MAY 2026

SIGNAL kids

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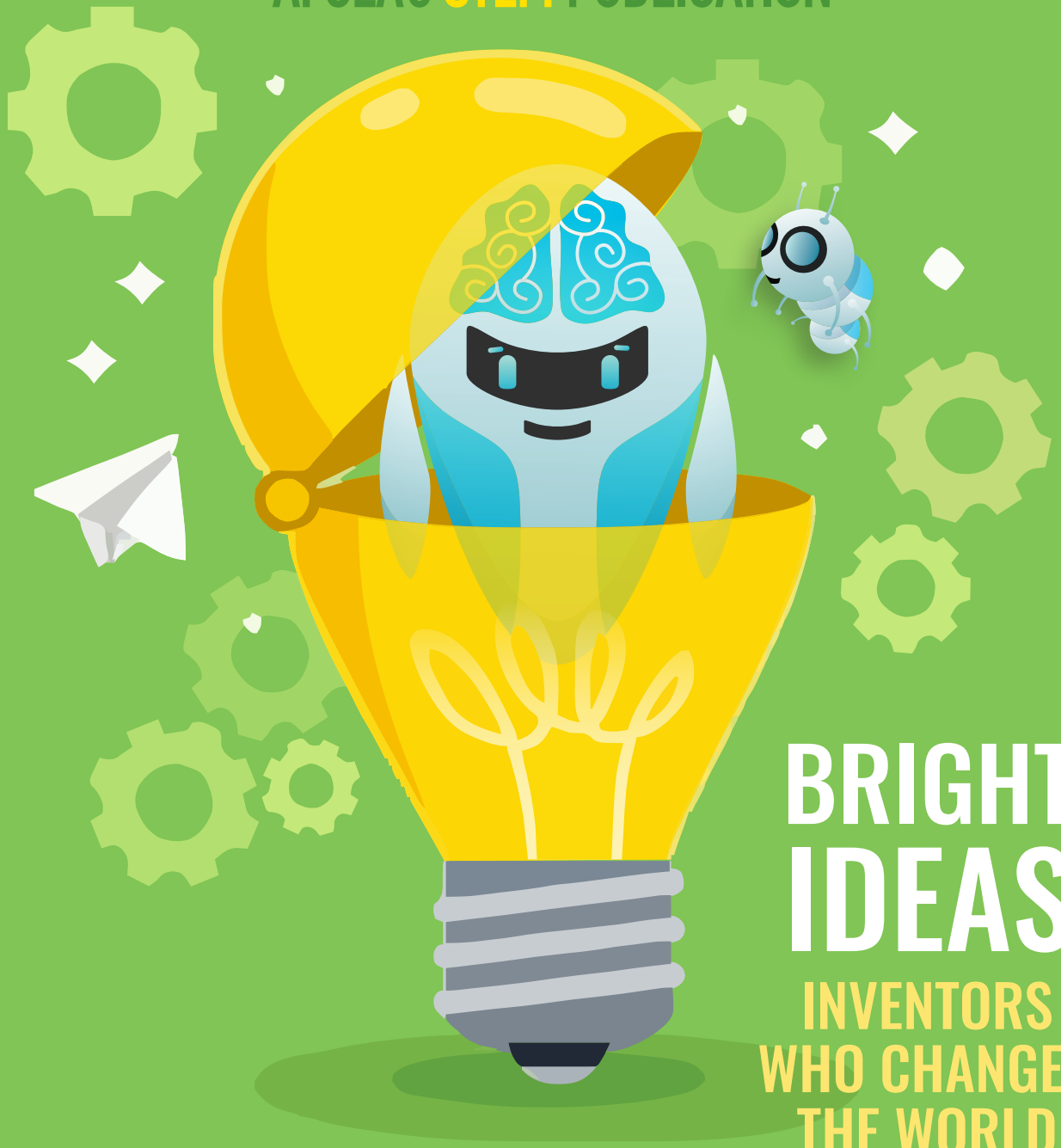

BRIGHT IDEAS

INVENTORS WHO CHANGED THE WORLD

In this issue

COVER DESIGN: By Chris D'Elia, based on imagery from Foxelle Art (Link) and SHAILA-stock.adobe.com.

