy quietly disappears. The fix, treating innovation strategies the way Defence treats major procurement, with phased milestones, measurable progress indicators, and regular accountability reviews, does not appear to require new powers. It would require the Cabinet Office to stop treating the announcement of a strategy as the completion of its job. The talent point is also structural: if the civil service cannot

offer competitive compensation for frontier technology expertise, it is likely to continue doing what it currently does, importing management consultants to do the analytical work and then failing to retain the insight they generate.

The single institutional change Mullally's case points toward is a dedicated innovation delivery unit inside the Cabinet Office, protected from crisis management by design and measured against publicly reported milestones, without which every other recommendation in this book is subject to the same execution failure he has spent his career documenting.

Action Takeaway	Segment the Cabinet Office so that an innovation delivery function is structurally protected from crisis management, with a long-term mandate, phased milestones, and transparent public reporting against measurable progress indicators.

PART II

EDUCATION, TALENT & THE ENTREPRENEURIAL GENERATION



The chapters in this Part build the evidence for Shift 6: replacing compliance-based assessment with entrepreneurial education. They connect to Shift 2, which cannot succeed without a talent pipeline that produces builders rather than credential-collectors.

What We Are Doing to the Next Generation

Sixty-nine per cent of girls aged thirteen to seventeen say they are interested in technology. Thirty-nine per cent say they would consider a career in it. That thirty-point gap is being produced at scale, reliably and predictably, by an ecosystem that is theoretically designed to develop human potential. It is not a pipeline problem in the sense that supply is unavailable. It is a pipeline problem in the sense that the pipeline has a catastrophic, well-documented, structurally produced leak that we have chosen not to fix.

Andreas Schleicher's diagnosis is the most comprehensively evidenced account of what is causing it. The UK exam system divorces learning from assessment and then wonders why students stop thinking creatively. Fifteen-year-olds report sharply lower creativity than ten-year-olds in virtually every system PISA measures. If fifteen-year-olds scored lower in mathematics than ten-year-olds, we would immediately investigate the curriculum. We apply no equivalent logic to creativity because creativity is not a subject, not assessed, and therefore not, in the operating logic of the system, real. The school does not destroy curiosity by malice. It destroys it as a side effect of optimising for what the exam measures.

Natalie Moore's Apps for Good data is the most direct challenge to Schleicher's position, and the tension is productive. Schleicher's view is that you cannot change pedagogy without first changing assessment; try to introduce project-based learning without reforming the exam system and the good ideas fall away the moment teachers realise the exam does not reward them. Moore's evidence shows that you can, change student engagement and trajectory meaningfully without waiting for exam reform: structured, sequenced, problem-based learning with real audiences and real feedback moves the

needle on the metrics Schleicher uses. The honest position is that both are right. Moore demonstrates what is possible inside the current system. Schleicher demonstrates why it does not scale until the system changes. The evidence in his chapter points toward needing both levers, in sequence, simultaneously.

Chelsea Slater's research is the most practically specific and deserves more attention than it typically receives in education policy discussions. The leakage does not happen gradually. It happens at two predictable moments: the GCSE subject choice, and the post-sixteen transition. At each point, the cause is not attitude but information. Careers guidance that has not updated its model of technology work since the late 1990s is presenting students who are interested in design, ethics, communication, and data with a choice set that does not include them. The student concludes, rationally given the information provided, that the technology sector is not for her. That conclusion is wrong. And it is being produced at industrial scale by a system that cannot be bothered to update a list.

Slater's InnovateHer programmes have run in schools across the UK. The pattern she finds is consistent: a girl who has spent three years building things in Minecraft, who can explain how a recommendation algorithm works, who follows AI researchers on social media. She arrives at GCSE options and is shown a list of technology careers that consists of 'software developer' and 'IT support.' She does not see herself there. She chooses something else. She is not the exception. She is the majority of the talent the UK is losing.

Where I have a view that cuts against the consensus in this Part: the UK frames this as a supply problem when it is primarily a signal problem. The policy debate focuses on creating more technology courses, more coding programmes, more STEM outreach. The InnovateHer data shows that a 182 per cent increase in interest was achieved not by creating more courses but by making the destination feel real and reachable through local, relatable, sequenced contact with people who look like the student and work in roles she did not know existed. That is a signal intervention, not a supply intervention.

A signal intervention changes what young people believe is possible for people like them; a supply intervention creates more courses for young people who have already decided the sector is not for them. The InnovateHer evidence suggests the sequencing matters: signal first, supply second. It is also substantially cheaper and faster than curriculum reform.

Nick Clegg's chapter pushes the frame to its logical conclusion. The Walker chapters fix the capital allocation. Clegg names the ceiling that even correctly allocated capital cannot raise alone: market size. A software company founded in Delaware ships to three hundred and fifty million people in a single regulatory market on day one. The same company founded in London ships to sixty-seven million, in a market with declining purchasing power, cut off from the single largest market on its doorstep. In winner-take-all technology markets, that asymmetry is not a background condition. It is a structural determinant of whether a company becomes the category leader or the acquisition target. Clegg's proposed near-term answer is a hemispheric technology integration agenda, not because the question of EU membership is settled, but because hemispheric integration is what can be built in the time available. It is a forward-looking agenda, an economy of bits to replace the economy of atoms, covering the UK, Ukraine, Norway, Iceland, and EU member states, and built around the specific things where cooperation produces hemispheric competitive advantage: liquid capital markets, seamless digital markets, visa-free movement of entrepreneurs, and shared research funding that does not stop at a political border. Of the featured individuals in Part III, Clegg is the only one who has governed at the level where such an agenda would need to be initiated. His chapter is the most geopolitically ambitious in this Part. It is also the one that addresses the constraint that makes everything else here necessary but not sufficient.

The highest-use intervention in this Part, on the evidence Slater presents, is structured employer engagement before hiring age, built into the accountability structure so that it cannot be cut when the HR budget tightens. Not corporate social responsibility. Not optional

enrichment. A specified minimum standard of structured industry contact, at key transition points, with local businesses committed by contract rather than goodwill. Slater's pathway framework is the design template. What appears to be missing is the institutional will to make it compulsory. Every year this does not happen, the class of students who will be making technology decisions in 2035 is choosing something else, or choosing nothing, because we never made the connection between what they were curious about and where it could take them.

The four chapters in this Part address the pipeline at its earliest and most consequential stages. Fix the Exam System confronts the assessment architecture that rewards recall over judgment. Make Every Student Build and Share Something Real makes the case for applied learning as a standard, not an enrichment. Build Clear Youth-to-Career Pathways closes the final gap between education and the economy. None of these changes would require a generation to pass. They would require a decision, made at some point, by people who understand what the delay costs.

———

7

FIX THE EXAM SYSTEM BEFORE IT KILLS EVERYTHING ELSE

Based on conversations with Andreas Schleicher, Director for Education and Skills, OECD

Editor's Prelude

Andreas Schleicher directs education and skills at the OECD and oversees the PISA assessments that governments use to benchmark their education systems. His chapter addresses the structural problem created when the UK industrialised education by divorcing learning from assessment: twelve years of content accumulation followed by a single high-stakes examination that rewards a narrow range of cognitive abilities. His view is that the answer is to bring assessment and learning back into contact, so that what is measured includes creativity, agency, and collaborative problem-solving alongside content recall.

Schleicher's wider point, that entrepreneurship is a learnable method rather than a personality trait, is the premise on which the reforms he proposes must stand.

Assessment as the Biggest Roadblock

I believe one of the greatest mistakes we made in the history of education was to divorce learning from assessment. If you go back far enough, we all learned by apprenticeship. You learned from and with

people. If you made a mistake, someone tapped you on the shoulder and said, here is a better way of doing this, and you learned from that.

When we industrialised education, we divorced those two processes. We asked students to pile up twelve years of content and memorise all of it, and then one day we called them back and said, tell me everything you have learned, in a contrived, artificial setting. We call that an exam. And that has made learning superficial. It has made teaching superficial. It has made us focus everything on content rather than on ways of thinking.

The answer is to bring learning and assessment closer together. The closer we can move them, the more assessment becomes a constructive form of feedback that helps learners learn better, teachers teach better, and schools become more effective. Assessment should not be a gatekeeper that pushes students toward passive consumption. It should be a mechanism that makes them owners of their own learning strategies. That is the biggest roadblock. The gateways we establish push us to become consumers of vast amounts of content rather than owners of our learning.

And here is the danger: when you design a really great programme built around projects and authentic experience, but then at the end you only assess a narrow spectrum of student skills, you corrupt the idea. Students figure out quickly what the teacher is really after and what the system actually recognises. If the assessment does not match the teaching, the good ideas fall by the wayside. Finland is a cautionary tale. They introduced cross-disciplinary teaching because innovation today requires thinking across boundaries. But teachers did not take real ownership of it. They just mixed up the subjects, and learning became flat, and standards actually declined. Authenticity matters. You cannot teach entrepreneurship in a box.

The UK's Specific Problem

In the UK, what is a bit of a pity is that academic success is revered as the only type of success. If you are honest, most of the exam systems drive you into university and there is no real alternative. T-levels were

a really good initiative, but take-up has not matched the ambition, because prevailing cultural norms are still powerful. They tell young people there is just one route that makes you really successful. That sends a signal to children when they are young. There is only one part of talent that is actually recognised, that is seen as valued in the system. And that limits entrepreneurship.

Entrepreneurship is really about agency. It is not just about what you know, but about how you can put things to good use, how you can build new things, how you can think around the next corner. Valuing a broader range of knowledge, skills, attitudes, and values is essential if you want to see more entrepreneurship. And in a way, it has perhaps become worse. The academic orientation over the last decade has become even more disconnected from the applied, real world and from a broader range of skills. Making vocational education a first choice rather than a last resort, recognising multiple intelligences and multiple strengths, creating pathways that lead to similar occupations through different routes: the system could do a lot better.

What You Measure Is Where You Act

What you measure in your exam is where you will put your intention, your attention, and your action. If you do not broaden the goalposts, it is going to be hard to see good and interesting programmes at scale. You find many interesting schools and programmes in the UK, absolutely. But sometimes you can say they operate despite the system, not because of it. If you want good programmes at scale, you have to think about how you frame success in the system. And that is much about the exam system.

In our global PISA assessments, we now measure things like student agency, creative thinking, and collaborative problem-solving. And once you start measuring those things, behaviour does change. We talk about social skills a lot in education, but then we put students behind individual desks and at the end test whether you are better than your neighbour. That is not how you build interaction and social skills.

Teachers as Coaches, Not Transmitters

The quality of education will never exceed the quality of teaching. And the biggest part of that quality is the quality of relationships. You can tell teachers a lot about pedagogy, you can tell them a lot about subject matter, and that is important. But what matters is the quality of the relationship with the student. Often we have made education a transactional business rather than a social, relational phenomenon. Your favourite subject in primary school probably had more to do with the teacher than with the content.

In our PISA assessments, we have one question where we ask students: if you come back to your school three years from now, do you think your teachers will be excited to see you? Where students say yes, they are not anxious, not worried, and no amount of external pressure is making a negative difference to them. Where students say no, everything works against them. The five minutes you have with your teacher outside the classroom may matter more than the hour you sit inside it. Learning is a social, relational experience. Give teachers time and space for that interaction.

If you want the best engineers to inspire young people, do not expect teachers to emulate them. Bring those people into schools directly. If you cannot bring children into the real world, bring the real world into schools. Be more open about who becomes a teacher and in what capacity. A teacher in life can be many people in many different functions. If we better connect and integrate the world of learning with the real world, we are going to achieve a great deal. Teachers can then do what they are best at: teaching you how to think, how to approach the world, how to solve problems. That is where their expertise is irreplaceable.

Editor's Synthesis

Schleicher's critique is precise and uncomfortable for anyone who believes the UK's exam system is a rigorous meritocracy. The problem is not difficulty. It is selection: when assessment measures only the recall

of accumulated content, the curriculum naturally shrinks toward what the assessment rewards. Teachers are not failing their students when they teach to the test. They are responding rationally to the system they are inside. The PISA evidence on student agency and creative thinking shows that once you measure those capabilities, behaviour does change. The UK's academic monoculture, where university entrance is treated as the only meaningful measure of educational success, actively suppresses the alternative routes and vocational competencies that high-performing innovation economies depend on, as the featured individuals' evidence consistently shows. Bringing talented practitioners from industry into schools as direct featured individuals, rather than expecting teachers to emulate them from a distance, is one of the few practical interventions Schleicher identifies as working at scale.

Schleicher's analysis points to one clear lever: assessment reform. Expanding what the exam system measures is the precondition for expanding what teachers teach, what students practise, and what the UK's education system produces.

———

8

BUILD AN EQUITY CULTURE FROM THE CLASSROOM UP

Based on conversations with Nic Humphries, Senior Partner at Hg Capital

Editor's Prelude

Nic Humphries is a senior partner at Hg Capital and has spent thirty years in private equity watching the consequences of a UK population that does not understand equity investment. His chapter addresses a thirty-year mistake: the systematic drift of UK pension fund and personal savings away from equities and into bonds, driven by legislation, liability matching requirements, and a doom loop of falling gilt yields and rising pension liabilities. The result is an economy where most people's long-term savings earn bond returns when they could have earned equity returns, and where the political conditions for equity culture have never been built.

A Thirty-Year Mistake

The vast majority of the UK population does not really understand investment at all, and specifically does not understand the value of equity investment and compounding over medium to long periods of time. As a result, over the past twenty to thirty years, the overwhelming majority of people's pension funds and personal savings have gone not

into venture capital, growth equity, or even public equities, but into bonds and other instruments perceived as safe.

The problem is straightforward arithmetic. Bonds return three to four per cent, perhaps one or two points above inflation if you are fortunate. Equities in the stock market return four to six points more. Over a generation, twenty, thirty years, the compounding effect of that difference is enormous. Someone who put their savings into equity markets at age twenty-five will arrive at retirement with dramatically more wealth than someone who put the same amount into bonds. That wealth gap compounds into the ability to invest in the next generation of entrepreneurs, to take risks, and to participate in the innovation economy. Without it, the entire system is starved.

There is extensive history about why this happened: pension fund legislation, asset-liability matching requirements, and regulatory changes that pushed institutional investors toward bonds and away from equities. We made a huge mistake thirty to forty years ago, and we need to reverse it.

Third, a doom loop took hold. As funds shifted into gilts in bulk, gilt yields fell. Falling yields mechanically increased pension liabilities. Higher liabilities increased pressure to match them more tightly. That suppressed yields further. The 2022 gilt crisis exposed this acutely, but the loop had been running quietly for two decades.

Financial Literacy in the Curriculum

The concepts involved are not difficult. The difference between putting your money in a bank, in bonds, in equities, and in venture capital can be explained to a teenager more easily than calculus. Understanding that a pound compounding at fifteen per cent is worth dramatically more than a pound compounding at eight per cent requires only basic mathematics. And yet none of this appears anywhere in the school syllabus.

I would put financial literacy into the curriculum from roughly age twelve or thirteen, the point at which students have enough basic

mathematics to understand compounding. You are not expecting ninety-five per cent of children to become passionate about it. You are planting a seed. Even if the knowledge only surfaces ten years later when they are making their first real financial decisions, it will have been worth it. The alternative, which is what we have now, is that young people learn about investing from their parents, most of whom know little about it either. The result is a self-perpetuating cycle of financial illiteracy.

With not teaching financial literacy, we are not being neutral. We are actively enforcing a culture of low risk. When equity investment feels like a black box, something opaque and frightening that other people do. People default to what feels safe. They put their money in a bank account. They avoid risk entirely. That disposition shapes everything: whether they invest, whether they start a business, whether they understand how investors think when they are pitching for funding. Financial illiteracy does not just cost people money. It suppresses the entire entrepreneurial culture.

Invest UK: An Account for Every Child

There is a model for this that has recently been launched in the United States. The programme, branded as Invest America, works on a simple principle: the government puts a thousand dollars into an investment account for every child born in the country. That money is invested in funds tracking the US stock market, and families and employers are encouraged to add contributions over time. The account cannot be accessed until the child turns eighteen. With even modest additional monthly contributions, the account can grow to a substantial sum by the time the child reaches adulthood.

The cost is meaningful but not extraordinary. In the US, the government seed funding runs to approximately four billion dollars per year for each birth cohort, with billions more contributed by private donors and corporations. Scaled to the UK, the numbers are manageable. The account is administered by the government, allocated

by postcode, and invested in a regulated, transparent way. It is not a radical proposal. It is a mechanism for giving every young person a direct, personal stake in the equity markets.

The effects extend far beyond the money itself. When a thirteen-year-old is being taught about compounding in school and can see a growing balance in their Invest UK account, the lesson is no longer abstract. It is personal. It engages parents as well, who will start paying attention to what is happening in equity markets because their children's money is invested there. Over time, understanding public equity leads naturally to understanding private equity, venture capital, and growth capital. Some of those young people will choose investing as a career. Others will become entrepreneurs who understand how to access capital because they grew up watching it work. The trickle-down effect on entrepreneurial culture would be powerful.

There is even an argument for tying the account to entrepreneurship directly: allowing the funds to be released early if the holder is starting a business. In an age where AI means you do not need millions to get something going, fifty thousand pounds of seed capital could be the difference between someone attempting a startup and never trying at all.

Tax Incentives for Entrepreneurs

Consider someone who leaves school at eighteen and starts a business. Over a career they employ two or three hundred people, make payroll every week, take nothing from the state, and fund their own pension. After decades of hundred-hour weeks, they sell the business for five million pounds.

There used to be a mechanism called entrepreneurs' relief, which allowed the first five million pounds from a qualifying business sale to be taxed at a sharply lower rate. The seller had to have owned the business for a specified period and employed a minimum number of people. It was a targeted, practical incentive that directly rewarded the people who had created jobs and taken risk. It was scrapped, and I have never understood why.

Something similar should be restored, alongside other targeted measures: reduced or eliminated inheritance tax on business assets that are being handed to the next generation, and tax structures that recognise the difference between someone who has risked their own capital and sweat for decades and someone who has not. These measures would not cost the government a great deal relative to their impact. Combined with financial literacy in schools and the Invest UK account, they would form a coherent package that directly builds an equity-owning, risk-taking, entrepreneurial culture.

Make It Aspirational

Culture shifts require cultural icons. When people think of success in the UK, they think of sport, entertainment, or property. They rarely think of building a business. But many of the country's most recognisable figures are, serious entrepreneurs. David Beckham has built a business worth four to five hundred million pounds off the back of his football career. His wife has built a fashion business worth three to four hundred million. Gary Neville, one of Beckham's former teammates, has built a hundred-million-pound business empire in Manchester spanning ten to fifteen different ventures. These stories cross over from sport and celebrity into mainstream culture in a way that a Wayve demonstration or a venture capital conference never will.

A programme like Invest UK would give every child a personal stake in the equity markets. The curriculum would teach them how those markets work. Cultural icons would show them what entrepreneurial success looks like. Together, over fifteen to twenty years, the combined effect would be a generation with a fundamentally different relationship to wealth creation.

Editor's Synthesis

Humphries' financial literacy case is more radical than it appears. He is not simply proposing better personal finance education as a vague good. His point is that the absence of financial literacy actively enforces

a culture of low risk, and that this cultural outcome is not neutral but a policy choice with compounding economic consequences. When equity investment feels like a black box, people do not choose bonds because they have assessed the risk-adjusted returns. They choose bonds because equities feel dangerous and unfamiliar. Teaching compounding to a thirteen-year-old who can then observe it in a real account changes the nature of the relationship. The Invest UK proposal, a government-matched equity investment account for every eighteen-year-old, is the structural mechanism that converts the cultural ambition into a durable instrument. The American precedent, Invest America, demonstrates that the cost is manageable and the second-order effects, an electorate with a personal stake in equity market performance, are politically significant.

The two interventions Humphries' analysis most directly supports are introducing financial literacy into the national curriculum from age twelve and launching an Invest UK programme providing government-matched equity investment accounts for every eighteen-year-old: the most direct available route to building the equity culture the UK's capital markets currently lack.

Action Takeaway	Introduce financial literacy into the national curriculum from age twelve and launch an Invest UK programme providing government-matched equity investment accounts for every eighteen-year-old.

9

WIN THE GLOBAL TALENT WAR

Based on conversations with Stan Boland,
Serial Technology Founder

Editor's Prelude

Stan Boland addresses the talent dimension of the UK's scale gap in this chapter, proposing that the value of the capital programme he described in Chapter 8 depends entirely on whether the UK can attract and retain the people to put it to work. His focus is on the policy environment the current government has created: non-domicile tax changes, increases to employer national insurance, and a visa system that charges international STEM graduates ten thousand pounds and months of processing to relocate to the UK, collectively sending a signal that the country does not prioritise builders and creators.

Scale Capital is Not Enough

All the capital in the world, as I alluded to in my previous chapter regarding flooding the scale capital gap, is irrelevant if the UK cannot attract and retain the talent to put that capital to work. The global economy runs on human capability, and right now two countries are exporting technical talent at extraordinary scale: India and China. The top graduates from those countries are being educated at the world's

best universities, including many in the UK. But their real intention is to work in the United States. America is the magnet for global talent, and we have to make the UK an equally powerful draw.

The Wrong Signals

Instead of making the UK the most attractive destination for the world's best, the current government has introduced a suite of policies that collectively shout from the rooftops: leave. The changes to carried interest taxation, moving the rate to somewhere between capital gains and income tax, directly discourage venture capital and private equity professionals from establishing their funds in the UK. The abolition of non-domicile status has driven a large number of high-net-worth individuals out of the country. Changes to tax relief on school fees, increases in capital gains tax rates, and reforms to inheritance tax have all compounded the message. The environment these policies have created is redistributive rather than generative. It penalises wealth creation rather than encouraging it.

The combined effect has been to dampen the animal spirits of entrepreneurship in the UK. Each one of these policies sends a signal to the global talent market: the UK does not prioritise builders and creators. It prioritises redistribution. For a founder choosing between London, San Francisco, Dubai, or Singapore, that signal matters enormously. We need to reverse it comprehensively.

The Visa Friction

Consider the practical experience of a graduate from the Indian Institutes of Technology, one of the most selective engineering programmes in the world, who wants to come to London to work for an AI startup. The last time I examined the process, it involved approximately £10,000 in fees, months of processing, and significant additional barriers to bringing a spouse and children. We are making it expensive, slow, and uncertain for exactly the people we most want to attract.

The fix is not complicated. When talented people graduate from UK universities in relevant subjects, we should make it unambiguously clear that we want them to stay. That means an automatic visa at nil or low cost, the right to work and build a company immediately, and a clear, fast pathway to citizenship; not a decade-long ordeal, but a relatively short period of productive contribution leading to permanent belonging. This should be obvious policy, and the only reason it is not current policy is that politicians are too frightened of a perceived anti-immigration sentiment to do what is plainly right for the country's economic future.

University Investment in Critical Disciplines

The talent pipeline does not begin at the visa office. It begins in universities, and here too the UK is underinvesting in precisely the disciplines that matter most. Take semiconductor design as an example. The global semiconductor market generates roughly a trillion dollars per year in revenue. It is absolutely fundamental to the UK's ability to be a serious technology nation. The market is currently dominated by Taiwan, Korea, Japan, and China. Europe is a small player, and the UK is smaller still.

The UK has world-leading teaching capability in electronics and engineering. But semiconductor design requires more than basic electronics instruction. It requires specialised facilities, tools, and faculty that are more expensive than standard university departments can afford on current budgets. The result is that the number of people actually learning semiconductor design in the UK is in the hundreds, and most of them are international students with no intention of staying.

If we are serious about building sovereign capability in critical technologies, we must invest in the university departments that produce the people who design them. The sums involved are modest compared to the economic return. But without that investment, we are training talent for other countries while our own capabilities atrophy.

Making the UK a Magnet

The UK has enormous natural advantages in the talent war. It is one of the most liveable countries in the world. It has genuine cultural richness, a tolerant and diverse society, excellent schools for those who can access them, and a quality of life that is attractive to people from every background. The English language, the legal system, the time zone bridging Asia and the Americas. These are structural assets that most countries cannot replicate.

What the UK lacks is a policy environment that applies these advantages. We need to realign immigration policy, tax policy, and education investment with a single strategic objective: making the UK the most attractive place in the world for talented people to come, stay, build, and create wealth. That means frictionless visas for high-skilled graduates, a tax regime that rewards risk-taking and wealth creation, and targeted investment in the university departments that train the next generation of engineers and scientists.

This is a global race, and the countries that move fastest will capture a disproportionate share of the talent that will define the industries of the next century. The UK has a natural advantage. What it needs is the political courage to use them.

Editor's Synthesis

Boland's talent case connects directly to his capital case: the two reinforce each other, and both can be undermined by a policy environment that treats international technical talent as a revenue source rather than a strategic asset. The IIT graduate analogy is not hypothetical. The UK competes directly with the US, Canada, Australia, and increasingly with Singapore and Dubai for exactly that cohort, and the comparison on cost, speed, and clarity of welcome is currently unflattering. The change Boland describes is not complicated in design, even if it is politically difficult. An automatic visa at near-zero cost with under twenty-one-day

processing for qualifying STEM graduates and entrepreneurs is a well-defined administrative change. The political obstacle, in Boland's account, is that it would require treating talent attraction as a strategic priority, not as a migration policy question subject to the usual political pressures.

The most direct change Boland's case supports is a founder and technical talent visa with automatic approval at near-zero cost and rapid processing: the clearest available signal that the UK prioritises the builders and creators its capital programme depends on.

Action Takeaway	Create a founder and technical talent visa with automatic approval at near-zero cost and with rapid processing, and make it unambiguously clear to STEM graduates from UK universities that they are wanted to stay.

10

MAKE EVERY STUDENT BUILD AND SHARE SOMETHING REAL

Based on conversations with Natalie Moore, CEO of Apps for Good

Editor's Prelude

Natalie Moore leads Apps for Good, which has run structured project-based technology programmes in schools across the UK and demonstrated that students who build real products develop the agency and confidence that the innovation economy requires. Her argument is that the UK is losing its future innovators not to a lack of ability but to a curriculum that asks them to absorb rather than create. The fix is a fundamental shift in how students experience learning: from passive consumption to active creation, from abstract exercises to real-world prototypes, and from isolated classrooms to direct engagement with professionals who can show young people what is possible.

The Engagement Crisis

Across the UK, too many students sit in classrooms feeling disconnected from their learning, questioning whether they will ever use what they are taught. At the same time, employers continue to ask why so many young people are not work-ready. These are not separate

problems. Both stem from the same issue: an education system that too often sees students as recipients of knowledge rather than makers of it.

The transition to secondary school is a critical tipping point. Research by Professor John Jerrim found that more than one in four pupils begin to disengage from school during Year 7, with engagement particularly low among girls and disadvantaged pupils. These early signs of disengagement widen over time, contributing to longer-term inequality that ripples through the workforce for decades. The National Parent Survey 2025 confirmed what teachers already know: forty-two per cent of parents whose children are unhappy at school say the reason is uninteresting lessons.

We will not address this challenge by squeezing more content into an already crowded curriculum. The answer is to rethink how students experience learning itself. Project-based learning, where students take the driving seat, offers a powerful and proven solution. When learners lead their own projects, ideating, building, and testing ideas, they move from passive recipients of knowledge to active creators. This approach gives students ownership over their learning and connects what they do in the classroom to the real world.

From Assignment Completion to Agency

Problem-solving is a skill, but agency is a mindset. It is the difference between completing an assignment and believing you can actually change something. When students see that they can respond to problems, not just study them, they start to build the confidence they will need in a fast-changing world. That confidence does not emerge from lectures or textbooks. It emerges from the experience of building something real, testing it, refining it, and sharing it with people who have an informed opinion.

At Apps for Good, we give students the tools to work in teams to create app prototypes that tackle social issues important to them, often drawing on their own experiences. It is a computing project designed to engage and excite. Students build, test, and refine their app ideas

with feedback from industry professionals, and we provide several of these opportunities throughout the course to help them view their projects through a real-world lens. Time and again, we see the impact: encounters with industry professionals help demystify the technology world, spark students' interest in future career possibilities, and give them a chance to share their hard work and bring genuine energy to the classroom.

Even a simple prototype turns an abstract idea into tangible evidence of thinking. By ideating, iterating, and building, students develop problem-solving skills, teamwork, adaptability, and the ability to listen and learn from different perspectives: skills that extend far beyond the classroom and prepare them for challenges no curriculum can anticipate.

AI as Collaborator, Not Competitor

AI is already reshaping what early careers look like and how young people will enter the workforce. Rather than positioning AI as something young people must compete against, we should be teaching them how to work alongside it safely and ethically. Used well, AI can be a powerful collaborator, helping students build adaptable, transferable skills that prepare them to navigate both societal challenges and rapid technological change. The pace of AI advancement and wider economic uncertainty mean that the ability to transfer skills across contexts becomes more important than ever. This places a premium on the human capabilities that are hardest to automate: judgement, empathy, creativity, ethical reasoning, and the ability to learn continuously. Equipping young people with these capabilities is not an optional enrichment activity. It's a tremendous opportunity for young people, which the education system must embrace.

Breaking Down the Classroom Walls

Innovation cannot happen in a vacuum. Learning becomes most meaningful when students are connected to real-world problems and

the professionals tackling them. Breaking down the classroom walls and giving students direct exposure to industry helps them explore the working world and shows them what is possible. This matters especially for learners from disadvantaged backgrounds who may have limited access to positive role models in technology, business, and entrepreneurship.

I have seen firsthand how opportunities for students to present and share their work with industry professionals can be profoundly useful, yet they are often overlooked in schools. For a student who once thought a subject was too hard or not for them, working as part of a team and presenting a project they feel connected to before a real-world audience can be genuinely transformative. It changes their sense of what they are capable of. It changes what they believe is possible for their future. And it changes whether the UK's innovation economy will have the diverse, confident, agency-driven workforce it needs.

The future of UK innovation begins in classrooms, not boardrooms. Addressing the skills gap requires more than tweaking the curriculum. It means giving students the opportunity to create, lead, and share their ideas in meaningful ways. When young people can see the impact of their work and how technology can be used for good, they move from passive learning to active agency. Rather than asking students to sit and learn for the sake of some distant future, we must give them the resources, pathways, and opportunities to help shape it now.

Editor's Synthesis

Based on Moore's findings and recommendations, next generation preparation centres around embedding project-based, student-led learning into the secondary curriculum from Year 7 so every student gains experience building, testing, and presenting something real before choosing GCSE options. It includes creating structured opportunities for students to engage with industry professionals throughout their projects,

not as one-off careers talks but as ongoing feedback loops that connect classroom work to real-world application. It also involves teaching AI as a collaborative tool within project-based learning, focusing on the human capabilities that ensure its responsible and safe use, including judgment, empathy, creativity, ethical reasoning, and continuous learning. Access for disadvantaged students is identified by the featured individuals as a priority: the evidence here suggests programmes connecting schools with industry professionals would have more impact if they specifically reached communities where positive role models in technology and business are scarce. Finally, essential skills development such as confidence, communication, teamwork, and adaptability are treated by the featured individuals as core educational outcomes, not optional enrichment, and the gap between that position and current funding decisions is one the evidence here makes difficult to justify.

———

11

BUILD CLEAR YOUTH CAREER PATHWAYS INTO TECH BEFORE THE DROP-OFFS HAPPEN

Based on conversations with Chelsea Slater, Co-founder and CEO of InnovateHer

Editor's Prelude

Chelsea Slater co-founded InnovateHer, which has run structured technology pathway programmes in schools across the UK. Her chapter addresses a conversion failure rather than a talent shortage: sixty-nine per cent of girls aged thirteen to seventeen say they are interested in technology, but only thirty-nine per cent would consider a career in it. That thirty-point gap is not explained by ability or interest. It is explained by two predictable drop-off points, at GCSE option choices and at post-sixteen route selection, where the system consistently fails to convert curiosity into confidence and visible routes into work.

Not a Talent Shortage

The UK does not have a technology talent shortage. It has a conversion failure at two specific and predictable points in the pipeline, and the distinction matters enormously, because the two diagnoses produce completely different policy responses. If you believe the pipeline is

thin, you fund more STEM outreach and wait a decade. If you believe the pipeline leaks at two known decision points, you fix the pipe at those points. When we surveyed young people aged thirteen to seventeen, sixty-nine per cent of girls told us they were interested in technology. That is not a thin pipeline. That is a full pipeline with a structural fault at age thirteen to fourteen, when GCSE options are chosen, and another at sixteen, when post-16 routes narrow. Both faults are well documented. Neither has been addressed with the structural seriousness the data demands. The argument in this chapter is specific and falsifiable: closing the thirty-point gap between interest and career consideration does not require more inspiration. It requires fixing the two points where the system reliably loses the people it should be converting.

When we surveyed young people aged thirteen to seventeen, sixty-nine per cent of girls told us they were interested in technology. But only thirty-nine per cent said they would consider a career in the sector. That gap is the story. It is not that young people do not care. It is that interest is not being converted into confidence, subject choices, and real routes into work.

The Two Drop-Off Points

You can see the leakage in real life. A student at thirteen or fourteen can be excited about AI, cybersecurity, gaming, design, or the way digital tools shape their world. Then they reach the first decision point, around GCSE options, and the advice they receive can still be painfully traditional. The roles being presented are often traditional ones that may not exist in five years. That is not a criticism of schools; it is the reality of how slowly careers guidance updates. But the effect on the student is immediate. They cannot see a route from interest to a job, or they begin to feel tech is not for people like them.

The second drop-off comes at sixteen, when young people choose A-levels, college courses, or vocational routes. This is where the pipeline narrows again, particularly for girls and underrepresented groups. By the time industry shows up meaningfully, often at eighteen

or later, the game is already decided for many students. From a gender perspective, waiting until university is far too late. Girls tend to start making subject and career decisions earlier. If the first meaningful employer interaction arrives at twenty-one, we have missed years where confidence and identity were being formed.

Inspiration Is Not Enough

A practical mistake we make is treating inspiration as the solution. One-off assemblies and occasional careers fairs have value because they can spark imagination, but they rarely change outcomes on their own. Young people need repeated interactions over time so they can connect a concept to a person, a person to a pathway, and a pathway to a real opportunity. They need familiarity, not a single event.

What works best is a structured programme with multiple touchpoints. You start broad so no one self-selects out. Then you go deeper so the learning becomes personal and specific. Then you create a route to continue learning independently. And finally, you connect the learning to the real entry routes that exist in the labour market, not the narrow routes that adults assume are proper. In one pilot programme focused on AI, students had four interactions over roughly nine months. Through that structured sequence, we saw a one-hundred-and-eighty-two per cent increase in students' interest in tech, a twenty-seven per cent increase in students considering STEM pathways, and a fifty-three per cent increase in confidence and literacy in everyday AI use.

Local Relatability and Repetition

Two design choices matter more than people expect. The first is local relatability. When a student meets someone with the same accent, from the same region, or who went to the same school, the job becomes reachable. It moves from somewhere else to here. That is why we place local role models into local schools whenever possible. The distance between them and me matters. Closing that distance is often the difference between curiosity and confidence.

The second is repetition. Confidence is not downloaded in one session. It is built through exposure and practice. Multiple interactions across months produce materially stronger outcomes than any single event, regardless of how well-produced that event is.

Making Work Experience Work

If the UK wants to be serious about talent, employer engagement before hiring age has to become normal. It should not be treated as optional corporate social responsibility. It is part of building the workforce the economy needs. But it must be done well. Poorly designed work experience, where a young person is placed in a workplace with no agenda, no exposure to different roles, and no sense of what they are meant to learn, teaches them the sector is boring or unwelcoming. That can be worse than no experience at all. A good placement is structured: a clear schedule, multiple interactions across a business, and a small set of outcomes that are human and simple.

Pathways as National Infrastructure

Regional bodies are an underused lever. Combined authorities, councils, and regional skills networks can connect the dots between employers, schools, and training providers in a way individual organisations cannot. Procurement and social value commitments can also be used more intelligently: sustained skills engagement within tenders becomes more than a box-tick when it delivers structured programmes to local schools.

The UK should treat pathways as a system, not a collection of disconnected interventions. A pathway is a sequence: awareness, relevance, learning, exposure to real roles, and a visible route into work. If any link is missing, the chain breaks and the student falls out of the pipeline. This is not charity. It is competitiveness policy. The UK cannot build a durable innovation economy if it continues to lose young people at the decision points that shape their futures.

What This Approach Gets Wrong, and Why We Do It Anyway

The strongest argument against pathway programmes as the primary intervention is that they address the wrong end of the problem. Structural barriers for women and underrepresented groups in technology are not mainly located at the career-entry decision point. They sit in workplace culture, pay structures, and promotion practice. A perfectly designed pathway that converts a thirteen-year-old's interest into a first job does not fix attrition. The Technology Talent Charter's annual Diversity in Tech report has consistently shown that women leave technology roles most rapidly between twenty-eight and thirty-five, precisely when careers should be consolidating. Fixing the pipeline without fixing the destination is a real and bounded limitation. The pragmatic case is that the pipeline is the necessary prior condition for everything else. You cannot reform retention in a cohort that does not yet exist in the sector in meaningful numbers. Workplace culture shifts when the women inside it have the seniority and numbers to produce change. Pay gap legislation becomes meaningful when there are enough women in the roles for the gap to be visible and contested. The thirteen-year-old who converts her interest into a career is also, in fifteen years, the person who builds the inclusive team, mentors the next cohort, and changes the norms from the inside. The pathway intervention is not sufficient. But it is prior, and prior matters.

Editor's Synthesis

Slater's reading shifts the UK's talent diagnosis from pipeline thinness to pipeline leakage at known locations. The distinction has direct policy consequences: if the pipeline is thin, you fund more outreach and wait a decade; if it leaks at two identifiable decision points, you fix the pipe at those points. The evidence from InnovateHer's structured programmes is specific: four interactions over nine months produced a

one-hundred-and-eighty-two per cent increase in interest in technology, a twenty-seven per cent increase in students considering STEM pathways, and a fifty-three per cent increase in AI literacy. A single inspiration event produces none of those outcomes. The design principles that make structured programmes work are also specific: local relatability, matching accent, region, and background, not just sector; repeated interaction over months, not one-off events; and a visible route into real entry-level roles rather than aspirational examples that feel out of reach.

Talent without capital is the UK's most expensive recurring export. The builders Part II describes will found companies. Part III is about whether those companies stay.

Action Takeaway	Build a national pathway spine from age thirteen with mandatory employer touchpoints at GCSE and post-16 decision points, coordinated through regional bodies and measured by conversion rates into technology careers.

PART III

CAPITAL, SCALE & THE GROWTH GAP



The chapters in this Part build the evidence for Shift 1 (redirecting passive subsidy into active capital), Shift 9 (normalising secondary liquidity so founders are not forced to sell early), and Shift 5 (providing the growth capital that keeps companies in the UK through the Tornado).

A British founder walks into a Series B meeting expecting the growth capital his company needs to stay independent. The investors agree the technology is strong. They also explain that no domestic fund can write a cheque of that size.

The Eleven Billion Dollar Question

Without growth-stage capital at the scale required, the best companies the UK produces will keep facing the same choice: sell early or move.

In 2025, UK venture firms raised 1.6 billion dollars. In the same year, US venture firms raised 62 billion dollars. The UK economy is roughly one sixth the size of the US economy. At proportionate scale, UK firms would have raised approximately 12 billion dollars. The gap between 1.6 billion and 12 billion is 10.4 billion dollars of annual venture shortfall. That number does not describe a market that is slightly underperforming. It describes a market in which the best technology companies in the country, at the moment they most need capital to press their advantage, have two choices: take terms from the few UK growth investors available, or take the acquisition offer that arrives from a foreign buyer who has access to the capital the UK cannot provide.

Stan Boland's analysis is the most forensically precise account of this failure available, and his proposed remedy is specific enough to be either adopted or deliberately rejected. The British Business Bank currently invests approximately 400 million dollars per year in fund-of-funds structures. Boland's view is that figure would need to scale to five billion per year over a ten-year statutory programme. At that scale, with a fifty per cent cornerstone cap per qualifying fund, the government commitment draws in between ten and twelve billion pounds of new annual venture capital. The programme is designed

to taper as private institutional capital fills the gap it creates. It is not a permanent subsidy. It is a market-building mechanism.

David Clark, Chief Investment Officer at VenCap International and one of the world's most experienced fund-of-funds investors, makes the complementary point: the UK's error is not underinvesting in venture capital broadly, but distributing what it has too evenly. Thirty years of data from top-tier global venture funds show that returns follow a power law: a small number of companies generate the vast majority of total value, and the investors who back them outperform not because they find more companies, but because they concentrate behind the right ones. The UK's institutional incentive structure pushes in the opposite direction. Public programmes are designed to demonstrate breadth of support: more companies funded, more regions covered, more sectors represented. Each of those metrics is politically legible. None of them captures whether the capital is reaching the companies capable of generating the flywheel returns that make the next generation of investment possible. Boland's programme addresses the volume gap. Clark's point addresses the allocation logic that would need to change for that volume to produce a different outcome: fewer bets, larger, concentrated behind the companies already showing the trajectory that power-law returns require.

Hermann Hauser's contribution pushes the frame to Europe, and the tension between his perspective and Boland's is worth naming directly. Boland's programme is UK-focused: build the domestic capital market that the UK's best companies need. Hauser's Scale Up Europe Fund suggests a complementary and, post-Brexit, politically complicated alternative: the UK market may be too small to generate the growth capital its best companies require without some form of access to European institutional infrastructure. The pattern across these chapters suggests Hauser is right, and the political difficulty of acknowledging it does not make the structural case weaker. A twenty-billion-euro growth fund with Dutch pension fund commitments and European institutional depth is the structure UK deep tech companies needed when Oxford Ionics was deciding whether to sell to IonQ.

Charlie Walker's two chapters complete the demand-side argument that Boland, Hauser, and Lerner approach from the supply side. Walker runs the London Stock Exchange and sees the consequence of the capital gap at the moment it becomes irreversible: the company that reaches public markets and finds no domestic investor waiting. His first chapter establishes why the UK's capital markets reform programme, now substantially complete after five years of regulatory work, cannot produce its intended outcome without a parallel reform to who is investing in it. His second chapter makes the specific policy case: DC pension funds, which will manage over a trillion pounds in assets by 2030, currently allocate under 5 per cent of that to UK equities, against a global average of over 13 per cent. The UK-weighted default fund mechanism he proposes — requiring DC default funds to allocate a minimum of 25% of assets by asset class to the UK, with a full opt-out for any individual who prefers otherwise — is the demand-side complement to Boland's supply-side programme. Neither works without the other.

Nic Humphries from Hg Capital makes the point that deserves the most pushback from optimistic observers of recent UK capital market progress. Private equity, in his framing, is productivity engineering, not financial extraction. HG's ninety-five per cent success rate in cracking the US market with its European portfolio companies is a data point that cuts against the conventional narrative that European companies are structurally disadvantaged in American markets. What they are is undercapitalised at the growth stage and undercoached on the specific commercial disciplines that American enterprise sales requires. Both of those are fixable. Neither would require waiting for the BBB programme to reach full deployment.

The part of this analysis that surprised me most was Jeff Lynn's account of secondary liquidity as a structural driver of premature exit. The point is not complicated but it is underweighted in most capital policy discussions. Founders now stay private for ten to fifteen years. The accumulation of paper wealth over that period, against real financial obligations, creates rational pressure to accept an acquisition

that converts paper into certainty. The absence of normalised secondary liquidity mechanisms is one of the structural enablers of the Bowling Alley exit pattern. It is also among the cheapest and fastest to fix: the most respected investors in the ecosystem signalling openly that secondary liquidity is healthy changes the norm without requiring legislation.

