

# Disaster Mitigation Competence Centre

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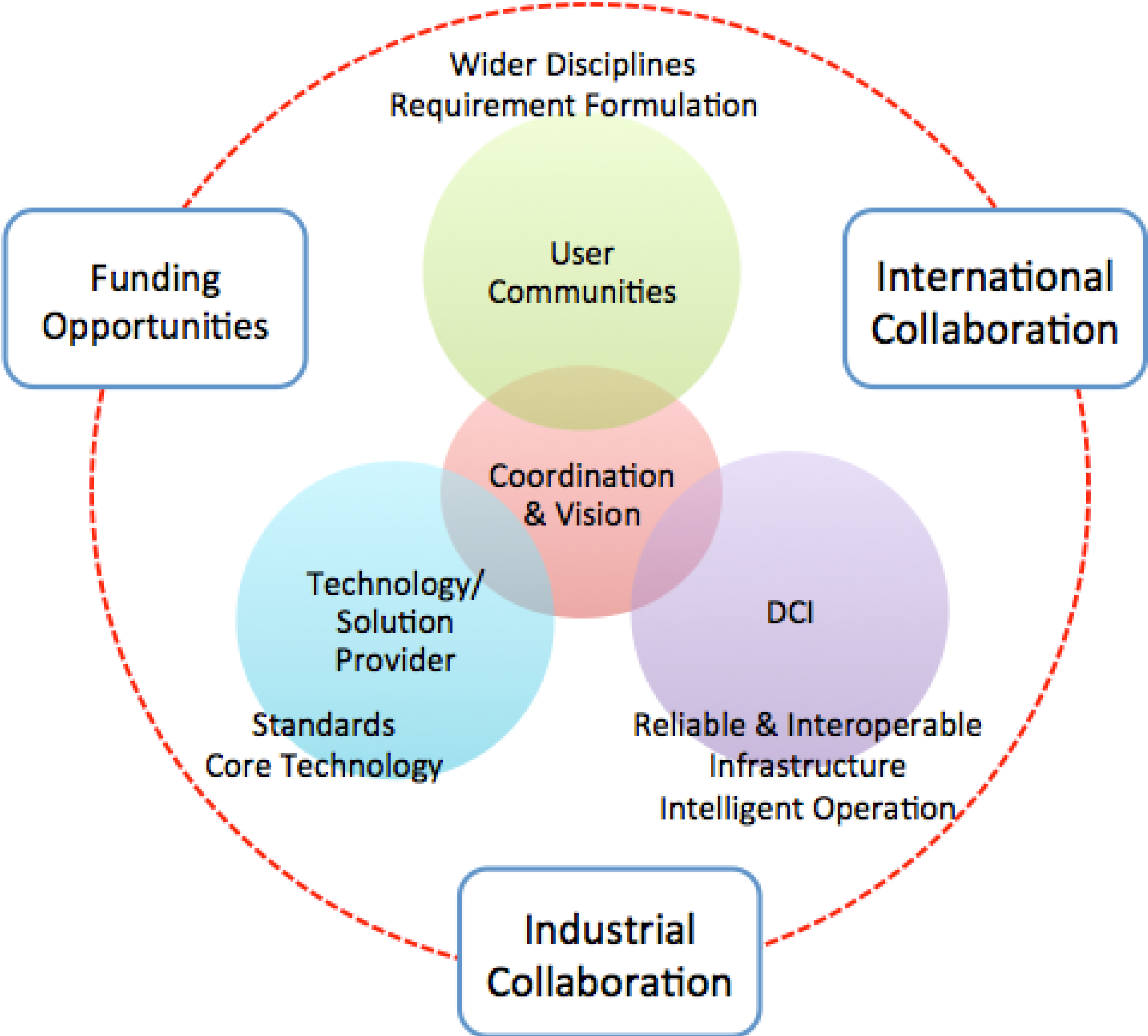
Academia Sinica Grid Computing Centre

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# We are NOT new to work on Disaster Mitigation Together

- Fighting for endemic disease (Avian Flu and Dengue Fever) by Drug Discovery System over the Grid from 2006.
- Building up regional seismic sensor network and faster seismic wave propagation simulation and early warning by e-Science from 2007.
- Publish the first version web portal of weather simulation for typhoon and extreme weather simulation in 2010.
- Open the first version of tsunami simulation web portal with 30 times performance improvements in 2011.
- Tsunami inversion, environmental changes and QCN earthquake sensor networking, etc. are all undergoing and integrated with EGI infrastructure.
- Regional collaborations over APGI keep going on from EGEE, EUAsiaGrid, and EGI-Inspire, and onward.

# Sustainability Model



# Asia Pacific CC

## e-Science for Disaster Mitigation

- Objective of the APCC initiative is to understand deeper and mitigate multi-hazards via e-Science collaboration in the EGI-Engage project.
- APCC is creating an innovative value chain to alleviate the impacts of natural disasters.
  - Multi-disciplinary, Complex disasters, Cross administrative boundaries
  - Observation+Theory —> Discovery —> Modeling —> Analysis & Simulation —> (Loop back and) Early Warning & Mitigation Planning
- Through the e-Infrastructure and collaboration framework, the sharing of data, services, applications and knowledge shortens the capacity gaps among the partners.

