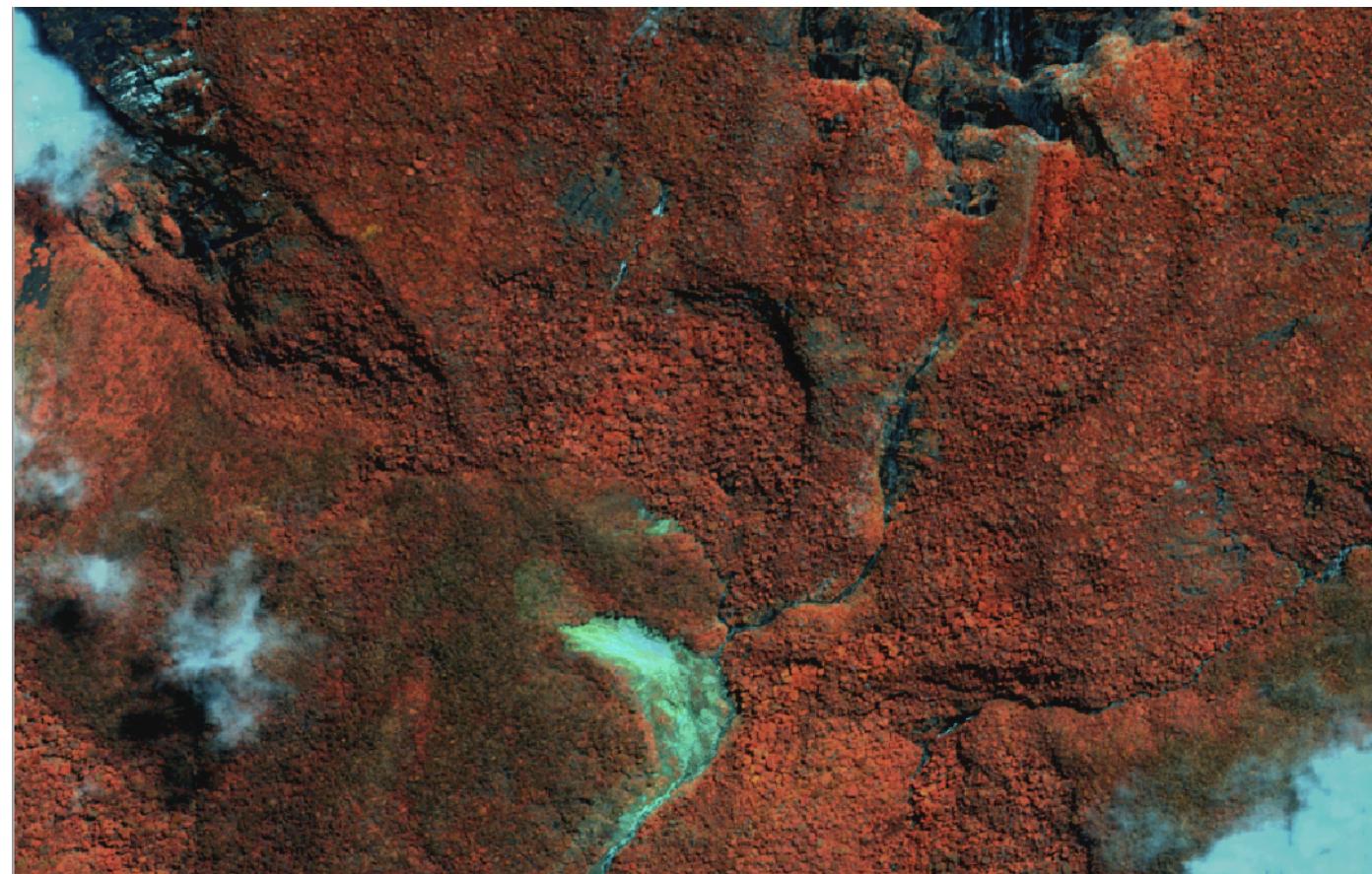


PRAGMA Biodiversity Expedition: Update on planned activities for June 2014



Reed Beaman
10 April 2014

University
of
Florida

Kinabalu – Biodiversity Hotspot

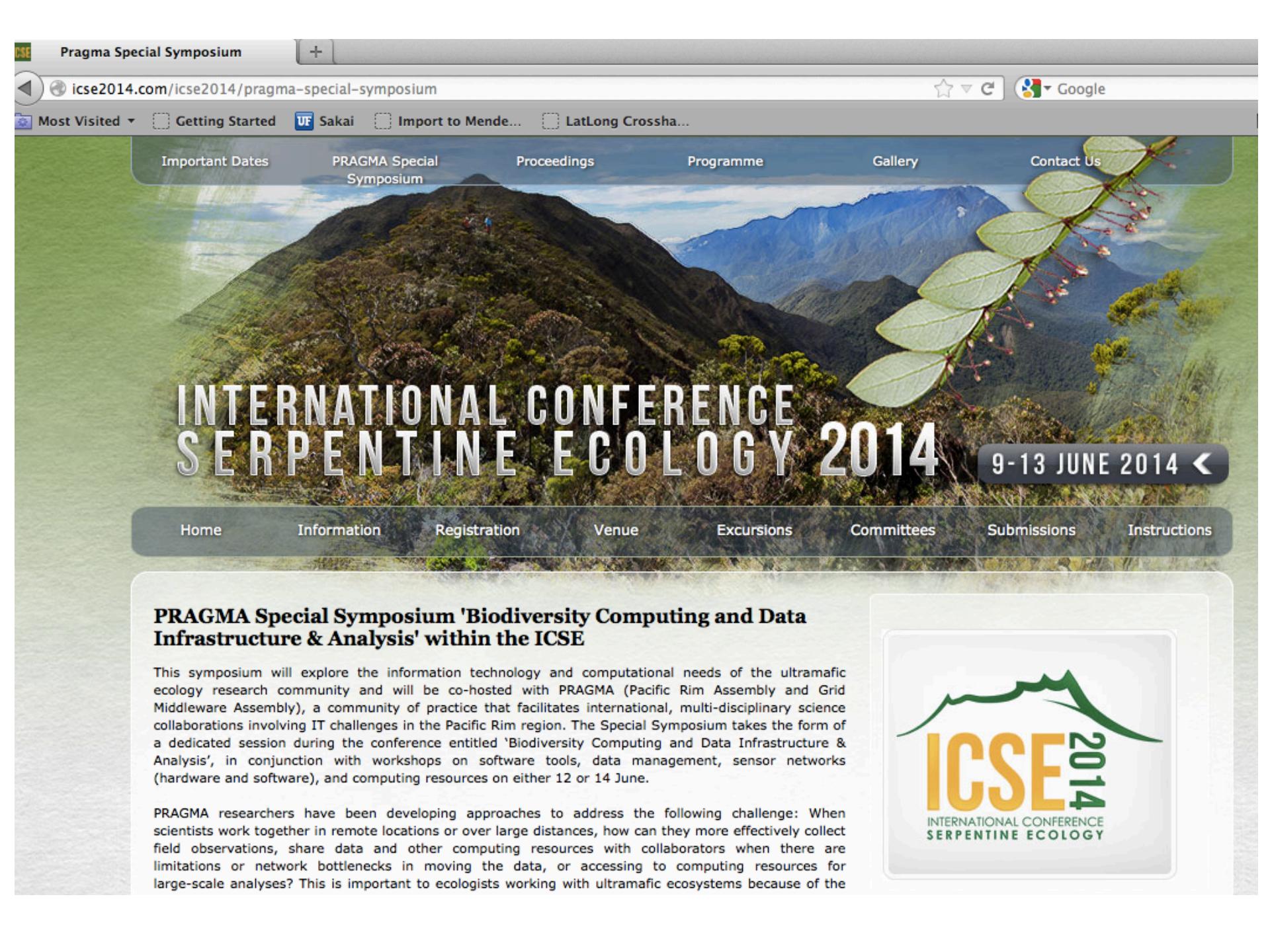


- Mount Kinabalu (4095 m), Sabah, Malaysia
- Highest point between Himalaya and New Guinea and on island of Borneo
- World Heritage site
- Ca. 5,000 species of vascular plants in ca. 1,500 sq km area
- Database of ca. 73,000 specimen records

Drivers: What, why, where is the high diversity?