The highest-use intervention in this Part is the BBB fund-of-funds programme, scaled as Boland describes it, enacted as a ten-year statutory commitment rather than a series of annual budget decisions. The statutory element is not a technicality. It is the entire point. A ten-year commitment that can be cancelled in year two by a new chancellor is not a capital markets signal. It is a press release. The UK's best technology companies are, on the evidence here, making exit and relocation decisions partly because they cannot rely on domestic growth capital infrastructure being there at Series C and beyond. That certainty is what the statute creates. Without it, everything else in this Part is analysis in search of a mechanism.

The Walker chapters add the complementary instrument: without a structural anchor for domestic long-term capital in the DC pension default, the companies the BBB programme helps build will continue to list overseas or be acquired by investors the UK system never mobilised. And Clegg's chapter names the ceiling that all three instruments together cannot raise without political will at the hemispheric level: a company that survives the BBB programme, lists in London with domestic pension capital behind it, and still faces a home market one-fifth the size of its American competitor has not been saved. It has been better resourced on its way to the same outcome.

Where the Featured Individuals Disagree

Boland and Hauser agree on the diagnosis but diverge on the primary lever. Boland's position is that the UK would need to build its own domestic growth capital market at scale: the British Business Bank programme, executed correctly, can close most of the structural gap.

Hauser's Scale Up Europe Fund implies a different conclusion: that the UK market may be intrinsically too small to generate the institutional depth its frontier companies need, and that some form of European capital infrastructure access is the real solution. The editorial position is that Hauser is probably correct in the long run and Boland is correct about what can be done in the next three years. A domestic programme is executable now. Post-Brexit European capital access, and ultimately the question of EU membership itself, is a political negotiation without a clear endpoint. The two are complementary, not competing, but only one of them has a delivery mechanism.

———

12

FIX THE CAPITAL ALLOCATION GAP: STOP SUBSIDISING MEDIOCRITY, START FUNDING SCALE

Based on conversations with Stan Boland, Serial Technology Founder

Editor's Prelude

Stan Boland has founded, scaled, and sold technology companies including Element 14 and FiveAI, and has spent two decades watching the UK consistently fail to retain the companies it creates at the growth stage. His chapter addresses the venture capital shortfall with forensic precision: in 2025, UK venture firms raised 1.6 billion dollars against a proportionate target of twelve billion, a ten-billion-dollar annual gap that is not a marginal disadvantage but the structural reason the UK's best companies face acquisition before they reach global scale.

The UK Value Creation Gap

If you examine the value creation gap between the United States and the United Kingdom over the past two decades, the UK is short of something like four trillion dollars in value that it counterfactually

should have created. That is not a rounding error. It is a systemic failure, and it is eminently fixable if we have the political courage to address it.

I see four structural differences between the US and the UK that explain this gap. The first is talent: our ability to attract and cultivate the people who build powerful companies. The second is how we select and mentor early-stage companies, because a great deal goes wrong at the beginning and too many of our support systems fail to use what we have. The third, and by far the biggest single factor, is the limited availability of venture capital. The fourth is the preponderance of financial props that maintain mediocrity, subsidies and tax schemes that keep zombie companies alive and tie up national resources without delivering value. Of these four, the single biggest lever we can pull is capital.

The Scale of the Shortfall

It is worth starting with a fact that surprises most people: the UK is not short of capital. UK institutions hold approximately $780 billion in US treasury bonds. There has been a massive shift of national wealth into fixed income and relatively low-yielding, often offshore investments. The challenge is not the absence of money. It is our collective failure to direct a meaningful share of it into our own economy.

When venture capital is scarce, or when its allocation is poor, when partners do not network deeply, do not track global technology developments, and do not understand competitive dynamics, the result is inferior companies.

I have seen this first-hand. A founder approaches a UK venture firm and is asked: is there a more capital-efficient business model you could adopt? Could you stage the product development so it reduce the risk ons the investment? Could you pursue a niche rather than the main market? Could you license the IP rather than build a product? This heavy emphasis on risk management has no place in venture capital. Venture is a power-law game. The entire model depends on encouraging founders to swing for the fences. But when

cautious capital is the only capital available, founders naturally adjust downwards. They hire smaller, target smaller customers, adopt less ambitious business models, and set their trajectory on a path that will never produce a global winner.

Then comes the second blow. Companies that do get funded to a certain point inevitably hit the moment where they need material capital to scale globally, late-stage venture or early growth capital. In the United States, a founder at that stage might pitch to thirty or fifty firms. In the UK, there might be two, and even those may lack the expertise or the courage to write large cheques into uncertainty. The result is predictable: companies either have their ambition permanently redirected downwards, or they migrate themselves and the company out of the UK at precisely the moment when material value and jobs are being created.

The Numbers Are Stark

In 2024, US venture firms raised $81 billion in venture capital. If the UK is roughly a fifth the size of the US economy, you would expect UK firms to have raised approximately $16 billion. In reality, UK firms raised $5.2 billion. That is an annual shortfall of roughly $11 billion.

The preliminary numbers for 2025 are even worse. US firms raised $62 billion. UK firms raised $1.6 billion. The UK should have raised approximately $12 billion. Once again, we are $11 billion short.

This is not a marginal gap. It is a chasm, and it explains why the technology sector in the UK accounts for significantly lower per cent of that of the US. Every other major sector, financial services, utilities, manufacturing, is roughly proportioned between the two countries. The missing sector is technology, and the missing ingredient is capital.

A Government-Led Fund of Funds at Scale

The vehicle the government has established to address this is the British Business Bank, which currently invests approximately $400 million per year in fund-of-fund investments in venture. That represents about

25 per cent of total UK venture capital raised in 2025. In my view, that number needs to rise to $5 billion per year.

The mechanics would work as follows. The government, through the British Business Bank, would commit to cornerstoning new venture funds at up to half their total size. A general partner wishing to establish a new fund would need to raise the other half from professional, long-term investors, pension funds, family offices, endowments, and foundations. The provenance of that capital would be assured, and the British Business Bank would write the cheque. With this approach, you could release $10 billion per year of new venture capital in the UK.

This requires a high degree of creativity in how the British Business Bank structures these arrangements. It cannot be flat-footed. Shouting at pension funds to hand over their money will not work. The programme must be designed to address the real limitations pension funds face when investing in venture: how carried interest is shared, how fees are structured, who takes which slice of risk, and what liquidity guarantees are available for an asset class that is inherently illiquid. The British Business Bank is in a perfect position to engineer these agreements and make them so attractive that only the most risk-averse analyst in a pension fund would decline to participate.

Ambition Rises to the Availability of Capital

One of the most important dynamics I have observed is that founder ambition rises in direct proportion to the availability of capital. If the current interaction between UK founders and the venture industry crimps ambition, the opposite is equally true: when founders encounter a capital environment that says, "If we gave you ten times that amount, what more could you do?", they think bigger, hire bolder, and build for global markets from day one.

I have heard established UK venture firms argue that there simply are not enough great founders or great opportunities in the UK to justify more capital. I believe that is complete nonsense. The UK generates early-stage entrepreneurs who are just as capable and

ambitious as their American counterparts. The difference is that British founders have their ambition knocked out of them by the interaction with a capital-constrained venture ecosystem. Change the capital environment, and the ambition will follow.

The biggest proof point for this is China. Twenty years ago, China had virtually no venture-backed technology sector. Today it has one of the most vibrant in the world, and it was built through a combination of venture capital and material state intervention. The UK can do the same, faster, and with better governance.

Becoming Europe's Silicon Valley

If the UK commits to this at scale, the second-order effects are powerful. Once pension fund analysts become familiar with venture as an asset class, they will quickly learn which general partners they can trust and which are not worth backing again. The quality of venture partnerships in the UK will improve organically over time. A small number of top-tier US partners, attracted by the combination of concentrated talent and concentrated capital, would likely cross the Atlantic to participate in a revitalised British and European technology sector.

Consider the current moment: the UK has a supersaturation of technical talent, a massive global opportunity particularly around artificial intelligence, and the potential to add the third critical ingredient, material concentration of capital. If we do this, London becomes the true centre of informed, courageous venture capital in Europe. If I am a founder in Stuttgart, or Helsinki, or Milan, I call up the London team. The best founders across the continent gravitate to where the capital and the talent are most concentrated. This is how you build an ecosystem that compounds.

The Balance Sheet Argument

The accounting argument for this programme is sound but must be stated precisely. BBB fund-of-funds commitments are classified as

financial assets under IFRS 13 and Government Financial Reporting standards, not as public expenditure. This means the commitment does not increase Public Sector Net Borrowing in the period of commitment. It resolves the most common objection. It does not resolve the Treasury's actual constraint, which is the combination of near-term cash deployment reality, public sector net financial liabilities stock, and the political difficulty of a statutory decade-long capital commitment before the first phase has demonstrated its returns. The programme structure below addresses this directly: the statutory lock is triggered by Phase 1 performance evidence, not assumed upfront.

Moreover, no large diversified fund-of-funds has ever lost money over a full cycle. The expected internal rate of return on a well-managed venture fund-of-funds portfolio is in the range of 14 to 16 per cent per annum. Over a decade, the government would accumulate a growing national asset worth tens of billions of pounds, an asset that could eventually be offered to the public through an IPO or individual savings plan, allowing ordinary citizens to own a piece of the country's technological future.

This is a ten-year mission. It will not happen overnight, and the government's role as a catalytic investor should taper as the private sector matures. The 2021–22 capital cycle demonstrated that a strong signal without institutional continuity produces no sustained ecosystem effect: capital arrived, and the companies that received it have disproportionately been acquired, restructured, or relocated. A quieter start with statutory durability produces more than a louder start that can be cancelled in the next spending review. The programme below is designed to demonstrate returns before it requires legislation, which is the only order in which a Treasury operating inside near-term fiscal constraints will approve a decade-long capital commitment. Everything else, the talent, the research, the entrepreneurial energy, is already here. What has been missing is not the signal. It is the structure.

What Great Looks Like

Let me be specific, because "scale the British Business Bank" is not a programme, it is a headline. Hermann Hauser and I have spent considerable time working through what a credible, costed, phased intervention actually looks like. Here it is.

Years one and two: Foundation. Deploy £1.5 billion per year as cornerstone capital into existing high-performing BBB portfolio funds that are raising successor vehicles. The diligence burden is low, these are known managers with established track records. Simultaneously, establish a BBB-operated secondary market liquidity facility so that pension funds can treat their LP positions as eligible for a credible exit pathway after year five. This is not a guarantee of liquidity; it is a market-making function that satisfies the regulatory requirements pension trustees face. Without this structural fix, the pension funds will not come. With it, they will. This phase requires no new primary legislation, it operates within existing BBB Act authority. It is also the programme's evidential foundation. If by the end of year two the £3 billion Phase 1 commitment has attracted at minimum 1:1 private co-investment from pension funds and institutional LPs, the statutory British Business Bank Amendment Act is introduced. If the trigger is not met, the programme does not escalate. The statutory commitment is earned by performance, not assumed by ambition.

Years three to five: Acceleration. Scale to £4 billion per year. Expand to first-time and emerging fund managers, with priority given to deep tech: quantum, synthetic biology, advanced materials, AI infrastructure, and to regional funds outside London. The DWP should issue clarifying guidance confirming that pension trustees directing up to five per cent of default fund assets into BBB-cornerstone qualifying vehicles are acting within their fiduciary duty. This is a clarification, not new legislation. Its signalling effect will release tens of billions in pension capital that is currently sitting on the sideline not out of risk aversion, but out of regulatory uncertainty. Fix the regulatory signal and the money moves.

Years six to eight: Peak deployment at £5 billion per year. By this point, the BBB's cornerstone commitment should be catalysing at minimum two pounds of pension and institutional capital for every one pound of government money, in addition to the international LP co-investment the programme attracts. The UK should have twenty to thirty venture funds of real scale, with fund sizes of £500 million or more and established track records that create the exit liquidity depth the secondary market currently lacks. The self-reinforcing flywheel that exists in the United States, where successful fund managers reinvest carry into the next generation of funds, and successful founders become the next generation of investors, begins to function here.

Years nine and ten: Taper and exit. BBB deployment reduces from £5 billion to £500 million per year as private institutional capital fills the gap. The government's role transitions from cornerstone investor to standards body, certifying qualifying funds, operating the secondary market facility, publishing the annual transparency data the market needs. The programme has achieved its objective when UK pension funds are deploying two to three per cent of their assets under management into domestic venture without government inducement. That is the exit condition. That is what success looks like.

Fifty billion pounds committed over the decade at a projected net IRR of fourteen to sixteen per cent, the median outcome from comparable fund-of-funds programmes globally and consistent with the BBB's own existing programme performance, is not a subsidy. This figure applies only to the Phase 2 statutory commitment, after Phase 1 validation.

Editor's Synthesis

Boland's case for scaling the British Business Bank's fund-of-funds programme is built on arithmetic rather than aspiration. The programme's expected IRR of fourteen to sixteen per cent, consistent with

comparable fund-of-funds programmes globally, means the expected net cost to government over a full cycle is close to zero. The real question is not whether the programme pays for itself but whether the political commitment to a ten-year statutory mandate can be made and held. A programme that can be cancelled in year two by a new chancellor is not a capital market signal. It is a press release. The fifty-billion-pound commitment over a decade is designed to draw private institutional capital into venture at a two-to-one ratio by the end of the programme. The government's role tapers as the private market matures. This is not a permanent subsidy. It is a market-building mechanism with a defined exit.

What follows from Boland's case is that the British Business Bank would need to deploy at five billion pounds per year by year six of a ten-year statutory programme, with cornerstone commitments structured to draw in at minimum two pounds of pension and institutional capital for every pound of public money deployed, if the structural gap he identifies is to be closed at the pace he considers necessary.

———

13

WIND DOWN SUBSIDIES THAT TRAP TALENT IN LOW-IMPACT FIRMS

Based on conversations with Stan Boland,
Serial Technology Founder

Editor's Prelude

Stan Boland returns to examine the subsidies that sit alongside the venture capital shortfall, and his conclusion is that they are making the problem worse. The UK spends 7.5 billion pounds per year on R&D tax credits, most of which flows to companies that are not building for global scale. He calls these companies zombies: firms that consume capital, employ engineers, and sustain themselves through subsidy while producing no breakthrough outcomes. His chapter makes the case for halving R&D tax credits to align with US rates, dismantling EIS and VCT relief for funds, and redirecting the savings into active venture capital.

The R&D Tax Credit Trap

Alongside the venture capital shortfall, the UK government has built an elaborate system of financial props that are all intended to support the technology sector. R&D tax credits, enterprise investment

schemes, venture capital trusts, patent boxes, Innovate UK grants. These all sound like sensible policies until you examine what they actually produce.

The total amount the UK spends on R&D tax credits every year is approximately £7.5 billion. That is an enormous sum. You would expect that out of a pipeline fuelled by £7.5 billion of annual subsidy, year after year, there would be a massive output of globally successful technology companies. But there is not. The honest assessment is that this policy is failing.

The fundamental problem is that R&D tax credits are passive capital. A company simply has to demonstrate that it spent money on engineers doing something that qualifies as research and development. There is no requirement that the work be commercially viable, strategically valuable, globally competitive, or tied to any milestones beyond the expenditure itself. The company submits its claim, and the government writes a cheque. It is helicopter money for the technology sector.

With contrast, the United States has R&D tax credit programmes at both federal and state level, but they operate at roughly half the rate of the UK. If we simply aligned our R&D tax credit regime with the American model, reducing the effective rate from approximately 28 per cent to 14 per cent. We would save three to four billion dollars per year in public spending. That money could then be redirected into fund-of-funds investments in venture capital, which, crucially, do not count as public spending under the government's current accounting framework. The net effect is a reduction in public expenditure and a dramatically better innovation ecosystem.

Why Passive Capital Feeds Zombies

The deeper problem with R&D tax credits is that they sustain companies that should not exist. I call them zombies: firms that are never going to swing for the fences, will never be competitive on a global stage, and are often doing something that four or five other companies around the world are already doing better. This is

Boland's characterisation of a structural pattern, not a description of any specific company. These firms do not know this because their investors are not helping them see the bigger picture, and the subsidy removes the market discipline that would otherwise force a reckoning.

Each one of these zombie companies employs engineers. Often good engineers. And those engineers are trapped, working on projects with no realistic path to global impact when they could be contributing to companies that have a real shot at building something material. The human cost of passive subsidies is not just wasted public money; it is wasted talent, which is the resource the UK can least afford to squander.

The EIS and VCT Problem

The enterprise investment scheme and venture capital trusts are a particularly instructive case. The government created these structures roughly fifteen to twenty years ago to encourage investment into early-stage companies by offering generous tax incentives. Investors in an EIS fund receive a 30 per cent income tax credit on the money they invest, capital gains tax rollover relief, and tax-free treatment of any gains on the investment. On paper, it is an extremely attractive proposition.

In practice, it attracts entirely the wrong kind of investor. The people who flock to EIS funds are not technologists. They have no long-term interest in the success of the companies. They are solely interested in sheltering income tax or capital gains tax. As they hand over their money, the implicit instruction to the fund manager is: do not lose more than 30 per cent of this, because I get a 30 per cent tax credit. If you can return 0.7 times my money, I am happy. If you return more, wonderful. That is the exact opposite of what venture capital is supposed to do.

Venture capital is about investing in the top one or two per cent of companies doing something extraordinary that might return 200 times the investment. EIS funds, by contrast, generate returns of between 0.7 and 1.3 times money on money. The fund managers

are often chartered accountants or retired bankers who sit on the boards of portfolio companies, know nothing about the underlying technology, and contribute nothing of strategic value. There is no transmission mechanism for quality to flow from this capital source to the companies it funds.

I would dismantle EIS and VCT tax relief for funds entirely. The one exception is angel investors, where the scheme does serve a useful purpose. An angel investor has a direct relationship with a single company, brings personal expertise and networks, and is willing to put their own capital behind their conviction. That is valuable. But EIS funds are a bastardisation of venture capital that is not serving the UK's interests.

Innovate UK and the Bureaucracy Problem

Innovate UK is yet another example of well-intentioned intervention that has become a bureaucratic nightmare. The process of applying for an Innovate UK grant is remarkably similar to applying for a visa: slow, opaque, and often decided by assessors who lack the expertise to evaluate what they are reading. You have people who do not know what they are doing marking the homework of people who, in many cases, do know what they are doing. The wrong decisions are taken because the evaluation process cannot match the sophistication of the applications.

The current chief executive is working to address these issues, but the structural problem remains. State-administered innovation grants are an inherently poor mechanism for allocating capital to the highest-potential opportunities. The private venture capital market, for all its imperfections, does this far more effectively because it is staffed by people whose livelihoods depend on getting the selection right.

The Swap: Fifty Zombies for One Global Winner

The reallocation arithmetic, stated precisely. The UK currently spends approximately £7.5 billion per year on R&D tax credits and produces

from that pipeline venture capital investment of £1.6 billion per year (2025 figures). The ratio of subsidy input to active capital output is roughly five to one in the wrong direction. The R&D credit is not funding the companies that need funding. Halving R&D tax credits from 28 per cent to 14 per cent to align with the US rate saves £3.5 to £4 billion per year. Removing EIS and VCT tax relief for pooled funds saves approximately £1 billion per year. This is not a saving redirected to new spending. It is a substitution within the existing innovation budget: replacing a documented low-return instrument with a documented higher-return one. The receipts improvement from R&D credit reduction is the fiscal mechanism that enables the Phase 2 BBB scale-up, providing a receipts gain that coincides with the capital commitment escalation and makes the Treasury arithmetic of the full programme defensible. The net result is lower public spending, higher-quality capital investment, and the liberation of engineering talent from firms that consume public resources without producing globally competitive outcomes.

This is not a complicated trade. It is swapping fifty zombies for one global winner. The zombies employ talent that goes nowhere and consume public resources that produce nothing. The global winner creates thousands of jobs, generates enormous tax revenue, builds supply chains, attracts further investment, and raises the ambition of every founder who comes after. Active capital, deployed by people who understand technology and markets and are financially motivated to get it right, is the engine that produces those winners. Passive subsidies are not, and never will be.

We have to be ruthless about not feeding zombies and instead feeding and encouraging success. That requires political courage, because the beneficiaries of the current system will resist change. The evidence is clear. The UK's current subsidy architecture is not producing the outcomes it was designed to achieve. The cost of continuing is measured not just in pounds but in the wasted potential of an entire generation of engineers and founders.

Editor's Synthesis

The zombie point is the most politically difficult claim in Boland's analysis because the beneficiaries of the current system are numerous, organised, and vocal. The companies that would lose subsidy have employees, accountants, and MPs. The companies that would be built with the redirected capital do not yet exist. That asymmetry reliably defeats sensible reallocation in policy cycles, which is why Boland is explicit that the change would require a degree of political courage that has not yet been demonstrated. The arithmetic, however, is not complicated: fifty zombie companies absorbing subsidy that produces nothing versus one global winner that, when it does succeed, pays corporation tax, creates alumni networks, and funds the next generation of founders, is not a close comparison. The EIS and VCT point is separate but related: these structures were designed to encourage investment into growing companies but in practice attract investors whose only interest is the tax break, who bring no relevant expertise and whose presence corrupts the governance of the firms they fund.

What follows from Boland's case is that halving R&D tax credits from twenty-eight per cent to fourteen per cent, saving three to four billion pounds annually, and redirecting those savings into the British Business Bank's fund-of-funds programme, is the most straightforward reallocation of existing public money available to the UK government.

———

14

BUILD THE FIREWALL BETWEEN POLITICS AND PUBLIC CAPITAL

Based on conversations with Josh Lerner, Professor of Investment Banking, Harvard Business School; Co-author, *Boulevard of Broken Dreams*

Editor's Prelude

Government capital for innovation is not inherently flawed. It is the design of those programmes that is almost universally flawed, in ways that are not random. The same distortions appear in every political system, in every geography, every time the same structural decisions are made. Josh Lerner has spent three decades documenting those decisions and what they produce. His argument is practical: the failures are predictable, which means they are preventable, if the programme is designed to resist the pressures that reliably produce them.

Keep Them Apart

One thing I think is very important is the notion of really trying to keep as much distance between the startups and the government officials as possible. When you have direct winner-picking, or when you open the door to influence activities to get funding, this is not

something that happens in one place or another. It seems to be a much more generic phenomenon. You just end up with all sorts of potential distortions that can creep in.

The clearest example is the 2009 American Recovery and Reinvestment Act, under which the Department of Energy made direct investments of roughly a billion dollars each into clean technology companies. The intent was sound. The outcome was not. Companies that won funding, including Solyndra, which filed for bankruptcy in 2011, were frequently distinguished by their lobbying effectiveness rather than their technological merit. One of the strategies many firms employed was to hire government officials who had retired from the Department of Energy. And perhaps not surprisingly, the companies selected were the most adept lobbyists, in many cases not the best companies.

The damage went further than poor allocation. Venture investors already active in clean tech slowed down their investing activity. They did not want to fund a company that would have to compete with one that had just received a billion-dollar government cheque. So the programme had a self-defeating effect: it did not just lead to distorted decision-making, it actually deterred and crowded out private research funding. That is the worst version of this failure mode, when a programme intended to crowd in private capital ends up driving it away.

Rules, Not Discretion

The structural alternative is what I would describe as rules-based approaches. One of those is matching funds: companies need to raise money from independent capital sources, like a venture group, before they can get government funds. That provides somewhat of a market test. If you cannot go out and raise private funding, that is an indication that something is wrong. It is essentially trying to get validation from the private market that you are doing something right.

Tax credit mechanisms work on a similar logic. By creating conditions under which private investors are effectively subsidised,

you stimulate activity across the whole market rather than picking individual winners. Neither mechanism is perfect. The guidance fund programme in China demonstrated that matching requirements can be gamed. Local political entities would strong-arm politically connected state-owned enterprises to provide the matching funds the federal government required, making it look like the company had passed a market test when in actuality it was still distorted. But that is an argument for designing the independence requirement rigorously, not for abandoning it. Putting a big emphasis on raising independent third-party capital is a very important step.

The second structural principle concerns who makes the decisions. Rather than having politicians or political appointees doing it, you want to try to create real independence in the body doing the selecting. Fixed terms, transparent criteria, professional fund managers with track records, and conflict-of-interest protocols that are publicly enforced. This is harder to sustain politically than it sounds, because the pressure to intervene is constant.

>70%

Innovate UK: open vs. directed

Proportion of Innovate UK grants issued through competitive open calls versus directed or ministerially prioritised mechanisms. This is the most direct UK test of the rules-based versus discretionary design question. High directed allocation is the structural precondition for the distortions Lerner describes.

Source: Innovate UK annual report; What Works Centre for Local Economic Growth

The Spreading Problem

The pressures to regional fairness are very extreme. You start off with a big pot of money, and then you start spreading it around many

different regions and sub-regions. One of the things we know about venture capital around the world is that it is an incredibly localised industry. The vast majority of the activity ends up focusing in a relatively small number of places.

This ends up being a real challenge for policymakers who feel this pressure to do fairness. This is certainly true in the United States, where programmes like the Small Business Innovation Research Programme have shown that awards to firms in venture hubs are much more effective in terms of promoting innovation than the ones which are not in venture hubs. But the money still gets spread out. Even Chairman Xi said, why is it that every region or every city in China needs to have an AI hub and an electric vehicle facility? You see the same dynamic whether it is a democracy or a more autocratic system. These pressures are still very much there.

I would like to say there is a real fix to it. I do not think one can honestly say there really is one. To the extent that one can avoid building in dynamics which make it automatic for there to be regional fairness, one should do so. But beyond that, it is not super clear that there is a one-size-fits-all approach.

Build in the Authority to Stop

The same political dynamics that produce winner-picking and regional spreading also make it almost impossible to wind down companies once funding has begun. The logic is straightforward: admitting failure requires admitting that public money was given to something that did not work. No political system makes that easy. But we know from any study of venture vesting that the vast majority of companies backed will not make it, and that returns are concentrated in a small number of winners. A programme that cannot exit its failures is not a programme that can concentrate behind its potential winners.

The structural fix requires pre-committing the exit criteria before the investment is made, not after the company has begun to struggle. Sunset provisions, mandatory third-party review at defined milestones, and explicit authority to exit without ministerial approval

are the mechanisms that make this possible. This is not primarily a design challenge. It is a governance challenge: the people running the programme must have genuine authority to act on what the evidence tells them, insulated from the pressure to protect prior decisions.

What This Means for the UK

The UK has the institutional infrastructure. The question is whether it is governed in a way that can resist the pressures this chapter has described: the pressure to pick winners directly, to spread capital for regional fairness, and to sustain investments that should be wound down. Those pressures are not unique to the UK. They are universal. What distinguishes the programmes that have built genuine ecosystems from those that have merely spent public money is not the level of funding but the architecture of governance, the structural insulation that allows market validation to drive decisions rather than political visibility.

Editor's Synthesis

Lerner's argument is not that public capital for innovation is a bad idea. It is that the design decisions that determine whether public capital creates or destroys private markets are entirely predictable, which means the failures are preventable. Distance from political selection, matching requirements that demand genuine independent validation, independent governance bodies, and pre-committed exit criteria are the structural elements that separate programmes that compound returns from those that absorb capital without producing them. The UK's Levelling Up pressures and the political difficulty of winding down funded companies are not unique problems. They are the universal version of the same challenge every government has faced, and they require the same structural response.

Action Takeaway

Establish independent governance boards for all public innovation capital vehicles, including the British Business Bank and its subsidiary British Patient Capital, with fixed terms of appointment, transparent and publicly declared selection criteria, and a requirement to publish investment rationales. This would create genuine structural insulation from ministerial direction rather than relying on informal arm's-length conventions.

In parallel, legislate fixed terms for investment committee members at British Patient Capital, alongside mandatory, publicly accessible conflict-of-interest registers, ensuring that decision-making independence is embedded institutionally rather than dependent on goodwill.

Finally, separate policy objectives explicitly by ring-fencing innovation-for-growth capital from regional economic development funding, and require that every direct company investment includes pre-committed wind-down criteria, with clear authority to exit without the need for ministerial approval.

15

CLOSE THE SCALE-UP GAP BEFORE EUROPE'S BEST COMPANIES LEAVE

Based on conversations with Dr Hermann Hauser, FRS, KBE, Co-founder of Amadeus Capital Partners and Architect of the Scale Up Europe Fund

Editor's Prelude

Hermann Hauser co-founded Amadeus Capital Partners, backed eleven companies that became unicorns, and watched every one of them end up headquartered in the United States. His chapter examines the structural reason: Europe produces as many startups as the US but has no equivalent to the late-stage capital markets that allow those companies to grow to hundred-billion-dollar scale at home. He describes the Scale Up Europe Fund, the EU Inc. corporate form, and the case for a European stock exchange capable of competing with Nasdaq as the institutional infrastructure that the UK currently lacks and urgently needs.

He does not describe this as failure. He describes it as arithmetic. Eleven companies. Zero retained. Each one the product of years of his capital, his network, his judgement about which technologies would matter. Each one, at the moment it needed growth capital to press its advantage, facing a choice the UK system made inevitable: take the American cheque or stop growing. He took the data personally enough to spend the last several years building the institutional alternative. That is what this chapter is.

The Hectocorn Deficit

If you compare European and American universities, the intellectual property output is comparable. Europe actually produces more startups than America, a little-known fact that surprises most people. We do not have a startup problem. What we have, emphatically, is a scale-up problem.

When a company needs a funding round of fifty to five hundred million dollars, or especially a billion, American investors do that with reasonable ease. European investors do not. The result is predictable and devastating: out of the eleven unicorns I have personally been involved in, all of them ended up in the United States. That is not an accident. It is a systemic failure of European capital markets, and it is the single most important problem we need to solve.

The numbers tell the story starkly. There are only three companies worth more than one hundred billion dollars, hecticorns, in all of Europe: ASML, SAP, and ARM. The United States has something like a thousand. That gap is not explained by any deficit in European talent, research, or entrepreneurial energy. It is explained entirely by the absence of growth-stage capital and the financial infrastructure to retain companies as they scale.

There is a remarkable graph, published by Bloomberg, showing that European and American GDP growth rates tracked each other closely until about ten years ago, at which point they dramatically

diverged. The entire divergence is attributable to technology. The big bifurcation in GDP growth between the US and Europe is all tech. That is the problem we are trying to solve, and it will not be solved by producing more startups. It will only be solved by keeping the startups we produce and giving them the capital to become global leaders.

The Scale Up Europe Fund

This is why I have spent the past several years building the Scale Up Europe Fund, which is a new compartment of the European Innovation Council. The fund is progressing well and will likely have a first closing at five billion euros, making it the largest growth fund in Europe. The ultimate ambition is to reach twenty billion euros.

The structure is deliberately designed to use public money into private capital. The initial fund invests taxpayer money, but the Scale Up Europe Fund will be only 20 per cent taxpayer capital and 80 per cent market capital. We have been impressed by the willingness of Europe's largest investors: Novo Nordisk, the Wallenberg foundations, the major Dutch pension funds, to commit to this initiative. These are sophisticated, long-term investors who understand that Europe's growth-stage capital gap is the single biggest drag on the continent's economic competitiveness.

For The UK, this story is particularly important. We managed to get the UK back into Horizon Europe, so The UK is once again participating in Europe's research framework. But the UK is currently excluded from the equity instruments. What we are working to achieve, and it is looking promising, is to get the UK back into the equity part as well, so that British companies can access the Scale Up Europe Fund alongside their continental counterparts. This matters enormously, because The UK has exactly the same scale-up problem as the rest of Europe.

€20B	**Scale Up Europe Fund target the UK risks missing**
Fund Target	The €20 billion fund is 80 per cent market capital, designed to retain deep tech companies at Tornado stage.

Technology Sovereignty and the Three Circles

I am currently writing a book on technology sovereignty, and the central thesis is that the world is consolidating into three technology sovereignty circles: the United States, China, and Europe. Of the three, Europe is the only one that does not aspire to be a hegemon. That makes it the natural partner for every country that does not want to subordinate itself to Washington or Beijing.

The UK has to get closer to Europe. The size of the UK market is simply too small to sustain a viable independent technology ecosystem. Unless The UK wants to become the fifty-first state of the US or join China, neither of which is realistic. It must be part of the European technology circle. That means, at minimum, rejoining the customs union, which is the most economically damaging aspect of the current arrangement. Large, tariff-free customs unions are unambiguously beneficial, and Europe now has customs-free access to two billion people following its deal with India. The UK should be part of that.

China as a Market, Not a Threat

We must also be realistic about China. People sometimes forget, amid the current anxiety, that as well as expanding into the US we need to engage with the Chinese market. China is going to be one of the leading economic powers later this century. It is often one of the main markets for the companies we are trying to build in Europe. This does not mean being equidistant between the US and China. But ignoring China or treating it as the enemy is simply unrealistic.

Because of the current transatlantic tensions, China is now more willing to work with Europe and the UK under conditions that might be acceptable to both sides. And if the UK acts together with Europe rather than alone, its negotiating power is far greater. This is another reason why rejoining the customs union would strengthen The UK's position; not only within Europe but in its dealings with the world's largest emerging market.

A European Stock Exchange to Rival Nasdaq

Capital is only part of the equation. The other missing piece is a public market that allows European technology companies to list at home rather than defecting to Nasdaq. London was once the natural home for European technology IPOs, but it has lost its trading supremacy to Amsterdam and its capital depth to Euronext.

The old idea of merging the London Stock Exchange with Deutsche Börse or Euronext to create a single European stock exchange that can compete with Nasdaq is more relevant than ever. Such a merger would be good for London, good for Europe, and good for a growth company that currently feels compelled to list in New York to access the liquidity and valuations that European markets cannot provide. Whether this is politically achievable is uncertain, but the economic logic is overwhelming. The UK alone is a minnow in global capital markets. Together with Europe, it can be a credible alternative.

EU Inc.: A European Alternative to Delaware

For ten years, I have been lobbying for the creation of a European corporate form, an EU Inc., that would give startups a credible alternative to Delaware incorporation. The best European companies routinely reincorporate in Delaware because they cannot manage twenty-seven different legal systems, and because the Delaware structure offers the option schemes, share classes, and governance flexibility that technology companies require.

I am delighted to report that this is finally happening. The EU Inc. Is being created using what Brussels calls the twenty-eighth regime: a virtual twenty-eighth member state with its own legal framework, accepted by all twenty-seven existing members. The regulations are modelled closely on Delaware corporate law, offering the option schemes, share classes, and structures that startups need. This will launch in the second quarter of this year, and I believe it will be powerful for European entrepreneurship.

The EU Inc. Serves as both a workaround for the fragmentation of European legal systems and a European alternative to Delaware. For UK founders who currently feel forced to incorporate in the United States, it provides a European option that keeps companies, and the jobs and value they create, on this side of the Atlantic.

Editor's Synthesis

Hauser's position sits in productive tension with Boland's. Boland proposes a UK-domestic solution: scale the British Business Bank to close the capital gap through a ten-year fund-of-funds programme. Hauser's Scale Up Europe Fund implies a different conclusion: the UK market may be structurally too small to generate the institutional depth its frontier companies require without access to European capital infrastructure. Both can be right simultaneously. A domestic programme is executable in the near term. European capital access is a political negotiation without a clear timeline. The EU Inc. observation is more immediately within reach: it is currently being created as a virtual twenty-eighth member state, and the question of whether the UK will align its corporate law to give UK founders access to that structure is one that Hauser's account suggests could be addressed without any broader political negotiation.

The two steps Hauser's case most directly supports are securing UK participation in the equity instruments of the Scale Up Europe Fund and clarifying whether the UK will support the EU Inc. corporate form

are the two most specific steps available to close the institutional gap he has spent years documenting.

Action Takeaway	Secure UK participation in the equity instruments of the Scale Up Europe Fund and clarify whether the UK will support the EU Inc. corporate form, giving UK companies a credible alternative to Delaware incorporation.

16

BUILD UK PUBLIC MARKETS THAT SCALE AND RETAIN WORLD-CLASS COMPANIES

Based on conversations with Charlie Walker,
Deputy CEO, London Stock Exchange

Editor's Prelude

Charlie Walker runs the London Stock Exchange, the marketplace itself, which gives him a vantage point no other featured individual in this book holds: he sees the companies trying to list, the investors choosing not to back them, and the structural gap between the two simultaneously. Where other chapters in Part III address private capital, venture scale-up, and public funding firewalls, Walker's chapter addresses the terminal failure that makes all of them insufficient: the moment a company reaches public markets and finds either no domestic capital waiting for it, or no market capable of holding it. His argument is that the UK has nearly completed a five-year capital markets reform programme, and is now one structural decision away from the outcome all that work was designed to produce.

The Starting Problem Is Not the Starting

The UK is doing an incredible job of starting companies. Four of the top ten universities in the world. Either the third or fourth highest number of unicorns globally. World-leading sectors in quantum computing, artificial intelligence, and life sciences. The next generation of deep technology is being built here, and we have been pretty capable of getting companies to a certain size.

We also have one of the largest pools of long-term capital in the world, sitting in our pension schemes, our investment trusts, and retail savings. On the numbers we see, the UK is around third in the world for that.

So we have an extraordinary pipeline of companies spinning out of world-leading research institutions into world-leading sectors, and we have capital sitting in our pension schemes. What we have not done as well as we could is connect the two together.

The result is that we have become very good at exporting wealth creation. When you ask the fast-growing companies in these sectors who is on their shareholder register, the answer is striking: the level of British ownership is consistently low. We are building the asset and then selling it, early, to someone else.

The Funding Continuum Cannot Have a Gap in the Middle

Part of the answer is about private capital, and there are strong voices in this book making that case. But if you address private and not public, you will lose these companies at a different rung of the same ladder. It is self-defeating to treat this as a private versus public question. It is a continuum. A company needs capital at seed, at Series A, at growth stage, and then, when it reaches a certain scale, it will want to access public markets. If it cannot do that in the UK, it will look overseas, and that is where the problem compounds.

When a company moves its listing overseas, it does not just change its ticker. The gravity shifts. You can only get eligibility to

certain foreign indices if you are deemed to be a company resident in that country. So boards move. Management moves. Sometimes the incorporation moves. The tax base follows. The company becomes subject to foreign regulation. In today's geopolitical world, with diverging views on environmental disclosures, diversity requirements, the life sciences regulatory remit, and the defence sector, that is a much bigger consideration than it was ten or fifteen years ago. You do not just lose the listing. You lose the company.

And that gravity shift is not easily reversed. Once a company's leadership is in California, once its management team is compensated in US stock, once its lawyers, bankers, and analysts are on the same side of the Atlantic as its listing, the centre of gravity has moved. We will never get the flywheel going in quantum, AI, and life sciences if we are in a perpetual cycle of starting companies, getting them to a certain size, and then exporting them before they reach their full potential.

The Reformed Car That Still Needs Petrol

The UK capital markets have been on a reform journey over the last five years. It is the biggest in a generation. Every material piece of regulation surrounding UK capital markets has been addressed: listing rules, corporate governance requirements, the stewardship code, research coverage, remuneration policies, prospectus requirements. That work has been done.

If you compare London side by side with New York, Amsterdam, or Hong Kong from a regulatory perspective, we are competitive. We are match fit.

The analogy I use is this: we now have the most mechanically sound car we have had in decades. We have polished it, it looks good, it is ready to go. We just need a bit of petrol to really get it moving.

That petrol is capital, and specifically domestic long-term capital that is not tethered to the performance of overseas markets.

The Mechanical Problem With Global Passive

Here is what is happening, and it is not obvious until you look at the mechanics. If you invest in a pure global passive fund, roughly 3per cent will be allocated to UK listed companies. That is because the UK stock market represents about 3 to 4 per cent of global indices.

Now suppose the US stock market rallies. That 3 per cent becomes 2.5 per cent. Not because the UK is a worse place to invest. Not because anything changed here. Purely mathematically, because the US grew larger in the index and the UK shrank proportionally. Money flows out of UK equities not as an investment decision but as a mechanical consequence of relative market size movements. Currency shifts do the same thing. It is entirely untethered from whether the UK is actually a good place to invest.

4.9%

UK pension fund allocation to domestic equities 2025

In 1997, UK pension funds invested 53% of their equity allocation in UK companies. By 2025, this had fallen to 4.9%, the equivalent of withdrawing 25 billion pounds of investment from UK companies every year. DC pension funds, which will manage over 1 trillion pounds in assets by 2030, now hold less than 5% of their assets in UK equities, against a global average of over 13%. As recently as 2020, UK equities still represented approximately 24% of DC pension equities.

Source: New Financial / LSEG analysis

This is the structural problem. We cannot have our pool of domestic capital oscillating based on the performance of the S&P 500. We need a base of long-term capital anchored to UK companies, capital that is here because it chose to be here, not capital that drifts in and out based on what is happening overseas.

The Gravity of the Company Follows the Capital

The countries that have grown world-leading companies, companies that go global from their home market and stay anchored there, all have one thing in common. They have a dedicated domestic investor base that is not tied to the performance of international stocks. The United States has its 401k culture, where people know what is in their pension and take an active interest in it. Australia, Canada, France, and Italy all invest significantly more of their own capital domestically.

The UK is a genuine outlier. And it is not because there are no great investment opportunities here. Anyone who says that is not looking hard enough. The evidence is this: when global pension schemes open their first office outside their domestic market, the most common choice is London. International capital recognises the value of investing here.

But international capital should not be coming in to replace domestic capital. It should be coming in alongside it. When domestic capital is absent, the dynamic shifts. Decisions about the future of British companies increasingly rest with non-domestic investors. The strategic choices, whether to list, where to list, whether to sell, what to build next, get made by people whose interests are not necessarily aligned with the long-term health of the British economy.

The moment to act is now. The regulatory work is done, the awareness is high, and the policy tools are visible. The question is whether we choose to use them.

Editor's Synthesis

Walker's argument is not about market sentiment or investor confidence in the usual sense. It is structural: the UK's capital markets reform programme has removed the regulatory barriers, but the demand-side problem, the absence of a domestic investor base anchored to UK equities, remains, and it cannot be solved by further regulatory adjustment alone.

The mechanical drift point is the one that sticks: domestic capital is leaving UK equities not because pension fund managers have made negative investment decisions about the UK, but because the default architecture of global passive investing produces automatic outflows whenever overseas markets outperform. That is a system design problem, and it requires a system design solution. The single structural change Walker's chapter most directly supports is reforming the default allocation of DC pension funds, addressed in the chapter that follows.

Action Takeaway	Require the FCA and the Pensions Regulator to publish an annual comparison of DC pension domestic equity allocation in the UK against peer markets, tabled in Parliament alongside the Pensions Commission's recommendations. Use the resulting public baseline to measure the impact of pension reform in real time and to inform any future use of the reserve powers on investment allocation contained in the Pensions Bill.

17

RECONNECT DOMESTIC CAPITAL TO DOMESTIC COMPANIES

Based on conversations with Charlie Walker, Deputy CEO, London Stock Exchange

Editor's Prelude

The previous chapter diagnosed why the UK's public markets cannot retain world-class companies without a reliable domestic investor base. This chapter names the cure. Walker co-organised the Business Leaders' Letter to the Chancellor, signed by over three hundred founders, CEOs, and chairs of British companies, which called for a specific and achievable reform: requiring DC pension default funds to allocate a minimum of 25% of their assets by asset class to UK investments. His chapter makes the case that other featured individuals in this book cannot make with the same credibility, not because they lack the argument, but because he sits at the centre of the transaction: the marketplace operator who has tracked every data point and still concludes that only structural intervention will move the needle.

The Number People Do Not Know

Ninety-seven per cent of the money in UK defined contribution pension schemes is invested overseas when it comes to equities. Most people, including many in government, did not know that five years ago. Now they do.

