

COVID 19 STACK

Tapping Data & Analytics for Evidence
based Pandemic Management



Introduction

This is an unprecedented time that has challenged the human kind to evolve, reinvent and become resilient to survive and sustain. Nations have faced and have been tackling recurring epidemics but the Novel Corona virus has proven to be the most dreaded pandemic. In their efforts to flatten the curve, nations have taken to social distancing. Also, they have leveraged technology to reinforce their pandemic management strategies. In dealing with the COVID-19 pandemic across the globe, governments at all levels-local or national have shared and closely monitored data-driven dashboards to communicate crucial information to officials and citizens. These intuitive dashboards with the power of data, analytics and visualization enables governments to combat the pandemic better with information on rising caseload, testing facilities, status of health infrastructure for treatment of infected patients etc.

Need for ICT in Pandemic Management and Response

Given the devastating effect Covid-19 has had on human lives and economies, ICT has emerged as a disruptor cum enabler in taming the pandemic and helping to restore normalcy.

Governments have actively engaged the private sector to develop ICT solutions that enable identification, isolation, contact tracing, and treatment, to deal with the evolving situation in their countries. ICT solutions help to:-

01 Identify

Citizens who could be confirmed or suspect carriers of Coronavirus.

02 Trace

Contacts of citizens infected with virus or placed under quarantine.

03 Monitor

Health of citizens who are at high risk or critically affected by virus.

04 Map

Available infrastructure for testing, quarantining & treating affected citizens.

05 Enforce

Compliance to quarantine norms and timely report to authorities for action.

06 Assist

Citizens to access essential services during times of partial or full lockdown.

07 Optimize

Allocation of limited resources to arrest infection & mortality.

08 Mobilize

Infrastructure to handle surge in migration after lockdown relaxations.

09 Plan

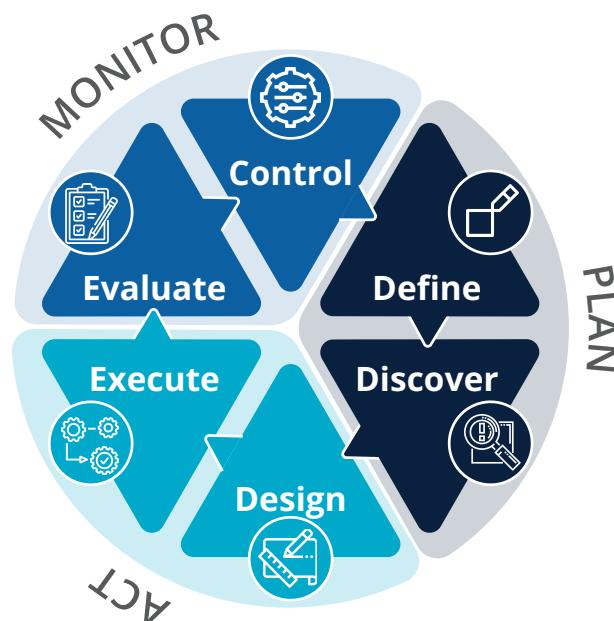
Augmentation of health care infrastructure to meet peak demands of infection curve

10 Access

Easy download of E-reports of the Covid Test ensure expeditious access to result, identification of infection and treatment.

Our Solution: Covid Stack

We had the foresight to understand that technology could prove crucial in enabling governments to closely monitor CoVID-19 suspect carriers, enforcing social distancing and isolation and augmenting infrastructure capacity to deal with the crisis. Against this backdrop, we conceptualized and implemented our solution, an end-to-end ICT solution stack comprising a unified portal, mobile application & advanced analytics to combat CoVID-19.



Integrated key Features

- ◆ Analytics based, data driven Goal setting.
- ◆ Planning through identification and configuration of KPIs.
- ◆ Executing the actionable through transaction modules.
- ◆ Monitoring the progress through department dashboards.
- ◆ Controlling the parameters through data driven re-planning.

Benefits

Proactive measures driven by analytics

Unified Data Portal managing large data sets prove to be critical for evidence-based efforts in fighting the pandemic

- ◆ Registering and tracking known COVID cases.
- ◆ Monitoring adherence to quarantine requirements.
- ◆ Sampling, testing and notification.
- ◆ Managing patients.
- ◆ Mapping infrastructure and optimizing medical resources.
- ◆ Issuing travel passes for stranded visitors.
- ◆ Monitoring incoming worker registration and border protection.
- ◆ Managing medical outposts.
- ◆ Determining benefits eligibility.
- ◆ Data driven decision for enforcing or relaxing lockdown for different areas.