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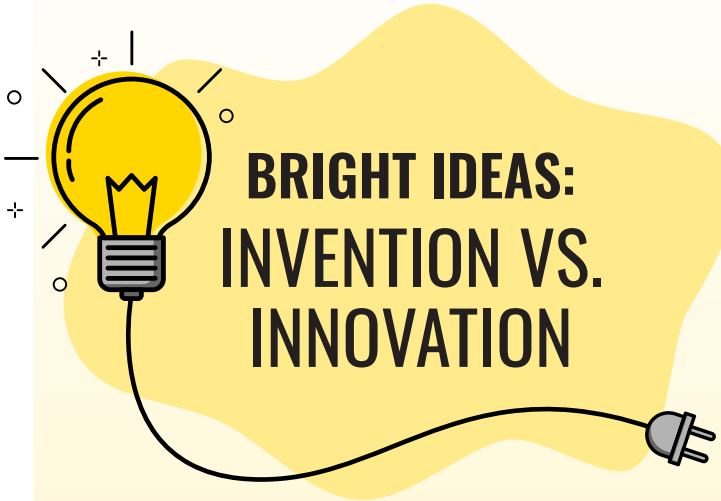


BRIGHT IDEAS: INVENTION VS. INNOVATION

What is the difference between invention and innovation? They both start with big ideas.

An invention is something brand new. For example, Alexander Graham Bell was an inventor because he was the first person to create the telephone. He made it possible for people to call and talk to friends in far places.

An innovator can take an original invention and make it better. For example, Steve Jobs didn't invent the cellphone, but he did find a way to turn cellphones into smartphones with innovative technologies. The original telephone didn't have games, music and a camera, but Steve Jobs made it possible with his innovation.

Inventions and innovations are both important. If people didn't think big and try to solve problems, we wouldn't have the technologies we use today. And it's important for the next generation to keep inventing and innovating, because who knows what kind of great things could be in our future. All it takes is a curious and creative mind!

Graphic by Monster Ztudio-stock.adobe.com

HEY, KIDS!

Do you have a comment or idea to share with us?
Email signalkids@afcea.org

INVENTING FUN: HOW BRIAN JORDAN DREAMS UP HIS COOL CREATIONS

How one inventor turns curiosity, creativity and amazing ideas into real-life gadgets—from an air cannon toy to high-tech prosthetics.

BY ANNIE K., AGE 9

Brian Jordan is an inventor whose unique way of thinking has made the world a better place with his inventions and kindness. When he was a kid, he loved to read and invent, and he still does! Growing up, he wanted to do three things: become an athlete, a pilot and an inventor. So, he played sports in college, and then he joined the Navy, where he learned how to fly airplanes. After that, he decided to become an inventor. Out of all his past jobs, Brian says being an inventor fits his personality best.

Brian thinks there are three types of people that are in us all: a technician, a manager and a visionary. The technician is the part of us that does a specific skill very well. The manager takes care of the practical aspects. And, last but not least, the visionary. The visionary is a person who sees things that don't exist and sees potential. Brian says he is 99% visionary.

Brian thinks that one of the biggest challenges of being an inventor is getting people to see your vision. When you come up with something, or you come up with a new way to do something, people might not accept it, maybe because they think it won't work, or they like to do things the usual way. Brian said you have to "get them to see and understand the new way of doing things, how it makes the world better."

Brian is prolific on his own, but not all these amazing things are a one-person job. His friend, Ryan, is an engineer. Brian said that Ryan would be the technician in his group. His wife, he says, would be a manager. They will sit down together and brainstorm. Brian has said that he sometimes goes out in nature and brainstorms. He will bring a whiteboard, and he will write down ideas that he has.

As a kid, Brian Jordan invented light-up sneakers. Throughout his life, he has invented a toy cannon that shoots rings of air called the Airzooka, a prosthetic finger called the Digitouch, and a bookcase that turns into a boat in case of flooding. These are just some of Brian's many inventions. Brian is an amazing inventor, and hopefully there will be many more things to come designed by inventor Brian Jordan.

ABOUT THE KID REPORTER

Annie K. is a 9-year-old resident of Virginia who wants to become an author or inventor when she grows up.

Brian has invented lots of amazing things! From a prosthetic finger (top left) to toys like TagBall and the Airzooka. He even invented a bookcase that can turn into a boat during a flood (far right).

