

Project AEDES Enhancement

CirroLytix Research Services

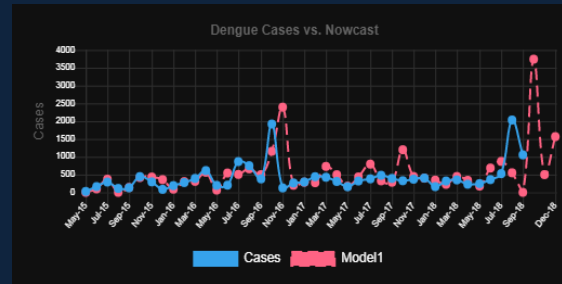
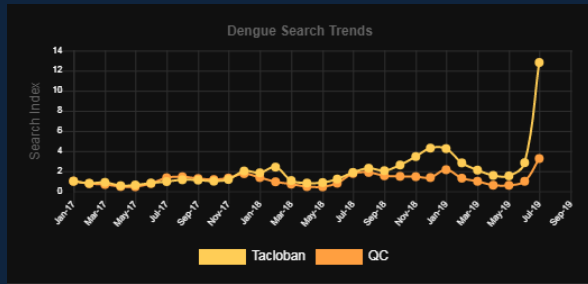
October 2021

Agenda

- Current state and use-cases
- Feedback on prototype
- Areas of enhancement
- Team composition

Project AEDES Front-end





Use-case

Dengue Panic Alerts

Dengue Case Nowcasting

Dengue Hotspot Detection

Visualization
API

Chart JS

Mapbox API

Front-end
Stack

Web Front-end

Back-end
Stack

AJAX / PHP

Datasets

Google
Search
Trends

PAGASA
Precipitation

PAGASA
Temperature

DOH Epi
Bureau
Cases and
Deaths

Sentinel
FAPAR

Sentinel
NDVI

Sentinel
NDWI

Prototype Feedback and Challenges

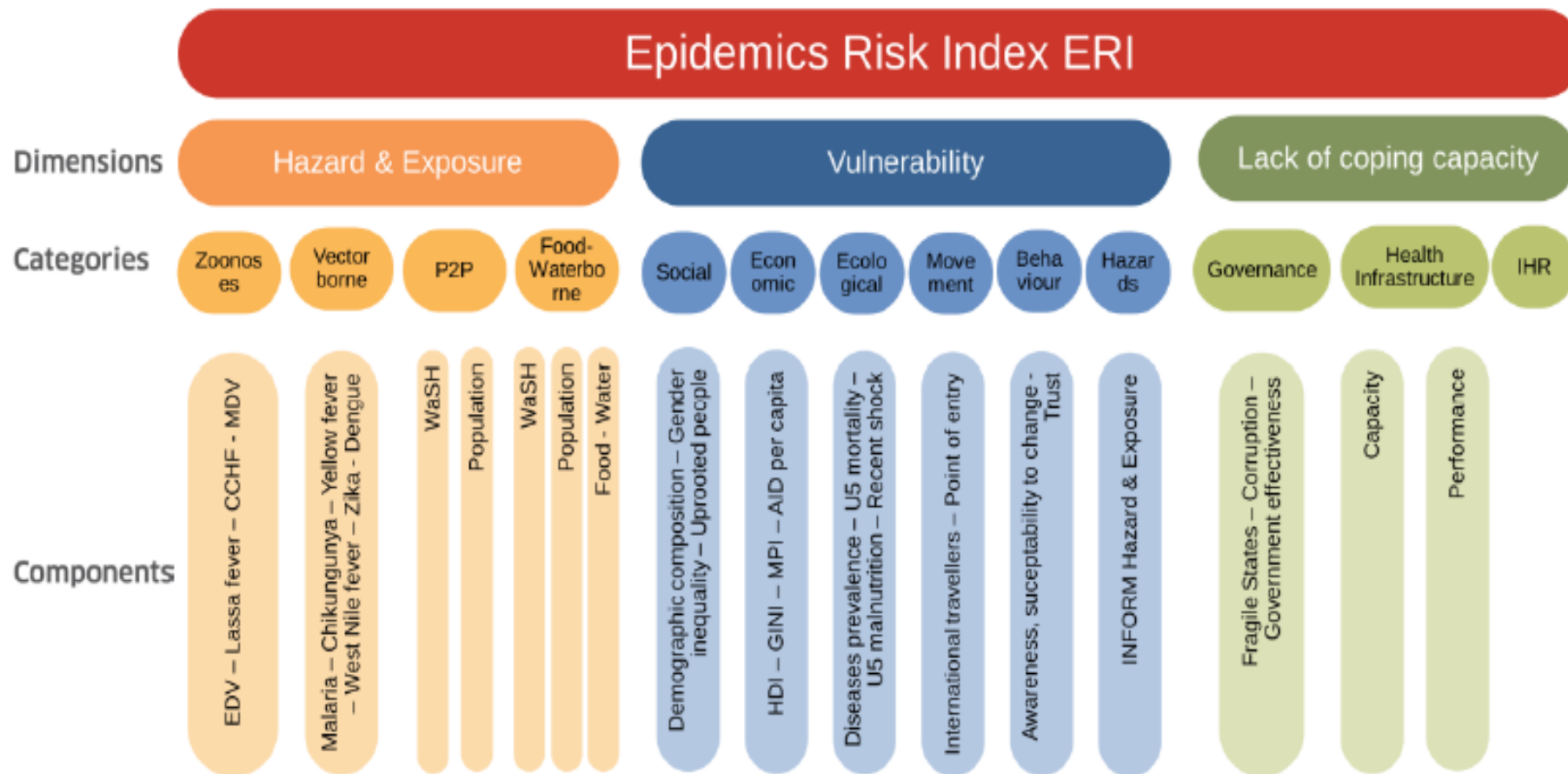
- Current data not available
- Data gathering and preparation is manual
- Dashboard is counter-intuitive, needs elaboration
- Policy usage of the information is unclear
- Scope of solution is too narrow (dengue), needs relevance

