

PRAGMA 36

RESOURCES AND DATA WG AND EXPEDITIONS UPDATES

Hsiu-Mei Chou (NCHC)
Nadya Williams (UCSD)

Resources WG: what we planned during PRAGMA 35

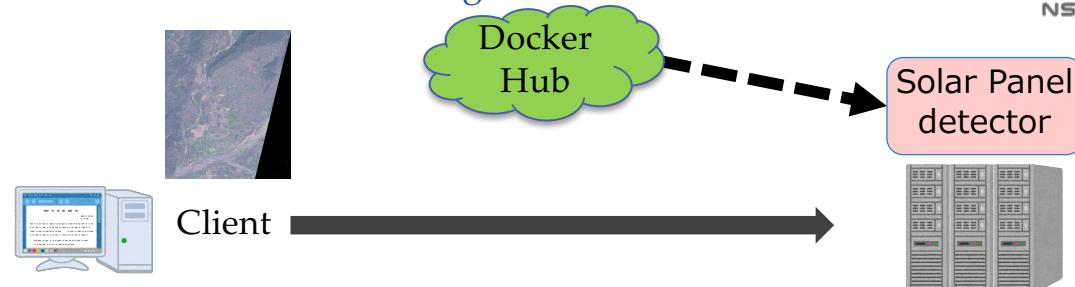
- How to be more productive in the sessions
 - Usually more productive outcomes are from **smaller inter-disciplinary groups**
 - We can't support other groups without **understanding what they need**
 - Tackle **higher level problems**: present a problem and see who wants to participate
- Restructure the **breakout groups format** into interdisciplinary groups that are focused around a high level problem.
- Propose **research problems** by PRAGMA members and local participants and form groups with the interested participants.

Japan-Taiwan Data and AI module platform for Analyzing Remote Sensing Data

Hidemoto Nakada, Ryosuke Nakamura, Kyoung-Sook Kim, Jason Haga, Yusuke Tanimura, Ryousei Takano, Yoshio Tanaka (**AIST**), Hsiu-Mei Chou, Hsi-En Yu, Chun Hung Huang, Weicheng Huang (**NCHC**), Bo Chen, Scarlet Peng (**NSPO**)

Demo at PRAGMA 35

- Deploy the preconfigured 'Module' docker container on NCHC node
- Only use NCHC computing resources
- Data is embedded in the docker image

