

PRAGMA 39: Overview and Updates

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Co-chair, PRAGMA Steering Committee
University of California, San Diego

June 22, 2023



PRAGMA seeks to address these challenges to improve *CI and scientific impact via practical implementation*. We focus on international *collaborations that uniquely team technology specialists and domain scientists*

- Science is **inherently international** and requires collaboration.
- Cyberinfrastructure is only one dimension; **people and trust are also essential**
- Collaboration is **enabled by sharing and exchanging data, algorithms and tools**.
- There are fundamental challenges in matching existing CI to hundreds of communities. **Deep interactions with long-tail communities has the potential to transform both science domains and CI development**



*Screenshot of 2019
PRAGMA collaborative
overview publication*

Founded in 2002

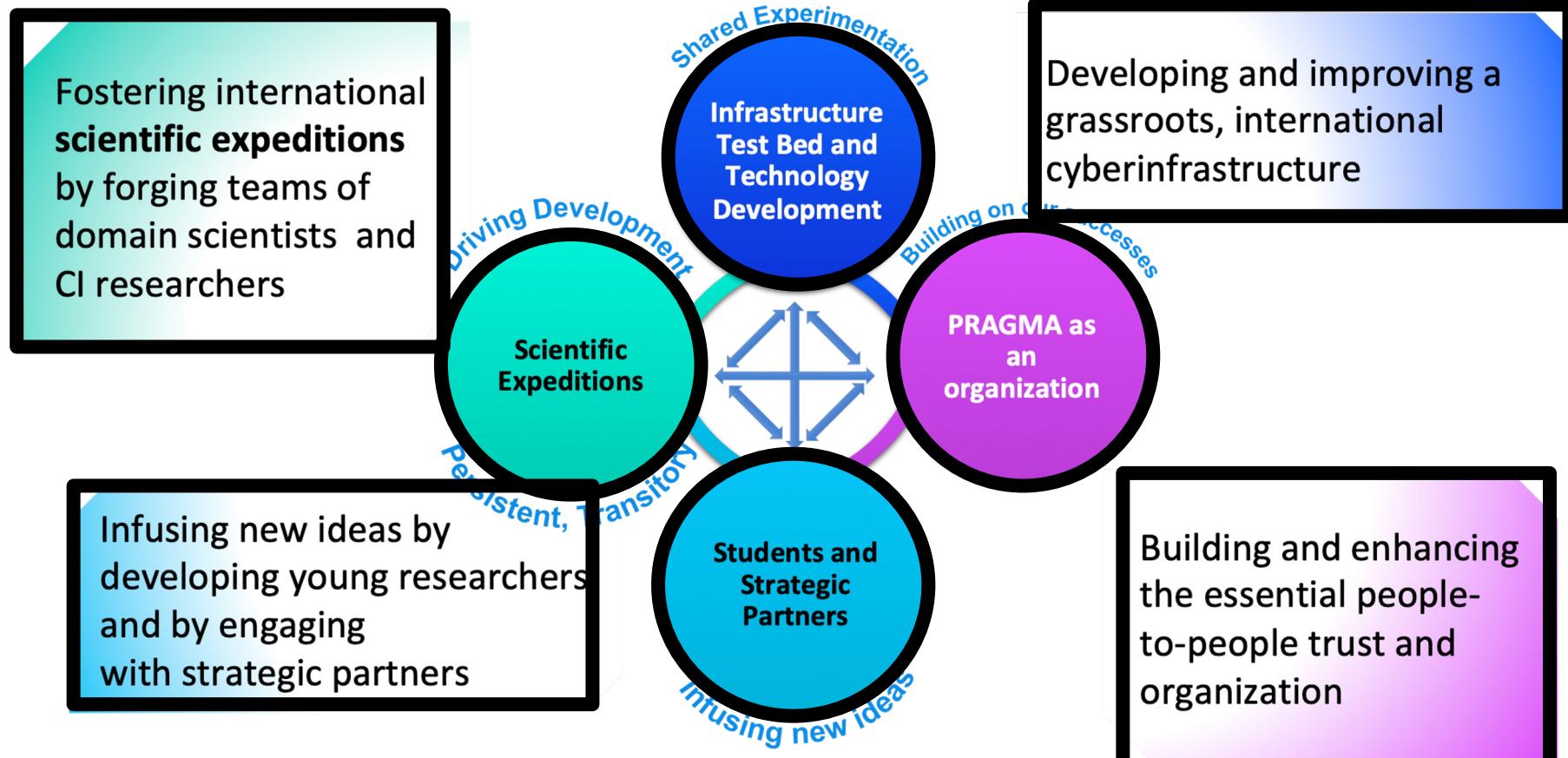
Focused on
researchers and
institutions on the
Pacific Rim

