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Brunei

The Platform for Humanitarian Assist and Disaster Relief Management (HADR) using Remote Sensing and Social Media Data

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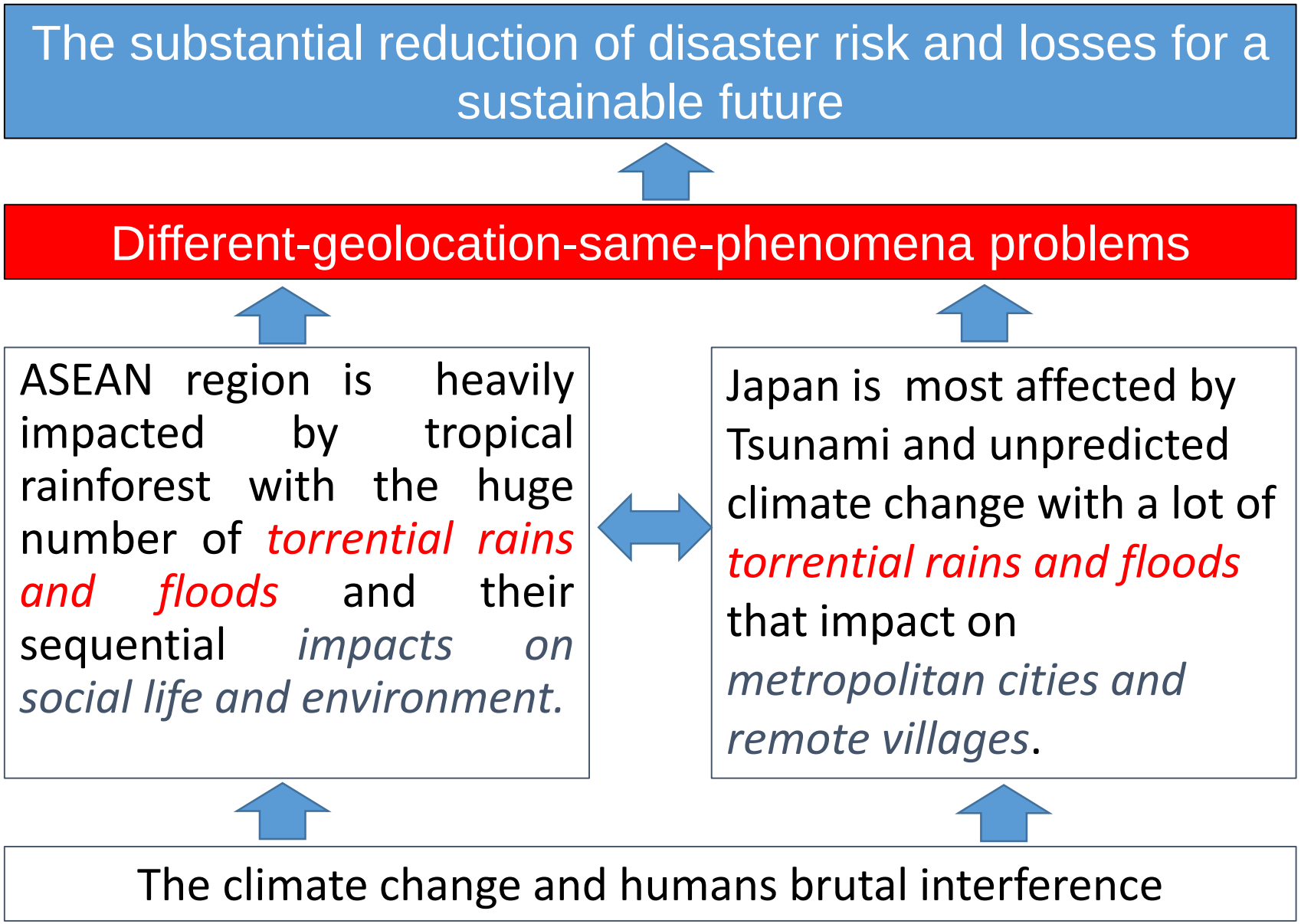
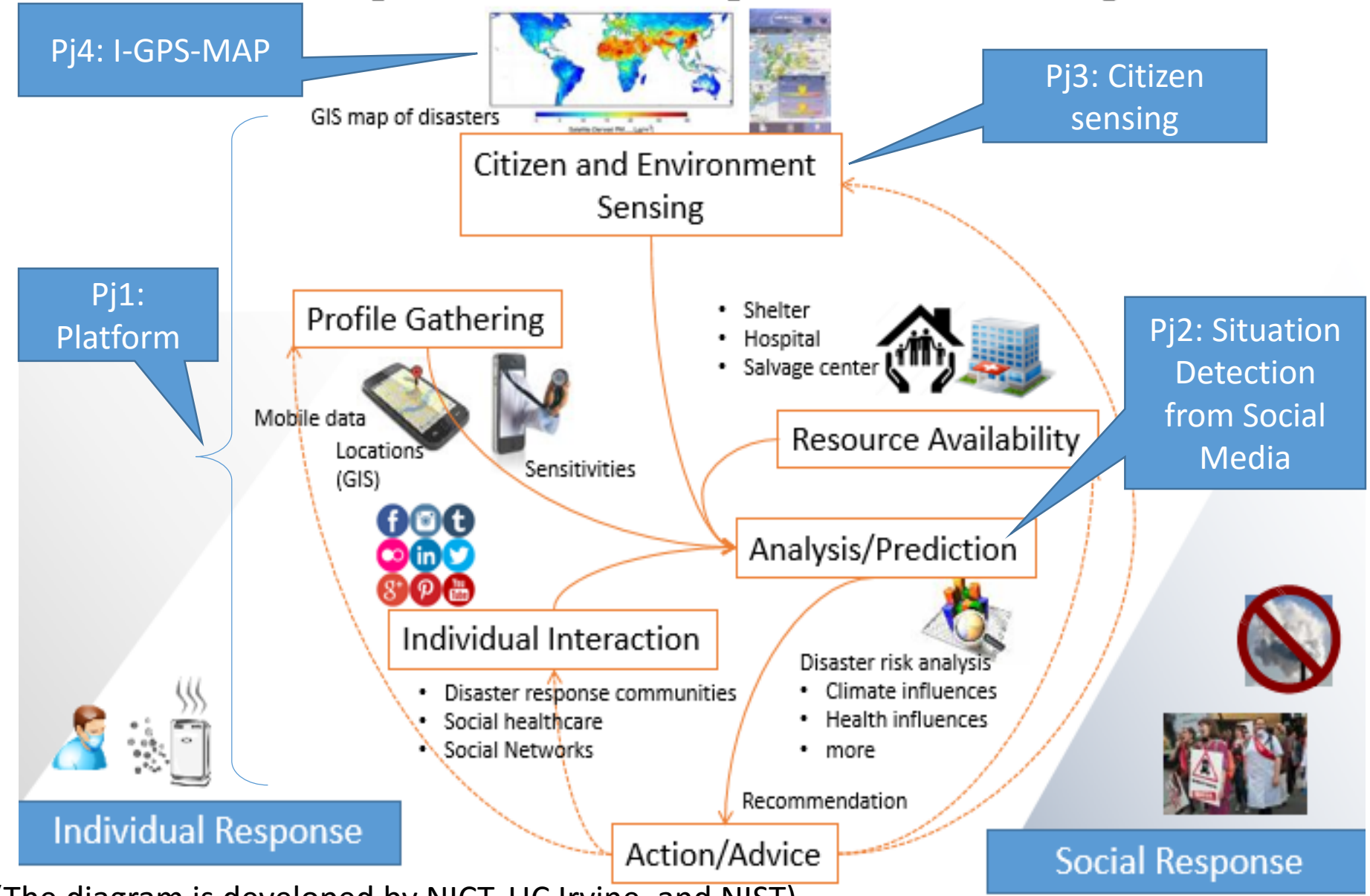
Motivation


