



# Vaccination Tracking System (VTS)



**Stéphane VOUILLAMOZ**  
CO-FOUNDER AND SOLUTIONS ENGINEER

Integrity  
Swiss Simplicity  
Experienced  
Adaptive Professionals  
International Technology  
Solutions Efficiency  
Quality Engineers  
Committed  
Neutral  
Partners

Innovation

**Novel-t**

# Novel-T

- **Swiss** company based in **Geneva**
- Founded by **3** former **WHO** staff members
- Active in **Public Health** and **Humanitarian** Projects
- Working with **UN** agencies, **NGOs**, **Governments** and **local partners**

---

BILL & MELINDA  
GATES foundation



**Novel-t**  
Innovative solutions

# Novel-T

## Core Activities

- Business Analysis
- Systems Analysis
- Project Management
- Software Development
- Problem Solving
- Training of Trainers

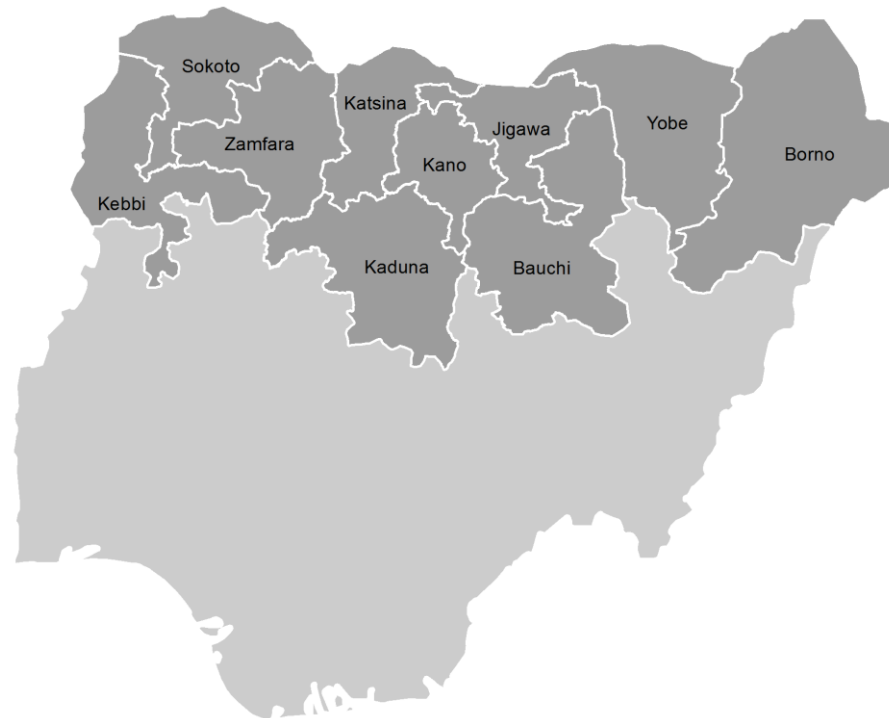


# Vaccination Tracking System (VTS)



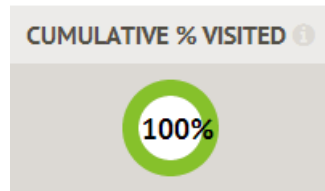
# What is VTS

- An information system which can monitor house to house vaccination teams in the northern states of Nigeria



# Main Objectives

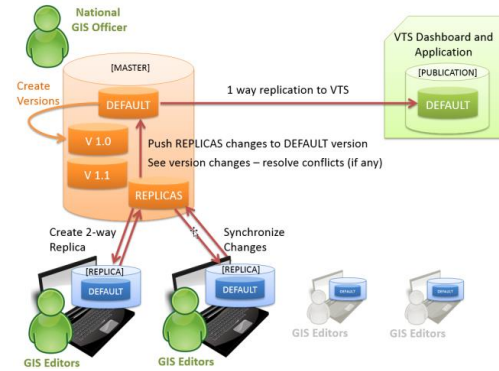
- Compute “geographic coverage” for each settlement