Open Community of
Practice

Engages “Long Tail”
science communities

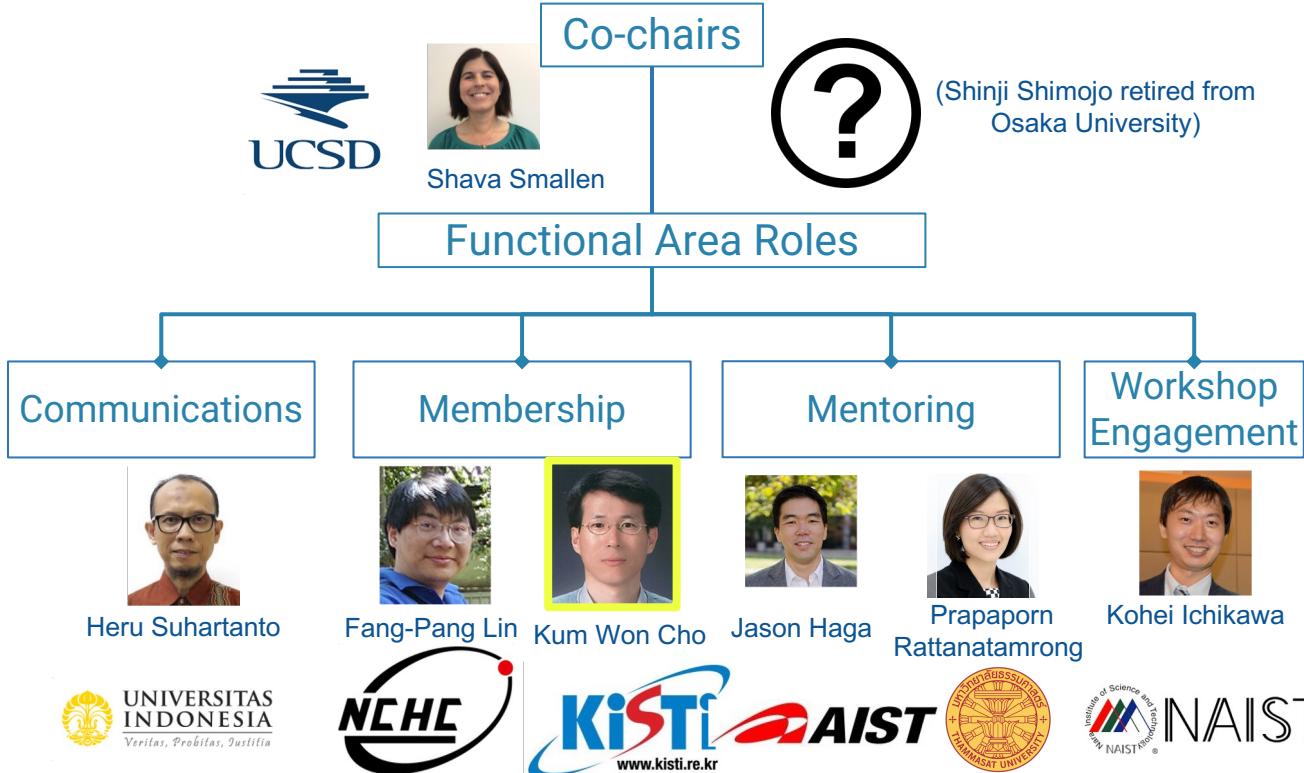


Building Trusted Community of Practice through