- Elevation and climatic range
- Precipitous topography causing
- Geographic and reproductive isolation over short distances
- Geological history of the Malay Archipelago
- Diverse geology, localized edaphic conditions, ultramafic substrates;
- Environmental instability: landslides, droughts, El Niño, climate change, flooding and glaciation



INTERNATIONAL CONFERENCE SERPENTINE ECOLOGY 2014

9-13 JUNE 2014 ↗

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PRAGMA Special Symposium 'Biodiversity Computing and Data Infrastructure & Analysis' within the ICSE

This symposium will explore the information technology and computational needs of the ultramafic ecology research community and will be co-hosted with PRAGMA (Pacific Rim Assembly and Grid Middleware Assembly), a community of practice that facilitates international, multi-disciplinary science collaborations involving IT challenges in the Pacific Rim region. The Special Symposium takes the form of a dedicated session during the conference entitled 'Biodiversity Computing and Data Infrastructure & Analysis', in conjunction with workshops on software tools, data management, sensor networks (hardware and software), and computing resources on either 12 or 14 June.

PRAGMA researchers have been developing approaches to address the following challenge: When scientists work together in remote locations or over large distances, how can they more effectively collect field observations, share data and other computing resources with collaborators when there are limitations or network bottlenecks in moving the data, or accessing to computing resources for large-scale analyses? This is important to ecologists working with ultramafic ecosystems because of the



PRAGMA-tic activities

Pre-conference (June 4-8)

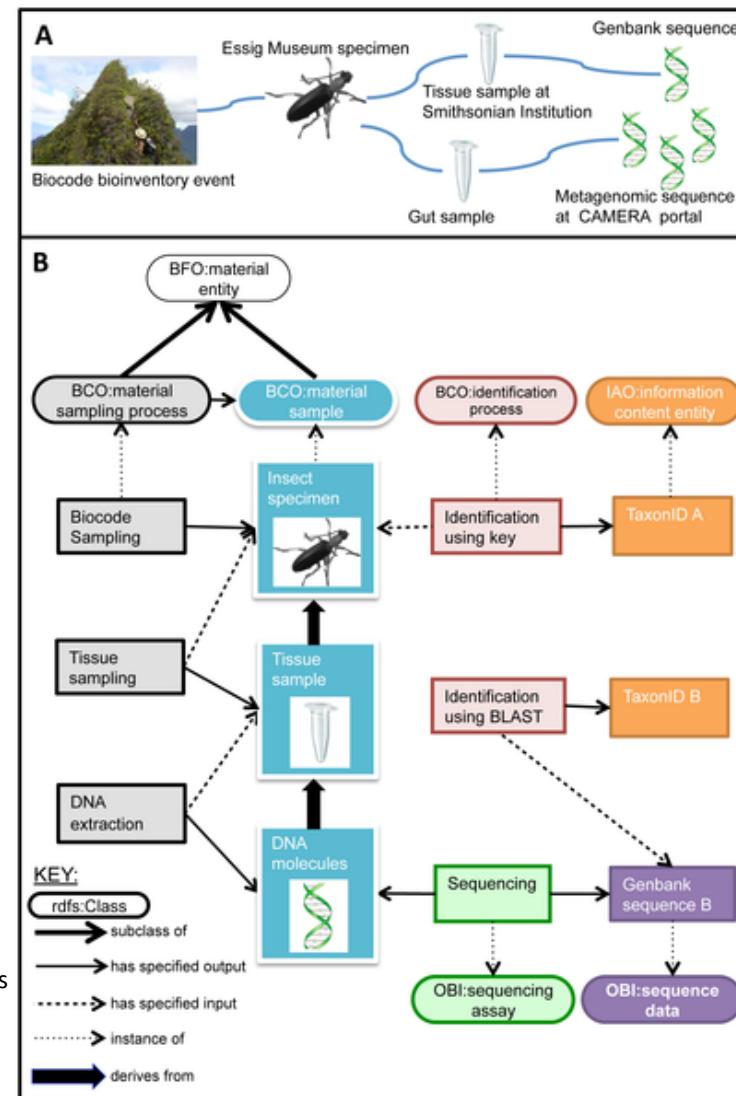
- Unmanned Aerial Vehicle (UAV) data capture (U Queensland, Sabah Parks)

PRAGMA Mini-symposium (12 June)

- Mobile application for field data capture
- Lifemapper and GIS (tutorial, future requirements)
- Data integration
- Specimen digitization

Citation: Walls RL, Deck J, Guralnick R, Baskauf S, Beaman R, et al. (2014) Semantics in Support of Biodiversity Knowledge Discovery: An Introduction to the Biological Collections Ontology and Related Ontologies. PLoS ONE 9(3): e89606. doi:10.1371/journal.pone.0089606

<http://www.plosone.org/article/info:doi/10.1371/journal.pone.0089606>



Mobile application for field data capture

- Demo, tutorial and field testing (June 15-20) on Kinabalu
- Universiti Tecknologi Malaysia
 - Nor Arlina Amirah bt Ahmad Ghani
 - Shahir Samsir
- Use available data sources (Geoportal) for geospatial data and species occurrences
- controlled vocabulary for field observations, trait data images.
- Leverage on-board GPS and user metadata
- Links up to servers (Twitter feed?)