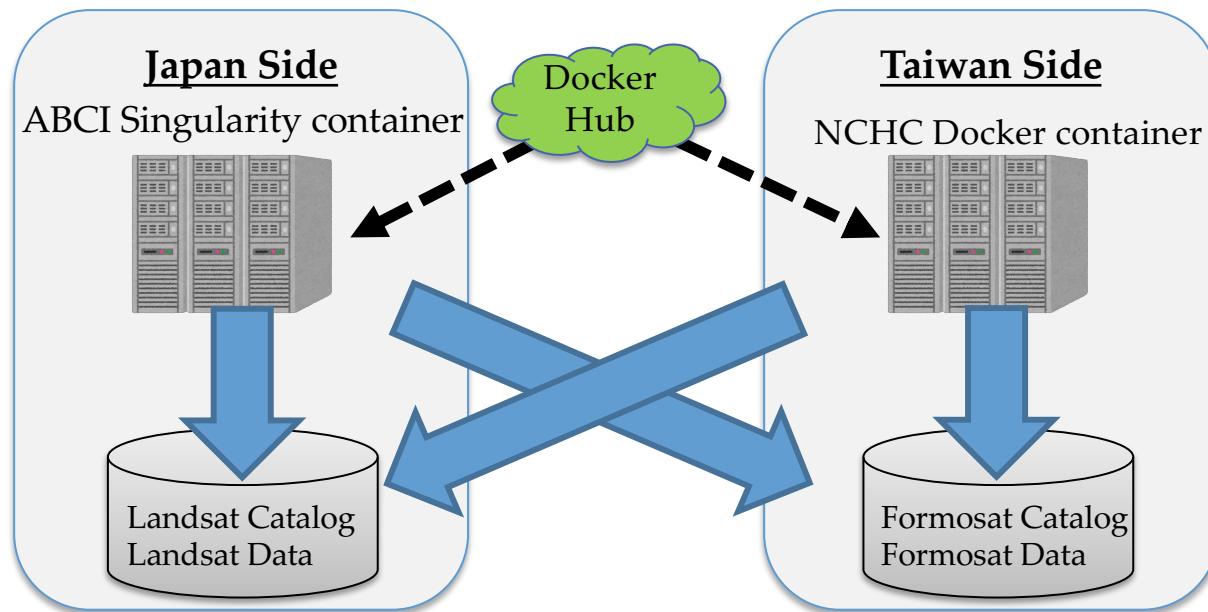


- This work is based on results obtained from a project commissioned by the New Energy and Industrial Technology Development Organization (NEDO)
- This is a joint project with National Institute of Advanced Industrial Science and Technology **Artificial Intelligence Research Center** and **NCHC National Space Organization**

New demo at Pragma 36

More realistic scenario **demo**

- Sharing computing resources and data resources
- Interoperable ML module on Docker hub
- Deploy and run the module for any combination of the resources.



Work with undergraduate students

- Students

- Thammasat University / AIST / UCSD / UF
 - Ayuth Mangmesap,
 - Nitipat Wuttisasiwat
- CNU (Korea) / UCSD 

 - Hajeong Cho
 - Hyojeong Kang

- Projects

- CNU: Data storage monitoring and visualization [poster](#)
- CNU: PRAGMA Cloud Scheduler administrative interface [poster](#)
- TU: Applications performance monitoring and visualization [demo](#)



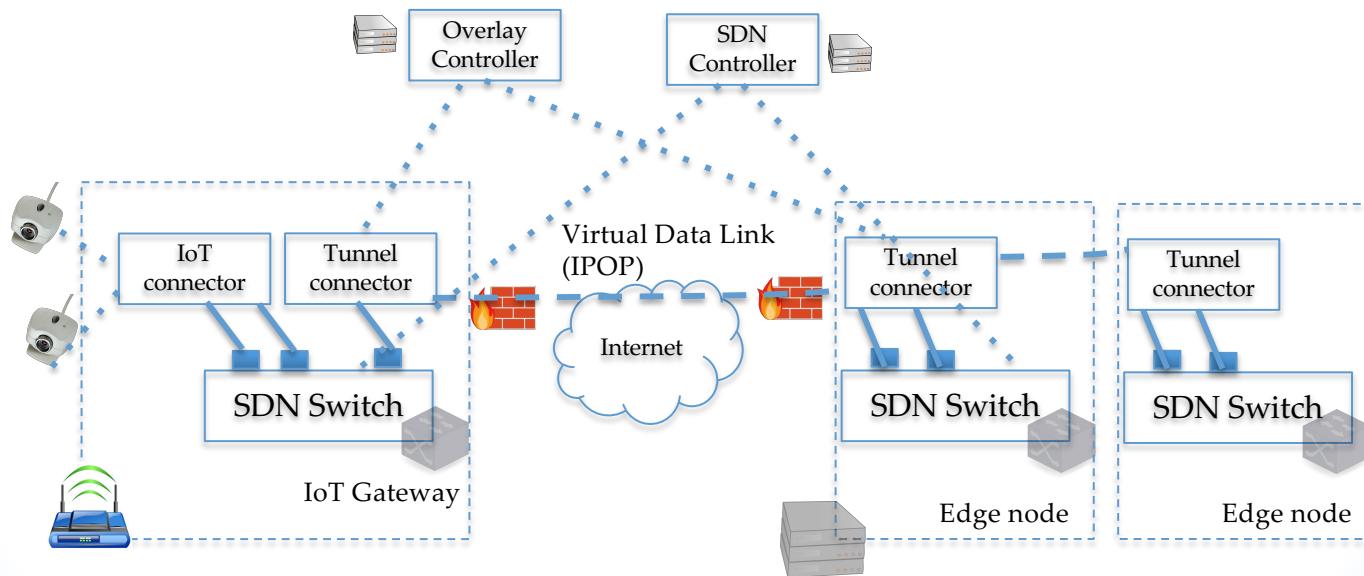
มหาวิทยาลัยธรรมศาสตร์
THAMMASAT UNIVERSITY