four strategies of collaborating

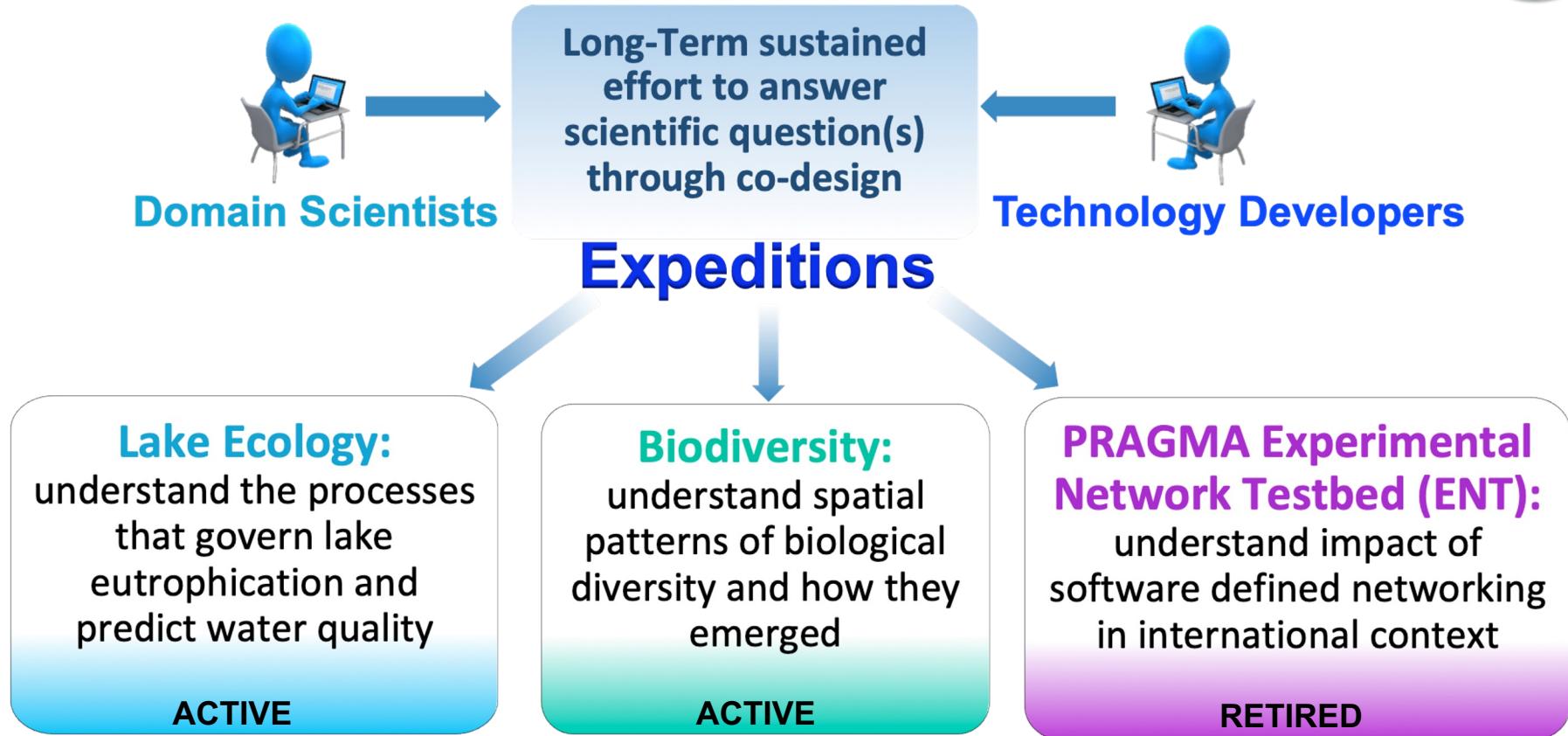


PRAGMA Steering Committee
(23 representatives)Operating
Principles and
Procedures