But here is the more striking number. We surveyed a thousand people and asked them how much of their pension they thought was invested in the UK. The average answer was forty-one per cent. The actual figure is three to four per cent, and it drifts down every time we measure it. By 2030, without any policy change, it is projected to fall to 3.5%.

There is a profound disconnect between what the British public believes is happening with their pension savings and what is actually happening. And when you tell people the real number, and then ask whether they support government action to encourage more domestic investment, over seventy per cent either agree or strongly agree. This is not a fringe view. It is the settled opinion of the people whose money it is.

A Problem That Regulation Created

The level of overseas investment in UK DC pensions did not emerge because pension fund managers decided the UK was a bad place to invest. It emerged because of a series of regulatory and structural changes, the shift to global market-weighted passive investing, cost pressures that made passive the default, the abolition of dividend tax credits in 1997, that compounded over decades into the position we are in now.

Regulation and policy got us into this situation. That means there is going to need to be a role for regulation and policy to get us out of it. Tinkering will not solve it. The structural position is too entrenched, the inertia too strong, and the incentives currently pointing in the wrong direction. Anyone who thinks that the Mansion House Accord or the consolidation of pension schemes, welcome as they are, will on

their own reverse a twenty-five-year structural shift is not looking at the scale of what needs to move.

The Design of the Fix

What we proposed in the letter to the Chancellor, signed by over three hundred founders, CEOs, and chairs of British companies, public and private, large and small, is specific and it is not complicated. In order to be a default pension scheme in the UK, you would need to have at least 25% of your assets by asset class invested in the UK. Not just in listed equities. Across the board, in infrastructure, in private assets, in public equities. So it does not dictate asset allocation. It sets a minimum domestic proportion within whatever allocation the fund has already chosen.

And critically: if you, as an individual investor, do not want that proportion allocated to UK assets, you can opt out of the default scheme. No penalty. No adverse tax consequence. You simply choose a different fund. The default changes. Your freedom does not.

This is not mandation or compulsion. It is a default. The distinction matters, politically and practically. Mandation says you must invest this way. A default says this is the starting point, and you can choose differently if you want to. The predecessor to the ISA regime followed the same logic, using the architecture of defaults and tax incentives to encourage saving and increase investment in the UK economy. We are proposing the same principle for pensions.

+230%

Projected increase in DC investment in UK equities by 2030

A UK-weighted default fund at 20 to 25% of equities would increase DC investment in UK equities by between 76 billion pounds and 95 billion pounds by 2030, an increase of over 230% from current levels. DC pension funds currently hold just 33 billion pounds in UK equities out of 670 billion pounds in total assets, under 5%. The required allocation of 20 to 25% is roughly where UK pension funds were in 2020, five years ago. It is not a return to the 1990s. It is a return to normal.

Source: New Financial / CMIT modelling

What Brings the UK Back to International Norms

This would bring the UK back into line with how our international peers invest. Australia, Canada, France, Italy: it is genuinely hard to find a country that invests less of its own money domestically than we do. The global average for DC pension domestic equity allocation is over 13% of assets, nearly 30% of total equities. The UK is at under 5% of assets, under 9% of equities.

The ask of 20 to 25% is not radical. It is roughly where UK pension funds were just five years ago. We are not asking for a return to the 1990s, when over half of UK pension equity was invested domestically. We are asking for a position that every comparable capital market in the world considers normal.

The argument against is usually that this would compromise diversification or reduce returns. That argument does not survive scrutiny. Being globally diversified is not the same thing as taking a global-market-weighted approach, an approach that, at the moment, means having roughly 65% of your equity allocation in the US stock market. That is not diversification. That is concentration in a single market that has had an exceptional decade and is unlikely to sustain it

in perpetuity. A fund with 20 to 25% in UK equities and the remainder across a range of international markets is better diversified than one that mechanically mirrors a US-dominated global index.

The Retail Piece and the Cultural Shift

The pensions piece is where the bulk of the long-term capital sits. But there is a wider cultural point worth naming, because it connects.

The UK currently has around 800 billion pounds in retail savings sitting in cash. That generates poor outcomes for individual investors and does almost nothing productive for the economy. When people make active investment decisions for their own account, choosing where to invest personally rather than having a fund decide for them, around 40 to 50% of that money goes into the UK. People, when given the choice and the information, are significantly more likely to back British companies than the default institutional machinery currently does.

The goal is not just a policy adjustment. It is rebuilding an investment culture: one where people are engaged in their own financial futures, understand what their pension is actually doing, and feel a genuine stake in the companies that operate in the communities they live in. A structural change to the default pension architecture is the mechanism. The culture is what follows when the mechanism works.

Editor's Synthesis

Walker's chapter closes the gap the rest of Part III leaves open. The other featured individuals address how public capital can be better structured, how private markets can be deepened, and how growth-stage companies can access larger rounds. None of them address the one structural lever that determines whether all of that investment stays anchored in the UK once it has been made: the default allocation of the 670 billion pound and growing DC pension system. The opt-out design is politically

significant: it is not the mandation that would trigger fierce industry backlash, but it is sufficiently structural to move the needle in a way that voluntary accords cannot. The 72% public support figure is, in Walker's account, the political opening that makes this achievable. The government is not being asked to fight the public to do this. It is being asked to align policy with what the public already wants and, critically, already assumes is happening.

Action Takeaway	Amend the Pensions Bill to require all DC default funds to designate a UK-weighted fund as their default arrangement, allocating a minimum of 25% of assets by asset class to UK investments, with individuals retaining the right to opt out without tax penalty. Implement through amendments to the Pensions Bill 2025, the Investment Regulations 2005, and FCA COBS. No additional government expenditure is required. Projected impact: between 76 billion pounds and 95 billion pounds of additional DC investment in UK equities by 2030.

18

ACCEPT THAT COMPETITIVENESS WITHOUT SCALE IS NOT COMPETITIVENESS

Based on conversations with Nick Clegg, Former Deputy Prime Minister of the United Kingdom and Former President, Global Affairs at Meta

Editor's Prelude

The Walker chapters established that the UK has the capital but is pointing it in the wrong direction. Clegg's chapter establishes that even capital correctly directed runs into a ceiling that capital alone cannot raise. A software company in Delaware ships to three hundred and fifty million people in a single regulatory market on day one. The same company founded in London ships to sixty-seven million, in a market with declining purchasing power, disconnected from the largest single market on its doorstep. Clegg is not, in this chapter, making a Brexit argument. He is making a geometry argument: in winner-take-all technology markets, the size of your home market at launch is not a background condition. It is a primary determinant of whether you become the category leader or the company that gets acquired by one.

———

The Geometry of Scale

There is a number that ends most honest conversations about British technology competitiveness. A software company founded in Delaware ships to three hundred and fifty million people in a single regulatory market on day one. No licences by state. No fragmented data rules by territory. No question about whether the product works in California the same way it works in Massachusetts. Three hundred and fifty million people. One market.

A software company founded in London ships to sixty-seven million people. In a market with declining consumer purchasing power. In a market that, ten years ago, made the decision to uncouple itself from the four hundred and fifty million people immediately on its doorstep. In a market where that doorstep has itself failed to build a functioning digital single market, meaning that even if you could easily access it, shipping a software product from Lisbon to Helsinki is currently harder than transporting agricultural waste across the same border. I am not making that up. It is now easier to move farm manure across EU member state borders than to ship a new software product. That is the regulatory reality of the world's most ambitious economic integration project in its digital incarnation.

That asymmetry, three hundred and fifty million versus sixty-seven million, is not a background condition for UK technology companies. In winner-take-all markets, and the most consequential technology markets are winner-take-all, the size of your home market at the moment you are proving the product is a primary determinant of whether you become the category leader or the company the category leader acquires. You can iterate faster, fail cheaper, recover more quickly, and arrive at global expansion having already solved the hard problems with a relatively forgiving audience at home. The UK cannot do this. It never really could, but it has made it structurally worse.

Why Capital Alone Cannot Fix a Market Size Problem

I want to be precise about what I am and am not saying, because this argument is sometimes misread. I am not saying that more venture capital is irrelevant. Of course it matters. The chapters in this Part that address the British Business Bank programme, the DC pension default, and the growth-stage capital gap are right on every point they make. The UK does need more domestic capital directed at growth-stage companies.

But capital helps you build the product. Capital cannot manufacture the market you need to prove it in. China and America did not build globally dominant technology companies primarily because they had better capital markets, though they did. They built them because they had enormous domestic markets in which companies could achieve genuine scale before they expanded internationally. By the time a Chinese or American company goes global, it has already survived the hardest commercial proving ground. It arrives internationally with proof of concept at size, not just in a pilot.

The UK cannot offer that. And the reforms that fix the capital supply do not fix the market size problem. They are necessary. They are not sufficient.

While partial arrangements can mitigate some of these constraints, the full economic benefits of regional market scale are difficult to replicate outside deep integration. In that sense, the UK's long-term scale question is not only domestic but structural in its relationship to the European market.

5x

The gap in addressable home market size between a US and UK technology company at launch

A software company founded in Delaware launches into a single regulatory market of approximately 335 million consumers. The same company founded in London launches into a market of approximately 67 million, one-fifth the size, with declining purchasing power and separated from the 450 million consumers on its doorstep. In winner-take-all technology markets, this is not a background condition. It is a structural determinant of whether a company becomes the category leader or the acquisition target.

Source: US Census Bureau / ONS / author's analysis

The Farm Manure Problem

The European Union has spent thirty years trying to build a single market. In goods, it has largely succeeded. In digital services and software, it has largely failed. The result is that a company trying to ship a software product across EU member state borders faces a patchwork of data regulations, licensing requirements, and legal frameworks that make what should be seamless genuinely complicated. Meanwhile, the rules governing physical goods crossing those same borders are, in many categories, simpler and more harmonised. The farm manure observation is not a joke. It captures a genuine regulatory failure with serious economic consequences.

This is not an argument for EU membership. It is an argument for something more ambitious and more difficult: a digital integration agenda that the EU has consistently failed to build, and that therefore requires political leadership from outside the existing EU framework to make happen.

A Eurovision Concept for the Economy of Bits

The European Union of the past was built on an economy of atoms. Goods crossing borders. Physical infrastructure. Common rules for tangible things. That was the right project for its era and it produced real results: the greatest period of economic dynamism across the European continent in living memory, driven by the political will to create the single market in response to the stagnation of the 1970s.

We now need the equivalent project for an economy of bits. Not going back. Not returning to any previous arrangement. Going forward, and building something that does not yet exist: a hemispheric technology integration framework covering the wider European geography, including the UK, Ukraine, Norway, Iceland, and EU member states, built around the specific things where cooperation produces competitive advantage that none of us can generate alone.

What would that framework cover? Deep liquid capital markets across the continent, so that European companies do not face the structural pressure to list on Nasdaq simply because there is no domestic capital market large enough to support them. Seamless digital markets, so that a software product can ship from London to Warsaw to Kyiv as naturally as it ships from New York to Chicago. Visa-free or near-frictionless movement of technology entrepreneurs across the participating countries. Shared research funding that does not stop at a political border, which means researchers in Ukraine, Norway, and the UK accessing the same funds as researchers in Berlin and Paris.

None of this requires re-entering the EU. It requires a different political frame: that the relevant unit in the age of hemispheric competition between the United States and China is not EU member states versus everyone else. It is the wider European geography, cooperating on the specific things where cooperation changes the competitive outcome.

Ukraine and a Continental Beneficiary

There is one dimension of this that is not theoretical and is time-sensitive. Ukraine is already a world leader in AI-enabled defence applications, particularly autonomous systems. The innovation being generated under conditions of genuine existential pressure is remarkable. When the fighting stops, that capability will be commercially deployable in ways that go well beyond defence.

The question is whether the benefits of that innovation accrue to the European hemisphere or are immediately acquired by Chinese and American capital, which will be the fastest and most aggressive capital in the room when the moment comes. This is not an abstract geopolitical concern. It is the specific version of the premature exit pattern operating at continental scale: a European asset at the moment of maximum strategic value, sold to the highest bidder from outside the hemisphere because no hemispheric mechanism exists to retain it. Building the framework now, before that moment arrives, is the difference between capturing the value and watching it leave.

Competitiveness Without Scale

The generational shift is real. Young people across Britain and Europe want to be entrepreneurs in a way they did not fifteen years ago. The attitude has genuinely changed. But the institutional infrastructure has not caught up with the attitude. A generation that wants to build is operating inside a framework designed for a different era.

Hemispheric market integration is not a nostalgic project. It is the infrastructure that the entrepreneurial ambition already present in this generation needs to reach its potential. Competitiveness without scale is not really competitiveness. It is sophisticated participation in someone else's market.

Author's Note

The argument above sets out what is politically achievable in the near term, and what should be pursued without waiting for any change in the UK's relationship with the European Union. My own settled

view, set out more fully in a recent lecture at the National Liberal Club, is that in the long run the United Kingdom should aim to rejoin the European Union alongside Ukraine and others by 2036, the twentieth anniversary of the Brexit vote. There is no way to access full hemispheric market scale properly short of full membership. The hemispheric integration framework described here is necessary in any case; it is also the most that can realistically be built in the time before public opinion and political conditions allow a fuller settlement. That will take time, trust, and political will. But it is the destination the scale argument ultimately points toward, and the case for it should be made now rather than later.

Editor's Synthesis

Clegg's chapter is the one that tells the capital chapters what they are building toward. Boland's BBB programme, Walker's pension default reform, Lerner's governance architecture: all of them are necessary, and none of them is sufficient if the market that the capital helps build is too small to prove a technology at global scale. The hemispheric market integration argument is the most politically uncomfortable contribution in Part III because it requires Britain to acknowledge that its most consequential strategic decision in a generation has left it structurally disadvantaged in the competition that matters most. Clegg is not proposing immediate reversal. He is proposing that in the near term the EU versus non-EU distinction should be treated as functionally less important than a specific technology integration agenda, bits not atoms, and that the countries willing to act on that basis will build the market that makes everything else in this book worth doing. The Ukraine point is not rhetorical. It names the specific moment, predictable and coming, when the absence of a hemispheric framework will produce the most expensive continental Bowling Alley exit yet recorded.

Action Takeaway	Convene a UK-led hemispheric technology summit with government leads from Ukraine, Norway, Iceland, and at minimum three major EU member states, with a mandate to produce within twelve months a binding digital integration framework covering: mutual recognition of company registration across participating countries, shared research fund access for researchers regardless of EU membership status, visa-free entrepreneur mobility across the hemisphere, and a joint liquid capital markets working group to reduce the structural pressure on European companies to list on Nasdaq.

19

WIN THE GROWTH STAGE: PROTECT CAPITAL FROM POLITICS AND DEPLOY IT WHERE MARKETS BREAK

Based on conversations with Josh Lerner, Professor of Investment Banking, Harvard Business School; Co-author, *Boulevard of Broken Dreams*

Editor's Prelude

Josh Lerner is a comparative analyst of innovation ecosystems across Europe, Asia, and the Americas, Lerner brings empirical precision to the question at the centre of the UK's growth debate: why do strong early-stage companies so consistently fail to become large ones?

The UK does not have a startup problem. The evidence for that is clear enough: seed and early-stage activity has grown substantially, and the pipeline of technically strong, well-funded young companies is real. The problem appears later, at the growth stage, in winner-take-all markets where the company that scales second does not come second. It disappears. Josh Lerner locates the causes not in the quality of UK founders but in three structural conditions that compound against them at the precise moment they matter most.

Where Momentum Breaks

One of the characteristics you see in Europe in general is a lot of companies getting initial financing and being very promising at that point, yet somehow not executing with the sort of speed you would expect in winner-take-all markets where the dynamics are really very tough. The problem is not that these companies are bad. It is that in markets where the company that moves fastest wins, having less capital than a well-funded competitor at the moment you need to establish market position is a structural disadvantage that compounds forward from that point.

A company that raises substantially more at the growth stage and immediately expands its sales team, enters multiple new markets, and accelerates product development builds organisational capabilities, including sales infrastructure, engineering depth, brand recognition, and customer relationships, that are genuinely difficult to overcome later regardless of how good the underlying product is. The company that proceeds more cautiously may be making a perfectly rational decision given the capital available to it. That rational decision may still cost it the market.

Capital at the Growth Stage

Part of the answer is capital availability at the growth stage, but not in the way the diagnosis is usually framed. The question is not simply whether enough capital exists in the market. It is whether capital is available in sufficient concentration at the specific moment when market position gets determined. Two companies can start at a relatively equal point, and as competition develops, the one that receives substantially more resources often gains an advantage that is structural rather than temporary. It is not that the better-capitalised company has a bigger war chest. It is that the capital buys the organisational capabilities, the sales hires, the market entries, the product acceleration, that make subsequent competition disproportionately harder for the company that moved more slowly.

This is the mechanism that makes the growth stage the decisive point. Capital advantage at Series B does not produce a larger version of the same company. It produces a different category of company, one with the talent density, customer relationships, and organisational infrastructure that makes subsequent fundraising easier, customer acquisition faster, and exit timing a choice rather than a constraint. The distance between a company that raised substantially at the growth stage and one that did not is not measured in months. It is measured in whether the company still exists as an independent entity.

The Depth of Bench Problem

I would also point to the labour market. One of the great strengths of a deep ecosystem is that if you need a salesperson doing stuff in a particular SaaS vertical geared toward certain kinds of customers, you can probably find thirty potential candidates with the right track record. That is obviously an issue not just in the UK but in many places. The depth of bench of experienced team members is often much thinner. And as a result the process of scale-up can often be much more laboured.

This is not primarily a skills gap in the traditional sense. It is an experience gap. The relevant experience only accumulates in a market where a large number of companies have already successfully scaled, producing a generation of operators who have navigated the specific challenges of high-growth technology businesses. Hiring, culture, go-to-market, customer success, revenue operations at scale, these are learned disciplines. They compound in ecosystems where they have been practised repeatedly, and they are thin in ecosystems where they have not yet had the chance to become second nature. The UK is building that cohort, but the process is slow, and every year the gap remains it becomes slightly harder to close.

Geography Still Concentrates

Remote work has maybe helped a little bit. But if you look at something like AI as an example, it is incredibly geographically concentrated in a

few cities worldwide. Despite the potential for something built around coding to operate remotely, there has been a major emphasis from these firms on people being tangibly there. The basic stylised number is that if you look at venture worldwide, somewhere on the order of 20 per cent of the money is in one cluster. If you look at AI investing specifically, more than half the money is going into companies in that same geography. In the area of venture activity that has had the most explosive growth, the geographic concentration is intensifying, not receding.

What this means practically is that the talent density, the investor density, and the informal knowledge networks that determine who gets the best people and the fastest introductions are becoming more concentrated in the same places at the same time the stakes are rising. This is the mechanism that makes the window close. It is not a single event. It is a slow structural shift that becomes harder to reverse with each passing year.

Creating the Environment

The solutions lie in creating an environment that is particularly conducive to entrepreneurship at the growth stage. That means thinking about the ecosystem conditions: tax policy, the depth of experienced talent that can be attracted and retained, and the capital structures that allow companies to stay independent through the moment where market position gets established. It also means being honest that these things compound. Early investment in ecosystem conditions does not produce immediate results. It produces the depth of bench, the track record of successful exits, and the density of experienced investors and operators that make scaling less laboured five years from now. The argument for acting now is not urgency in the political sense. It is the arithmetic of compounding, which works against you if you wait and for you if you do not.

———

Editor's Synthesis

Lerner's scale-up argument is structural, not competitive. The problem he identifies is not that the UK is losing a race to any particular country. It is that winner-take-all markets punish companies that scale second, regardless of where the faster-scaling competitor is from, and that the three conditions that determine scaling speed, capital availability at the growth stage, labour market depth, and ecosystem density, are all thin in the UK at precisely the stage they are most needed. Each of these conditions compounds: the thinner they are today, the harder they are to build tomorrow. The window for intervention does not close all at once. It narrows incrementally, which is why the urgency is structural rather than dramatic.

Action Takeaway

Mandate that British Patient Capital publish an annual, sector-by-sector analysis comparing average UK Series B and C round sizes with global benchmarks. This would establish a clear public accountability mechanism, making the growth-stage capital gap visible, comparable, and measurable year on year rather than inferred from fragmented data.

In parallel, create a structured senior talent mobility programme designed to attract UK operators who have successfully scaled companies internationally back into the domestic ecosystem. This programme should include tax and visa arrangements that make returning both economically rational and administratively straightforward, reducing friction for experienced leadership to re-enter the UK market.

Finally, commission a rolling annual assessment of the "depth-of-bench" gap in critical growth disciplines such as enterprise sales, revenue operations, and growth marketing. By segmenting this analysis by sector and region, policymakers can build a robust evidence base to guide targeted investment in talent infrastructure and address specific capability shortages across the innovation economy.

20

NORMALISE SECONDARY LIQUIDITY AND OPEN PRIVATE MARKETS TO EVERYONE

Based on conversations with Jeff Lynn, Co-founder of Reach Public Europe (formerly Seedrs) and Founder of the Startup Coalition

Editor's Prelude

Jeff Lynn co-founded what is now Reach Public Europe, the first regulated equity crowdfunding platform in the world, and has spent fifteen years working on the policy and structural conditions for private capital markets. His chapter addresses a structural driver of premature exits that receives almost no attention in UK capital policy: founders now stay private for ten to fifteen years, and the accumulation of paper wealth against real financial obligations creates rational pressure to accept an acquisition that converts uncertainty into certainty, even when selling early destroys the company's potential.

Why Exits Happen Later and What That Means

One of the most consequential things we could do for the UK startup and technology ecosystem is to both normalise and promote the

structures around liquidity for founders and employees during the journey of building a company, not only at the point of exit.

This runs against a traditional set of views that says nobody should make any money until there is a complete exit, whether that is an IPO or a trade sale. I believe that view is antiquated, and it is actively damaging the ecosystem.

The simple reality is that exits happen much later now than they once did. If we were operating in a world where companies reached IPO within three to five years, we might be having a different conversation. But IPOs, particularly in the UK and particularly for technology businesses, are extremely challenging. At the same time, the availability of private capital has grown enormously, which means businesses stay private longer. That is excellent for company-building, because it allows businesses to grow with supportive investor bases. But it also means the natural point at which a founder or employee would historically have achieved liquidity, the public market, no longer exists for most companies.

The consequence is a mounting pressure to sell early. When founders and employees work year after year, often for sharply below-market salaries, watching the paper value of their holdings appreciate materially but unable to do anything with it, there is an entirely rational temptation to pursue an exit before the company has reached its full potential. This is not the sole reason the UK has a tendency to sell companies too early, market size and the value of partnerships with larger international firms play a role too; but the desire for liquidity in the absence of public markets is a large factor.

The Motivation Myth

There is a persistent concern that if founders achieve meaningful wealth before the company is fully built, they will lose motivation. In my experience, this fear is vastly overstated. For the vast majority of employees, the amounts involved are not generational wealth. They are amounts, one hundred thousand, half a million, a million pounds, that can take enormous pressure off people who have been accepting

below-market salaries for years and who now have mortgages, families, and obligations. That kind of liquidity does not cause people to quit. It enables them to stay. It removes the rational calculation that says they should go take that job at Google.

Even for founders who achieve larger sums, the pattern is remarkably consistent: the people driven enough to build a company to material value are not the people who hang it up when they get some money. They keep building. And they take a meaningful portion of that wealth and reinvest it into other founders and other businesses. Nikolay Storonsky at Revolut is a perfect example. He has taken material money off the table. Has it diminished his ambition for Revolut? Absolutely not. But he has set up a venture fund and done extensive angel investing, putting capital back into the ecosystem. That is the virtuous circle Silicon Valley is famous for, and we are beginning to see it in the UK too.

The Structural Solution: Secondary Markets

The structural infrastructure for secondary liquidity is developing, though it has further to go. When I was building Seedrs, now Reach Public Europe, we launched one of the earliest secondary markets for private company equity, and it continues to operate effectively. We are also seeing the emergence of more institutionalised solutions like Pisces, a regulated private secondary market associated with the London Stock Exchange. More and more funds and other sources of capital are interested in buying on a secondary basis.

One of the difficult technical challenges with secondary markets for private companies is disclosure. Private companies cannot be expected to maintain public-market levels of transparency simply to facilitate secondary trading. The regime has to be comfortable with a degree of caveat emptor, with information asymmetries that the buyer accepts as part of the asset class. This requires a specific regulatory approach that acknowledges the inherent differences between public and private markets. We are making progress, but there is further to go.

The Cultural Barrier

The bigger obstacle, frankly, is cultural. There are two strands to this aversion, one legitimate and one less so.

The legitimate concern comes from early investors who feel it is unfair for founders to achieve liquidity while investors remain locked in for ten or fifteen years. I have some sympathy for this view, and I think the answer is that secondary liquidity should be shared. If founders are finding liquidity for themselves, they should be looking for similar partial liquidity for their early investors. When that norm is established, the legitimate concern is largely addressed.

The less legitimate aversion is what I would describe as a Calvinist or hair-shirt view of entrepreneurship: the romantic notion that founders should be starving artists until the great exit. I find this misguided. Building a business is a long, complicated, messy process that happens alongside the practicalities of life, family, health, financial obligations. Taking some money off the table along the way, enough to fund a life and perhaps invest in other businesses, is a normal and good thing to do. It benefits everyone.

The single most effective step toward shifting this culture would be for five to ten of the most respected investors in the UK ecosystem to start talking publicly and openly about secondary liquidity as a normalised concept. Venture capital, despite being an innovative industry, is remarkably prone to following established norms. If the people at the top of the stack endorse founder and employee liquidity, the rest of the ecosystem will shift relatively quickly.

Opening Private Markets to Retail Investors

The other side of the capital availability equation is retail participation in private markets. In 2009, I co-founded what became the first regulated equity crowdfunding platform in the world. Our goal was to create a real online marketplace for investing in private companies. During our ten years of independent operation, more people invested through our platform alone than had ever previously invested in a private company in the UK.

We achieved this by removing the barriers that had historically limited private market investing to the wealthy: instead of requiring tens or hundreds of thousands of pounds, we gave people the chance to invest whatever amount they were comfortable with, whether that was a thousand pounds, a hundred, or ten. The principle was ruthless transparency about risk. This is a high-risk asset class. Most investments will fail. The only sensible strategy is diversification. If you have a thousand pounds to invest, put a hundred into ten businesses, not a thousand into one.

What I found, consistently, is that retail investors are far more thoughtful and careful than the conventional wisdom suggests. When you tell people this is high-risk and they should only invest what they can afford to lose, they believe you. Where problems arise is when risk is mis-sold, when people are told an investment is safe, or a sure thing, or akin to a savings product. The answer is not to exclude people from the asset class. The answer is ruthless transparency and proper diversification guidance.

The benefits are substantial. New pools of capital become available to entrepreneurs. The supply of entrepreneurship itself is elastic: as more bright people see that capital is accessible, more of them will pursue the innovative businesses they have been contemplating. And wider participation creates social cohesion. It is no longer solely about tech billionaires, but about ordinary people sharing in the wealth that innovation creates.

Political Leadership and Regulatory Balance

None of this happens in a vacuum. The regulatory environment matters enormously, and the UK has, by and large, done a good job over the past fifteen years of balancing consumer protection with fostering innovation. The FCA sandbox, which allowed fintech businesses to test new financial products in controlled environments, was a world-leading initiative that directly contributed to the UK's strength in financial technology.

But regulatory balance requires constant political attention. Without it, regulators will naturally drift toward greater restriction, because that is what regulators do. The period following the 2016 referendum was instructive: politicians did not change their views on innovation, but they were distracted, and in the absence of political pressure, regulatory creep set in quickly. It took a renewed government focus on growth to push back again and reassert that innovation mattered.

This is why organisations like the Startup Coalition, which I co-founded, exist. Startup founders do not have the time or resources to engage in detailed policy work. Large technology companies can afford entire lobbying teams; a ten-person startup cannot. The Coalition operates as a quiet, behind-the-scenes group that goes into Westminster and Whitehall to explain why specific pieces of legislation do not work as intended. To my surprise, it has been remarkably effective. Senior civil servants have been keen to listen and to act on the ecosystem's concerns.

The lesson is that the UK's regulatory environment is an asset, but it is a fragile one. It requires constant, informed advocacy from the people who understand what the ecosystem needs, and it requires political leaders who are willing to push regulators out of their comfort zone in the service of growth. Regulation should be nuanced and targeted, calibrated to the level of risk in each sector, flexible enough to adapt as technology moves, and designed through broad legislative frameworks that can be adjusted at the level of statutory instruments rather than requiring new Acts of Parliament for a change. The goal is not deregulation. It is intelligent, adaptive regulation that protects consumers without strangling the companies best positioned to create value.

———

Editor's Synthesis

The secondary liquidity point is not about rewarding founders prematurely. It is about removing the rational pressure to sell that builds over a decade of working for below-market salaries while watching paper values rise. Lynn's evidence on founder motivation after liquidity events runs counter to the conventional concern: the people driven enough to build a company to material value are not the people who stop when they achieve some personal security. The cultural obstacle is not that founders will lose motivation. It is the Calvinist strand of the investment community that treats early founder liquidity as morally problematic regardless of its practical effects. The practical implication is that the most effective single step is not regulatory. Lynn is explicit: five to ten of the most respected investors in the UK openly discussing secondary liquidity as healthy would shift the norm faster than any legislation. Retail access to private markets expands the capital available to entrepreneurs while expanding the population of people with a direct stake in the success of UK technology companies.

Lynn's evidence points toward one near-term intervention: accelerating the Pisces secondary market programme, with clear entry criteria and liquidity protections, and extending access to retail investors, which would normalise private company shares as a standard asset class and remove one structural driver of premature exit.

Action Takeaway	Accelerate the Pisces secondary market framework with clear entry criteria and liquidity protections, and extend access to retail investors so that private company shares become a standard asset class.

21

BACK BOLD BETS EARLY: WHY GOVERNMENT MUST INVEST BEFORE IT HAS CERTAINTY

Based on conversations with Kate Bingham,
Former Chair, UK Vaccine Taskforce 2020;
Managing Partner, SV Health Investors

Editor's Prelude

This chapter addresses an earlier and distinct failure: the framework mismatch that prevents government from making early-stage commitments at all. Kate Bingham argues from VC practice that specification-first logic – the standard framework for public expenditure – is structurally incompatible with frontier technology investment, where the outcome cannot be defined in advance and the value of early commitment is precisely that it is made before the outcome is certain. Her chapter proposes staged commitment as the specific alternative framework, identifies the accountability asymmetry that makes caution individually rational even when it is collectively damaging, and connects this to active current decisions in AI, energy, and advanced manufacturing where the UK faces the same structural choice it faced in vaccines.

Certainty Is Not Available at the Moment That Counts

As a VC, I spend most of my time making decisions under conditions where the outcome cannot be specified in advance. That is not a failure of analysis. It is the defining condition of frontier investment. The technologies most worth backing are precisely those where the outcome is uncertain – because certainty, in investment, is already priced in.

This is equally true for government. The technologies most worth backing are precisely those where the specification cannot be written in advance, where the outcome is genuinely uncertain, and where early commitment is the mechanism by which you shape the outcome rather than merely purchase it.

The Framework Mismatch

The standard framework for public expenditure requires a defined specification before commitment. You describe what you want, you invite bids, you select the best offer against your specification. This is a reasonable framework for purchasing known goods. It is structurally incompatible with frontier technology investment.

The alternative is staged commitment: an initial commitment to develop and compare candidates, with decision points at defined milestones, authority to cut underperformers and increase allocation to leaders, and a final commitment that is made when – and only when – sufficient evidence has been generated. This is how VC works. It is how the VTF worked. It is not how standard government procurement works.

Applying this systematically to frontier technology investment requires a different accountability framework – one that measures the quality of the decision-making process at each stage rather than the outcome of any individual bet. A portfolio approach that expects most bets to fail is rational if the ones that succeed are sufficiently valuable. A framework that punishes any individual failure will rationally produce a portfolio of safe bets that collectively deliver nothing.

The Accountability Asymmetry That Makes Caution Individually Rational

The structural reason government defaults to specification before commitment is not ignorance of the alternative. It is accountability asymmetry. An official who commits to a programme that subsequently fails faces scrutiny, criticism, and potential career damage. An official who declines to commit – or delays commitment until certainty arrives, by which point it is too late – faces no equivalent accountability for the cost of that inaction.

This asymmetry is a design choice and it can be redesigned. In Long Shot I put it plainly: I would also punish for failing to act. The accountability framework must measure inaction as well as action. An official who failed to commit to a frontier technology investment when the evidence warranted it, and who watched another country deploy that technology first, should be as accountable for that failure as one who committed and was wrong.

What This Requires in Practice

The UK faces active technology investment decisions right now that are structurally identical to the vaccine procurement decisions of 2020: AI infrastructure, advanced energy technologies, sovereign manufacturing capability in strategically critical sectors. In each case, the outcome cannot be specified in advance. In each case, early commitment shapes the outcome. In each case, the default framework will produce delay, and delay will produce loss.

The commitment instruments that allow earlier entry already exist within current procurement law. Framework agreements allow multi-supplier commitments without a final selection. Structured options allow commitment to a development pathway without commitment to a specific outcome. Direct award with parallel development – the VTF's core instrument – is available for programmes that can demonstrate strategic necessity. The instruments exist. What is missing

is the explicit authorisation to use them for frontier technology investment, and the accountability framework that makes doing so professionally safe.

Editor's Synthesis

This chapter identifies a structural incompatibility between the framework used for public expenditure and the conditions under which frontier technologies are developed. The existing model requires specification before commitment. That model works when government is purchasing known goods. It fails when the technology being procured does not yet exist. Venture capital solved this problem decades ago through staged commitment. Early investment funds exploration. Evidence generated through development determines which candidates receive additional resources. Failure is expected within the portfolio rather than treated as an accountability event.

Government procurement still operates under the opposite assumption. Officials are asked to guarantee outcomes before evidence exists. The rational response is caution. The result is delayed commitment, which in frontier technologies usually means losing the strategic position entirely. The institutional fix is not simply new funding. It is a change in accountability design. Officials must be evaluated on the quality of decisions made under uncertainty rather than the outcome of individual investments.

If the UK intends to compete in AI infrastructure, advanced energy systems, and strategic manufacturing, it must formalise staged commitment as a standard investment framework. Without it, the government will continue attempting to purchase technologies that only exist after someone else has already built them.

Action Takeaway	Develop an explicit staged-commitment investment framework for designated frontier technology priorities. Establish a ministerial investment committee with authority to approve early-stage commitments outside standard procurement timelines. Redesign accountability to measure inaction as well as action. Authorise framework agreements, structured options, and direct award with parallel development as standard instruments for frontier technology investment.

22

TURN PRIVATE EQUITY INTO PRODUCTIVITY ENGINEERING AND CRACK THE US MARKET

Based on conversations with Nic Humphries, Senior Partner at Hg Capital

Editor's Prelude

Nic Humphries returns in this chapter to make a case that complements his equity culture point: that venture capital, important as it is, addresses only one part of the UK's productivity gap. Private equity, properly understood, is not financial extraction but operational improvement applied to existing businesses at scale. His chapter examines the Hg Capital model, which has achieved a ninety-five per cent success rate in helping European portfolio companies crack the US market, and contends that the discipline of applying technology to existing business processes at growth stage is a distinct and undervalued form of innovation.

Not the Next Microsoft: A Different Kind of Innovation

When people think about technology innovation in the UK, they think about finding the next shiny thing. The Sinclair ZX Spectrum. The BBC Micro. Acorn chips. ARM. All of these were decisive, and venture capital is the right instrument for pursuing that kind of

breakthrough. But it operates on a one-in-twenty success ratio, with the other nineteen disappearing. Investors, public markets, and the broader ecosystem get disenfranchised when nineteen out of twenty bets fail to become the next Google.

I am not saying stop that. Venture capital is a great way to generate frontier innovation, and the UK should continue to back it. But there is a different and complementary game to play with more mature businesses, and it requires a different philosophy.

The Buffett Philosophy Applied to Software

What we have tried to do at HG is apply something closer to Warren Buffett's investment philosophy to technology. Buffett buys franchises with real moats, businesses with deep customer loyalty in a particular area, and holds them for decades, compounding returns over time. He does this with Coca-Cola, McDonald's, and Apple. You can apply exactly the same thinking to technology by finding businesses that do a really valuable thing for a niche set of customers, where those customers depend on the product and are going to continue using it for years.

The problem historically with private equity has been what happens after the acquisition. Traditional PE takes a lovely business and sucks the life out of it: over-using, slashing costs, maximising short-term margins, and selling within three years. If instead you adopt the second part of the Buffett philosophy, think long term about a compounding business that will make you returns over decades, not just a few years, you run that business in a different way. You invest in continual innovation, because if you want to keep generating returns for a long period, two-thirds to three-quarters of the company's revenue a decade from now will come from new products that you have invented and launched. It is that simple, and it is the opposite of maximising the current product set.

£10–20M	**Revenue ceiling where UK software companies stall without a scaling partner**
Revenue Stall	Hundreds of excellent UK software businesses plateau at £10 to £20 million revenue for want of a US market playbook.

Where to Find These Businesses

We have developed a methodology that systematically avoids the risks we cannot control. Consumer-oriented businesses tend to be driven by fashion, sentiment, or the economic cycle. We avoid them. We focus on B2B businesses that serve other businesses, because they are more protected from economic shocks.

Within B2B, we look specifically for businesses that are embedded deep in customer workflows and data. Once a user has spent months or years learning a piece of software, integrating it with other systems, and building it into their core operations, they are extraordinarily unlikely to switch. We focus on back-office, mission-critical applications where the software is essential to the customer but not the most interesting thing in their life. Think of a plumbing firm that employs fifteen people. They need payroll software that calculates taxes correctly a single month, no exceptions. It is critical, but they want to spend ten minutes on it, not five hours. They will pay a subscription and they will use it for ten, fifteen, twenty years as long as you provide a good quality of service. That business, the payroll provider, is a consistent, steady grower for decades.

Access Group is a good example of what this philosophy produces at scale. It is a largely UK-based business that has expanded across a wide range of verticals within the UK rather than going international, and it has reached a billion pounds in revenue. That is one legitimate path for a niche software business: go wide within your home geography rather than deep internationally.

The Three Expansion Routes

Almost any country in Europe will support a ten or twenty million revenue business in its niche. Almost no country in Europe will support a hundred or two hundred million revenue business scaling fast in a single market. So once you have built a strong position in your home country, you face three choices.

First, you expand into adjacent segments within your current geography. Access Group did this brilliantly in the UK. Second, you expand into neighbouring European countries. This depends entirely on your vertical: if you are in tax compliance or payroll, the regulatory environment in France is completely different from the UK or Germany, and the expansion is extremely difficult. If you are in engineering software, it is relatively straightforward. Third, you skip Europe and go directly to the United States. We have generally found it easier to expand into the US than into France or Germany, which surprises people but is a consistent pattern in our experience.

Closer Is Not Always Easier

European founders naturally assume they should expand into neighbouring countries first. The logic seems obvious: France and Germany are an hour away, they are large markets, and they are European. But proximity can be deceptive. Could you pick three more different countries than the UK, Germany, and France? I am not sure you could. Spain and Italy are different again.

We discovered this vividly when we took a product from Norway to Sweden. These are countries within miles of each other, with a shared heritage. We got almost no usage in Sweden. The reason was that the end users had learned in school to use the interface in a different way. It was the equivalent of one group reading left to right and the other reading bottom to top. Once we understood this and changed the user interface, the product worked. But without going and sitting with the actual users, watching exactly how they worked, we would never have found it. We came with a Norwegian mindset.

They came with a Swedish one. The cultural assumption that close means similar nearly killed the product.

London, is closer to New York than it is to Madrid or Munich in business culture. The legal frameworks are similar. The sales culture is similar. The language is shared. Founders should assess product-market fit based on how their actual users behave, not on geographic distance. As a rule of thumb, you want eighty per cent or more fit between your existing product and what the US market needs. If you have to rebuild half the product, the US may not be the right move, and expanding into adjacent UK verticals or selected European markets might be more productive.

Cracking the US Market: The Playbook

Going to the US has been the death of most European businesses. Within our portfolio at HG, we take sixty to seventy per cent of our businesses from Europe to the US with a ninety-five per cent plus success rate. It is not genius. It is doing basic things repeatedly and well.

First, lock down your home market. Your competitive position must be strong, your franchise secure, and your business generating enough cash to fund a major expansion. If you are fighting day to day at home, do not attempt the US. You cannot defend your home turf and launch a major international expansion simultaneously.

Second, spend years preparing. You as the principal should be visiting the US on a regular basis, attending trade shows, meeting competitors, talking to potential partners, and ideally beginning to win customers on a flyover basis. This is not a six-month exercise. It is a multi-year, ideally five-plus year programme of building knowledge, relationships, and market understanding on the ground. Too many founders do six to twelve months of surface-level research and convince themselves they understand the market. They do not.

Third, when you go, burn the boats. Do not send two or three people to New York and hope for the best. That is what I call the one man and a dog strategy, and while it occasionally works if you happen

to have put a genius on the ground, it is not a recipe for consistent success. Instead, commit a quarter to a third of your entire company's resources to the US within the first year to two years. If you have three hundred people in the UK, you should be planning to have a hundred in the US within that timeframe. The alternative to organic entry is M&A: buy a US business that is thirty to forty per cent of your own size, a deal large enough that you cannot afford for it to fail, which means you will do due diligence as if your life depends on it.

Editor's Synthesis

The case that private equity is productivity engineering deserves more attention than it typically receives in UK innovation policy discussions, which tend to focus on startups and venture capital while treating the existing base of established businesses as a separate economic concern. Humphries' point is that the largest returns to technology adoption often come not from founding new companies but from applying proven technology to existing businesses that have not yet made the transition. The HG model demonstrates that this can be done systematically and exported: European companies with strong underlying businesses but limited technology adoption can be transformed into US-competitive enterprises with the right operational support. The implication for UK industrial policy is that growing technology adoption in the existing business base, not just the startup cohort, is a distinct and measurable contribution to economic performance.

Humphries' analysis makes one point that UK industrial policy has not yet absorbed: private equity's role as a productivity instrument in existing businesses deserves the same recognition as venture capital, and the operational capability required to help mid-market companies adopt technology at scale matters as much to the economy as the capital that funds new companies.

PART IV

DEEP TECH, QUANTUM & THE FRONTIER



The chapters in this Part build the evidence for Shift 5: keeping frontier technology companies in the UK through the Tornado stage. They provide the deep-tech-specific case for Shift 7: that the UK's frontier advantages are geographically concentrated and must be built on, not dispersed.

A researcher at a UK quantum computing company opens the news to find that a US competitor has raised a billion dollars on technology her team's published papers made possible. Her company is still waiting on a grant decision.

The Moment Before the Tornado

The UK is currently leading the world in several of the most consequential technology races of the next decade. Quantum error correction. AI infrastructure design. Synthetic biology platforms. In each case, the lead is real, technically specific, and finite. In each case, the window during which the UK's advantage is exploitable rather than merely possessable is measured in years. The chapters in this Part were written by people who are inside those races. They are not writing about the future. They are writing about what is happening now, at laboratories in Cambridge and Oxford and in the specific gap between what the UK has built and what it has so far been unable to keep.

Steve Brierley's account of the quantum error correction race is the most technically specific piece of public writing available on the UK's strategic position in quantum computing. Riverlane employs over one hundred of the approximately five hundred people globally who understand quantum error correction at a deep technical level. That concentration emerged from a specific confluence: the UK's national quantum programme launched in 2015 and Cambridge's world-leading semiconductor design capability. Google reached the error correction threshold in 2024. From that inflection point, progress will accelerate. The UK's window of maximum advantage is not decades. Brierley estimates it in single-digit years.