Instant Access to Vital Statistics

Single, reliable source of information for the citizens to generate awareness and help administration to plan effectively

- ◆ District-wise and block-wise near real-time infection data.
- ◆ COVID-19 testing and health/hospital infrastructure.
- ◆ Emergency Ambulance Services.
- ◆ Travel regulations in and out of the state.
- ◆ Lockdown norms and other directives released by the concerned departments from time to time.
- ◆ Expeditious access to reliable Test e-Reports with authentication and security QR code for faster treatment.
- ◆ Intra/inter-state benchmarking of Covid.

Preparedness for the Future

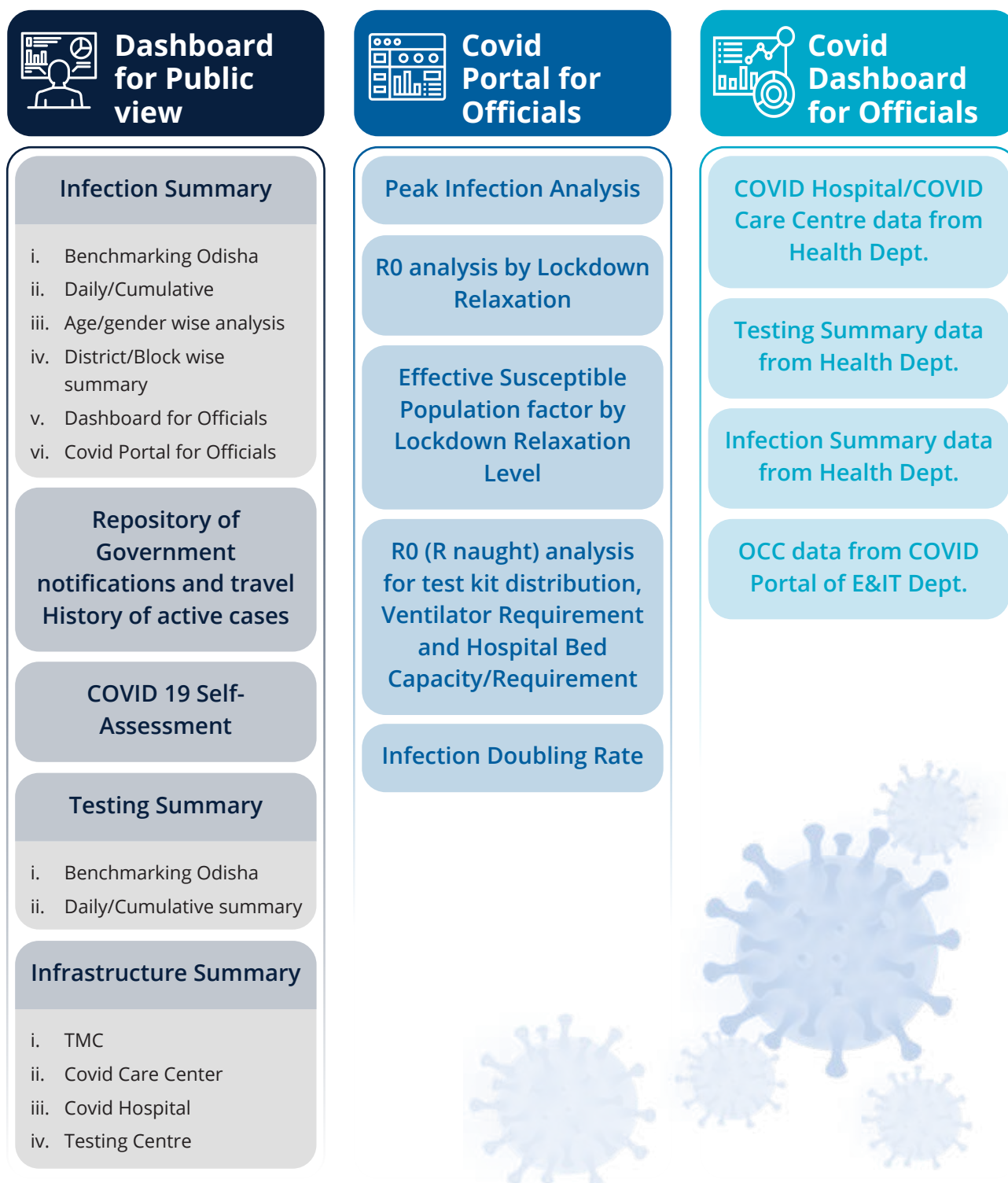
Effective planning and preparedness can streamline pandemic management

- ◆ Provides indicators on the readiness of the state in combating the pandemic.
- ◆ Provides real-time information to citizens on the status of the pandemic.
- ◆ Serves as a single platform for communication on the location and capacity of the health infrastructure, contacting officials for health-related concerns.
- ◆ Healthcare infrastructure planning for high caseload using data.
- ◆ Enables real-time sourcing of infection summary at the district and block level from the health department.
- ◆ Enables real-time sync and analysis without manual intervention.
- ◆ Simulation analysis to explore the impacts of different lockdown situations and travel on the infection rate, thereby assessing the best- and worst-case scenarios.
- ◆ Dashboard also supports modeling tools that help the Government of Odisha plan for the future, in terms of allocating funds and resources to the districts based their needs for medical equipment, critical care capacity and medical personnel for the treatment and recovery of patients.

