



VACCINE MANAGEMENT WITH SCALE, SPEED AND SECURITY

As vaccines for COVID-19 emerge, the focus now shifts to the enormous and complex task of successfully immunising citizens across the world. The challenge can be overcome by the integrated use of secure cloud-based systems of record, communication, collaboration, analytics, engagement and tracking. Infosys' Simplus vaccine management solution has already been proven in some markets and is ready to support this next stage on a global scale.



'We have a vaccine for the world.'¹ These were the proud words of Andrew Pollard, chief investigator of the AstraZeneca COVID-19 vaccine trial at Oxford University, on Monday, 23rd November 2020.

It's the third vaccine in as many weeks to prove its effectiveness in late-stage trials, following in the footsteps of Pfizer/BioNTech and Moderna. UK Health Secretary Matt Hancock has said that vaccinations in the UK will start in December², having already secured orders for 100 million doses of the AstraZeneca jab and 40 million of the Pfizer version. In the U.S, one of the three vaccines should be authorized before the year is out, even while the White House is outlining a definitive timeline for effective administration.³ Priced at \$4 a dose⁴, the end to COVID-19 is lower than the price of a Starbucks latte.

Regulatory approval for all three vaccines will be achieved quickly. The new problem now is how to get these

vaccines into the hands of those who need them, and do that safely, securely and effectively.

An epic challenge

Vaccination management is already a tricky business. The scale, complexity and speed required this time around mean that existing systems are unlikely to cope.

More than 66 million UK citizens will require two doses, which in itself is a significant logistical and management challenge. Germany, which will start administering shots in December, will need a vaccination center at the ready in all federal states before Christmas if they are to stick to their proposed schedule.⁵ At this early stage, the side effects of any of the three vaccinations aren't completely clear. How long people remain well will only be determined once full-scale administration takes place.

Vaccines will need to be prioritised for those most in need initially. But for there to be any confidence in the programme, all citizens who receive a dose will also need to be recorded, tracked and confirmed to have taken the second dose. This process also needs to balance data privacy with transparency in order to ensure people's trust — another key element in successful and speedy administration.

Further, distribution of the jab will involve a wholesale change in health logistics networks. Jabs will need a 'cold' supply chain to ensure doses don't die on the shelf and lose their efficacy. This will also significantly increase the cost; cold storage and transportation account for four-fifths of the total cost of vaccination programmes. This makes better inventory management a pressing need, with the ability to recall and dispose of unwanted doses in next-to-real time.

It also means that alternate supply chains should be set up using big data to optimise transport networks. Harvard's Prashant Yadav, a supply chains expert, says that one way to get jabs out efficiently, especially in poorer rural areas such as Northern Nigeria and small countries such as São Tomés and Equatorial Guineas, is to piggyback on existing retail and food company supply chain networks.⁶ Though this avenue doesn't meet current medical standards, it's one option to bring down costs and get things moving in the right direction.

Data privacy must be balanced with transparency for successful vaccine administration

Healthcare workers also need to be brought quickly up to speed. Having qualified staff that have confidence in the systems and processes at their disposal becomes critical. Further, governments across the world need to adopt decentralised leadership and foster trust. 'You can't run this sort of service from the top down.

You need trust, with communities taking charge,' says Dr Heymann, a former senior official at the World Health Organisation who played a leading role in tackling SARS and other infectious diseases.⁷ This sort of ownership requires having the right data, at the right time, dispersed among healthcare providers around the country.

A Simplus Cloud Solution

Cloud technology has been one of the unexpected saviours during these challenging times. It has given children the opportunity to continue learning and allowed families to stay in touch while supporting businesses to continue to serve their customers and enabling people to work from home. Cloud can also be the saviour for vaccine management.