The image displays three screenshots of the iZOO mobile application interface, arranged vertically. The top screenshot shows the 'Species Identification' screen with a search bar for 'Species Name' containing 'Ratufa affinis', a 'Get Coordinate' button, and a 'Submit Location' button. The middle screenshot shows the 'Welcome to iZOO Mobile Application' screen with the iZOO logo, a 'Show Menu' button, and a note about the app's purpose. The bottom screenshot shows the 'Browse Species' screen listing various rodent species with icons and arrows for more details: Ratufa bicolor, Ratufa affinis, Callosciurus notatus, Callosciurus flavimanus, Callosciurus prevostii, Ratufa affinis, Callosciurus flavimanus, Callosciurus prevostii, Callosciurus finlaysonii, Callosciurus nigrovittatus, Callosciurus baluensis, Callosciurus adamsi, Callosciurus orestes, and Callosciurus euphractus.

Capturing ultra-high resolution UAV-imagery on Mount Kinabalu

Pilot-project for modelling vegetation across geological substrates over an altitude gradient in Kinabalu Park

**Peter Erskine
Andrew Fletcher
Antony van der Ent
(The University of Queensland, Australia)**

**Rimi Repin
(Sabah Parks, Sabah, Malaysia)**

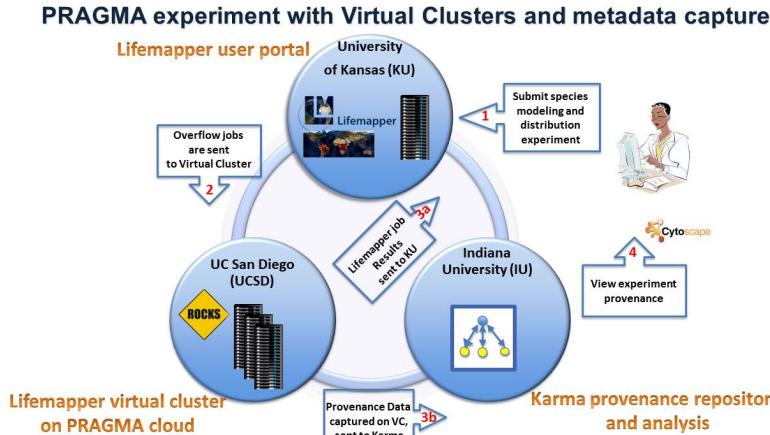
**Reed Beaman
(The University of Florida, USA)**

**Abdullah Kamaruddan
(Minerals and Geosciences Department, Sabah, Malaysia)**

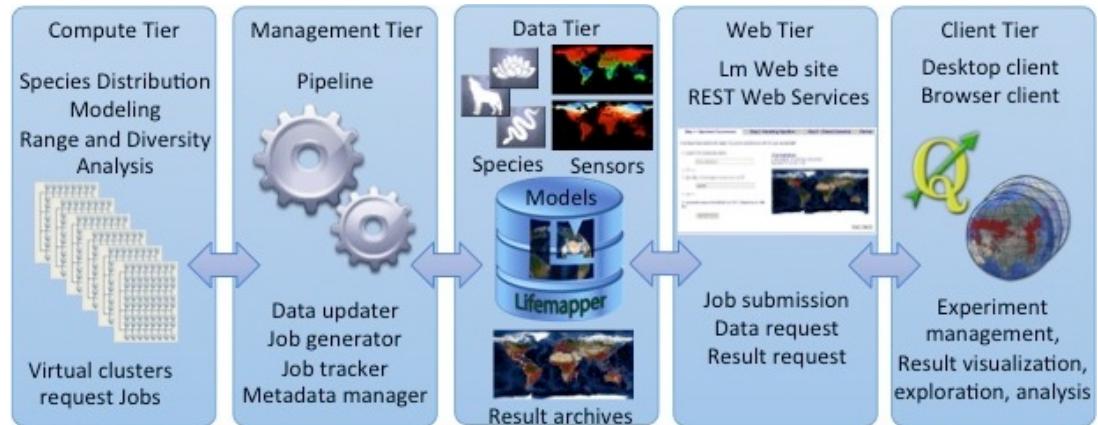


Lifemapper and GIS tutorials

- Lifemapper software predicts species distributions
- Improve efficiency, portability and capture provenance
- Pushed Virtual Cluster technology, improved Lifemapper, incorporated Karma provenance
- Goal is to share computation data in trusted network