The substantial reduction of disaster risk and losses for a sustainable future
Different-geolocation-same-phenomena problems
ASEAN region is heavily impacted by tropical rainforest with the huge number of torrential rains and floods and their sequential impacts on social life and environment.
Japan is most affected by Tsunami and unpredicted climate change with a lot of torrential rains and floods that impact on metropolitan cities and remote villages.
The climate change and humans brutal interference

Targets

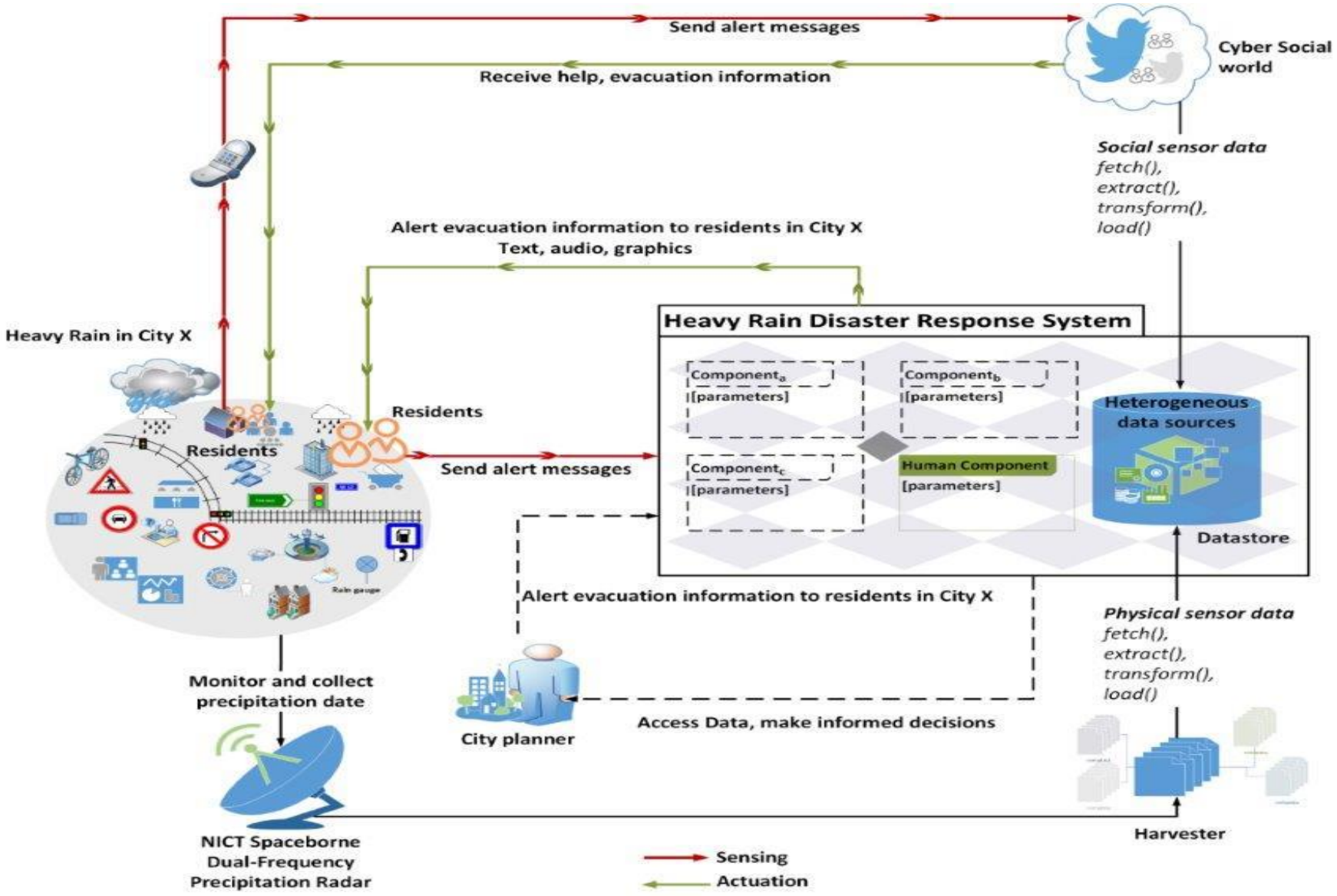
- Building a platform that has the ability to plugin differently *independent systems* to integrate a new system that is easily deployed in a new category of natural disasters depending on the availability of resources and the scope of application.
- Developing fundamental *independent systems* by members of the consortium, and integrating them to create products according to different case studies.
- The first output of this platform can be considered as the prototype to monitor floods in Brunei and torrential rains in Japan.

