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Using Sue AI for Vaccine Logistics

The Goal



Making medical and logistics expertise
available everywhere, to deliver COVID-19
vaccines to everyone, anywhere

A Global Logistics Challenge to Deliver COVID-19 Vaccines



ISSUES

We live in a world that faces an unprecedented international medical and logistics challenge in terms of its urgency, complexity and scale.

Medical and logistics expertise (not necessarily experts) is required everywhere, all of the time—24/7, for planning, managing, coordinating and sustaining the timely volume, flow and access to vaccines across the full vaccine logistics and distribution channels.

HOW ADDRESSED

We must deliver successfully and make available an estimated 10 billion* doses of quality COVID-19 vaccines to every region, every country and every person on the planet over the next 9-12 months. And we must do this as efficiently, transparently, and cost-effectively as possible in a context of multiple vaccines with different logistics requirements, multiple public and private stakeholders including some with limited or no experience in medical supply chains, huge differences on in-bound and local distribution infrastructure, and highly variable data quality and information systems.

The functioning, resilience and sustainability of each step or segment of the vaccine logistics chain is integral to overall success, and that can be achieved only if the necessary medical and logistics expertise is always available, everywhere, at all times and under highly variable conditions.





The logistics systems for delivering COVID-19 Vaccines will be unique, more complex and of unprecedented scale than ever before – quality logistics and related medical expertise will be a premium asset, and logistics services will need to be highly adaptable and responsive including frequent and iterative planning and decision-making.

- The variety and newness of the many vaccines being developed and tested will require considerable innovation in logistics capabilities to deliver them globally, for example, meeting different temperature requirements for packaging, transportation, and storage in a context of variable regional distribution capabilities.
- Some elements or segments of the logistics chain can and should be well-defined, established and maintained systematically with compliance and integrity, while other parts of the chain will involve frequent updating of information on the needs and flows of vaccines and therefore improvisation to respond effectively.
- Information along the complete vaccine logistic chain must be detectable, observable, accessible and made readily available at all times, providing the information and analyses needed to support optimal supply and vaccines under changing conditions.



Even where circumstances provide only a limited quantity and quality of information it is critical that the IT tools deployed have the capability to deliver meaningful decisions based on mobile, decentralized logistics and medical expert services.

LOGISTICS AND MEDICAL EXPERT SERVICES WILL PLAY A CRITICAL ROLE ENSURING SUCCESSFUL COVID-19 VACCINE DELIVERY, GLOBALLY.



Vaccines are the only viable solution for ending the COVID-19 pandemic. They must be made available to everyone, everywhere cost-effectively, transparently, and in the quantity and quality required with minimum delay or losses.

- In the first wave of the COVID-19 pandemic regional and international supply chains and logistics struggled to produce, ship, and distribute in-country vital medical equipment and supplies to minimize virus transmission, protect emergency health workers, and to treat the most seriously ill patients.
 - The key supply and logistics challenges were ensuring adequate quantities of medical goods and ensure product-quality, insufficient transportation and warehousing capacity, and poor data and information on the quantity and location levels of supplies.
- We cannot repeat or allow those same logistics challenges to emerge in the next global phase of addressing COVID-19 – the world-wide delivery of vaccines.
 - We now need to ensure that the highest quality logistics and medical expertise is available everywhere to be able to take COVID-19 vaccines to people living anywhere.



We Have a Critical Part of the Vaccine Logistics Solution



ISSUES

That is exactly what SUE AI can do, what it was built to do—rapidly create and deploy virtual medical and logistics experts and to customize the expertise to local conditions and requirements.

SUE AI can support any COVID-19 vaccine (or health delivery) partnership system or network—private, public, or public-private.

HOW ADDRESSED

SUE is an AI technology that allows medical and logistics experts to quickly transfer their knowledge to computers. This gives the organization, network or system the ability to replicate everywhere the decisioning performance of its best experts. SUE then allows users to monitor and manage outcomes and adjust the model to changing needs. SUE AI becomes a platform of virtual experts with near limitless capacity and can be integrated and deployed anywhere and in any operational environment. SUE can give any expert anywhere in the COVID-19 vaccine logistics chain the ability to mass-customize models quickly and cheaply without programmers and data scientists. This ability to customize and revise localized models as things change on the ground is going to be vital to success in situations where vaccination programs are unique or diverse, infrastructure and operating resources are limited, and where quality data is scarce or not readily available.

that is responding to the global COVID-19 health emergency, or any other significant health emergency or large public health program. SUE AI can be integrated into international/national commercial logistics systems, can augment international development agency (e.g., WHO) logistics tools, and support international and national specialized health programs (e.g, GAVI Vaccine Alliance, NGOs) delivering vaccines and helping to keep local health and logistics vaccine services functioning effectively.

* <https://www.dhl.com/global-en/home/insights-and-innovation/thought-leadership/white-papers/delivering-pandemic-resilience.html>



What is Sue AI?

