

Developing sustainable collaborations for
integrated space-based/geospatial disaster
management to strengthen the resilience in
ASEAN community

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Introduction of ERIA

- **Economic Research Institute for ASEAN and East Asia**
- Established by ASEAN states in 2008.
 - Member: 10 ASEAN states, Japan, China, South Korea, India, Australia, India.
- Conducting research activities and make policy recommendations for further economic integration
 - Deepening Economic Integration
 - Narrowing Development Gaps, and
 - Sustainable Development

Working Group of the Study on Space-based /Geospatial Techs for DRM in ASEAN

with support of **Cabinet Office, the Government of Japan**

ERIA



Research Management

Japan Space Forum



Project Management

Center for Spatial Information Science,
The University of Tokyo



東京大学
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Csis 東京大学 空間情報科学研究センター
Center for Spatial Information Science The University of Tokyo

Knowledge works & Field studies

Existing partners

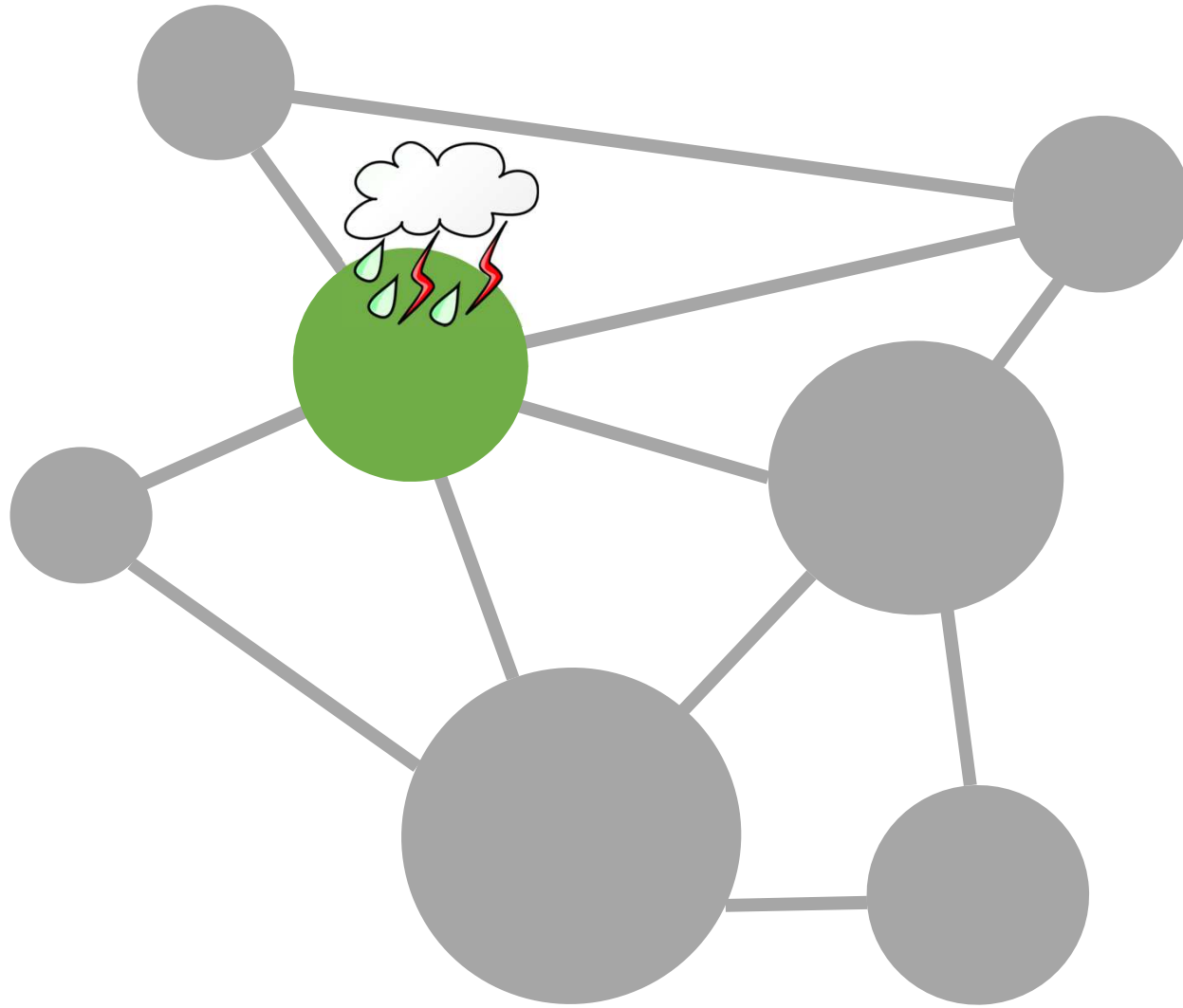
- Technology providers
 - Space agency
 - University
 - Research institute
 - Private company
- Technology users
 - Disaster management authorities
 - National government
 - International organization

