

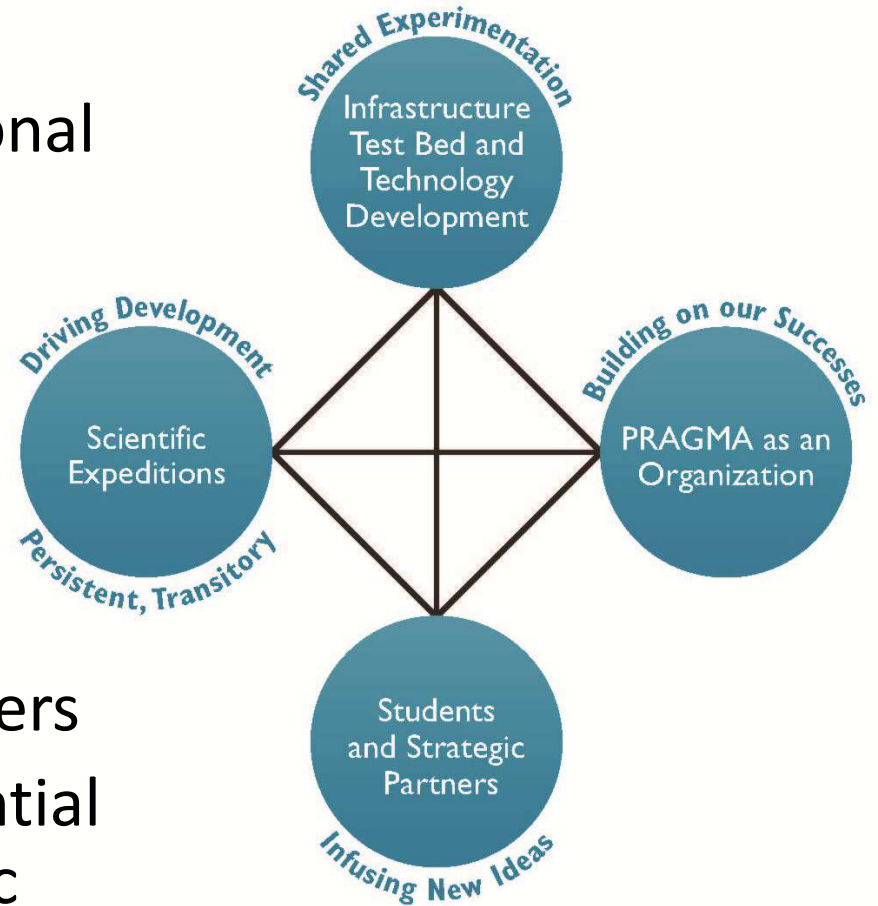
Reed Beaman,
University of Florida

Pacific Rim Applications
and Grid Middleware
Assembly:
Building virtual bridges
around the Pacific and
across domains

