

About the deliverable

Smart City Platforms Thematic Group

Working Group 2: Smart Public Health Emergency Management

- **The question:** why smart cities did not predict or utilized to respond to the COVID-19 pandemic? How can they prevent mass surveillance?
- **Smart public health emergency management and ICT implementations**
 - Analysis of the terms
 - A gap analysis of existing relevant standards for smart public health,
 - literature analysis about pandemic management frameworks.
 - How cities responded to COVID-19.
 - Define a framework for smart public health management in smart city

Identified terms

Resilience: ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt, transform and recover from the effects of a hazard in a timely and efficient manner, including the preservation and restoration of its essential basic structures and functions through risk management (United Nations Office for Disaster Risk Reduction)

Public Health: the science and art of preventing disease, prolonging life and improving quality of life through organized efforts and informed choices of society, organizations, public and private, communities and individuals

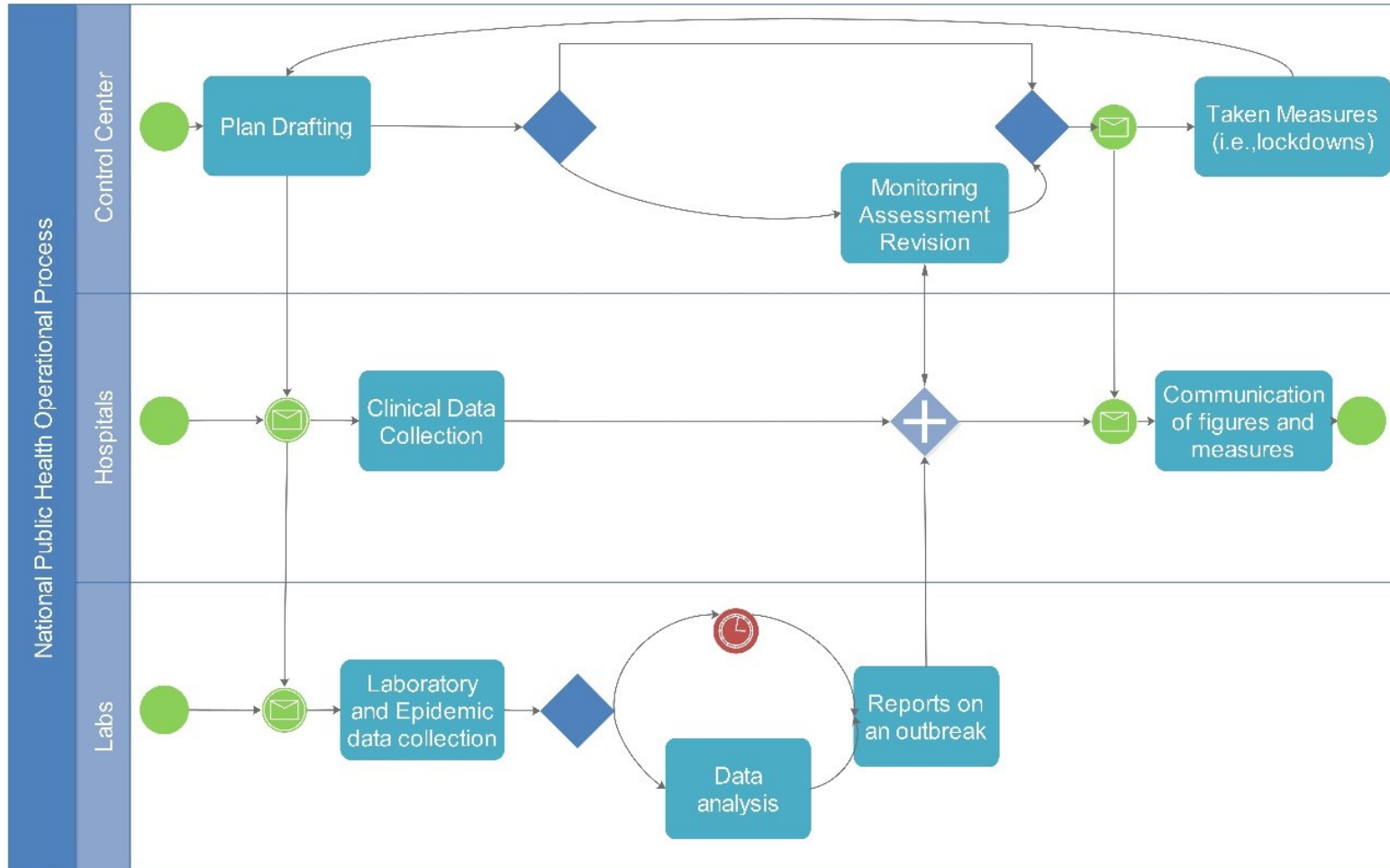
Epidemic: occurrence or imminent threat of an illness or health condition caused by bioterrorism, epidemic or pandemic disease, or a novel and highly fatal infectious agent or biological toxin that poses a substantial risk of a significant number of human fatalities or incidents or permanent or long-term disability