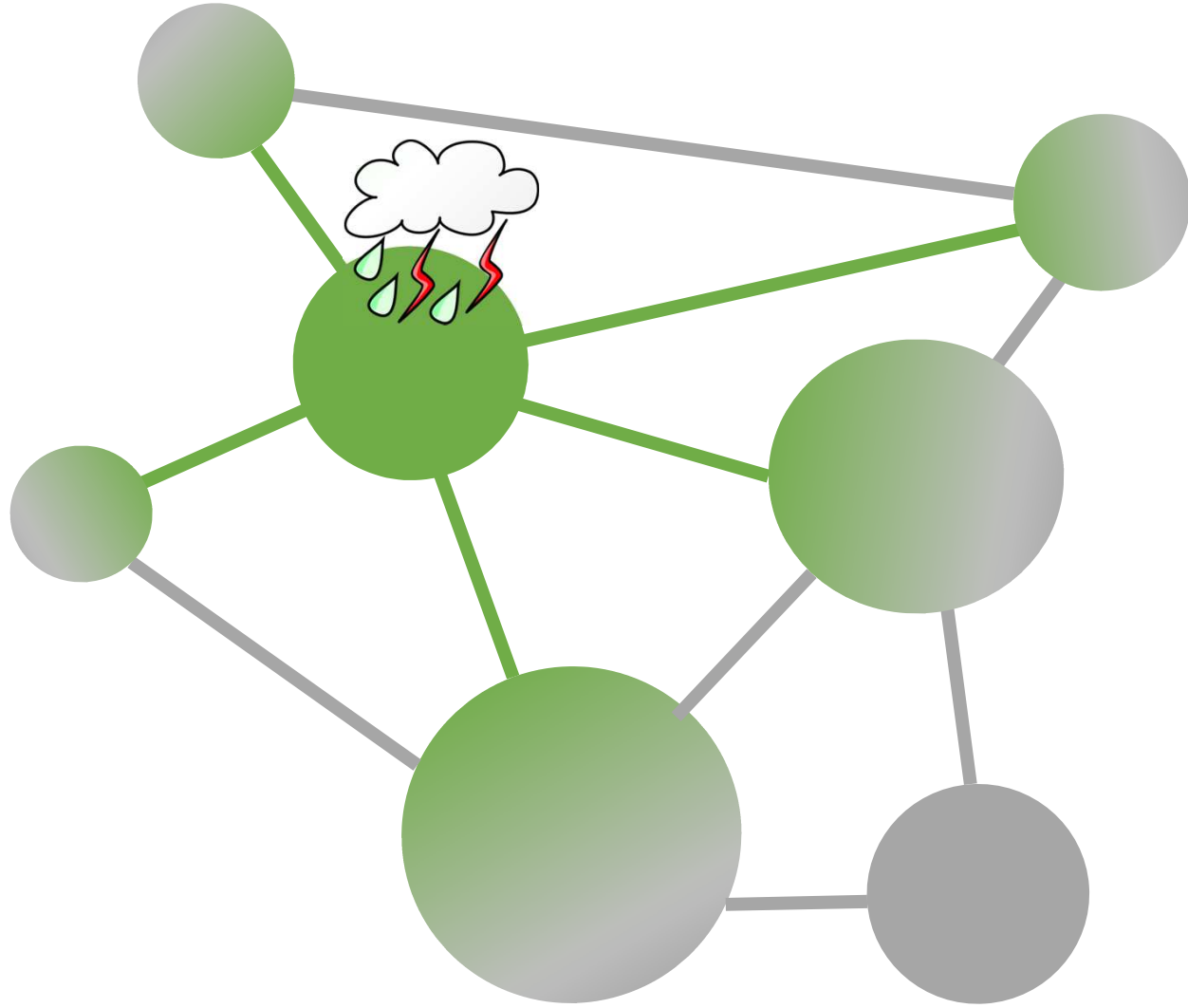
Potential (new) partners

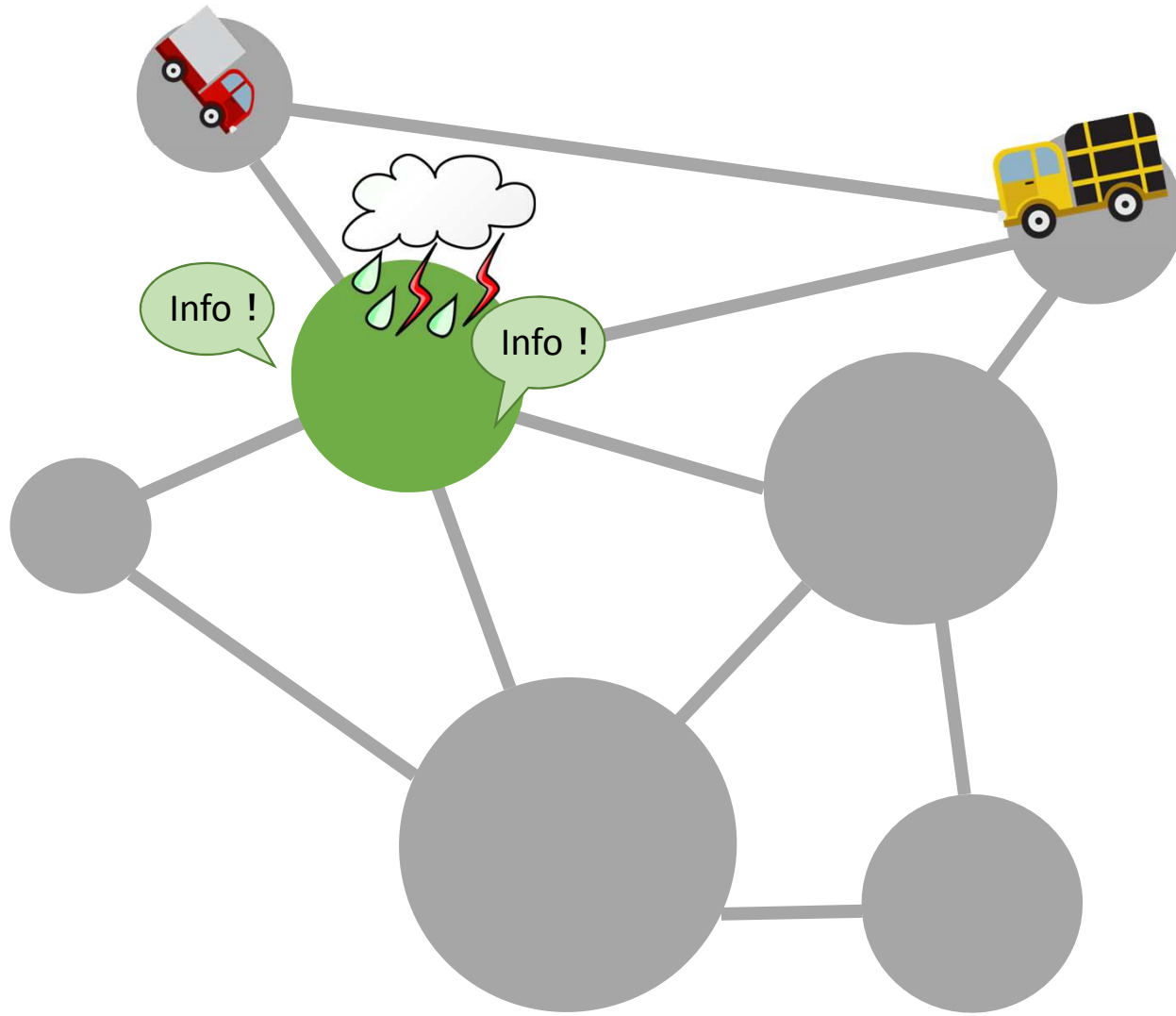
- Technology providers
 - Local university
 - Regional institute
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 - Local community
 - Private company
 - NGO

Why Disaster Risk Management?



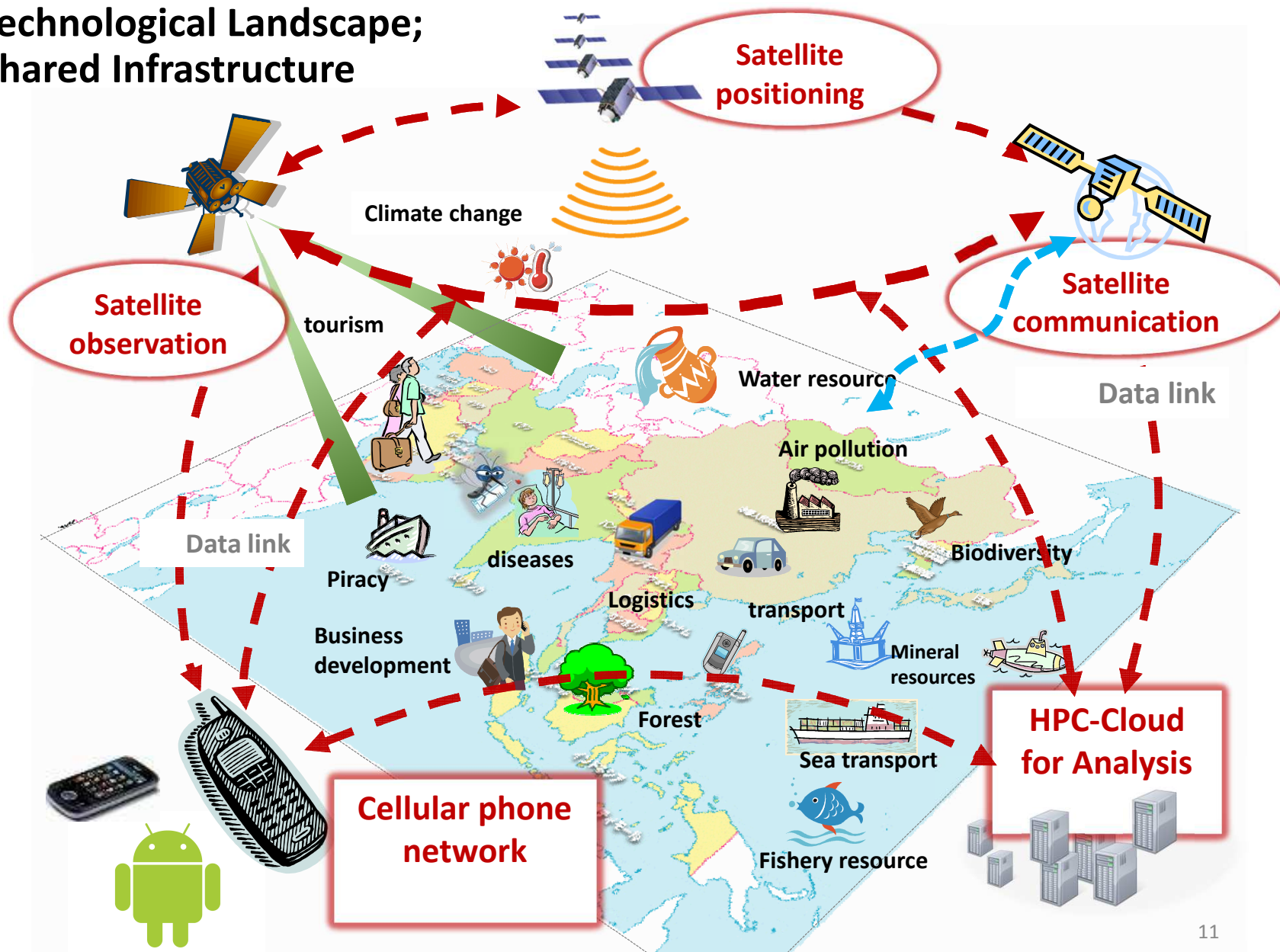






Why Space Technology?

