



a community-based surveillance platform

 Norwegian Red Cross

Nyss: the platform

- SMS reporting
- Automatic aggregation and analysis of data
- Automatic alerts

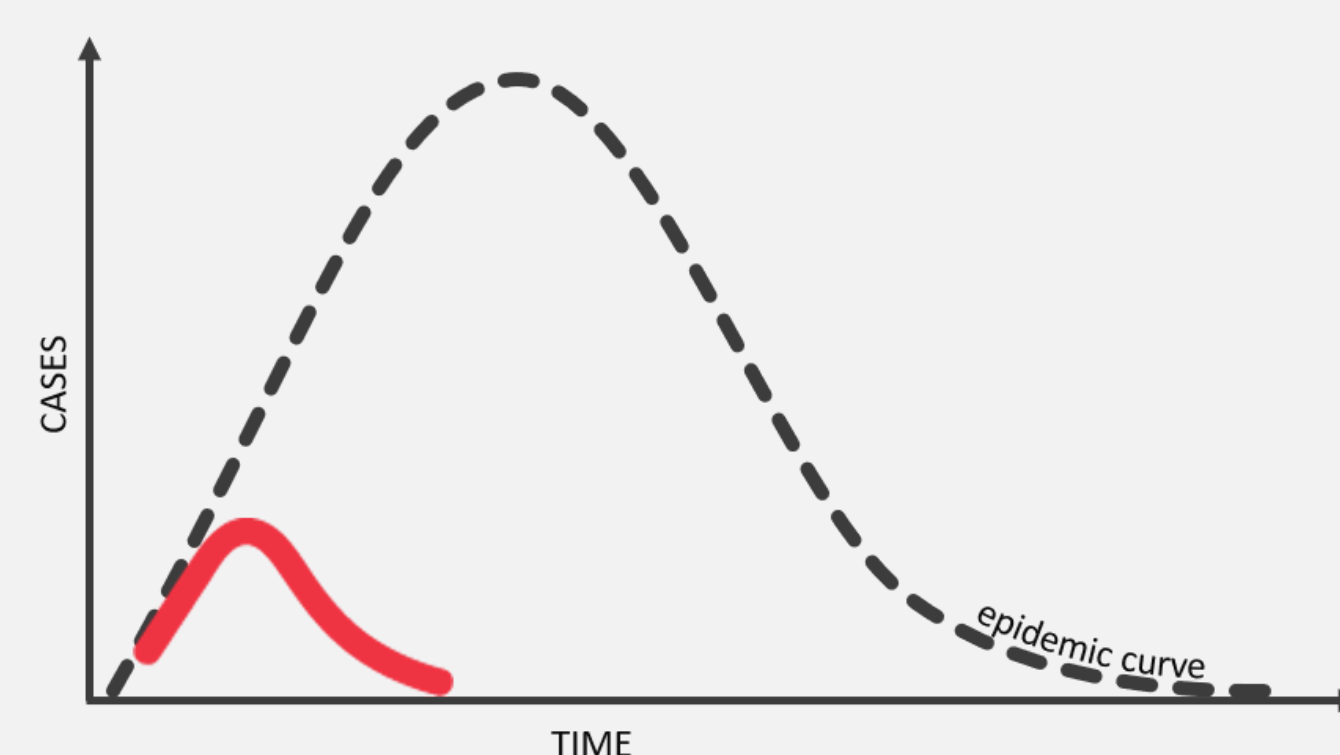
Nyss is a custom software platform for data collection, management and analyses; tailored to the needs of the Red Cross Red Crescent Movement for community-based surveillance (CBS).

Nyss allows for real-time detection, reporting, aggregation, and analysis of information on community health risks; hence enables prevention, identification and response to disease outbreaks, through early warning and early response.

When to use Nyss

Community-based surveillance is the systematic detection and reporting of events of public health significance within a community by community members.

Outbreaks and epidemics are a threat to the well-being of communities everywhere and can rapidly escalate if undetected by health clinics. By extending public health surveillance to communities we can close this information gap. Red Cross volunteer networks in local communities can carry out community-based surveillance with the help of Nyss.



CBS and Nyss help health authorities act faster and save lives

How does Nyss work?



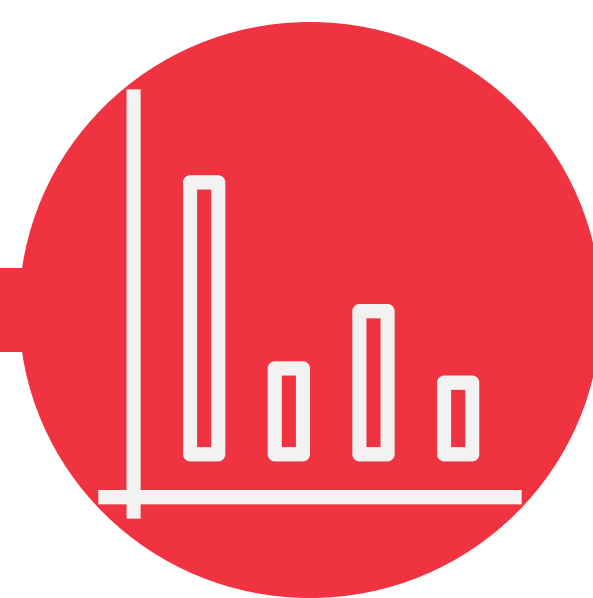
Volunteers

Volunteers are trained to recognise signs and symptoms of epidemic-prone diseases and to be the focal point in their community for responding to and reporting health risks and events.



Reports

Volunteers report by sending short, coded SMS. Nyss replies to the volunteers, providing them with health promotion messages so they can initiate the appropriate first aid response.