Surveillance: surveillance is the ongoing systematic collection, analysis, interpretation and dissemination of health data for the planning, implementation and evaluation of public health action

Indicative Surveillance systems: U.S. Centres for Disease Control and Prevention (CDC); European Surveillance System (TESSy); UK Public Health Surveillance System ; Australian Communicable Diseases Intelligence; the Infectious Disease Surveillance Centre (NESID); and the Chinese Centre for Disease Control and Prevention (China CDC) etc.

Findings & Experiences from pre-Covid-19 pandemics

CDC response to H1N1 Influenza (Swine flu)



Generic public health operational process

Findings & Experiences from pre-Covid-19 pandemics

CDC response to H1N1 Influenza (Swine flu)

Data Sources

Clinical, laboratory and epidemic

- *Known disease-oriented*
- *Ad hoc information collection*

Operational and Response Plan

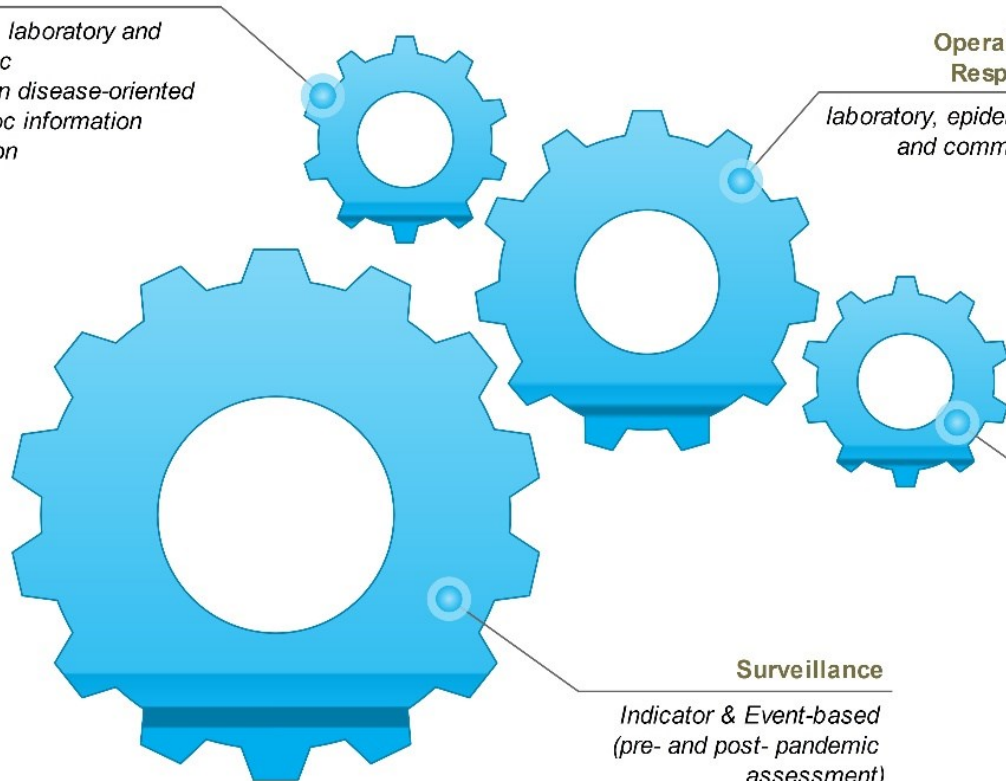
laboratory, epidemiological, and communications measures

Network

Connecting a control center with national labs, professionals and resources; linking with other countries and with the WHO

