

Transforming Vaccine Availability Through Real-time Last-Mile Visibility: A Systems Approach to Strengthening Stock Data in Nigerian PHC Facilities

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Background

Nigeria's vaccine supply chain faces persistent gaps in last-mile vaccine stock visibility, driven by incomplete, delayed, and inaccurate facility-level data. This limits timely, data-driven decisions on resupply, redistribution, and wastage control, contributing to stock imbalances and weak supply chain performance across subnational and national levels. To address this, Development Delivery Partners (DDP) and VillageReach are supporting the National Primary Health Care Development Agency (NPHCDA) to deploy an interoperable digital reporting system that links paper-based tools to a DHIS2-modeled platform, integrates with OpenLMIS, and feeds into a national dashboard. The system digitizes stock transactions and translates them into real-time indicators to enable faster, more effective decision-making.

Objective

The study evaluates the practicability and effectiveness of employing a real-time vaccine stock reporting system in equipped health facilities within 3 pilot states, focusing on unifying existing digital platforms, interoperability and evidence-based supply-chain decision-making.

Method

This ongoing study is part of a Gavi-funded project, using an integrated and contextually tailored approaches. Rapid diagnostic of digital readiness was conducted at the facility and national levels. The DHIS2 digital stock reporting and OpenLMIS platforms were reviewed at the national level to evaluate their flexibility for timely last-mile vaccine stock-reporting and appropriateness for scale-up. At the facility level, 871 health facilities provided with cold chain equipment across three states of Ogun, Bayelsa, and Jigawa were assessed for the availability and usability of digital reporting inputs. Capacity building was conducted for 1,498 individuals at different levels in the 3 piloted-states on digital reporting workflows, data quality assurance, system integration points, dashboard interpretation and use for decision-making, and protocols for escalation and supportive supervision to address issues post-deployment. Coordinated feedback loops were established with key stakeholders, mainly to align intervention with national vaccine resupply and cold-chain management processes. An evaluation of interventions implemented was conducted to assess outcomes and effectiveness in 2026 Q1.