Areas of Enhancement

- Risk-based Framework
- Improved Insight generation
- Data gathering Automation
- Interface Improvement
- Expansion of use-cases
- Sustainability Plan

INFORM Risk Framework

Figure 2: Epidemic risk index conceptual framework



INFORM was developed by the EU JRC.

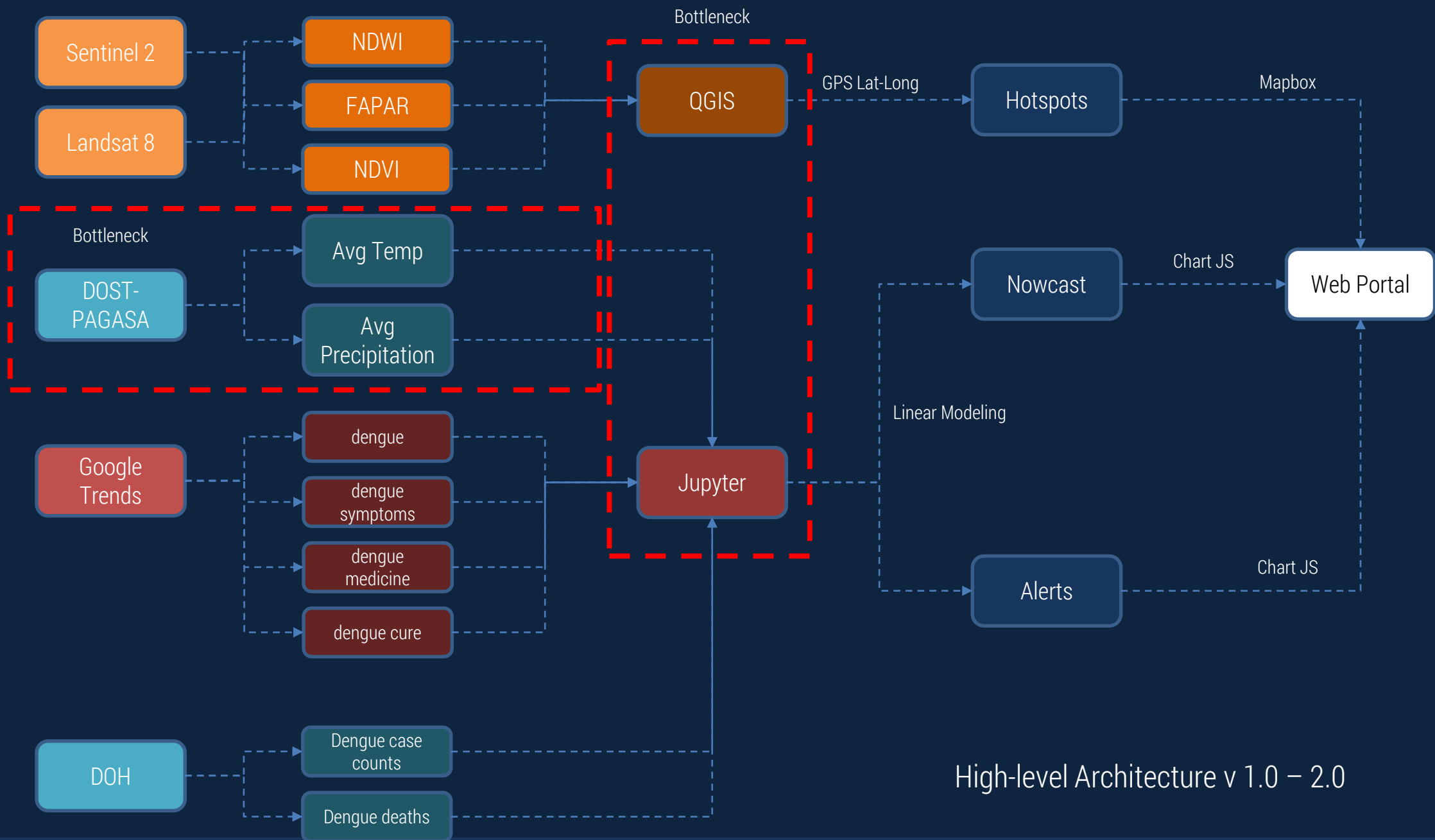
Risk framework provides data-driven policy ideas and actionable strategies.