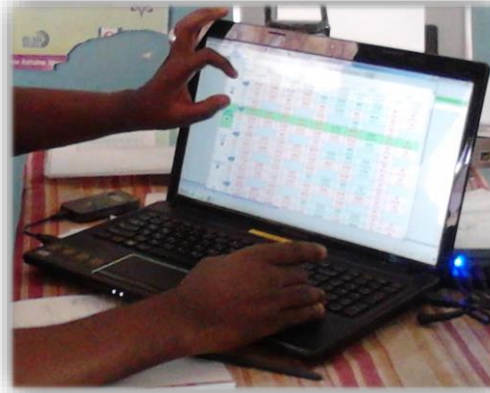
- Identify in near real-time missed or partially covered settlements
- Identify chronically missed or partially covered settlements

# Solution Components

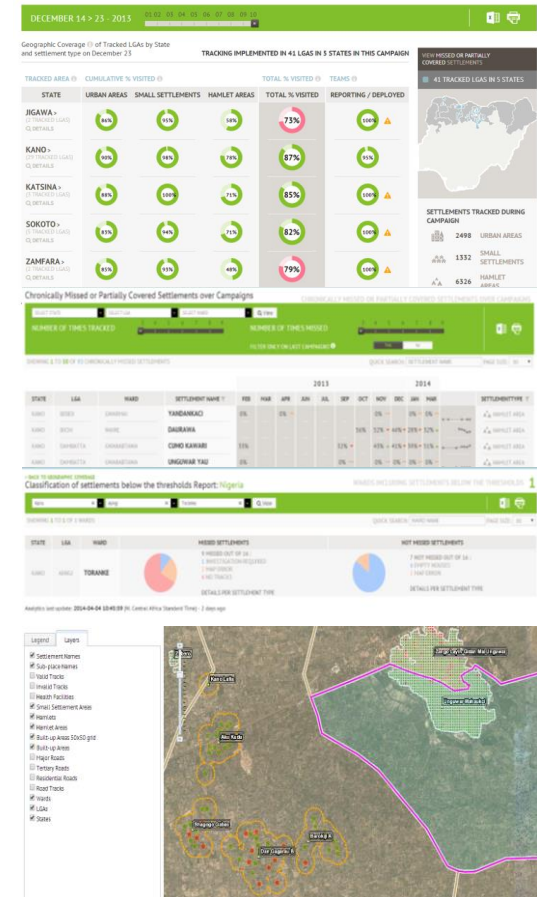
## Distributed geodatabase



## Local Laptops



## National EOC Dashboard



## GPS-enabled phones



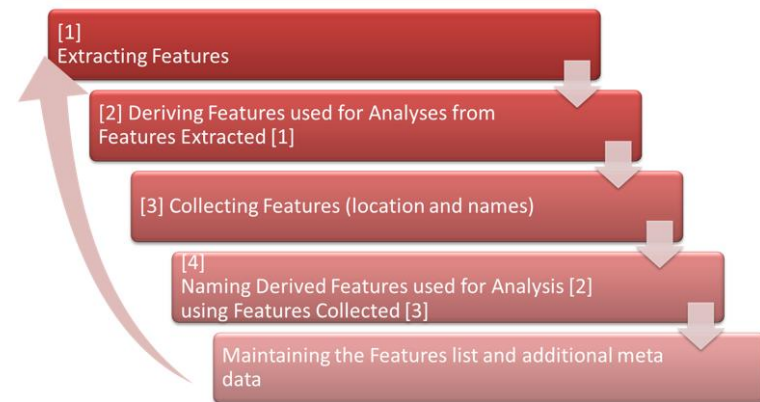
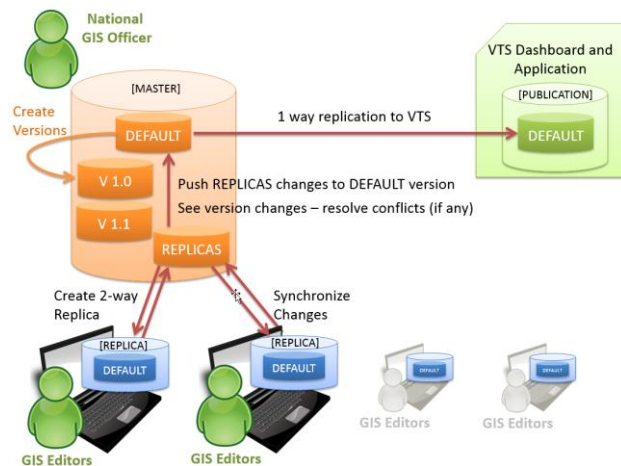
## Tablets / Hamlet Buster