Technological Landscape; Shared Infrastructure



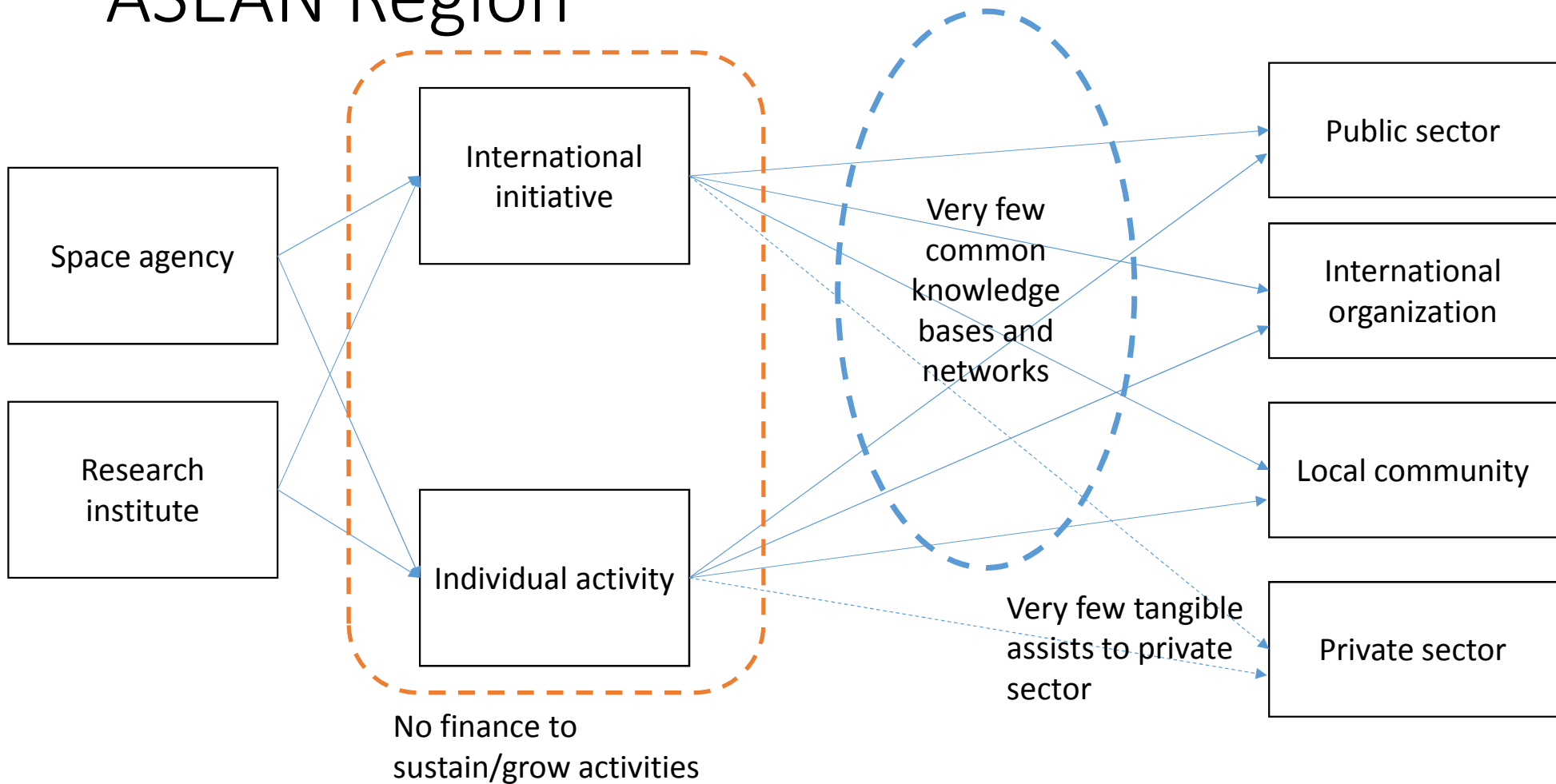
the One Space
beyond Borders.

How to Maximize it?

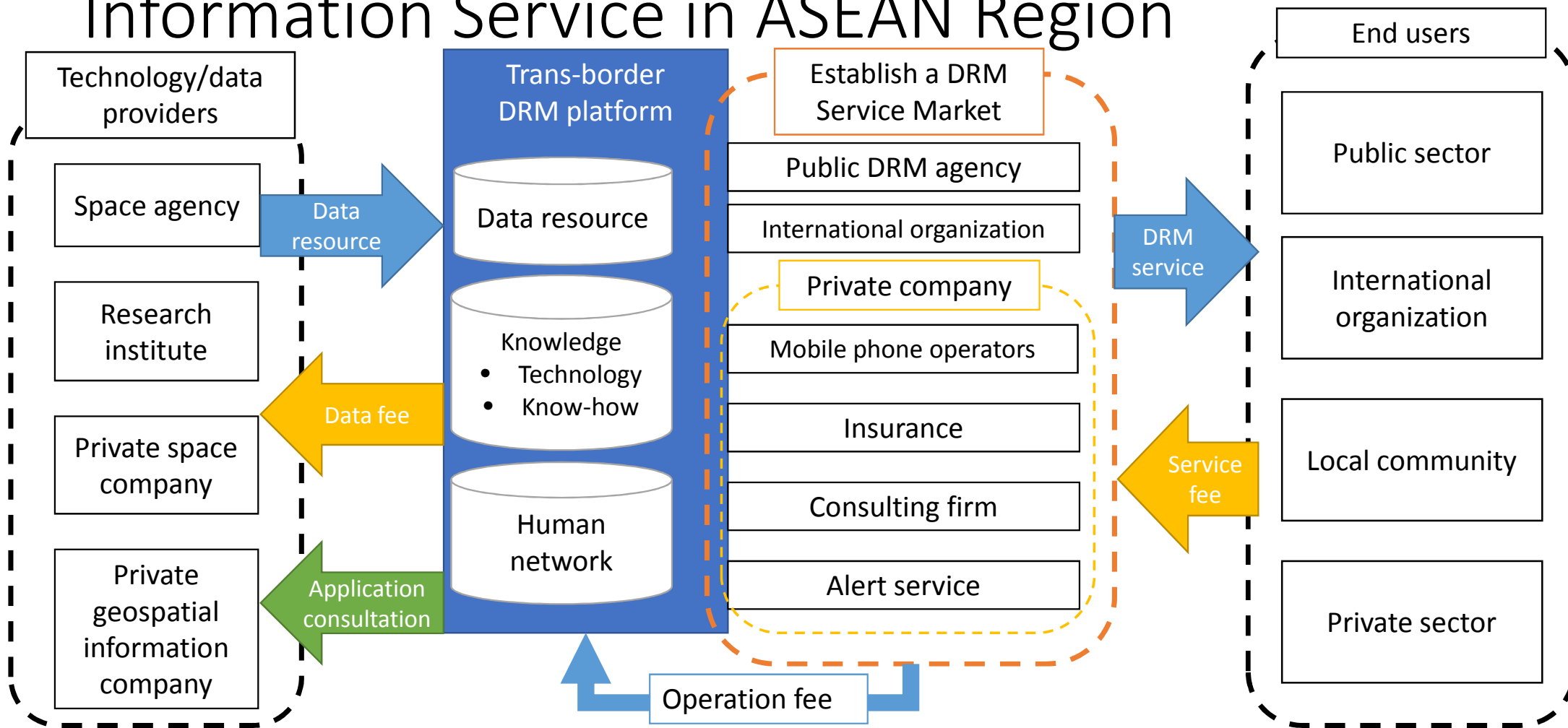
Developing sustainable collaboration model
for implementing integrated space-
based/geospatial disaster management
infrastructure to strengthen the resilience in
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Developing **sustainable collaboration** model
for implementing **integrated** space-
based/geospatial disaster management
infrastructure to strengthen the resilience in
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Current Status of DRM Information Service in ASEAN Region