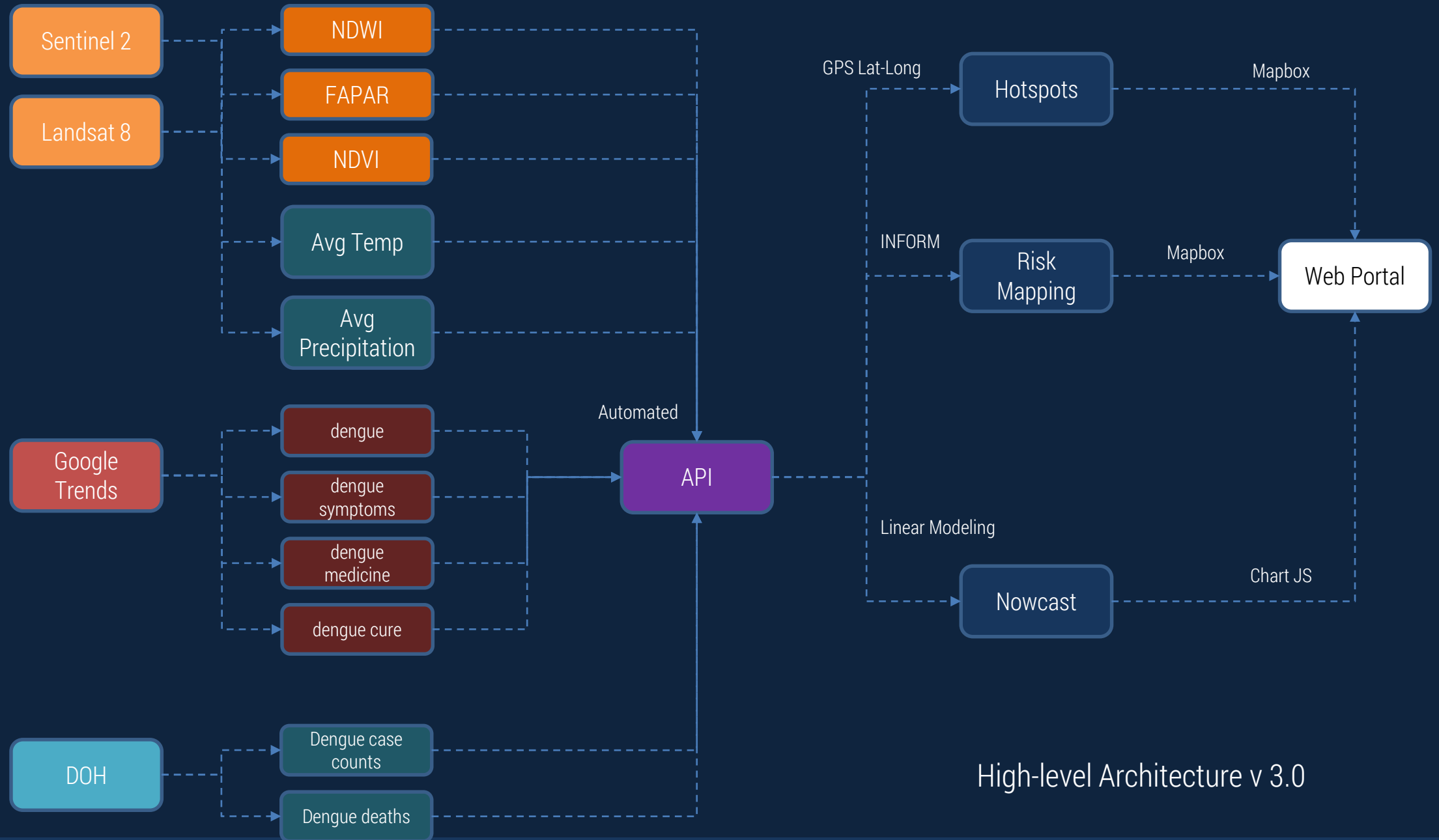
INFORM AEDES Data (Proposed)