Carlos and his team are showing how technology, like WISeRobot, can be a force for good and help keep us safe!

TECHNOLOGY SUPERPOWERS
KEEPING PEOPLE SAFE ONLINE

BY BRADEN L., AGE 10

I got the chance to interview Carlos Moreira, who is a cybersecurity expert. He created and leads two companies: WISeKey and SEALSQ. Carlos and his teams have invented lots of ways to make the internet a safer place.

WISeKey stands for "World Internet Secure Key," and the company started in 1999. They protect the internet against threats and protect people from dangerous stuff online. SEALSQ makes special computer chips and codes that help keep devices and information safe from hackers.

When Carlos was in school, he was curious about science and inspired by inventors like Leonardo da Vinci and Bill Gates. This got him interested in technology and the internet.

I asked Carlos why internet security is important, and he said to think of the internet like a highway. If a highway had no rules, like no speed limit or driver's licenses, then everything would be dangerous and out of control. So if the internet had no rules, then anyone could do what they want, and they could do bad stuff.

A big part of staying safe online is protecting your identity. Each person has a digital identity that is who they are on the internet. If your identity is not secure, people can steal your information and even pretend to be you. People need their identity to do important stuff online, like buying things, paying taxes, putting money in their banks and talking to doctors.

Kids need to stay safe online too. Some of the worst things that can happen to kids online are getting addicted to social media and being bullied. With technology now, someone could make a fake picture of someone doing something weird or embarrassing and show it to people. Their reputation could be ruined even though it wasn't even them. Social media is addictive because the companies make it so that you are addicted. They want you to spend as much time as possible so they make more money.

But Carlos believes that with the right rules and knowledge, people can make the internet a safer place. His companies use things like post-quantum security chips (like a super-strong digital lock that even a supercomputer can't break), secure satellites and digital identity tools to protect information online.

I also asked Carlos about artificial intelligence (AI). He said that it's an amazing tool and can do great things, but at the same time, it can do bad things. It's getting smarter and smarter, and by 2030, it will be smarter than all humans combined. It could put humans in danger, so Carlos said it needs to be controlled.

WISeKey has its own robot called WISeRobot that uses AI. The company is training it with only good content so that it is helpful to people and not dangerous. Carlos said he is a positive person and thinks humans will always find ways to use technology for good.

Carlos said that if kids want to grow up and solve important problems, they are lucky because of the technology we have today. "It's a superpower." Kids can do amazing and powerful things that were not possible for past generations.

ABOUT THE KID REPORTER

Braden is in fourth grade and lives in Alexandria, Virginia. He loves video games and playing lacrosse and soccer. He wants to be a software engineer like his dad when he grows up.

FUNNY/WEIRD INVENTIONS

No idea is too weird or silly … but these are certainly unique! Here are some of the craziest inventions that exist today.

BABY MOP: Don't feel like mopping the floor? It's a chore, but not anymore with the baby mop! Japanese inventor Kenji Kawakami invented a mop-like outfit for babies so they can clean the floor as they crawl.

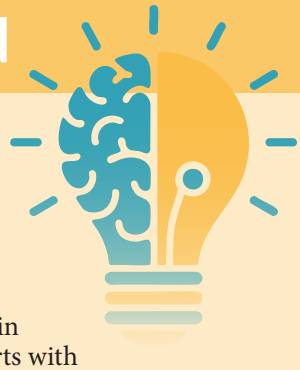
SHOE UMBRELLAS: Do you have a pair of super cool shoes that you want to wear but don't want to get dirty? Kenji Kawakami and Dan Papia worked together to create small umbrellas that stick to your shoes to keep them from getting wet.

PRISM GLASSES: While some people refer to these as lazy glasses, this invention was first created by Andrew McKie Reid in the 1930s to help sick patients see straight ahead while facing the ceiling. Now, prism glasses are used to read or watch TV while laying down. No more dropping books on your face!

MUSTACHE GUARD: Say goodbye to wet mustaches! In 1876, Virgil A. Gates first created a steel mustache shield that men could wear to keep their facial hair from getting wet while drinking. In 2014, Blake Caldwell reinvented the mustache guard, the MoGuard, which is a mustache-shaped piece of silicon that sits on top of a cup and blocks liquid from touching men's hair while they drink.