# Distributed Geodatabase

- Repository of inhabited settlements in both urban and rural areas and other geo-data
- Architected to support multiple concurrent editors constantly enhancing the geo-data

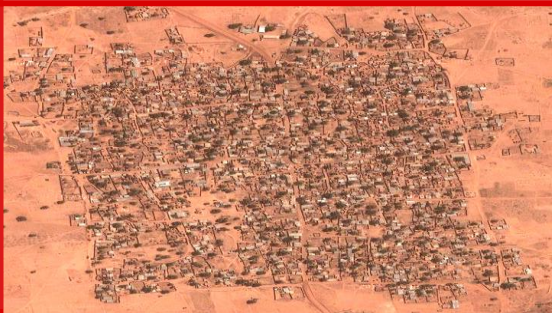


# Distributed Geodatabase

## Built up areas (11'000+)

Large settlements

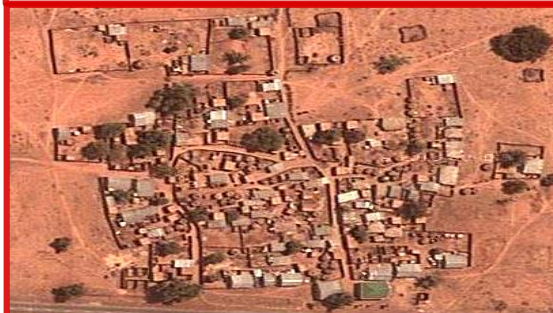
Cities with more than 100  
residences



## Small Settlement Areas (24'000+)

Rural villages

with 20-100 residences



## Hamlet Areas (60'000+)

Clusters of hamlets within  
200m from one another

Each hamlet containing less  
than 20 residences



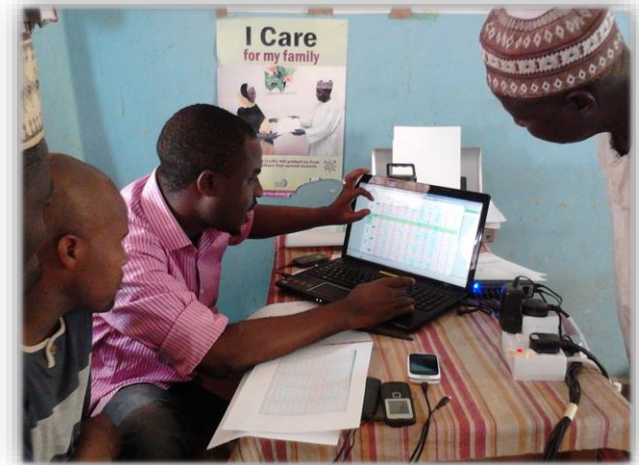
# GPS-enabled Phones

- GPS-enabled android phones
- Rely on GPS network only
- Operate completely offline
- Capture GPS position every 2 mins
- Distributed to 16'000+ vaccination teams
- No interaction required - vaccination teams simply need to carry it