Hazards	Vulnerabilities	Coping Capacity
Dengue Case incidence Flood Occurrence Temperature Precipitation COVID-19 Incidence Access to water Access to sanitation	Population ages 0-20 Poverty Index Population affected by natural disasters Population previously infected by dengue Mortality Land-use types Social listening Primary and secondary schools Philhealth coverage Human mobility	Presence of health centers Presence of hospitals Number of health workers Health expenditure Vaccination coverage

Risk-based Decision Use-cases

- Hazards – monitor progress of epidemic, generate alerts
- Vulnerabilities – prioritize areas with vulnerable groups, suggest demographic and geographic determinants of risk
- Coping Capacity – prioritize areas for emergency aid, recommend infrastructure investment





High-level Architecture v 3.0

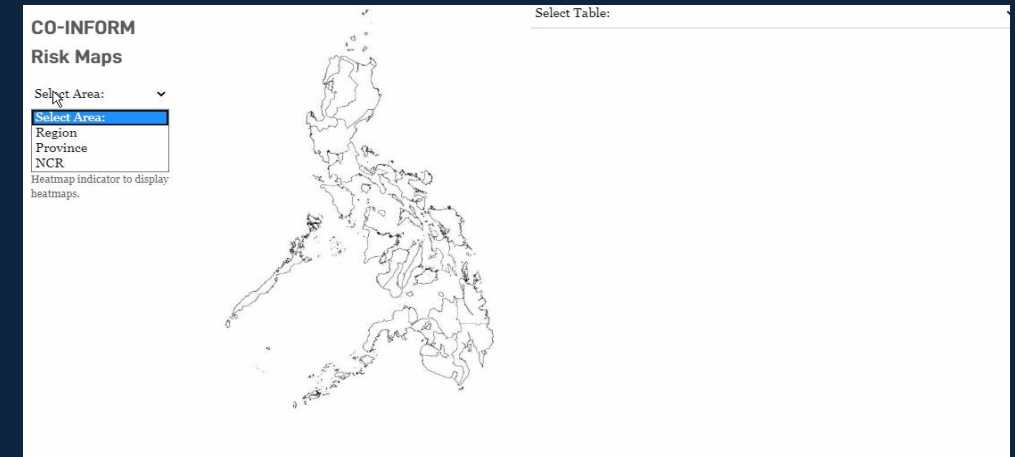
Expanded Satellite Indicators

Surface Conditions	Air Quality	Climate and Hazards
FAPAR	PM2.5	Temperature
NDWI	NO2	Rainfall
NDVI	SO2	Earthquake Zone
NDBI	CO2	Flooding Zone