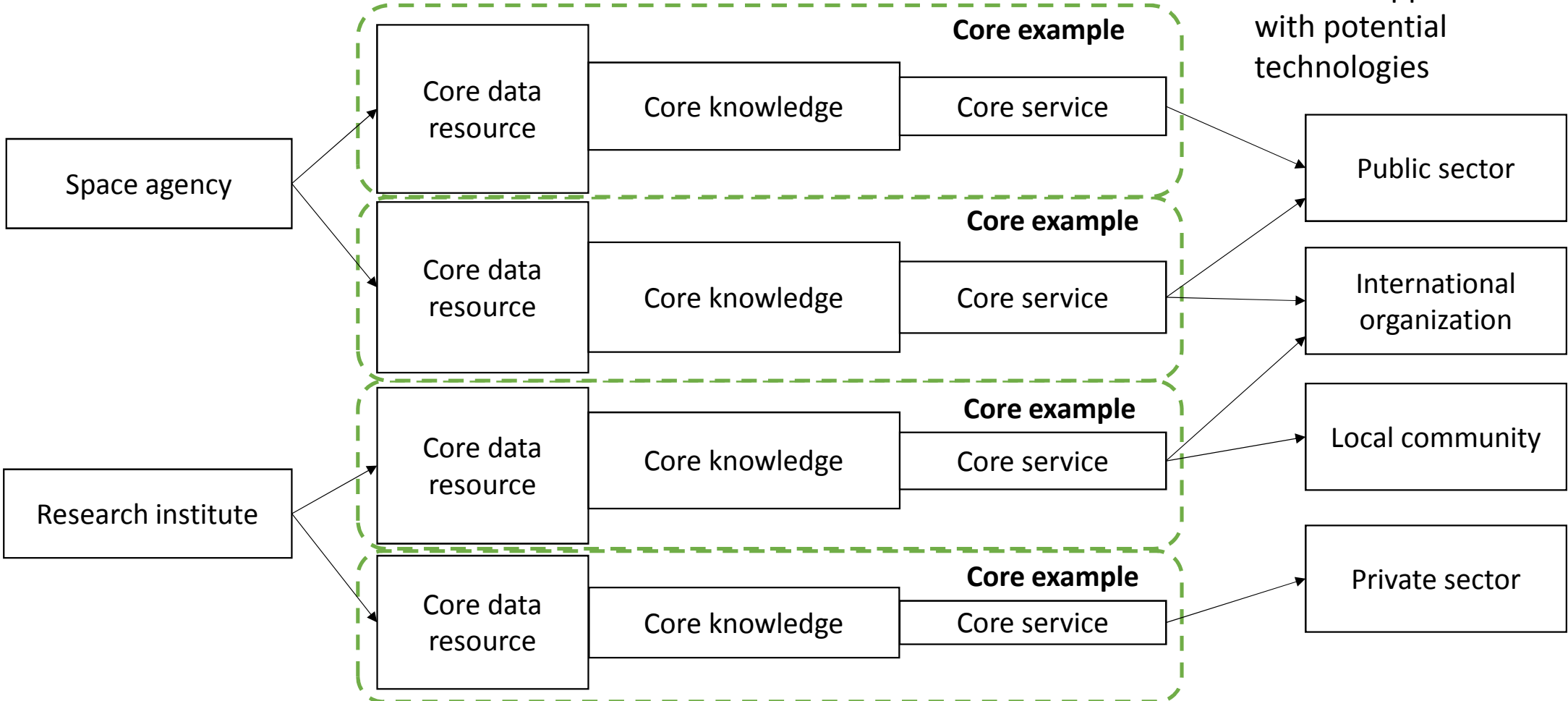
An Envisaged Sustainable Scheme of DRM Information Service in ASEAN Region



Phase 1—Collection of core examples

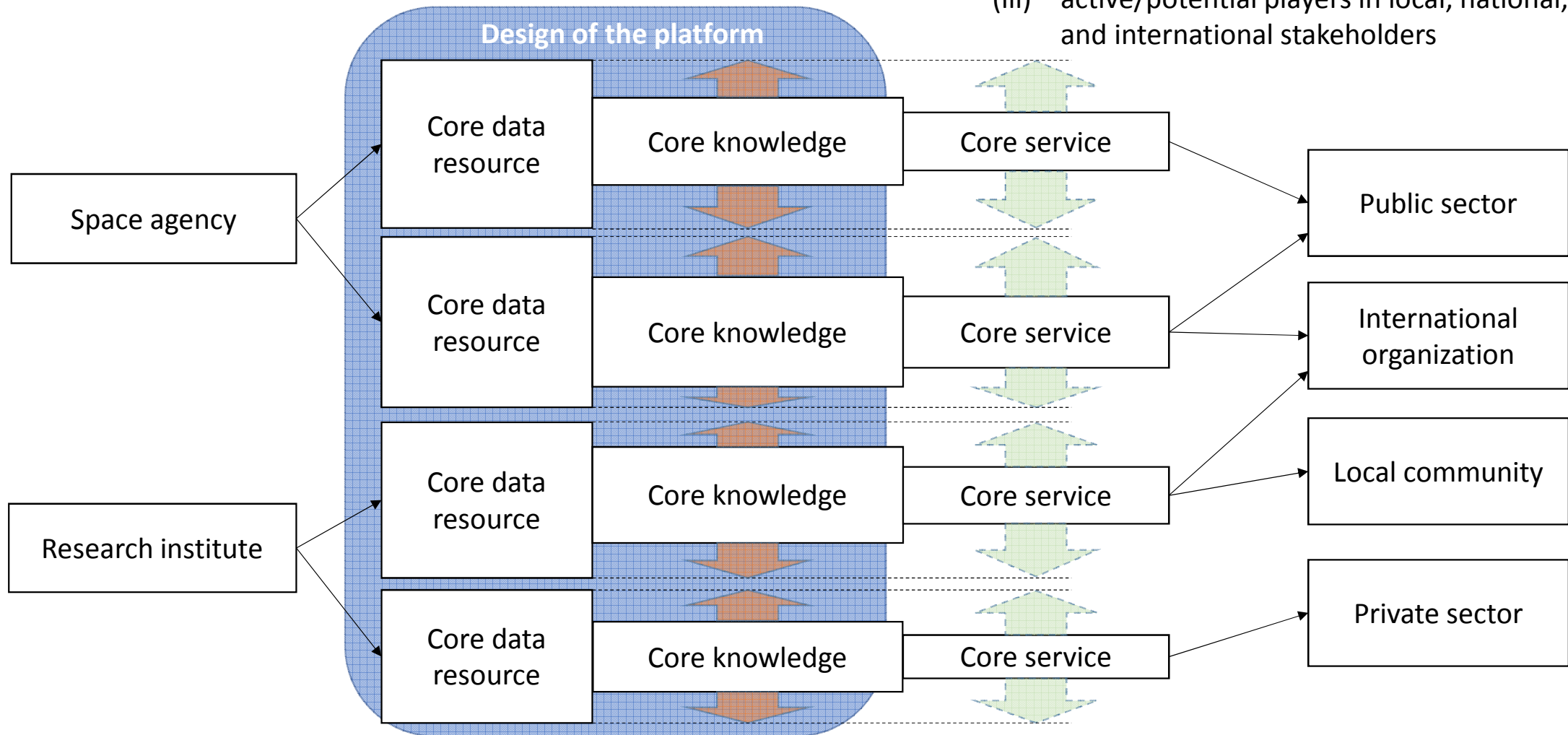
Collect and/or develop core examples, e.g.:

- Existing activity
- Feasible application with potential technologies

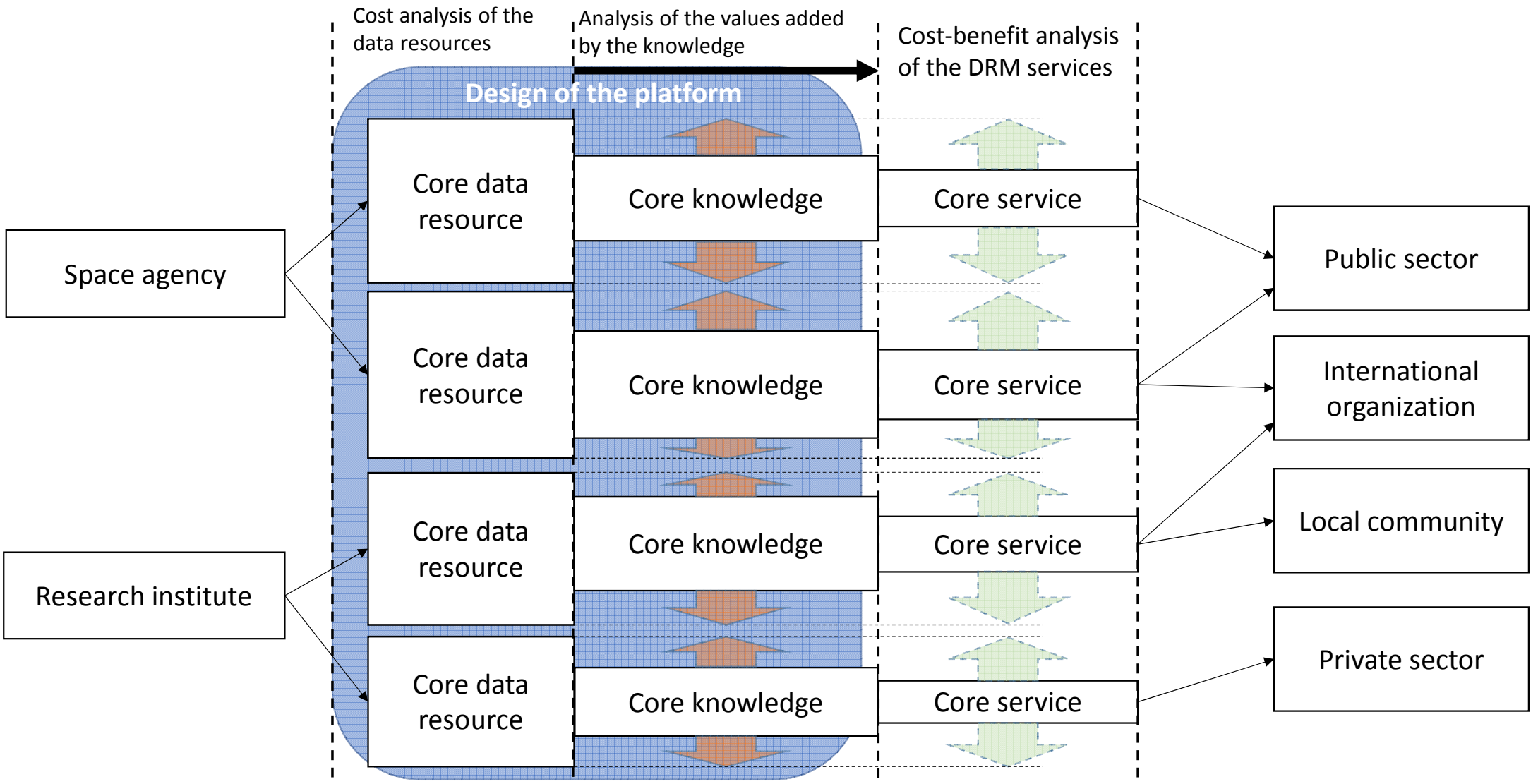


Phase 2—Design of the platform for maximizing applications

- Design the platform by identifying:
- (i) technical interoperability of the data resources and technology
 - (ii) partnerships with data providers, and
 - (iii) active/potential players in local, national, and international stakeholders

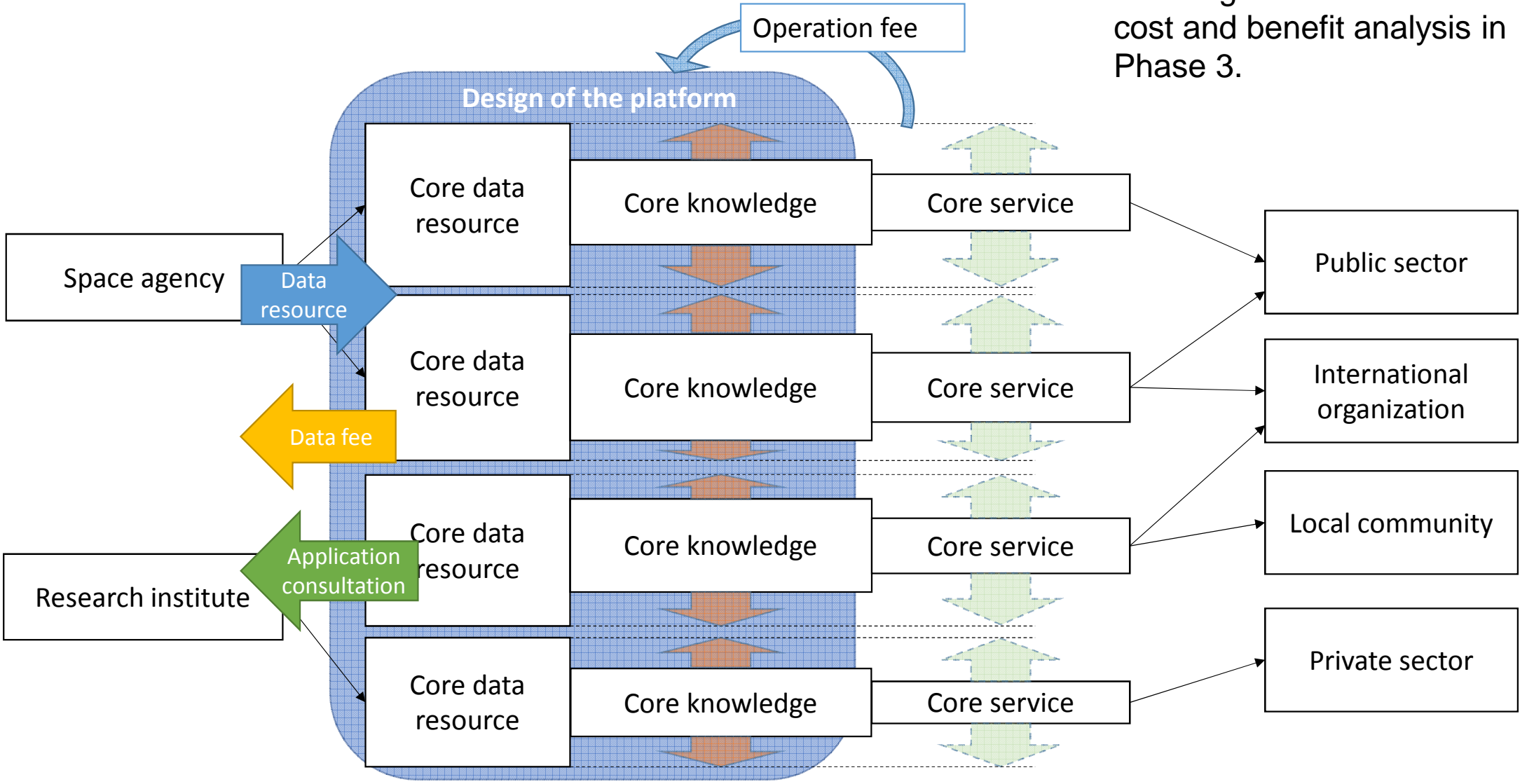


Phase 3—Financial analysis of the platform



Phase 4—Design of financial arrangement

Financial arrangements will be designed based on the cost and benefit analysis in Phase 3.