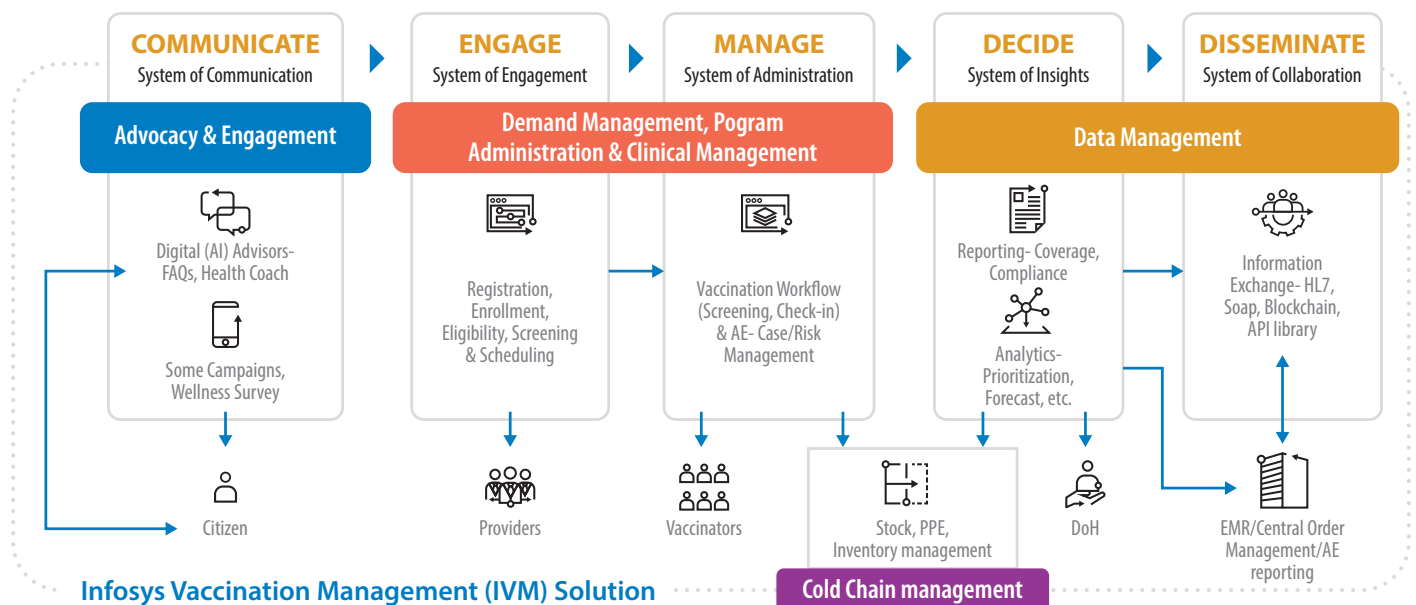
Simplus, an Infosys company that specialises in developing solutions on the Salesforce cloud platform, has developed a vaccine management solution that can bring greater

collaborative communication, advocacy and engagement, demand management, sophisticated analytics, and effective administration to world governments at just the right time.

Bringing together the full range of Salesforce cloud services, including Health Cloud, Community Cloud, Marketing Cloud, Tableau (data analytics) and MuleSoft (data integration from various data sources), along with a talent pool that can work at scale and at speed, the modular system architecture provides:

- **Candidate Registration Portal:** A centralised portal for citizens to find information, schedule appointments and follow up for additional doses
- **System of Communication:** Combined technology and campaign design support for proactive outreach and follow-up post appointment
- **Provider Vaccination Portal:** Enables providers to coordinate clinical administration with local governments

Figure 1. Infosys' end-to-end solution for Covid Vaccination Management



Source: Infosys



- **State/County Command Center:**
Windowpane view to support state and local officials managing analysis and decision-making
- **Cold Chain/Inventory Tracking:**
Visibility and integrability with key data points along the cold chain to support efficient supply/demand balance
- **Integration Framework:**
Methodology and suggested platform to manage multiple integration points with agility and flexibility

Because the solution is integrated with Salesforce Health Cloud, compliance with applicable data privacy and security laws such as GDPR in the UK is supported. The platform — modular and plug-and-play in its architecture — works with legacy systems to provide a one-stop shop for both residents and health services. Individuals can find vaccination information, register with local government and schedule vaccine appointments. Providers can manage vaccination appointments, maintain inventory, document adverse job effects and log administration details. Further, the solution can be managed

entirely within any given country, with access to closed-border healthcare data and legacy systems forming the backbone of the systems of record.

A vital piece of the puzzle

Of course, such a one-stop shop delivers incremental business value through efficient automation, unified experience, increased self-service and the continuous learning paradigm inherent in all good systems of record. It also provides governments with cost reduction through rapid data input and the ability to scale quickly on the cloud. This eases adoption and enables healthcare providers to invest more in the areas where they are lacking.

However, governments should use this system in collaboration with effective testing and tracing procedures. Mitigating new outbreaks of the COVID-19 strain will require an all-hands-on-deck approach, with effective outreach programs and real-time communication. The Simplus solution helps here too, but outreach must be tempered with the message that pharmaceutical

innovations are not, as might seem counterintuitive, a magic pill that can be taken without further government vigilance. Following in the footsteps of South Korea, Japan, Hong Kong and Singapore, forward-thinking governments across the world should work towards effectively administering these vaccines while continuing active case finding, contact tracing and strong testing strategies.

‘We have architected the [Simplus] solution in a modular fashion to complement existing systems’, says Eric Paternoster, CEO of Infosys Public Services. ‘In this way, we are delivering the fastest time-to-value, as well as acting in the interests of the public good.’⁸

Vaccines must be administered by governments along with active case finding and testing strategies

This overarching containment strategy for both the public sector and the world at large is definitely worthy of a cheer, as we all step closer and closer towards the light at the end of a very dark tunnel.

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