Working Groups

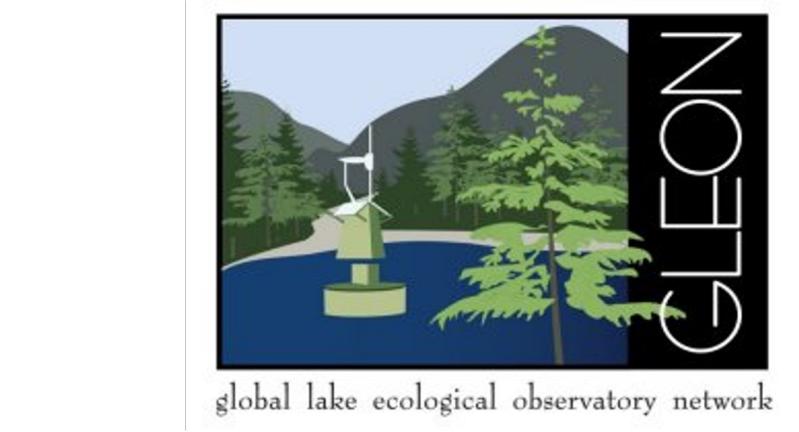
Student
Committee

Pre-COVID Expeditions: A Model of Collaboration



Paul Hanson (U. Wisconsin), Cayelan Carey (Virginia Tech), Renato Figueiredo (U. Florida)

- **Eutrophication:** excessive richness of nutrients in a lake or other body of water, frequently due to run-off from the land, which causes a dense growth of plant life.
- **Lake eutrophication** is global issue, results in **degraded water quality**
- **Goal:** Integrate sensor data as inputs to **computational lake models** → science goal is to *predict water quality*



- **Sensor gateways** link sensors to internet (connecting to storage and models)
- **IPOP overlay network** create virtual private network for sensor data and computation
- **GRAPLER computing** to allow efficient distributed computation
- **Education** for future generations of computer scientists at 12 universities



Prof Carey teaching students to use GRAPLER at VaTech

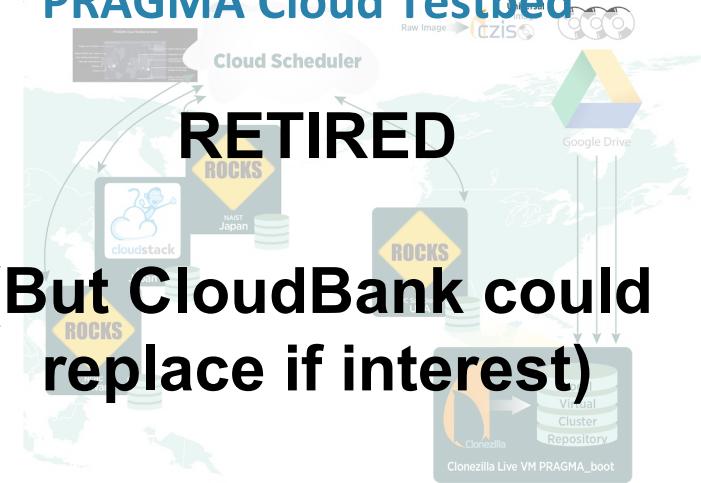


Outputs from model runs are aggregated and returned to user for analysis and decision making.

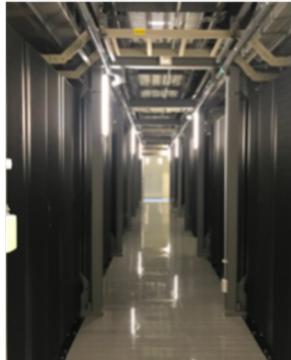
Image: pl.wikipedia.org



PRAGMA Cloud Testbed



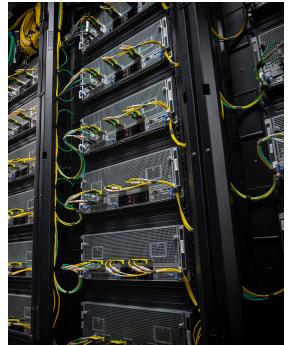
**AI Bridging
Cloud
Infrastructure**



Taiwania
2 & 3



**UCSD
SDSC
Voyager**



Edge Computing Testbed

24 Raspberry Pi 3B+ nodes on three sites:
16 Nodes at University of Florida, USA
8 Nodes at NAIST Japan
4 nodes at Thammasat University



