

Surveillance, Outbreak Response Management and Analysis System

# MOBILE HEALTH INFORMATION TECHNOLOGY FOR PREVENTION AND CONTROL OF EPIDEMICS



## SORMAS MISSION

The Surveillance, Outbreak Response Management and Analysis System (**SORMAS**<sup>®</sup>) aims to improve prevention and control of communicable diseases particularly in resource-poor settings. The system is being designed by those involved in public health surveillance and disease control. **SORMAS** is free of charge and adheres to highest data protection standards, good scientific practice and open access policy.

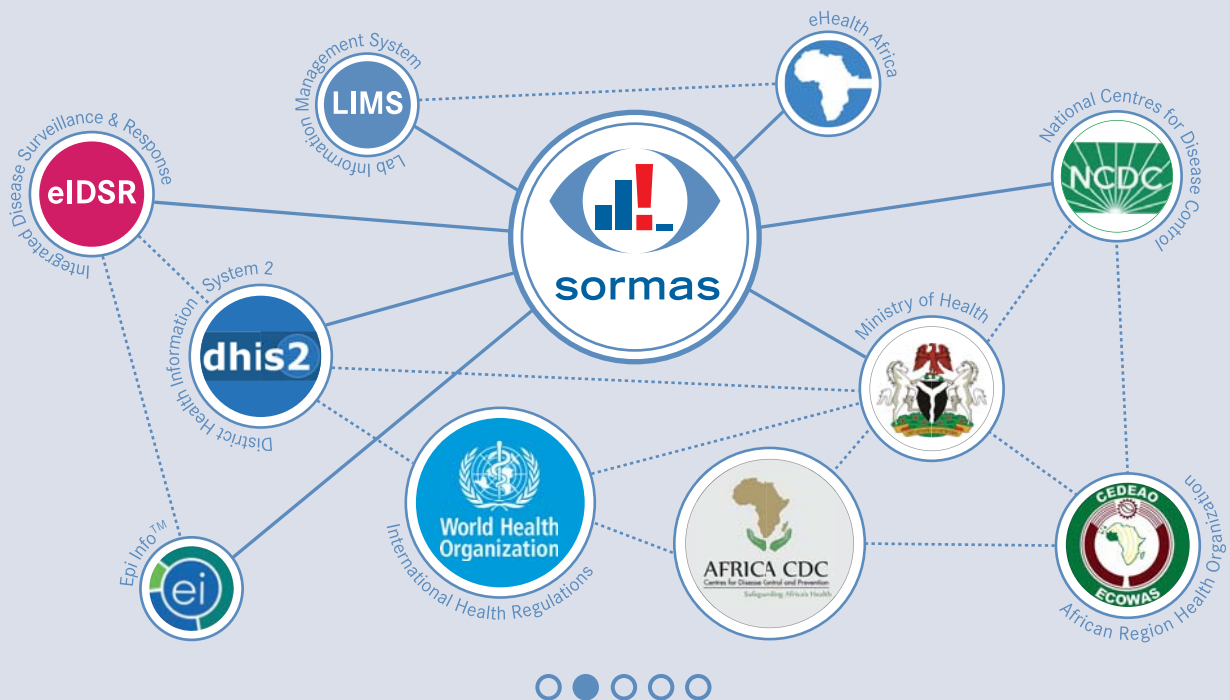
## FUNCTIONAL FEATURES

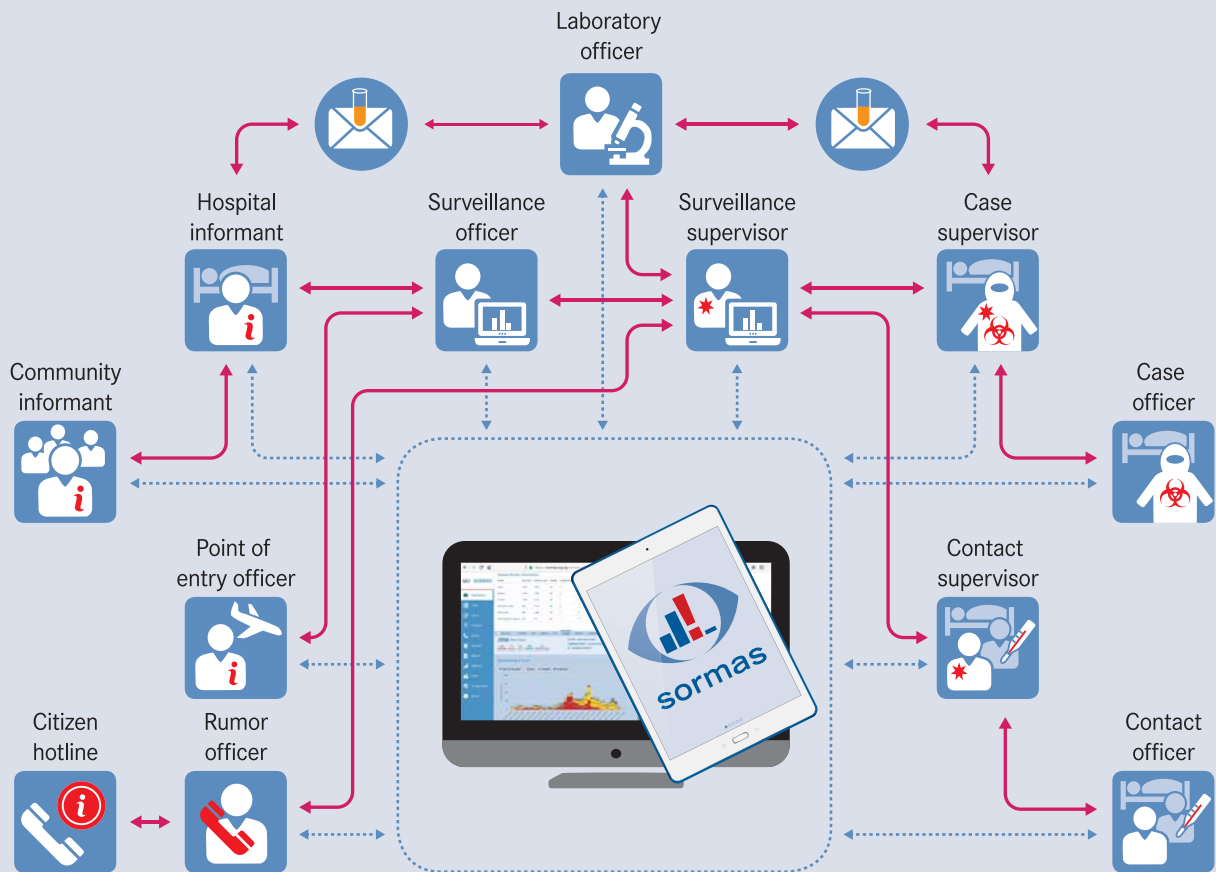
**SORMAS** is a mobile eHealth System that organizes and facilitates disease control and outbreak management in addition to disease surveillance and epidemiological analysis for all administrative levels of the public health system. **SORMAS** is characterized by:

- Digital notification at point of care
- Case-based surveillance
- Bi-directional information flow
- Contact follow-up management
- Digital medical record
- Outcome monitoring
- Outbreak detection algorithms
- Interoperability with common systems
- Open source
- Mobile offline capability
- Inclusion of all relevant actors
- User-centered design

## INTEROPERABILITY

**SORMAS** adheres to international data standards (e.g. HL7 FHIR) and enhances technical and contextual interoperability with the following systems:





Workflow between SORMAS-users and interoperability with international networks.