Baby Mop *and* ***Shoe Umbrella*** *images from "101 Unuseless Japanese Inventions: The Art of Chindōgu," published in 1995 by Kenji Kawakami and translated to English by Dan Papia.*
Prism Glasses *image from Nationaal Archief/CC-BY-SA-4.0.*
Mustache Guard *image from Richard Huber/CC-BY-SA-4.0.*

CREATE YOUR OWN INVENTION



ARE YOU UP FOR A CHALLENGE? LET'S BRAINSTORM!

Inventors and innovators come up with their big ideas in all sorts of ways, but it all starts with brainstorming. Brainstorming is the act of thinking big and writing down ideas that can help you plan.

Here are some helpful steps to get your brain storming with ideas!

1. Pick a problem you want to solve. Think of things that you wish could be easier or better.
2. Write everything down. If you think your idea is silly, still write it down! No idea is a bad idea while you're brainstorming.
3. Think about how you can make your ideas come to life. What supplies would you need? How will your invention or innovation work?
4. Draw a picture of what your idea looks like! Famous inventors always start with a sketch, and their first model is called a prototype.

Now it's your turn to brainstorm!

Fill out the questions below to get started and let your imagination run wild as you sketch it out. If you have the materials to make your invention, feel free to make your first prototype as well.

Who/What do you want to help?
What will your invention do?
How will it make things better?
What supplies will you need to make it?

Draw your invention below:

What is your invention called?

Have an adult help you email a picture of your work to signalkids@afcea.org, and we might feature it in a future issue!

How To Become a Professional Innovator

BY COURTNEY BENEDETTO

J.F. Mergen, deputy office director for the Information Innovation Office at the Defense Advanced Research Projects Agency (DARPA), gets to oversee different inventions and creatively solve problems every day.

He helps program managers decide how they will reach their goals. When innovators want to invent something that will change the world, Mergen helps them stay on track and understand exactly how the invention will come to life.

LESSONS LEARNED GROWING UP

Mergen said his journey to his career at DARPA began with knowing he was meant to be an engineer because that's what made him happy.

"Once you really embrace the idea that you're an engineer, or you're a scientist, or you're going to be a doctor ... don't be afraid of diving deeply, exploring all the weird little nooks and crannies," he said.

As a kid, he loved science and solving problems. He got a ham radio license, learned how to develop photographs and even got a 400-power microscope for his 11th birthday.

After his birthday, Mergen learned a powerful lesson that he has never forgotten. A Yale University professor, who was friends with Mergen's dad, visited Mergen, gave him a 10-power magnifying glass and said the smaller glass was all he needed.

At first, Mergen thought the professor wasn't interested in his microscope, but then he realized the professor was trying to teach him that his brain is the most important tool.

"Look and observe. It's not about the fanciness of your instrumentation. It's not about how much money got spent on something," he said. "It's about what you have behind that lens and how you observe, how you can look and see things."

IDEAS THAT CHANGED THE WORLD

New things are invented every day around the world, but a few major breakthroughs have totally changed the way we live, work and connect. Check out the timeline of life-altering inventions and innovations! What would you add to this list?

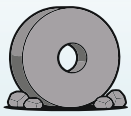
BEFORE COMMON ERA

1400

1500

1600

THE WHEEL | AROUND 3500 BCE



Inventor: Unknown (first developed in ancient Mesopotamia)

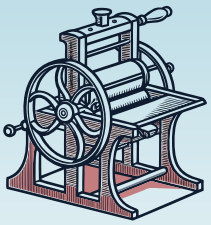
How it changed the world: The wheel made it easier to move heavy objects, which helped early civilizations build cities, trade with others and explore farther than ever before. Historians actually think the first wheel wasn't for a cart; it was for a pottery wheel!

THE COMPASS | AROUND 206 BCE

Inventors: Chinese scientists using magnetized lodestones

How it changed the world: By showing direction using Earth's magnetic field, the compass helped explorers navigate oceans and discover new lands, opening the door to global travel and trade. The Chinese called the first compass the "South Pointing Fish."