Vahid Daneshmand (UF)
Jason Haga (AIST)
Minsun Lee (CNU)
Prapaporn (Nan) Rattanatamrong (TU)
Shava Smallen (UCSD)
Nadya Williams (UCSD)

IPOP

SDN-based structured P2P routing (open vSwitch)
L2 switched overlay

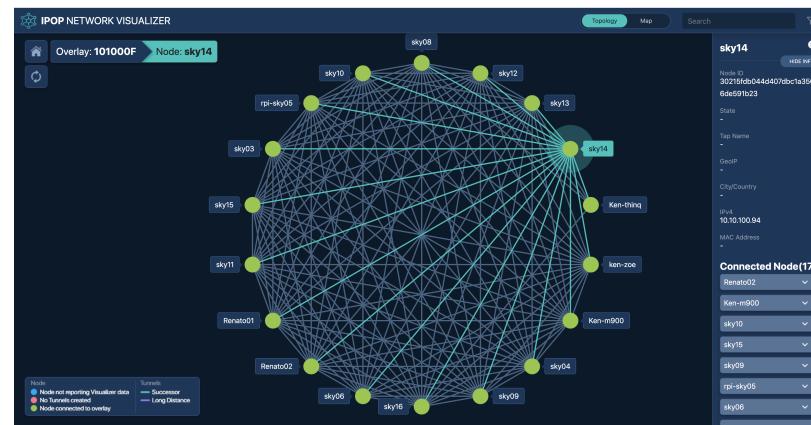
- Bounded-flood broadcasts (e.g. ARP)
- Self-learning, cycle-free structured P2P unicasts



IPOP

Visualization

- Per-node data collection
- MongoDB back-end
- Javascript front-end
- Collaboration with Thammasat University
- Ken+Nan's **demo**



EDISON

Working to install EDISON on PRAGMA resources

- KISTI is leading this effort with UCSD support
 - EDISON site for PRAGMA at <https://pragma.edison.re.kr> demo
 - Started test install on UCSD Virtual Cluster

The screenshot shows the PRAGMA website interface. At the top, there is a map of the world with various research institutions highlighted in purple, including KISTI, CNIC, and several US universities like Illinois U, AST, UT-Bat, Oklahoma U, and others. Below the map, the word "EDISON" is prominently displayed. The main content area is divided into sections: "Science Apps" featuring four icons for GFD, uChem, CSD, and DESIGN; and "Specialized Site" featuring two cards: "EDISON Materials Science" and "EDISON MQCP".

PRAGMA Home Simulation · Scientific Data · AI · About · Guides

EDISON'S

Science Apps

GFD
2D_Incomp_P
Two-dimensional

uChem
Quantum Chemical

CSD
SemDesk
Computational

DESIGN
Edison Designer
Parametric 3D CAD

Specialized Site

EDISON Materials Science

Materials Science Community provides open web-based access to computed information on known and predicted materials as well as powerful analysis tools.

EDISON MQCP

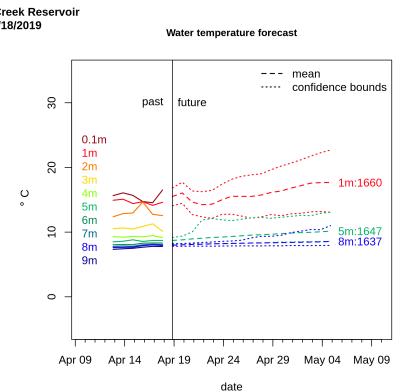
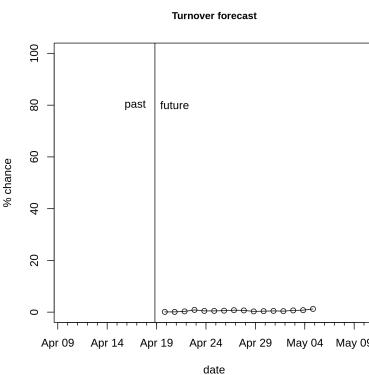
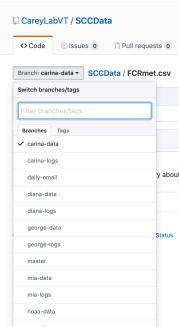
Apply your own ideas on energy computation and structure optimization through workflow