25 March 2014

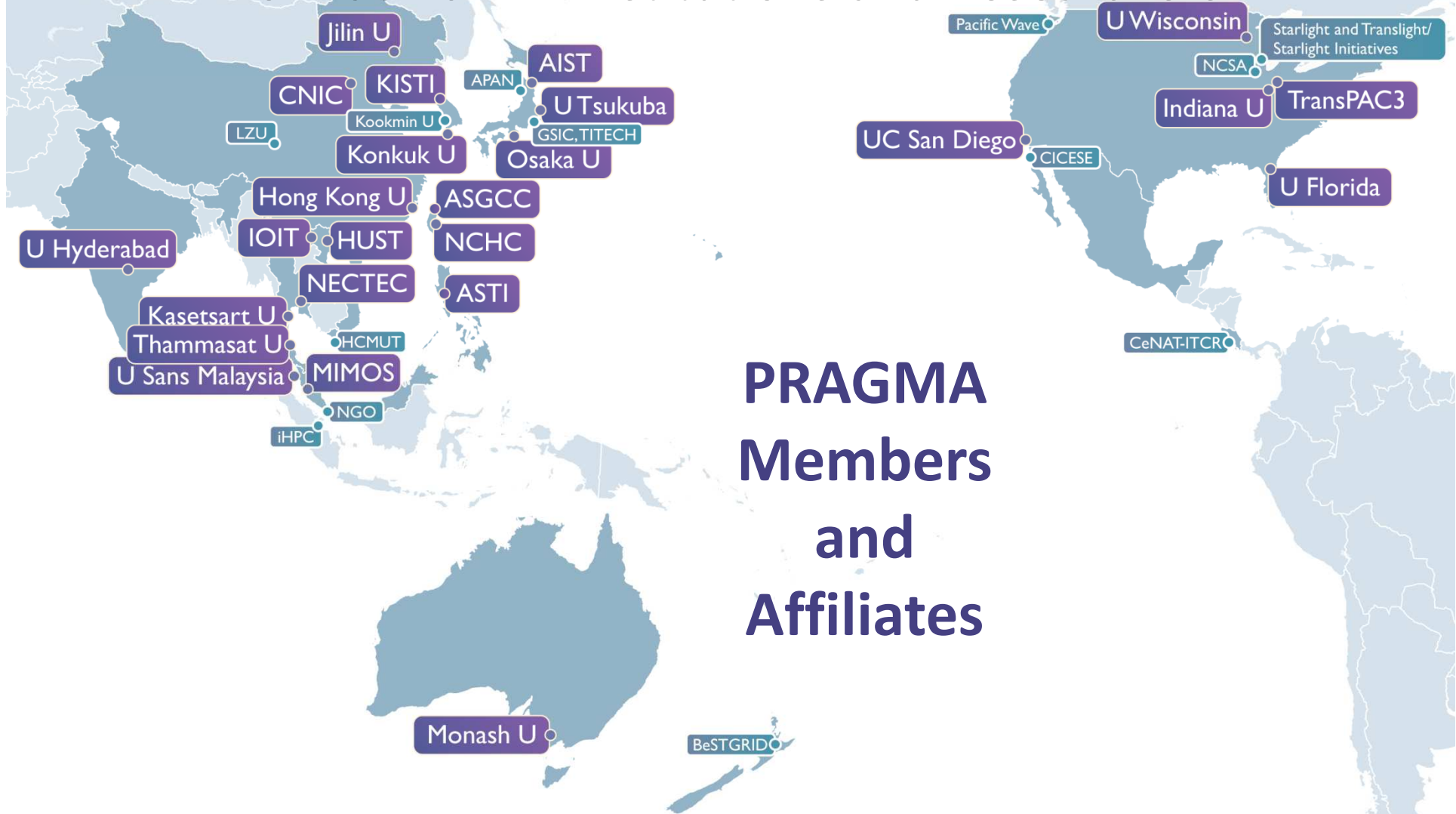
PRAGMA's Overarching Activities to Enable Long Tail of (Team) Science

- SAVI (Science Across Virtual Institutes): Foster international collaboration and scientific expeditions
- Develop and improve a grassroots, international cyberinfrastructure
- Infuse new ideas through students and strategic partners
- Build and enhance the essential people-to-people trust fabric