Hermann Hauser's provocation is the one I find most productive

and most politically avoided. The UK is not losing the deep technology race because it fails to invent things. It is losing it because it fails to deploy them. The electricity analogy is not a metaphor. The societies that captured most of the economic value from electrification were the ones that built the infrastructure to deploy electricity at scale across their entire economy, fastest. They were not primarily the ones with the best electricity research. AI is following the same pattern. In 2025, companies across the world were spending close to a trillion dollars in AI-related capital expenditure. The UK debate focused on foundation models. The value race was about deployment, sector by sector, at speed.

Geoffrey Moore's two chapters provide the analytical framework that makes Hauser's point legible in operational terms. The Bowling Alley is where technology proves itself in niche markets. The tornado is where it goes horizontal and the winner captures the architecture of the next generation. The UK's defining pattern is to sell at the Bowling Alley. Autonomy, Graphcore, Oxford Ionics, the genomics companies: each was acquired at the phase of maximum UK advantage and minimum value relative to potential, by buyers who understood that the tornado was forming. Moore's framework is not retrospective analysis. It is a real-time diagnostic tool for identifying, before an acquisition decision is made, whether a tornado is forming and what the cost of selling before it arrives will be.

Gerald Mullally's contribution surfaces the tension in this Part that most needs naming. Hauser argues for sovereign retention and deployment at scale. Gerald Mullally argues that the mechanism that could enable both, government as anchor customer rather than passive investor, is structurally unavailable in the UK because procurement for frontier technology sits in DSIT, a department that does not need what it funds. The departments that do need frontier technology, Defence, Health, Transport, the intelligence agencies, do not have the institutional connection to the frontier companies that could address their requirements. An advanced market commitment from the Ministry of Defence for a specified quantum sensing capability

would change the fundraising environment for every relevant UK company overnight. That mechanism exists. The institutional design to use it does not.

My position on the tension between Hauser and Gerald Mullally is that they are describing the same problem from different ends. Hauser identifies what is being lost. Gerald Mullally identifies why it keeps happening. The highest-use intervention in this Part is not a new funding programme. It is a structural change: move procurement authority for frontier technology out of DSIT and into the departments that actually need it, with explicit cross-departmental coordination mechanisms that give companies building in quantum, AI, and synthetic biology a real government customer before a foreign acquirer arrives with a cheque. That change does not require new money. It requires institutional redesign that someone with authority needs to decide is worth the political cost of making.

Where the Featured Individuals Disagree

Moore's framework says hold through the Bowling Alley: the Tornado is forming and the company that sells before it arrives transfers all the value it created to its acquirer. Hauser's lived experience says eleven companies, all of which became unicorns, all of which ended up headquartered in the United States despite his best efforts to keep them. The disagreement is not about theory. It is about whether the institutional conditions for holding exist in the UK today. Moore is describing what founders should rationally choose given competent growth capital access. Hauser is describing what they actually choose given the capital environment that currently exists. The editorial position is that Moore is right about the framework and Hauser is right about the facts. Closing the gap between them is the entire point of Part III.

23

CONQUER THE ERROR CORRECTION RACE AND ESTABLISH UK QUANTUM LEADERSHIP

Based on conversations with Steve Brierley, CEO, Riverlane

Editor's Prelude

The single biggest technical challenge in quantum computing is error correction. The UK already leads the world in solving it. Steve Brierley's company Riverlane employs over a hundred of the estimated five hundred global experts in quantum error correction, roughly twenty per cent of everyone who knows how to do this at the frontier level. That concentration exists because of a rare confluence: a national quantum programme launched in 2015 and world-leading semiconductor design expertise concentrated in Cambridge. Error correction is not a niche subfield. It is the gating technology that every quantum computer on earth will need before it becomes commercially useful, regardless of qubit modality or country of origin. Losing this lead would mean losing the most strategically valuable layer of the quantum computing supply chain. The window to hold it is measured in years.

Why the UK Leads

The best quantum computers today can perform about a thousand operations before errors overwhelm the device. To do something commercially useful, we need to reach trillions of error-free operations. That gap, from a thousand to a trillion, is the central challenge of the entire quantum computing industry, and it is solved by a technology called quantum error correction.

Error correction requires building dedicated real-time processors: chips that take data from a running quantum computer, determine where the most likely error is, and send back a correction in real time. This is a real-time inference problem, and it is extraordinarily difficult to implement at the speeds quantum computing demands. Every quantum computer needs this technology, regardless of whether it uses superconducting qubits, ion traps, neutral atoms, or silicon spin qubits. It is a universal requirement.

The UK leads in this field because of a confluence that exists nowhere else: a massive national quantum computing programme that ramped up in 2015, and deep semiconductor chip design expertise concentrated in Cambridge. Riverlane was able to bring together the world's best minds in quantum error correction research with engineers who can design and build real-time chips. That combination created a company that now employs over a hundred of the approximately five hundred people globally who understand quantum error correction at a deep level.

20% **UK QEC Share**	**Share of global quantum error correction experts employed in the UK** Riverlane alone employs over 100 of approximately 500 people globally who understand this field at deep technical level.

The Inflection Point

Last year, Google was the first to reach what is called the error correction threshold, the break-even point where physical qubit error rates are good enough that adding more qubits through error correction actually improves performance rather than adding noise. Others have followed. This threshold is why the industry is so excited about error correction right now. The two prerequisites, physical qubits good enough and in sufficient number, and real-time error correction processors capable of operating at the required speed, have been developing in parallel and are converging now.

From here, progress will accelerate dramatically. We are talking about moving from a thousand to a million error-free operations within a few years. Breakthroughs that Riverlane has made show that we can extract a thousand times more quantum operations from the same physical device. That acceleration of computational power is powerful for the entire industry.

What the UK Must Do

The biggest constraint is talent. There are not many people in the world who understand quantum error correction, and the UK must compete aggressively to attract and retain them. If I were in charge of the country, I would staple a visa to every PhD at a top university. When talented people come to the UK early in their careers, they put down roots: they make friends, they fall in love, they start families. That investment pays back enormously. Riverlane has been a direct beneficiary of immigration of exceptionally talented people, and the UK's ability to continue attracting them is existentially important.

Brexit sent exactly the wrong signal. It marketed the UK as unwelcoming at precisely the moment when openness was the competitive advantage. The current geopolitical moment is a once-in-a-generation opportunity for the UK. The United States is creating uncertainty around immigration and making talented people anxious about their status. The UK can position itself as the opposite: stable, welcoming, and serious about retaining the best minds in the world.

Beyond talent, the Cabinet Office must designate quantum error correction as a strategic procurement priority, with DSIT and the MOD required to place early contracts with UK quantum companies before commercial viability is fully proven, exactly as the Vaccine Taskforce committed to manufacturing capacity before a single vaccine had been approved. Patrick Vallance and others understand the principle, but it has not yet been written into a procurement mandate. Government should be the first customer for quantum technology, not the institution that waits until the company has already found one elsewhere. That means accepting that some startups will fail to deliver, and that nobody should lose their job because a procurement bet on an early-stage company did not pay off. You should not do this for the entire budget, but for a meaningful portion, government procurement as technology adoption would be powerful.

1K → 1T

Error Gap

The Quantum Error Correction Gap

The best quantum computers today perform roughly one thousand error-free operations. Commercial utility: drug discovery, materials design, logistics optimisation, requires trillions. That is a gap of nine to ten orders of magnitude. Quantum error correction is the technology that closes it. Riverlane, based in Cambridge, employs over 100 of the approximately 500 people globally who understand this field at a deep technical level. The UK's lead is real. It is also finite.

THE WINDOW

UK leads globally now. The acquisition clock is already running.

Building a Deep Tech Company Ahead of the Market

Riverlane has spent six or seven years building error correction solutions for a technology that was itself still being developed. We were anticipating the market, building for where quantum computing companies would be in 2028 and 2029. That was deeply contrarian. At the beginning, many in the industry argued that error correction would not be needed, that quantum computers performing a thousand operations would be commercially viable on their own. We took a different view: the real commercial market would come at trillions of operations, making error correction essential.

Building ahead of the market means you cannot rely on traditional product development. You cannot go out and ask customers what they want, because they are telling you they do not want what you are building. What worked for us was projecting the trajectory of the market, a kind of Moore's Law for quantum, and identifying the first major inflection point where error correction would create value. We narrowed our focus to that inflection point and worked backward: if we must win at that moment, what do we need to build today? That discipline, starting from the end vision, narrowing to the critical inflection, and reverse-engineering the path, is the essence of building a deep tech company.

Editor's Synthesis

Brierley's chapter is simultaneously a description of a strategic asset and a warning about how quickly it can be lost. The concentration of global quantum error correction expertise in Cambridge exists because of a rare and unrepeatable combination: a national quantum programme launched in 2015 and deep semiconductor design expertise already present. Neither of those conditions can be manufactured in a different location. Brierley's view is that protecting the lead that now exists, attracting the talent that sustains it, and positioning the UK

as a destination of choice for the global talent pool are the actions his evidence most directly points toward, particularly at a moment when US immigration policy is creating uncertainty among exactly the people Riverlane needs. The government-as-early-customer point is practically important in Brierley's account: defence and public procurement buying from UK quantum startups before the technology is proven commercial would create the domestic demand signal that sustains frontier companies through the years when they are building ahead of the market.

If Brierley's assessment of the UK's global uniqueness in quantum error correction holds, the implication is direct: treat the lead as a strategic national asset, with protected public funding, early government procurement, and acquisition review under the National Security and Investment Act before a foreign cheque arrives.

Action Takeaway	Protect the UK quantum error correction lead by treating it as a strategic national asset, with protected public funding and acquisition review under the National Security and Investment Act.

24

WIN THE DEEP TECHNOLOGY RACE BY ROLLING OUT, NOT JUST INVENTING

Based on conversations with Dr Hermann Hauser, FRS, KBE, Co-founder of Amadeus Capital Partners and Architect of the Scale Up Europe Fund

Editor's Prelude

Hermann Hauser co-founded Amadeus Capital Partners and has backed companies at the frontier of AI, quantum computing, and synthetic biology for three decades. His chapter addresses the UK's consistent failure to capture the economic value of the technologies it invents, using AI, quantum computing, and synthetic biology as case studies, each a sector where the UK holds a leading research position it is converting into value for other economies. His central claim is that the race in AI will not be won by whoever builds the best foundation models but by whoever deploys AI fastest across every sector of the economy, and that the UK is currently losing that race.

AI: The Electricity Analogy

I always liken artificial intelligence to electricity. When electricity was first demonstrated, people were terrified. There is that famous incident where they electrocuted an elephant in New York to show how dangerous it was. But the societies that benefited were not the ones that feared electricity. They were the ones that rolled out electrification across every sector of the economy, so that when electric motors transformed manufacturing, transport, and daily life, they were already positioned to capture the value.

AI is the same. The critical issue is not foundation models. Europe has access to open-source models, including those from China, and Mistral provides a European option. The game is not about building our own foundation models, although that would be ideal. The game is about the rollout of AI across every sector of the economy. The Americans are doing this with extraordinary speed. They are showing precisely how AI produces productivity gains in healthcare, finance, manufacturing, logistics, and every other sector. We are standing like rabbits in the headlights.

We do not need to invent the foundation models. We need to invest massively in the application of AI to our industries, learning from the productivity gains that American companies are already demonstrating. Every month of delay is a month in which American firms extend their lead, not in the science of AI but in the economic value they extract from it. The rollout, not the research, is where the race will be won or lost.

11	**Unicorn companies backed by Hauser, all now US-headquartered**
Unicorns Lost	Eleven unicorns from one investor, zero retained in the UK. A proof of concept for the Conversion Gap.

Quantum Computing: The UK Retention Lesson

In quantum computing, the UK has outstanding companies and a strong research base. But the pattern of loss repeats itself with painful predictability. IonQ, an American competitor, has done a brilliant job of financial marketing. Its CEO managed to get the company to a market capitalisation of fifteen to twenty billion dollars on Nasdaq, despite not having the best technology. What Nasdaq gave IonQ was currency, the ability to use its inflated market capitalisation to acquire the technologies it lacked.

The question is whether the UK will build the institutional infrastructure to keep companies like Quantinuum independent and UK-headquartered through the tornado. The alternative is that the next generation of Nasdaq-listed foreign competitors will use their inflated capital market valuations to repeat what IonQ did to Oxford Ionics.

The government has the regulatory tools to prevent a repeat. The National Security and Investment Act exists precisely for this purpose. But regulatory intervention alone is insufficient. The right response is to ensure that companies like Riverlane, Quantinuum, and the next generation of UK quantum leaders have access to the growth capital they need to remain independent through the Bowling Alley, so that the question of foreign acquisition never becomes the only viable exit. That capital is not yet reliably available, and the political will to deploy it at scale remains untested. Whether it materialises before the next foreign cheque arrives will determine whether the UK wins the quantum race or merely runs it.

The lesson is not that this acquisition was unusual. It is that this is the default outcome for British deep technology company that reaches the point where it needs hundreds of millions in growth capital. Without a domestic source of that capital, which is precisely what the Scale Up Europe Fund is designed to provide, the pattern will repeat across quantum, across synthetic biology, across frontier sector where the UK has a leading position.

Synthetic Biology: The Next Frontier

Long term, I believe synthetic biology will be the most important technology of all, because it concerns our own biological selves and our health systems. The UK has strong foundations here. Cambridge led the world in genetic sequencing, with roughly 80 per cent of global sequencing done on machines originating from that ecosystem. But the Cambridge company that achieved that breakthrough was, inevitably, acquired by an American buyer. The science stayed in Cambridge, at least initially. The control, the strategy, and the long-term economic value did not.

A new opportunity is emerging in protein sequencing, which may be more important than gene sequencing. Proteins are the functional machinery of biology, understanding their structure and behaviour is the key to drug discovery, disease treatment, and the broader transformation of healthcare. If the UK can maintain its position in this emerging field and, critically, provide the growth capital to keep the companies that commercialise it, it has an opportunity to lead a sector that will define healthcare for the rest of the century. But the window is finite. Other countries are investing aggressively, and the pattern of British invention followed by American acquisition will repeat unless something structural changes.

The Interdisciplinary Opportunity

The most exciting investment opportunities sit at the interface of these three technologies. Using AI to accelerate synthetic biology, predicting protein structures, designing new molecules, optimising drug candidates, is already producing results that would have been unimaginable five years ago. Using quantum computing to simulate molecular interactions that are beyond the reach of classical computers could transform drug discovery and materials science. The companies that operate at these intersections, combining capabilities from AI, quantum, and synthetic biology, will be the most valuable technology companies of the next generation.

The UK is unusually well positioned to support interdisciplinary work of this kind, because it has real strength in all three fields and because its research ecosystem, particularly in the Cambridge and Oxford clusters, encourages the cross-pollination of ideas between disciplines. Supporting interdisciplinary projects at these intersections is one of the highest-use investments the UK can make. But it requires patient capital, tolerance for the longer timelines that frontier science demands, and the strategic conviction to back British companies through the growth stages where they are most vulnerable to foreign acquisition.

Editor's Synthesis

The electricity analogy is not decorative. Hauser is making a precise point about where economic value concentrates in a general-purpose technology cycle: not in the invention of the technology but in the speed and breadth of its application across existing industries. The UK's fixation on foundation model development, and on AI research output, is a misallocation of strategic attention. The productivity gains that will determine competitive position over the next decade are being captured by companies applying AI to healthcare, logistics, finance, and manufacturing, and the US is moving at a speed that makes the gap compound every month. The quantum acquisition point is equally precise: IonQ did not have the best technology. It had Nasdaq-listed currency that allowed it to acquire the technologies it lacked. Without domestic growth capital, UK quantum companies face the same structural vulnerability, regardless of how good their technology is.

Hauser's case resolves to a single strategic priority for the next five years: massive investment in applying AI across UK industries, not in building foundation models, combined with the growth capital required to keep frontier companies independent through the Bowling Alley stage.

25

TURN FRONTIER TECHNOLOGY INTO GOVERNMENT-GRADE ADOPTION

Based on conversations with Gerald Mullally, Former Senior Civil Servant and Quantum Technology Executive

Editor's Prelude

Gerald Mullally returns to address the government adoption side of the frontier technology problem. His chapter contends that the structural barrier to scaling UK deep technology companies is not only capital but procurement: DSIT, the department responsible for supporting frontier technology, is not a customer department and has never managed a large-scale, long-term technology programme. He proposes four structural changes: consolidating fragmented budgets, moving procurement to mission-driven departments, deploying advanced market commitments, and building an explicit technology sovereignty approach to acquisition decisions.

Stop Fragmenting Government Budgets

We are genuinely strong at the point where academic research turns into intellectual property and then scales to roughly a Series A company. That incubation economy works. What does not work is the next phase: scaling those Series A companies into globally leading businesses. By releasing the challenges at that transition, we could support the scaling of some of the most important innovation happening anywhere in the world.

The first issue, and the most fundamental, is that government takes whatever budgets it has and fragments them across as many companies as possible. The principle behind this is fairness: you do not want to be seen to prioritise any single provider, so you spread the money thinly across the entire ecosystem. That approach is valuable at the earliest stages, from invention through to Series A. After Series A, it becomes counterproductive to the point of being destructive.

The solution is straightforward in concept and difficult in practice: hold budgets together, make much more ambitious bets on a smaller number of companies in a smaller number of sectors, and accept that this means choosing. The analysis is less the problem than the confidence to decide. Government knows which sectors are strategically important and which companies within those sectors have real potential. What it lacks is the political courage to stand up and say: this is where we are going deep.

The current industrial strategy is a reasonable starting point, but it still covers a broad range of sectors. You could and should be more selective. Even if the sector framing remains broad, the critical decision is within each sector: do you support everybody thinly, or do you back a small number of companies with enough capital to reach global scale? The fragmentation occurs not at the level of sector selection but at the level of company selection, and it is at the company level that the damage is done.

Move Procurement to Customer Departments

One of the most material structural barriers in UK government is that frontier technology support comes primarily through the Department for Science, Innovation and Technology, which is not a customer department. DSIT has no mission that requires it to use the technology it supports. It exists to support the scaling of technology in the abstract, and its primary mechanism for doing so is grants through UKRI. That is different from a department like the Ministry of Defence, which procures technology because it needs that technology to achieve defence objectives.

The difference matters enormously. Defence does long-term, high-risk, large-scale procurements: Trident alone is a £52 billion programme spanning decades. That is precisely the procurement mindset that frontier technologies like quantum computing require: a view to 2035 or 2040, phased milestones, and the institutional capability to manage complex technical programmes over extended timescales. DSIT does not have that capability, because it has never needed it. Its civil servants have never done a large-scale, long-term procurement, and they are not going to start now without structural change.

In every other major economy, the United States through DARPA, France through its defence apparatus, Canada through its defence innovation programmes, frontier technology procurement sits within a department that has both a mission requiring the technology and the institutional capability to procure at scale. The UK needs to make the same shift: move the scaling of critical frontier technologies out of a grant-funding science department and into mission-driven customer departments that can procure them properly.

What Industry Must Do for Government

The responsibility does not fall entirely on government. As an industry, we need to do far more to support government adoption. First, we must understand government's missions and align what we

offer to how we will transform those missions. Too often, quantum companies and other deep technology firms simply promote the abstract potential of their technology without doing the hard work of explaining precisely what it will change in defence, healthcare, or security. If we do not make that case concretely, defence will not conclude that this is something it should care about.

Second, we must be transparent about milestones and performance. Government needs to be able to judge whether an investment is succeeding, and that means providing clear phasing, validate, integrate, scale, with measurable performance metrics at each stage. The industry has historically been reluctant to commit to hard metrics, and that reluctance erodes government confidence.

Third, and perhaps most companies building sovereign critical infrastructure need to accept a much closer, more open relationship with government than private companies would normally tolerate. That means allowing government insight into security posture, cyber resilience, insider risk, and physical security. It means clearing staff to the appropriate security levels. It means deploying into government infrastructure rather than expecting government to come to you. The boundary that frontier technology companies often maintain, partly from real security concerns, partly from a reluctance to expose the gap between promises and progress, needs to come down if government is to become a real customer at scale.

Advanced Market Commitments: Government as Customer, Not Investor

There is a mechanism that could transform the relationship between government and frontier technology companies, and we saw it work brilliantly during the pandemic. Advanced market commitments operate on a simple principle: government commits to purchasing an outcome at an agreed price once it is delivered, but does not fund the development process. During the pandemic, governments committed to buying vaccines at scale once pharmaceutical companies delivered

them. The companies took the technology risk. Government took the commercial risk. And the market responded with extraordinary speed.

The same principle applies directly to frontier technologies like quantum computing, fusion energy, or space. Imagine being able to tell a Series C or Series D investor: I have a government contract that will provide hundreds of millions of pounds if I deliver a system that runs a specific algorithm enabling drug discovery, materials simulation, or a defined cryptographic capability. Government does not need to understand the technology in detail. It needs to specify the outcome it wants and commit to paying for it when it arrives. That contract becomes the foundation for private fundraising. The venture capital process then operates normally, assessing the team, the technology, the probability of delivery; but with a guaranteed customer at the end.

DSIT has made a start with approximately one hundred million pounds in advanced market commitments for AI, which is encouraging. But this needs to expand dramatically into quantum, space, fusion, and every other frontier sector where the UK has sovereign capability worth scaling. The beauty of the mechanism is that it aligns government's true strength, being a large, patient, committed customer, with the private sector's true strength, taking technology risk and raising capital against it. Government as an investor is awkward and often counterproductive. Government as a customer is powerful and natural.

The Sovereignty Imperative

Everything I have described leads to a single conclusion: the UK must take technology sovereignty seriously. I define sovereignty narrowly: a British company, traceable from its original academic IP through scaling and global expansion, headquartered in the UK. A foreign technology office in London is not sovereignty. A British-founded, British-headquartered company that grows to serve global markets, that is sovereignty.

The geopolitical context makes this urgent. The EU is deepening its own sovereignty position. The United States is moving toward a more

domestically focused technology posture. If the UK remains the only major economy that maintains a fully open approach while everyone else protects their own, we will end up with a vibrant innovation ecosystem in which not a single company of scale is actually British. We will be the only ones exposed to full international competition while our own companies cannot access increasingly protected foreign markets.

This does not mean abandoning collaboration. A deeper relationship with the EU is essential, and alliances with other middle powers like Canada and Australia are strategically important. But alongside collaboration, we must build sovereign capability. That means making choices, which is the part the UK finds most difficult. The cloud computing precedent is instructive: when the major American cloud platforms were scaling, British government could have chosen to back smaller sovereign providers. Instead, it took the familiar route and ran with the established foreign providers. Now Europe is painfully retracting from that dependency. In quantum computing, we face exactly the same choice today. The choice is simple: back sovereign capability now, or spend the next decade undoing the consequences of not doing so.

Editor's Synthesis

Mullally's procurement point is the most direct diagnosis of why government support for frontier technology consistently underperforms its stated ambitions. The problem is not the quality of civil servants or the intentions of ministers. It is that DSIT has no mission that requires it to use the technology it supports. A department that funds quantum computing through grants has no reason to develop the capability to procure it, to specify outcomes, or to manage a complex technical programme over fifteen years. Defence has all of those capabilities because it has always needed them. The advanced market commitment model, government specifies an outcome and commits to purchase it

when delivered, the private sector takes the technology risk and raises capital against the contract, is the mechanism that aligns government's true strength as a patient, committed customer with the private sector's true strength in taking technology risk. The pandemic vaccine programme demonstrated the model at scale. Applying it systematically to quantum, fusion, and space is, on the evidence Mullally presents, the logical extension.

The structural change Mullally's analysis calls for is consolidating fragmented government innovation budgets into larger mission-driven bets and shifting procurement authority for frontier technology to mission-owning departments with multi-year spending commitments. Without it, every other government innovation initiative will continue to underperform.

Action Takeaway	Consolidate fragmented government innovation budgets into larger mission-driven bets and shift procurement authority for frontier technology to mission-owning departments with multi-year spending commitments.

26

FIX THE SYSTEM THAT SURROUNDS THE TEAM

Based on conversations with Kate Bingham, Former Chair, UK Vaccine Taskforce 2020; Managing Partner, SV Health Investors

Editor's Prelude

Mullally's chapter has addressed the Cabinet Office's structural purpose and the delivery architecture. This chapter addresses the three institutional systems that determine what any delivery team can actually do: the civil service talent pipeline, the regulatory framework for novel technologies, and the data infrastructure the UK has built but not yet opened for use. Each of these is a system problem, not a team problem. The best delivery team in the world cannot move faster than the regulatory framework will allow, cannot hire the people it needs if the talent pipeline does not produce them, and cannot use data assets that are not accessible. Kate Bingham addresses each in turn, drawing on direct experience of where each system produced friction and what the specific fix is.

The Entry and Promotion System Is Producing the Wrong People

The civil service talent problem has two distinct components. Mullally describes the structural issue at the Cabinet Office level. This is the pipeline problem that precedes it.

The entry problem is concrete. Fewer than ten per cent of Whitehall civil servants have STEM degrees. The Fast Stream STEM route takes approximately twenty-five people per year into a civil service of hundreds of thousands. That is not a pipeline. A government that commissions and evaluates technology programmes at scale, that procures frontier technology, that regulates artificial intelligence and synthetic biology and advanced manufacturing, is doing so with a workforce in which STEM literacy is the rare exception rather than the expected baseline.

The promotion problem is equally concrete and less visible. The civil service rewards generalist breadth over domain expertise. Officials who develop deep technical knowledge in a specific area are less likely to be promoted than those who rotate across policy areas and develop broad institutional knowledge. The result is a systematic bias against exactly the kind of expertise a technology-commissioning government most needs.

I have seen this gamed firsthand. An official goes for an internal promotion, gets told they need broader experience, rotates out of the area where they had built genuine domain expertise, and returns two years later having lost the expertise but gained the promotion. The ecosystem is working as designed. The design is wrong.

10%

STEM in Govt

Share of Whitehall with STEM degrees – in a government that commissions and evaluates frontier technology

Fewer than 10% of Whitehall civil servants have STEM degrees. The Fast Stream STEM route admits approximately 25 people per year. A government that commissions frontier technology, regulates AI, and procures advanced manufacturing capability at scale is doing so with a workforce for which STEM literacy is the rare exception. I would set a target of recruiting fifty per cent STEM graduates at entry. The current figure is not a rounding error. It is irrelevant at that scale.

The fix is to set a target of fifty per cent STEM intake at civil service entry. Make at least one period of private sector or research institution placement a requirement for senior promotion in technology-adjacent roles. Remove the promotion incentive for generalist rotation at the expense of domain expertise.

Two Regulatory Instruments the UK Is Not Using Systematically

Most regulatory frameworks rest on a fixed assumption: the product being assessed is complete, and the regulator's job is to evaluate it against defined standards. This assumption works for stable technologies with known risk profiles. It fails for novel technologies where the product is still being developed, the risk profile is being discovered, and the pace of development means that sequential review

produces approval decisions that are months or years behind the actual state of the technology.

Two instruments would address this without reducing standards. The first is rolling review: the regulator evaluates evidence as it is generated, in real time, rather than waiting for a complete submission package. Rolling review is what allowed the MHRA to approve the first Covid vaccine in the world in December 2020 – not because standards were lowered, but because the assessment ran in parallel with the trials rather than after them. The compression was from months to days on the final decision, because most of the assessment had already been completed.

The second is process certification: approving the manufacturing or development process rather than, or as well as, the final product. If a manufacturer has certified processes, subsequent products developed through those processes can be assessed against the certified baseline rather than from scratch. The semiconductor industry has operated on this model for decades.

A further instrument complements both: industry-funded accelerated review, in which a company can pay for dedicated regulatory resource to run its assessment at speed. This is available in some contexts. It should be the explicit default for frontier technology applications, with a published schedule and a defined service standard.

90%

Rolling Review

90% of the regulatory assessment already completed before the final approval decision under rolling review.

Rolling review compresses the final regulatory decision from months to days because the substantive assessment runs in parallel with evidence generation rather than after it. The MHRA used rolling review to achieve the world's first Covid vaccine approval. It was not a special pandemic measure. It was a change in the sequencing of assessment. By the time the final decision was made, approximately ninety per cent of the review had already been completed. Making it the default for frontier technology applications requires a policy decision, not a new capability.

THE FIX

Mandate rolling review as the default regulatory process for novel applications of frontier technologies. Extend process certification to all technology sectors where manufacturing capability is as significant as product specification. Publish a defined service standard for industry-funded accelerated review and make it available by default.

Open the Data Infrastructure the UK Has Already Built

The UK holds population-scale data assets that most comparable countries simply do not have: the NHS longitudinal health record

for sixty-seven million people, the Health Data Research UK infrastructure, and the Our Future Health cohort being built to five million deeply profiled, consented participants with linked genomic, clinical, and lifestyle data. These assets are genuinely rare. The problem is not their existence. The problem is their accessibility.

Both assets are being built. That is the good news. The gap is not in the underlying data but in the accessibility infrastructure — the standardised APIs, the secure access environments, the governance frameworks that allow researchers and companies to use the data without compromising participant privacy. Building that infrastructure is what converts a data asset into a competitive advantage.

The same logic applies well beyond health. Wherever government holds population-scale data: transport patterns, energy consumption, educational progression, environmental monitoring, and so forth. The same question applies: is the accessibility infrastructure in place to allow that data to be used for innovation without compromising the rights of the people whose data it is? In most cases, the answer is no. Building it systematically, sector by sector, would give the UK a structural advantage that cannot be replicated quickly by countries that do not hold the underlying data.

Editor's Synthesis

This chapter expands the scope from the delivery team itself to the institutional systems that determine what any delivery team can accomplish.

Three structural constraints dominate: the civil service talent pipeline, regulatory design for emerging technologies, and access to national data assets.

The talent pipeline problem is quantitative and structural. The proportion of officials with STEM training is extremely small relative to the scale of technology policy responsibilities now carried by government.

Promotion incentives further discourage the development of deep domain expertise.

Regulatory frameworks introduce a second constraint. Most approval systems assume that technologies are complete products awaiting evaluation. Frontier technologies evolve during development. Sequential review processes therefore create approval cycles that lag behind the technology itself.

The final constraint is data access. The UK possesses uniquely valuable health and research data infrastructure. Much of it remains administratively inaccessible for innovation programmes that could use it.

Taken together these systems define the ceiling on delivery capability. Improving the performance of individual teams will have limited effect unless the surrounding institutional architecture evolves in parallel.

Action Takeaway	Set a target of fifty per cent STEM intake at civil service entry. Make at least one period of industry or research institution placement a requirement for senior promotion in technology-adjacent roles. Mandate rolling review as the default for frontier technology regulatory applications. Extend process certification across technology sectors. Complete accessibility infrastructure for Our Future Health and apply the model to all major government population-scale data assets.

27

FIND THE TRAPPED VALUE, CROSS THE CHASM, AND WIN THROUGH THE BOWLING ALLEY

Based on conversations with Geoffrey Moore,
Author of *Crossing the Chasm* and
Inside the Tornado

Editor's Prelude

Geoffrey Moore wrote Crossing the Chasm, the most widely read account of why technology companies fail to transition from early adopters to mainstream markets. His chapter addresses the first principle that most entrepreneurs overlook before they reach that transition: failing to identify the specific trapped value their technology releases before they begin building. His view is that every disruptive technology releases value that already exists in the world's current operating model, and that identifying precisely which bottleneck is being removed is the precondition for everything that follows.

Starting with ROI, Not Technology

When you introduce any disruptive innovation, the value the world is going to derive from it already exists somewhere in the world's current operating model. There is some constraint, some bottleneck, some gating item that is holding back performance and limiting the value that a given industry or profession can deliver. The first principle for any entrepreneur is not to start with the technology and ask what it can do. It is to start with the market and ask: where is the trapped value?

If you target trapped value, the return on investment is automatically built into your business plan from day one, because releasing that value creates all the ROI you need. The question then becomes: why would this particular technology or disruptive innovation be the right tool to release it? And if it is not, you should look elsewhere. But you should never start a venture without a deep conviction, not merely a hypothesis, that there is trapped value in the world you can release, and that the returns from doing so will be powerful.

The metaphor comes from the oil industry. There is oil in wells, concentrated, under pressure, ready to be extracted, and there is shale oil, diffused thinly across vast areas. For venture returns, you are looking for oil wells: trapped value that is concentrated and under material pressure. The group-travel coordination problem is real but diffuse. The pharmaceutical regulatory approval bottleneck that costs a company a million dollars a day in delayed revenue is concentrated and under enormous pressure. One will generate a venture return. The other will not.

My first experience with trapped value was personal. When the Macintosh arrived, I could suddenly create presentations and documents without going to a word-processing department or hiring a graphic artist. The productivity gain was immediate and transformational. But the commercial illustration is more instructive. Documentum, the first company I wrote about in Crossing the Chasm,

served the pharmaceutical industry. A patented drug typically earns one to two million dollars per day while on patent, but before it can be sold, the manufacturer must assemble up to half a million pages of documentation for regulatory approval, a process that could take six months. Documentum compressed that to six weeks. At a million dollars a day, the trapped value was self-evident, and the ROI practically sold itself.

Today, if you look at healthcare systems and how overloaded doctors and nurses are, or at education where children learn in different ways but the system delivers one-size-fits-all instruction, the amount of trapped value is enormous. An AI tutor that could tailor lesson plans to individual learning styles would release value from a system where poor outcomes are not caused by unwilling students but by mismatched methods. Everywhere you look, there is trapped value. The second law of thermodynamics tells us there is no such thing as a perfectly efficient system. The entrepreneur's job is to find where the inefficiency is concentrated and under pressure. One important caution: governments make poor investors precisely because they do not think in terms of trapped value. They think in terms of what would be nice for everyone. Venture investors test ruthlessly for whether the value is concentrated enough to generate a return. That discipline is what separates ventures that succeed from those that merely sound good.

Crossing the Chasm: From Early Market to Beachhead

The technology adoption lifecycle has four stages, and each requires a different playbook. The first stage is the early market, populated by technology enthusiasts and visionaries. People willing to fund ambitious projects because they share your belief in the potential. This is an exciting time, but it is not a sustainable business. Visionary customers demand tailored systems that fulfil their specific vision, and the revenue is project-based, not repeatable. Think of your company at this stage as a project team in service to a major visionary customer.

You want that customer to be a name brand, Harrods, not a corner shop, because you want the world to hear about the result. That lighthouse account shows the market what is possible. It does not prove you have a business.

The chasm is the gap between the early market and the mainstream. Your visionary projects have generated excitement and positive feedback, but the rest of the world looks at them and says: impressive, but not ready for prime time. To cross the chasm, you must find at least one industry with one use case where the problem is broken, the urgency is undeniable, and the industry has already tried and failed to fix it with conventional approaches. That is your beachhead market.

The beachhead must satisfy three conditions. It must be big enough to matter, capable of taking your company from one million in revenue to at least ten million. It must be small enough to lead, you cannot be a minnow in an ocean. And it must be a good fit with your core technology assets, what I call your crown jewels. If all three conditions are met, you commit completely to that single market.

The Whole Product and the Power of Focus

The critical mistake most companies make at this stage is an unwillingness to commit to a single target market. They have a visionary customer in pharmaceuticals, another in aerospace, a third in insurance. Each looks promising, and the temptation is to pursue all of them. The problem is that you never build enough mass in any single market to develop a reputation. You remain a one-off everywhere rather than the dominant player somewhere.

Commitment means going deep. The beachhead market will have specific idiosyncrasies that no other market shares, and you must move your product roadmap to incorporate them. The goal is what I call the whole product: not just your technology, but everything the customer needs to solve their specific problem, including partner products, services, and integrations that you orchestrate. You recruit someone from the target industry who has owned the relevant problem process,

bring them in as a product manager or advisor, and follow their lead. Lawson Software, a tiny ERP company competing against SAP, did this brilliantly in healthcare. They built par carts, the wheeled inventory units used in hospitals, directly into their software. Nobody else had done it because it seemed absurdly niche. But when they gave a par cart demo, every hospital administrator understood immediately. And when a competitor came in, Lawson could say: ask them to give you a par cart demo. They could not. That specificity, that willingness to go deep into one market's idiosyncrasies, is what crossing the chasm requires.

When Documentum committed to pharmaceutical regulatory submissions, it won its first customer, then its second, then its third. Eighteen months later, it had thirty-five of the top forty pharmaceutical companies. Once you have three or four customers in a beachhead market, the rest of the industry typically capitulates, because the question shifts from 'should we do this?' to 'why wouldn't we?' The reason this works is word of mouth. Dentists do not talk to automobile manufacturers who do not talk to retailers. But dentists talk to other dentists constantly, especially about problem processes that keep them up at night. If you are the company whose name comes up in those conversations, mentioned by others when you are not in the room, you will win the beachhead faster than any amount of marketing could achieve.

The Bowling Alley: From Beachhead to Scale

A single beachhead market does not create a venture return, but it creates something more important: a going concern. Those loyal customers will keep you in business for a long time. The Macintosh survived years of near-irrelevance because graphic designers and educators had built so much on top of the platform that they simply could not leave. That installed base kept Apple alive until Steve Jobs returned and transformed the company.

To move from beachhead to venture-scale returns, you enter what I call the Bowling Alley. You have two expansion vectors. First,

your beachhead customers love you, so you can expand within their environment into adjacent applications. Second, your whole-product solution and partner ecosystem may fit a related industry. Documentum moved from pharmaceuticals to specialty chemicals, because chemicals companies had similar regulatory documentation challenges. From chemicals, it expanded into oil and gas for land lease management. From oil and gas, Wall Street realised that any document-intensive process could benefit. That progression took Documentum from a fifty-million-dollar business to a five-hundred-million-dollar business.

The Bowling Alley strategy is the lowest-risk, highest-probability-of-success playbook in all of technology. Unlike consumer businesses, where an element of luck is unavoidable, this approach simply requires you to release the trapped value, stay focused, and deliver what customers endorse. It is how companies grow from one million to one hundred million in revenue without requiring a massive, horizontal market or a lucky break. This playbook does not require a large domestic market. It requires a concentrated beachhead where you can become the undisputed leader, and adjacent markets into which you can expand through word of mouth and ecosystem use.

The mistakes I see most often follow a pattern. Some founders refuse to commit to a single target market, fearing it is too small or uncertain. Others pursue three or four verticals simultaneously and achieve critical mass in none. Others still mistake activity for traction, spending years building features nobody is paying for.

The trapped value in healthcare, in education, in financial services, in government procurement is enormous. The entrepreneurs who identify it precisely, commit to a beachhead, build the whole product, and expand through the Bowling Alley will create the next generation of powerful companies. The framework is proven. The execution is what separates those who win from those who merely participate.

———

Editor's Synthesis

The trapped value concept reframes the entrepreneur's core question. Instead of asking what technology can be built, it asks what constraint currently limits the value a given industry or profession can deliver. That reframing has practical consequences for market selection, product design, and investment sequencing. The Documentum example is not anecdotal: it demonstrates what happens when a company identifies a specific trapped value in a specific market and builds the whole product that releases it. Eighteen months after committing to pharmaceutical regulatory submissions as its beachhead, Documentum had thirty-five of the top forty pharmaceutical companies as customers. The companies Moore describes as failing at this stage are not failing because they lack technology. They are failing because they are trying to serve multiple markets simultaneously, spreading development effort across verticals that have nothing in common, and building a product that is adequate for each but dominant in none.

Moore's framework points to one founding discipline above all others: identify the specific reservoir of trapped value in a single market before building anything, commit to that beachhead, and build the whole product for that segment before expanding.

———

28

WIN THE TORNADO OR WATCH SOMEONE ELSE SET THE STANDARD

Based on conversations with Geoffrey Moore,
Author of *Crossing the Chasm* and
Inside the Tornado

Editor's Prelude

Geoffrey Moore returns to address what happens after the beachhead is won: the Tornado. When a market makes a collective decision that a technology is no longer optional, the rules change entirely. Speed replaces precision, distribution replaces differentiation, and the companies that win are not necessarily the ones with the best products but the ones that moved first at sufficient scale. His chapter examines why the Tornado is the moment at which UK companies most consistently lose, and why the capital and market dynamics at that stage call for a completely different strategy than the one that won the beachhead.

When the Market Goes Horizontal

There comes a point in the technology adoption lifecycle when the market makes a collective decision: this is no longer just for

specialists. Cell phones are not just for executives. Wi-fi is not just for universities. Cloud computing is not just for Salesforce. AI is not just for the intelligence services. Everybody needs this. When that shift happens, the market goes from vertical to horizontal, and something extraordinary occurs.

Instead of the reluctance that characterises the chasm, where mainstream buyers say they are not sure this is ready, the tornado produces the opposite reaction. Buyers across industry simultaneously conclude that everyone else is adopting this and they are being left behind. Requests for proposals flood in. Budgets appear. The question is no longer whether to adopt but which vendor to choose. And in that moment, a brutal, winner-take-most competition begins.

The Gorilla Game

Whoever captures the most market share during the tornado's two-to-three-year window becomes what I call the gorilla: the de facto standard for the category. Oracle in databases. Microsoft in operating systems. Intel in processors. Cisco in internet routers. Nvidia, right now, in AI chips. The gorilla does not just win the most customers. It sets the standards that the entire ecosystem builds around. When Oracle became the database standard, competitors like Sybase and Informix had minor incompatibilities, and the market said: no, you must be compatible with Oracle. The gorilla's competitive advantage becomes self-reinforcing.

The market always wants a second choice, AMD to Intel's gorilla, and the number two player captures meaningful value. But after number one and number two, the remaining competitors are reduced to selling clones of the market leader's architecture. They can generate revenue, but they will never have the pricing power, the ecosystem loyalty, or the standard-setting authority of the gorilla. The wealth creation at the top of this pyramid is extraordinary and durable.

Revenue First, Profitability Later

Inside the tornado, the playbook inverts everything that made the Bowling Alley work. In the Bowling Alley, you went deep into specific verticals, tailoring your product for each market's idiosyncrasies. In the tornado, you go wide. You want horizontal sales coverage: territories organised by geography, not by industry. The objective is to capture as much market share as possible in a compressed timeframe.

This means being willing to be cash-flow negative if that is what coverage requires. The current AI infrastructure buildout is a perfect illustration: companies are spending close to a trillion dollars in a few years on AI factories. That level of investment looks irrational by any normal measure. But it is rational if you understand the gorilla game. The companies making those bets are not trying to be profitable this quarter. They are trying to capture the category standard for the next two decades. And if they succeed, the returns will dwarf the investment.

Microsoft provides an instructive counterpoint on timing. Microsoft was almost never the first mover in any category. It was not first in word processing, spreadsheets, browsers, or cloud computing. But it had an extraordinary ability to enter a category from behind and take it away from whoever had established the early lead. First-mover advantage matters more in consumer markets, where switching costs are high and habits form quickly. In enterprise markets, the tornado rewards the company that achieves the widest coverage fastest, which is not always the company that arrived first.

Lock-In and the Fight Against It

The gorilla's power rests on lock-in: when a customer has invested so much in a vendor's platform that switching becomes prohibitively expensive. In the era of licensed on-premise software, lock-in was almost total. The shift to software-as-a-service created some freedom to switch, though less than people initially expected, because over time businesses build so much operational dependency on their SaaS

platforms that migration remains painful. The current evolution toward open APIs and cross-system interoperability is another attempt to reduce lock-in, and enterprises are increasingly making purchasing decisions with explicit lock-in avoidance as a strategic criterion.