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Case Study— GNSS for Disaster Nursing

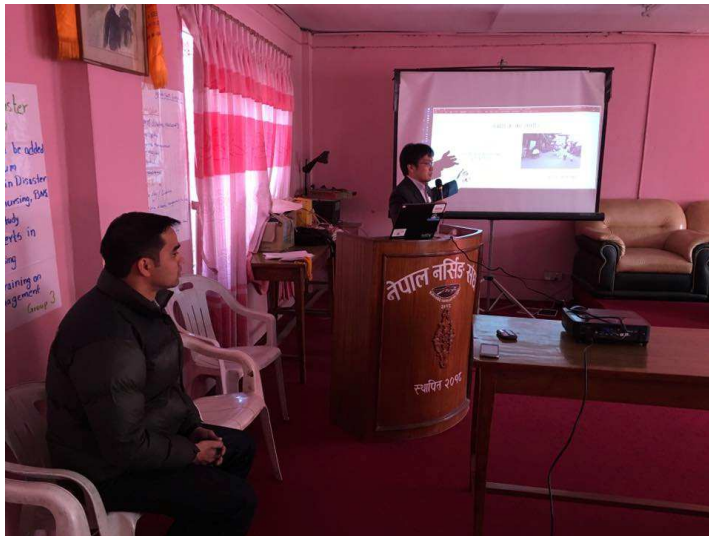
Definition of Disaster Nursing



“The systematic and flexible utilization of knowledge and skills specific to disaster-related nursing, and the promotion of a wide range of activities to **minimize the health hazards and life-threatening damage caused by disasters**, in collaboration with other specialized fields” (Japan Society for disaster Nursing, 2002)

A Workshop on Disaster Nursing

- 9-10 December 2016 (very fresh report!)
- @ Nursing Association of Nepal (10 min walking from here)



Help Each Other आपसी सहयोग

- Key Questions प्रमुख प्रश्नहरू

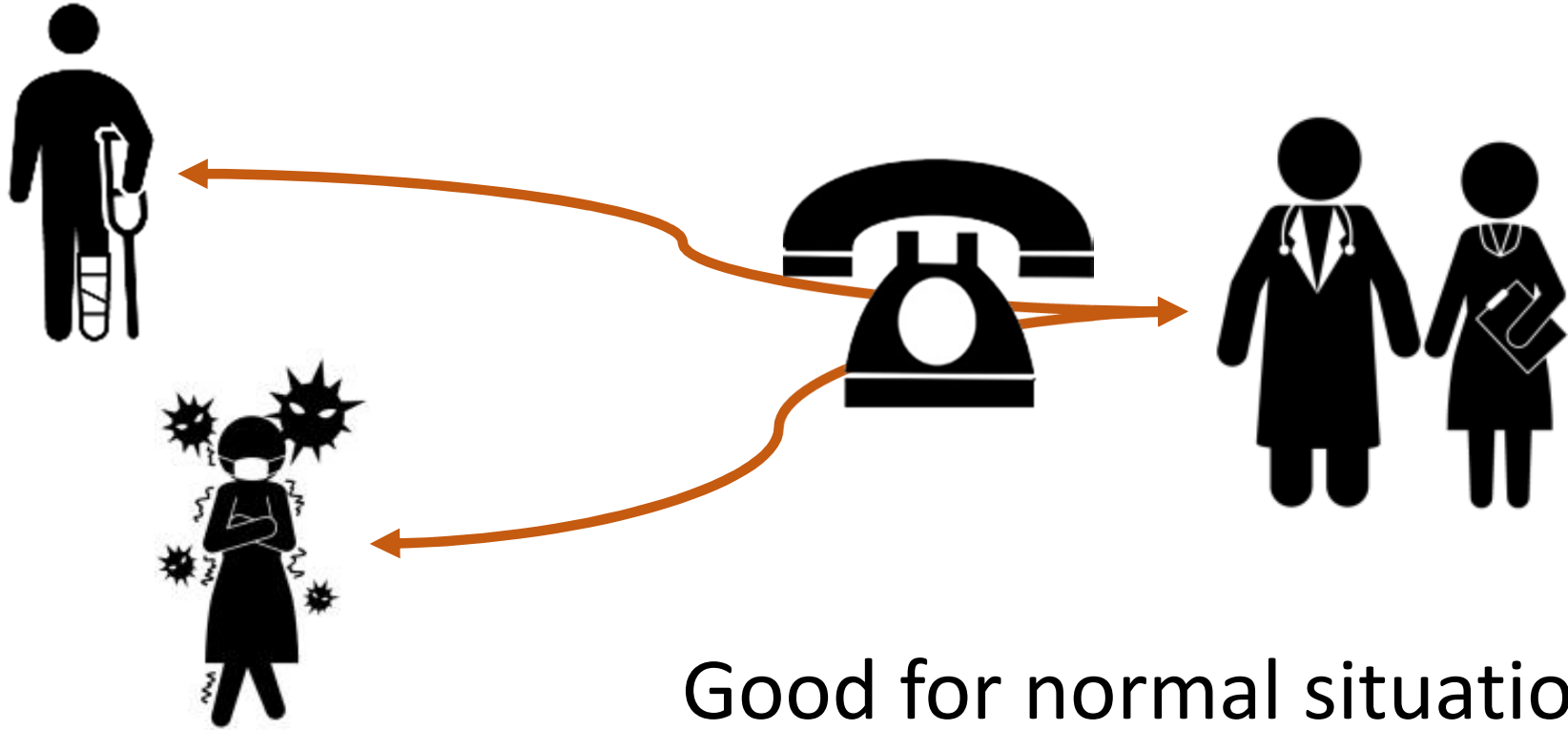
- Who need helps? Where?

सहयोग कसलाई र कहाँ चाहिएको छ?

- Who can help me? Where?

- मलाई कसले र कहाँ सहयोग गर्न सक्छ?

How to connect—Normal situations
सहज परिस्थितिमा कसरी सुचना आदानप्रदान गर्ने?



Good for normal situations
सहज परिस्थितिका लागि मात्र उपयुक्त

Why Maps? नक्शा के का लागी?

I went to Bhaktapur
for sightseeing.
म हिजो भक्तपुर घुम्न
गएको थिए



Ground view
जमिन सतह बाट

Why Maps? नक्शा के का लागि?

I went to Bhaktapur
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म हिजो भक्तपुर घुम्न
गएको थिएँ



Bird's view आकाश बाट

What information can photos and maps deliver? तस्बिर र नक्शाले कस्ता सुचना प्रवाह गर्छन्?