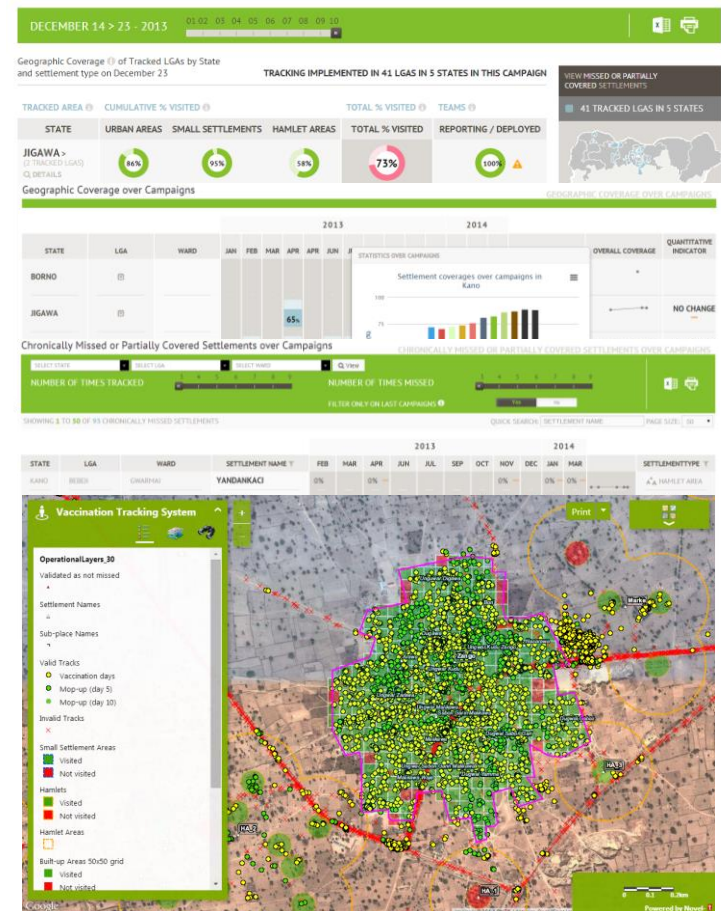
# Local Laptops

- Extract GPS positions from the phones via USB
- Operate completely offline
- Centralize all GPS position per day / LGA / campaign
- Compute daily analytics, display dashboard and maps including offline satellite imagery
- Inform the decisions and planning for the next days
- Transfer GPS positions to EOC via MiFi / WiFi



# Emergency Operation Center (EOC)

- **Web-based** dashboard
- **Consolidated view** at the National EOC
- **Fully automated** data reception and processing
- **updated near real-time** (< 30 mins to compute daily analytics)
- **Cross-campaign** analyses



# Tablets (aka Hamlet Buster)

- Ruggedized and **field-ready**
- Rely on **GPS** network **only**
- **Operate** completely **offline**
- Contains **settlement locations** and **offline satellite imagery**
- **Help locate and reach** chronically missed **settlements during microplanning** or in-between round activities
- Can **collect geo-referenced data** such as place names and other information



# Campaign Workflow



🕒  
5a-6:30a

given to Ward Focal Person (WFP) at LGA HQ each morning



🕒  
7a-8a

WFP returns to Ward take-off point and gives phones to vaccinators



Vaccinators return phones to WFP at the end of their day



GPS-enabled phones collect time-stamped GPS coordinates every 2 minutes

STATE	LGA	NAME	SETTLEMENT NAME	COVERAGE %	SETTLEMENT ID
LAGOS	LAGOS	LAGOS	LAGOS	52.7	LAGOS
LAGOS	LAGOS	LAGOS	LAGOS	52.7	LAGOS
LAGOS	LAGOS	LAGOS	LAGOS	52.7	LAGOS
LAGOS	LAGOS	LAGOS	LAGOS	52.7	LAGOS
LAGOS	LAGOS	LAGOS	LAGOS	52.7	LAGOS
LAGOS	LAGOS	LAGOS	LAGOS	52.7	LAGOS
LAGOS	LAGOS	LAGOS	LAGOS	52.7	LAGOS
LAGOS	LAGOS	LAGOS	LAGOS	52.7	LAGOS
LAGOS	LAGOS	LAGOS	LAGOS	52.7	LAGOS

Missed Settlement Report generated at end of days 4 & 5

🕒  
11a-5p



WFP returns to LGA-HQ where GPS tracks are downloaded to Laptop and geo-coverage computed