Aggregation & analysis

The SMS reports are automatically fed into Nyss, which aggregates and analyses the incoming reports in a visual dashboard, accessible by health authorities and the Red Cross or Red Crescent Society.



Alerts & response

Nyss automatically triggers alerts, informing volunteer supervisors and health authorities about increases in reports above predefined thresholds. Health authorities can then initiate a response.

"Nyss" is a Norwegian word, that means to get word of something; to get wind of something; to find out about something; to hear of a rumor.

The technology

Components

- SQL database
- Azure Web Apps
- Azure Function Apps
- Azure Service Bus
- SMS gateway

Nyss is a cloud-based solution running on Microsoft Azure. The application itself is running on an Azure Web App, and so is the internal API (ReportAPI).

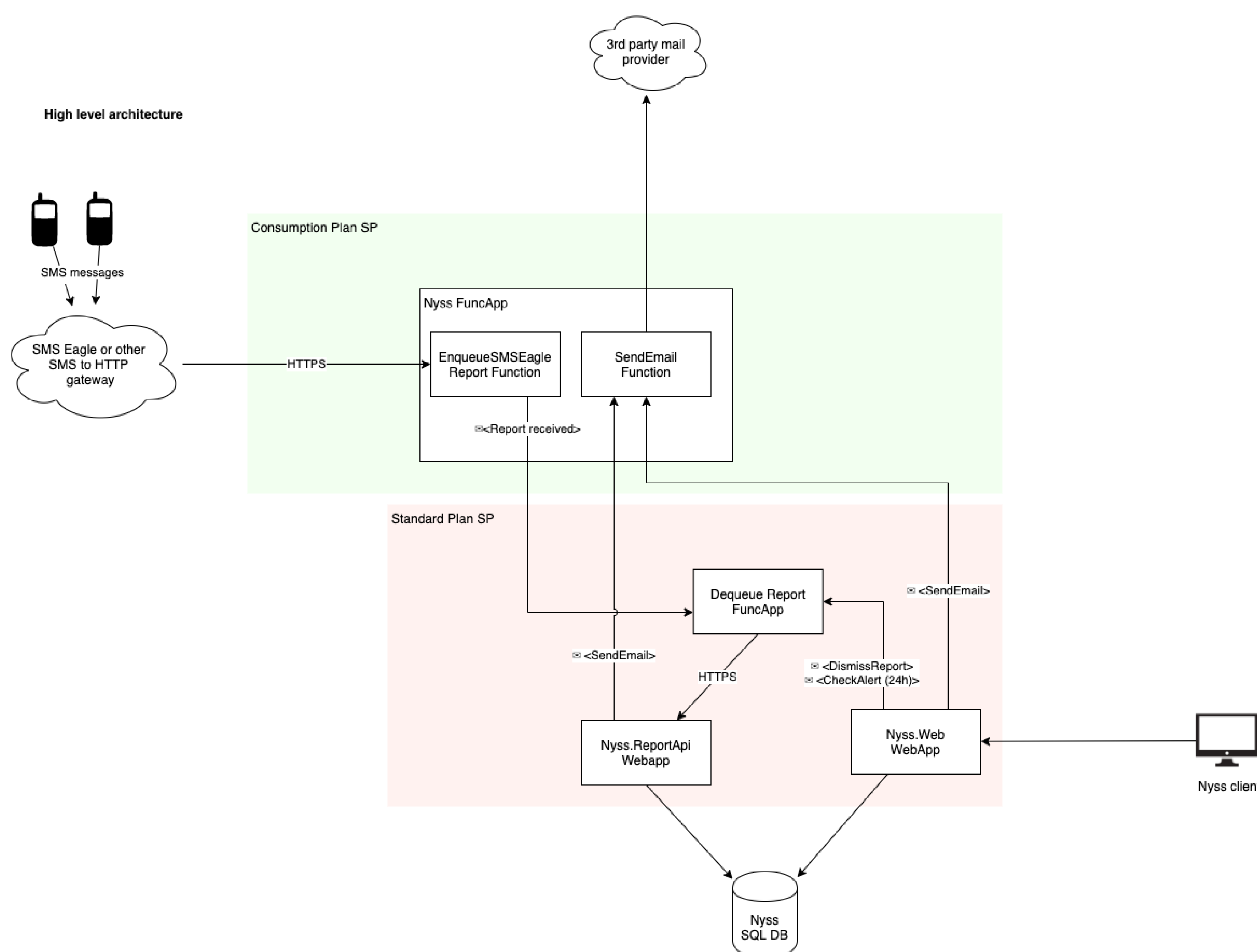
Asynchronous communication between components of the system is facilitated through message queues on an Azure Service Bus. Nyss depends on a physical SMS gateway to relay SMS messages to the cloud.

Asynchronous communication

The SMS reports are received by a public facing Function app that puts the messages on a queue. These messages are then read by an internal Function app that posts an HTTP request to the internal ReportAPI, which parses and validates the reports. A feedback SMS is sent to the data collector who sent the report. The feedback SMS is sent through the physical SMS gateway through an email-to-sms service that the gateway provides.

Automatic alerts

If the report received is parsed and validated successfully, an alert is triggered based on rules specified on a project basis through the Nyss application. When alerts are triggered, notifications are sent as SMS and/or email, depending on configurations specified on a project basis in the Nyss application. In the event that an alert has not been handled within 24 hours, an email is sent to the manager.



Data protection

With Nyss we aspire to comply with the General Data Protection Regulation, which is increasingly becoming the world wide gold standard in data protection.

Regional confinement of data to northern Europe, encryption of all databases, user access controls, usage of HTTPS and rigorous documentation of all workflows related to data processing.

A public API is under development but not yet ready for production.