NAIST UF UNIVERSITY of FLORIDA



PRAGMA Student Committee



Kundjanasith (Tem)
Thonglek



Pacific Rim Experiences for UCSD
Undergraduates (2004-2015)



MONASH University

MURPA
(2008-current)



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

QURPA
(2014-current)



NATIONAL INSTITUTE OF
ADVANCED INDUSTRIAL SCIENCE
AND TECHNOLOGY (AIST)

Internship Program
(2014-current)



Undergraduate projects
(2016-current)



충남대학교
CHUNGJANG NATIONAL UNIVERSITY

Undergraduate internships
(2017-current)

Outline

- PRAGMA Introduction and Overview
- Updates Since our Last Meeting
- Our Future

Thank you to HKU

- PRAGMA 38 cancelled in February due to COVID spread
- However, it was still a lot of work to prepare for the conference and our arrival
- Special thank you to Lilian Chan and Wing Keung KWAN



2021: PRAGMA Reconnect Symposium

1. May 28, 2021

- David Abramson (Univ of Queensland): Scalable Distributed Infrastructure for Data Intensive Science
- Renato Figueiredo & Ken Subratie (Univ of Florida): EdgeVPN.io: Software-Defined Overlay Virtual Private Networks for Edge Computing

2. June 11, 2021

- Nurul Hashimah Ahamed Hassain Malim (USM): Collaboration Opportunities With CSUSM
- Sri Chusri Haryanti (YARSI): Update from Universitas YARSI and Chandra Prasetyo Utomo (YARSI): YARSI and PRAGMA Partnership

2021: PRAGMA Reconnect Symposium (cont.)

3. June 25, 2021

- Jason Haga (AIST): AIST's new Digital Architecture Research Center
- Putchong Uthayopas (Kasetsart University): Thailand's National AI Strategic Plan

4. July 23, 2021

- Jim Chen (Starlight Exchange Consortium): Data Mover Projects and the Global Research Platform (GRP)
- Edward Moynihan (Indiana University): TransPAC and The Engagement and Performance Operations Center (EPOC)

2021: PRAGMA Reconnect Symposium (cont.)

5. August 6, 2021

- Weicheng Huang (NCHC): IoT, Federated Learning (FL), Data Market
- Kohei Ichikawa (NAIST): Edge machine learning, Programmable networking with SRv6

6. August 27, 2021

- Prapaporn Rattanatamrong (Thammasat) and Jason Haga (AIST): immersive visualization applications
- Jason Leigh and Luc Renambot (Univ of Hawaii): Sage 3 Demo

Related Workshops in 2021



CENTRA:5 HPC and AI Convergence for Smart Connected Communities

GOING HYBRID

September 15-17 2021
Porto, Portugal

The logo features a decorative border of green dots and icons representing various fields such as science, technology, and connectivity.



2021 Dec. 06 8:00-11:30pm via Webex

2021 Dec. 06 8:00-11:30pm via Webex

Cyberinfrastructure and AI Challenges & Opportunities in the New Normal (II)

Southeast Asia International Joint-Research and Training Program in Cloud Computing and Internet of Things in Taiwan

via Webex

NEW NORMAL

The banner has a dark background with orange and red abstract shapes. It features large white text for the date and time, and smaller white text for the program details. A circular graphic on the right contains the year '2021' and the word 'via Webex'. The bottom right corner contains the words 'NEW NORMAL' in a grid pattern.