SUE AI IS THIS: THE ABILITY TO RAPIDLY CREATE AND DEPLOY VIRTUAL EXPERTS

- SUE AI is a technology that allows experts to transfer their knowledge to computers and replicate it (decentralize it) for simultaneous application, to create and deploy virtual experts across the logistics network. This provides the ability to replicate and leverage the decisioning performance of the top experts—you already have—throughout your network, system, or organization.
- SUE AI then allows you to manage outcomes and adjust the model to changing needs. Your virtual experts now have near limitless capacity and can be integrated and deployed anywhere and in any operational environment.
- An asset-intensive logistics infrastructure, including those that supply and deliver vaccines, cannot create digital copies to replace assembly lines, transport connectivity, machines, and warehouses.
- The key to high business performance and continuity for these physical assets lies in the digital integration, control, and management of them through the application of specialized technical knowledge and expertise, and the latest information on the environment in which they operate and needs of the various private and public stakeholders they serve.

A SUE AI virtual expert is built in 4 easy steps:

1. Specify what the decision is and what questions you would ask to make the decision.
2. Teach. Sue will ask you numerous configurations of your questions to find your underlying rules.
3. Calibrate. Optimize your bot to suit your needs.
4. Distribute the model throughout your organization so everyone can benefit from your judgement.

A **10 MINUTE VIDEO DEMO** OF SUE AI IS AVAILABLE AT:
ANALYCAT.COM/SUEVID



HOW CAN SUE AI HELP A COVID-19 VACCINE PARTNERSHIP ACHIEVE ITS GOALS (1)

SUE AI can support implementation of the GAVI Vaccine Alliance's triple-V framework to defeat COVID-19 – Vaccines, Vaccinators, and Vaccinees.¹



By helping to ensure timely supply and distribution and allocation of vaccines in good quality, plus recognize, characterize and cluster prioritized target groups, SUE AI can minimize vaccinators' risks of exposure to COVID-19 and build trust with vaccinees.



SUE AI is an operational technology (OT) that can support or augment established vaccine public and private sector logistics systems and devices and vendor/development agency's architectures and standards (e.g., WHO vaccine management and logistics support tools).



Sue can convert any telemetry from a reactive rule base to a predictive model that will avoid unplanned stoppages, delays and address problems before they become critical. Sue is the ideal AI for IOT in a critical vaccine logistics chain.



With the vast amounts of telemetry that will be generated by IOT delivering 10 billion doses of vaccines in less than 12 months, there are not enough logistics and medical experts and engineers to read it all.

¹<https://www.gavi.org/vaccineswork/three-vs-needed-end-pandemic>

HOW CAN SUE AI HELP A COVID-19 VACCINE PARTNERSHIP ACHIEVE ITS GOALS (2)



Customized monitoring of the cold chain

If a vaccine should be kept at 3 degrees Celsius but goes up to 12 for ten minutes, that might be acceptable. But if it hits 30 degrees Celsius for 2 hours, then it's unacceptable. SUE AI could be used to monitor the quality of delivery and storage with decisions made on the best information and accepted protocols. Nobody will have resources or an incentive to dispose of doubtful vaccines unless they absolutely have to.

Demand identification in remote and undocumented areas

Sue can be used to loosely reconcile local population profiles and patterns of vaccine inventory and delivery in different areas and flag probable disruptions or theft in real time.

Allocation decisions

An expert can train a model to allow access only for high-risk individuals initially and then liberalize vaccine roll-out as time goes by. This model can be linked, for example, to the cell-phone networks in under a day and even use SMPP (short message peer-to-peer) telecommunication when the phone is not a smart phone.

Linking allocation to distribution decisions with immediate feedback

Once we know that, for example, 10,000 vaccines are approved for an area, SUE AI can monitor stock movements in real time and alert if the wrong amounts are moving so authorities can respond.

Supplier eligibility and transparency across the board.

Every supplier should be chosen on merit. If a SUE AI model is trained to evaluate a supplier in every step of the chain, it removes bias and makes it impossible to defraud the decision.

HOW CAN SUE AI HELP A COVID-19 VACCINE PARTNERSHIP ACHIEVE ITS GOALS (3)



IOT monitoring and auditing in real time

A large number of IOT sensors would be deployed along the complete vaccine logistics chain. The amount of information that comes from 20 sensors is more than any person can monitor. SUE AI can be deployed to triage sensor readings and escalate information and events to a higher decision process rapidly. As decisions are made, SUE AI can reconcile in real time to actions on the ground, scouring for discrepancies.

Forecasting

Countries are already being faced with multiple options and requirements to take into consideration for planning and implementing a national COVID-19 vaccination program. For example, the decision to use a less expensive vaccine that needs to be stored at -8 degrees Celsius can outweigh an expensive one that doesn't need refrigeration in one area, but not in another. As conditions, circumstances, and access to resources shift, SUE AI models can take the best decisions made by the best logistics, medical, and planning expertise at hand.

Geographic variability

Sue can make multiple different models for each environment that maximizes efficacy in the face of intractable challenges and shifting constraints and opportunities. SUE AI models are quick and inexpensive to make, so they can form a practical and feasible ecosystem as needed.

Adaptable and usable across highly differentiated contexts

If you need big data, it has to come from a wide set of sources, but logistics and challenges differ enormously across the globe, from region to region and country to country the models will vary. SUE AI gives the experts the ability to mass-customize models quickly and inexpensively without programmers and data scientists. This ability to customize and revise localized models as things change on the ground is going to be vital to success.

SUE AI – Expanding our intelligence, to help us all meet the challenge of our lives.

You Want to Deliver Life Saving Vaccines. Let 'Sue' Help You
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