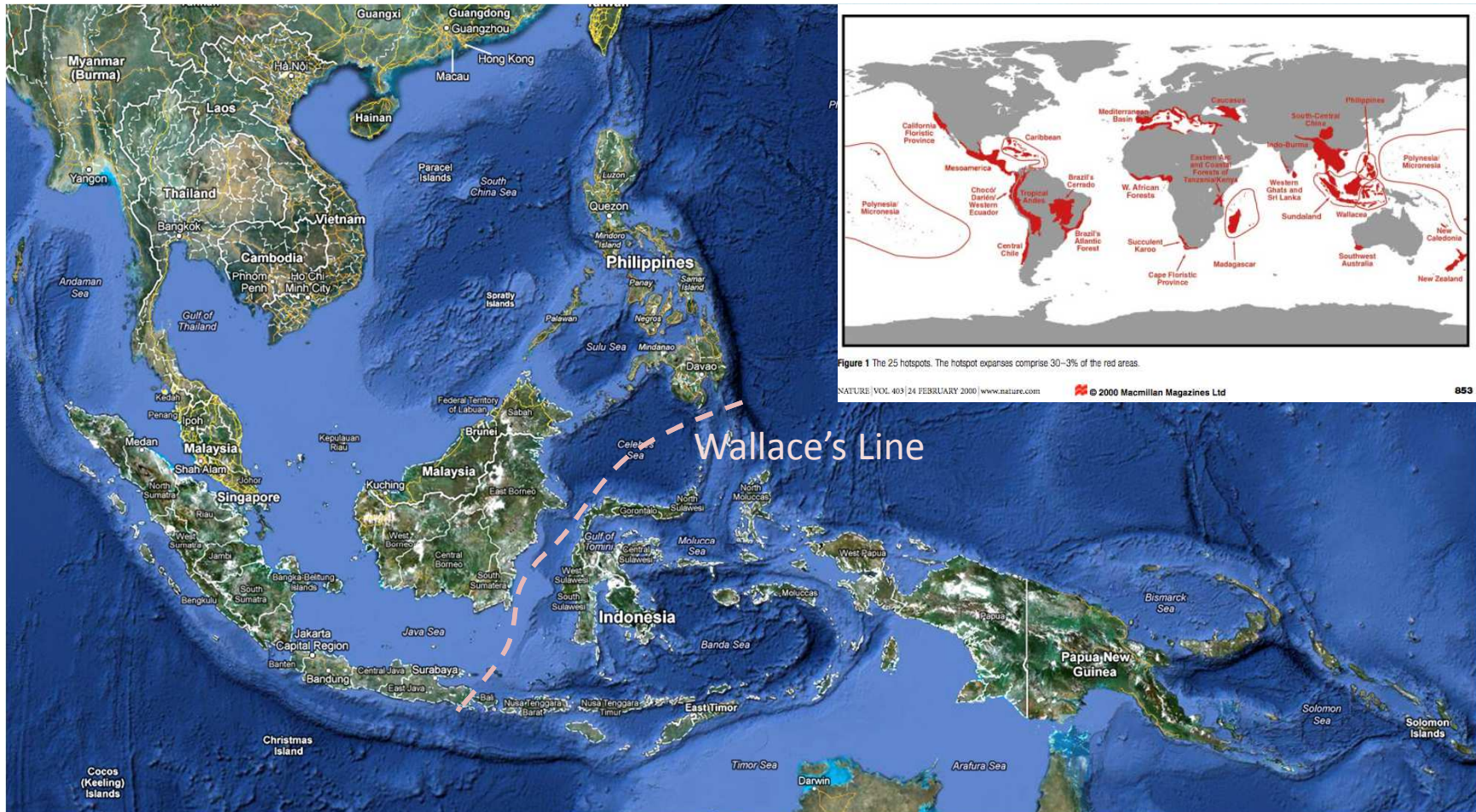


Interdependence Essential

Enabling the Long-Tail of Science through Scientific Expeditions and Infrastructure Experiments for Pacific Rim Institutions and Researchers



SE Asia – Biodiversity Hotspot



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

Many rare species and endemics (organisms that occur nowhere else)

Populations isolated by
elevation and substrate

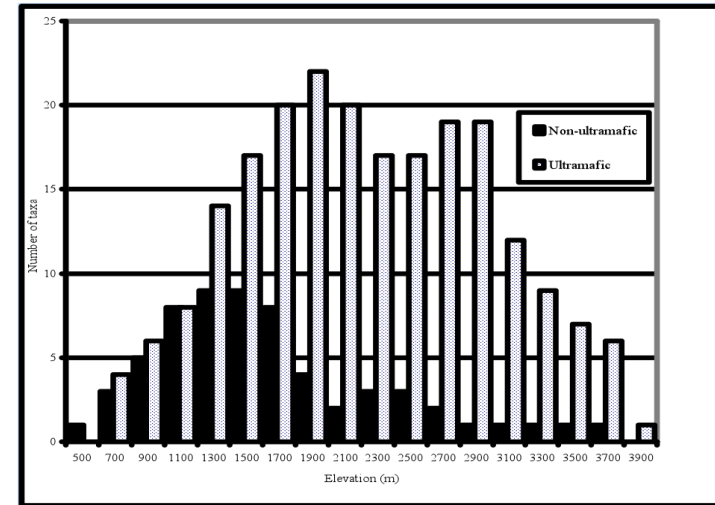
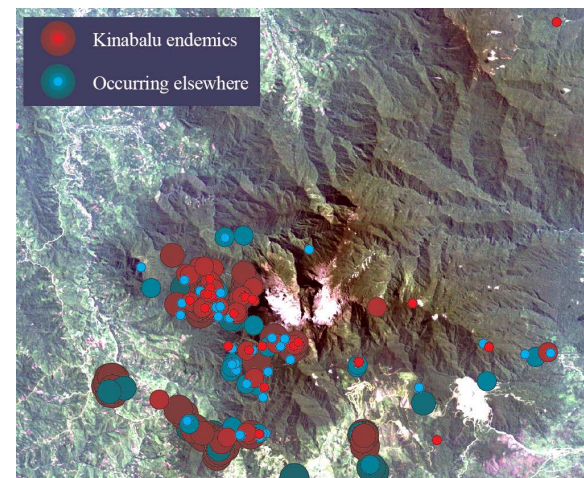


