

# ASEAN Forum for Software Defined System on Disaster Mitigation and Smart Cities

Project Status Updates  
ASEAN IVO Forum 2016

25 November 2016, Hanoi, Vietnam



# Outline

- Project Background
- Project Activities for Year 1
- Focus Areas in Year 1
  - Visualization of Distributed Environmental Data
  - SDN-IP Peering for IoTs Data Transmission (Resilient Transnational Network with SDN-IP)
  - SDN/NFV Infrastructure for Disaster Mitigation and Smart Cities

# Software Defined System on Disaster Mitigation and Smart Cities

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**Goals:** This project addresses the impact of climate change on cities and urbanization, with particular relevance to the priority area of improving environmental resilience and more specifically in disaster mitigation.

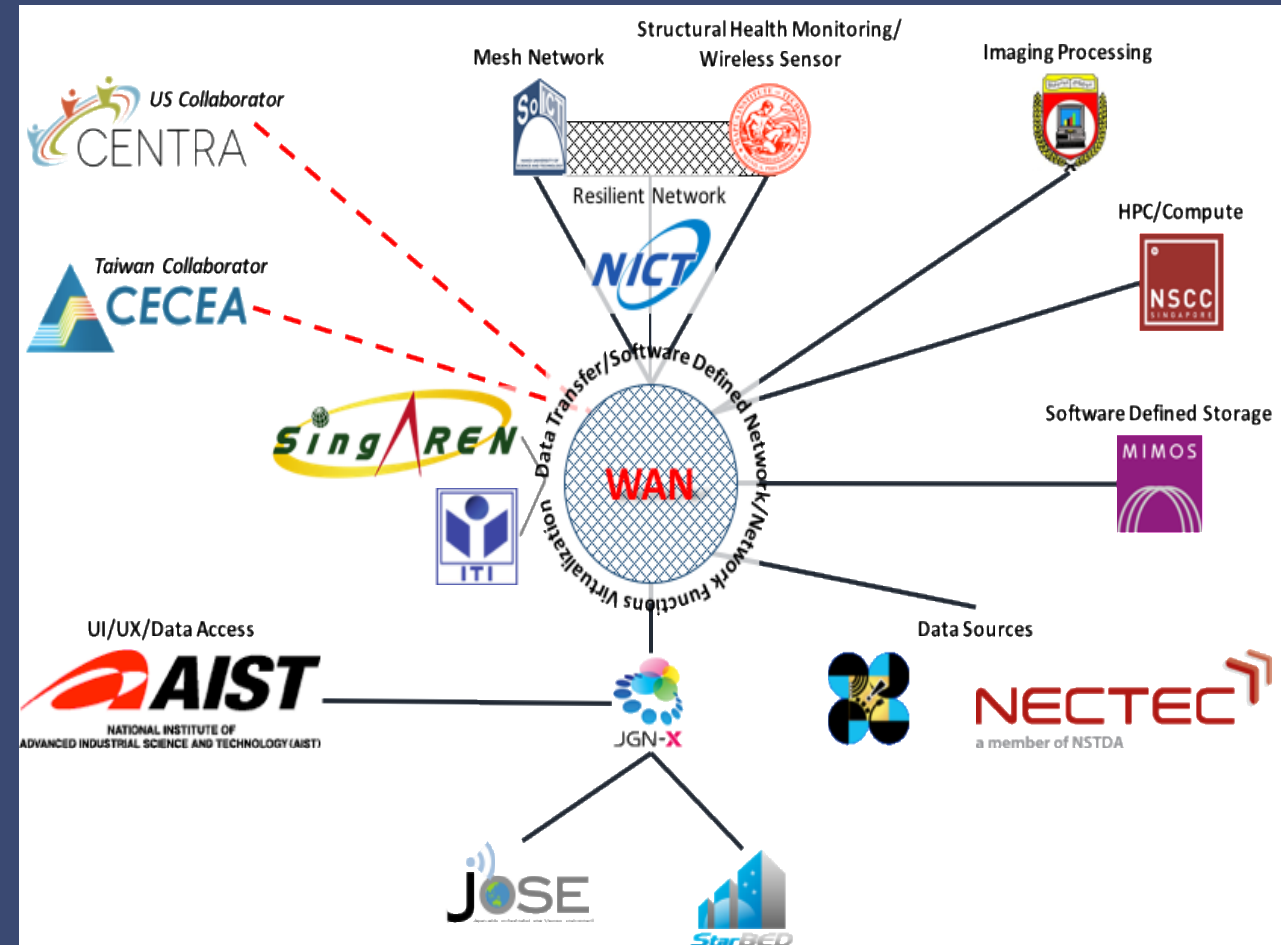
**Activities:**

- Develop a **Software Defined System architecture blueprint** for disaster mitigation, crisis communication, and emergency management that can monitor and report disaster events in near-real-time.
- Investigate **programmability aspects** of IoTs technologies, networking, and edge/cloud computing platforms.
- Conduct **field testing of potential use cases** using NICT's existing testbeds such as JGN-X, Starbed, and JOSE.
- Organize workshops with ASEAN members to **disseminate R&D results**.