THE PRINTING PRESS | 1440



Inventor: Johannes Gutenberg, German goldsmith

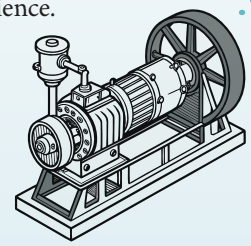
How it changed the world: Books could be made quickly and cheaply, spreading ideas, stories and knowledge to millions of people and fueling huge leaps in learning. The first book made by the Gutenberg printing press was the Bible.

THE TELESCOPE | 1608

Inventor: Hans Lippershey, Dutch spectacle maker

How it changed the world: The telescope let people see faraway planets and stars, inspiring astronomers like Galileo and launching the beginning of modern space science.

THE STEAM ENGINE | 1712



Inventors: Thomas Newcomen; later improved by James Watt

How it changed the world: Steam engines powered trains, ships and early factories, kicking off the Industrial Revolution and transforming how people worked and traveled. James Watt came up with the term "horsepower" to compare the power of his steam engine to the power of horses pulling carts.

Photo taken during summer 2025 while flying over the Eastern Shore of Maryland in a Cessna 172 aircraft. J.F. Mergen, who was at the controls during this flight, has been a pilot for more than 30 years.

In addition to his professor mentor, Mergen said it helped to have friends who were also interested in engineering because they have supported each other throughout their careers.

FAVORITE MOMENTS ON THE JOB

At DARPA, Mergen has worked on many cool projects, one of his favorites being a small device with machine learning that can help robots, ships and planes adapt when something goes wrong.

One of his other favorite parts of the job is visiting national labs where new technologies are tested. He visited Sandia National Labs and got to run an experiment in the same splash tank that was used to test how the Apollo spacecraft would splash down.

Ultimately, Mergen said one of the best things about being an engineer is getting to choose your own adventure. There are new problems to solve every day.

ADVICE FOR KIDS

For anyone who wants to become an innovator, Mergen said it's important to stay creative and not get upset when problems become harder to solve.

"Don't be discouraged if you feel like you've bitten off more than you can chew," he advised.

He promised that the feeling of finally finding the solution is worth the struggle.

Mergen's love of engineering and thinking through tough situations has led him to a job that he loves, which is most important of all.

"I've been able to retire for about 20 years, and the only reason I come in is because I am happier at the end of the day than I was at the beginning."

THE LIGHT BULB | 1879

Inventor: Thomas Edison and his research team

How it changed the world: Long-lasting electric light made homes, schools and streets safer and brighter, allowing people to work and learn even after the sun went down. The first light bulb lasted for 13.5 hours. Today, LED bulbs can last up to 50,000 hours!

THE INTERNET | 1960S–1990s

Inventors: ARPA (now DARPA) researchers; Vinton Cerf; Tim Berners-Lee

How it changed the world: The internet connects billions of people, allowing instant communication, online learning, digital creativity and sharing information across the globe. As of 2025, more than 73% of the world is connected to the internet. That's more than 6 billion people!

1700 1800 1900 2000

THE AIRPLANE | 1903

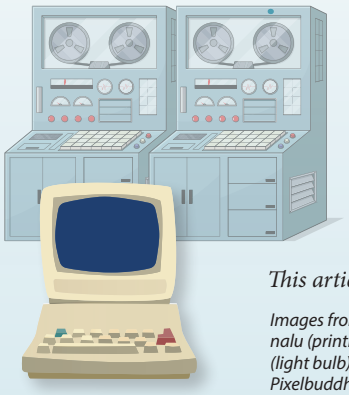
Inventors: Orville and Wilbur Wright

How it changed the world: The Wright brothers' first flight proved that powered air travel was possible, eventually making it easy for people to cross continents and connect with the world. The first flight lasted 12 seconds and covered 121 feet.

THE COMPUTER | 1940s

Inventors: Many innovators, including Alan Turing, John Atanasoff and the ENIAC team

How it changed the world: Computers went from room-sized machines to laptops and tablets, powering everything from video games to medical research, weather prediction and space missions. The first laptop computer, the Osborne 1, came later, in April 1981.



THE iPHONE | 2007

Inventor: Steve Jobs and the Apple engineering teams

How it changed the world: While the first smartphone was likely the IBM Simon Personal Communicator in 1993, the invention of the iPhone in 2007 made a huge impact. Smartphones put cameras, maps, music, learning tools and communication all in one device, transforming how people connect, create and explore their world. The iPhone changed the way we get information and transformed how we live, work and interact.