🕒  
2p-8p



Tracks uploaded to EOC/Dashboard via MiFi



Feedback for daily coverage provided to WFPs and LGA team at daily meeting

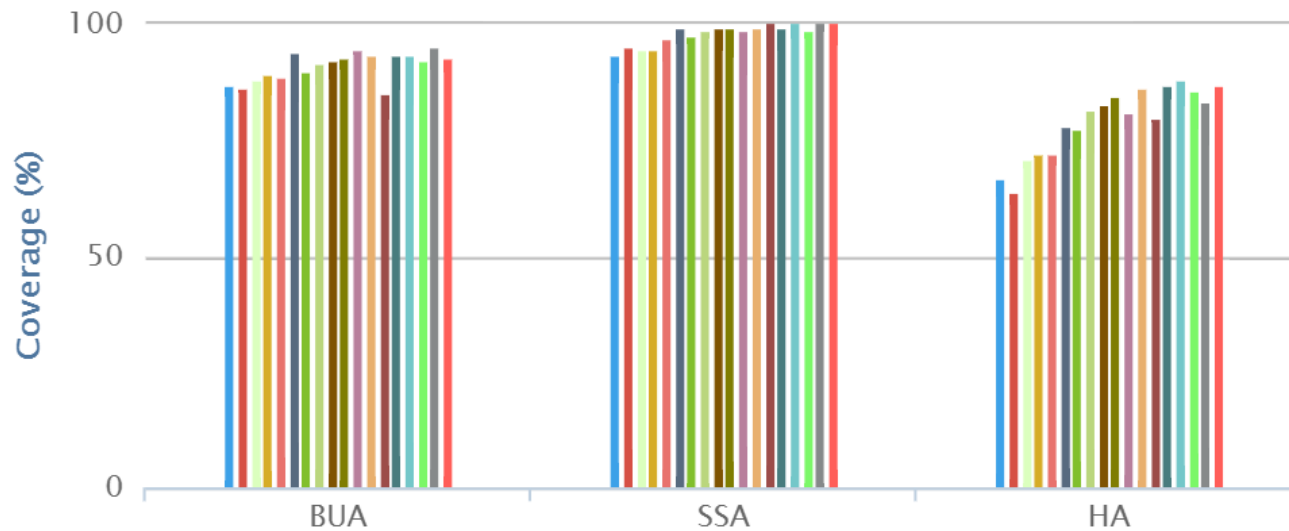
# Key Facts & Figures

- **23** campaigns monitored since Jan 2013
- **80** LGAs monitored per campaign
- **16'000+** teams in the field visiting **20'000+** settlements per campaign
- Generating **4'000'000+** GPS positions in a single day
- Processed in **< 30 mins**
- **19'000'000+** GPS positions collected in a single campaign
- **190'000'000+** GPS tracks in the VTS
- **hundreds** of zero dose child vaccinated thanks to the “Hamlet Buster”