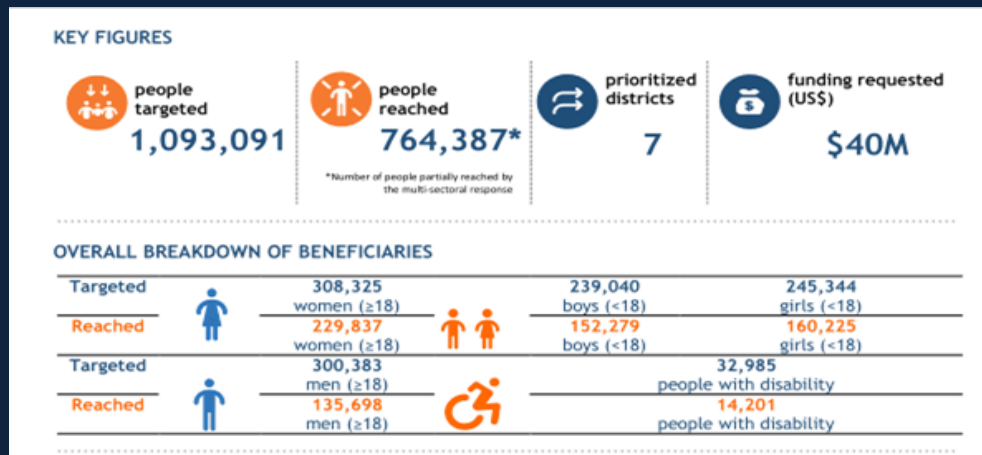
Interface Improvement



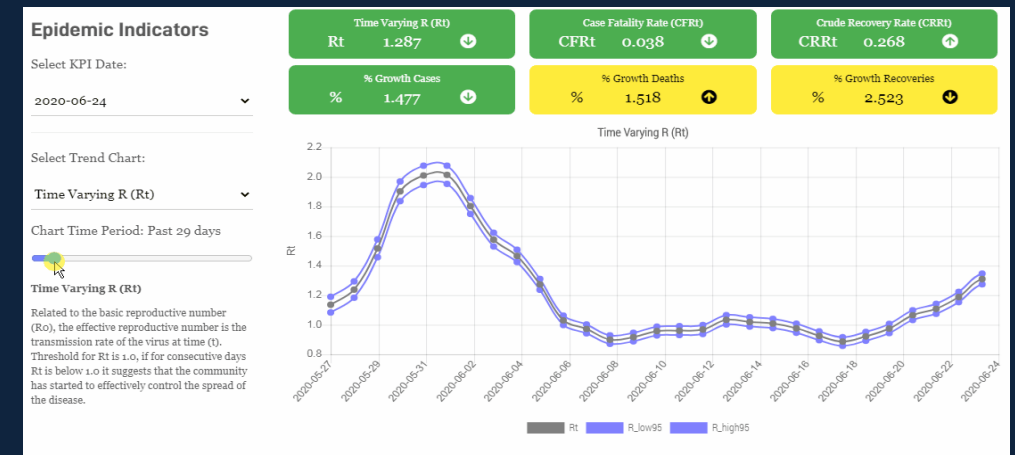
Current Dashboard



INFORM Risk Mapping

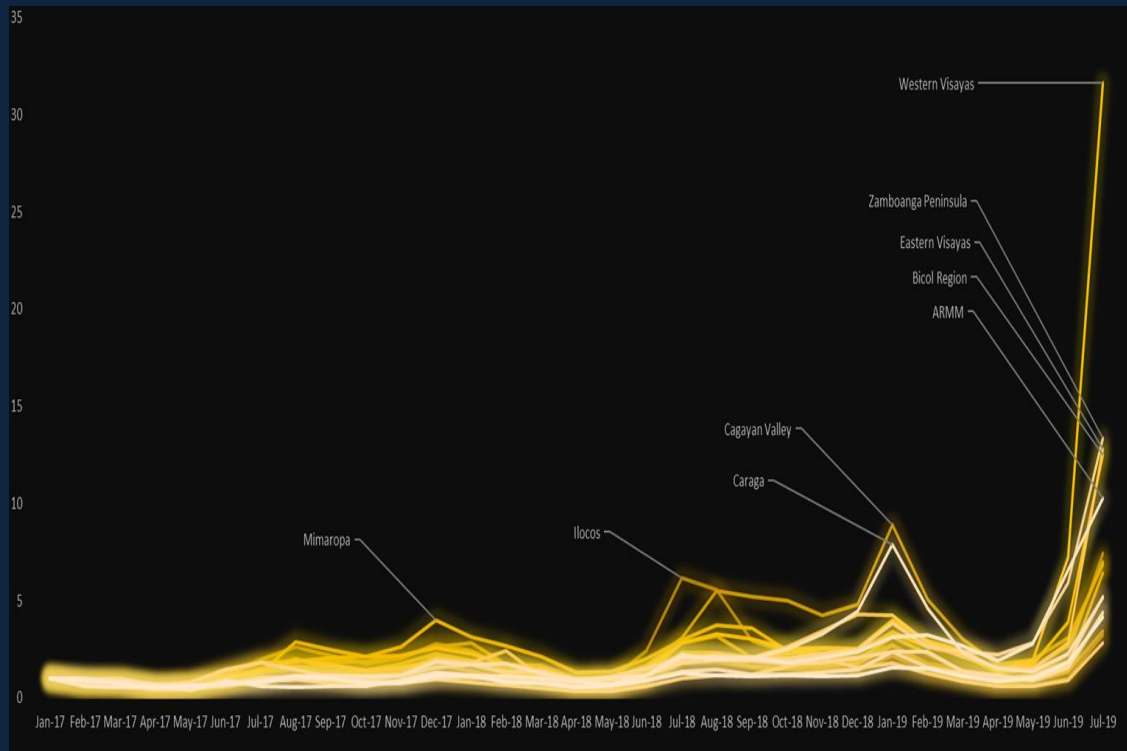


Sit-rep and Alerts

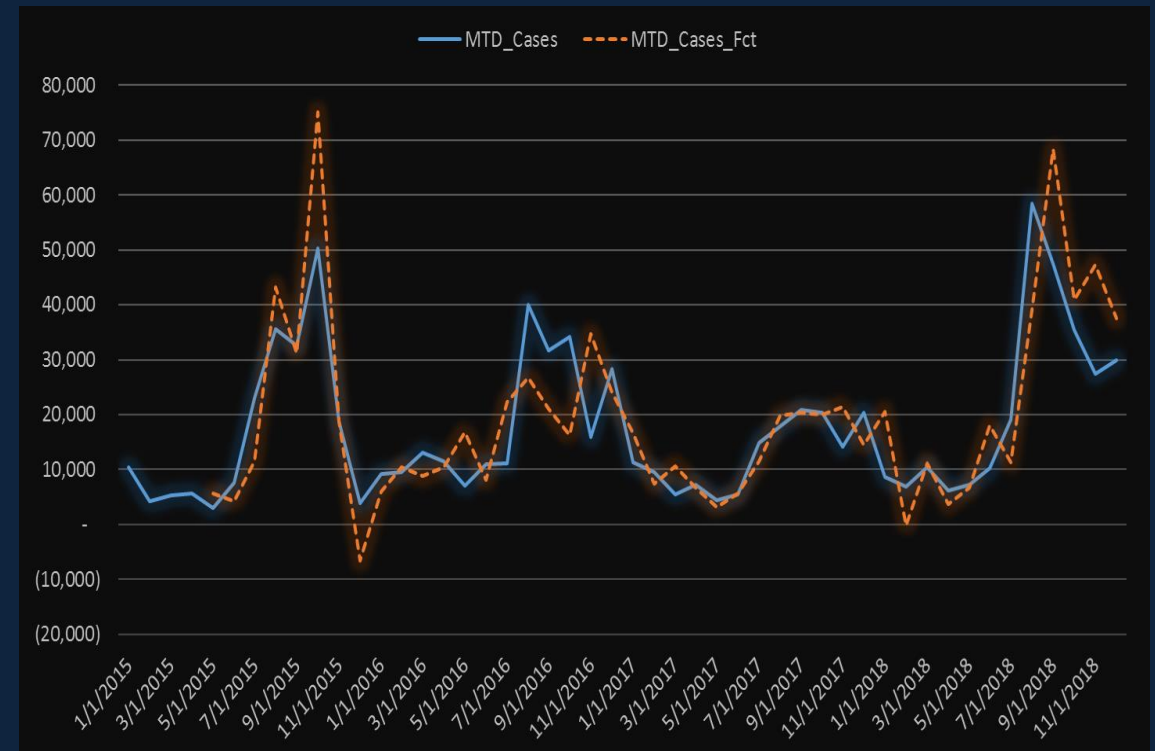


Epidemic Indicators

Digital Syndromic Surveillance

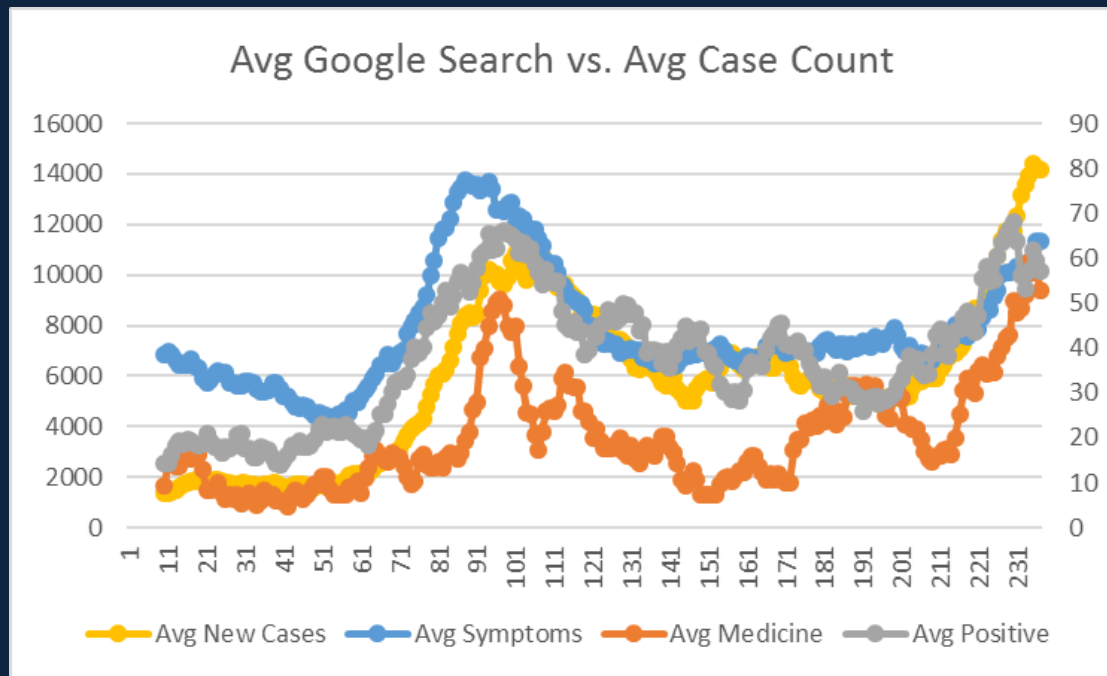


Google Dengue-related Searches

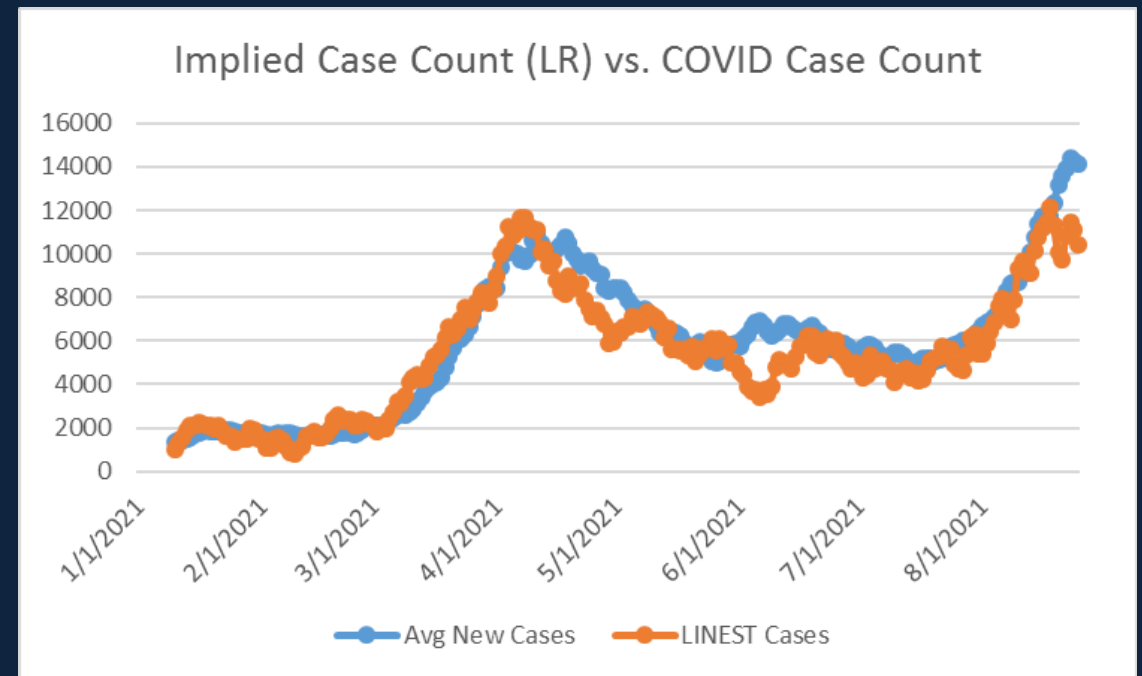


Dengue cases and Nowcast

Digital Syndromic Surveillance



Correlation of COVID-related Google Searches and COVID cases



Implied COVID cases nowcasted by Google Trends

Expanded Disease Use-cases

Vector Borne	Airborne	Bacterial, Food and Water-borne	Zoonotic
Dengue Malaria Chikungunya Zika	COVID-19 TB Respiratory	Cholera Tetanus	Rabies Leptospirosis

Execution Plan

Activity	M1	M2	M3	M4	M+
Proposal Submission					
Project Plan Report					
Development Environment Setup and Solution Design					
Open-Source Regional Search Trends and Satellite Data Collection					
Data Management and Data Preparation					
Risk INFORM Model Integration					
Data Analysis: Time-Series Trends					
Data Analysis Social Listening Trends					
Dengue Regional Risk Mapping					
Mid-Term Monitoring and Evaluation Report					
UI/UX Mockups/Wireframes					
Application Development (Data Visualization and Dashboard)					
Testing and Deployment					
Local Health Unit/s (at least 3) Dashboard Training					
Final Monitoring and Evaluation Report					
Post-Implementation: Publication and Community Engagement					