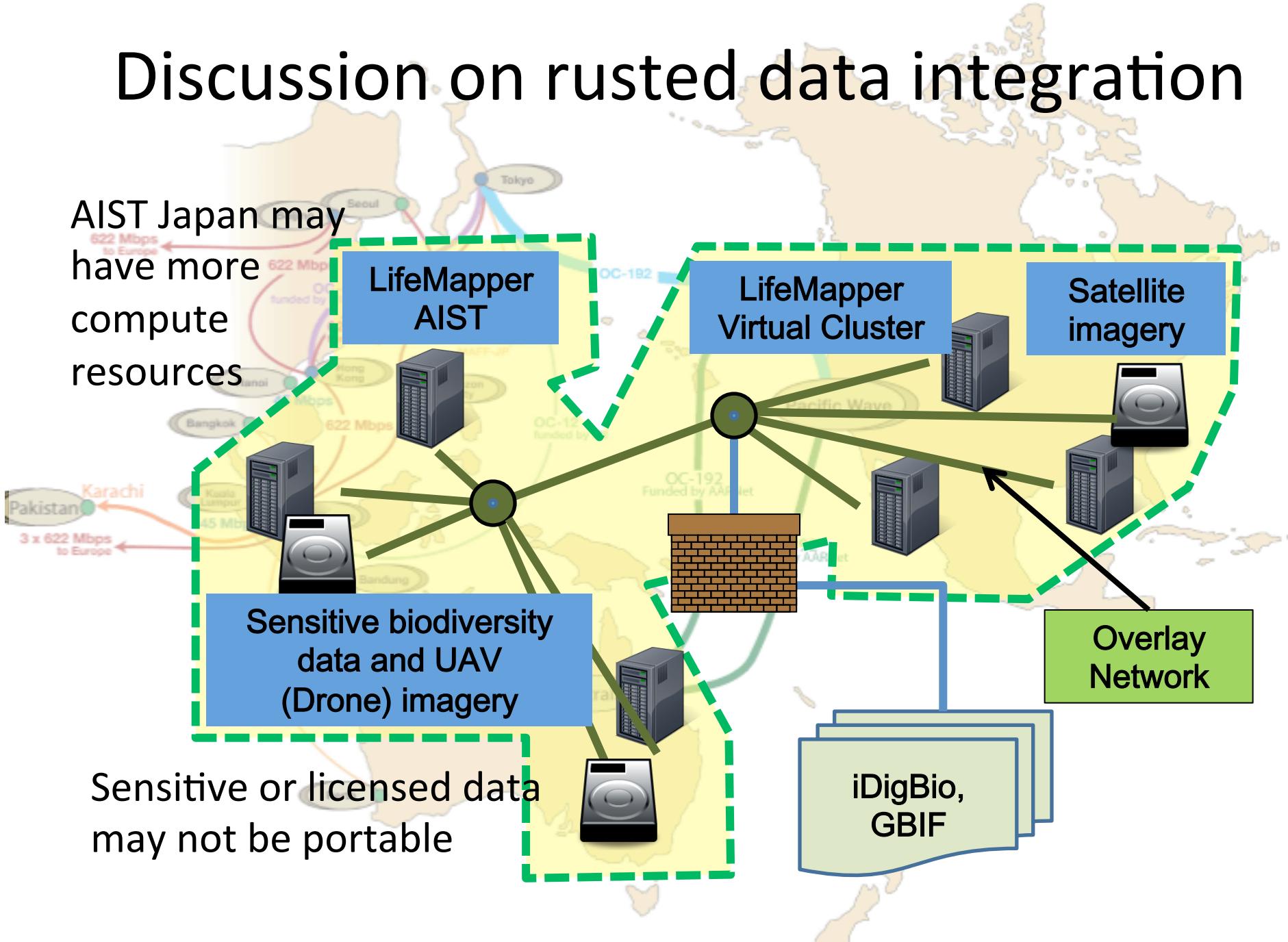


Demo: Nadya Williams (UCSD),
Aimee Stewart (KU), Quan Zhou (IU)



Discussion on rusted data integration

AIST Japan may have more compute resources



Sensitive or licensed data may not be portable