Expeditions Updates

Lake Ecology
PRAGMA-ENT
Virtual Biodiversity

Lake expedition CI

- **GRAPLER software**
 - GRAPLER uses in two projects
 - Lake expedition presentation elaborates on them
- **IPOP-connected CI for end-to-end forecasts** **demo**
 - Sensor gateway -> Git -> GLM model execution
 - Connected via IPOP overlay
 - Planning for new design based on containers, microservices, event-driven triggers

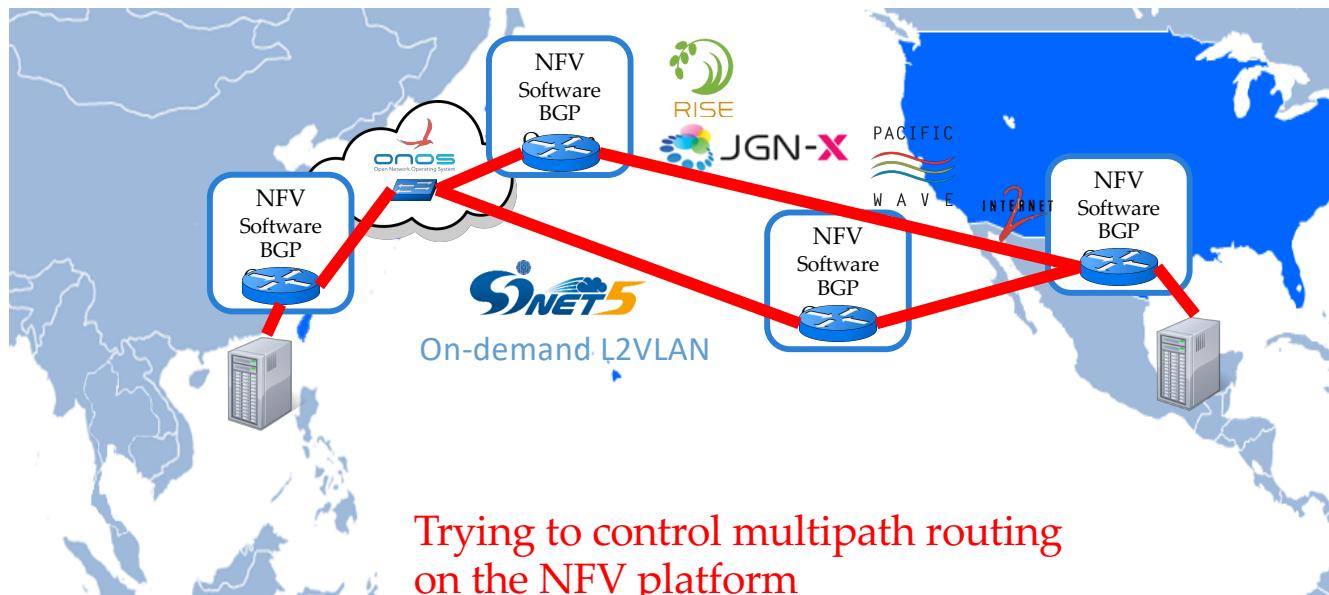


2019-04-25

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NFV experiment on ENT

We are working on an experiment deploying a Network Function Virtualization application on Experimental Network Testbed (ENT)
Sebastian, Osaka Univ. is working for the experiment, see [poster](#)



VBE updates

Hsiu-Mei Chou (NCHC), Aimee Stewart (KU), Nadya Williams (UCSD)

National Museum of Marine Science and Technology NCHC – UCSD– KU

- “Exploring coastal species of Taiwan” funded September 2018
- November 2018, installed a new Lifemapper Cluster
 - Plans for LM install and local data population
- Workshop planning

Dynamic load balancing KU

- Aggregate processing elements for less fine-grained monitoring and resource utilization but simpler workflows with less IO
- Move long-running Front End processes to compute nodes
- Write outputs from compute nodes directly to final, shared data space

Simplify data ingestion KU

- Simpler user requirements
- Integrate iDigBio species data and Open Tree of Life (OToL) data via APIs
- Improve User Interface
- Package outputs as downloadable, interactive “Result Package”