For vendors who want to build durable power despite this trend, the answer is to offer something so valuable that customers accept the dependency willingly. Nvidia's CUDAn ecosystem is a contemporary example: developers could use other chips, but the depth of CUDA's software ecosystem makes it the path of least resistance. That kind of lock-in, earned through real value rather than imposed through contractual or technical barriers, is the most sustainable form of competitive advantage in the tornado.

Will AI Replace Enterprise Software?

There is a debate right now about whether AI will replace enterprise software entirely. If an AI can write custom software for you, why would you pay a vendor for an off-the-shelf product, especially when you could have exactly what you want rather than a generic offering? The answer lies in the distinction between differentiating and non-differentiating processes. If a process is what makes your company distinctive, your secret sauce, then yes, you might want to build it yourself. But if it is your accounting system, your HR platform, your cybersecurity infrastructure, or your facilities management, processes that are necessary but not distinctive, you do not want to write them yourself even if you could get them for free. You would have to maintain the code every year. You would never benefit from the proven approaches that emerge from five thousand other customers using the same platform. The operational burden would far outweigh the customisation benefit.

So enterprise software is not going away. But AI will transform how it is built, how it is sold, and how quickly new categories emerge. Each technology adoption lifecycle looks much like the previous one, though they arrive faster as each builds on the infrastructure of its predecessors. The shift from mainframes to minicomputers took a

decade. From minicomputers to PCs, roughly eight years. The internet cycle was faster still. AI is following the same pattern, and the transfer of wealth at each inflection point is still extraordinary. The tornado is happening now. The question for any company in any market is whether it will be the one setting the standard or the one building around someone else's.

Editor's Synthesis

Moore's Tornado point is the complement to Boland's scale capital case. They are describing the same failure from different vantage points. Boland sees UK companies being acquired at the growth stage because they lack the capital to press their advantage. Moore sees them being outmaneuvered because they apply the wrong competitive strategy at the moment the market tips. In a Tornado, attempting to maintain premium positioning, protect margins, or continue customising for individual customers is a losing strategy regardless of capital availability. The required move is to standardise, to move fast, and to prioritise distribution over everything else. The companies that win Tornados are frequently not the technology leaders. They are the companies that understood the new rules first and had the capital to execute them. Both conditions, strategic clarity and capital availability, appear to be needed simultaneously.

UK companies reaching the Tornado stage, Moore's analysis suggests, need not only more capital but different strategic counsel: the willingness to abandon beachhead disciplines and move to a standardisation and distribution strategy at a pace that feels premature from inside the company but is precisely what the moment calls for.

PART V

PLACES, CITIES & REGIONAL CLUSTERS



The chapters in this Part build the evidence for Shift 7: moving from cluster imitation to adoption-led regional specialisation. They connect to Shift 3: cities as the first procurement customers that give technology companies the reference case they need.

A founder in Manchester builds something genuinely new and goes looking for the investors, advisors, and first customers that ecosystems are supposed to provide. Most of them are in London, and the ones in London are not sure she counts as local.

Stop Copying Silicon Valley

In Neil Lee's twenty-plus years advising governments on economic development, the number of places that have tried to create biotech clusters, AI hubs, or fintech districts on the basis of no existing local companies, no relevant research anchor, and no particular reason why here rather than anywhere else is, in his word, staggering. The count of those that succeeded is zero. Not one. This is not an observation about one failed initiative or one misallocated budget. It is a finding about a model of regional innovation policy that has been applied repeatedly, by competent people with real resources, and has never produced the outcome it promised. The model is wrong.

Neil Lee's analytical contribution is the distinction between frontier innovation and adoption innovation, and it is the most practically useful reframe available to regional policymakers who are tired of spending money on cluster strategies that disappear when the consultant moves on. Frontier innovation, new knowledge, happens in large dense clusters with a critical mass of world-leading capability. The list of places that can realistically host it is short and not primarily determined by policy decisions. Adoption innovation, taking technologies developed elsewhere and applying them to make an existing economic base more productive, can and should happen everywhere. It does not require Nobel-grade research infrastructure. It requires management capability, organisational willingness, and a regulatory environment that allows experimentation.

Carlos Moedas brings the practitioner's perspective that makes Neil Lee's framework operational, and the tension between them is worth surfacing. Neil Lee argues, on the basis of twenty years of economic geography evidence, that most regions should stop trying to be frontier innovation centres and focus on adoption. Moedas built Lisbon into a city with seventeen unicorns in five years. His theory of what cities can do, treating themselves as first deployment customers, sharing data with researchers, adapting regulatory frameworks to allow trials, is a frontier-adjacent model that Neil Lee's framework might classify as overambitious for most UK regions. I think Moedas's point is more specific than that: it is not that any city can become Lisbon. It is that any city government willing to commit real procurement budgets rather than press releases to early-stage companies can create the reference customer effect that changes a company's commercial trajectory.

My position on this is that both arguments are right at different scales and the policy failure is in conflating them. The UK's regional cities are not going to become frontier innovation centres by administrative decision, and strategies that promise otherwise deserve the scepticism they receive from founders who have watched them fail before. But capable city can do what Moedas describes: make a real procurement commitment to early-stage technology companies working on real civic problems, and turn that commitment into a reference customer that changes the company's fundraising, hiring, and commercial trajectory. That is not a cluster strategy. It is a procurement strategy. It is substantially cheaper, faster, and more evidence-based than anything the consultant-written innovation district approach has ever produced.

The post-Brexit dimension of this Part is one I want to name directly because much of the UK's innovation policy debate skirts it. Before Brexit, Cambridge received approximately 400 million euros from EU science programmes. UCL received approximately 300 million. Those sums were allocated on merit: the best researchers were in the UK. The networks were cross-border. Horizon Association

membership is welcome and substantially incomplete. Research teams disrupted during the exclusion period have rebuilt with different partners. The UK now participates in standard-setting negotiations for a 450-million-person market as an observer rather than a participant. The practical consequence for regional cities outside London, which depended on EU structural funds as well as research networks, is an isolation that the domestic levelling-up agenda has not come close to replacing.

The highest-use intervention in this Part is straightforward to describe and requires political will that has been consistently absent: every UK city above a certain population threshold should be required to allocate a specified minimum percentage of its procurement budget to early-stage technology companies, with a public account of what was procured, what it cost, and what it produced. Not an innovation office. Not a tech hub announcement. A procurement commitment with money attached, measured against outcomes, published annually. That is what Moedas built in Lisbon. It is what the FCA did for fintech in 2016. It is what the UK's regional cities have been promised but not delivered for fifteen years.

29

BUILD ON WHAT YOU HAVE: A REGIONAL INNOVATION STRATEGY THAT ACTUALLY WORKS

Based on conversations with Neil Lee,
Professor of Economic Geography,
London School of Economics

Editor's Prelude

Neil Lee is a professor of economic geography at the London School of Economics who has spent twenty years advising governments on regional economic development. His chapter addresses a consistent failure in UK regional policy: the attempt to create clusters in sectors where a region has no existing strength, no relevant research anchor, and no particular reason to be the place where that industry concentrates. His view is that the record of cluster-creation strategies is effectively zero, and that the UK's regional innovation investment would produce more value if it built on existing strengths through related diversification rather than imitating fashionable clusters elsewhere.

The Alchemy of Clusters

In more than twenty years advising governments on regional economic development, I have tracked each attempt to create a biotech cluster,

an AI hub, or a fintech district in a region with no existing companies in that sector, no relevant research anchor, and no particular reason why this place rather than any other should be where that industry concentrates. The number of those attempts that succeeded is zero. Not one. That is not a statement about ambition. It is a statement about a model that has been applied repeatedly, with real money and real political will, and has never produced what it promised.

The reason it keeps failing is precise. Innovation does not cluster randomly. It clusters through a process of related diversification: industries build on adjacent industries, skills transfer across similar problems, supply chains deepen in sectors that already share infrastructure. London's fintech cluster did not appear because someone decided London would be a fintech hub. It appeared because London had deep expertise in financial services and deep expertise in technology, and entrepreneurs in both fields found each other. Every high-growth city in the past twenty years followed the same pattern. None of them succeeded by copying somewhere else.

This matters for the UK right now because the cut-and-paste strategy has an opportunity cost that the policy debate consistently ignores. Every pound spent creating an AI hub in a town with no AI companies is a pound not spent helping that town's existing manufacturers become thirty per cent more productive through technology adoption. The first produces a press release. The second produces compounding.

0%

Cluster Success

Percentage of create-a-cluster strategies that succeeded across 20 years of UK regional policy

Each attempt to build a cluster in a region with no existing companies, research anchor, or supply chain has failed.

Why Clustering Matters and Why Most Places Cannot Replicate It

We know that clustering matters for frontier innovation. Star scientists are more productive when located near other star scientists. The most complex, innovative work will happen in large cities. That is why San Francisco, Shenzhen, London, and a handful of other places dominate. For a regional economy in the UK: Newcastle, Stoke, most places outside the South East. It is delusional to believe they can create a Silicon Valley equivalent. What they can do, and what they should focus on, is becoming excellent at adopting and applying technology to their local economic base.

Switzerland provides an instructive model. It has world-leading frontier innovation, Google's largest R&D lab outside the US is in Zurich, and ETH Zurich is a global top-ten university. But Switzerland's real strength is its second tier: firms and industries that are not themselves world-leading innovators but are consistently excellent at adopting technology from elsewhere and applying it to their operations. The combination of frontier innovation in a few places and excellent adoption everywhere else is what makes Switzerland's economy so consistently strong.

The Cut-and-Paste Trap

The single most common mistake in regional economic development is what I call cut-and-paste strategy. Local policymakers look at Silicon Valley, or at creative industries clusters, or at whatever sector is fashionable, and try to replicate it in their own region regardless of whether they have any existing strengths in that area. I have been working in economic development for more than twenty years. The number of times I have seen towns in the middle of nowhere attempting to create biotech clusters on the basis of total fantasy is staggering.

The evidence is clear: industries become fashionable, local policymakers target them, and the results are almost uniformly poor.

What works is the opposite. It is easier to develop a new specialisation if you already have strengths in related sectors. London's fintech success did not appear from nowhere: it emerged from the merger of existing strengths in financial services and technology. Every high-growth city over the past twenty years has followed this pattern: working out realistically what they can be good at based on what they already do, and expanding from there. None of them succeeded by copying someone else.

A Two-Tier University System

The UK's university system reflects the same confusion. We have world-leading universities, UCL, Imperial, Oxbridge, LSE, competing on international markets for Nobel Prize-calibre research. But we also have a large number of relatively young institutions that serve their local economies primarily through student intake and training. We pretend they are all playing the same game, competing on the same league tables, when by definition only a small number can be world-leading. The rest should be playing a different sport entirely.

The practical step is to create incentives for a tier of universities to become explicitly focused on local economic development: applied research, technology adoption, training for local industries, and partnership with local firms. Switzerland does this through its universities of applied sciences. They carry no stigma and serve local economies effectively. The contrast with the UK is stark: too many UK institutions chase the fantasy of being world-leading and end up serving neither global nor local needs well. The UK needs to invest more in its world-leading universities, which we are taking for granted, and simultaneously give a clear, respected, and well-funded mission to the rest.

The argument of this chapter is falsifiable and I want to state it in terms that make the test clear. If any UK region that has no existing strength in a target sector successfully creates a frontier innovation cluster in that sector within ten years, through deliberate policy rather than the emergence of a distinctive anchor, the model is wrong.

The practical implication is not modest. It requires each regional economic development plan to pass a single test before it is funded: what existing economic strength in this region does this strategy extend, and what is the evidence that the extension is viable? Not what sector is currently fashionable nationally. Not what the consultant identified as an emerging market. What this place already does well, and what adjacent capability would make it stronger.

This book is built on the argument that the UK's problem is not talent or technology. It is the failure to extract full value from what already exists. That argument applies to companies and to regions equally. The UK does not need more regions pretending to be Silicon Valley. It needs every region building seriously from where it actually stands. That is how compounding begins.

Editor's Synthesis

Lee's falsifiable claim, that no UK region has successfully created a frontier innovation cluster in a sector where it had no existing strength, is the most direct empirical challenge to a large part of current UK regional policy spending. The mechanism he identifies is well-established in economic geography: related diversification, industries building on adjacent industries, skills transferring across similar problems, supply chains deepening in sectors that already share infrastructure. London's fintech cluster was not created by policy. It emerged from the intersection of existing financial services and technology expertise. Every high-growth city in the past twenty years followed the same pattern. The Switzerland model is practically useful: world-leading frontier innovation concentrated in a small number of institutions, combined with excellence in technology adoption distributed across the broader economy. The second tier of Swiss firms, not themselves innovators but excellent at adopting and applying technology, is where most of the economic value is generated. The UK has the first tier. It is missing the second.

Lee's evidence points to a simple test that regional economic development plans currently fail to pass: demonstrate how the strategy builds on existing local strengths and related sectors, rather than replicating a cluster the region does not actually possess.

———

30

USE CITIES AS FIRST DEPLOYMENT PLATFORMS TO TURN INNOVATION INTO JOBS

Based on conversations with Carlos Moedas, Mayor of Lisbon and Former European Commissioner for Research, Science and Innovation

Editor's Prelude

Carlos Moedas served as European Commissioner for Research and is now Mayor of Lisbon, a city he has deliberately repositioned as a first deployment platform for technology companies. His chapter addresses a question that, on the evidence here, UK regional and national policy has not consistently asked: if cities are where technology meets citizens and knowledge becomes experiential, how should they be structured to function as first customers for startups, as governance platforms for regulation, and as talent attractors through the quality of life they provide?

People often talk about innovation as if it lives in a lab, a university, or a national strategy document. In practice, innovation happens when the digital and the physical meet, when an idea touches real life, and when something new becomes useful. That intersection is the city. Countries create frameworks and universities create knowledge, but

cities are where knowledge becomes experiential, where you learn not only from books but from being part of a living system. Cities are not a side character in innovation. They are the main stage.

———

Why Cities, Not Labs

In the 1990s many people predicted that cities would become entirely digital, that physical proximity would stop mattering. That never happened, because cities are physical. They are where you feel the frictions and constraints that matter in real life: mobility, energy, housing, safety, health. When technology touches those systems, it becomes real. It gets tested, adopted, iterated, or it fails. A city is the best place to move from idea to product, and from product to scale.

Marshall McLuhan spoke about experiential knowledge, what we might call tacit knowledge. It is knowledge you do not learn by reading. You learn it by talking, observing, trying, failing, and being surrounded by other people who are also trying. That is exactly what cities provide. They create the density of interactions that accelerates learning. Innovation is not an individual sport. You innovate when you mix disciplines, bring different perspectives into contact, and create enough collisions of thought for something new to emerge.

Cities as First Customers

The practical shift I would encourage in the UK is to start treating cities as first deployment platforms. Cities can be the first customers for startups, the first places where new technologies are implemented in the real world, and the first settings where a company can move from a pilot to scaled adoption. When a startup can point to a city as a reference customer, everything changes. Sales cycles shorten. Credibility rises. Partners listen. Talent becomes easier to recruit. Investment becomes easier to justify.

In Lisbon we approached this by treating innovation as a process, not as branding. We created what we call the Unicorn Factory, not to

pick winners but to build infrastructure that helps many companies grow. The role of public leadership is not to decide which entrepreneur will succeed. It is to create a level playing field, remove unnecessary friction, and build an ecosystem that makes scaling possible. When you do that with seriousness, results show up in the form that matters most: jobs, and better-paid jobs. Lisbon now hosts seventeen unicorns and over a hundred technology hubs, and the jobs those companies have created are the most tangible proof that innovation policy works.

The Three Ingredients of a First-Tier City

Cities compete for talent. Talent gathers where the mix is right. The cities that become first tier tend to balance three ingredients: social welfare, culture, and innovation infrastructure. Social welfare matters because if people do not feel safe, if housing is unstable, if there is visible social crisis, talent eventually leaves. Culture matters because it is the bloodstream of creativity, attracting different ways of thinking. Innovation infrastructure matters because you need places to build, meet, test, learn, and scale. If a city focuses on only one of these, it becomes fragile. If it develops all three, it becomes magnetic.

You can see this dynamic in American cities that were once outstanding innovation centres but lost their balance when social welfare deteriorated. There comes a point where even the most talented people leave because they do not want to live somewhere that feels broken. The magic is in holding all three together, and that is what separates a third-tier city from a first-tier one.

The Missing Piece: Cross-Border Connectivity

I know the UK well. I worked as a European Commissioner during the period when The UK was still part of the European Union, and the UK was, in my assessment, the strongest innovation ecosystem in Europe. It had the best universities, strong venture capital, excellent labour laws, and deep talent drawn from across the continent.

That offer has a European dimension that bears directly on what UK cities can provide as first deployment platforms.

Since the changes in the UK's relationship with Europe, some of those connections have weakened. During my tenure at the European Commission, a university like Cambridge would receive around four hundred million euros from EU science programmes, and University College London around three hundred million. Those sums were larger than what some entire countries received, because the funding was allocated on merit and the best researchers were in the UK. Those researchers were working in teams that included French, Italian, Portuguese, and Spanish colleagues. When those networks were disrupted, the impact was felt on both sides.

The UK has since rejoined European science programmes, which was a large and welcome step. But broader connectivity has not fully recovered. I have seen this directly in Lisbon, where we have attracted a substantial number of talented people from the UK who found it easier to operate within the European framework. The UK has strong ties to Asia, Africa, and the Middle East, and that is a real asset. But reducing ties with the European continent, which represents a market of over four hundred million people and some of the world's strongest research institutions, has come at a cost to the UK's innovation ecosystem.

The practical reality is instructive. If a UK company develops a product and wants to sell it across Europe, it must comply with European regulations regardless. Companies will not develop one product for the UK market and a different one for four hundred million European customers. They will build to the larger standard. The question is whether the UK is inside that standard-setting process, shaping the rules, or outside it, following rules it had no voice in creating.

The Capital Markets Problem

The other piece of the puzzle that constrains both the UK and Europe is the absence of a functioning capital markets union. This is why companies start in Europe and then relocate to the United States. In America, there is a single capital market across fifty states. In Europe, a

company that wants to scale must establish separate operations in each country, managing twenty-seven different regulatory environments. The fragmentation prevents European companies from scaling at the speed their American competitors achieve.

The UK once had a voice in pushing for a European capital markets union and used it effectively. That voice is now absent. But the underlying problem remains: without unified capital markets, European companies, including British ones, will continue to be drawn to the US at precisely the growth stage where the most value is created. This is the missing piece of the puzzle. You can have excellent universities, strong venture capital, and abundant talent, but if the financial infrastructure does not support companies scaling across a large, integrated market, nothing else fully compensates.

A Connected Network of UK Cities

The UK has a real opportunity here because it is rich in capable cities. London has global finance and market access. Cambridge and Oxford have research excellence. Manchester, Birmingham, Leeds, Bristol, Glasgow, Edinburgh, Belfast, and many others have industrial depth, cultural energy, and talent. The opportunity is to treat these cities as connected deployment engines rather than isolated islands.

A company that proves a solution in one major city should be able to scale into others without starting from zero each time. That requires a small amount of coordination and a great deal of execution discipline. Cities can align on a handful of shared problem categories, agree on common evaluation criteria, and reuse contractual templates so that once a vendor proves outcomes in one place, procurement in another place moves faster. When cities share evidence and standardise what good looks like, they build a runway for scaling. And if those domestic networks can extend to European cities, with Lisbon, Amsterdam, Barcelona, and Munich as natural partners, the market depth becomes competitive with what American companies take for granted.

———

Editor's Synthesis

Moedas' first-deployment-platform concept reframes the city from passive backdrop to active participant in the innovation cycle. The Lisbon Unicorn Factory model is not branding. It is infrastructure: the city as a customer that gives startups their first reference contract, as a testing environment that generates evidence for regulatory approval, and as a network node that connects local companies to European institutional relationships. The cross-border connectivity point is directly relevant to UK cities: post-Brexit, the connections between UK universities and European research programmes have weakened, and the founders choosing Lisbon over London are often doing so because Lisbon offers both European market access and a quality of life that has improved sharply. The three-ingredient model, social welfare, culture, and innovation infrastructure, is a useful diagnostic: UK cities that excel on the third ingredient while neglecting the first two will find that the talent they attract eventually leaves.

The direction Moedas' evidence points toward is the major UK city-regions designated as first-deployment customers for priority innovation challenges, with outcome-based procurement and a shared cross-city adoption network, so that a company proving a solution in one city has a clear route into others.

Action Takeaway	Designate the major UK city-regions as first-deployment customers for priority innovation challenges, with outcome-based procurement and a shared cross-city adoption network.

31

BUILD SAFE-TO-SCALE RULES THAT RELEASE ADOPTION WITH TRUST

Based on conversations with Carlos Moedas, Mayor of Lisbon and Former European Commissioner for Research, Science and Innovation

Editor's Prelude

The deployment platform model Moedas describes only functions if the regulatory environment around it is built to match. Moedas addresses this directly: the question is not whether to regulate, but whether to regulate products or outcomes.

Regulation and innovation are often described as enemies. That is a mistake. Regulation is not the opposite of innovation. Poor regulation is. The real question is whether regulation creates a safe path for new ideas to be tested, adopted, and scaled, or whether it creates so much rigidity that innovation dies before it reaches people. City leaders feel this tension directly because cities are where technology meets citizens. When people experience harm, they do not blame an abstract market. They blame the institutions that allowed it. That is why the right answer is not no rules, but rules that are agile and credible. You need order and you need freedom. You need a system and you need space for creativity.

Regulate Outcomes, Not Products

One of the best ways to balance these demands is to focus regulation on outcomes rather than trying to control the product. If you regulate the product too early, you end up with rules for something that never exists. This is a common European pattern: the regulation becomes detailed, the product disappears, and the opportunity moves elsewhere. The better approach is to define principles and outcomes, create sandboxes where innovators can experiment, and then update rules as the market matures and real evidence emerges.

Public leaders should not try to pick winners. It does not work. The job of government is to create conditions for many companies to try, and for the best ones to thrive through the quality of their products and services. When the state tries to choose winners, it distorts incentives, politicises innovation, and slows dynamism.

The Missing Piece in the Puzzle

Innovation ecosystems have many pieces: talent, universities, capital, regulation, procurement, culture, quality of life. Sometimes a country looks strong on several pieces and still underperforms because one missing piece is enough to break the whole system. The hard part is diagnosis: identifying which missing piece is blocking conversion from ideas to scaled outcomes.

One piece that matters for scale is market access and cross-border friction. The United States has an advantage because it is one market. Europe is large but fragmented into many administrative systems. The UK has many strengths: excellent universities, strong private capital, global connectivity, and an entrepreneurial culture. But as cross-border arrangements have evolved, firms and researchers can face more steps and more friction when collaborating across Europe. Innovation thrives when cooperation is easy rather than hard, and when talented people can move and work across networks with minimal friction. The UK's return to major European science programmes is an important step. The next steps are similarly practical: make cross-border

partnerships easy for startups, make researcher mobility predictable, and design standards that reduce duplication for companies serving both UK and European customers.

What a Safe-to-Scale Pathway Looks Like

A safe-to-scale regulatory pathway starts with clear principles. Define the outcomes you want to protect: safety, fairness, transparency, accountability, privacy, resilience, and consumer protection. Then create a route for innovators to prove compliance in a way that is proportionate to risk.

Make it measurable. Too often regulation is written in language that is hard to audit. A good pathway includes clear expectations about evidence, testing, monitoring, and reporting. It also includes clear escalation paths. If something goes wrong, who is accountable? How do you correct? How do you learn? Trust is built when people see the system can respond, not when the system claims it can prevent a problem in advance.

Make it iterative. Technologies evolve. Business models change. Social impacts become visible at scale, not at the beginning. If rules are treated as permanent, they will become outdated. The lesson from social media is that early frameworks did not adapt quickly enough as harms became visible. The solution is to build review cycles into regulation so it can tighten or loosen as evidence changes.

Cities can play a specific role. Because cities are first deployment platforms, they can also be first governance platforms. A city can run controlled trials, gather evidence, and create a feedback loop between innovators and regulators. If a company proves it can deliver outcomes safely, it should move faster. If it cannot, it should face friction. This is how regulation becomes a driver of better innovation rather than a brake on it.

———

Editor's Synthesis

The outcome-based regulatory approach addresses the most common failure mode of technology regulation, which is writing rules for a specific product at a specific stage of development and then discovering that both the product and the technology have moved on. Moedas' point is that regulating the product too early produces rules for something that no longer exists. Regulating outcomes, safety, fairness, transparency, accountability, privacy, resilience, consumer protection, produces rules that remain valid as the product evolves. The city-as-first-governance-platform concept is the practical complement to the first-deployment-platform point from the previous chapter: cities can run controlled trials, gather evidence, and create feedback loops between technology adoption and regulatory response that national bodies cannot generate at the same speed. The sandboxes-to-approval route is essential: a sandbox without a defined conversion route into full regulatory approval is a research programme, not a regulatory pathway.

Moedas' analysis points to a specific regulatory design: outcome-based principles for AI, data and frontier technologies, published as provisional standards within a short fixed timeframe, with sandboxes operating to clear timelines and a defined conversion route into full approval.

Action Takeaway	Define outcome-based regulatory principles for AI, data, and frontier technologies and publish provisional standards within a defined short timeframe, with sandboxes operating to clear timelines and a defined conversion route into full approval.

PART VI

PROCUREMENT, PILOTS & PUBLIC SECTOR INVESTMENT



The chapters in this Part build the evidence for Shift 3 (converting pilots into scaled procurement), Shift 4 (making government a capable delivery engine), and Shift 8 (wiring the innovation system so its components compound rather than fragment).

More Pilots Than British Airways

The NHS has more pilots than British Airways. That observation has been circulating in UK health technology circles long enough to become a cliché, and its durability is testament to its accuracy. The National Health Service runs hundreds of innovation pilots at any given moment. Solutions to real clinical problems are tested in controlled environments, produce results, receive write-ups, and disappear. Not because they failed. Because the system that produced the pilot was never designed to produce an adoption decision, and the people who would eventually make that decision were not told the pilot was happening. This is not a health service management failure. It is the defining structural constraint on the UK's ability to use its largest institutional customer base as the anchor of a technology sector retention strategy.

The clinical team at the trust that ran the pilot has moved on to other priorities. The company that built the technology has run out of runway and been acquired by a German competitor that had a procurement pathway its British equivalent did not. The NHS now pays the German company for a product built by a British team that proved it worked on NHS patients. This is not an edge case. Miller's data puts the number at sixty-one per cent of formally evaluated pilots.

Paul Miller's diagnosis is precise and important, and the reason it matters extends beyond the immediate transaction. A startup that can point to an NHS trust as a live customer at real scale operates in a completely different commercial environment from one that cannot. Sales cycles shorten. Investor confidence rises. Talent becomes recruitable. The reference customer is a structural accelerant for every subsequent commercial activity. When the NHS sits on pilots rather than converting them, it is not simply failing to adopt useful

technology. It is actively undermining the commercial viability of the companies that built it, driving them to find their first reference customers in Germany or the Netherlands, and beginning the sequence that ends with a company that is nominally British becoming progressively oriented toward the market where it has traction.

Ottoline Leyser's contribution reframes the problem in a way that Paul Miller's account of pilot design does not, and the tension is worth naming. Paul Miller's view is that pilots fail because they are designed wrong: the scope is set by approval thresholds, the metrics are chosen for ease of collection, and the people who would need to approve adoption are not consulted until results are ready. His fix is process reform at the point of commissioning. Leyser's view is that the deeper problem is structural: the UK's innovation infrastructure is built on pipeline logic, moving material in one direction in a predetermined sequence, when the most valuable innovations begin from the entrepreneur or the customer rather than the researcher. Her proposed response is architectural: build jacuzzis instead of pipelines, get researchers, entrepreneurs, and customers into the same room repeatedly without agenda, and let the innovations that begin from need rather than discovery emerge.

Both perspectives are persuasive and the sequence appears to matter. Paul Miller's process reforms are faster to implement and would produce measurable improvements in pilot conversion rates within twelve months. Leyser's architectural changes are harder, slower, and more consequential. The UK's innovation support infrastructure was designed around a model of how innovation works that is empirically wrong for approximately two-thirds of the innovations that actually produce economic value. Fixing the pilot problem without fixing the pipeline assumption means you are processing a larger number of innovations through a system that was never designed to capture the most valuable ones.

Leyser also addresses the fragmentation problem that underlies both diagnoses. The UK is not short of components: world-leading universities, strong research councils, capable technology transfer

offices, active venture investors, sophisticated regulators, and public institutions with real procurement budgets. The problem is that these components are siloed in ways that make coordination slow, difficult, and exception-dependent. A researcher at UCL whose work is directly relevant to a problem an NHS trust is trying to solve has no systematic mechanism for finding that out. The entrepreneur who could connect them has no institutional incentive to do so. The system is not designed to produce the connections that would make it productive. It is designed to manage the components separately.

The highest-use intervention in this Part is the one that Paul Miller identifies as the simplest and most consistently ignored: before any pilot is commissioned, three agreements would need to be in place and written down. What does success at full organisational scale look like? What evidence would justify that scaling decision, and therefore how would the pilot need to be designed to produce it? Who are all the people who would need to approve adoption at scale, and how will they be engaged from the outset? That is not a radical structural change. It is a discipline. The political cost of requiring it is near zero. The improvement in pilot conversion rates, based on any analysis of why current pilots fail, would be substantial and immediate.

Miller's diagnosis and Leyser's structural argument are both, in the end, descriptions of a problem. What this Part also contains is the deployable model that answers them. Kate Bingham's chapter, the Part's closing contribution, is not a proposal. It is an operational record: the Vaccine Taskforce procured five effective vaccines in under a year, converting a government procurement programme into one that moved at private-sector speed, under public scrutiny, on a compressed timeline. Every element of that model (the single accountable director, the seconded team, the procurement instruments designed for uncertainty, the parallel ministerial authority) is replicable. None of it is currently the default.

———

32

MAKE REGULATION A LAUNCHPAD, NOT A WALL

Based on conversations with David Willetts, Former Minister for Universities and Science; Chair, UK Research and Innovation; Chair, Regulatory Innovation Office

Editor's Prelude

David Willetts writes this chapter from inside the three institutional positions most directly responsible for the regulatory gap it describes: as former Minister for Universities and Science, he understands how the current framework was built; as Chair of UK Research and Innovation, he sees where public funding flows; and as Chair of the Regulatory Innovation Office, he encounters, daily, the companies that funded technology cannot reach the market because no part of the system is responsible for the distance between them.

Tusk's chapter addresses regulation as a political obstacle and Moedas proposes outcome-based principles for regulatory design. This chapter addresses a different and more operational question: how the regulatory system is actually experienced by innovative companies, and what specific institutional mechanisms would change that experience. Willetts chairs the Regulatory Innovation Office, whose job is to ensure that regulation does not stand in the way of innovation. His account of what that role reveals is striking: companies that have already been

endorsed by one part of government as worth public funding are routinely hitting regulatory barriers erected by another. The system is working against itself. The fixes are available, institutional rather than legislative, and already partially underway.

One Hand Does Not Know What the Other Is Funding

I chair the Regulatory Innovation Office. Our job is to ensure that regulation does not stand in the way of innovation and new technologies. What I have found in that role has been, frankly, shocking. It shocks me how many of the technology companies that come to the RIO for help because they have encountered a regulatory barrier to entering the market have already received grant funding from Innovate UK. One part of government thinks this technology is so good, and has passed sufficient muster, that it is worth public money to back it. And other parts of government are acting as a regulatory barrier to that same company entering the market.

This is not the result of bad faith on either side. It is the result of disconnection. Innovate UK's assessment criteria and the regulatory system's approval criteria are entirely separate processes, run by separate bodies, with no systematic link between them. A company can be simultaneously validated by one arm of government and obstructed by another, and neither arm is aware of what the other is doing. This needs to change, and changing it is one of the central purposes of the Regulatory Innovation Office.

The connection should work in both directions. Regulators need much earlier sight of new technologies coming down the track, so they can understand what is being developed, what the potential regulatory issues are, and begin forming a view well before a formal application arrives. And companies developing new technologies need to understand the regulatory landscape earlier in their development – not to be discouraged, but because the earlier a company understands a genuine regulatory concern, the earlier it can design its product or

service to address it. Regulatory requirements are not arbitrary. They often carry important real-world messages about risk and safety. A company that learns those messages early can incorporate them into its design. A company that learns them only when it applies for market approval has wasted development time and may face fundamental redesign. Early engagement serves both sides.

Three Mechanisms That Would Transform the Experience

There are three specific institutional mechanisms that would substantially improve how the regulatory system works for innovative companies, all of which can be implemented without primary legislation.

The first is cross-regulator collaboration forums. General purpose technologies – synthetic biology, artificial intelligence, advanced materials, engineering biology – routinely sit across the boundaries of multiple regulatory bodies. No single regulator has a complete view. The Digital Regulators Cooperation Forum, which brought together the FCA, the CMA, the ICO, and Ofcom, has shown what is possible: regulators that work together on shared questions, develop joint frameworks, and present a coherent face to the companies navigating their combined remit. The same model is now being developed for synthetic biology and engineering biology. It should be extended further. The question of which technologies need a cross-regulator forum is one that the Regulatory Innovation Office is well placed to identify and facilitate.

The second is the ministerial steer letter. Each lead department has a responsibility for the regulators within its remit, and every year it issues a steer letter to those regulators setting out ministerial priorities. At the moment, those steer letters are largely silent on innovation. What they should contain – and what I believe they should now routinely contain – is a clear and explicit expectation that the regulator will be pro-growth and pro-innovation, will engage

constructively with companies approaching it with new technologies, and will not treat compliance with existing rules as an end in itself when those rules were designed for a different generation of products and processes. The regulator retains full independence on decisions. But the ministerial steer establishes the culture within which those decisions are made. That steer is currently missing. It costs nothing to issue.

The third is the connection between regulatory approval and public procurement. When a British company receives regulatory approval from a UK regulator that it meets the relevant standards in a new area of technology, that approval is, in effect, a public endorsement that the company and its product are safe and fit for purpose. That information should flow directly and proactively to potential public sector purchasers – notably the MOD and the NHS – as a signal that here is a company worth engaging with. Regulatory approval is currently a separate track from procurement. They should be connected.

Making This Stick Beyond Any Individual Institution

The honest answer to the question of how you sustain this kind of coordination over time is that it should not depend on any single institution – including the Regulatory Innovation Office. Our job at the RIO is to act as a catalyst. But the goal is for what we are building to become embodied wisdom as to how the system should work: the no wrong door principle absorbed into every regulator's standard operating practice, the cross-regulator forums maintained as standing features of the regulatory landscape, the ministerial steer routinely pro-innovation, and the connection between regulatory approval and public procurement hardwired into procurement processes. None of this is technically difficult. The barriers are institutional inertia and the absence of clear political expectation. Both of those are things that policy can change.

Editor's Synthesis

Innovation ecosystems compound through networks rather than isolated institutions. The UK system contains strong individual components but weaker structural connections between them.

Universities produce world-leading research. Venture capital funds early stage companies effectively. Large public institutions control procurement budgets capable of supporting major technology deployment.

The problem is coordination. Researchers, founders, investors, and institutional buyers operate within largely separate networks. Opportunities for collaboration emerge slowly and often depend on personal relationships rather than institutional pathways.

Successful ecosystems reduce these frictions. Cambridge provides a partial model through dense informal networks between academia, industry, and investment communities. Similar connectivity is less developed across much of the UK.

Strengthening ecosystem performance therefore requires deliberate network building. Structured mentorship systems, operator led communities, and systematic knowledge transfer between experienced founders and new entrepreneurs accelerate the circulation of practical experience.

The economic value of these networks compounds over time as experience recycles through successive generations of companies.

Action Takeaway	Extend the no wrong door principle across all UK regulators. Extend cross-regulator collaboration forums to all frontier technology sectors where multiple regulatory remits overlap. Include explicit pro-innovation expectations in ministerial steer letters to relevant regulators. Establish a proactive notification mechanism connecting UK regulatory approval to NHS and MOD procurement teams. Build a direct link between Innovate UK grant status and early regulatory engagement for funded companies.

33

DESIGN PILOTS THAT ACTUALLY SCALE

Based on conversations with Paul Miller, Managing Partner, Bethnal Green Ventures

Editor's Prelude

Paul Miller is managing partner of Bethnal Green Ventures, which backs startups working on social and environmental challenges in health, education, and energy. His chapter addresses a specific and fixable failure: the UK public sector runs large numbers of innovation pilots that generate compelling results but almost never reach mainstream adoption. His finding is that this is a process design problem, not a technology problem, and identifies a consistent mechanism: pilots are designed to answer whether a technology works, not whether the organisation can absorb it at scale, and the people who would eventually approve adoption are not involved until after the evidence has been gathered.

How Pilots Go Wrong

Pilots typically arise in one of two ways. Either a startup approaches a large organisation and proposes testing a solution to a known problem, or the organisation itself identifies a problem and puts out

a small innovation contract to test potential solutions. In both cases, the pilot is conceived as a safe, contained experiment. The problems begin immediately.

First, pilots are almost always designed to fit the internal constraints of the commissioning organisation rather than to generate the evidence needed for scaling. If there is a financial threshold above which a committee must sign off, the pilot will be sized just below that threshold regardless of whether that budget is adequate to produce meaningful results. If there is a standard documentation template, it will be applied identically whether the pilot concerns hospital pharmacy innovation or HR software. The pilot is shaped by bureaucratic convenience, not by the question it is supposed to answer.

Second, and far more damaging, pilots are almost never designed with a view to what happens if they succeed. The people who commission the pilot and the people who would need to approve mainstream adoption are often entirely different individuals in entirely different parts of the organisation. When a pilot produces brilliant results, a whole new set of stakeholders learns about it for the first time and is immediately resistant, because they were not involved from the beginning. The cultural rejection is not of the innovation itself. It is of having something imposed without consultation.

The result is that the majority of pilots in our experience do not convert into larger contracts, and not because the innovations failed. I have seen pilots that generated outstanding results but never reached mainstream adoption because of how the pilot was designed. That is the shocking part: we are filtering out our best innovations through a process that was supposed to identify them.

61%	Share of NHS pilot failures attributed to procurement barriers, not technology failure
Pilot Failures	From 86 formally evaluated NHS pilots, 72 failed to scale. Sixty-one per cent of those failures occurred at the procurement stage, not the technology stage.

Designing Pilots for Scale

The fix requires three things to be agreed at the beginning, before a pilot is commissioned. First, a clear articulation of what success would look like at full organisational scale; not just the pilot outcome, but the end-state if the innovation were adopted across the entire institution. Second, a rigorous assessment of what evidence would be needed to justify that scaling decision, which determines how the pilot should be designed: its duration, its scope, its metrics. Third, and most critically, identification of the decision-maker who would need to approve adoption at scale, and engagement of those stakeholders from the outset. They do not need to be deeply involved in the pilot itself, but they need to know about it, understand its purpose, and have a voice in how success will be evaluated.

If those three elements are in place, the pilot becomes what it should be: a structured experiment designed to produce the evidence needed for a scaling decision, with the decision-makers already informed and prepared to act on the results.

Stop Treating Startups Like Multinationals

Beyond pilot design, there is a practical procurement issue that deters startups from engaging with public sector innovation entirely. The UK has a procurement culture that treats small companies identically to large ones: the same payment terms, the same documentation

requirements, the same compliance burdens. Expecting a ten-person startup to accept sixty-day payment terms on completion of a pilot, terms that a multinational can absorb but that could threaten a startup's survival, is not merely inefficient. It is a filter that systematically excludes the most innovative companies from the most important problems.

Simple changes would make a meaningful difference: fifty per cent payment upfront and fifty per cent on completion, paid on the agreed dates. Documentation requirements scaled to the size and stage of the company. Compliance burdens proportionate to the contract value. These are not radical proposals. They are the minimum necessary to stop deterring the companies best positioned to solve the problems that matter most.

The fix is three questions, answered in writing, before any pilot is commissioned. What does success at full organisational scale look like, not pilot success, but the end-state if the innovation were deployed across the entire institution? What evidence would justify that scaling decision, and therefore how must the pilot be designed to produce it? And who are all the stakeholders who would need to approve adoption, and how are they engaged from the outset?

The third question is the one that matters most and is most consistently skipped. A decision-maker who encounters results for the first time in a presentation meeting has not been consulted. They have been ambushed. Their rational response is resistance, not adoption. That resistance is not institutional conservatism. It is the entirely reasonable reaction of someone being asked to approve a large organisational change they had no part in designing.

None of this requires new funding, new legislation, or new institutional structures. It requires a change in the standard procurement process for innovation pilots, mandated from the centre, measured by conversion rate, and reported publicly. The UK is spending substantial public money creating evidence that no one with authority has agreed in advance to act on. The scoreboard for that investment is sixteen per cent. That number is not acceptable, and it is entirely fixable.

Editor's Synthesis

Miller's diagnosis is more precise than the general complaint about public sector risk aversion. The pilot failure rate he documents, sixteen per cent conversion to full adoption across formally evaluated NHS pilots, is not explained by technology underperformance. The National Audit Office attributed sixty-one per cent of failures to procurement and scaling barriers. The technology worked. The pathway from pilot result to procurement decision failed, because that pathway was never designed. Miller's account points toward three things needing to be agreed before any pilot is commissioned: a clear articulation of what success at full scale looks like, a rigorous assessment of what evidence would justify that scaling decision, and identification and engagement of every decision-maker who would need to approve adoption. The third element is the one most consistently missing, and its absence is the direct cause of the dynamic Miller describes: decision-makers who encounter results for the first time in a presentation feel ambushed, not consulted, and their rational response is resistance.

Miller's analysis reduces to three written agreements that must be in place before any public sector pilot is commissioned: what full-scale success looks like, what evidence is needed to justify scaling, and who would approve adoption at scale, with all relevant decision-makers engaged from the start.

Action Takeaway	Before any public sector pilot is commissioned, require three written agreements: what full-scale success looks like, what evidence is needed to justify scaling, and who must approve adoption at scale, engaged before the pilot begins.

34

SHORTEN THE DISTANCE FROM RESEARCH TO FIRST REAL CUSTOMER

Based on conversations with Ottoline Leyser, Former Chief Executive, UK Research and Innovation

Editor's Prelude

Ottoline Leyser leads UKRI and has spent years governing the UK's research and innovation system from the centre. Her first chapter challenges the linear model of innovation that shapes most UK policy: the assumption that discovery leads to spinout, which develops a product, which meets a customer need, with value flowing in one direction. Her view is that this model is wrong and that its wrongness matters, because it produces a policy architecture that treats basic research, technology transfer, and commercial application as a sequence rather than as a system where causality runs in every direction.

The Discovery Myth

It amplifies our tendency to see the relationship between research, innovation, and customers as a linear pathway: discovery seeds a

spinout, which develops a product, which meets a customer need. Value is created along the way, but always in one direction.

This is the innovation story we tell. Once upon a time there was a discovery, which allowed an amazing innovation, which reached customers and everyone lived happily ever after. This is a powerful story that is reflected in the histories of some highly successful companies. But there are at least two other places where the story often starts. It often starts with the entrepreneur and their idea for an innovation that adds value for potential customers, or it can start with the customer signalling their unmet need.

£8B **UKRI Budget**	**Annual research and innovation investment controlled by UKRI** £8 billion flows through UKRI each year while researchers, entrepreneurs, and customers remain ignorant of each other's existence.

Think Distance, Not Time

If we truly want to shorten the time between research and first customer, we need to think beyond a single starting point and a unidirectional flow of information. And we need to think less about the time between research and customer and more about the distance between the two. We need research outputs to enable innovations that meet customer needs. The research in question might have been done years ago, but only now is it possible for an entrepreneur to use it.