Surveillance

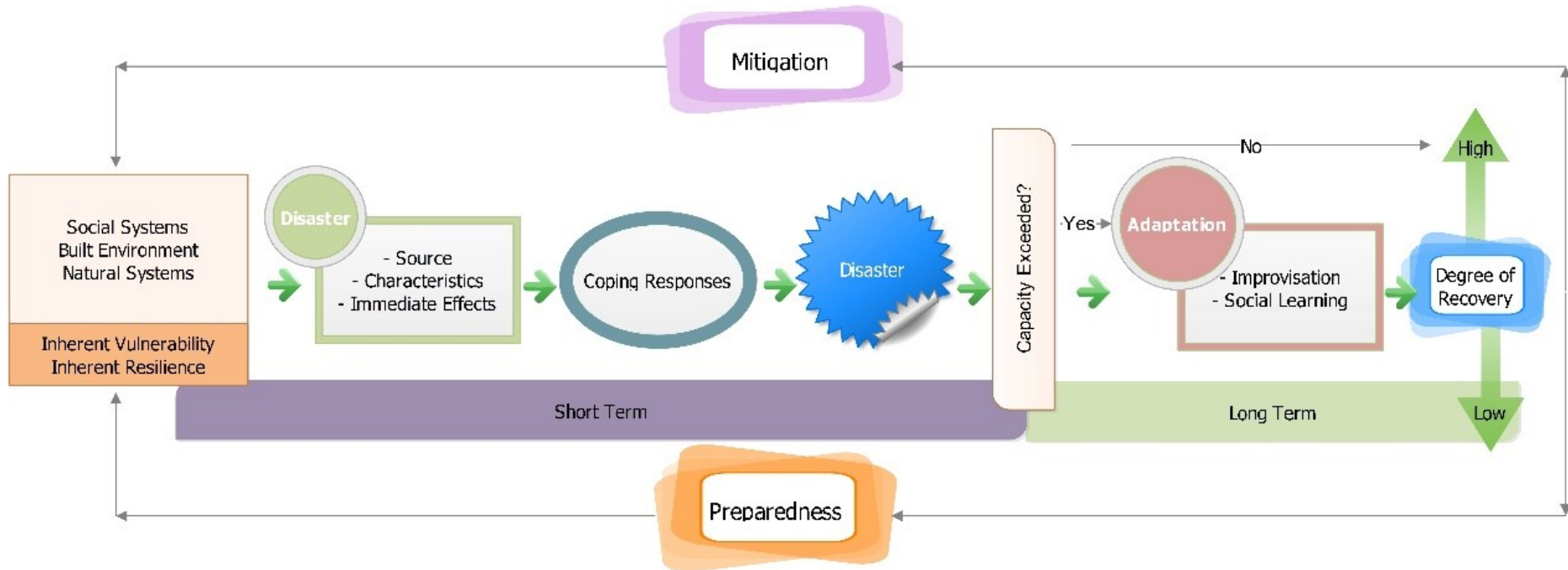
Indicator & Event-based (pre- and post- pandemic assessment)