Humanitarian Assistance and Disaster Relief Systems using Social Networking and Crowd Sensing



(The diagram is developed by NICT, UC Irvine, and NIST)

A proposed application built on top HADR platform



(The diagram is developed by NICT)

Projects and Components

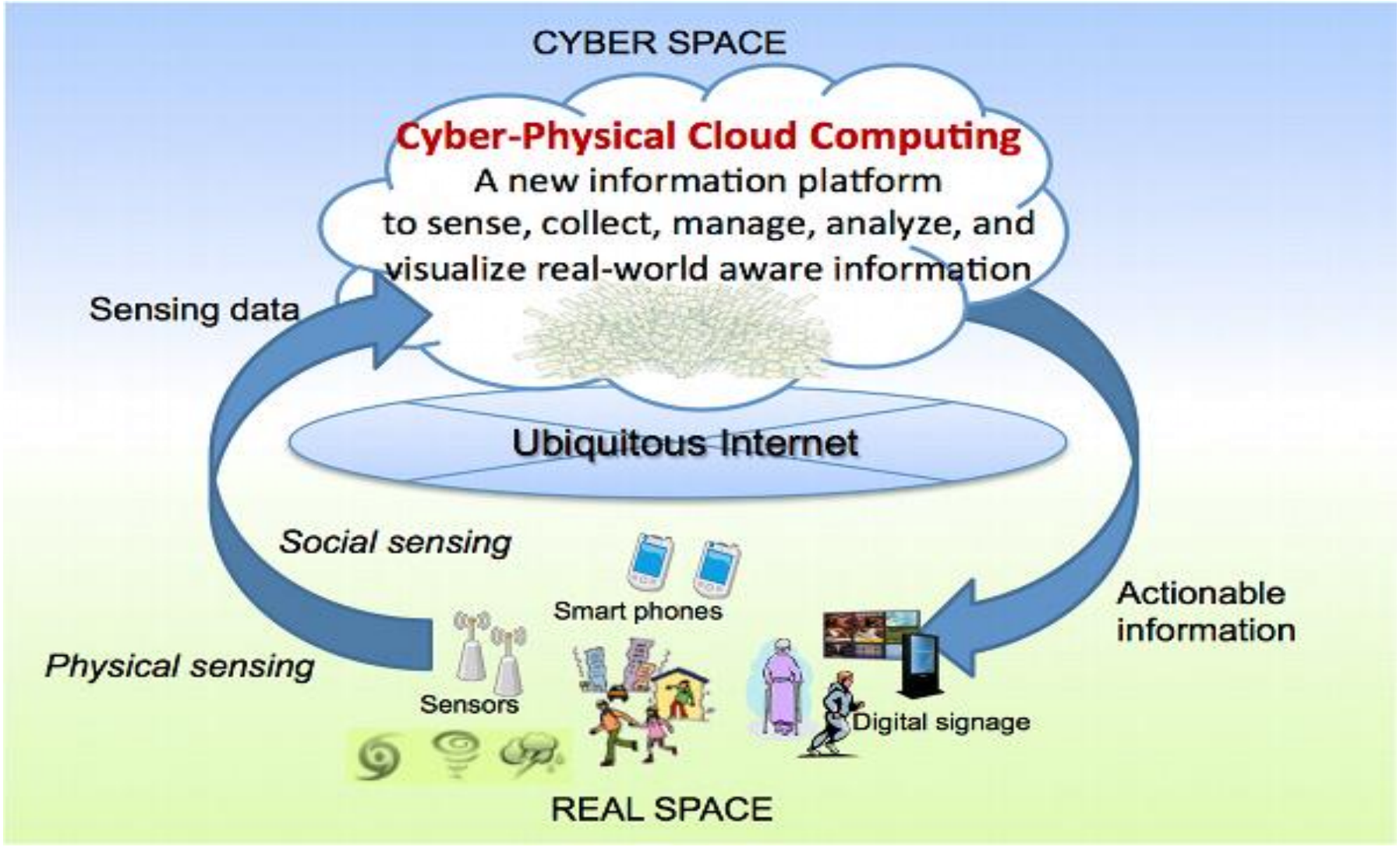
Project

1. EDHR- Platform for Event detection from heterogeneous resource
2. SDSN- Situation Detection from Social Networks
3. Citizen Sensing
4. I-GPS-MAP: Interactive-GPS-map for monitoring and managing during the time of disaster

