Injecting digital technology into old-school immunization systems: building for sustainability and scale in Vietnam, Tanzania and Zambia

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Country Landscapes

Context	Vietnam	Tanzania	Zambia
Total Population	92M	56M	17M
Coverage	91.4% (2014)	95% (2016)	98% (2016)
Percent completion of full immunization schedule	75.6% (2014)	-	-
Frequency that immunizations are provided at the health center	Monthly	Daily	Varies: once a month to three days a week
Level of health system for immunization	Commune	Facility	Facility
Migratory populations from neighboring countries	3 countries	8 countries	8 countries
Geographic inequalities between rural and urban	Yes	Yes	Yes

Different contexts, shared challenges

- Incomplete or untimely data
- Lack of unique identifiers for infants
- Inaccurate or uncertain target population for calculating immunization rates
- Difficulty identifying infants who do not start immunization or who drop out
- Poor data visibility into supplies at the facility level to district-level data
- Complex data collection forms and tools
- Insufficient supply chains
- Inadequate data management and use capacity at all levels of the health system
- Workload for health workers with existing paper-based process

How it happened: from ImmReg and VaxTrak pilots to the National Immunization Information System

Optimize project developed **three** separate systems:
1. **Vaxtrak** (WinForm):
   - Track vaccine transactions and aggregating immunization reports
2. **ImmReg** (Web-based):
   - Track immunization events of children under 1 year.
   - Send reminder SMS from a GSM modem.
   - Have 01 report.
3. **Fee-based report** (Web-based)

Vaxtrak was rewritten to web-based

- **Integrate** Vaxtrak and ImmReg as one comprehensive system for vaccine and immunization (VIS)
- Add new modules for pregnant women

- Working with GDPM, NEPI, Viettel to scale up to **National Immunization Information System** for both Vaxtrak and ImmReg.
- Add new modules for fee-based immunization service.
- Build a portal for parents and customers to manage their own immunizaiton information.
- Add nutrition module...

2011 — **01/2012** — **12/2012** — **01/2013** — **03/2014** — **12/2015** — **2016**

- **Vaxtrak**: Pilot in 3 provinces + 13 districts in Phu Tho
- **ImmReg**: Pilot in 01 district (17 communes) in Ben Tre. ImmReg supported web-based and mobile app

- Vaxtrak was scaled up nationwide (63 provinces).
- 7 provinces implemented to district level by themselves

- Scale up ImmReg module to 164 communes in 9 district of Ben Tre
- VIS supported PC web-based and mobile-friendly version
- **GSK & Save the Children award**

- TOT training for provincial and regional officials in **4 regions** in Nov 2016
- TOT training for district health workers in **19 provinces** in 2017

Designing a replicable and holistic solution

PRODUCTS

POLICIES & PRACTICES **PEOPLE**

Bringing together information system products, data management policies, and the practices of people that use them to be tested in a few countries and packaged to deploy at scale in many.

The Challenge

- There are strong challenges related to data quality around immunizations in Africa, yet few can identify which problems matter most and where.
- Lack of reliable, accessible, actionable data on the barriers impeding immunizations coupled with trained and empowered data users at all levels.

The Vision

- Empower countries to enhance immunization and overall health service delivery through improved data collection, quality, and use.

The Approach

- Partner with demonstration countries Tanzania and Zambia to:
  - Identify the most pressing routine immunization service delivery problems.
  - Develop, perfect, and scale solutions with the users on the ground throughout the health system.
  - Facilitate peer learning with other sub-Saharan African countries in design, testing, and applying interventions.

Why ImmReg was successful in scaling up

- Starting with a **small scale pilot** generated:
  - an evidence base for decision-makers in the MOH
  - a smoother transition to national system
  - buy-in for health leaders at provincial, district and commune level.
- **An evaluation provided clear evidence of results.** The 2015 evaluation of *ImmReg* in Ben Tre showed that the system:
  - reduced time needed to generate immunization reports (e.g. district health workers needed just 3 minutes to generate a report on all the children aged under 1 year, rather than 15 minutes)
  - increased on-time vaccination rates: the on-time delivery of pentavalent, measles and oral polio vaccines in Ben Tre province increased by up to 20 percent in one year.
  - Reduced dropout rates: the dropout rate between BCG to Measles 1 and Quinvaxem 1 to Quinvaxem 3 in Ben Tre province fell from 12.8 and 4.2 in 2013 respectively to 0 in 2015.
- **Engaging the government** at all stages, from system design, to early pilot, evaluation and scaling up, built strong commitments from government and health leaders.