Photos—Ground view

तस्बिर - जमिन सतह बाट

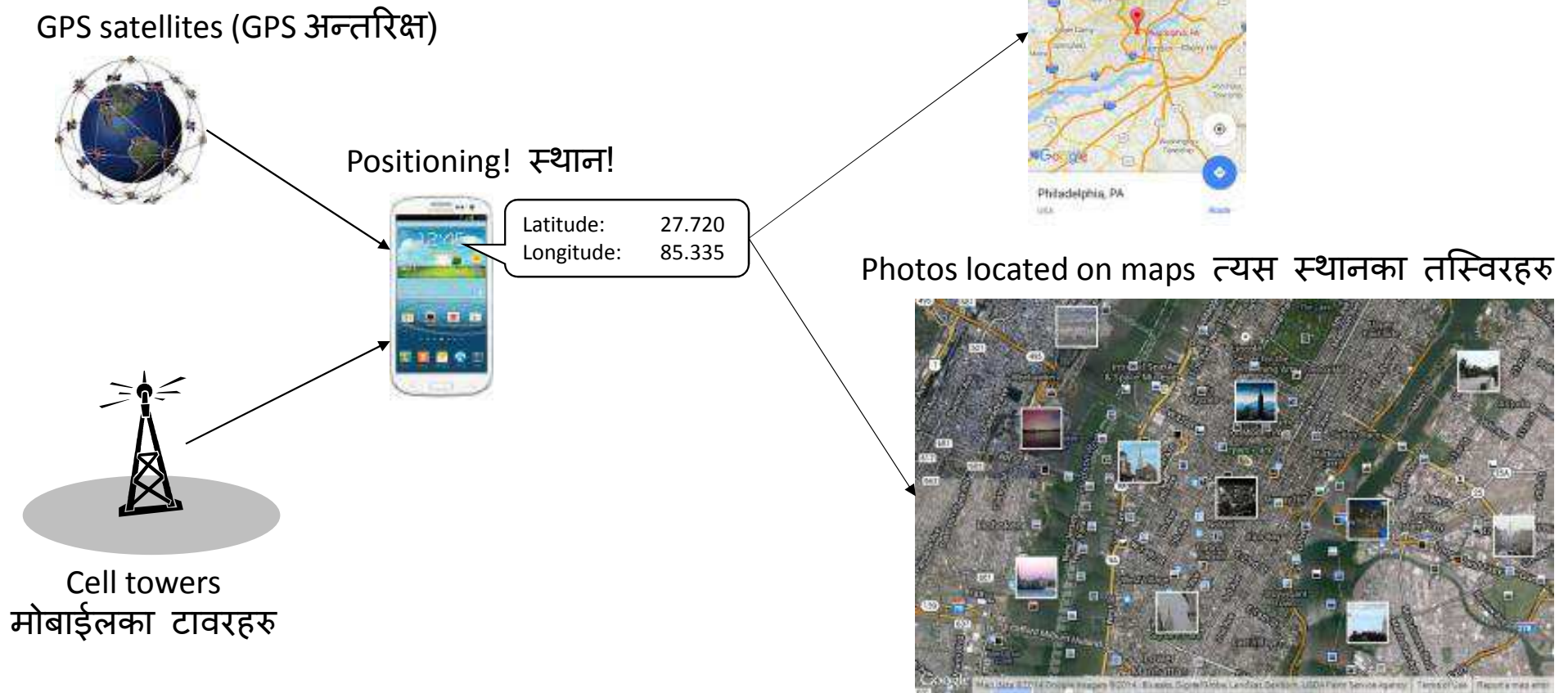
- Landscapes **at a place**
त्यस ठाउँको परिदृश्य
 - People's lives **at a place**
त्यहाँका मानिसको जिवन
 - Situations **at a place**
त्यस ठाउँको अवस्था
 - ...
- Detail-scale information
शुक्ष्म सुचना

Maps— Bird's view

नक्शा - आकाश बाट

- Distance **दुरी**
 - Size of cities and towns **आकार**
 - Geography **भुगोल**
 - ...
- Broad-scale information
विस्तृत सुचना

Supporting Technologies सहयोगी प्रविधिहरू —Smartphones स्मार्टफोनहरू



Supporting Technologies सहयोगी प्रविधिहरु

—Shared Platform on the Internet

- इन्टरनेटमा साझा मन्च

Internet

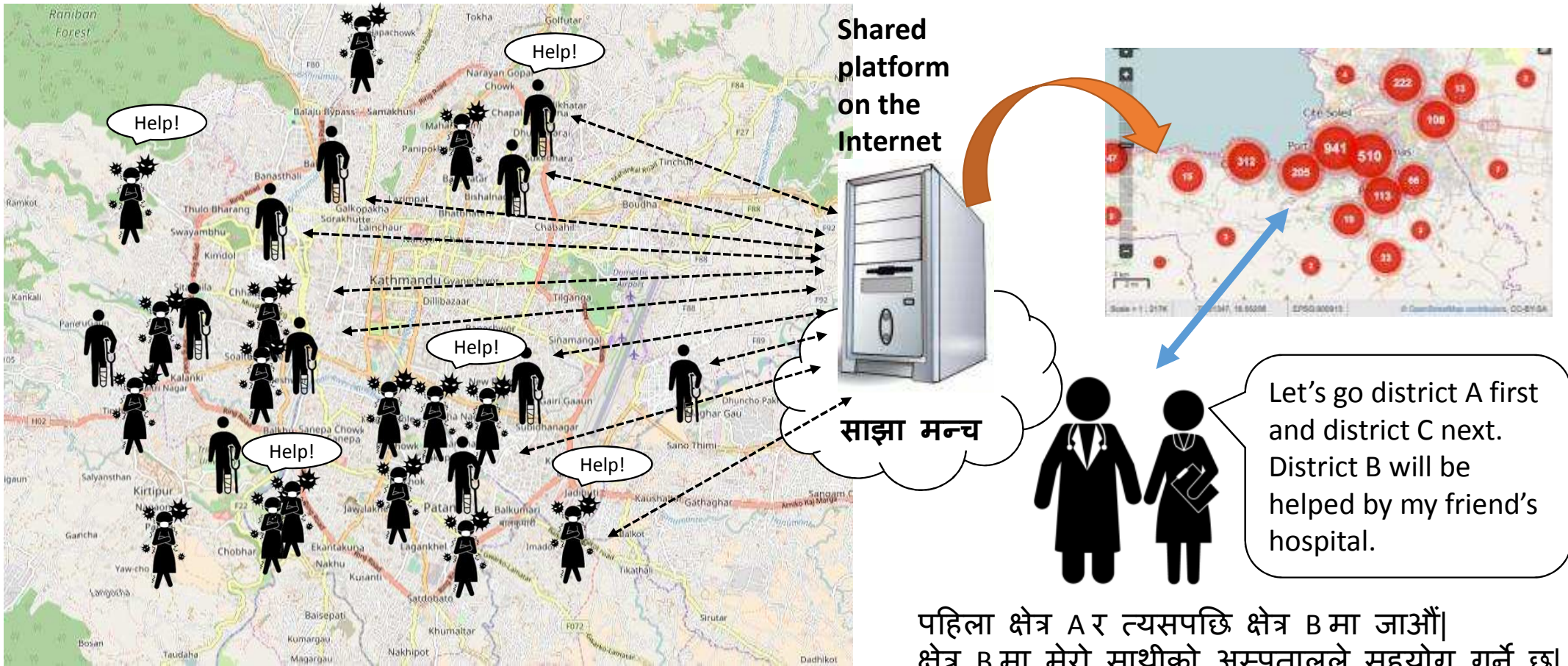


सबैजना र सबैस्थान बाट एकै ठाउँमा संकलित सुचना

Collected information from everyone and everywhere in a single place



Applications in Disaster Nursing बिपद नर्सिंग सेवामा यसको प्रयोग



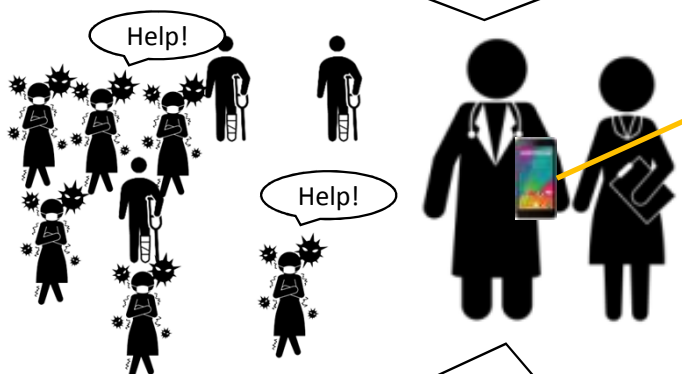
Demonstrations for Nurses in Nepal

- Recording POIs using smartphone map application “maps.me” and sharing KMZ file of POIs by email.
- Sharing POIs using Google’s “My Maps”

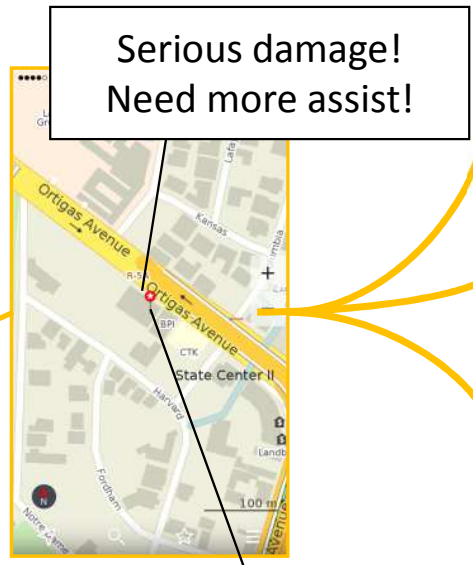
Collect and sharing POIs by maps.me.