Components

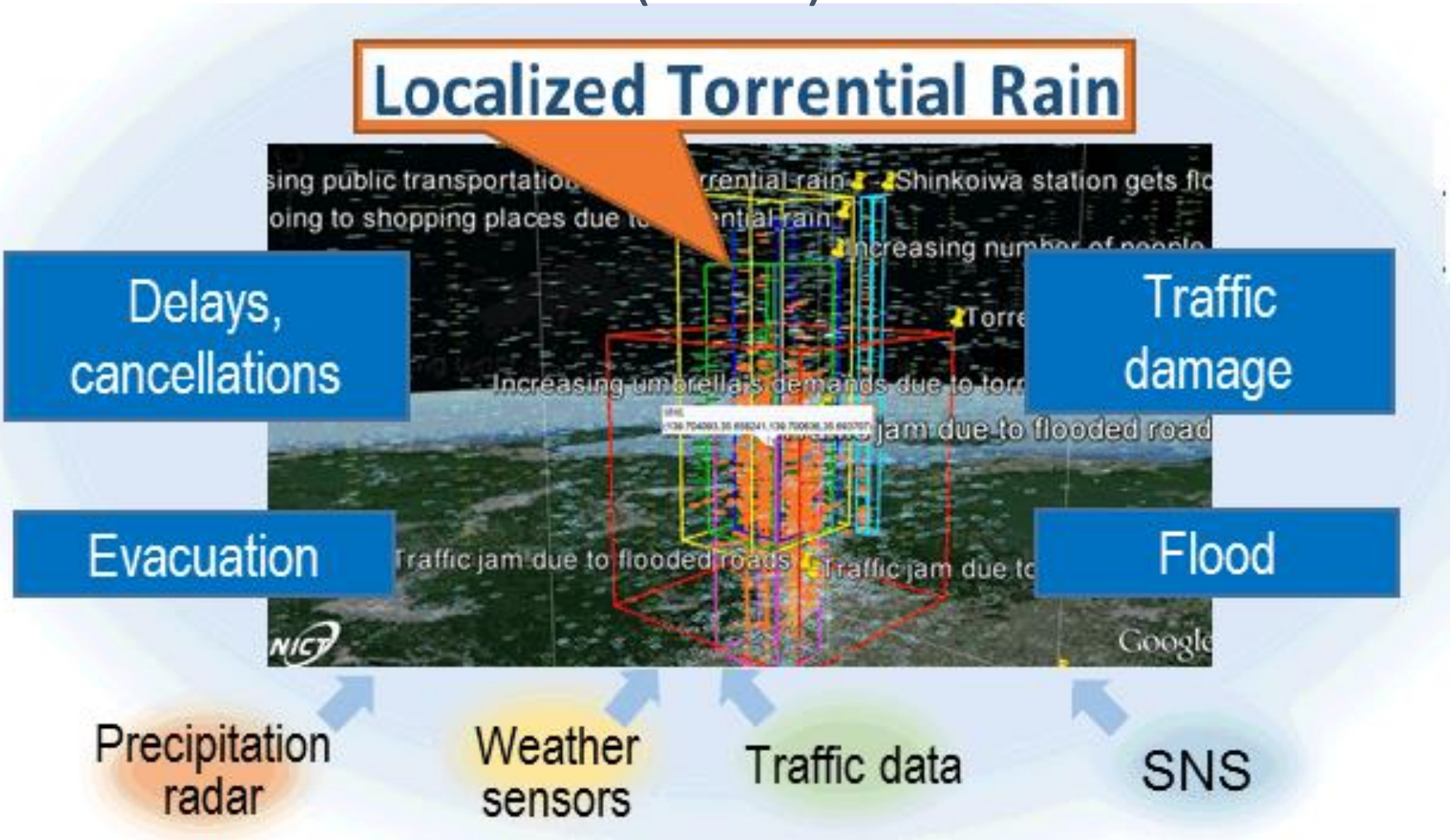
1. Platform
2. Event warehouse
3. Data Analytics
4. Event Detection
5. Image Segmentation
6. Decision Support