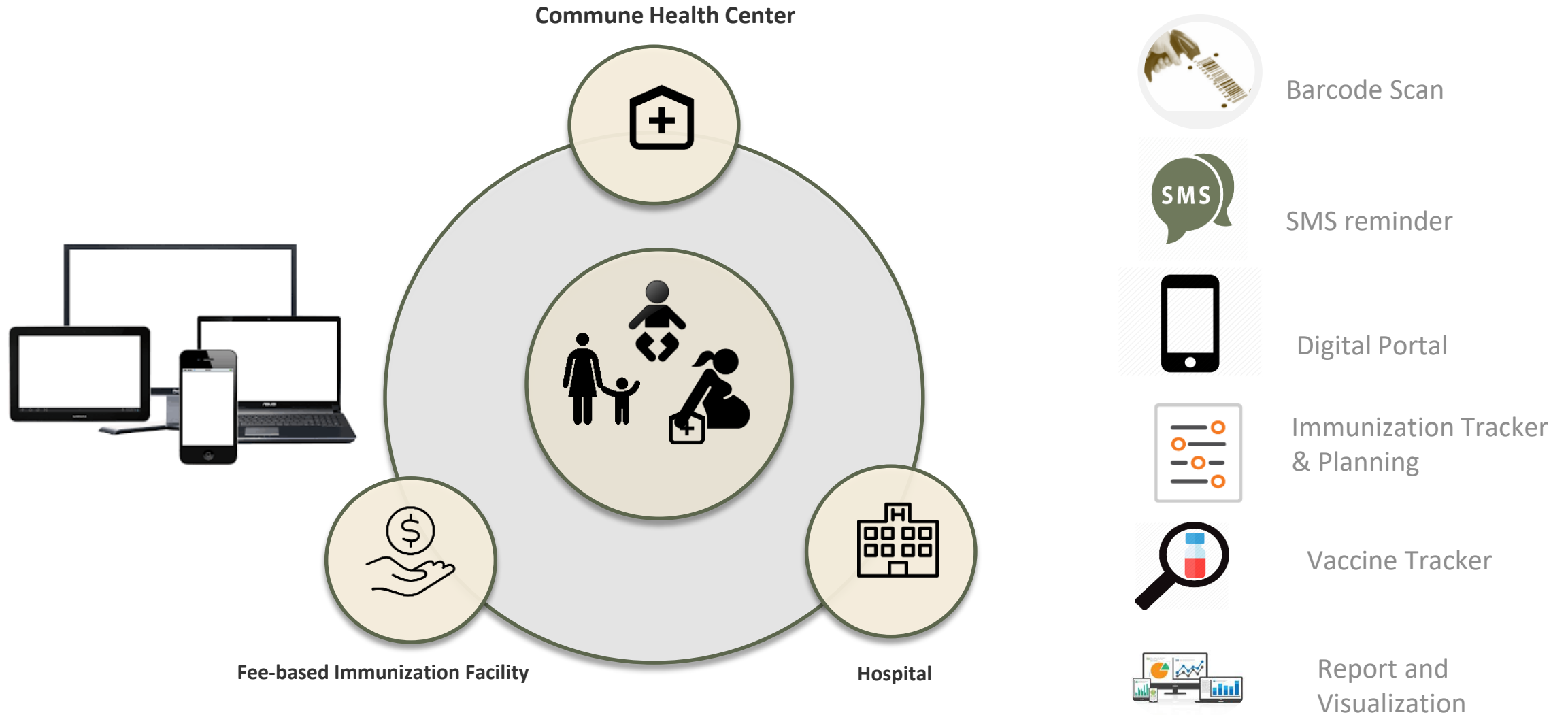❋PATH

Scale for Tanzania and Zambia

Tanzania

- Interventions rolled out across Arusha and Tanga Regions
- 611 facilities implementing solutions
- Over 160,000 children in the EIR
- Kilimanjaro and Dodoma Regions in 2018
- Scale to other regions in 2018
- Sustainability planning