## SORMAS USERS

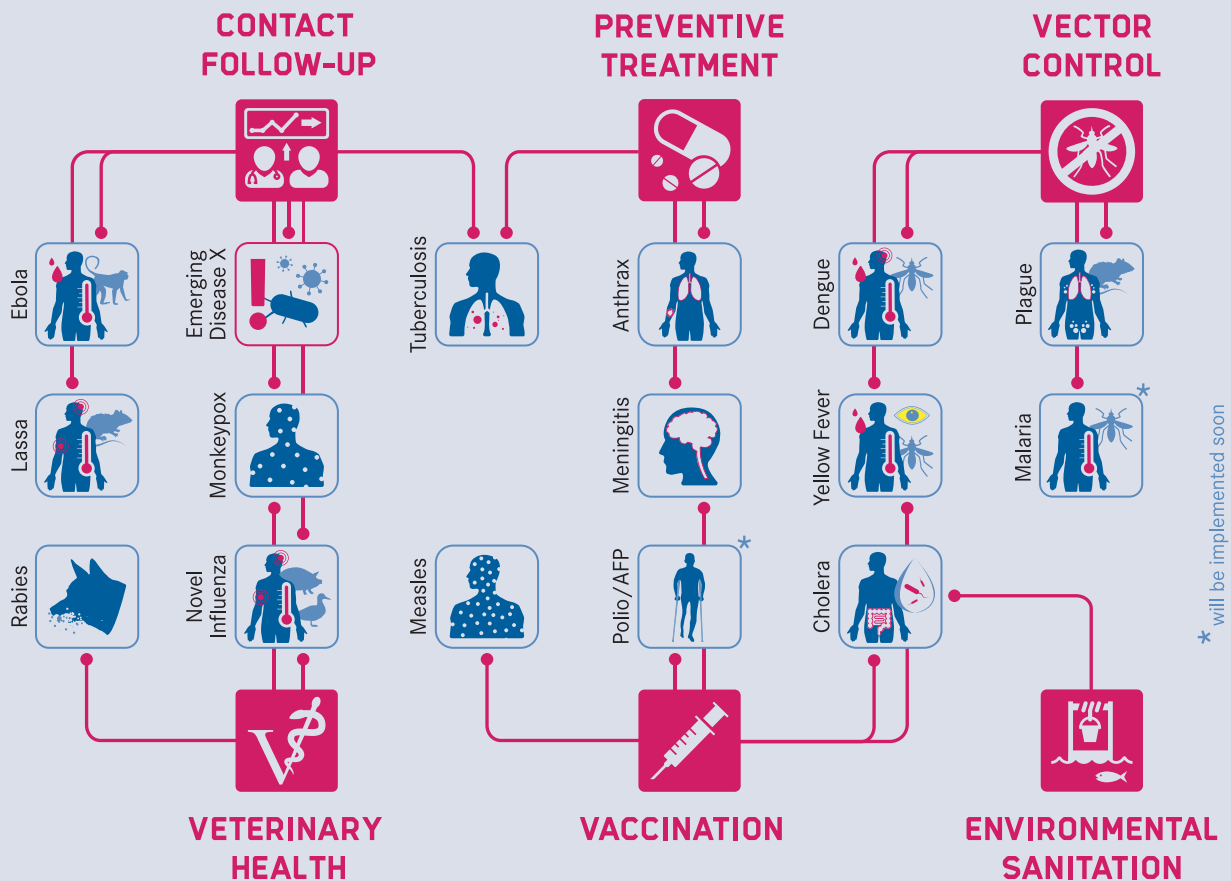
SORMAS has user specific interfaces for the following users:

- |   |   |   |
|---|---|---|
| Hospital informant<br>Nurse, clinician    | Surveillance officer<br>District DSNO     | Contact officer<br>Assistant DSNO         |
| Point of entry officer<br>Airport, border | Surveillance supervisor<br>Epidemiologist | Contact supervisor<br>Epidemiologist      |
| Rumor officer<br>Public hotline           | Case officer<br>Nurse                     | National CDC<br>Incident command manager  |
| Laboratory officer<br>Lab technician      | Case supervisor<br>Head of isolation unit | Supra-national centre<br>(e.g. WHO, WAHO) |



## EPIDEMIC PRONE DISEASES

**SORMAS** currently already includes and implements disease specific process models for the following diseases and a customizable process model for unforeseen emerging threats:



## TECHNICAL FEATURES

**SORMAS** runs on android mobile smart devices, tablets and desktop computers. **SORMAS** is being developed on tools such as VAADIN framework, JAVA EE Server Payara and PostgreSQL Database. The **SORMAS** platform consists of two major components, the mobile app (android) which interacts with the Payara Server via a REST-API and a VAADIN web client application.