- Dialogue with PRAGMA (NSF, US), CENTRA (NSF, US), and CECEA (Taiwan) on similar R&D challenges to accelerate project activities.

# Software Defined System on Disaster Mitigation and Smart Cities

	Member	Affiliate Institution	Country
1	Jason HAGA	AIST	Japan
2	Eiji Kawai	NICT	Japan
3	Hiroshi Kumagai	NICT	Japan
4	Hong H. ONG	MIMOS	Malaysia*
5	Jing Yuan LUKE	MIMOS	Malaysia
6	Myint Myint SEIN	University of Computer Studies, Yangon	Myanmar
7	Alejandro H. Ballado Jr.	Mapua Institute of Technology	Philippines
8	Jelina Tanya H. Tetangco	ASTI	Philippines
9	Bu Sung LEE	SINGAREN	Singapore
10	Kanokvate Tungpimolrut	NECTEC	Thailand
11	Hong Son NGO	Hanoi University of Science and Technology	Vietnam
12	Van Dzung DINH	Vietnam National University (Hanoi)	Vietnam

Project Partners  
(7 countries, 10 institutions)



Project Partners Work Areas

# Project Activities for Year 1



# 1<sup>st</sup> Project Meeting @ PRAGMA 31, Bangkok (September 2016)

- 3 Keynotes

- Dr. Chen – Academia Sinica
- Prof. Jose – CENTRA
- Dr. Lin - CECEA

- 1 Workshop

- AirBox hands-on



- 3 work areas defined

- WP1: Visualization of Distributed Environmental Data
- WP2: SDN-IP Peering for IoTs Data Transmission (Resilient Transnational Network with SDN-IP)
- WP3: SDN/NFV Infrastructure for Disaster Mitigation and Smart Cities