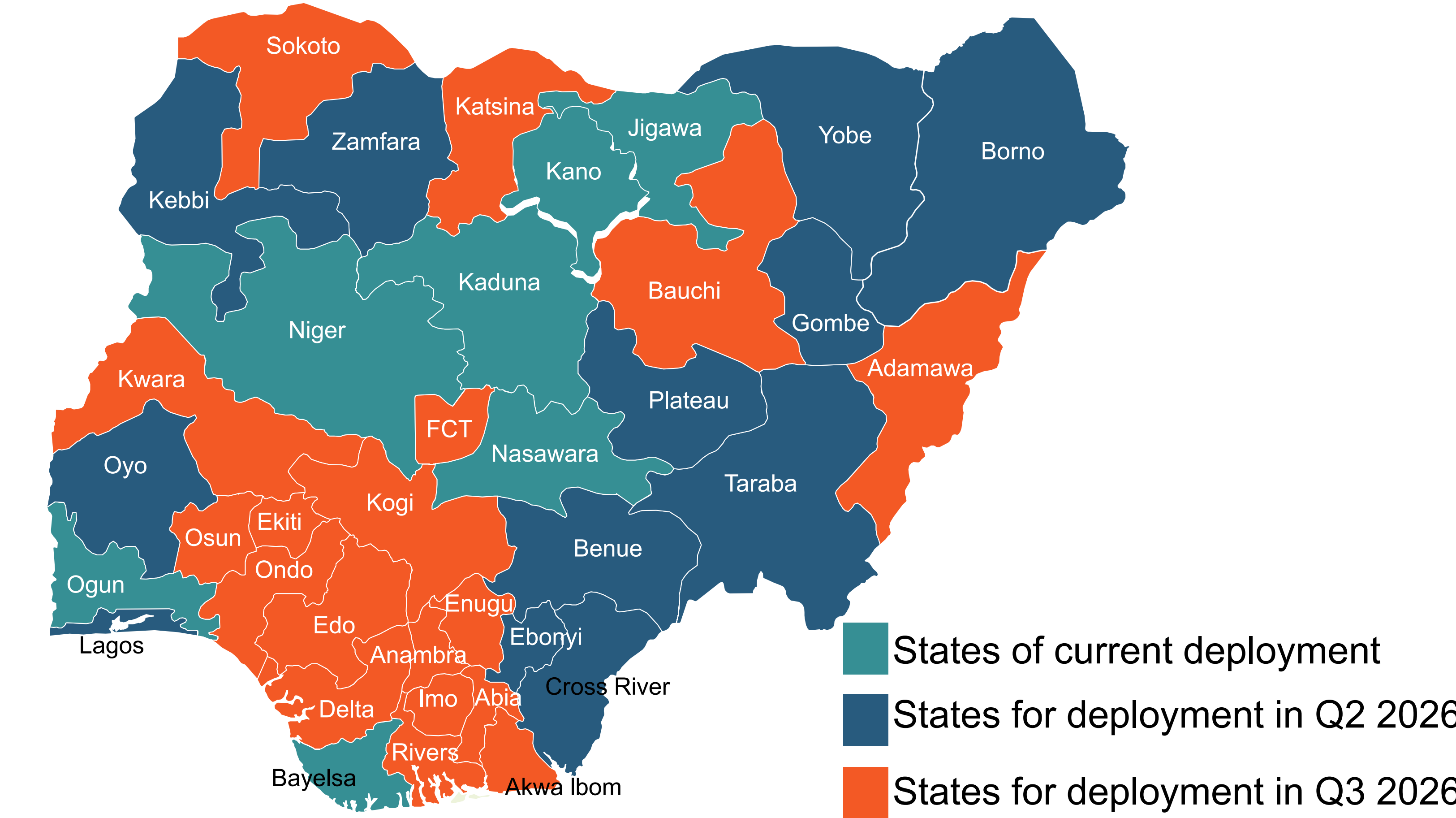


Figure 1: Map of Nigeria showing system deployment status

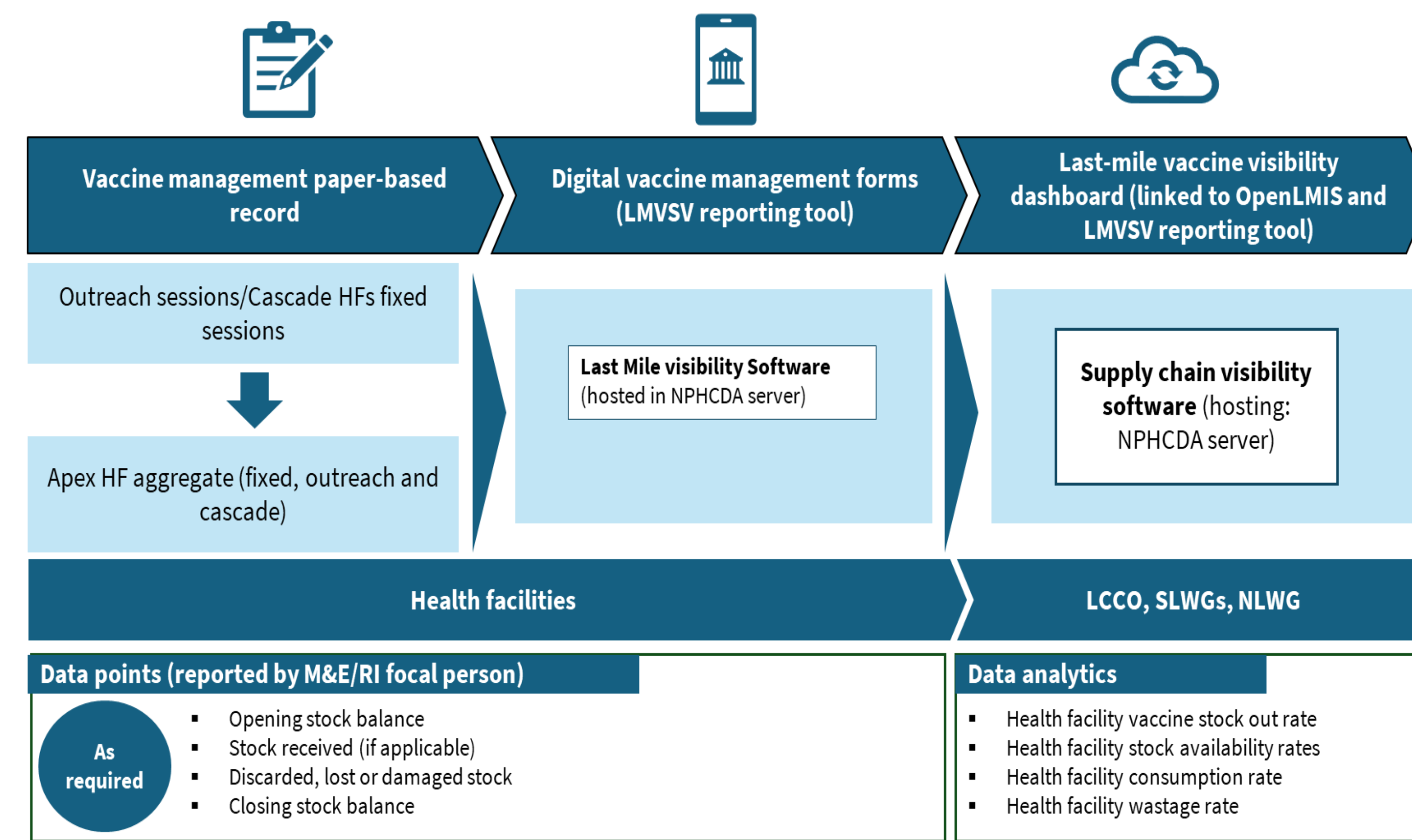
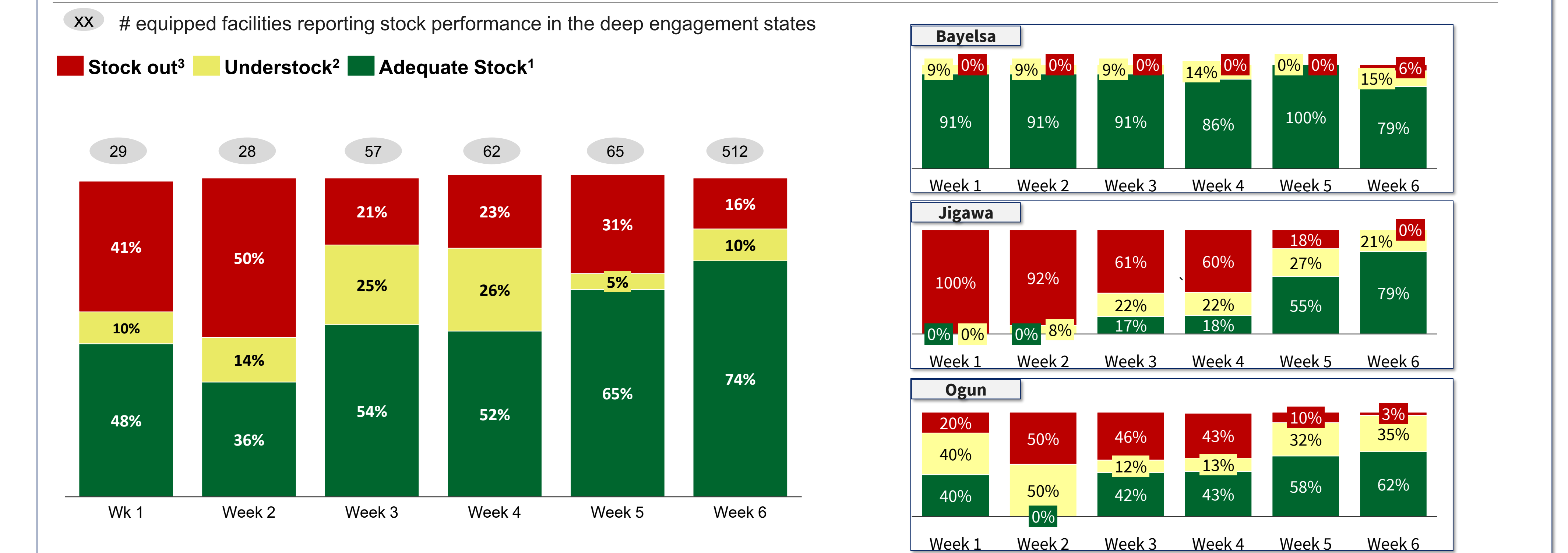