Use case – simple dissemination उदाहरण – सरल प्रसार

We need much more support! I'm sharing this situation and location with my colleagues.



हामीलाई अझै धेरै सहयोग आवश्यक छ। यस स्थानको अवस्था बारे म मेरा साथीहरुलाई सुचना प्रेषित गर्छु।



गम्भीर क्षति!
अझै धेरै सहयोगको आवश्यकता!



Serious damage!
Need more assist!

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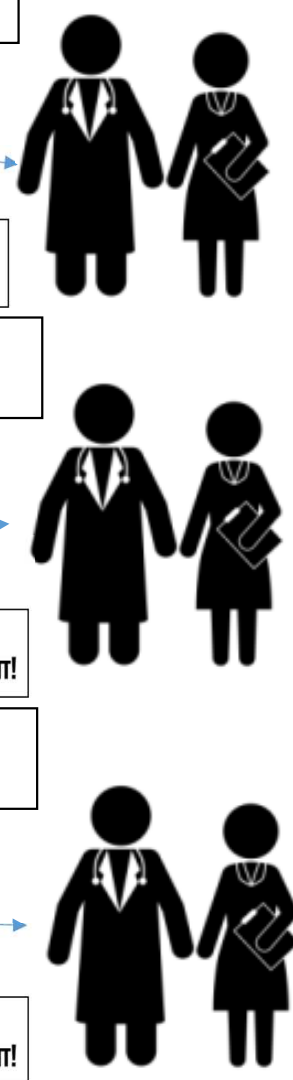
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Share places by Google's My Maps

The screenshot shows the Google My Maps interface. On the left, there is a sidebar with a map titled "2016-12-10 Demo" and a list of layers. The main map area shows a satellite view of a city with various markers. A red circle highlights the location pin icon in the top toolbar. A red arrow points from this icon to a location pin on the map. A pop-up window titled "Collapsed buiding" is open over the pin, containing the text "The building has been remained collapsed since April 2015." and "Save" and "Cancel" buttons. Three text boxes with a grid background provide instructions in Nepali: "Choose a place स्थान इंकित गर्नुहोस्", "Give name and descriptions त्यस स्थानको नाम र अन्य सुचना राख्नुहोस्", and "Save in the shared map अन्त्यमा सेयर्ड म्यापमा सेभ गर्नुहोस्".

Choose a place
स्थान इंकित गर्नुहोस्

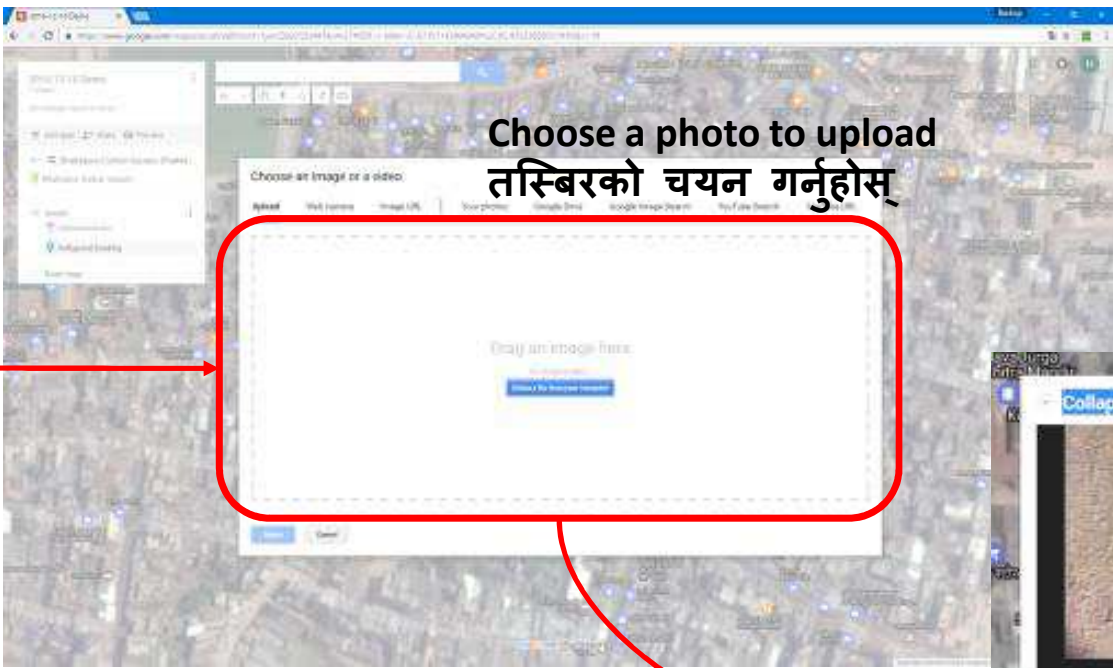
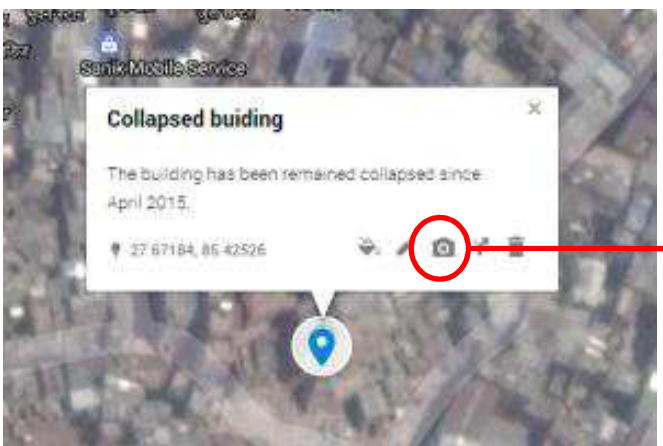
Give name and descriptions
त्यस स्थानको नाम र अन्य सुचना राख्नुहोस्

Save in the shared map
अन्त्यमा सेयर्ड म्यापमा सेभ गर्नुहोस्

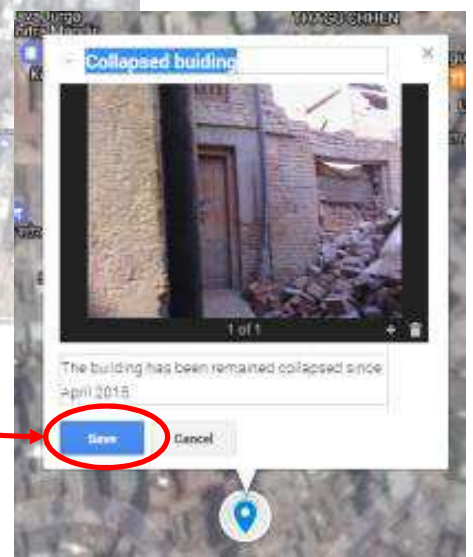
Add places of your issues
सरोकारका स्थान थप्नुहोस

Share places by Google's My Maps

Add photos of the place त्यस स्थानका तस्बिर हरु थप्नुहोस



Save सेभ



Key Findings from the workshop

- Simple steps on smartphones are needed.
- Internet-dependency is a key issue.
 - Satellite communications should be alternative in disaster situations.
- Expected solutions - Automation for no extra works
 - Automated positioning by embedded GNSS
 - Automated image recognitions by machine learning
 - Authentication by ID/license cards
 - Symptom diagnostic
 - Damage assessment from automated snapshots
- **Potential collaborations with development financing agencies in women empowerment.**

Concluding remarks

- The Economic Research Institute (ERIA) conducts a study project on sustainable schemes of applications of space technology and geospatial technology for disaster risk management in AESAN states.
- Studies on potential applications for core examples that extensible to other regions and courtiers are ongoing.
- Disaster nursing in Nepal is a potential applications for the scheme because of its feasibility owing to established GNSS and cloud services.

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