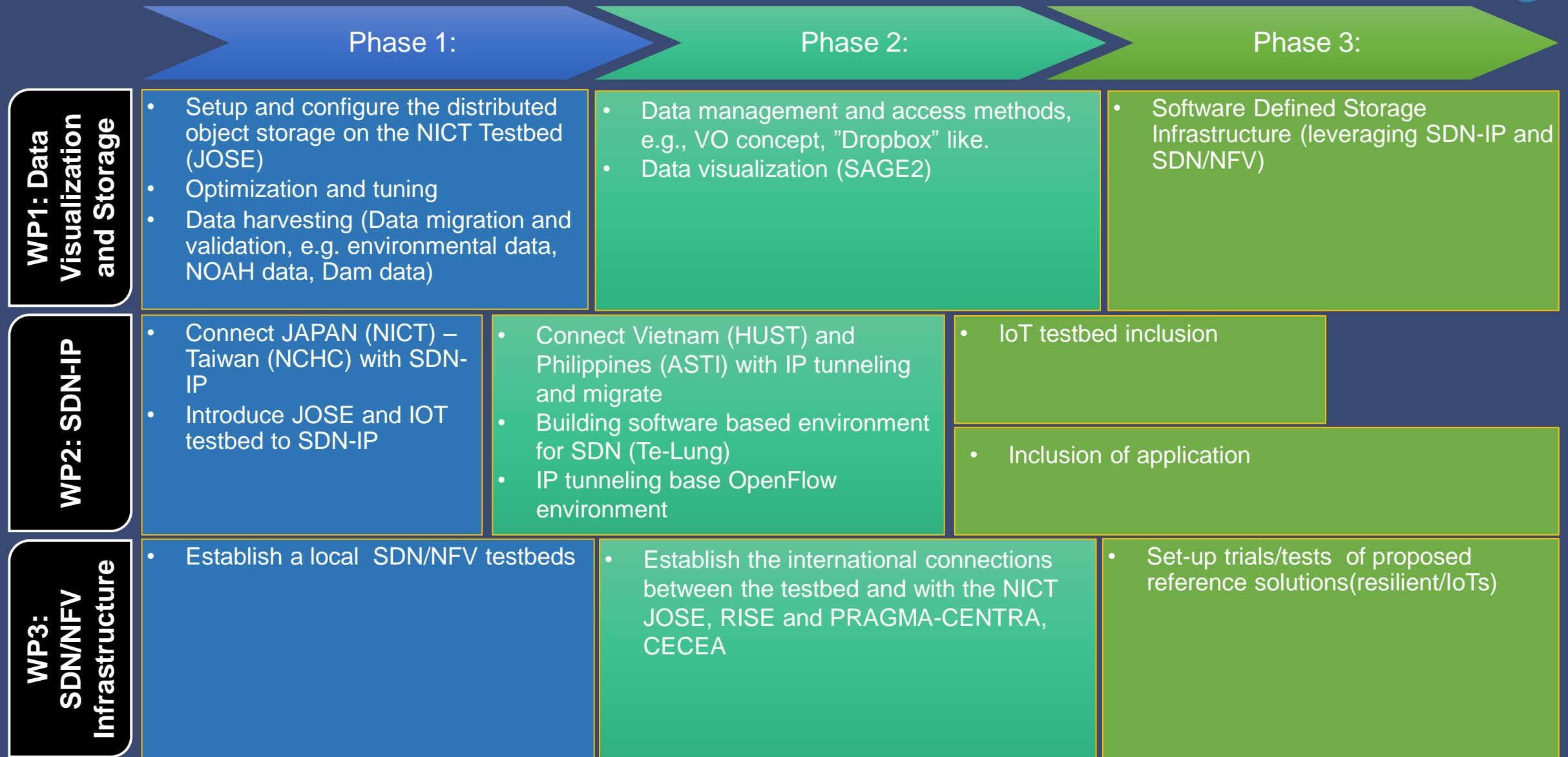


# Software Defined System on Disaster Mitigation and Smart Cities

	WP1: Visualization of Distributed Environmental Data	WP2: SDN-IP Peering for IoTs Data Transmission	WP3: SDN/NFV Infrastructure
Objectives	<ul style="list-style-type: none"> <li>To create reliable software defined distributed storage platform for seamless access and visualization</li> </ul>	<ul style="list-style-type: none"> <li>To federate IP networks with SDN-IP for resilient and effective infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>To build a ASEAN SDN/NFV Testbed (Philippines, Vietnam, Myanmar, Japan, Taiwan)</li> </ul>
Problems to be solved	<ul style="list-style-type: none"> <li>To ensure consistent access to environmental data</li> <li>To ensure data resiliency</li> <li>To facilitate data discovery</li> <li>To address data security</li> <li>To enable ease and standard visualization</li> </ul>	<ul style="list-style-type: none"> <li>Interconnection through legacy internet by IP tunneling</li> <li>Migration to native SDN connection (work with POC for SDN/IP (performance, feasibility)</li> <li>Integration with access network such as Free space optics</li> <li>Automatic configuration of