This article was developed by humans with some help from AI!

Images from Adobe Stock provided by Creative Minds (wheel), Mary (compass), nalu (printing press), Andrei (telescope), Maisa (steam engine), Nikolai Titov (light bulb), MD ABDUL MATIN (airplane), creativeteam & Maman (computers), Pixelbuddha Studio (internet) and boingz (iPhone).

A Night of STEM Innovation

Family STEM Night at Crofton Woods Elementary School brought students and families together for an exciting evening of hands-on science, technology, engineering and math activities. With help from Crofton High School student volunteers and teachers, younger students explored stations designed to spark curiosity and creativity.

As families moved through the event, students collected stamps in a STEM passport, encouraging them to try as many challenges as possible. One of the most popular activities was the pasta and marshmallow tower challenge, where students experimented with shapes and structures to build the tallest, strongest tower they could. Fifth graders showcased their own creativity by sharing homemade Operation-style games they designed during class.

Students also visited stations where they practiced safe tool use with Chomp Saws, examined owl pellets to learn about food chains and made colorful pasta necklaces while exploring patterns. Other activities included origami, identifying mystery liquids, graphing Skittles, estimating items in jars, creating tessellations, testing objects to see if they float, exploring symmetry and solving tangram puzzles.

Family STEM Night showed that learning can be fun, hands-on and collaborative. Students worked together with parents, siblings and classmates to solve problems, test ideas and explore new concepts. By the end of the night, many students had filled their STEM passports—and even more importantly, they left with new skills, confidence and big smiles.

Crofton Woods Elementary School received a Kickstarter grant from the AFCEA Central Maryland Chapter to fund their STEM programs. Learn more about the Central Maryland Chapter: centralmd.afceachapters.org

HOW AN IDEA BECOMES A PATENT

Have you ever imagined inventing dark-vision goggles or a backpack that charges your tablet? Scientists and engineers use science, technology, engineering and math (STEM) to turn wild ideas like these into real inventions.

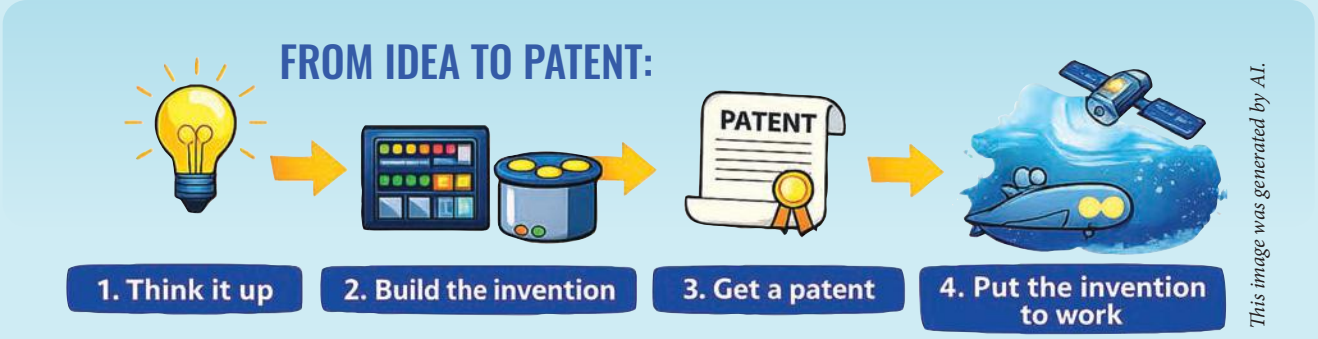
When inventors create something new and useful, they can apply for a patent from the U.S. Patent Office, which protects an inventor's idea from being copied or sold by someone else without permission. Inventors must explain exactly how their invention works. If approved, the patent protects the idea for about 20 years, while sharing knowledge so others can build on it.

At Naval Information Warfare Center Pacific (NIWC Pacific) in San Diego, scientists and engineers have been inventing and earning patents since 1957. Their teams have created thousands of inventions in communications, cybersecurity, ocean systems and robotics—from sending messages underwater to protecting computers from hackers.

Every invention starts with one simple question: How can we make this better?

AFCEA San Diego supports STEM education and connects students with the people and technologies shaping our future.

Visit sandiego.afceachapters.org to learn more.



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