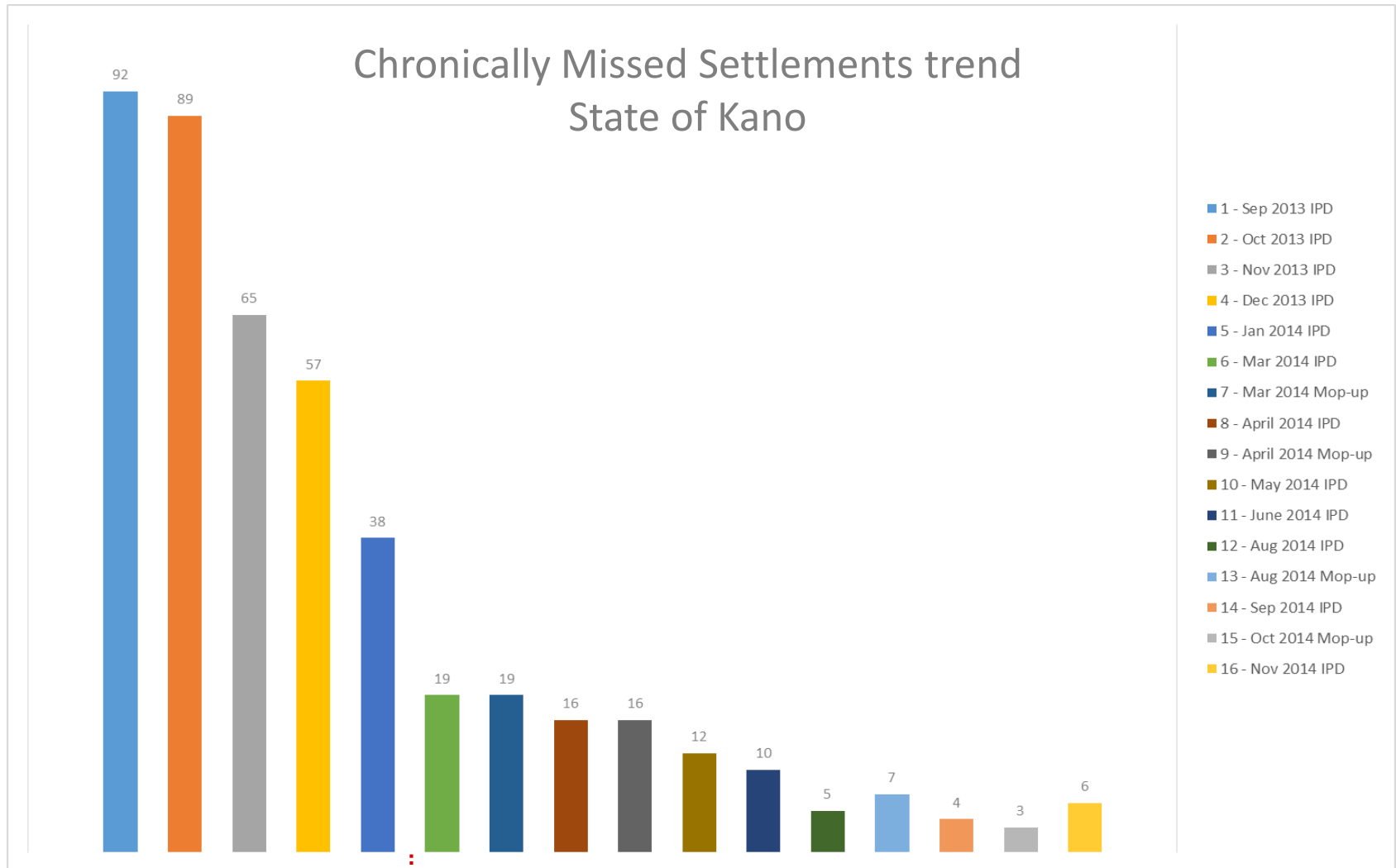


# Key Facts & Figures

Geo-coverage trend by settlement type  
State of Kano



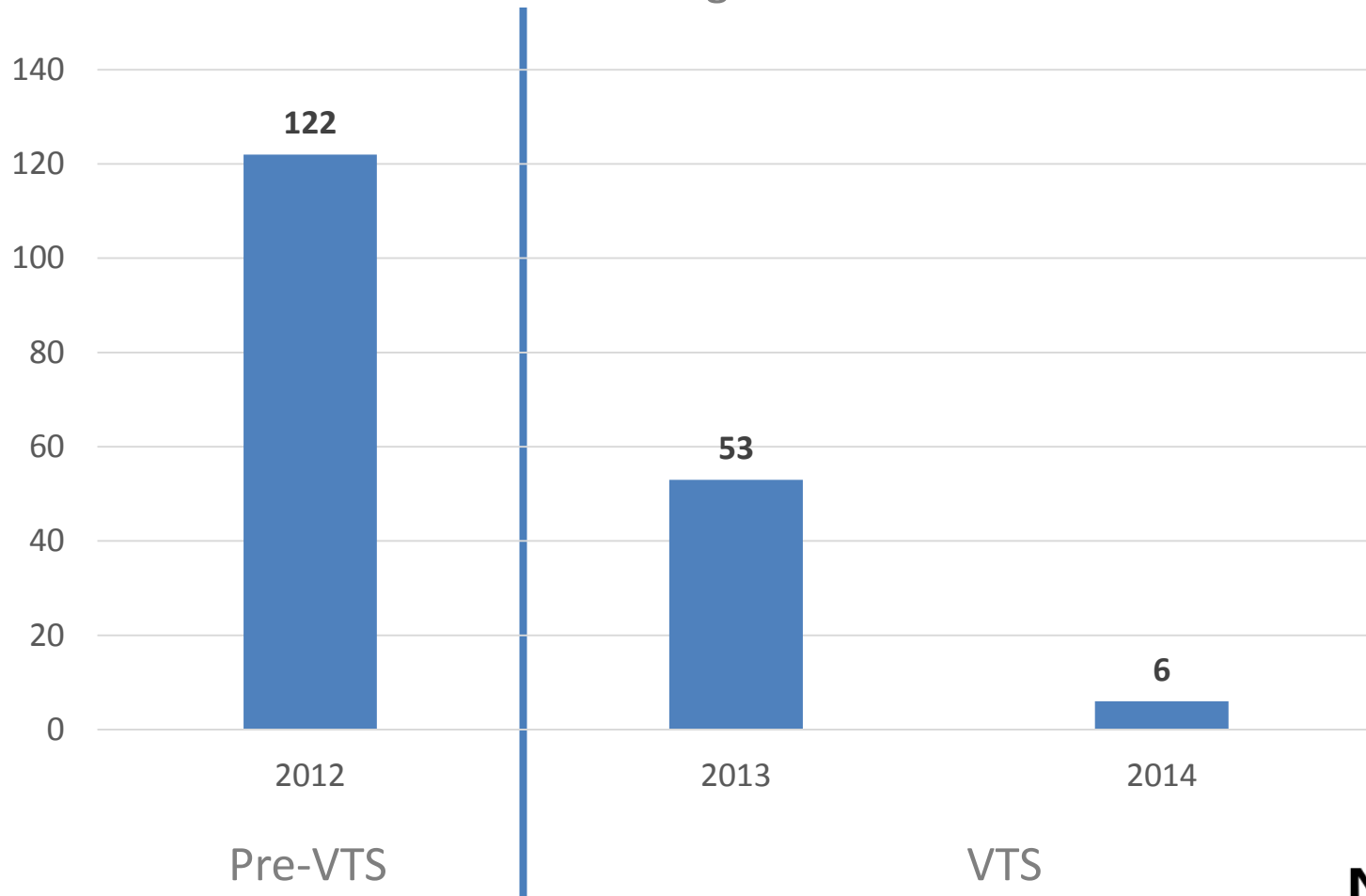
# Key Facts & Figures



introduction of "Hamlet Buster"

# Key Facts & Figures

Wild polio virus (WPV) cases trend  
Nigeria



# Online demo

- <http://vts.eocng.org>

THE VACCINATION TRACKING SYSTEM (VTS) - SUPPORTING POLIO ERADICATION IN NIGERIA

SEPTEMBER 18 > 26 - 2014  
Day 9 of 9

LOG IN

SEPTEMBER 18 > 26 - 2014

Geographic Coverage of Tracked LGAs by State and settlement type on September 26

TRACKING IMPLEMENTED IN 60 LGAS IN 5 STATES IN THIS CAMPAIGN

TRACKED AREA	CUMULATIVE % VISITED			TOTAL % VISITED	TEAMS
STATE	URBAN AREAS	SMALL SETTLEMENTS	HAMLET AREAS	TOTAL % VISITED	TEAMS REPORTING / TEAMS DEPLOYED