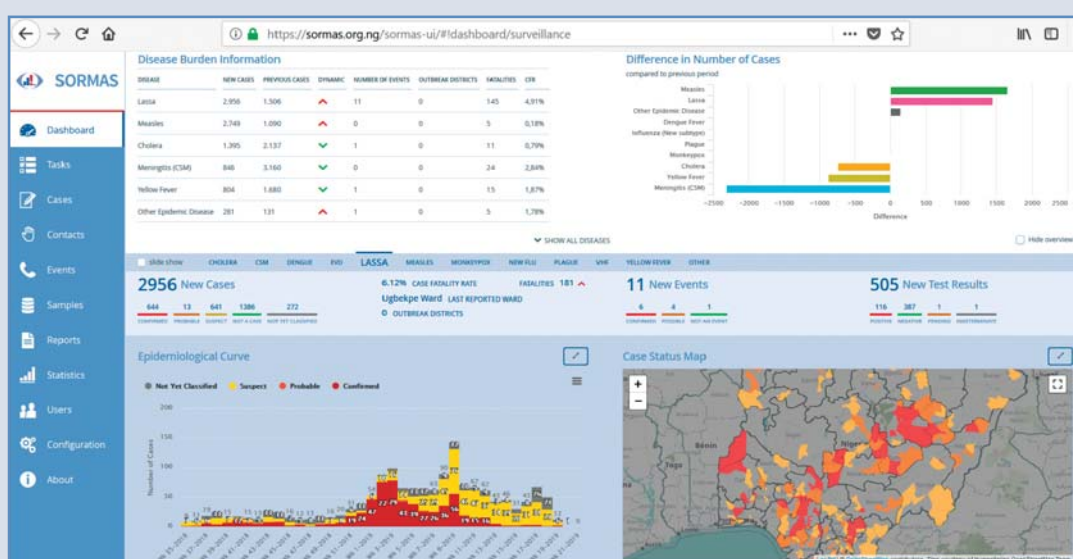
Programmers from different countries are contributing to this open source software. Source codes, back logs and specifications are managed open access on GitHub. Data generated by **SORMAS** belongs to the national authority in charge and is stored according to national requirements. Periodic external penetration tests assure data security. A web-version of **SORMAS** with virtual data can be accessed openly for test purposes. **SORMAS** fulfills the full score of the Global Good Maturity Model for digital health tools.





## USE CASE NIGERIA

Nigeria has started to implement **SORMAS** in November 2017. Within 18 months, **SORMAS** was deployed for continuous operation by over 700 health professionals in over 200 districts (LGA) of 12 independent federal states covering a population of over 50 million people. All data generated by **SORMAS** are owned and processed in a central server under control of the Nigeria Centre for Disease Control (NCDC). **SORMAS** has proven its power in successfully responding to three simultaneous large outbreaks of Monkeypox, Meningitis and Lassa Fever in Nigeria in 2018. Since then, the number of clinicians, nurses, laboratorians, public health officers, and epidemiologists using **SORMAS** on mobile tablets or desktop computers continues to grow.



SORMAS dashboard on epidemic prone diseases displayed at the Nigerian Centre for Disease Control, 2018.

## TRAINING AND SUPERVISION

**SORMAS** deployment is complemented by an increasing repository of tools for training, supportive supervision and systematic evaluation. These include training scenarios, lectures, instructional cartoon videos, user guides in different languages, and mobile digital evaluation tools.

## ADDITIONAL INFORMATION

**Website:** <http://www.sormas.org>

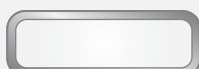
**Demo tool:** <http://www.sormas.helmholtz-hzi.de>

**Videos:** <https://sormasorg.helmholtz-hzi.de/overview-video.html>

**Twitter:** [https://twitter.com/SORMAS\\_open](https://twitter.com/SORMAS_open)

**Facebook:** <https://www.facebook.com/sormasOpen/>

**GitHub:** <https://github.com/hzi-braunschweig/SORMAS-Project>





**sormas**

## CONTACT

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## SCIENTIFIC LEAD

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## SORMAS NETWORK

Development, field piloting, training and scientific evaluation of SORMAS is jointly done by:



## FUNDING

Funding for development and operation of SORMAS is provided by:

**Helmholtz Association**

**European Union**

**German Centre for Infection Research**

**World Health Organization**

**German Ministry for Research and Education**

**Bill & Melinda Gates Foundation**

**German Ministry for Economic Cooperation  
and Development**

**US Centres for Disease Prevention  
and Control**