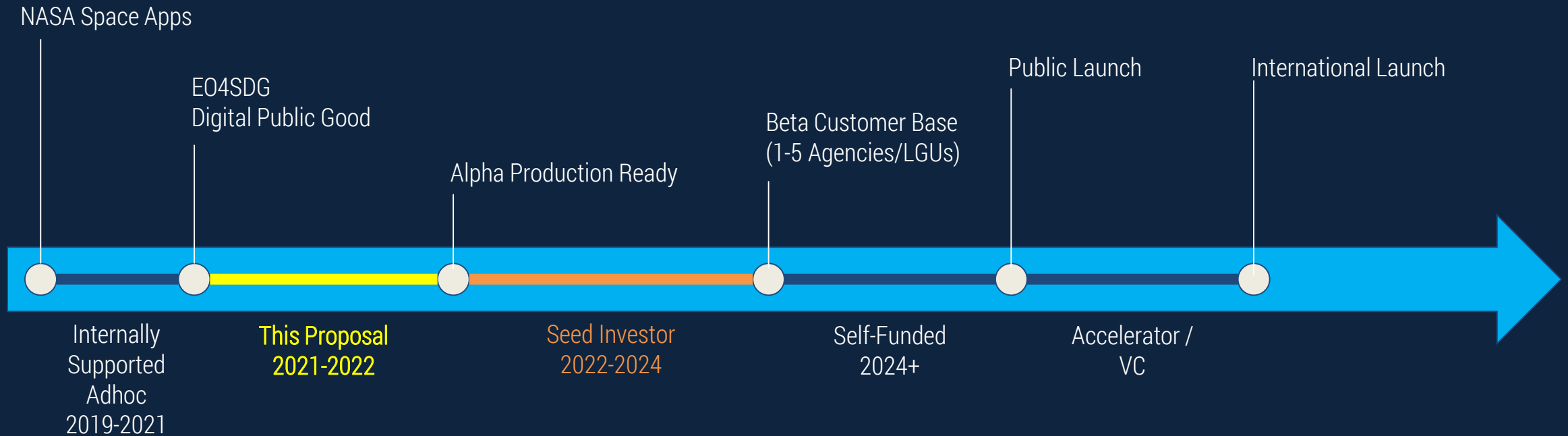
Sustainability Plan

- Kick start LGU Engagement
- Lean Canvas - Cost and Fee Structure, establish “Business” Model
- Establish investment runway before self-funding status

LGU Engagement

LGU Coverage	Current Status
San Fernando, Pampanga	Inactive MOU – via PSPHP, need to revisit
CALABARZON	Existing engagement with DOST R4
Tacloban, Eastern Visayas	No relationship
Iloilo, Western Visayas	Initial linkage via DAP, Project SPARTA
Cotabato, BARMM	Initial linkage via TAF, UNDP, UNICEF Country Office

Development Roadmap (Internal)



Team Members



Dominic
Ligot

Computational
Social Science,
Clinical
Epidemiology



Mark
Toledo

Big Data
Engineering



Claire
Tayco

Statistical
Models, Machine
Learning



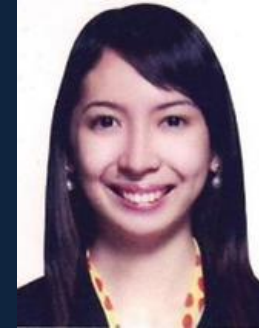
Cricket
Soong

Community
Engagement,
Emerging
Technologies



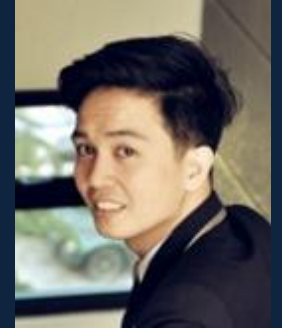
Rache
Melendres

Geospatial
Modeling,
Agricultural Bio-
technology



Emily Jo
Vizmonte

Risk Modeling



Mark
Pascual

Web Engineering

Board of Advisers



Mike Promentilla

Chemical Engineering,
Environmental Risk
Mapping



Thaddeus Carvajal

Dengue and Mosquito
Research



Wilson Chua

Big Data Analysis



Mike Domagas

NASA, ESA, Satellite
Research

Thank You

CirroLytix Research Services

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