General structure of a public health system

A review of existing public health systems

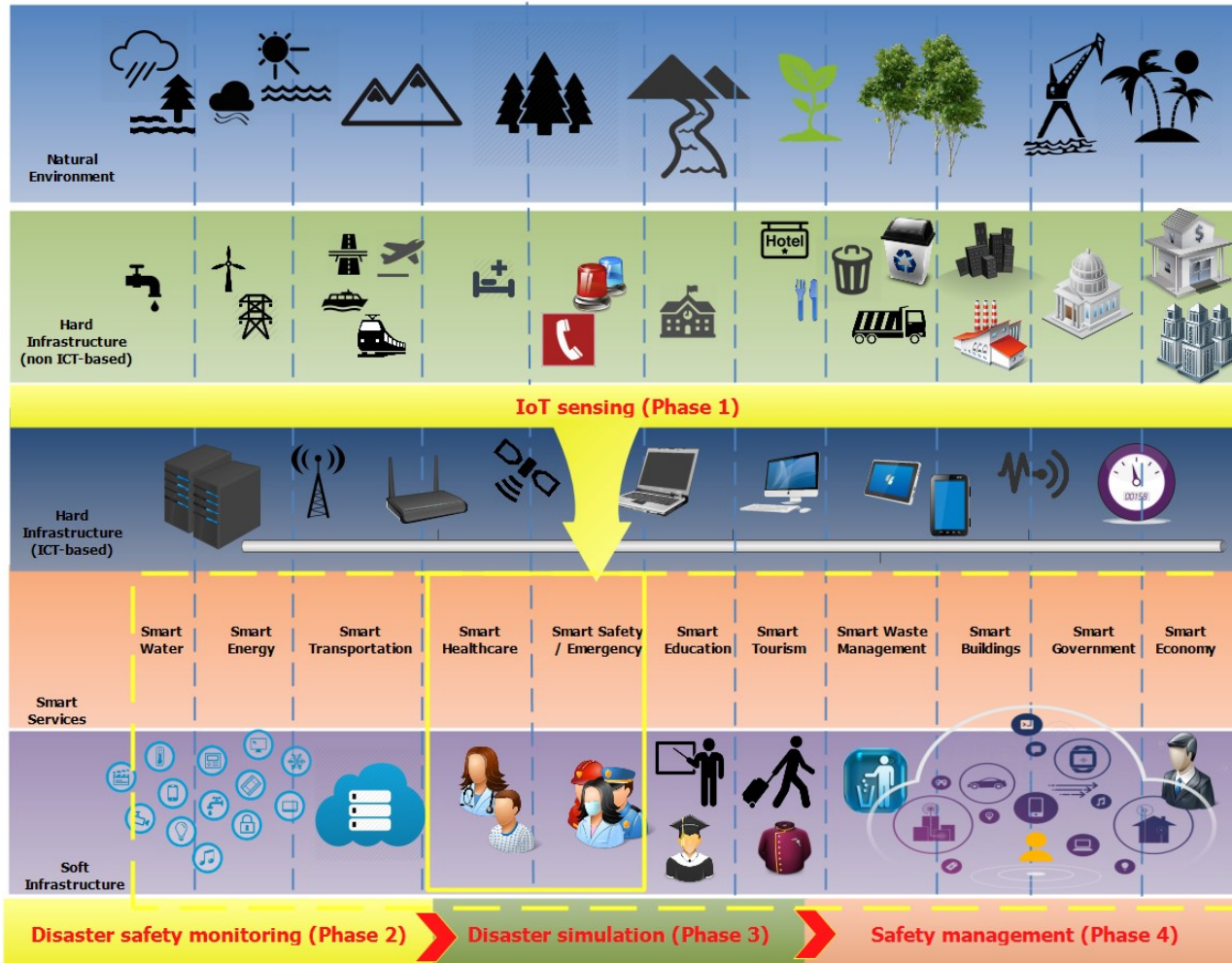
Disaster resilience of place model



Examined cases

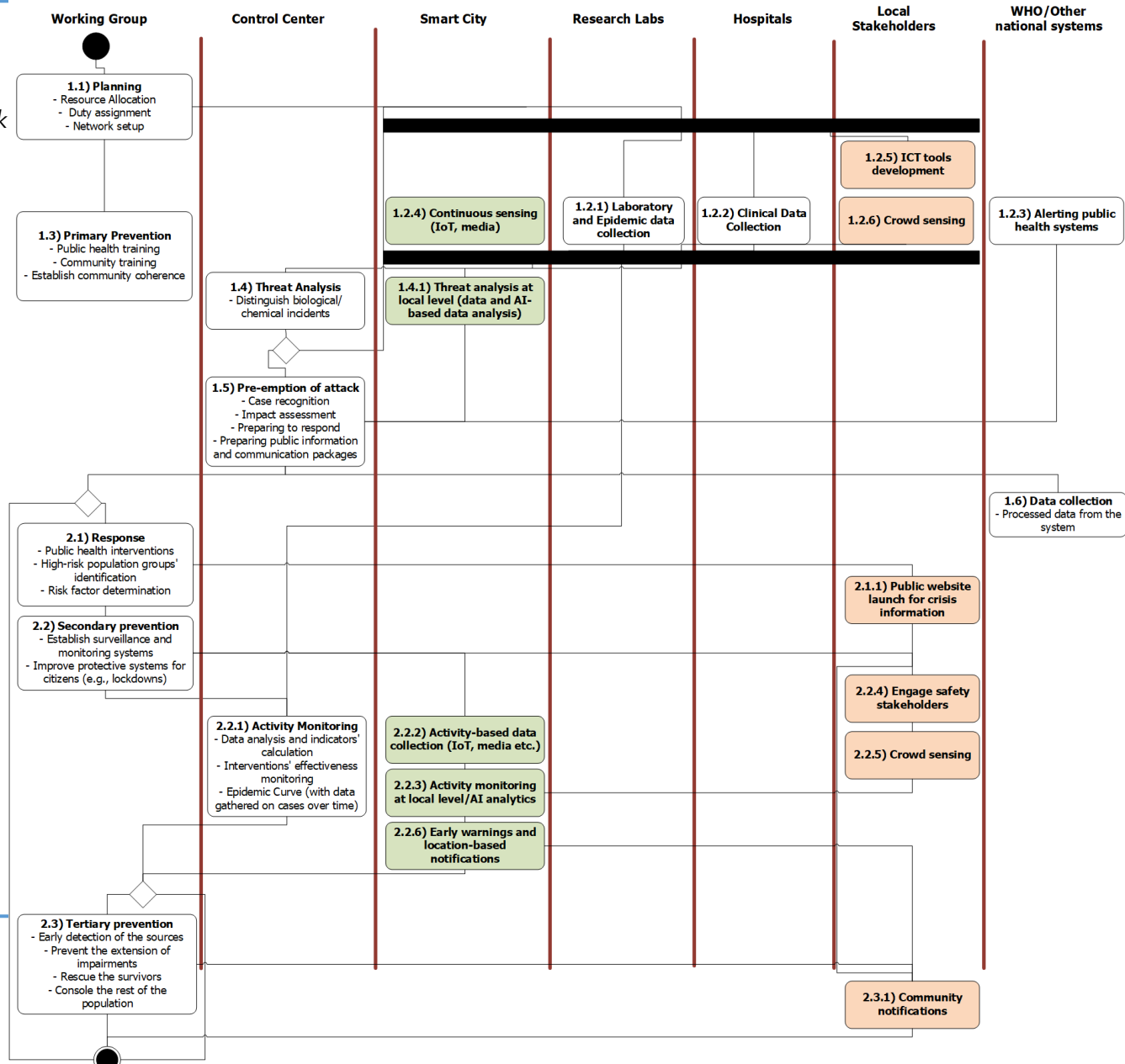
1. **'Flattening the curve': S. Korea's 24-hour emergency citizen prevention system & Korona App**
2. **TraceTogether from Singapore**
3. **GH Covid-19 Tracker App from Ghana**
4. **CovidWatch from Stanford University**
5. **HaMagen from Israel Ministry of Health**
6. **Corona DatenSpende - from German Watch co.**
7. **Covid Symptom Tracker from King's College, London and others**
8. **NHS Smart Phone App from NHS, UK**
9. **Let's Beat Covid-19 from MedShr , London**
10. **Pedulilindungi from Indonesia**
11. **Kwarantana Dommowa from Poland**
12. **Arogya Setu from Government of India (GOI)**