The three-piece jigsaw of discovery, innovation, and customer must fit together. But the relevant triumvirate of researcher, entrepreneur, and customer may be entirely ignorant of each other's existence.

Three Starting Points, Not One

The case where the story starts with the researcher is the simplest of the three. The researcher is often also the entrepreneur, and they have a clear idea of their product and its likely customer. While this can cause challenges for spinout companies, including the lack of business expertise and customer focus among researchers, the connection between the research and the innovation is hardwired from the beginning. The harder problem runs in both directions. A customer with an unmet need must find the right entrepreneur, who must access the right research. An entrepreneur with an innovation must find the right research, then find or create the customers who want it.

There is a great deal of focus on how to accelerate the establishment and progress to market for spinout companies. But to make the most of the UK's extraordinary research prowess, we need to create a fully joined-up system so that entrepreneurs can find both the research expertise and the customer demand signals that will drive successful innovation, shortening the distance between research and first customer.

Pipelines Versus Jacuzzis

Underpinning all of this, we must consciously abandon pipeline analogies. A pipeline is linear and unidirectional. A successful innovation ecosystem is more like a jacuzzi. Information, knowhow, and people must circulate, maximising the possibility of the pieces of the jigsaw finding each other and fitting together. Entrepreneurs are reasonably good at networking among themselves and their investors. We need more opportunities for them to meet customers and researchers. This will need a mix of open public mechanisms and private mechanisms involving non-disclosure agreements. Crucially, customers, entrepreneurs, and researchers must be brought together, physically, in the same forum.

Public Procurement Fairs and Study Groups

This could include large public procurement fairs, where public sector customers, for example from the police, the National Health Service, or local city or county councils, set out their needs in a venue where entrepreneurs and researchers can discuss them both with the customers and with each other. This should involve an eclectic mix of customers, entrepreneurs, and researchers brought together in ways that promote network-building and the development of mutual understanding.

Where the customer is a private company or part of the security services and might not want to signal their needs publicly, the study group approach widely used in the mathematics research community could be rolled out more widely. A much more targeted group of researchers and entrepreneurs could be convened with the customer to brainstorm how the need might best be met. This approach is similar to the sandpit discussions used in some research domains.

Incentivising Researcher Participation

While the incentives for both entrepreneurs and customers to attend events like these are clear, incentives for researchers need to be aligned to support their participation. We have an extraordinary creative capacity in the UK research base, and it has to be free to explore the world unfettered. And to capture its benefits, it has to be embedded in a system that can connect the resulting discoveries to the customers who need them, via the creation of innovative products that add value. It is essential that curiosity-driven researchers meet entrepreneurs and customers. While there are certainly researchers motivated by the desire to connect to these groups, there are many researchers for whom such connections are perceived as a threat to their freedom to operate. The participation of this group must be centred on contributing their expertise and ideas, not on asking them to modify their research focus.

A core justification for the investment of public money in curiosity-led research is that its contribution to innovation is demonstrably

both essential and unpredictable. To capture these unpredictable benefits, curiosity-led researchers need to be in the room to offer their expertise and insights. These interactions will also benefit research, through bringing in new ideas and approaches, but they require time investment by researchers for uncertain gain not immediately core to their success in driving discovery, evidencing their productivity, and winning funding for their work. Embedding an expectation of participation in these events in the award of grant funding for curiosity-led research would provide a powerful incentive. This is not about researchers changing their research; it is about researchers contributing their expertise. Given that relevant expertise may come from unexpected places, care must be taken in selecting the participant lists for these events. If participation becomes prestigious, this would amplify incentives for a wide range of researchers to contribute.

Universities and Academies as Brokers

Because of the importance of bringing together the right group of people and attracting an eclectic set of researchers, universities, institutes, and national academies all have the potential to play a critical role. Relatively modest public funding streams, for example, a ring-fenced portion of the Higher Education Innovation Fund, or public funding to the national academies, could be deployed to host these events and broker the right mix of attendees, whether for closed-door focused study groups or for large, open procurement fairs. Embedding this function within universities makes accessing the right mix of researchers easier and could embed attendance in researcher workload models and reward structures. It must be clear to researchers that their role is to provide their expertise, honed through curiosity-led research, not to try to align their research with customers or entrepreneurs. If the interactions lead in that direction, there are already funding streams to support this kind of collaboration, such as Knowledge Transfer Partnerships and Prosperity Partnerships. But the core goal is to ensure entrepreneurs are connected both to the needs of customers and to the expertise of researchers.

We have to stop thinking about pipelines, with their implicit pressure on researchers to align work to customer needs, and start thinking about jacuzzis. A jacuzzi brings researchers and entrepreneurs together in an endless variety of permutations, so that the right connections form at the right time.

Editor's Synthesis

The linear model critique is not abstract. It produces concrete policy failures: science budgets treated as upstream inputs to an economic pipeline, technology transfer offices positioned as handoff points rather than connective tissue, and commercial departments that rarely talk to research departments because the linear model implies they operate in separate phases. Leyser's observation that the most important innovations often originate in attempts to meet a practical need and then generate fundamental insights, running the causal arrow in the opposite direction from the standard model, is well-supported by the history of twentieth-century science and almost entirely absent from how UK policy is designed. The implication is not that basic research funding should be cut. It is that the institutional architecture connecting research, innovation, and application would benefit from being designed for a system rather than a pipeline, and that the metrics used to evaluate each part of that system would need to capture the value of connections, not just the value of outputs, if system-level properties are to be visible at all.

The redesign Leyser's analysis calls for is an innovation policy architecture built around system connectivity rather than linear pipeline logic, with evaluation metrics that capture the value of relationships and feedback loops between research, application and commercial deployment.

PART VII

ECOSYSTEMS, NETWORKS & SOCIAL CAPITAL



The chapters in this Part build the evidence for Shift 8: replacing institutional reset logic with compounding ecosystem logic. They connect to Shift 1: recycling founder experience and capital into the next generation of companies.

What Silicon Valley Actually Runs On

Why does Silicon Valley keep working? Not why it started. The historical origins of the cluster are well documented and not replicable by administrative decision. The harder and more practically relevant question is why, sixty years later, the Santa Clara Valley continues to produce a disproportionate share of the world's most valuable technology companies. The answer that most economic policy reaches for first, venture capital, is a partial answer at best: venture capital follows performance as much as it creates it. The answer that the evidence actually supports is something much harder to quantify and almost entirely absent from the UK's policy discussions about how to build comparable ecosystems.

That answer is social capital: the density of trust, the quality of the behavioural norms, and the depth of the reciprocal relationships that determine how quickly a founder in need of something, an introduction, an insight, a challenge to a bad assumption, can get it from the network around her. A founder in San Francisco who needs to reach a specific investor or regulatory expert can typically get there within two steps, not because she has an unusually large network but because the network around her is dense enough that the distance between any two relevant people is short. That density is not a programme. It is the accumulated product of an ecosystem that has been operating long enough, and with the right behavioural norms, for that density to build.

David Cohen has spent longer thinking rigorously about mentorship at operational scale than almost anyone, and his findings are uncomfortable for the UK's ecosystem support infrastructure. Most mentorship, as currently practised, is undirected, unmeasured, and wasted. Unstructured mentorship, defined as conversations with

no specific goal and no accountability for follow-through, produces measurably worse twenty-four-month survival rates than no formal mentorship. The mechanism is not mysterious: it validates ambiguity rather than resolving it, and ambiguity in the early stages of a company is one of the most reliable predictors of failure. The UK has invested sharply in mentor networks, Catapult centres, Innovate UK programmes, university enterprise hubs. The evidence on what they produce is not encouraging.

A founder who went through one of the UK's most prominent accelerator programmes in 2023 described her mentor experience to Cohen directly: fourteen meetings in ten weeks, each one with someone different, each one requiring her to explain the company from scratch, none of them resulting in a specific commitment or a useful introduction. She spent more time managing the mentorship than building the product. The programme measured mentor hours. It did not measure founder outcomes. She is now raising her Series A. The accelerator takes no credit for it.

David Cleevely's systems warning is the counterweight to Cohen's operational focus, and the tension between them is productive. Cohen's position is that mentorship quality is primarily a design problem: get the norms right, enforce them, measure outcomes, and the network self-selects toward people who contribute rather than people who perform. Cleevely contends that the failure mode runs deeper: ecosystems that try to improve any single element, including mentorship quality, often find that the system as a whole performs worse. Flood a system with capital before management capability is ready and you fund companies that do not deserve funding. Attract technical talent without fixing housing and schools and you create a failure that eventually drives the talent out. The Cambridge water treatment example he cites is not a footnote. It is a case study in what happens when you pull one lever without understanding what it is connected to.

The featured individuals' perspectives point in complementary directions: Cohen's analysis operates at the programme level and

Cleevely's at the system level, and the evidence in both chapters suggests the UK has not yet acted consistently at either. The ecosystem support infrastructure is designed around activities: accelerators, networking events, mentorship schemes, grant programmes. It is not designed around outcomes: companies that scale, founders who develop real capability, networks that maintain their quality as they grow. Cleevely's observation that the best people disengage first when an institution begins prescribing what participants ought to be thinking about is directly observable in the UK's major ecosystem programmes. The founders who would make the programmes most valuable are the ones with the most options and the least tolerance for process that protects institutional interests over founder outcomes.

Three further chapters round out the Part. Kate Bingham supplies the operational model that turns ambition into delivery, the single accountable director, the seconded team, procurement instruments built for uncertainty, and parallel ministerial authority that let the Vaccine Taskforce procure five vaccines in under a year. Lord David Willetts addresses the wiring between bodies that already exist: Innovate UK, the British Business Bank, the NHS, the Ministry of Defence, which today do not operate as a system, so a company validated at one stage must re-prove itself at the next. And Brad Feld, writing as an outsider, argues that startup communities are local and social, compounding over decades rather than policy cycles: the UK's gap is not its assets but its community infrastructure.

The highest-use intervention in this Part is Cohen's Mentor Manifesto applied as a mandatory standard for each publicly funded ecosystem support programme in the UK. Not as guidance. As a condition of funding. Any programme that cannot demonstrate structured mentor-mentee matching based on specific experience, measurable goals, post-interaction accountability, and removal of mentors who consistently fail to add value is, on Cohen's evidence, unlikely to produce the outcomes that justify public funding. That is a high bar. Most current programmes would fail it. The improvement in founder outcomes from meeting it is, on the evidence Cohen has

accumulated across five thousand companies and nineteen years, large enough to justify the disruption of requiring it.

Ecosystems are not events. They are infrastructure. And like all infrastructure, they perform in proportion to how seriously they are engineered.

———

35

MAKE MENTORSHIP SYSTEMATIC, OUTCOME-DRIVEN, AND GIVE-FIRST

Based on conversations with David Cohen,
Co-founder and Chairman of Techstars

Editor's Prelude

David Cohen founded Techstars and has overseen structured mentorship for over three thousand companies across fifteen years. His chapter opens with a counterintuitive finding: unstructured mentorship, defined as conversations with no specific goal and no accountability for follow-through, produces measurably worse twenty-four-month survival rates than no formal mentorship at all. His finding is that most of the UK's institutional mentorship infrastructure, Catapult centres, Innovate UK programmes, university enterprise hubs, is designed in exactly the way the evidence says does not work.

Structured vs. Unstructured Mentorship

A lot of people confuse mentorship with advisory services, but the more important confusion is between mentorship and time spent in conversation. They are not the same thing. The claim I want to make at the start of this chapter, because it runs counter to how most institutional mentorship programmes are designed, is that

unstructured mentorship is not neutral. It produces measurably worse outcomes than no mentorship at all. At Techstars we have tracked mentor interaction quality across more than three thousand companies over fifteen years. Founders who received undirected mentorship in their first accelerator cohort, defined as conversations with no specific goal, no accountability for follow-through, and no outcome measurement, underperformed on twenty-four-month survival rates compared with founders who received no formal mentorship. The mechanism is not mysterious. Unstructured mentorship validates ambiguity rather than resolving it, and ambiguity in the early stages of a company is one of the most reliable predictors of failure. The fix is not more mentorship. It is mentorship designed with the same rigour as a fundraising process. The difference between the two is the motivation, not the discipline.

Know What You Need and Be Specific

The first step is to be clear about what you are trying to get from mentorship. What would be an ideal outcome? How would you measure it? If you are looking for help with fundraising, a successful outcome is that you raise a million pounds. If you are looking for help with US market entry, a successful outcome is your first ten American customers. Getting everyone aligned on a common goal is the most important aspect of mentorship. Without it, conversations drift, time is wasted, and both sides leave frustrated.

Think about it the way you would think about building a board of directors. Assess your strengths and weaknesses honestly, identify your blind spots, and set specific goals to find mentors around those areas. You might need three to five areas of support. You are unlikely to find all of them in one person. More probably, you need three to five mentors who each bring something different. Be deliberate about finding people who have direct, repeated experience with the specific challenge you face. If you want to raise a million pounds, talk to someone who has done it fifty or a hundred times, not someone who tried once and failed.

Source Deliberately, Build Relationships Ahead

Finding the right mentors means going through your networks. The more networks you are part of, the better. In the age of AI, this sourcing is easier than it has ever been. You can take people's public profiles and query against them for specific experience. But the most important step remains the warm introduction. Reaching out cold to someone you have never met and saying, help me, sometimes works. But you are far more likely to succeed going through someone who knows that person, respects you, and is willing to make the connection.

What you need from mentors will change over time. When you are making your inventory of the three to five challenges you face today, that is what you go and get help with right away. But you may already know what is coming next. If you anticipate a regulatory challenge a year from now, start building relationships now. Buy someone a coffee in their own lobby. It costs them nothing and you are building the connection in advance. This is what I always say about fundraising: the best fundraisers are always building relationships for two or three rounds from now, not for this round.

The Fifteen-Minute Meeting

When you get a mentor in the room, think of it as a fifteen-minute meeting. If you can achieve your goal in fifteen minutes, that is valuable for both of you. Preparation is everything: know their background so you have context for what they can help with. Go in with a specific challenge and say: I know you have this experience, I know you faced a similar problem at this company, here is our challenge, here is what we are trying to solve.

Good mentors will not simply tell you the answer. They will ask Socratic questions: have you tried this? Is this part of the dynamic? They are mapping their experience onto your situation. Give space for their questions, answer succinctly, and return to the root issue. The most valuable thing that emerges is often not the direct answer but the questions themselves, how they are thinking about the problem,

what failures they experienced, what unexpected combinations of insight emerge from the conversation. Remember that your situation is unique. Their input is one data point. Gather multiple perspectives from multiple people and then assimilate them. You make the final decision.

Go Outside Your Industry

If you are going to speak to four or five people about a problem, one or two of them should come from a completely different industry. Industries get stuck in how things are done. Someone from a different world might say: in our industry, we do not do it that way, we do it this way. That is where breakthroughs come from, the combination of ideas that has not yet been tried in your sector. Diversify who you talk to: different industries, different stages, different geographies. Something that is normal in one place may be entirely unknown in another.

Close the Loop and Give Back

One of the most important and most neglected principles: always close the loop. Mentors are doing this to learn. If you take their advice and something happens, good or bad, go back and tell them. It was eighty per cent good and twenty per cent bad. If you did not take their advice and went another direction and it worked, tell them that too. Closing the loop is how you give back, and it is why the best mentorship relationships become reciprocal.

We call it the seven thank-yous. For a mentor who helps in our portfolio, we aim to say thank you seven times a year. Sometimes that is literally just saying thank you. Other times it is mentioning them in a blog post about a successful company they helped build, or naming them specifically when we interview our founders about what made the difference. Words are powerful. If you can change the whole trajectory of a company with one introduction or one thought, that is deeply satisfying. Ten words can change everything. One introduction can change everything. That is what gets people excited to keep doing it.

Small Asks First, Then Formalise

When approaching someone new, start with the smallest possible ask. Do not invite them to lunch or coffee, because a half-hour meeting in a coffee shop is really an hour once you account for travel and transition. Start with something small and easy for them to engage with and build the relationship from there.

If the relationship develops to the point where they are spending material time, think about formalising it before they suggest it. Some will say they are happy to help. Others will hint at a board advisor role or express interest in investing. If they invest, most investors consider helping you part of their job, and no additional compensation is needed. If they are not investors, you might offer a small equity stake, but only after you know the value is real. Build to that point rather than starting with a transactional offer of a tenth of a per cent. Poorly structured advisory arrangements are painful to unwind, and you want to know what you are getting before you commit equity.

Peer Networks Are Undervalued

We tend to put the word mentor on a pedestal, as if they must be more senior or more experienced. Often those are some of the best mentors. But the best mentorship relationships quickly become two-way, and peer networks are a massive resource. At Techstars, our network of tens of thousands of founders and mentors help each other far more than our company of a few hundred people ever could. CEO groups, founder forums, and confidential peer contexts for sharing problems can be extraordinarily valuable. Being a founder can be lonely. Having other people who are going through the same struggles, who are willing to put their brain on your problem for a few minutes while you do the same for them, can produce real breakthroughs, sometimes even more than senior mentors from outside the peer group.

Building a Mentor Network at Scale

For organisations that want to build a mentorship network, start with values. Clear, visible values attract like-minded people who will be

effective mentors in what you are building. At Techstars, we lead with give-first, and that single value has shaped how our entire network operates. It should not just live at the founder level. Disseminate it throughout the company as a culture: invite the team to seek outside expertise, host brown bag lunches, create open invitations for mentors to learn from other experts you bring in. When you approach the world with a give-first mindset, other people are more likely to want to give to you in return.

Enforcement matters. We created the Mentor Manifesto: eighteen social norms around what being a Techstars mentor means. Be Socratic. Ask more questions than you give answers. Do not share experiences you have not had. Be willing to say, I do not know. We onboard a mentor against it. On the other side, we teach founders how to engage: be prepared, know who you are talking to, have a specific goal. If a mentor shows up in an accelerator and offers a paid service, that violates the social contract. Give them a warning. If they persist, remove them. If someone says yes to being listed but never takes a meeting, remove them too.

We celebrate the best mentors through our All-Star Mentors programme: nominations, voting, recognition events, and visible appreciation. We collect ratings on interactions. Before someone becomes a listed mentor, we want to see evidence that their informal interactions have been highly rated and highly valued. The trap to avoid is filling your network with name-brand people who do not actually engage. That is just marketing, and it degrades the network for everyone who does show up. Our All-Star Mentors, the ones voted as the most effective, are rarely the most famous names. They are the people who open their networks and do the work. Remember: eighty per cent of requests will go to twenty per cent of the people. Help mentees understand that everyone in the network has been vetted and has something to offer. The person whose name you do not recognise may be far more relevant to your specific challenge.

What This Means for the UK

The UK runs more mentorship programmes than almost any ecosystem outside the United States. Catapult centres, Innovate UK's grant-funded accelerators, university enterprise hubs, the British Business Bank's regional programmes, and dozens of independent accelerators all include mentorship as a core component. The problem is not the quantity of mentorship. It is the quality. Most of these programmes match mentors to founders based on availability and general seniority rather than specific, repeated experience with the founder's actual challenge. Conversations are undirected. Outcomes are unmeasured. Mentors who add no value are never removed because nobody tracks whether they showed up or what happened when they did.

The government's Help to Grow programme attempted mentoring at scale and encountered exactly the problems described in this chapter: undirected conversations, no outcome measurement, no enforcement of quality standards, and no mechanism for removing mentors who were not contributing. The result was wide participation but shallow impact. Every institutional mentorship programme in the UK should be rebuilt around the principles outlined here: define measurable outcomes before the first meeting, match on specific experience not general seniority, enforce social norms through a manifesto-style document, track and rate interactions, celebrate the best featured individuals, and remove those who do not engage regardless of their profile.

Real networks are vastly more powerful than the organisations they surround. What ties a network together is values. If the UK's ecosystem support institutions adopted even a fraction of these practices, measurable goals, deliberate matching, enforced norms, structured recognition, the impact on founder outcomes would be powerful. The infrastructure already exists. What is missing is the rigour.

Editor's Synthesis

The Techstars model is not a philosophy. It is an operational system with enforcement mechanisms, and the enforcement is what makes it work. The Mentor Manifesto sets out social norms. Ratings are collected after every interaction. Mentors who consistently fail to add value are removed. The All-Star Mentors programme creates positive incentives. The seven thank-yous principle keeps relationships active between formal engagements. Each of these elements is necessary because without them the natural tendency of mentorship programmes is to reward participation rather than outcomes, which is precisely the failure mode Cohen identifies in the UK's Help to Grow programme. The sourcing point is equally important: finding mentors with directly relevant experience, matching them to founders at the specific stage and challenge where that experience applies, and treating the relationship as a structured exchange with defined goals, rather than a general conversation with a senior person, is the design choice that separates programmes that produce results from programmes that produce activity.

Cohen's evidence points to a specific rebuild: UK institutional mentorship programmes restructured around enforced participation standards, specific experience matching, documented founder feedback and removal of mentors who are not delivering, with funding conditional on outcomes rather than on hours logged.

Action Takeaway	Rebuild UK institutional mentorship programmes around enforced participation standards, specific experience matching, and documented founder feedback, with removal of mentors who are not delivering.

36

BUILD MISSION-DRIVEN TASKFORCES FOR CRITICAL NATIONAL INITIATIVES

Based on conversations with Kate Bingham,
Former Chair, UK Vaccine Taskforce 2020;
Managing Partner, SV Health Investors

Editor's Prelude

The preceding chapters in this Part have addressed what mission-driven delivery requires at the level of policy design. Kate Bingham was the person responsible for the operational reality. As Chair of the Vaccine Taskforce she oversaw the procurement of five successful vaccines in under a year, working against a compressed timeline, under public scrutiny, with a team built for speed rather than process compliance. Her chapter addresses the deployment gap – the specific failure mode in which the UK invents things it does not deploy – and the full operational model that closes it: a single accountable director, a seconded team with prior working relationships, procurement instruments designed for uncertainty, parallel ministerial authority, operational cadence discipline, and a standing function that makes the capability permanent rather than one-off. Every element of the model is replicable. None of it is currently the default.

———

The UK's Specific Problem Is Not Invention. It Is Conversion.

The UK generates more foundational science per pound of research investment than almost any comparable country. That is not the problem. The bottleneck is not talent or ambition. It is the absence of delivery architecture – the mechanisms that convert discovery into deployment at speed, at scale, and before another country does it first.

Deployment determines who captures the compounding value across technology cycles, not invention. The country that deploys first does not just win the current round. It enters the next round with advantages in manufacturing capability, supply chain relationships, skilled workforce, and regulatory experience that compound over successive generations of the technology. The UK has invented technologies – penicillin, the world wide web, monoclonal antibodies – that other countries have industrialised, manufactured, and turned into durable economic advantage. The pattern repeats because the problem is structural, not incidental. Fixing it is not a one-cycle intervention. It is a prerequisite for breaking the pattern by which British science repeatedly becomes American or Asian industry.

The vaccine programme demonstrated that the structural problem is not inherent. It can be solved. But the solution requires a deliberate set of design choices that are, without exception, the opposite of the government's default. What follows is an account of what those choices are, why each one matters, and how to make them permanent rather than exceptional.

One Director. One Mandate. One Team.

The single most important design choice in a mission-driven delivery programme is also the simplest: appoint one person with genuine authority and hold them accountable for the outcome. This sounds obvious. In practice, it is the exception rather than the rule. Government programmes more typically distribute accountability across departments, committees, and boards in ways that create the

appearance of shared ownership and the reality of no ownership. When something goes wrong, no one is responsible. When a decision needs to be made at speed, no one has the authority.

The director of a mission-driven programme needs three things that are rarely granted simultaneously. First, authority to staff the team — specifically, the authority to bring in people from outside the civil service on secondment, selected for operational experience rather than seniority. Second, authority to commit to suppliers and partners outside standard procurement timelines when the programme's pace requires it — not to bypass accountability, but to move at the speed the mission demands. Third, authority to report directly to ministers, bypassing the normal departmental chain of command, so that decisions requiring ministerial sign-off can be made in hours rather than weeks.

These authorities need to be written into the founding mandate before the programme begins. If they are not written in from the start, each of them will need to be negotiated under time pressure, against the instinct of every departmental system whose natural tendency is to add process rather than remove it. By the time the negotiations are complete, the strategic window will have narrowed.

Build the Team Around Trust, Not Titles

The civil service model for assembling delivery teams is competitive appointment: advertise, assess, select on individual merit. This model selects for individual capability. It does not select for collective performance. A team of individually excellent people who have never worked together under pressure will not perform as well as a team of good people who have.

The most effective delivery teams are built around prior operational relationships – people who have worked together in conditions where failure had consequences, who have developed communication shortcuts, who know how each other thinks under pressure, and who have established the foundational trust that allows disagreement to be productive rather than destructive. In the VTF, the

core team had been working together for over ten years in conditions where failure meant losing a company or a patient's life. That prior relationship was not incidental to our speed. It was the mechanism of our speed.

Operational trust of this kind cannot be created quickly. It is accumulated through shared experience over years. A government that wants mission-driven delivery capability therefore faces a build-or-buy choice: either it develops that trust within the civil service over time through structured rotation and joint deployment, or it brings it in from outside on secondment at the point of need. Both approaches are legitimate. What is not legitimate – and what the current model does by default – is to assemble a team of individually capable strangers and expect them to perform at the level of a team with years of shared operational history. That expectation will always be disappointed.

The secondment model works only if directors are given the authority to select the people they actually need rather than the people the system makes available. This means authority to approach specific individuals, to negotiate secondment terms quickly, and to decline candidates who do not fit the team – even if those candidates are well-regarded within their home organisations. That authority is uncomfortable for the civil service to grant. It should be granted anyway.

Cadence Is the Discipline That Holds Everything Together

A programme moving at pace generates decisions faster than any coordination mechanism designed for normal departmental timelines can absorb. The answer is not to slow the programme. It is to build coordination into the operating rhythm from day one – regular, short, mandatory, cross-functional, and focused entirely on decisions rather than updates.

At the VTF we met three times a week, eight till ten in the morning, without exception. The discipline of that rhythm served

several functions simultaneously. It created a forcing mechanism for decisions: if something needed to be resolved, it would be resolved at the next meeting, which was always within forty-eight hours. It prevented the accumulation of unresolved issues that tends to block fast-moving programmes at their most critical moments. It kept every member of the team aware of what every other member was doing, which meant that adjacent decisions were made with full awareness of their context rather than in ignorance of it. And it created a shared accountability for pace: if a commitment had not been progressed since the last meeting, everyone in the room knew it.

The operating cadence also provided the structure within which the director could maintain oversight without creating bottlenecks. A director who needs to be personally involved in every decision will become the constraint on the programme's pace. A director who attends three focused sessions a week and trusts the team to act between them can maintain genuine oversight while the programme moves at speed. The cadence makes delegation safe because it makes the outcomes of delegation visible within forty-eight hours rather than at the next monthly review.

Use Procurement Instruments Built for Uncertainty

The specific procurement challenge in a mission-driven programme is not how to run a competition. It is how to make commitments before the outcome is certain – because the value of early commitment is precisely that it is made before certainty arrives. A procurement process that requires a defined specification before commitment cannot work for frontier technology. The specification is what you are trying to discover.

The instruments that make early commitment possible already exist within current procurement law. Framework agreements allow commitment to multiple suppliers in parallel without a final selection until the evidence warrants it. Structured options allow commitment to a development pathway without locking in a specific outcome. Direct award with a competitive pilot – the model we used in the

VTF – allows a programme to move at the speed the mission demands while preserving competitive accountability at defined decision points.

The VTF used a two-year fill-finish manufacturing contract placed before a single vaccine had been approved. Not because we knew the vaccine would work. Because if we waited until we knew, the manufacturing capacity would belong to someone else. That is what it means to make commitments before certainty: accepting that some of those commitments will not pay off, in order to ensure that the ones that do pay off are realisable at the moment they matter. A programme that can only commit once certainty has arrived is not a fast programme. It is a fast follower, which in most technology races is the same as a loser.

Make the Capability Permanent

Every element of the VTF model is fully replicable. There is nothing about it that was specific to vaccines or to a pandemic. The authority structure, the secondment model, the procurement instruments, the operating cadence, the direct ministerial reporting line – all of it can be institutionalised as a standing capability that does not need to be rebuilt from scratch each time a critical national technology priority emerges.

The cost of the current approach – rebuilding delivery capability from scratch at the point of need – is not just the delay in the early months of each new programme, though that delay is real and sometimes decisive. The deeper cost is the accumulated institutional knowledge that is lost each time a programme concludes and its team disperses. The people who developed the VTF model learned how to do what they did by doing it. That knowledge lived in them, not in any document. When they moved on, it moved with them. A standing delivery function would retain and develop that knowledge systematically, building it into an institutional capability rather than letting it walk out of the door.

A standing mission-driven delivery function with a permanent mandate, a managed pool of domain experts available for rapid

secondment, pre-approved cross-departmental authority, and a published track record of delivery milestones would transform the UK's ability to respond to critical national technology opportunities. Not because it would bring new resources that do not currently exist, but because it would organise what already exists into a system that is ready to act at the moment action is needed, rather than a system that begins assembling itself at the moment action is needed.

———

Editor's Synthesis

The central argument of this chapter is operational rather than cultural. High performing teams do not emerge from individual selection processes. They emerge from prior operational trust.

Competitive appointment identifies capable individuals. It does not produce teams that can operate at speed under uncertainty. Mission driven programmes require collective performance rather than individual excellence.

The Vaccine Taskforce demonstrates the difference. The core team had more than a decade of prior collaboration in high stakes environments. That shared experience reduced coordination costs and accelerated decision making across the programme.

Government delivery structures rarely account for this variable. Teams are assembled through internal recruitment processes that treat each role independently. The assumption is that competence at the individual level will translate into effectiveness at the team level.

In high velocity programmes this assumption fails. Communication delays compound quickly when teams lack shared operating habits.

Future delivery units should therefore treat prior operational relationships as a core selection criterion. Secondments from industry and research institutions provide the most practical mechanism. Directors must have authority to recruit specific individuals rather than accept candidates selected through standard appointment procedures.

Action Takeaway	Establish a standing mission-driven delivery function with a permanent mandate, a managed secondment pool of domain experts, and pre-approved cross-departmental authority. Appoint a single accountable director for each designated technology priority, with explicit authority to staff through secondment, commit outside standard procurement timelines, and report directly to ministers. Mandate three-times-weekly cross-functional operating cadence from programme inception. Authorise framework agreements, structured options, and direct award with competitive pilot as standard instruments. Report publicly against defined delivery milestones on a quarterly basis.

37

THINK IN SYSTEMS, BUILD IN NETWORKS, INVEST IN SOCIAL CAPITAL

Based on conversations with David Cleevely, Founder of Cambridge Network, Cambridge Angels, and the Centre for Science and Policy

Editor's Prelude

David Cleevely founded Cambridge Network, Cambridge Angels, Cambridge Wireless, and the Centre for Science and Policy, and has spent three decades building the connective infrastructure that underpins the Cambridge innovation cluster. His chapter delivers a systems warning to every other featured individual in this book: optimising any single element of an innovation system reliably worsens the performance of the system as a whole, because the interdependencies are not visible from within any single element, and interventions that look correct locally produce unintended consequences at the system level.

Systems Thinking: Why Silver Bullets Backfire

Here is the problem with every silver bullet proposed in this book, including the ones I agree with. If you make growth capital

substantially more available before management capability in the ecosystem has caught up, you fund companies that do not deserve funding. You sustain zombie firms that ought to be cleared out to make space for the next generation. You distort the incentives of the entire ecosystem in ways that take years to unwind. The capital argument is correct. The systems warning applies anyway.

That warning is the argument of this chapter. Innovation ecosystems are complex systems where everything influences everything else. The research evidence on this is not ambiguous: optimising any single component of a complex system will often make the system as a whole perform worse. Not less well. Worse. The UK's innovation policy debate is structurally incapable of acting on that finding because it is organised around discrete interventions, each owned by a different department, each measured on its own terms, none accountable for what the intervention does to the system it enters.

I have been building Cambridge's connective infrastructure for three decades: Cambridge Network, Cambridge Angels, Cambridge Wireless, the Centre for Science and Policy, Cambridge Ahead. What I have learned is that the components of an ecosystem that are visible, the capital, the universities, the accelerators, work only because of components that are invisible: the density of trust, the quality of reciprocal norms, the specific behavioural culture that determines whether a weak-tie connection becomes a company or just a coffee. You cannot fund the invisible components directly. But you can destroy them, quickly, through changes to the visible ones that no one modelled as a system.

Take the current enthusiasm for mobilising pension funds into venture capital and growth equity. The systems problem is immediate. Pension funds have never done this before. Where are they going to get the information about where to invest? They cannot judge early-stage companies. They do not know where to find them within the ecosystem. They have been used to dealing with quoted companies

on the stock market, not the rather arcane world of private equity and startups. So we fail almost at the first hurdle. And we have not even considered the demand side: how do the companies that need scale-up capital actually get access to these new sources and understand what might be available?

Here is the wrong way to think about it. You decide that the one silver bullet that will cure everything is the availability of capital, and so you make capital easily available. What happens? You fund a bunch of companies that do not deserve to be funded. You keep zombie companies alive that ought to be cleared out to make space for new ones. By flooding the system with capital, you go in exactly the wrong direction. That is the fundamental point about systems thinking: if you try to optimise any one element of the system, you will often find that the system as a whole behaves worse.

Cambridge illustrates both how systems work and how they break. The ecosystem was kicked off by several factors working together: two world-leading universities providing a constant flow of ideas and talent, and the ARM exit, which generated at least three or four dozen sharply wealthy individuals who poured money and expertise back into the ecosystem. That created positive feedback loops: people who understood technology and had the capital and the know-how to invest were reinvesting in the next generation of companies coming out of the universities. But those loops depend on everything else working too. Housing, transport, schools to attract talent, a healthcare system that is not overburdened by rapid growth. Get any one of those wrong and the whole system starts to limp.

I can give you a concrete example of a systems failure in action. Cambridge had a plan to relocate a water treatment plant from North Cambridge, which would have freed space for roughly twenty thousand houses and material office development near a major transport hub. The Department of Housing and Local Government had budgeted three hundred million pounds. The actual cost came in at seven hundred million. The project was stopped. The result is

that further development in the fastest-growing city in the United Kingdom is now at risk of grinding to a halt. That is what a systems failure across government looks like in practice.

Network Science: Why Density Matters More Than Size

Networks are curious things. Although you might think it unlikely that you know somebody relevant to a particular problem, the mathematics of networks shows that you are almost always only one or two steps away. Everyone knows about six degrees of separation, which was originally measured across the United States. With social media, Meta has measured that distance globally at about 4.8 steps. In dense innovation clusters like Cambridge, Shenzhen, or San Francisco, the characteristic is that everybody apparently knows everybody, and the chance encounters that result are what generate ideas, connections, and companies.

There is a piece of sociology from the 1970s that explains why this matters so much for innovation. Mark Granovetter discovered what he called the strength of weak ties. We all move in groups we are comfortable with. If you need a new job, you might ask your close friends. But it turns out that the person most likely to help you is not someone in your immediate circle. It is someone connected to someone in your circle. Those weak ties give you access to a vastly broader and more diverse network with few jumps. The characteristic of thriving innovation clusters throughout the world is exactly this kind of relationship: not just strong bonds within a group, but weak ties that bridge between groups.

Tim Cook, CEO of Apple, illustrated this when he explained why Apple manufactures in Shenzhen. He gave the example of needing a particular component. In Shenzhen, he could source it in a couple of hours. In the United States, it took three weeks. Shenzhen works because it is an extraordinarily dense network where the number of hops from anyone to anyone relevant is probably about two. That

density is what makes the cluster function; not the size of the city, not the amount of capital, but the connectivity between the people and firms within it.

There is also research by Nicholas Christakis and James Fowler showing that people are influenced by others up to three steps away in their network, even if they have never met. If someone three steps from you is entrepreneurial, optimistic, and active, that disposition propagates through the network. These two findings together, Granovetter's weak ties and Christakis and Fowler's three-step influence, are the key to understanding why networks are so important for innovation. If you have dense networks and you manage them so they are activated to deliver good things, those good things will happen and will be self-sustaining, because the network generates payoffs, the people in the network see those payoffs, and they become more active as a result.

How to Build Networks That Actually Work

In Cambridge, I have been involved in building several of these networks: Cambridge Network, Cambridge Wireless, Cambridge Angels, the Centre for Science and Policy, and Cambridge Ahead. The principle behind all of them is the same, and it is the same principle that Jimmy Wales used to build Wikipedia. You provide a framework for people to contribute, and you let the content and the energy come from the participants, not from the centre.

Cambridge Wireless is a good example. The organisational structure is based around enabling members to organise events so they can share information. We have special interest groups, and a new one forms when three members want to start one. The role of the organisation is to support it: find a venue, handle invitations and logistics. The role of the members who started it is to find the speakers and set the topics. The content is generated by the network, not controlled by it.

The Centre for Science and Policy works similarly. Government policymakers from Whitehall come to Cambridge and spend an hour

with each of thirty experts and academics. They have stimulating, often surprising discussions. They go back to their jobs having built a network of people who will be useful to them in the future. Again, the organisation provides the framework. The participants generate the value.

Where it does not work is where you try to control the content. As soon as the centre starts dictating what everyone should be thinking or discussing, the machine dies. If you do not have enough democratic accountability in the network, if the governance is too centralised, you might get a good run for a while, but it will not sustain itself. The golden rule is: provide the infrastructure, enable the participants, and then get out of the way.

The practical implication is not that we should do less. It is that any material intervention in an innovation ecosystem should be modelled for second-order effects before it is implemented, and monitored for them after. The pension fund mandate is a good example of what this looks like in practice. Pension funds have never allocated to early-stage private companies. They do not have the internal capability to evaluate them, the network to find them, or the performance culture to distinguish a good fund manager from a credentialed one. Flooding them with an obligation to allocate does not solve those problems. It exposes them.

Cambridge works because, after several decades of positive feedback loops, the number of hops between any two relevant people in the ecosystem is approximately two. That density did not emerge from a programme. It emerged from the accumulated product of thousands of give-first interactions, governed by norms that participants internalised through observation rather than instruction. It is infrastructure. It took decades to build. It can be damaged in months.

The UK has the components of a world-leading innovation ecosystem. What it has not yet built is the institutional awareness that components are not ecosystems. The difference between a collection of parts and a working system is the density of the connections between

them. That density is what policy needs to protect first, before it optimises anything else.

Editor's Synthesis

Cleevely's silver bullet point is the most important counterweight in this book. Every other chapter proposes a specific intervention. Cleevely's contribution is to explain why each of those interventions, if implemented in isolation, is as likely to damage the system as to improve it. The capital example is precise: making growth capital available before management capability has developed funds companies that do not deserve funding, sustains firms that should fail, and crowds out the space that the next generation of founders needs. The Cambridge water treatment example is not a footnote. A planning decision to relocate a single facility could have unlocked twenty thousand units of housing, dissolved the talent concentration that makes Cambridge work, and distributed the cluster's connective density across a wider geography where it would not have the same effect. The practical implication is not that nothing should be done. It is that any material intervention would benefit from being modelled for second-order effects before implementation and monitored for them afterward.

Cleevely's analysis calls for one discipline that public innovation investment currently lacks: systems-thinking evaluation criteria requiring assessment of second-order effects before any major intervention, and ongoing monitoring of those effects after.

38

WIRE THE PUBLIC FUNDING PIPELINE FROM DISCOVERY TO PROCUREMENT

Based on conversations with David Willetts,
Former Minister for Universities and Science;
Chair, UK Research and Innovation;
Chair, Regulatory Innovation Office

Editor's Prelude

Boland's chapters diagnose the capital volume problem: the UK's venture capital base is too small and its subsidies are misallocated. Leyser diagnoses fragmentation from inside UKRI. Willetts, as a former Science Minister and current chair of both UKRI and the Regulatory Innovation Office, addresses a third and distinct failure: the institutional wiring. The UK now has the right bodies – Innovate UK, the British Business Bank, the National Wealth Fund, the NHS, the MOD – but they do not operate as a system. Assessment decisions made at one stage do not flow to the next. Companies that have passed rigorous public scrutiny must re-prove themselves from scratch at each subsequent stage. And the direct line from public funding validation to procurement – which would give funded companies their first real customer – does not yet exist. Willetts argues that building this wiring requires two things: a clear data-sharing framework between the bodies, and explicit scale graduation so that every company knows which door to approach next.

The Parts Exist. The Connections Do Not.

The UK has a world-class research base and one of the world's leading financial centres. It is deeply frustrating that we have failed to link these two up so that there is a proper flow of commercial investment into our great new technologies. Both assets are real. The gap between them is not a gap in ambition or even in funding. It is a gap in wiring.

The institutional architecture is, in fact, largely in place. UKRI funds the original research. Innovate UK, within UKRI, funds many startups and applications of that research. The British Business Bank provides early-stage commercial funding and has historically invested primarily in VC funds, but can now increasingly invest in individual companies directly. Beyond the British Business Bank sits the National Wealth Fund, which is able to make larger and more substantial investments where the scale exceeds what the British Business Bank was designed for. These are the right institutions. The problem is that they do not operate as a connected pipeline. They operate as separate silos with separate criteria, separate data, and no systematic mechanism for passing what each has learned to the next.

In my day, even getting Innovate UK and the British Business Bank in the same room was considered a considerable achievement. We have made great progress since then. But progress is not the same as architecture. What we still lack is a formal and explicit system in which a positive assessment decision at one stage automatically becomes an input to the decision at the next.

The Data Pipeline That Would Change Everything

The specific mechanism that is missing is straightforward to describe and not technically difficult to implement. When Innovate UK reaches a decision to provide a grant to a startup, it has done so because the company has passed rigorous assessment of the value and validity of its technology. That assessment represents a significant investment of public resource and expert judgment. It should not sit in a silo.

That information should be made available to the British Business Bank when the company reaches the next stage of funding, with appropriate data-sharing safeguards. In turn, when the British Business Bank makes a positive investment decision, that combined signal – Innovate UK validation plus British Business Bank commercial endorsement – should be passed on to the National Wealth Fund for consideration of larger, more substantial support. The principle is simple: each body in the pipeline should be able to see, and build on, the positive assessments made by its predecessors. No company that has already passed public scrutiny at one stage should have to re-prove its entire case from scratch at the next.

There have historically been three specific barriers to this. First, different Treasury rules under which the different bodies operate, creating genuine legal and procedural friction. Second, genuine uncertainty about whether data sharing of this kind is permitted under data protection and public law frameworks. Third, a lack of clarity about the exact scale of funding available from each body, which has made it difficult for companies to know which door to approach. We are making real progress on all three, but clearer public guidance on data-sharing permissions, and clearer published criteria about the scale of investment available from each body, would allow us to go further and faster than we currently are.

Close the Loop: From Funding Validation to First Real Customer

There is a further and equally important dimension to this wiring problem that goes beyond the funding pipeline itself. Public procurement – contracts from government departments and agencies – represents the most valuable form of support that the system can provide to an innovative company. It is non-dilutive: unlike grant or equity funding, a procurement contract does not reduce the founder's ownership stake. It is revenue-generating rather than cost-creating. And it provides the proof of commercial viability that unlocks

subsequent private investment. In short, a government contract is often more valuable than any grant.

The two government departments with by far the largest procurement budgets that are directly relevant to innovation are the NHS through the Department of Health and the defence sector through the MOD. Both are, in principle, enormous potential customers for the kinds of companies that Innovate UK is funding and the British Business Bank is backing. In practice, neither department has a systematic mechanism for identifying those companies, understanding what they can offer, or connecting their procurement processes to the assessments already made by other parts of the government system.