Zambia

- Rollout underway in Southern Province
- 133 facilities implementing solutions
- Over 16,000 children in EIR
- Sustainability and scale plans underway

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Functions of the National Immunization Information System

Commune Health Center

Fee-based Immunization Facility

Hospital

Barcode Scan

SMS reminder

Digital Portal

Immunization Tracker & Planning

Vaccine Tracker

Report and Visualization

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EIR Functionalities

Functionality	Vietnam	Tanzania	Zambia
Equipment			
Unique identification of the child			
ToDo List			
Stock management	National-commune integration	Facility-District integration	Facility-District integration
Openness	ImmReg	OpenIZ	OpenSRP
SMS	Reminders, Notifications	Reminders	Reminders, Birth notifications
Data visualization			

Key successes

| Successes	Vietnam	Tanzania	Zambia
User-centered design	Technical working group	User advisory group	User advisory group
Government engagement - all levels	Yes	Yes	Yes
Interoperability	ImmReg + Vaxtrak + DHIS2	TImR + VIMS + DHIS2	ZEIR + DHIS2 Plans for ZEIR + mVacc + Logistimo
Scale	Nationwide	3 regions (2 more regions in progress, 6 regions planned for 2018)	1 province (data maturation and system integration before scale)
Sustainability	Multiple Approaches	District Data Use Mentors, Gavi HSS and TCA	Gavi TCA, EPI-OPT (in development)
Research, monitoring and evaluation	Monthly	Monthly data reviews	Monthly data reviews

Exercise!
Problem-solver Shark Tank

Meet the sharks!

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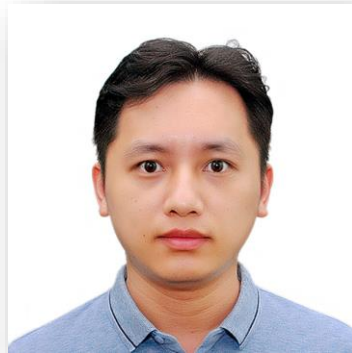
Tran Trung Hieu

Technical Officer for Information
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10:00 Stop

Stop

Shark Tank Challenges

Group Number	Challenge
1	**The government gives you 6 months to scale nation-wide.** What innovative solutions would you use to accomplish this?
2	**System development is ongoing during rollout**: How would you go about managing software updates during this time?
3	**Limited resources**, from both central and local governments: How would you do to overcome with this?
4	**Limited IT knowledge** of health staff at lower levels: How would you train new users of technology?
5	**Parallel System Use:** Ongoing legacy systems can prevent adoption of new tools. What criteria would you implement to end parallel system use?

Challenges and solutions

Challenge	Solutions
The government gives you 6 months to scale nation-wide. What innovative solutions would you use to accomplish this?	- Inform about implementation plan ASAP - Standardize paper-based records - Enter data in Advance
System development is ongoing during rollout: How would you go about managing software updates during this time?	- Notify end-users about updates when logging in - Update manual and publish on the website - 24/7 support through calling center or remote support apps
Limited resources, from both central and local governments: How would you do to overcome with this?	- Mobilize support from international organizations - Partner with Enterprises
Limited IT knowledge of health staff at lower levels: How would you train new users of technology?	- Conduct cascade trainings for technical support network - On-the-job trainings through supportive supervision visits - Calling center or remote support apps
Parallel System Use: Ongoing legacy systems can prevent adoption of new tools. What criteria would you implement to end parallel system use?	- Set policies for transition plan (e.g. 95% of facilities must use digital) - Important to set expectations so nurses know workload changes

Lessons learned and Recommendations

- **Building capacity** and a **network of support** at provincial and district levels is essential for successful uptake and long-term use of the system, as is considering **end-user feedback** in making system improvements

- **Public private partnerships** can promote sustainability: the MOH outsourced to a major ICT company for long term sustainability

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Links to Demos

Electronic Immunization Registries	Demo Link
ImmReg (Vietnam)	http://tcmr.ytecoso.vn:8082 Username: bt_ct_phutuc Password: 123456a@Xa
TImR (Tanzania)	http://bidinitiative.org/photos-videos/timr-demo-full/
ZEIR (Zambia)	http://bidinitiative.org/photos-videos/zeir-demo-full/

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