A Smart Public Health Emergency Framework: the role of SSCs



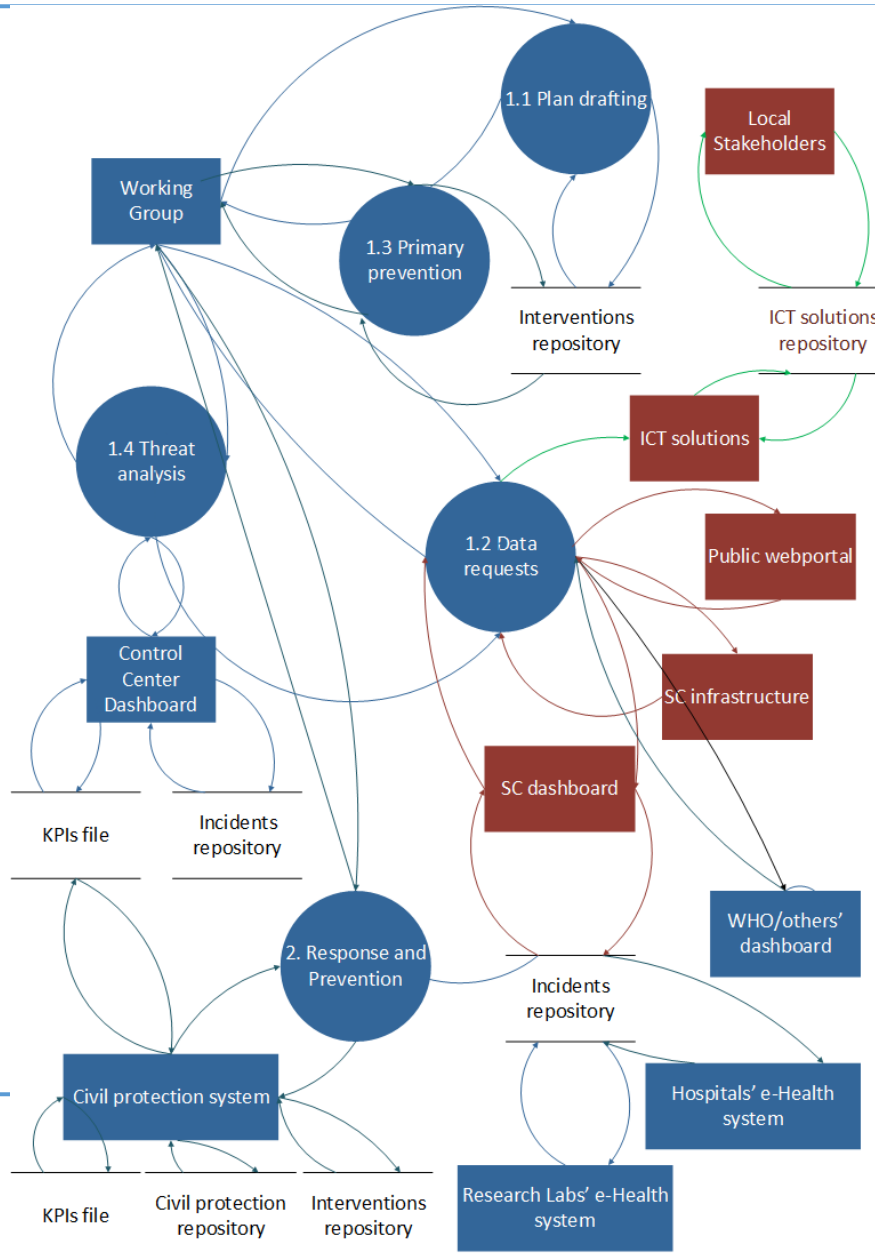
A Smart Public Health Emergency Framework: the role of SSCs

proposed UML use-case unified framework for public health management in SSC



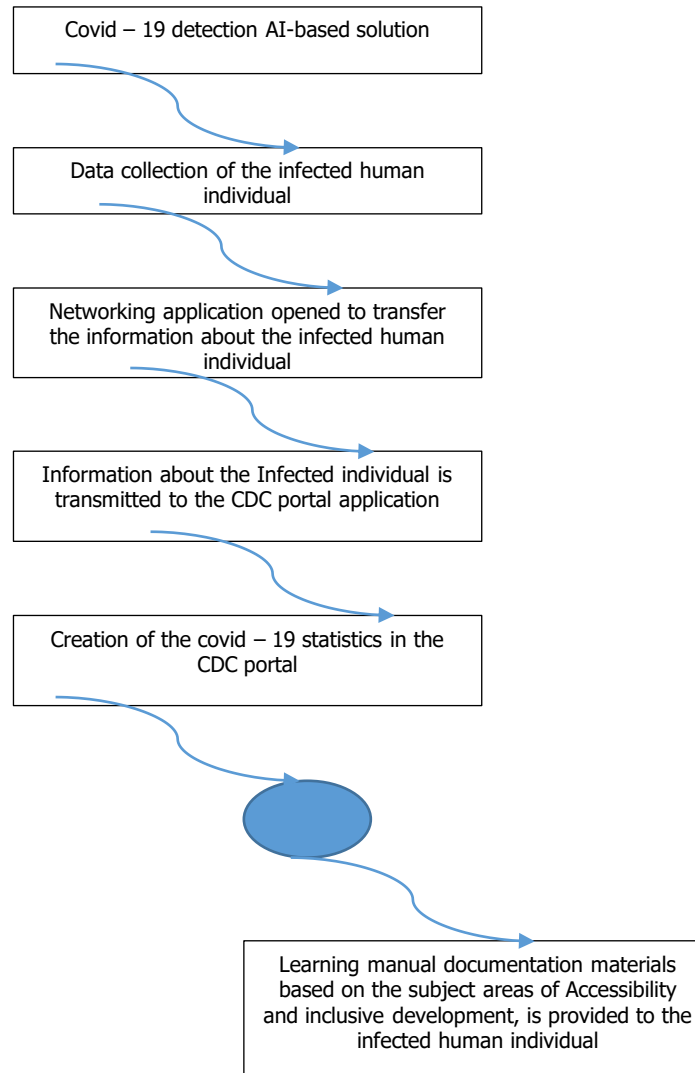
A Smart Public Health Emergency Framework: the role of SSCs