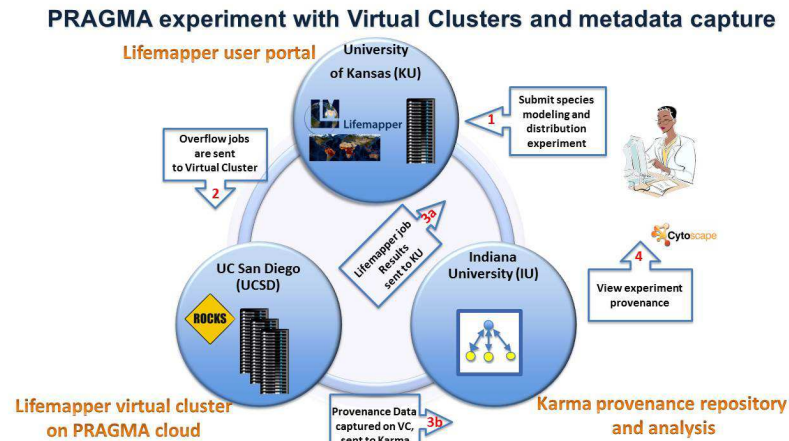
Fig. 19. Elevational distribution of endemic orchid taxa on ultramafic and non-ultramafic



Biodiversity in Extreme Environments

Distribution Prediction by Sharing CI and Provenance Capture

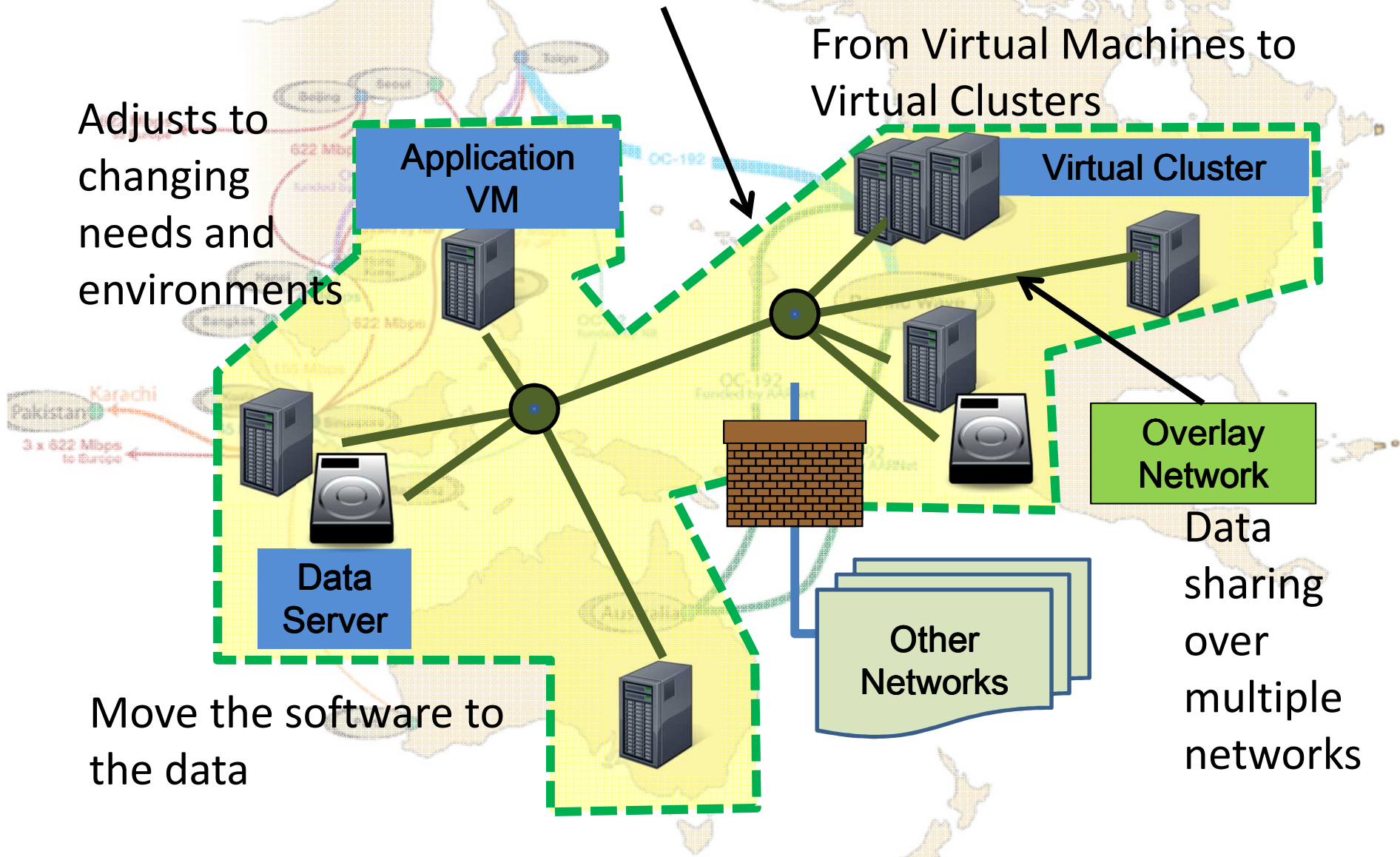
- Lifemapper software predicts species distributions
- Improve efficiency, portability and capture provenance
- Pushed Virtual Cluster technology, improved Lifemapper, incorporated Karma provenance
- Goal is to share computation data in trusted network