PRAGMA Steering Committee Meeting @ SC'22 (November)

Topics:

- Areas of Collaboration
 - Data
 - Edge/IoT
- What are missing?
 - Student Exchanges
 - Testbed Infrastructure



SEAIP 2022 (December)

- Organized by NCHC
- Applications:
 - Rubber Tree Disease Detection (Yeni),
 - Typhoon damage assessment / Rice crop health, Tea plantation health, Cloud Forest Health (Hui-Ping)
 - iDigBio (Jose)
 - Society 5.0 (Shimojo-sensei)
 - Smart Building Digital Twin (Nan/Jason)
 - Noise Pollution (Kritika, Thapana)
 - Coral Reef Health (Indra)



Technologies

- Knowledge Networks
- Public Cloud tools
- Green HPC
- ABCI
- Taiwania 3
- Sage 3

Coming Soon: More details follow this talk

CENTRA 6

Indiana University, Indianapolis, Indiana, US

September 12–15, 2023





Update from Univ of Queensland

- **David Abramson** was awarded (in 2021) the ACM/IEEE Ken Kennedy Award for "innovation in parallel and distributed computing tools with broad applications, as well as leadership contributions to professional service, creating international technical communities, and mentoring".



Rest in Peace: Prof. Putchong Uthayopas

December 2021

"I always remember Putchong's effervescent personality. One could not be sad or unhappy when he was in the room. So many good memories of him and the wonderful things he accomplished. A true loss that is difficult to put into words. I will miss you very much, Putchong!" -- Phil Papadopoulos



Retirement of Arun Agarwal (Univ of Hyderabad)

- June 2022
- PRAGMA 9 held at University Hyderabad in October 2005



Updates at AIST

Satoshi Sekiguchi retired and is now leading an industry/government institute.



Yoshio Tanaka is now AIST's Director General, Department of Information Technology and Human Factors



Jason Haga is now Chief Senior Research Scientist, Continuum Computing Architecture Research Team, Digital Architecture Research Center



Updates at NCHC

- **Fang-Pan Lin** and **Steven Shiau** are now Deputy Directors at NCHC (with Director General **Chau-Lyan Chang**)



Steven Shiau



Fang-Pang Lin



Chau-Lyan Chang

Update at Indiana University

- **Beth Plale** named executive director of Pervasive Technology Institute at IU, after serving at NSF for several years



Update at Universitas Sains Malaysia

- **Habibah Binti A. Wahab** named Deputy Vice-Chancellor (Research and Innovation)



Update from HKU

- **Wing Keung KWAN** retired after staying in HKU for 49 years. After COVID joined the "Beijing - HK Academic Exchange Centre" as an honorary HPC/AI Consultant, enabling to have frequent contact with HK/GBA/China scholars of different academic interests. Technical knowledge still well maintained. HPC, AI, Medical Computing, and Big Data analytics.



Shinji Shimojo Retires from Osaka University

- Retired from Osaka



SCA 2023 HPC

∞

Thank you Shimojo-sensei!

- Best wishes at

Aomori University!

- Working Group



*Shimojo-sensei hard at work at PRAGMA 10
(Australia - 2006)*

- Co-chair of the PRAGMA Steering Committee



Shimojo-sensei accepting “SCA HPC Distinguished Service Award” award at SC’Asia – Feb 2023