test environment on PRAGMA-ENT</li> </ul>	<ul style="list-style-type: none"> <li>Reliable/resilient network</li> <li>IoT enabled transport system (environmental sensors and gateways/MQTT broker)</li> <li>Case study 1: Early Warning Systems (e.g. flood, typhoon, earthquake monitoring)</li> <li>Case study 2: Smart Environment</li> </ul>
Team members	<ul style="list-style-type: none"> <li>ASTI (Data resource, Data Management)</li> <li>MIMOS (Distributed Object Storage)</li> <li>AIST (Data Visualization)</li> <li>NECTEC (Data resource)</li> <li>NICT (Testbed, SDN, NFV)</li> </ul>	<ul style="list-style-type: none"> <li>HUST</li> <li>NICT</li> <li>ASTI</li> <li>NECTEC</li> <li>SINGAREN</li> </ul>	<ul style="list-style-type: none"> <li>VNU</li> <li>HUST</li> <li>MAPUA</li> <li>UCSY</li> <li>NICT</li> </ul>
Additional collaborators	<ul style="list-style-type: none"> <li>NCHC (Additional use cases)</li> <li>NAIST (SDN, NFV, PRAGMA-ENT)</li> </ul>	<ul style="list-style-type: none"> <li>NCHC</li> <li>Osaka U</li> </ul>	<ul style="list-style-type: none"> <li>NCHC</li> <li>Osaka U</li> </ul>

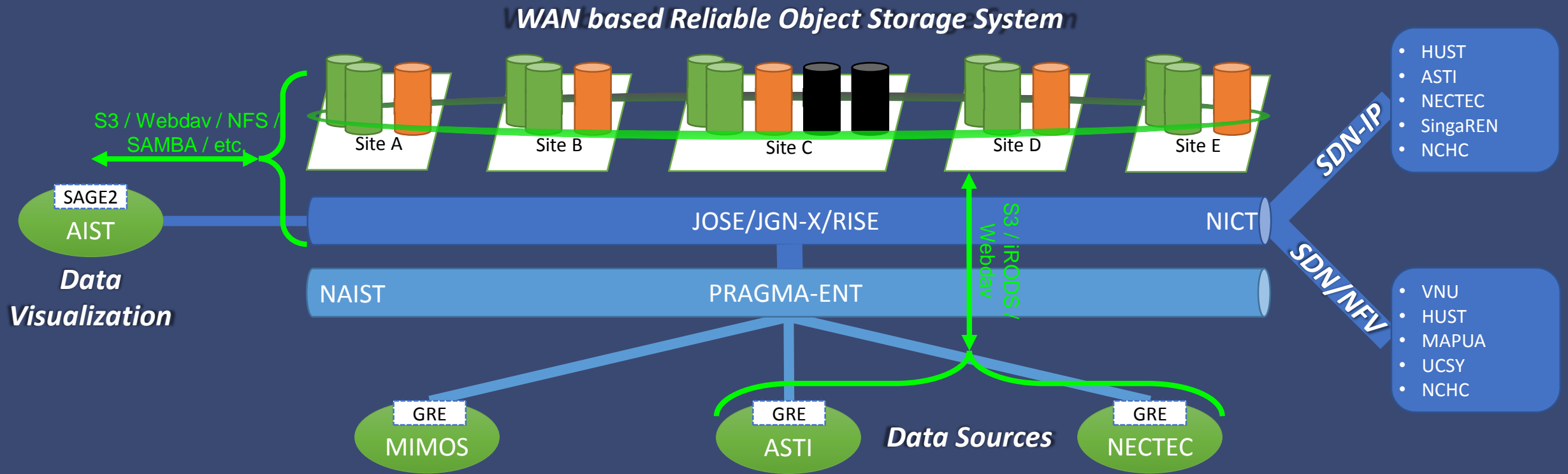


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# Reference Architecture



**Thank you**