Project 1: Platform for Event detection from heterogeneous resources (EDHR)



(first developed by NICT, UC Irvine, and NIST)

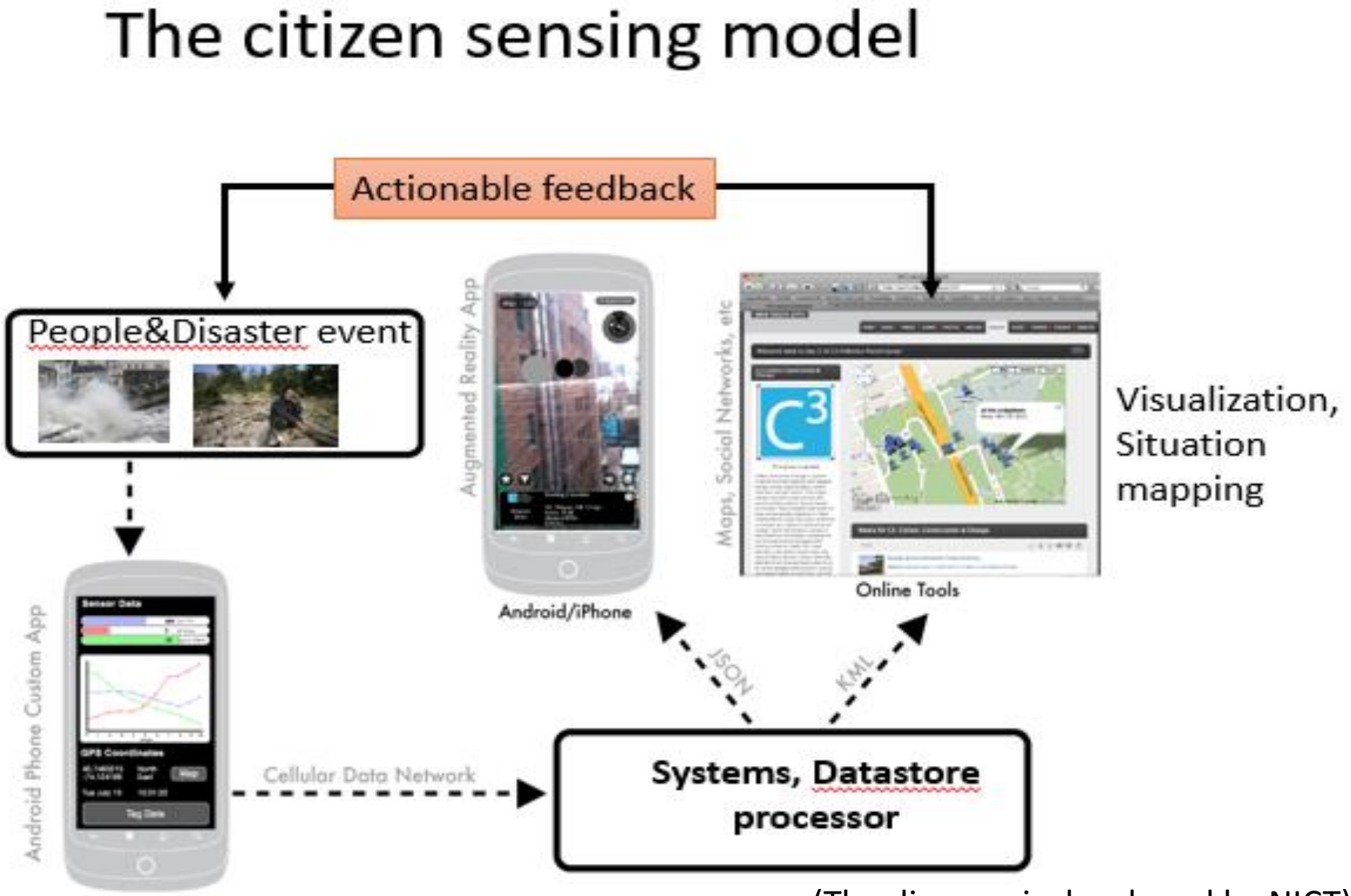
Project 2: Situation Detection from Social Networks (SDSN)