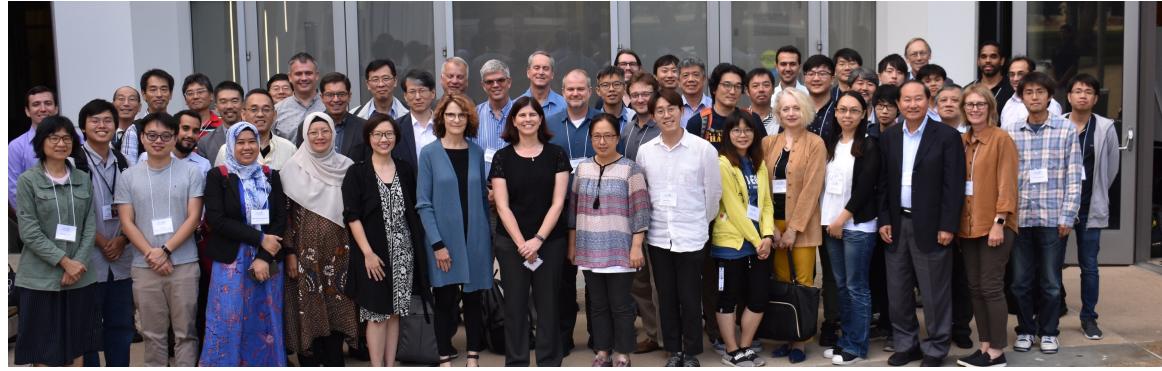
Updates from our PRAGMA founder

- **Peter Arzberger** is the Chair of the University of Texas – Portugal Program's External Review Committee (from 2020) and is starting a new career.



Peter Arzberger and Bill Chang recently travelled to Taiwan for CPS workshop and US/Taiwan annual science meeting (pictured with Fang-Pang Lin and Whey-Fone Tsai).

Power of our PRAGMA Collaboration



- “The bonds of collaboration and friendship are deeply rooted, having been nurtured over two decades. They survived the pandemic and [are/will be] strengthened again [with each visit]”
- “At this PRAGMA workshop (#39), cultivate your connections by contributing **ideas, expertise, and then action** to rekindle projects that show the value of this unique organization!”

Outline

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- Our Future



Call to action: Steering Committee Members (and attendees)

1. Identify something you will **DO**, based on the discussions.
2. This might motivate other members to do somethings too.
3. Then monitor and publish the progress.

Small steps lead to other small steps.

Add qualifiers to action, such as the following:

Visible: An action or next step others can see

Tangible: An action that is felt by others

Meaningful (impactful): An action that
changes what others can do

Beneficial: Others benefit, with knowledge,
access to resources, use of software or data

Topics for Discussion

Working Groups

How: Organizes collaborative activities; Review progress and decide on action items for next meeting



Workshops

When: Twice a year

Regular check-ins drives progress

Working Groups: Organizing our activities, goals, and structure (in transition)

Topic for past several PRAGMA meetings:
Resources too large,
Telescience is an old name,
Bioscience not consistently well-attended, *Cyber-Learning* very small so merged into *Resources*.

Resources and Data / Cyberlearning

At PRAGMA 36, decided to break into smaller focus groups:

- AI Focus Group
- DTN and data transfer focus group
- Edge computing focus group
- EDISON focus group



Hsiu-Mei Chou



Ruth Lee



Fang-Pang Lin



Shinji Shimojo

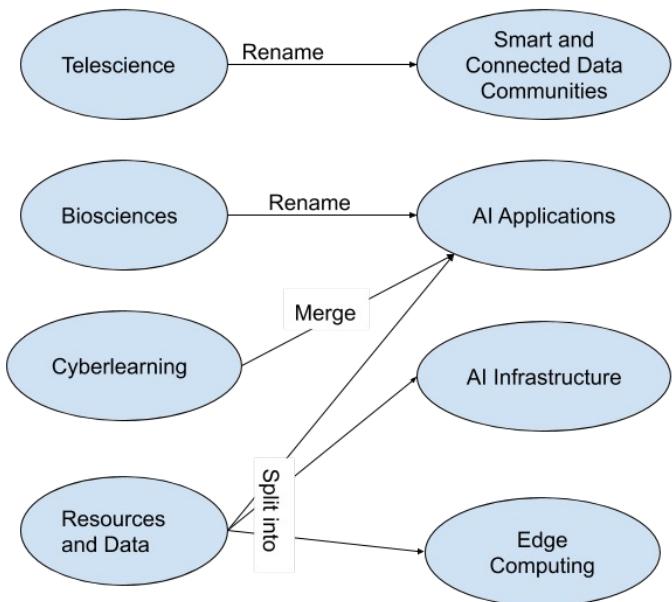
Telescience

Making and improving access to or use of remote equipment (e.g., tiled-display walls or sensors). **Current application areas** of the group include environmental monitoring and traffic flow.