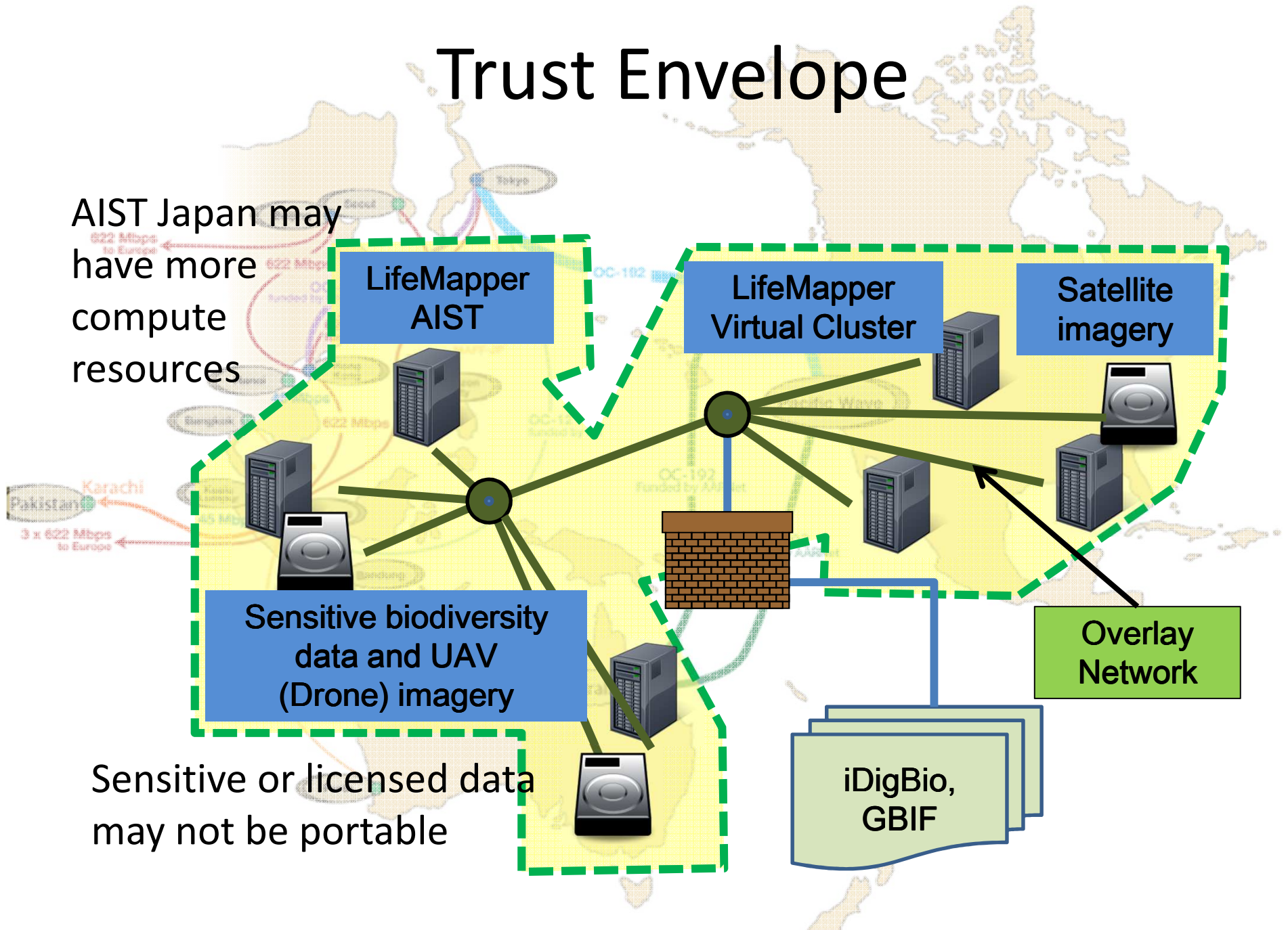
Demo: Nadya Williams (UCSD),
Aimee Stewart (KU), Quan Zhou (IU)