SNS: Social Network Sensors

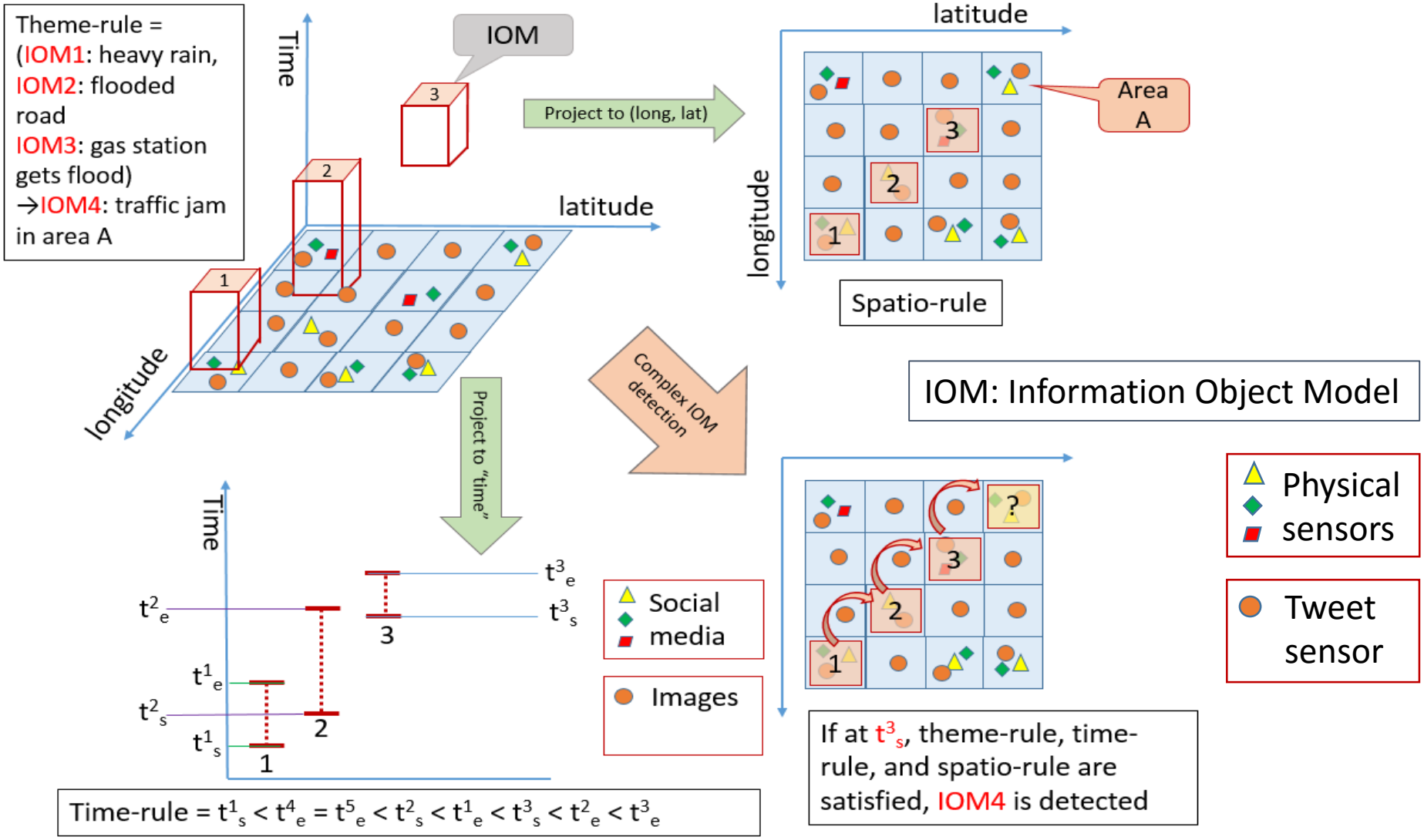
http://www2.nict.go.jp/bidal/en/research.html