Biosciences

Working Groups: Organizing our activities, goals, and structure (in transition)

Pre-PRAGMA 37



PRAGMA 37

Simplify working groups to:

- Applications and Data
- Integrated Infrastructure and Testbeds

Options for this PRAGMA

1. Don't do anything
2. Rebrand
3. Modify groups – add/delete

How to we drive forward progress?
Deadlines can be helpful.

Workshops: Driving progress and fostering new ideas, launching new activities

PRAGMA
as an
organization

Question: Should we meet once a year and leverage related workshops to drive forward progress? Do we have a PRAGMA 40 host candidate?



Steering Committee Items this meeting

- Membership updates
- PRAGMA Co-chair nominations
- PRAGMA Working Groups
- PRAGMA Workshops

Steering Committee members will meet tomorrow during lunch

Terima Kasih Universitas YARSI!



- Paramaresti Windriyani
 - Sri Chusri Haryanti
 - Ummi Azizah Rachmawati
 - Heru Suhartanto
- And
- Kohei Ichikawa
(FAR Workshop
Engagement)

Terima Kasih!

Next Meeting PRAGMA 40 TBD

Software: <https://github.com/pragmagrid>

Web: www.pragma-grid.net

Info: pragma-discussion@googlegroups.com

CENTRA 6

Indiana University, Indianapolis, Indiana, US

September 12–15, 2023



Global CENTRA welcomes you to
Indianapolis, the Crossroads of America!



Global CENTRA 6 Theme

*AI and Edge-Cloud-HPC
Continuum*

Planning for Workshop (Day 1)

- Focused workshop on AI and Edge-Cloud-HPC Continuum
 - Technology intersection with AI Trustworthiness, Human-Machine Interaction
 - CFP: short papers (5 pages)
 - Early results
 - Papers published as a collection (preprint server)
 - Follow with special issue (inquiring on)

Planning for Main Meeting

- Updates
- Build in opportunities to catalyze collaborative research projects
- Highlight through invited talks, panels:
 - existing partnerships that might be expanded
 - innovative funding for global research (e.g., global nonprofits or state departments or global companies)
 - translated or translatable research and their impact (can we extend these to other countries?)
 - partnerships for global use of research infrastructure (e.g., Vera Rubin)



Evening event

Thur Sep 15

Eiteljorg Museum

The Eiteljorg tells the stories of the peoples of North America in all their diversity and complexity. It's a place for historical context, artistic expression, new ideas, and individual perspectives. Here, visitors immerse themselves in the diverse cultures of the West and Native America. Sharing these amazing American stories is what we do at the Eiteljorg.

Program Committee

Program Co-Chairs

- Beth Plale, Pervasive Technology Institute at Indiana University, US
- Julie Wernert, Pervasive Technology Institute at Indiana University, US

Program Committee (incomplete)

- Ilkay Altintas, University of California, San Diego, US
- Hsiu-Mei Chou, National Center for High-Performance Computing, Taiwan
- Glenn Ricart, US Ignite, Washington, DC, US
- Sachith Withana, Indiana University, US
- Shyhtsun Felix Wu, University of California, Davis, US

Interested in joining? Contact pti@iu.edu

Event Venue: Indiana University Indianapolis Campus

Located in the heart of the city, the IU Indianapolis campus is just steps away from the White River State Park, Lucas Oil Stadium (home of the Indianapolis Colts), and the NCAA Hall of Fame. A short car ride will have you at the famed Indianapolis Motor Speedway, home of the Indianapolis 500.



Accommodations

- Accommodations will be at the nearby JW Marriott Hotel, Indiana's largest and most luxurious hotel, built in advance of the 2012 Super Bowl.
- The Global Centra 6 hotel block is now open and accepting reservations



Registration Now Open!

- Registration is now open and the hotel reservation link is live:
<https://www.globalcentra.org/centra6/>
- IMPORTANT! If you will require a visa to enter the United States, please make arrangements now! Visa letters can be requested during registration or by contacting
pti@iu.edu