# APCC Participants

- 9 Institutes in 6 Countries + 2 European Partners (Associate)
- Leading Partner: TW (Academia Sinica) - 50PM
  - Academia Sinica Grid Computing Centre (ASGC), Institute of Earth Science, Research Centre of Environmental Changes, National Central University
- ID: Institut Teknologi Bandung (ITB) - 4 PM
- KR: Korean Institute of Science and Technology Information (KISTI) - 1 PM
- MY: Universiti Putra Malaysia (UPM) - 1 PM
- PH: Advanced Science and Technology Institute (ASTI) - 2 PM
- TH: Thailand National Electronics and Computer Technology Centre (NECTEC): 2 PM
- DE: Leibniz Supercomputing Centre (LSC) - Associate
- UK: University of St. Andrews (UStA) - Associate

# Roles and Contributions

Topics X Roles in PMs		Leadin g Partner	User Community	Technology Provider	Service Provider	
User Support & Training		ASGC	ID(1), KR(0.5), PH(0.5), TH(0.5), TW(4)			6.5
Disaster Mitigation	Earthquake & Tsunami	ASGC	ID(2), PH(1), TW(9)	TW(8), DE(1)	PH(0.5), TW(1)	22.5
	Typhoon, Storm Surge and Extreme Weather	ASGC	ID(1), TW(7)	TW(6), DE(1), UK	TW(1)	18
	Aerosols Trans. and Urban Heat Island	ASGC	TW(7)	TW(6)	KR(0.5), MY(1), TH(1.5), TW(1)	17
			27	24	6.5	64



# Schedule and Deliverables

- APCC will be the incubation and support center for the regional sustainability development by the EGI-based infrastructure and collaborations in the long run. Outcomes of this project could be accumulated and support much complicated scenarios in the future. The created value chain to alleviate the disasters has never happened in this region.
- Deliverables
  - PM 9: Provide tsunami wave propagation simulation web portal to the public.
  - PM 14: Release prototype of WRF-based weather simulation web portal.
  - PM 19: Finish two high risk tsunami subduction zones scenario analysis in Asia Pacific region
  - PM 24: Depending on the data collected, one of the two alternatives will be delivered.
    - Release the prototype of WRF-Noah-UCM on UHI simulation of a city in a partner country;
    - Apply WRF/chem tracer modelling study to demonstrate the biomass-burning transport mechanism and its impact on air quality.
  - PM 29: Finish the design larger scale multi-hazards simulation attempting to reduce the uncertainty of climate change assessment.



# e-Science for the Masses (People)

- Earthquake, Tsunami, Typhoon, Flood, Pandemic are regional issues and cannot be dealt with by individual countries alone
- Based on the science and analytics, loss from natural disasters could be significantly alleviated
- Bottom-up approach enables unprecedented collaboration which may provide opportunities to leapfrog for the academia communities in Asia
- Interdisciplinary nature will lead to new scientific findings of disaster mitigation
- With BigData Analytics and PaaS over the DCI, detailed, quantitative scientific understandings are becoming possible



# Disaster mitigation CC

[https://wiki.egi.eu/wiki/CC-Disaster\\_Mitigation](https://wiki.egi.eu/wiki/CC-Disaster_Mitigation)



- Socio:
  - Mitigate multi-hazards that affect Asia by shortening the time to respond to natural disasters (e.g. earthquakes, tsunamis, typhoons)
- Scientific:
  - Gain a deeper understanding of serious natural disasters via data-intensive, e-Science techniques and collaborations
- E-infrastructure:
  - Create virtual research environments with embedded services and simulations that enable the sharing of disaster-related data, tools, applications and knowledge

1. M14 - D6.9 Web portals for tsunami wave propagation simulations and for WRF-based weather simulation (OTHER)
2. M24 – D6.20 Application of the simulation portals for scientific scenario in disaster mitigation (DEM)
3. M29 – D6.22 Design larger scale multi-hazards simulation attempting to reduce the uncertainty of climate change assessment (DEM)

## + Internal milestones, such as

- **Requirements and specification** of tsunami wave propagation and weather simulation portals (DOC), ~M6
- **Requirements and specification** of disaster mitigation portals (DOC), ~M12

- **CC-specific e-mail list:**
  - [CC-disastermitigation@mailman.egi.eu](mailto:CC-disastermitigation@mailman.egi.eu)
- **Wiki based workspace:**
  - [https://wiki.egi.eu/wiki/EGI-Engage:Competence\\_centre\\_Disaster\\_Mitigation](https://wiki.egi.eu/wiki/EGI-Engage:Competence_centre_Disaster_Mitigation)
- **Webex teleconference system:**
  - <http://egi.webex.com>
  - (Booking information available for CC-coordinators)
- **Indico meeting planner:**
  - <https://indico.egi.eu/indico/categoryDisplay.py?categId=147>
- **Document Database:**
  - <http://documents.egi.eu>

## Plus:

- Introductory training webinars about EGI Solutions: Cloud, Data, AAI
  - Approx. end of March, Early April

1. Populate email list
  - Eric/Vicky at <http://egi.eu/sso>
2. Establish teleconferences on a regular basis
  - Can use Webex for this ([egi.webex.com](http://egi.webex.com))
3. Preparation of a refined workplan
  - Present and discuss this with the EGI community in May at the EGI Conference
4. Seek for partnership with related initiatives
  - In EU (H2020), Asia, US

Ask for support from the EGI.eu User Community Support Team! ([ucst@egi.eu](mailto:ucst@egi.eu))

# To Do List

- Confirm the regular CC meeting schedule and establish the communication framework.
- Identify the roles of each partners to achieve the deliverables
- Target on at least one complex-disaster scenario and simulate its potential impacts by our system.
  - Engage more user communities
- Report at the EGI Conference in May 2015.

# Conclusion on March 16

- Revise the first deliverables to be on M12
  - M12 - D6.9 Web portals for tsunami wave propagation simulations and for WRF-based weather simulation (OTHER)
- Each partner has to confirm his contributions and role to achieve the deliverable.
  - We need every partner to present their plan for the first M12 deliverable at the next CC meeting (should be in early April)