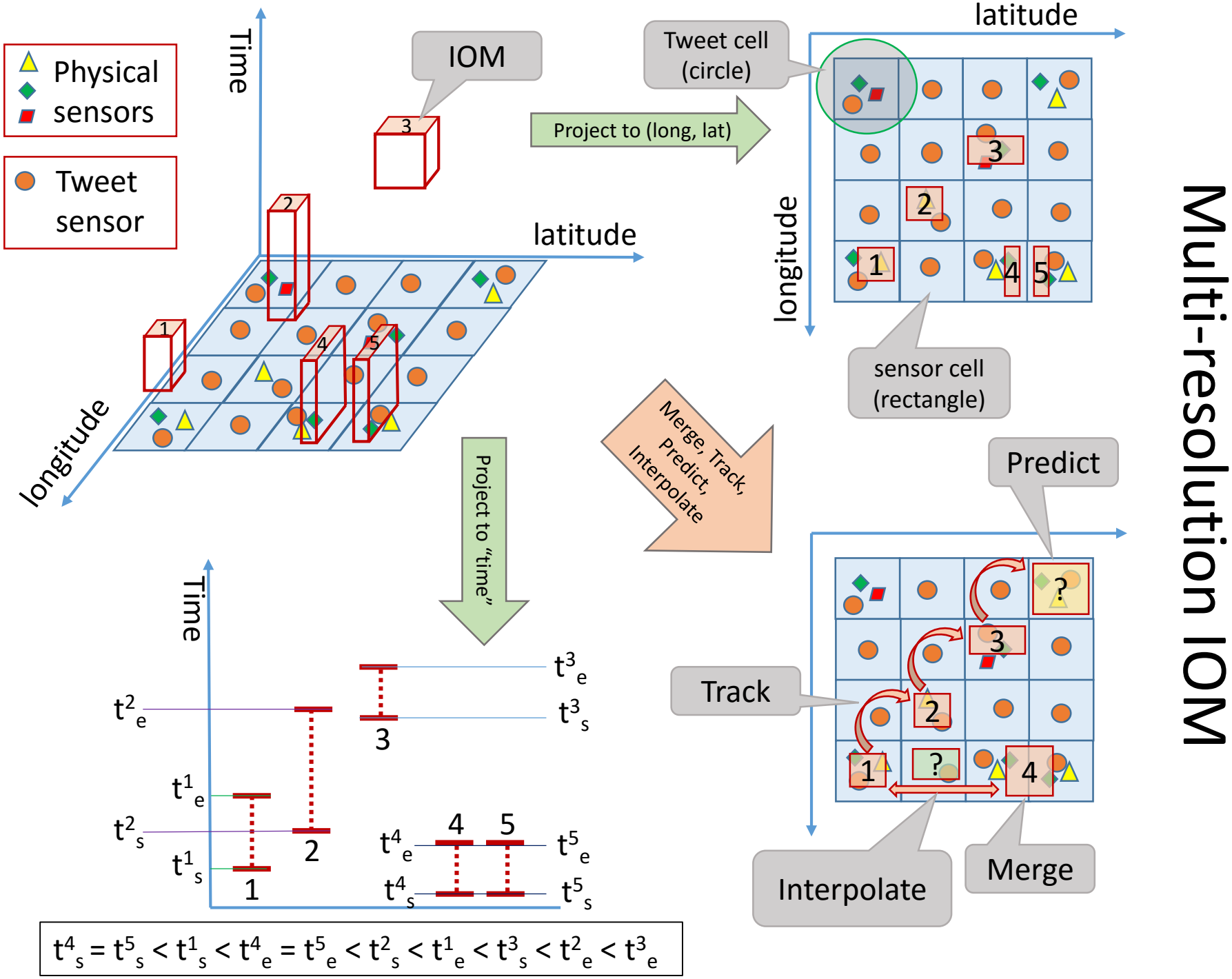
Project 3: Citizen Sensing



(The diagram is developed by NICT)

Project 4: Interactive-GPS-map for monitoring & managing during the time of disaster (I-GPS-MAP)




Physical sensors
Tweet sensor
Time
IOM
latitude
longitude
Project to (long, lat)
Tweet cell (circle)
sensor cell (rectangle)
Merge, Track, Predict, Interpolate
Project to "time"
Predict
Track
Interpolate
Merge
Multi-resolution IOM
$t^4_s = t^5_s < t^1_s < t^4_e = t^5_e < t^2_s < t^1_e < t^3_s < t^2_e < t^3_e$

Q&A

Thank you for your attention!