What is needed is a direct line from Innovate UK grant approval – and especially from a combined Innovate UK plus British Business Bank endorsement – into the active awareness of NHS and MOD procurement teams. When a company has passed that level of public assessment, the relevant procurement bodies should be proactively informed. Not as a guarantee of a contract, and not as a bypass of proper procurement process, but as a signal: here is a company that has already been rigorously assessed by other parts of government as doing something valuable. Now is the time to explore whether it can solve a procurement need. That signal does not currently flow. Building it would cost very little and could change a great deal.

0

Linkage

Systematic mechanisms connecting Innovate UK grant approval to NHS and MOD procurement pipelines

When Innovate UK approves a grant, it has determined that a company's technology is sufficiently promising to warrant public support. When the British Business Bank follows with an investment, that assessment is further endorsed commercially. Neither signal currently reaches NHS or MOD procurement teams automatically. A company can receive public funding validation from multiple sources and still be invisible to the largest public purchasers in its sector.

Establish a formal notification mechanism: when a company has received both Innovate UK grant approval and British Business Bank investment, NHS and MOD procurement teams in relevant sectors should receive a proactive signal identifying the company as one that has already passed rigorous public assessment. This requires no new legislation and no change to procurement rules.

This Agenda Is Taking Shape

I want to be clear that this is not a counsel of despair. The agenda Patrick Vallance has been pursuing – linking these different entities better than ever before, improving data alignment, clarifying scale criteria – is the right one and it is now taking shape. We are in a substantially better position than we were five years ago. What we need is not a new architecture but the completion of the one we have already

started building: clear public guidance on data sharing, published investment scale criteria, and the notification mechanism that closes the loop from public funding validation to public procurement. These are not heroic institutional reforms. They are the specific wiring tasks that would allow the system we already have to work as it was designed to.

Editor's Synthesis

Procurement determines whether innovation reaches deployment. In the UK system it is also one of the most consistent points of failure.

Pilot programmes are widely used as a risk management tool. In practice they often become a terminal stage rather than a transition to scaled adoption. The pilot proves feasibility but does not create the procurement pathway required for national deployment.

The NHS provides the most visible example. Hundreds of technologies demonstrate success in controlled pilots each year. Only a small fraction progress to system wide procurement.

The structural cause is misaligned design. Pilots are commissioned without predefined pathways to scale. Funding, evaluation criteria, and procurement authority are separated across different institutions.

A pilot designed for learning must also be designed for adoption. This requires predefined expansion budgets, standardised evaluation frameworks, and procurement authority aligned with the institutions that will eventually buy the technology.

Without those mechanisms the UK will continue producing evidence that innovations work while failing to deploy them at national scale.

Action Takeaway	Publish clear cross-body data-sharing guidance establishing a presumption that positive assessment decisions flow between Innovate UK, the British Business Bank, and the National Wealth Fund. Publish explicit and consistent scale-of-investment criteria for each body. Establish a proactive notification mechanism connecting Innovate UK plus British Business Bank endorsement directly to NHS and MOD procurement teams in relevant sectors.

39

BUILD REGIONAL STARTUP COMMUNITIES, NOT ONE NATIONAL ECOSYSTEM

Based on conversations with Brad Feld, Co-founder of Techstars and Foundry

Editor's Prelude

Brad Feld co-founded Techstars and Foundry and has spent three decades building startup communities, most notably in Boulder, Colorado, which became one of the most productive innovation ecosystems in the United States relative to its size. He is the author of Startup Communities and The Startup Community Way. His chapter addresses what national innovation debates consistently miss: that startup ecosystems are local, social, and compound over decades rather than policy cycles. He writes as an outsider who finds the gap between the UK's structural assets and its community infrastructure to be the central opportunity.

Innovation Is Local

As an outsider to the UK's innovation ecosystem, most of my experience building startup communities comes from the United States, particularly Boulder, Colorado. Over several decades I have worked alongside founders, investors, universities, and civic

institutions trying to cultivate environments where new companies can form, scale, and sustain themselves over time. The forces that shape startup ecosystems are remarkably similar everywhere I have seen them work.

One feature of the UK innovation debate stands out from that perspective. Much of the discussion about innovation occurs at the national level. Governments publish national strategies, policymakers compare countries on global rankings, and ministers announce innovation districts. But the real work of building innovative companies happens locally, in the same way it always has.

Startup communities thrive where entrepreneurs, engineers, investors, and universities interact frequently within the same physical environment. These dense local networks enable ideas, talent, and capital to circulate quickly. Silicon Valley is not the product of the United States as a whole. It is the product of a regional ecosystem. The same pattern appears in Boulder, Berlin, Tel Aviv, and Austin. The national context matters at the margins. The local community is everything.

Startup communities are not primarily the product of policy documents. They emerge from repeated interactions between founders, engineers, investors, and operators who are building companies at the same time and in the same place. Over time, those interactions create networks of trust. They generate shared experience. They recycle capital and knowledge from one generation of companies to the next. When those networks become dense enough, innovation begins to compound.

The United Kingdom already possesses many of the structural ingredients necessary for powerful startup ecosystems. Its universities are among the best in the world. Its research output is globally competitive. Its legal and financial systems connect entrepreneurs to international markets. What determines whether those ingredients translate into enduring innovation is not the ingredients themselves. It is the strength of the communities surrounding them.

Build from Strength, Not from Ambition

The UK already possesses several regional ecosystems with strong innovation potential, and the word regional matters. Cambridge has developed one of the world's leading deep technology clusters, built not by administrative decision but by decades of proximity between exceptional researchers, patient capital, and technically ambitious founders. London combines global capital markets with strong fintech and AI communities. Edinburgh and Glasgow are building ecosystems around data science and financial technology. Bristol has deep expertise in semiconductors and advanced engineering.

These clusters are not interchangeable. Each one reflects decades of accumulated specialisation. The mistake that national innovation debates make is treating them as a portfolio to be optimised from the centre rather than a set of independent communities to be strengthened from within.

Successful innovation ecosystems grow from existing capabilities. Cambridge's deep technology ecosystem grew from decades of academic research in computing, biotechnology, and materials science. Tel Aviv's cybersecurity cluster emerged from defence technologies developed in the Israeli military. Austin's technology sector evolved from semiconductor and computing research anchored at the University of Texas. Every high-growth city in the past twenty years followed the same pattern. None of them succeeded by copying somewhere else.

I have watched well-intentioned governments try to shortcut this process. They announce a life sciences hub in a city with no life sciences companies, allocate resources to create an AI district in a region whose main economic activity has nothing to do with artificial intelligence, and commission consultants to design cluster strategies that disappear when the consultant moves on. The results are predictably poor. Not because the ambition is wrong. Because the model is wrong. You cannot import the output of a cluster without importing the two or three decades of accumulated relationships,

recycled experience, and knowledge transfer that made the cluster possible in the first place.

The practical test for any regional innovation plan should be simple: what does this city already do well, and what adjacent capability would make it stronger? Not what sector is fashionable nationally. What this specific place actually has, and how to compound it.

The Twenty-Year Rule

Startup ecosystems take time to develop. Boulder, Silicon Valley, and Tel Aviv did not emerge within a single policy cycle. They developed over decades as successive generations of founders built companies, invested in younger entrepreneurs, and strengthened local networks. I often describe this as the twenty-year rule: it takes roughly twenty years for a startup community to mature into a self-sustaining ecosystem.

The reason is straightforward. Entrepreneurship compounds. A founder who launches a company today may become an angel investor ten years later. Early employees in successful startups frequently go on to become founders themselves. Investors who back successful ventures reinvest both their capital and their experience into the next generation of companies. Over time these cycles create an ecosystem where innovation accelerates.

Many of the UK's emerging technology communities are still early in this process. The opportunity is not to invent these ecosystems from scratch. It is to allow them the time and continuity required to compound. That means resisting the temptation to redesign ecosystem strategy every time leadership changes. The single most destructive force in a developing innovation community is policy whiplash. Every reset consumes the expertise of the people who built what existed, the trust of the founders who believed in it, and the momentum of programmes that were beginning to produce results.

Founder Leadership

Startup ecosystems function best when founders lead them. Governments, universities, and investors all play important roles. But they cannot substitute for entrepreneurial leadership. The people building companies are closest to the problems that startups encounter. They understand where regulation slows progress, where capital is scarce, and where talent networks are weak.

In the most successful ecosystems, founders do not simply build companies. They also help build the community around them. They mentor younger entrepreneurs. They share lessons from their own failures. They invest small amounts of capital into the next generation of startups. This behaviour creates a culture in which founders view ecosystem development as part of their responsibility. It also creates a feedback loop in which experience spreads quickly through the community.

In Boulder, the founders who exited between 2000 and 2010 became the angel investors, board members, and informal advisors who made the ecosystem of the following decade possible. They did not wait to be asked. They showed up because they understood that the community had given them something and they wanted to give something back. The UK has produced enough successful founders to seed exactly this kind of culture. The challenge is creating the conditions under which those founders choose to stay engaged locally rather than moving capital into property or relocating to ecosystems where their experience is more visibly valued.

This requires two things to be true simultaneously. It requires founders to choose it, which is a cultural question. And it requires the infrastructure to make giving back easy and specific, which is an organisational question. Mentorship that asks too much of a founder's time produces no mentorship at all. The design challenge is to make the minimum useful act of community contribution as frictionless as possible: one conversation, one focused introduction, one hour with a founder facing a problem you have already solved. At scale, those small

acts accumulate into the knowledge transfer network that separates a compounding ecosystem from a collection of isolated companies.

>50%

Founder Recycling

Of early-stage startup funding in mature ecosystems originates from founders who previously built companies in the same ecosystem.

SOURCE: Startup Genome. In Silicon Valley and Tel Aviv, founder reinvestment creates a compounding cycle where experience, capital, and mentorship circulate locally. In the UK's regional innovation cities, this recycling rate is substantially lower and represents the most addressable gap in ecosystem maturity.

Network Density

Startup ecosystems depend on dense interaction networks. The most important infrastructure in a startup ecosystem is not physical infrastructure or even financial infrastructure. It is relational infrastructure: the network of relationships connecting people across companies.

These networks rarely emerge from formal programmes. They develop through frequent conversations between founders, engineers, investors, and operators. Meetups, demo days, informal gatherings, and shared workspaces create environments where people encounter one another regularly. These interactions allow ideas and opportunities to circulate quickly. Over time those repeated interactions create trust. Trust enables collaboration. Collabouration accelerates innovation.

In Boulder, one of the most powerful forces in our ecosystem is the simple fact that many of the founders, investors, and operators live within a few miles of one another and encounter each other constantly outside any formal context. Those accidental encounters generate enormous amounts of informal information exchange and relationship building. The UK's cities are denser than Boulder. The

opportunity to create the same kind of ambient proximity exists, but it has to be built deliberately rather than assumed.

The cadence of community events matters more than their format. Monthly events create acquaintances. Weekly events create relationships. A recurring weekly gathering owned by founders and structured around honest conversation rather than pitching or networking is the single most reliable mechanism for building the relational density that makes an ecosystem function. The UK's innovation cities have the density of population to sustain this. What they often lack is the founder-led culture that makes showing up feel like an obligation rather than an option.

Recycling Capital and Experience

Strong startup ecosystems recycle capital and experience across generations of companies. When founders build successful companies they often become angel investors or advisors to younger entrepreneurs. Their involvement transfers both financial resources and operational knowledge to the next generation. In mature ecosystems this recycling process becomes self-reinforcing. Each generation of founders contributes to the development of the next.

Research from Startup Genome shows that in mature ecosystems such as Silicon Valley and Tel Aviv, more than half of early-stage startup funding originates from founders who previously built companies in the same ecosystem. In the UK's regional innovation cities, this recycling rate is substantially lower. Successful founders have historically moved capital out of regional ecosystems into asset management or property investment rather than back into the next generation of startups.

Closing this gap requires both cultural and structural intervention. Tax-efficient angel investment schemes are a legitimate and powerful incentive, but many founders who would consider writing early-stage cheques are not doing so partly because the mechanics feel complicated. Beyond the structural, the cultural shift matters as much: angel investment by successful founders should be socially expected,

not merely tax-advantaged. The ecosystems that compound most reliably are the ones where recycling capital back into early-stage companies is simply what successful founders do, as routinely and visibly as any other professional obligation.

A useful measurement discipline is to track what percentage of significant exits in each regional city result in the founder reinvesting capital locally within three years. Making that number public and city-specific creates exactly the kind of visible accountability that changes behaviour. Ecosystems respond to measurement when the measurement is honest and the comparison is real.

Editor's Synthesis

Feld's chapter provides the social infrastructure layer that Neil Lee's related diversification argument and Carlos Moedas' first-deployment-platform model both presuppose but neither examines directly. Lee establishes that regional clusters cannot be created by administrative decision in sectors where a region has no existing strength. Moedas establishes that cities function most powerfully when they act as first customers. Feld provides the founder-led community networks through which capital, experience, and practical knowledge circulate between generations of companies. Without that layer, specialised clusters remain isolated research outputs and first-deployment contracts produce individual wins rather than compounding ecosystems.

The twenty-year timeframe is the most uncomfortable point in the chapter for policymakers who need to show results in a parliamentary cycle. Feld is right that compounding requires continuity and that premature resets destroy more value than slow progress. The resolution is that the structural interventions described elsewhere in this book are not ecosystem-building in Feld's sense. They are the preconditions. His patience applies to what comes after: the decade-level social compounding that only occurs once the structural foundations are stable and founder communities can build on them without the clock being reset. The UK needs both, in sequence.

PART VIII

FROM BLUEPRINT TO EXECUTION: TEN SHIFTS



You have now read the evidence. Two dozen featured individuals have diagnosed the same system from two dozen different vantage points. The diagnosis converges: the UK does not lack the ingredients for a world-leading innovation economy. It lacks the structural changes that would allow those ingredients to compound rather than dissipate. The ten shifts that follow are not a new strategy document. They are a delivery framework built from everything that precedes them. Each shift names a specific structural change, identifies who owns it, and sets the condition that would tell you it had been made. The question this chapter asks is simple: given everything you have just read, what would you change first?

In November 2017, the UK government published its Industrial Strategy. It ran to one hundred and fifty-five pages. It named five grand challenges. It committed the country to becoming a world leader in artificial intelligence, clean growth, and the future of mobility. It was launched at the Queen Elizabeth II Conference Centre with the Prime Minister in attendance. The Observer called it the most material economic document in a generation.

In January 2018, the AI Sector Deal followed: fifty-one pages, nine hundred and fifty million pounds of government support, and the endorsement of every institution of consequence in the UK technology sector. The commitments were specific. The ambition was real.

In 2021, the Innovation Strategy arrived. A further elaboration of the UK's innovation aspirations, anchored by a commitment to raise total research and development investment to 2.4 per cent of GDP by 2027. It contained the phrase 'world-leading' forty-seven times.

By 2024, the Industrial Strategy had been quietly shelved. A new one was being written. The AI Sector Deal's commitments had never been formally audited, never been reported against, never been measured in any form that would allow a journalist, a parliamentarian, or a taxpayer to determine whether a single one of them had been met. The 2.4 per cent target was unmet and, on current trajectory, unreachable by 2027. The fifteen ministers who had occupied the brief responsible for science, technology, and innovation between 2010 and 2024 had each averaged fourteen months in post. In the same period,

Germany had two.

This is not a record of bad intentions. It is a record of a single, recurring failure: **the inability to sequence, own, and hold.** To commit publicly to a specific change. To name the person responsible for it. To measure whether it happened. To refuse to quietly replace it with different language when political attention moved on. The UK has produced strategies. What it has consistently failed to produce is delivery.

The featured individuals in this book did not write their chapters to describe the problem with fresh vocabulary. Ballance built Oxford Ionics knowing the fidelity metrics that made it the world's best ion trap quantum computer, and watched it sold before the quantum market reached commercial scale. Boland has founded and exited three technology companies from British soil and watched each successive generation of UK founders have their ambitions crimped by cautious capital. Brierley has built Riverlane's error correction capability knowing that the window in which it constitutes a global lead is measured in years. Gerald Mullally spent eight years at the Cabinet Office centre building a capability that eventually served sixty countries and then watched fourteen of the fifteen innovation strategies he observed get written and superseded. Feld has spent thirty years studying ecosystems that compound and ecosystems that reset, and has watched the UK's reset cycle with the specific frustration of someone who can see exactly what it costs.

These featured individuals, and the two dozen others alongside them, did not participate in this book to document the problem. They did because they have worked out what fixing it requires. This chapter compresses that knowledge into its most practical form. It does not introduce a single new idea. Every shift that follows exists somewhere in this book, argued by someone who has lived the failure and thought through the remedy. What this chapter does is take those arguments and organise them into the sequence that the system's own structure demands.

There are ten shifts. They are a sequence. The order is not a preference. It is a constraint.

THE TEN SHIFTS

1	**From Passive Subsidy to Active Capital** Redirect £4–5B of zombie fuel into active VC that backs global winners.
2	**From Visa Friction to Talent Magnetism** Staple a visa to every relevant PhD.
3	**From Pilot Theatre to Procurement That Scales** Design each pilot to succeed before it starts.
4	**From Strategy Documents to a Delivery Engine** A ten-year Cabinet Office mandate that survives a minister.
5	**From Bowling Alley Exits to Tornado Retention** Stop selling the UK's best before the Tornado arrives.
6	**From Compliance Assessment to Entrepreneurial Education** Every student ships something real before leaving school.
7	**From London Concentration to Smart Regional Specialisation** Build from existing strength, not fantasy clusters.
8	**From Institutional Reset to Compounding Ecosystems** Separate principles from programmes, permanently.
9	**From Secondary Liquidity Stigma to Founder Financial Health** Liquidity during the journey prevents exits before the Tornado.
10	**From Invisible Accountability to a Published National Scorecard** Name the metrics. Name the owners. Publish both.

THE TEN SHIFTS: DELIVERY ARCHITECTURE

1 Passive Subsidy to Active Capital Redirect £4–5B of zombie fuel into VC that backs winners	**2 Visa Friction to Talent Magnetism** Staple a visa to every relevant PhD
3 Pilot Theatre to Procurement That Scales Design each pilot to succeed before it starts	**4 Strategy Documents to a Delivery Engine** A ten-year Cabinet Office mandate that survives a minister
5 Bowling Alley Exits to Tornado Retention Stop selling the UK's best before the Tornado arrives	**6 Compliance Assessment to Entrepreneurial Education** Every student ships something real before leaving school
7 London Concentration to Smart Regional Specialisation Build from existing strength, not fantasy clusters	**8 Institutional Reset to Compounding Ecosystems** Separate principles from programmes, permanently
9 Secondary Liquidity Stigma to Founder Financial Health Liquidity during the journey prevents exits before the tornado	**10 Invisible Accountability to a Published National Scorecard** Name the metrics. Name the owners. Publish both.

The grid above maps each shift to its delivery bucket and the sequence it must follow. What follows is the full treatment of each shift: the failure it addresses, the mechanism that changes it, the named owner, and what success looks like at the relevant milestone.

Why Sequence Is Not Optional

Before entering the four delivery buckets, it is necessary to establish why the order matters. This is not administrative tidiness. It is the structural logic of innovation ecosystems, and three featured individuals in this book have each articulated a version of it from different professional positions.

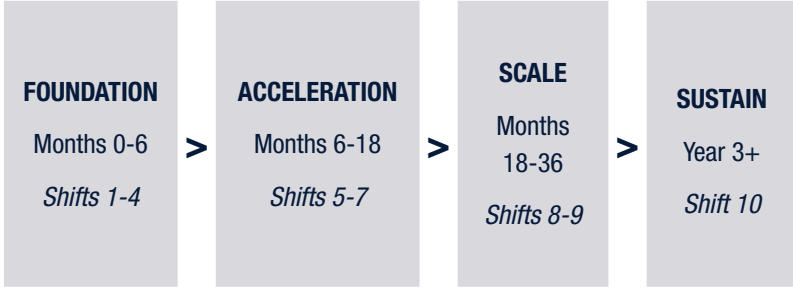
Brad Feld, whose chapter on building regional startup communities closes the main body of this book, has spent three decades at Foundry and Techstars watching ecosystems succeed and fail in Boston, Berlin, Boulder, and dozens of cities in between. His central observation is that innovation ecosystems are complex adaptive systems where order of operations is deterministic, not incidental. Flood a system with capital before the talent networks exist to deploy it well, and you fund the wrong companies and sustain the mediocrity that Boland's zombie analysis describes. Build accelerator programmes before you have experienced operators to run them, and you build process that optimises for institutional safety rather than founder outcomes. The system does not absorb all inputs simultaneously and produce optimal results. It responds to the right variable at the right time, and rejects everything else as noise.

Geoffrey Moore, whose framework of the Bowling Alley and the tornado provides Part IV with its analytical architecture, makes the sequencing argument at the company level in a way that applies with identical force to national policy. You cannot win the tornado without first winning the Bowling Alley. Strategies that attempt to move directly to tornado-stage deployment without first completing the specific, deep, credibility-building work in a small number of beachhead areas fail catastrophically and expensively. The UK

government has repeatedly attempted tornado strategies: national AI adoption programmes, industrial strategies at full horizontal scope, digital public infrastructure at scale. It has done so without completing the Bowling Alley work that would make those strategies land. The pattern the Prologue describes across its three case studies is the same pattern in the strategies that failed to retain them: broad ambition, absent sequencing, tornado attempted before the Bowling Alley work was done.

These two frameworks, complex system dependency from Feld and Bowling Alley sequencing from Moore, converge on the same practical conclusion. You cannot act on everything simultaneously and produce a compounding result. The four delivery buckets below reflect the dependency structure both frameworks describe. Each bucket depends on the one before it.

THE DELIVERY SEQUENCE



The Foundation bucket contains the structural preconditions. Without them, capital market deepening produces no companies worth funding. Procurement reform produces no suppliers capable of scaling through a public sector route. Investment in clusters and networks produces no founders ambitious enough to build globally. These four shifts are not the most technically complex interventions in this book. They are, in almost every case, decisions that require political will

rather than technical innovation. They are also the moves that send the clearest signal to the global talent market, to international investors, and to the founders already building inside the UK system: that this time is meaningfully different from the previous seventeen strategy documents.

Signal is not a soft concept. Boland's analysis demonstrates that founder ambition responds directly and measurably to the policy environment. When cautious capital is the only capital available, founders do not simply raise less money; they hire smaller, target smaller customers, adopt less ambitious business models, and set their trajectory on a path that will never produce a global winner. The current suite of policies communicates, collectively and unmistakably, that the UK does not prioritise builders. Reversing that signal is not sufficient to close the Conversion Gap. But without reversing it, none of the six shifts in Buckets 2 and 3 reaches its potential.

———

SHIFT 1:
FROM PASSIVE SUBSIDY TO ACTIVE CAPITAL

THE FAILURE

The UK spends approximately £7.5 billion per year on R&D tax credits at an effective rate of 28 per cent (prior to April 2024 reforms), double the US rate of 14 per cent. EIS fund relief adds a further billion. Together these instruments sustain what Boland calls zombie companies: firms that survive not because the market judges them worthy but because the subsidy removes the discipline that would force a reckoning. Every zombie company employs engineers. Often good engineers. Those engineers are trapped, working on projects with no realistic path to global impact, consuming the talent the UK can least afford to waste. EIS funds, structured to serve tax-motivated investors managing to a loss-minimisation objective, generate returns of 0.7 to 1.3 times money. They sustain mediocrity. They do not build global winners.

THE SHIFT

Reduce R&D tax credits from their pre-2024 rate of 28 per cent toward 14 per cent, aligning with the US rate and saving approximately £3.5–4 billion a year. Remove EIS and VCT tax relief for funds while preserving it for real angel investors who bring expertise alongside capital, saving approximately £1 billion. Redirect those £4–5 billion into the British Business Bank's fund-of-funds programme, scaling it from £400 million per year to £5 billion. At a fund-of-funds return of 14–16 per cent per annum, this unlocks approximately £10 billion per year of new active venture capital and closes the majority of the £11 billion annual shortfall Boland identifies. The balance sheet arithmetic is favourable: fund-of-funds investments count as national assets under current accounting rules, not public spending. Boland's formulation is exact: this is swapping fifty zombies for one global winner.

OWNER Chancellor of the Exchequer and British Business Bank board.

SUCCESS AT MILESTONE *At 6 months: British Business Bank annual commitment to fund-of-funds at £1.5B for years 1–2, with published ten-year phased trajectory to £5B peak and statutory commitment enacted. At least three new UK venture funds cornerstoned at 50 per cent BBB / 50 per cent private LP, with combined fund targets above £3B. DWP clarifying guidance on pension fund fiduciary duty for BBB-cornerstone vehicles published. BBB secondary market liquidity facility for pension LP positions announced. At 24 months: pension fund LP participation in qualifying vehicles exceeding 15 per cent of total programme capital raised.*

SHIFT 2:
FROM VISA FRICTION TO TALENT MAGNETISM

THE FAILURE

An IIT graduate, from one of the world's most selective engineering programmes, wanting to work at a London AI startup faces approximately £10,000 in fees, months of processing, and significant additional obstacles to bringing a spouse and children. The UK is marketing itself as unwelcoming at the precise moment the United States is creating real uncertainty for talented immigrants who might otherwise come here. Brierley, whose Riverlane employs over a hundred of the world's approximately five hundred quantum error correction experts, is direct: his company's global leadership depends on immigration that the current policy environment makes unnecessarily difficult and expensive. The US political environment has created a window for the UK to be the alternative. That window is finite and narrowing.

THE SHIFT

Automatic post-study visas for any graduate of a UK university in a qualifying STEM or entrepreneurship discipline: nil or low cost, four-year right to work and build a company immediately, fast pathway to citizenship measured in years rather than decades. Automatic founder visas for companies with verified investment above £100,000 from a UK-registered investor: two-year renewable, right to bring a spouse and dependents on the same application. Processing target: under four weeks for ninety-five per cent of qualifying applications. No quota. No points threshold. Brierley's formulation, the simplest and most memorable in this book: staple a visa to every relevant PhD.

OWNER Home Secretary.

SUCCESS AT MILESTONE *At 6 months: legislation or statutory instrument in force. Processing time under four weeks for qualifying applications. Measurable year-on-year increase in inbound STEM graduate visa applications from priority countries.*

SHIFT 3:
FROM PILOT THEATRE TO PROCUREMENT THAT SCALES

THE FAILURE

The NHS has more pilots than British Airways, and almost none convert to mainstream adoption. Not because the innovations failed. Because no one had designed the route from a successful pilot to an actual procurement decision. than scaling evidence. Paul Miller's chapter identifies the mechanism: pilots are sized to fit internal financial thresholds rather than to generate meaningful results, the stakeholders who must approve mainstream adoption are never involved until the pilot succeeds, and by then it is too late. The cultural rejection is not of the technology. It is of having something imposed without consultation. The UK is filtering out its best innovations through a process designed to identify them. This is not a marginal inefficiency. It is a structural failure that compounds annually.

THE SHIFT

Every public sector pilot must begin with three written agreements before commissioning: what success at full organisational scale looks like, what evidence the pilot must generate to justify that scaling decision, and which decision-makers must be involved from the outset. A Cabinet Office standing instruction that no pilot may proceed without a named scaling sponsor at senior leadership level in the commissioning organisation. Reform of procurement terms for companies under five years old: fifty per cent payment upfront, fifty per cent on completion, paid on the agreed dates. Documentation requirements scaled to company size and contract value. This costs nothing to implement. It requires only a change to procurement guidance. But it would transform conversion rates from near-zero to something that justifies the investment being made.

OWNER Cabinet Office Minister, with implementation mandate across all major departments.

SUCCESS AT MILESTONE *At 6 months: new procurement guidance published and in force. First cohort of pilots under the new framework commissioned with scaling sponsors named. Upfront payment reform live for all SME contracts.*

SHIFT 4:
FROM STRATEGY DOCUMENTS TO A DELIVERY ENGINE

Strategy Documents to a Delivery Engine

THE FAILURE

Gerald Mullally spent eight years at the centre of the Cabinet Office and describes from the inside what the outside can only observe from the pattern: the Cabinet Office has never had a settled sense of what it is for. It oscillates between hierarchical coordination, crisis management, and residual policy. Crisis always wins in the short run, consuming the capacity that sustained innovation requires. The result is an institution excellent at producing strategies and consistently poor at executing them. Gerald Mullally's diagnosis is structural: innovation requires long-horizon work that is structurally incompatible with crisis absorption. The two functions cannot coexist in the same team with the same leadership. They never will. Without architectural separation, any innovation unit inside the Cabinet Office will be consumed.

THE SHIFT

A dedicated innovation delivery unit within the Cabinet Office, structurally protected from crisis management absorption by its own mandate, ring-fenced budget, and separate leadership. Its remit is not to produce strategy. It is to drive execution: to ensure frontier technologies are adopted across mission-driven departments, that every recommendation in this book with a government owner has a named civil servant accountable for it, and that progress is measured and published quarterly. The director is appointed for a minimum of five years with publicly stated performance objectives agreed at appointment. A ten-year mandate, modelled on how Defence manages major procurement programmes, with phased milestones and an annual parliamentary accountability review.

OWNER Prime Minister and Cabinet Office Minister.

SUCCESS AT MILESTONE *At 6 months: unit established with protected budget and named director. Ten-year milestone framework published. At least three mission departments with signed Memoranda of Understanding committing to quarterly frontier technology adoption reviews.*

SHIFT 5:
FROM BOWLING ALLEY EXITS TO TORNADO RETENTION

THE FAILURE

Autonomy sold to Hewlett-Packard in 2011 for £7 billion, before enterprise cloud and information management reached the scale that would have made Autonomy's architecture the foundational layer of the knowledge economy. Imagination Technologies sold to Canyon Bridge (a fund backed by Chinese state capital) in 2017 for £550 million, before the GPU-adjacent chip design market transformed into one of the most strategically contested sectors in global technology. Graphcore sold to SoftBank in 2024 for approximately £370 million after raising over £500 million, before the AI accelerator market consolidated into the architecture that will underpin the next decade of AI infrastructure. In each case, the UK government had the legal power to intervene. In each case, it chose not to exercise it. The National Security and Investment Act exists precisely for this purpose. It has not been used.

THE SHIFT

A Strategic Technology Asset Register maintained by the Cabinet Office innovation unit, updated quarterly, covering all UK companies assessed as globally leading in defined frontier technology categories: quantum error correction, AI safety research, advanced semiconductor design, synthetic biology platforms. For every company on the register, active NSI Act review is triggered before any acquisition approach is received. The retention mechanism is not a blanket prohibition on acquisition. It is a structural requirement that the government makes an informed decision with a completed tornado-stage analysis, rather than a reactive decision made under commercial time pressure when the offer is already on the table and the Bowling Alley valuation is already shaping the negotiation.

OWNER Secretary of State for DSIT and Cabinet Office innovation unit director.

SUCCESS AT MILESTONE *At 18 months: Strategic Technology Asset Register published, covering at least ten companies. NSI Act active review process operational. No company on the register acquired without a formal government tornado-stage assessment.*

SHIFT 6: FROM COMPLIANCE ASSESSMENT TO ENTREPRENEURIAL EDUCATION

THE FAILURE

Sixty-nine per cent of girls aged thirteen to seventeen say they are interested in technology. Thirty-nine per cent say they would consider a career in the sector. That thirty-point gap between curiosity and confidence is not produced by individual failure or cultural accident. It is produced reliably and at scale by a system that rewards recall and compliance while providing almost no practice in identifying problems worth solving, building things that do not yet exist, or treating failure as information rather than verdict. Schleicher, whose PISA assessments cover seventy countries, identifies the UK examination system as optimising for exactly the wrong qualities for the economy the UK is trying to build. Slater's InnovateHer data shows the precise drop-off points where girls leave technology pathways. Moore's Apps for Good provides proof of concept: students who ship real products before leaving school develop agency, confidence, and the specific relationship with failure that founders need.

THE SHIFT

Ofqual extends acceptable assessment modes within regulated qualifications to include project-based real-world outputs in core secondary subjects, so that a shipped product contributes to a student's formal qualification. DfE mandates entrepreneurship as a curriculum thread across all secondary subjects, not as a standalone module but as a framing device for how each subject is taught. Apps for Good and InnovateHer funded at national scale from the DfE budget rather than from charitable fundraising, with a target of reaching five hundred thousand students annually by 2028. Every student ships something real before leaving school: a

tangible product, application, or service they identified a need for and built themselves.

OWNER Secretary of State for Education and Ofqual.

SUCCESS AT MILESTONE *At 18 months: Ofqual guidance updated for project-based assessment in at least five core GCSE subjects. DfE entrepreneurship curriculum mandate published. Apps for Good and InnovateHer reach at least one hundred thousand students in the first funded year.*

SHIFT 7: FROM LONDON CONCENTRATION TO SMART REGIONAL SPECIALISATION

London Concentration to Smart Regional Specialisation

THE FAILURE

Forty-seven per cent of UK venture capital flows to London. Sixty per cent of investment value. Every regional innovation strategy, across twenty years of levelling-up rhetoric and its predecessors, has chased the same fashionable sectors regardless of whether any existing capability makes success plausible. Neil Lee's chapter at the LSE, drawing on twenty years of economic geography research, names this precisely: the cut-and-paste trap. Every high-growth city over the past twenty years has followed the opposite approach, identifying what it could realistically be excellent at based on existing industrial depth, and building from there. None succeeded by copying Silicon Valley. Moedas' transformation of Lisbon, from a mid-tier European city to seventeen unicorns and over a hundred technology hubs, provides the most instructive recent example: he used city procurement as an innovation instrument, creating first-deployment customers for startups before they had proven their technology anywhere else.

THE SHIFT

Each UK region publishes a Smart Specialisation Strategy identifying two or three sectors where existing industrial strength creates credible competitive advantage, validated by an independent economic geography assessment rather than political aspiration. Metro mayors commit their city procurement budgets as first-deployment platforms: a defined percentage of technology procurement reserved for companies trialling new technologies

in the city, with a public scaling decision within six months. Manchester in health technology and advanced manufacturing. Bristol in aerospace and deep tech. Edinburgh in AI and financial services. Leeds in health data and life sciences. Birmingham in energy systems. The investment required is not primarily financial. It is a commitment to use procurement as an innovation instrument and cities as laboratories rather than backdrops.

OWNER Secretary of State for MHCLG and metro mayors.

SUCCESS AT MILESTONE *At 18 months: at least five Smart Specialisation Strategies published and independently validated. At least three UK cities operating as formal first-deployment platforms with named technology categories and public procurement commitments.*

SHIFT 8:
FROM INSTITUTIONAL RESET TO COMPOUNDING ECOSYSTEMS

THE FAILURE

Between 2010 and 2024, the UK had fifteen different ministers responsible for science, technology, and innovation. Fourteen-month average tenure. Every time the cycle resets, the programmes beginning to produce results are defunded or redirected, the civil servants who had built real expertise in what was working move on, and the founders and investors who had begun to trust the institutional framework return to their default of routing around it. Feld's diagnosis is forensic: the UK keeps resetting the system before it has time to develop memory. The specific mechanism is the failure to distinguish between what is durable and what is tactical. When a new minister arrives and everything is on the table, everything is on the table because no one wrote down which principles command cross-institutional respect and are stable across political change. The principles become programmes by default, and programmes are exactly what new ministers are entitled to change.

THE SHIFT

Separate principles from programmes, permanently and in writing. Principles, the commitment to founder-first procurement, operator-led decision rights over what founders touch, active capital over passive subsidy, outcome measurement over activity measurement, are documented, published, and survive leadership changes. Programmes are how those principles are expressed in the current context and evolve as evidence accumulates. New ministers must engage publicly with the documented principles before proposing to replace them: what they are inheriting, what they intend to continue, and what specific evidence justifies

changing course. Feld's scoreboard mechanism: every ecosystem institution publishes annually what it started, what it improved, what it stopped, and what it learned. If the stopped list is empty, the institution is not learning. If the principles list has changed without published justification, the reset cycle has resumed.

OWNER Cabinet Office innovation unit, Innovate UK, and the accelerator community collectively.

SUCCESS AT MILESTONE *At 36 months: Principles document published and adopted by at least ten major ecosystem institutions. First ministerial transition under the new protocol completed with the incoming minister's public engagement recorded. Annual founder confidence survey showing measurable improvement from the baseline established at the start of Year 1.*

SHIFT 9:
FROM SECONDARY LIQUIDITY STIGMA TO FOUNDER FINANCIAL HEALTH

THE FAILURE

The view that no one should make money until a complete exit is, as Jeff Lynn's chapter argues with precision, antiquated and actively damaging. Companies now stay private far longer than they did when the norm was established. The public market exit that would historically have provided founder and employee liquidity often does not materialise for a decade or longer, if at all. The result is mounting pressure. Founders and employees work years for below-market salaries, watch paper value accumulate, and face a rational temptation to pursue an acquisition before the company has reached its potential: not because a foreign buyer is offering too much but because the alternative is working another five years for equity they cannot convert into anything. The absence of secondary liquidity is not the only cause of premature exits in the UK ecosystem. It is a large and systematically underacknowledged one.

THE SHIFT

The FCA creates a regulated secondary market framework for shares in private companies above a defined revenue threshold, enabling founders and employees to sell a defined portion of their holdings without triggering a full liquidity event. The UK's most respected investors publicly endorse secondary liquidity as normal, healthy, and consistent with long-term company building. Their voices matter more than the regulatory change in shifting the cultural norm, which is primarily enforced by the ecosystem's informal consensus about what good founder behaviour looks like. Founder liquidity during the journey is reframed from a warning sign to a retention mechanism. Companies that allow their founders and

employees to achieve some financial stability during the journey are more likely to retain them through the tornado.

OWNER FCA and HM Treasury, with active cultural endorsement from the leading UK venture community.

SUCCESS AT MILESTONE *At 36 months: FCA secondary market framework live. At least ten completed UK secondary market transactions in year one of the framework. Founder and employee liquidity no longer cited as a factor in acquisition decisions by UK technology companies at the Bowling Alley stage.*

SHIFT 10:
FROM INVISIBLE ACCOUNTABILITY TO A PUBLISHED NATIONAL SCORECARD

Invisible Accountability to a Published National Scorecard

THE FAILURE

The UK measures innovation through composite indices that track inputs, expenditure, and activity rather than the outcomes that matter. R&D expenditure is not the proportion of that expenditure that produced globally competitive companies. Patent filings are not patents that became products. The innovation strategies have been measured, when measured at all, against their own aspirational language rather than against specific outcomes that would indicate whether the Conversion Gap is closing. When nothing is measured, nothing changes. When the targets that are set are process targets rather than outcome targets, the system optimises for activity. When accountability is absent, the reset cycle continues at zero cost to the people who authorise it.

THE SHIFT

A National Innovation Dashboard tracking eight metrics, updated quarterly, published on a dedicated government website, reported annually to a joint parliamentary committee with the authority to call ministers and officials to account for underperformance. An independently validated annual Readiness Score, developed by UKRI in collaboration with an independent academic panel, benchmarked against Singapore, Israel, Germany, and Canada. The Cabinet Office innovation unit director appears before the joint committee to explain underperformance against any metric and commits to a specific corrective action plan within ninety days. If corrective action does not produce measurable improvement within

twelve months, the committee may recommend the director's removal to the Prime Minister. This is how Defence manages major procurement programmes. Innovation delivery should be treated with the same institutional seriousness.

OWNER Cabinet Office innovation unit director, reporting to a joint parliamentary committee.

SUCCESS AT MILESTONE Year 3: National Innovation Dashboard published for three consecutive years without interruption by a government reset. Annual Readiness Score independently validated and cited in at least one major international innovation assessment. Named director has appeared before the parliamentary committee at least once and produced a published corrective action plan.

THE EIGHT METRICS: NATIONAL INNOVATION DASHBOARD

METRIC	CURRENT POSITION	TARGET 2030	ACCOUNTABLE OWNER
Annual UK VC raised vs US (GDP-adjusted)	~20% of equivalent	50%	British Business Bank
UK deep tech companies >£5B, still UK-HQ'd	Variable	+50% on baseline	Cabinet Office unit
Visa processing for qualifying STEM graduates	Months + ~£10k fees	Under 4 weeks, near-zero cost	Home Office
Pilot-to-adoption conversion rate	Estimated under 5%	40%+	Cabinet Office Minister
R&D investment as % of GDP	~1.7%	2.4% by 2027	DSIT
VC deal share outside London	~40%	55%	MHCLG / metro mayors
Pension fund allocation: domestic growth equity	Under 1%	5% average	Work and Pensions Secretary
Students reaching entrepreneurship competency	Not tracked	500,000 annually by 2030	DfE / Ofqual

THE 2035 TEST

Nine years from now, the UK innovation ecosystem has either compounded or reset. Here is how to tell which has happened.

The compound scenario: Annual UK venture capital raised has reached £12B. At least fifteen technology companies with combined market cap above £200B remain UK-headquartered and independent. The LSE technology segment has hosted three IPOs valued above £5B. Quantum and AI sectors report measurable reduction in bowling-alley-stage acquisitions. Regional ecosystems outside London account for over fifty per cent of early-stage deal volume. The National Innovation Dashboard has been published for four consecutive years without interruption.

The reset scenario: A new government has commissioned a new innovation strategy. The Cabinet Office innovation unit has been restructured. The dashboard metrics have been updated in ways that make previous underperformance incommensurable with current targets. The Readiness Scores have been quietly discontinued. The same companies that were at risk of bowling-alley acquisition in 2026 have been acquired. The same questions are being asked in Parliament about what the UK needs to do to close its technology gap.

The difference between these two scenarios is not talent, research, or the quality of the ideas in this book. The UK has all three in sufficient quantity to lead the world in at least a dozen technology categories. The difference is sequence, ownership, and accountability. This chapter has provided all three. What happens next depends on whether someone picks up each shift, puts their name on it, and refuses to let the system reset.

THE FIRST ACTION

The ten shifts and four delivery buckets in this chapter are the complete argument. What follows is the shortest possible version of what they mean for each of the four people this book was written for.

FOUNDER	Join the Startup Coalition. Make the Shift 2 and Shift 3 demands specific and loud: name the visa fees, name the pilot that died, name the person responsible. The political cost of inaction on both has been too low because the people most affected have not been organised.
INVESTOR	Publicly endorse secondary liquidity as normal, and make the fiduciary duty argument personally to your pension fund LPs. Shift 1 cannot close without you. The British Business Bank cannot replace your capital or your public language about what healthy founder economics look like.
POLICYMAKER	Establish the Cabinet Office innovation unit with a ten-year mandate before the next reorganisation absorbs this field it would occupy. Shift 4 is the delivery engine for every other shift involving government. Every day without it is a day every other policy depends on an engine that does not exist.
EDUCATOR	Adopt the Apps for Good or InnovateHer model in your institution without waiting for the Ofqual mandate. Be the evidence that justifies it. The curriculum reform will follow the evidence. The evidence will not follow the mandate unless someone creates it first.

This book opened in the Prologue with what the United Kingdom keeps losing. The pattern it described, bowling-alley exits before the tornado, did not begin and end with three companies. It is a structural condition that has repeated, with variations, across every technology generation the UK has led. The UK received the research credit. The economic value accrued elsewhere. The pattern has repeated, with variations, for thirty years.

It closes here, with what the UK can keep if it acts with the precision and the sequence that the system's own structure demands.

The research is real. The talent is real. The ambition, when the environment supports it rather than suppresses it, is here. What the UK has consistently lacked is not the ingredients. It is the recipe. Not the components. The sequence.