Case Snippet: Covid Dashboard, Odisha

Covid Odisha project has heralded a change in pandemic management. It has shown how technology led process automation can enable data driven decision making. Alongside challenges, Covid offered the Odisha government an opportunity to leverage near real time data to make proactive decisions and stay ahead of the curve in epidemic response management. And, that marked the genesis of the Odisha COVID-19 dashboard, which is accepted today as the single version of truth for citizens and administrators alike.

COVID19 Dashboard for Health Department – Components



Key Stakeholders/ Users of the System

- ◆ Hon'ble Chief Minister of Odisha
- ◆ Officials from Chief Minister's Office
- ◆ Hon'ble Ministers - Health & Family Welfare (H&FW) Department
- ◆ Top officials including Chief Secretary of Odisha, Development Commissioner, Special Relief Commissioner, Secretary-H&FW dept.
- ◆ 22 Covid Observers
- ◆ 150+ Contact Center Advisors
- ◆ Officials of IDSP (Integrated Disease Surveillance Project)
- ◆ Officials of NHM (National Health Mission)
- ◆ Citizens

Implementation Framework

- ◆ Agile implementation for each feature implementation within the solution scope.
- ◆ Swift deployment of the core solution modules was ensured through effectively managing the sprints.
- ◆ Strict Implementation of RACI (Responsible, Accountable, Consulted, Informed) matrix.
- ◆ Proper stakeholder involvement following Power-Interest Grid Analysis.
- ◆ A consultative approach with the administrators from the key departments was adopted for the UI/UX and core functionalities of the solution.
- ◆ Incorporation of the feedback received from the field operatives and functionaries aided in improving the usability of the overall solution.

Impact

Odisha has pushed the frontiers of digital transformation by investing in emerging technologies such as Big Data and Advanced Analytics to make proactive decisions and remain one step ahead in our war against the pandemic. The Covid dashboard helped Odisha set a new benchmark in pandemic management. The interactive data visualization dashboard provides the most recent key metrics and trends related to the pandemic through more than 50 interactive charts, graphs and diagrams. It has drill-down capabilities to depict the status, location, demographics, spread and trend analysis of cases at the most granular level across the state. Analyzed components pertain to COVID-19 testing, infections, available infrastructure (e.g., testing kits, beds, ventilators, water supply, and electricity), care facilities, inbound travelers, hospitalizations and citizen outreach via phone calls and social media engagement. This helped Odisha to tame the

first wave when other states faced burgeoning caseload. Not only does this benefit decision makers, the data enables the government to establish transparent communication channels with its citizens to keep them safe and informed throughout the pandemic. The state machinery still leans on this dashboard to impose/relax lock down curbs (with the help of TPR percentage) and calibrate its future strategy, to fight a possible third wave. The impact of the dashboard in combating Covid shows up in the metrics below:

- ◆ 22 lakhs + Migrant Registrations.
- ◆ 15 lakhs + Outbound calls to high risk individuals.
- ◆ 12 lakhs + Inbound calls received for COVID related assistance.
- ◆ 2.5 lakhs + Migrant Skill Mapping 1 lakh+ e-passes issued for those stranded in Odisha.
- ◆ 8000+ average monthly users for Whatsapp & Telegram bot.
- ◆ 50,000+ test e-reports generated daily.

Way Forward

- ◆ Implementation of Emerging Technologies like AWS Cloud C Lambda for Textract for extracting Table data for PDF for expeditious conversion of image file into document, for faster availability of online test reports etc.
- ◆ Further boost to evidence based decision making. The government can ease lockdown norms when TPR or the proportion of positive cases to the total tested samples falls below 10%.
- ◆ Mapping of Oxygen availability, procurement and assistance.
- ◆ Information and management of Vaccination Logistics and Supply chain.

As Covid-19 has set a new normal, the state administration needs to have a vigilant eye on the situation, especially on the emerging new strains of the virus. The changing dynamics would influence government's response to the pandemic- curbing crowding in public places, clamping lockdown and scaling up healthcare infrastructure. Our end-to-end tech solution stack enables governments to calibrate strategies and tailor responses to the changing circumstances. We draw strength from our active engagement with governments, spanning over two decades. Having pioneered many ground breaking GovTech solutions in the past, we were agile enough to spot the need for a scalable, configurable, interoperable tech solution for Covid response management. And, delivered a demand driven, seamless solution to counter the Covid phobia.

CSM Technologies is a pioneering Tech Services organization that harnesses the power of existing and emerging technologies to provide solutions with tangible impact on efficiency of governance and quality of citizens' lives.

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