UML data flow diagram
of the unified
framework in SSC



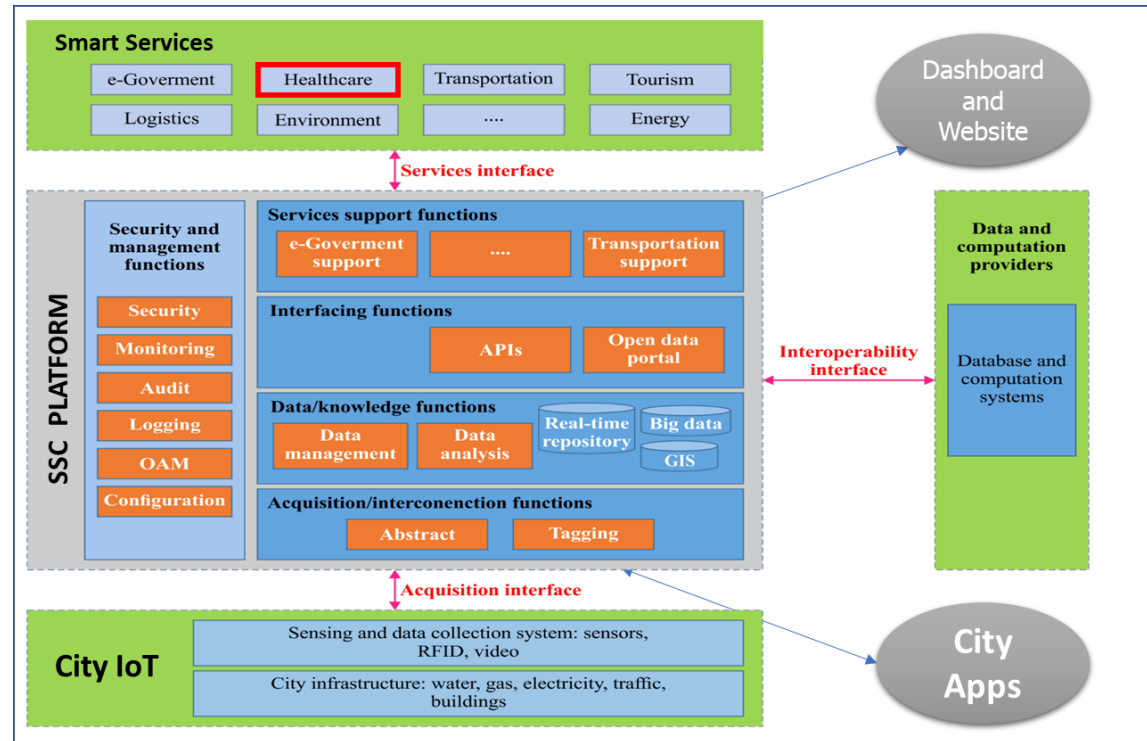
A Smart Public Health Emergency Framework: the role of SSCs

The role of an AI-based solution during Covid-19 pandemic



Integration with smart city platforms

1. City IoT infrastructure: collects information from the urban space (process step 1.2.4 and process step 2.2.2) and feeds into the public health threat analysis system (process step 1.4 e.g., the SIR functions) and the crisis curves (process step 2.2.1).
2. City Apps: These collect information from the community (process steps 1.2.5, 1.2.6 and 2.2.5).
3. City dashboard and public website: (process steps 2.1.1 and 2.2.3).
4. Smart services: ICT-based services that generate alerts when needed (process steps 2.2.6 and 2.3.1).



requirements for ICT implementations



Thank you.
Any questions?

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Platforms