The ten shifts in this chapter are the sequence. The four buckets are the order. The named owners are the accountability. The national scorecard is the proof.

The UK designed the processor architecture that now runs the world. It built the world wide web. It built AlphaFold. It built the world's leading quantum error correction capability, the world's most precise ion trap quantum computer, and the AI system that solved a fifty-year problem in biology on a Tuesday afternoon in London. The only thing it has not yet built is the institutional infrastructure to keep what it builds long enough for the tornado to arrive.

That infrastructure is ten shifts. They are named. The owners are named. The metrics are published. The sequence is set. All that remains is the decision to hold.

———



The ten shifts the UK must make. Combined they are the Blueprint.

CONCLUSION

The 2035 Fork

Two futures are available to the United Kingdom. Neither is hypothetical. Both are built from decisions being made right now, in pension fund boardrooms and ministerial offices and hospital procurement teams and university spinout committees. The difference between them is not talent, not research output, not ambition. The UK has all three in quantities that most countries cannot match. The difference is whether the ten shifts in this blueprint are made or left unmade.

The Prize: The UK in 2035 If We Execute the Blueprint

It is 2035. The British Business Bank's fund-of-funds programme is in its eighth year of statutory operation. UK venture capital deployment has reached £18 billion annually, still behind the United States in absolute terms, but proportionate to the size of the economy for the first time in a generation. The Pension Liability Lock has been cracked: seventeen of the UK's largest defined contribution schemes are allocating above 8 per cent to domestic growth equity, and three of them have UK quantum companies in their portfolios.

Riverlane's quantum error correction operating system runs on every commercially deployed quantum computer in the world, regardless of manufacturer. The company is headquartered in

Cambridge. It employs four hundred people. The quantum computing market is worth £90 billion and the UK captures 22 per cent of it, not because the government picked a winner, but because it protected the lead long enough for the market to form.

The company that was, in 2026, eighteen months from a forced sale to an American strategic buyer is now worth £4 billion and listed on the London Stock Exchange. Its founder is an angel investor in six companies. Three of those companies have NHS contracts. None of them ran a pilot. They had a procurement pathway.

There are currently twelve technology ministers across Europe. The UK has had one for seven years. He knows every CEO in the portfolio personally. He has been called boring by two consecutive Parliaments. He considers this a compliment.

Cambridge has added three thousand units of housing in the corridor between the station and the science park. The water treatment plant was relocated. The cluster density that Cleevely described as fragile in 2026 has compounded into something that feels, from the inside, inevitable. It was not inevitable. It was a series of decisions, most of them unglamorous, none of them reversible.

The thirty-year-old in Manchester who was, in 2025, days away from choosing a safe job at a consultancy because her startup had no prospect of raising a Series B domestically, she did not take that job. She took the capital that arrived when the BBB programme cornerstoned the regional fund that found her. Her company makes AI-assisted diagnostics for community health clinics. It operates in twelve countries. It has never been acquired. She has been asked.

A student at a comprehensive school in Birmingham submitted an app prototype at seventeen that tracked food waste across her local council. It won a regional award. The council bought a licence. She studied computer science at Birmingham. She graduated into a talent visa that cost her nothing and took three weeks. She is now twenty-eight and has founded twice.

The UK is not the United States. It was never going to be. But it is the place that the most talented people in the world, the ones who want

to build something that lasts, in a country with genuine intellectual culture, genuine rule of law, genuine openness, choose when they want an alternative. The window the US political environment opened in 2025 and 2026 was seized. The signals were changed. The builders came.

This is not a utopia. Companies still fail. Markets still disappoint. There are still fifteen things wrong with the UK that are not in this book. But the Conversion Gap, the structural haemorrhage of value from the economy that built ARM and DeepMind and Oxford Ionics and gave the proceeds to someone else, has been named, diagnosed, and treated. The system no longer works against itself by design.

The Price: The UK in 2035 If We Don't Execute the Blueprint

It is also 2035.

The eighteenth technology and innovation strategy document produced by the UK government since 2010 was published in February. It contains the phrase 'world-leading' fifty-three times. It has not been audited. The minister who launched it has since moved to a different portfolio.

Quantinuum was acquired in 2029. The buyer was a US defence contractor that had identified quantum sensing as a strategic national asset eighteen months before the UK government did. The National Security and Investment Act was reviewed. The review concluded the acquisition raised no concerns. Quantinuum's headquarters is now in Maryland. Sixty of its Cambridge researchers commute to their new employer's European office in Amsterdam, which opened in 2031.

Riverlane's error correction operating system is world-class. It still is. The company raised its Series D from a Singaporean sovereign wealth fund in 2027 after the UK's institutional investors declined to participate at the required valuation. The lead investor insisted on a Singapore secondary listing as a condition of the round. Riverlane's legal domicile is now the Cayman Islands. Its labs are still in Cambridge. For now.

The founder who was eighteen months from a forced sale in 2026 sold in 2027. The acquirer was a US strategic buyer. The price was fair. The company's technology now runs inside an American platform that serves the NHS under a ten-year contract. The NHS pays more for it than the UK would have paid to fund the company's independence. The contract cannot be renegotiated until 2037. The founder has retired to Portugal.

The Manchester founder did not take the Series B. The regional fund that might have found her was never cornerstoned because the BBB programme's statutory commitment was replaced, in the 2027 budget, with a more flexible arrangement that allowed annual adjustment. It was adjusted to zero in year two. She is running a consulting firm. She is very good at it. She is not building anything.

The prodigy Birmingham international student graduated into a visa process that cost him £11,400 and took four months. He is building his company in Dubai, where the visa took days, not months, and cost a fraction of what the UK charges. He visits his family in Birmingham twice a year.

An Edinburgh AI entrepreneur could not secure a government contract at home and chose to set up in Riyadh instead where he can take advantage of Saudi Arabia's startup incentives, fast procurement, and access to government. He landed his first large public sector contract within eighteen months. And never looked back. He still holds a British passport.

The UK venture capital deployment has plateaued at £11 billion annually, up from 2024, but still less than one-third of the proportionate level. The pension funds have moved 4 per cent into private markets, against their 2030 commitment of 10 per cent. The Mansion House Accord's architects have described this as meaningful progress. It is not meaningful progress. It is the same structural drift, with better press releases.

There are seventeen technology ministers across Europe. The UK has had seven in nine years.

The NHS runs four hundred innovation pilots annually. The conversion rate to mainstream adoption is 9 per cent. The phrase 'the

NHS has more pilots than British Airways' is no longer considered witty. It is simply true, and everyone who works in health technology has heard it so many times that it has lost the power to cause distress.

ARM is worth £180 billion. It is headquartered in Tokyo. The UK receives royalties.

The company that was, in 2026, beginning to prove itself in the Bowling Alley, the one that will become the foundational infrastructure layer of the next technology wave, was acquired in 2028. The founders received fair value. The acquirer was American. The board was told, correctly, that no domestic alternative to the acquisition existed.

This is not a catastrophe. It is quieter and more corrosive than a catastrophe. The UK's innovation ecosystem is productive. Companies are founded. Research is published. Conferences are held. The problem is not what is happening. It is what is not compounding. The Conversion Gap, the structural distance between what the UK invents and what it keeps, has widened by 2035 to the point where the question is no longer whether the UK will lead in the technology sectors that matter. It is whether it will participate.

The talent is still here. The research is still here. The ambition, in the people who have not yet left, is still here.

The ecosystem still works exactly as designed.

The difference between these two futures is not technology. It is not talent. It is not money, the capital exists in both futures, pooled in the same pension funds, waiting to be allocated or not.

The difference is ten decisions. They are named in this book. They have owners. They have timelines. They have measurable outcomes.

In Taiwan in 1987, a small group of officials made one decision about one company. Thirty-seven years later, that decision controls the chokepoint of the global technology supply chain.

The UK is not Taiwan. But it has the research, the talent, the legal system, the language, the time zone, and the institutional memory to make ten decisions, not one, that would close the Conversion Gap before the window closes.

The window is not closed. It is narrowing fast.

FEATURED PROFILES

CHRIS BALLANCE
Co-founder, Oxford Ionics

Chris Ballance is a physicist, entrepreneur, and co-founder of Oxford Ionics, a University of Oxford spinout behind the world's highest-performing trapped-ion quantum computing technology. Before its $1 billion acquisition by IonQ in 2025, he led the company's transition from academic research to commercial-scale systems. A former research fellow at Magdalen College, Oxford, his work set world-record gate fidelities that remain industry benchmarks. In this book, Ballance argues that British founders must aim for the global frontier and reject incremental ambition.

KATE BINGHAM
Former Chair, UK Vaccine Taskforce, Venture Capitalist, SV Health Investors

Kate Bingham is a venture capitalist and former Managing Partner at SV Health Investors. As Chair of the UK Vaccine Taskforce during the COVID-19 pandemic, she led the strategy that secured early access to multiple vaccines and enabled one of the fastest rollouts globally. With more than three decades in life sciences investing, she has backed numerous breakthrough biotechnology companies. She is widely recognised for coordinating government, academia, and industry during the pandemic response. Bingham is also the author of *The Long Shot: The Inside Story of the Race for a COVID-19 Vaccine*.

STAN BOLAND
Serial Technology Founder

Stan Boland is one of the United Kingdom's most experienced deep tech founders. He co-founded Element 14, acquired by Broadcom for $640 million, and Icera, acquired by Nvidia for approximately $400 million, generating more than $1 billion in total exit value. He has served as CEO of Acorn Computers and as a director of ARM Holdings, and later co-founded FiveAI, an autonomous driving software company. A Cambridge physics graduate, Boland has spent three decades building globally competitive technology companies. In this book, he argues for active venture capital, the removal of ineffective subsidies, and a decisive approach to winning global talent.

STEVE BRIERLEY
CEO, Riverlane

Steve Brierley is the founder and CEO of Riverlane, a Cambridge-based quantum computing company focused on quantum error correction, widely seen as the central barrier to useful quantum computing. Before founding Riverlane in 2016, he held research roles at the University of Cambridge and the University of Bristol in quantum information science. Riverlane has raised significant venture funding and partners with leading quantum hardware providers worldwide. In this book, Brierley argues that the UK has a narrowing window to lead in quantum and must retain top talent through frictionless immigration and competitive compensation.

DAVID CLEEVELY
Entrepreneur, Investor, and Cambridge Ecosystem Builder

David Cleevely is a central figure in the Cambridge technology cluster. He co-founded Cambridge Network with Hermann Hauser and has chaired or served on the boards of more than twenty technology companies, including founding Abcam and co-founding Analysys

Mason. A former member of the Council for Science and Technology advising the Prime Minister, he holds a PhD from the University of Cambridge. In this book, he advocates placing experienced CEOs into spinouts early, using anchor customers to drive adoption, and building regional clusters around real commercial strengths.

NICK CLEGG
Former UK Deputy Prime Minister; Former President, Global Affairs at Meta; General Partner, Hiro Capital

Sir Nick Clegg is the former UK Deputy Prime Minister (2010–2015) and former President, Global Affairs at Meta (2018–2025). Before entering Parliament in 2005, he worked at the European Commission and served as a Member of the European Parliament. He became leader of the Liberal Democrats in 2007 and served as Deputy Prime Minister in the UK's first coalition government since the war. Following his time at Meta, he became a General Partner at Hiro Capital and is also involved with companies including NScale and Efekta. He is the author of several books, including *How to Stop Brexit*, *Politics: Between the Extremes*, and *How to Save the Internet*.

DAVID COHEN
Founder and CEO, Techstars

David Cohen is the Founder and CEO of Techstars, one of the world's largest pre-seed investors and startup accelerators, with investments in more than 5,000 companies. Before Techstars, he founded several software companies, including Pinpoint Technologies, which was acquired by ZOLL Medical. He co-authored *Do More Faster* with Brad Feld. A leading advocate of mentorship-driven ecosystems, Cohen helped define the modern accelerator model. In this book, he argues that mentorship should be systematic, outcome-driven, and grounded in a give-first culture, with operator time treated as a disciplined resource.

BRAD FELD
Co-founder, Foundry and Techstars

Brad Feld is an entrepreneur, venture capitalist, and author who has shaped thinking on startup ecosystems. He co-founded Foundry, a Boulder-based venture capital firm, and Techstars, a global accelerator network. An investor and entrepreneur since 1987, he is the author of *Startup Communities*, *Venture Deals*, and *#GiveFirst*. He holds BS and MS degrees in Management Science from MIT. Feld has long advocated for founder-led communities and continues to influence how ecosystems are built and sustained.

HERMANN HAUSER
Co-founder, Amadeus Capital Partners; Co-founder, Acorn Computers

Hermann Hauser KBE FRS is one of Europe's most influential technology figures. He co-founded Acorn Computers, from which ARM Holdings was spun out in 1990, and Amadeus Capital Partners in 1997. He has founded or backed more than one hundred technology companies, including Solexa, CSR, and Icera. A Fellow of the Royal Society with a PhD in Physics from Cambridge, he also led the Scale Up Europe initiative. In this book, Hauser argues for European technology sovereignty, early deep tech commercialisation, and focused regional specialisation.

NIC HUMPHRIES
Senior Partner, Hg Capital

Nic Humphries is a Senior Partner at Hg Capital, a leading European technology-focused private equity firm with more than $65 billion in assets under management. He has led investments across software, data, and technology services, applying an operational approach focused on productivity rather than financial engineering. In this book, he argues for mobilising institutional capital into long-term

growth companies, building an equity culture from an early age, and positioning private equity as a driver of international expansion.

NEIL LEE
Professor of Economic Geography, London School of Economics

Neil Lee is Professor of Economic Geography at the London School of Economics and leads the Cities theme at the International Inequalities Institute. His research focuses on innovation, regional inequality, and economic geography. His book *Innovation for the Masses* argues for spreading the benefits of the high-tech economy beyond concentrated hubs. He has advised the OECD, the World Bank, and UK government departments, and has given evidence to parliamentary committees on the UK innovation system.

JOSH LERNER
Jacob H. Schiff Professor of Investment Banking, Harvard Business School

Josh Lerner is the Jacob H. Schiff Professor of Investment Banking at Harvard Business School, where he leads the Entrepreneurial Management Unit and co-directs the National Bureau of Economic Research programme on productivity, innovation, and entrepreneurship. One of the most cited economists in venture capital and innovation policy, he is the author of *Boulevard of Broken Dreams*. He also founded the Private Capital Research Institute. In this book, Lerner examines why government-backed entrepreneurship programmes often fail and how to design those that succeed.

OTTOLINE LEYSER
Former Chief Executive, UK Research and Innovation

Ottoline Leyser DBE, FRS is a plant biologist and former Chief Executive of UK Research and Innovation, which invests more than £8 billion annually in the UK's research and innovation system. She

previously directed the Sainsbury Laboratory at the University of Cambridge and is a Fellow of the Royal Society. In this book, Leyser challenges linear pipeline models of innovation and introduces the jacuzzi model, arguing that progress emerges from circulation and connection. She calls for a more integrated system that enables researchers, entrepreneurs, and customers to connect deliberately.

JEFF LYNN
Co-founder, Reach Public Europe (formerly Seedrs)

Jeff Lynn is the co-founder and former CEO of Seedrs, one of Europe's most active equity crowdfunding platforms, now part of Reach Public Europe. An American-born, London-based entrepreneur and lawyer, he has spent more than a decade building infrastructure that broadens access to private markets. He is the author of *Crowdfunding Revolution* and advises governments on financial inclusion and equity access. In this book, Lynn argues for normalising secondary liquidity during the growth journey and building market infrastructure that reduces pressure for premature exits.

PAUL MILLER
Managing Partner and CEO, Bethnal Green Ventures

Paul Miller OBE is Managing Partner and CEO of Bethnal Green Ventures, a leading European early-stage investor focused on startups addressing social and environmental challenges. Since co-founding the firm in 2012, he has supported more than 200 companies across sectors including health, climate, education, and civic technology. He previously co-founded the education technology startup School of Everything and worked as a researcher at Demos and Forum for the Future. In this book, Miller argues that government procurement is the key lever for scaling innovation, turning pilots into contracts.

CARLOS MOEDAS
Mayor of Lisbon; Former European Commissioner for Research, Science and Innovation

Carlos Moedas is Mayor of Lisbon and a former European Commissioner for Research, Science and Innovation, where he oversaw the €77 billion Horizon 2020 programme. Trained as an engineer and an MBA graduate of Harvard Business School, his career spans investment banking, government, and city leadership. As Mayor, he has positioned Lisbon as one of Europe's most dynamic innovation hubs. In this book, Moedas argues for using cities as first deployment platforms and for creating regulatory pathways that enable innovation while maintaining public trust.

GEOFFREY MOORE
Author, *Crossing the Chasm and Inside the Tornado*

Geoffrey Moore is an author, speaker, and advisor whose work on technology adoption has shaped generations of entrepreneurs and investors. *Crossing the Chasm* remains a foundational guide to moving disruptive products into mainstream markets. He has advised many of Silicon Valley's leading companies on market strategy and category creation. In this book, Moore argues that the UK's innovation challenge is a demand problem rather than a supply problem and introduces the concept of trapped value unlocked through focused beachhead strategies.

NATALIE MOORE
CEO, Apps for Good

Natalie Moore is CEO of Apps for Good, a UK education charity that teaches young people to design and build technology products that solve real-world problems. Under her leadership, the programme has reached hundreds of thousands of students across the UK. It combines product design, user research, and entrepreneurial thinking in a

hands-on curriculum. In this book, Moore argues that every student should create and launch something real before leaving school, because entrepreneurial capability is built through practice.

GERALD MULLALLY
Innovation Delivery and Execution Specialist

Gerald Mullally specialises in public sector innovation delivery, with experience designing procurement systems that bring emerging technologies into government at scale. His work spans roles across government, technology, and institutional reform. He advocates treating government as a strategic customer that can create markets through its purchasing power. In this book, Mullally calls for a national innovation delivery engine and a shift from pilots to default contracting, enabling faster adoption of frontier technologies.

ANDREAS SCHLEICHER
Director for Education and Skills, OECD

Andreas Schleicher is Director for Education and Skills at the OECD, where he leads PISA, the world's largest international assessment of student learning. A statistician and global education reformer, he has spent decades analysing high-performing education systems. He is the author of *World Class: How to Build a 21st-Century School System*. In this book, Schleicher argues that entrepreneurship is a method that can be taught and that education systems must embed it throughout the curriculum.

CHELSEA SLATER
Founder and CEO, InnovateHer

Chelsea Slater is the founder and CEO of InnovateHer, a social enterprise that equips young women aged 15 to 19 with the skills and confidence to enter the technology economy. Based in Liverpool, InnovateHer delivers programmes in schools across the UK, combining project-based learning, mentorship, and public presentation. In this

book, Slater argues that confidence and communication are core economic skills that must be developed deliberately.

BRADLEY TUSK
Founder and CEO, Tusk Ventures

Bradley Tusk is the founder and CEO of Tusk Ventures, a venture capital firm focused on startups facing regulatory challenges. A former political strategist, he served as campaign manager for Michael Bloomberg's mayoral re-election and as Deputy Governor of Illinois. His firm has backed companies including Uber, Lemonade, and Bird. He is the author of *The Fixer*, *Obvious in Hindsight*, and *Why Mobile Voting Is Our Final Shot at Saving Democracy*. In this book, Tusk argues that regulatory capture is a major barrier to innovation and outlines strategies to overcome it.

CHARLIE WALKER
Deputy CEO, London Stock Exchange Group

Charlie Walker is Deputy CEO of the London Stock Exchange Group and a senior leader in global financial markets. He has played a central role in shaping the UK's capital markets, overseeing equity and capital markets operations and supporting international growth. Before joining LSEG, he worked in investment banking and corporate finance. In this book, Walker focuses on improving access to capital and strengthening London's position as a global financial centre.

DAVID WILLETTS
President, Resolution Foundation; Former UK Minister for Universities and Science

David Willetts is a British politician, academic, and policy expert who served as Minister for Universities and Science from 2010 to 2014. He played a central role in higher education reform, research funding, and innovation policy. He is now President of the Resolution Foundation and has held academic roles, including at King's College

London. In this book, Willetts examines long-term economic policy, social mobility, and intergenerational fairness, drawing on decades of experience in government and research.

———

ACKNOWLEDGEMENTS

Thank you to everyone who contributed to this publication, for your insights, feedback, and support.

First and foremost, thank you, Bruno Lanvin, for your valuable feedback on the book's thesis and approach. It meant a lot to me, and I found it invaluable in ultimately shaping the finished product.

Special thanks to Carlota Perez for her generous endorsement and for her foundational work on innovation-driven economic growth.

Particular thanks to Geoffrey Moore, whose frameworks around technology adoption helped shape this book.

Special gratitude to each individual featured in this book. You gave your time, your thinking, and your candour to a project that asked a great deal of you. This book is yours as much as it is mine. They are: Chris Ballance, Kate Bingham, Stan Boland, Steve Brierley, David Cleevely, Nick Clegg, David Cohen, Brad Feld, Hermann Hauser, Nic Humphries, Neil Lee, Josh Lerner, Ottoline Leyser, Jeff Lynn, Paul Miller, Carlos Moedas, Geoffrey Moore, Natalie Moore, Gerald Mullally, Andreas Schleicher, Chelsea Slater, Bradley Tusk, Charlie Walker, and David Willetts.

To Andy Meaden, for your invaluable, timely help, patience, and attention to details and to Gabrielle Garcia for your great insights.

To Nash Salah, Rimy Allam, Erika Vericima, Aysha Espada, Amal Elsayed, Maryam Allam, and Reem Allam, Oreo Juve, Mochi Oreo, Taki Lanac, for being an anchor of unwavering support.

Finally, to my mother and father, may they rest in peace, you are my guiding light, and all my achievements are in your honour.

ABOUT THE AUTHOR



AMIR HEGAZI is Managing Director of CapitalDemocracy, advising founders, institutional investors, and policymakers on how innovation systems translate into economic growth.

He has spent over two decades working across venture capital, technology scaling, and ecosystem development, supporting companies from early-stage growth through to major exits, and working with governments and institutional leaders on capital formation and market expansion.

Amir played a role in the growth of Souq.com, the Middle East's largest e-commerce platform, which was acquired by Amazon. He previously co-founded intoMENA Group, advising companies on expansion across the Middle East and North Africa.

He has advised ministers, policymakers, and ecosystem leaders on go-to-market strategy, digital commerce, and innovation systems, and serves as an advisor to the University of California, Berkeley on its global AI initiative.

He is the author of multiple books on startups and ecosystem development.

BIBLIOGRAPHY

Sources cited, named, or implied throughout the text. Chapter references in brackets indicate where the source appears.

1. Beauhurst (n.d.). "UK Scale-Up and Startup Data." [Prologue, State]

2. BEIS (Department for Business, Energy and Industrial Strategy) (2023). "Help to Grow: Management Programme Evaluation." [Ch. 29]

3. Bloomberg (n.d.). "US-Europe GDP Growth Divergence Data." [Ch. 12]

4. British Business Bank (2025). "Annual Report and Accounts 2025." [Introduction, Ch. 8, Ch. 9, Ch. 12, State]

5. BVCA (British Private Equity & Venture Capital Association) (2025). "Venture Capital in the UK 2025." [State]

6. Dealroom (n.d.). "UK and European Venture Capital Data." [State]

7. DWF Group (2025). "UK Venture Capital in 2024–2025: Trends, Challenges and Opportunities." [State]

8. DWP (Department for Work and Pensions) (2024). "Pension Fund Investment and the UK Economy." [State]

9. Feld, Brad (2012). "Startup Communities: Building an Entrepreneurial Ecosystem in Your City." [Ch. 39, Conclusion]

10. House of Commons Library (2025). "Research and Development Spending. Parliamentary briefing CBP/04223." [State]

11. IFA Magazine (2026). "The Resurgence of the British Tech Sector: Why 2025 Marked a Definitive Turning Point." [State]

12. InnovateHer (n.d.). "Survey Data: Girls Aged 13–17 and Technology Interest vs Career Consideration." [Ch. 7, Part II]

13. Institute for Fiscal Studies (IFS) (2023). "Longitudinal Earnings Data: Project and Portfolio Assessment Outcomes." [Ch. 6]

14. Jerrim, John (Professor) (n.d.). "Research on Pupil Disengagement During Year 7 Transition." [Ch. 7]

15. Kauffman Foundation (2023). "State of Entrepreneurship Report." [Ch. 29]

16. LSEG (London Stock Exchange Group) (2025). "Putting UK Equities in Perspective." [State]

17. Lucas Education Research (2021). "Meta-Analysis of Project-Based Learning in Secondary Schools." [Ch. 6]

18. Moore, Geoffrey (2014). "Crossing the Chasm: Marketing and Selling Disruptive Products to Mainstream Customers, 3rd ed." [Prologue, Introduction, Ch. 19, Ch. 20, Part IV]

19. Moore, Geoffrey (1995). "Inside the Tornado: Marketing Strategies from Silicon Valley's Cutting Edge." [Prologue, Introduction, Ch. 19, Ch. 20, Part IV]

20. National Parent Survey (2025). "National Parent Survey 2025." [Ch. 6]

21. New Financial / Capital Markets Industry Taskforce (2023). "Releasing the Capital in Capital Markets." [State]

22. OECD (2024). "Main Science and Technology Indicators; R&D Tax Incentives Database." [State]

23. OECD (n.d.). "Education at a Glance: OECD Indicators." [Ch. 4, Ch. 5]

24. OECD (Organisation for Economic Co-operation and Development) (2022). "PISA 2022 Creative Thinking Assessment Results." [Ch. 4, Ch. 5, Ch. 6]

25. ONS (Office for National Statistics) (2025). "Business Enterprise Research and Development, UK: 2024; Gross Domestic Expenditure on R&D, UK: 2023." [State]

26. Riverlane (n.d.). "Quantum Error Correction Research and Company Data." [Ch. 18, Part IV]

27. Statista (2025). "Venture Capital, United Kingdom Market Forecast." [State]

28. Strategic Management Journal (2021). "Mentor-Mentee Match Quality as Predictor of Accelerator Programme Outcome: Analysis of 1,800 Firms." [Ch. 29]

29. Tech Nation (2025). "The Tech Nation Report 2025." [State]

30. Technology Talent Charter (n.d.). "Diversity in Tech Annual Report." [Ch. 7]

31. Techstars (2022). "Cohort Outcome Data: 3,200 Companies Across Fifteen Years." [Ch. 29]

32. TechUK (2022). "Are We Getting Closer to Achieving the Target for the UK to Invest 2.4% of GDP in R&D by 2027?" [State]

33. Tracxn (2026). "Unicorn Startups in United Kingdom." [State]

34. UK Government (2025). "Industrial Strategy 2025." [Ch. 28, Conclusion]

35. UK Government / DSIT (n.d.). "UK Science and Technology Framework." [Ch. 27, Ch. 28, Conclusion]

36. UKCES (UK Commission for Employment and Skills) (2022). "Employer Skills Survey 2022." [Ch. 6]

37. UKRI (UK Research and Innovation) (n.d.). "Annual Report and Science and Technology Framework." [Ch. 27, Ch. 28]

38. UKTN / HSBC Innovation Banking (2025). "UK Venture Capital Investment 2025." [State]

39. University of Cambridge CIIP (2025). "Investment in Innovation, Cambridge Industrial Innovation Policy." [State]

40. Visual Capitalist / Crunchbase (2025). "Visualizing Unicorns by Country in 2025." [State]

41. WIPO (World Intellectual Property Organisation) (n.d.). "Global Innovation Index." [Featured Individuals at a Glance]

INDEX

A

Acorn Computers 5, 12, 24, 376, 378
Active Capital 17, 338, 339
Advanced market commitments 217, 221
Agency (student) 91, 93
AI adoption 341
AI governance 31
AI infrastructure 6, 54, 57, 58, 131, 191, 192, 202, 243, 351
AI literacy 118
Airbnb 50, 55
A-levels 114
AlphaFold 7, 8, 12, 27, 366
Amadeus Capital Partners 24, 147, 211, 378
Angel investing 183
Annual shortfall 127, 343
Annual venture shortfall 120
Apps for Good 26, 84, 107, 108, 353, 354, 365, 381
ARM Holdings 376, 378
Assessment reform 93
Attrition (female STEM students) 117
Autonomy 203, 351

B

B2B SaaS 51
Balance Sheet Argument (fund of funds) 129
Ballance, Chris 9, 23, 38, 43, 375, 385
Bay Area 44
Bethnal Green Ventures 24, 277, 380
Bingham, Kate 20, 24, 36, 63, 189, 225, 270, 303, 375, 385
biotech clusters 248, 253
Boland, Stan 14, 23, 32, 101, 120, 125, 135, 376, 385
Bowling Alley stage (Moore) 12, 215, 360
Brexit 40, 69, 71, 72, 121, 124, 167, 173, 207, 249, 262, 377
Brierley, Steve 23, 202, 205, 376, 385
British Business Bank (BBB) 120, 123, 127, 128, 131, 132, 133, 140, 146, 152, 169, 301, 319, 320, 321, 322, 323, 325, 343, 344, 363, 365, 369, 389
British Patient Capital 146, 180
British Private Equity & Venture Capital Association (BVCA) 389
Bureaucratic convenience 278

C

Cabinet Office 63, 76, 77, 78, 79, 80, 81, 82, 208, 225, 226, 337, 338, 339, 347, 348, 349, 350, 351, 358, 361, 362, 363, 364, 365
Cambridge Angels 25, 311, 312, 315
Cambridge Network 25, 311, 312, 315, 376
Capital Allocation 125
Capital markets 15, 20, 86, 100, 122, 123, 147, 148, 151, 155, 157, 159, 169, 171, 174, 181, 260, 261, 329, 383
Churn (Ministerial) 35, 79
Civil service talent 225, 226, 230
Clark, David 121
Classroom Walls (breaking down) 109
Cleevely, David 25, 291, 311, 376, 385
Clegg, Nick 25, 39, 57, 69, 86, 167, 377, 385
Clustering (innovation) 253
Coalition government (2010-15) 377
Cohen, David 25, 290, 295, 377, 385
Co-investment 131, 132
Competition and Markets Authority (CMA) 51, 273
Compliance burdens 280
Consumer power (political) 52
Conversion Gap 3, 14, 15, 19, 20, 21, 36, 212, 342, 361, 371, 373
Cornerstoning (fund investment) 128
COVID-19 pandemic 375

Crisis management (Cabinet Office) 77, 78, 82, 349
Cross-border connectivity 259, 262
Cross-departmental adoption 79
Crowdfunding 181, 184, 380
Curriculum reform 86, 365
Cut-and-paste strategy 252, 253

D

Data infrastructure 225, 231
Decision authority 65
DeepMind 7, 8, 11, 12, 15, 27, 31, 371
Deep tech 201
Democratic accountability 316
Density of interactions 258
Department for Science, Innovation and Technology (DSIT) 219
Department for Work and Pensions (DWP) 389
Deployment platforms 257
Disadvantaged students 111
Drop-off points (talent pipeline) 113, 353

E

Early exits 14
Economic development (regional) 146, 248, 251, 253, 255, 256
Ecosystem builders 1, 18, 23
Editor's Synthesis 20, 47, 55, 61, 67, 75, 81, 92, 99, 104, 110, 117, 132, 140, 145, 152, 159, 165, 173, 179, 187, 192, 200, 209, 215, 222, 230, 239, 245, 255, 262, 266, 275, 281, 288, 302, 309, 317, 324, 334
Education investment 104
Engagement crisis (schools) 107
Engineering talent 139
Enterprise Investment Scheme (EIS) 32
Entrepreneurial culture 97, 98, 99, 264
Entrepreneurial education 17, 338, 339
Entrepreneurial generation 83
Equity Culture 95
Error correction processors 207
Error correction threshold 202, 207
ETH Zurich 253
European Commissioner 24, 257, 259, 263, 381
European science programmes 260, 264
European Union (EU) 170, 171, 172, 173, 259
Examination system 353
Experiential knowledge 258

F

Featured Individuals at a Glance 391
Feedback loops 20, 111, 266, 288, 313, 316
Feld, Brad 25, 327, 340, 377, 378, 385
Fiduciary duty (pension funds) 131, 344, 365
Financial Conduct Authority (FCA) 31
Fintech 31
Fintech cluster 252, 255
First-mover advantage 243
Five-Factor Assessment 49
Founder ambition 128, 342
Fragmented budgets (quantum) 217
Frontier technology adoption 24, 81, 350
Fund of funds 127

G

GCSE (General Certificate of Secondary Education) 85, 110, 113, 114, 118, 354
GDP (Gross Domestic Product) 13, 28, 148, 149, 336, 363, 389, 391
Global Talent Visa 1
Golden Visa (UAE) 2
Google 7, 8, 47, 183, 196, 202, 207, 253
Google DeepMind 7
Government as customer 220
Government procurement 190, 208, 210, 238, 270, 380
Growth capital 8, 19, 98, 120, 121, 123, 127, 146, 148, 204, 213, 214, 215, 311, 317
Growth stage capital 28

H

Hauser, Hermann 12, 13, 24, 121, 131, 147, 202, 211, 376, 378, 385
HM Treasury 72, 360
Home Office 363
Horizon Europe 149

HR software 278
Humphries, Nic 24, 95, 122, 195, 378, 385

I

IHS payment (visa system) 1
Incumbent political power 39
Information Commissioner's Office (ICO) 51, 273
InnovateHer 26, 85, 86, 113, 117, 353, 354, 365, 382, 389
Innovate UK 32, 136, 138, 143, 272, 276, 291, 295, 301, 319, 320, 321, 322, 323, 325, 358
Innovation budget (ring-fenced) 139
Innovation compounds 19
Innovation ecosystem 2, 17, 20, 136, 222, 259, 260, 285, 316, 327, 364, 373
Innovation infrastructure 259, 262, 269
Innovation policy 25, 200, 248, 249, 259, 288, 312, 379, 383
Institutional architecture 7, 39, 67, 69, 75, 231, 288, 320
Institutional depth 121, 124, 152
Intellectual property (IP) 5, 148, 218
Ion traps (quantum) 206
Isomorphic Labs 8, 12, 31

J

Japan (R&D investment) 5
Jerrim, Professor John 108

K

Knowledge Transfer Partnerships 287

L

Lanvin, Bruno 385
Late-stage capital gap 35
Lee, Neil 26, 248, 249, 251, 334, 355, 379, 385
Lerner, Josh 25, 141, 175, 379, 385
Leyser, Ottoline 25, 269, 283, 379, 385
Limited Partner (LP) 131, 132, 344
Lisbon 24, 168, 249, 250, 257, 258, 259, 260, 261, 262, 263, 355, 381
Local economic base 253
Local Government 313
Local relatability 115
London 1, 2, 3, 7, 8, 15, 17, 24, 26, 31, 32, 33, 50, 59, 61, 71, 72, 86, 102, 122, 123, 129, 131, 151, 155, 157, 159, 161, 167, 168, 170, 171, 183, 199, 221, 248, 250, 251, 252, 253, 254, 255, 260, 261, 262, 329, 338, 339, 345, 355, 363, 364, 366, 370, 379, 380, 383, 384, 390
London School of Economics (LSE) 26, 251, 379
London Stock Exchange Group (LSEG) 383, 390
Long-term capital 123, 156, 157, 158, 165
Low-impact firms 135
Lynn, Jeff 25, 122, 181, 359, 380, 385

M

Manchester 15, 33, 99, 248, 261, 356, 370, 372
McLuhan, Marshall 258
Mentorship 295, 331
Migration (talent, company) 105, 244
Miller, Paul 24, 268, 269, 270, 277, 347, 380, 385
Mindset (ambition) 45
Ministerial churn 35
Moedas, Carlos 24, 249, 257, 263, 334, 381, 385
Moore, Geoffrey 10, 11, 25, 203, 233, 241, 340, 381, 385
Moore, Natalie 26, 84, 107, 381, 385
Moore's Law for quantum 209
Mullally, Gerald 24, 39, 41, 77, 203, 204, 217, 337, 349, 382, 385

N

National Audit Office 281
National curriculum 100
National Health Service (NHS) 268, 286
National Parent Survey 2025 108, 390
National quantum programme 202, 205, 209
National Security 10, 210, 213, 351, 371
Network of UK cities 261
Neutral atoms (quantum) 206
Newcastle (regional innovation) 253

New York 151, 157, 171, 199, 212
Nobel Prize 8, 10, 254
Number of unicorns (UK) 156

O

OECD 26, 89, 379, 382, 390
Ofcom 51, 273
Office for National Statistics (ONS) 60, 72, 170, 390
Outcome measurement 296, 301, 357
Oxbridge 254
Oxford Ionics 9, 11, 12, 15, 23, 27, 38, 39, 43, 45, 121, 203, 213, 337, 371, 375
Oxford University 9, 30, 202, 375

P

Passive capital 136
Passive subsidies 137
Patient capital 6, 7, 11, 31, 215, 329
Payment terms (procurement) 279, 280
Penicillin (discovery) 304
Pension funds 28, 95, 122, 128, 131, 132, 149, 158, 160, 164, 312, 372, 373
Pension reform 160
Perez, Carlota 385
Performance culture 316
Permission to experiment 78
Physical proximity (cities) 258
Physical qubits 207
Pilot conversion rate 269, 270
Pilot design 269, 279
Pilot failure 35, 279
Pilot scaling 277, 279, 280, 281
Political lobbying 142, 151, 186
Post-sixteen transition 85
Power-law returns 121
Power law (venture capital) 121
Premature exits 181, 359, 380
Private equity 195, 389
Procurement culture 279
Procurement reform 24, 32
Productivity gap 195
Product-market fit 50, 199
Project-based learning 84, 111, 382
Public sector innovation 24, 279, 382

Q

Quantum computing 9, 12, 23, 38, 79, 156, 202, 205, 206, 209, 211, 213, 214, 219, 221, 222, 370, 375, 376
Quantum error correction 23, 202, 205, 206, 207, 208, 209, 210, 345, 351, 366, 369, 376
Quantum hardware 376
Quantum operations 207

R

R&D tax credits 32, 135, 136, 138, 139, 140, 343
Real-time inference (quantum) 206
Reference customer 249, 258, 268
Regional clusters 247
Regional economic development 146, 251, 253, 255, 256
Regional inequality 379
Regulatory capture 383
Regulatory frameworks 15, 20, 227, 249
Regulatory sandbox 31
Regulatory strategy 24, 63
Relocation (companies) 123
Research commercialisation 20
Research excellence 261
Research institutions 20, 156, 260, 309
Resilience 220, 265, 266
Risk management (VC) 126
Risk tolerance 63
Riverlane 23, 202, 205, 206, 207, 208, 209, 210, 213, 337, 345, 369, 371, 376, 390
Role models (youth) 110, 111, 115
Runway (startup) 261, 268

S

San Francisco 2, 16, 41, 102, 253, 290, 314
Scale Up Europe Fund 121, 124, 147, 149, 150, 152, 153, 211, 213
Scale-Up Gap 147
Schleicher, Adreas 26, 84, 85, 89, 92, 353, 382, 385
Secondary Liquidity 17, 181, 338, 339
Self-fulfilling prophecy 44, 45
Semiconductor chip design 206
Semiconductor expertise (Cambridge) 202, 205, 206, 209

Series A (funding) 156, 218, 291
Series B (funding) 2, 120, 177, 180, 370, 372
Series C (funding) 123, 221
Series D (funding) 221, 371
Shenzhen 253, 314
Silicon spin qubits 206
Silicon Valley 33, 129, 183, 248, 253, 255, 290, 328, 330, 332, 333, 355, 381, 390
Singapore 102, 104, 361, 371
Skills gap 110, 177
Slater, Chelsea 26, 85, 113, 382, 385
Small and Medium-sized Enterprises (SME) 348
Social infrastructure 334
Social issues (student projects) 108
Social welfare (cities) 259, 262
SoftBank 5, 6, 351
Sovereign technology fund 6
Spinout companies 285
Startup Coalition 181, 186, 365
STEM education 85, 101, 105, 114, 115, 118, 226, 227, 230, 345, 363
STEM pipeline 113, 226, 230
Superconducting qubits 206
Systems thinking 311

T

Tacit knowledge 258
Talent mobility 180
Talent pipeline 84, 103, 225, 230
Talent War (Global) 101
Tech Nation 391
Technology adoption 11
Technology careers (breadth of) 85, 118
Technology cluster 376
Technology sovereignty 150
Technology transfer offices 269, 288
Technology wave 373
Techstars 25, 295, 296, 299, 300, 302, 327, 340, 377, 378, 391
Time horizons (investments) 19
Tornado phase (Moore) 10, 11, 12, 16, 35, 203, 213, 242, 243, 244, 245, 339, 340, 341, 351, 352, 360, 366
Treasury (HM) 72, 130, 139, 321, 360
Tusk, Bradley 24, 39, 49, 383, 385
Tusk Ventures 24, 49, 383
Two-tier university system 254

U

UAE Golden Visa 2
UAE (United Arab Emirates) 2
Uber 24, 49, 50, 52, 55, 383
UK Public Markets 155
UK Research and Innovation (UKRI) 24, 25, 219, 271, 283, 284, 319, 320, 361, 379, 391
UK Science and Technology Framework 391
Unicorn Factory (Lisbon) 258, 262
University College London (UCL) 249, 254, 260, 270
University of Cambridge 376, 377, 380, 391
Upfront payment (procurement) 348

V

Vallance, Patrick 208, 323
Value creation 35, 125
VCT (Venture Capital Trust) 32, 135, 136, 137, 138, 139, 140, 343
Venture capital 18, 25, 27, 29, 31, 32, 59, 63, 96, 98, 99, 102, 120, 121, 125, 126, 127, 128, 129, 135, 136, 137, 138, 139, 144, 169, 195, 200, 221, 259, 261, 290, 312, 319, 343, 355, 364, 369, 372, 376, 378, 379, 383, 387
Venture capital shortfall 27, 125, 135
Visa friction 17, 102, 338, 339
Visas (cost of) 345

W

Walker, Charlie 24, 122, 155, 161, 383, 385
Westminster 51, 186
Westminster lobbying 51
Whitehall 51, 59, 60, 186, 226, 227, 315
WIPO (World Intellectual Property Organisation) 391
Workforce development 109, 116, 227

Z

Zombie companies 126, 137, 140, 313, 343

THE UK DOES NOT HAVE AN INNOVATION PROBLEM. IT HAS A CONVERSION PROBLEM.

> *The UK Innovation Blueprint* asks the right question at the right time—and provides the correct answer.
>
> **— Carlota Perez**
> Author of *Technological Revolutions and Financial Capital*

The United Kingdom is one of the world's most productive generators of breakthrough technology.

It is also one of the least effective at turning that innovation into lasting economic value.

ARM. DeepMind. Oxford Ionics.

In each case, the UK built the science. Another country captured the return.

This is not a coincidence. It is a system.

THE UK INNOVATION BLUEPRINT is a national playbook for fixing that system.

Built from conversations with two dozen leading figures in the UK innovation ecosystem, including Kate Bingham, Hermann Hauser, Geoffrey Moore, Josh Lerner, and David Willetts, the book identifies the structural constraints that prevent the UK from scaling its own innovation, and sets out practical, implementable solutions.

At its core is a clear framework for action:

TEN STRUCTURAL SHIFTS REQUIRED TO TURN INNOVATION INTO SUSTAINED ECONOMIC GROWTH.

From capital and talent to procurement, regulation, and ecosystem design, these shifts provide a practical blueprint for closing the gap between what the UK invents and what it keeps.

For policymakers, institutional leaders, and ecosystem builders, this is not an analysis.

IT IS A DELIVERY BLUEPRINT.

TRANSFORMENA PUBLISHING

ISBN: 978-1-0684760-4-4