<b>BAUCHI &gt;</b> (2 TRACKED LGAS) <a href="#">Q DETAILS</a>	87%	96%	44%	56%	100% ⚠
<b>KANO &gt;</b> (44 TRACKED LGAS) <a href="#">Q DETAILS</a>	93%	100%	87%	91%	100% ⚠
<b>KATSINA &gt;</b> (2 TRACKED LGAS) <a href="#">Q DETAILS</a>	89%	100%	93%	89%	100% ⚠
<b>SOKOTO &gt;</b> (9 TRACKED LGAS) <a href="#">Q DETAILS</a>	83%	100%	76%	82%	100% ⚠
<b>ZAMFARA &gt;</b> (3 TRACKED LGAS) <a href="#">Q DETAILS</a>	90%	95%	71%	85%	100% ⚠

VIEW MISSED OR PARTIALLY COVERED SETTLEMENTS

60 TRACKED LGAS IN 5 STATES

SETTLEMENTS TRACKED DURING CAMPAIGN

- 2939 URBAN AREAS
- 2535 SMALL SETTLEMENTS
- 10318 HAMLET AREAS

Analytics last update: 2014-09-29 10:18:51 (W. Central Africa Standard Time) - 2 days ago

CURRENTLY IN NIGERIA

01st October 2014 08:15

Powered by Novel-t

# Questions