Figure 2: Schema of the last-mile vaccine stock visibility and analytics system (LMVSV)

Result

Findings from the assessments informed the development and upgrade of the digital stock reporting tool, and the visualization dashboard platform to enable identification of stocked out facilities and make informed resupply and distribution decision across facilities in real-time. Across the three pilot states, **47% of 871 facilities that were digitally ready commenced reporting**, with notable variation by state, **67% (Ogun), 45% (Bayelsa), and 33% (Jigawa)**. Despite **100% completeness of reporting** among reporting facilities, **timeliness remained suboptimal, with an overall average of 42%**, falling significantly below the $\geq 95\%$ target. These findings indicate optimal data completeness, conditional on commencement of reporting but highlight gaps in reporting uptake and adherence to reporting timelines, emphasizing the need on reinforcing accountability mechanisms and targeted support on improving reporting timeliness. **Fig. 3 shows a positive trajectory in system uptake over 6 weeks, with gradual improvement in stock performance**, indicating improved last-mile visibility and responsiveness. Sustaining this progress will require reporting consistency, increased facility participation, and alignment between data visibility and supply chain actions

Percentage of antigens at CCE-equipped HF's reporting stock performance on the LMVSV tool (Wk 1 and Wk 6)



1. Adequate stock: Percentage of antigens above minimum stock level (1 week stock) 2. Understock: Percentage of antigens below minimum stock but not stocked out 3. Stock out: Percentage of antigens stocked out

Figure 3: Stock performance trend reported on LMVSV digital platform

Conclusion

Preliminary findings demonstrate that deploying a real-time vaccine stock visibility system is feasible and valuable for strengthening last-mile supply chain performance in Nigeria. While early adoption and reporting consistency remain suboptimal, the intervention has established a strong foundation through improved data standardization, enhanced visibility, and strengthened capacity for data use.