Software Defined System



Trust Envelope



INTERNATIONAL CONFERENCE SERPENTINE ECOLOGY 2014

9-13 JUNE 2014 <

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



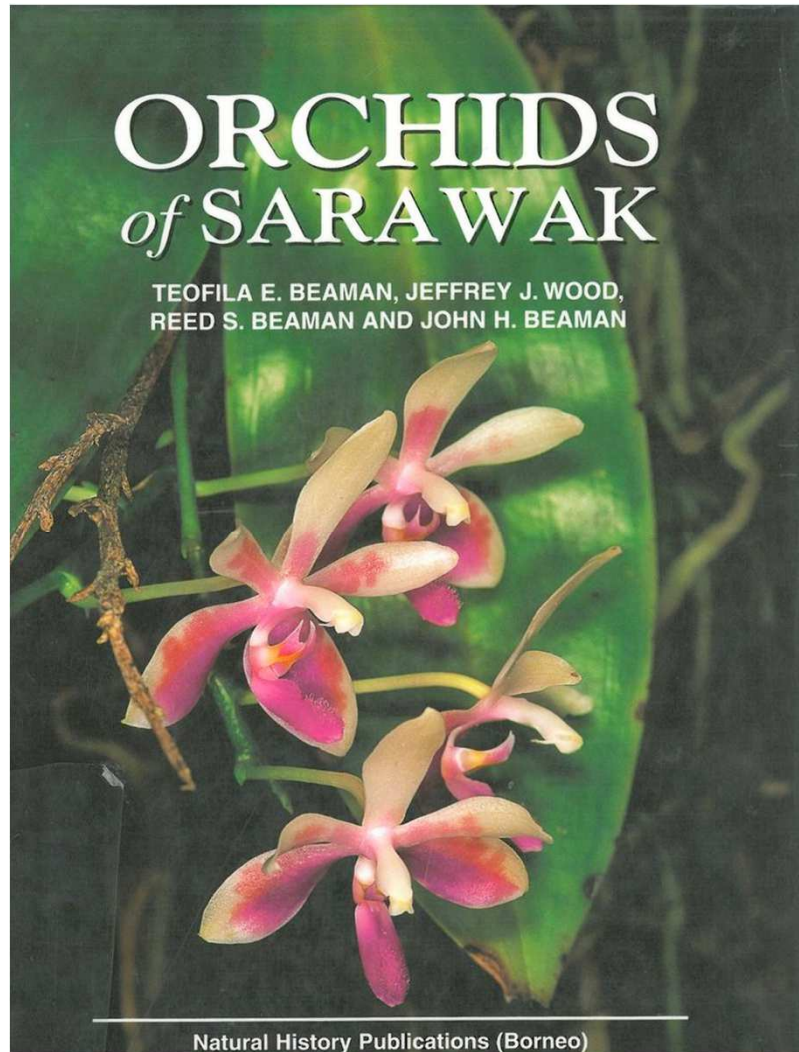
Multidisciplinary, International collaboration

PRAGMA mini-symposium

- Unmanned Aerial Vehicle (UAV) data capture (U Queensland, Sabah Parks)
- Mobile application for field data capture (UTM)
- Lifemapper and GIS tutorials
- Plan digitization efforts for the region?



In memoriam



***Teofila Eusebio Cabrera
Beaman***

May 13, 1933, Los Baños,
Philippines

—

March 20, 2014,
Gainesville, Florida

Thanks!

PRAGMA People

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A. Stewart
C.J. Grady



PRAGMA Resource WG:
Cindy Zheng
Nadya Williams
Phil Papadopoulos

S. Shamsir
S.N. Azmy
C.T. Han



R. Beaman
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- Sabah Parks

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