SC1-PHE-CORONAVIRUS-2020-2B

MEDICAL TECH, DIGITAL TOOLS AND AI FOR SURVEILLANCE AND CARE CALL

Epi-Net Consortium

The problem

The cost of COVID19 could exceed $3 trillion and as many as 10 million lives could be lost.

Public health preparedness involves, among other things, the capacity to identify outbreaks in real time and forecast their spread.

We do not detect disease outbreaks quickly and accurately enough.

The problem

Resources from government public health organizations are limited.

Europe is home to the largest network of Digital Participatory Surveillance, which would allow for widespread crowdsourcing of data in almost real time.

However, the network has struggled with dwindling funds and an increasingly obsolete technology.

THE CALL

The **EC2020 Medical Tech, Digital Tools and AI call** is looking for **close-to-market (TRL 7) innovative data-driven services and tools** to **contribute to the public health preparedness and response** in the context of the ongoing epidemic of COVID-19 and future emergencies.

OUR PROPOSAL

Our solution, **Epi-Net,** combines participatory data-gathering, data science, and mathematical modeling in a unique way to forecast infectious disease outbreaks.

Similar to how the National Weather Service helps people prepare for their local weather, Epi-Net tells people, governments, and businesses about their local risk from infectious diseases.

HOW EPI-NET WORKS

IMPROVING DISEASE SURVEILLANCE IN A SUSTAINABLE WAY

PARTICIPATORY DATA GATHERING

MATHEMATICAL MODELING & FORECASTING

ALERTS & RISK ASSESSMENT

1. Participatory Data Gathering

CITIZEN PARTICIPATION

Citizens self-report their health status pushed by a web and mobile platform.

USER ACQUISITION

Acquisition campaigns and messaging are managed in partnership with National Health Institutes to optimize participation and communication.

METHODOLOGY

We collect anonymized health data and identify higher-risk individuals and epidemic hotspots (digital participatory surveillance.

DATA LAKE

We combine, process, and standardize anonymized + aggregated datasets, into a secure cloud-based data lake accessible by all NHIs.

CURRENT PROTOTYPES

PROTOTYPE: SOUTH AFRICA + **PROTOTYPE: THE NETHERLANDS** = **SINGLE GLOBAL DPS PLATFORM**

Currently deploying a mobile app and chat bot prototype with the National Health Institute

Currently deploying a web app with the National National Institute for Health and Environment

Inputs will be used to create a standardized technological and epidemiological framework for coherent surveillance across countries

2. Data Aggregation & Mathematical Modeling

SAMPLING VALIDATION

We apply a spatio-temporal adaptive lattice-plus-close-pairs (LPCP) design to correct biases from crowdsourced data.

MODEL AGGREGATOR

We compare, score and aggregate models and make them accessible to public officials.

MODELING

We use high-performance computing to forecast how outbreaks spread.

WEARABLES

We make available wearable proximity sensors to identify routes of transmission of hospital-acquired infections.

3. Forecasting & Alerts

EARLY WARNING SYSTEM

We leverage an operational Early Warning Systems for automated alerts and notifications **(ongoing product).**

IMPACT ANALYSIS FOR BUSINESSES

We use economic impact models to quantify risks to societies, infrastructures, and businesses using aggregated and anonymized data.

TARGETING FOR NHIS

NHIs (and relevant research centers) have free access to data and insights.

INNOVATIVE RISK-FINANCING

We leverage market solutions to create innovative financial instruments (e.g. pandemic bonds) in partnership with the Red Cross.

Epi-Net is a collective effort, built on the contributions of:

- Innovative technology SMEs (**Mitiga Solutions, Pebble Analytics, German Center for AI**)
- Research institutes (**Barcelona Supercomputing Center, ISI Foundation, University of Ireland, University of Turin, University of Hasselt**)
- National Health Institutes (**INSERM, Public Health England, Staten Serum Institute, RIVM)**
- Humanitarian organizations (**Danish Red Cross**).

WHO ARE WE?

EPI-NET CONSORTIUM

DATA PROTECTION

A Data Protection Advisory Board will oversee deployment.

We abide to the highest principles of data protection and privacy, while inspiring trust from our users and continuous engagement in how their data will be used (i.e. consent co-creation).

No individual health data will be accessed by any of the involved parties, and all reports, dashboards, and data outputs will be based on trends and de-identified from any individuals.

SUSTAINABILITY

To make this work sustainable, we anticipate to repurpose aggregated and anonymized data into business intelligence products (e.g. alerts and notifications about epidemics).


WORK PACKAGES
WP1
WP2
WP3
WP4
WP5
WP6
PROJECT MANAGEMENT
Overall project coodinationa and data protection.
SMEs
DIGITAL PARTICIPATORY SURVEILLANCE
State-of-the-art web, mobile and chat bot platform with 500k users
NHIs, Research, SMEs
MODELLING & FORECASTING
Data validation, modeling, and aggregator
NHIs, Research
EARLY WARNING SYSTEMS
Operational systems and frameworks to respond to epidemics.
SMEs, Research
RISK FINANCING
Innovative forms of financing emergency responses
Humanitarian; SME
EXPLOITATION & DISSEMINATION
Maximizes the impact of the project.
SMEs

CONTACT DETAILS

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