Cyberinfrastructure Center of Excellence Pilot:

Where do we go from here?

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cicoe-pilot.org

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- Project Manager at USC ISI
  - CI CoE Pilot and Pegasus WMS projects
- UCSB
- Previously worked at USC's Institute for Creative Technologies as part of the Integrated Virtual Humans group

Connecting CI, Connecting People

- Dedicated to the enhancement of CI for science
- Platform for knowledge sharing and community building
- Forum for discussions about CI sustainability and workforce development and training
- Key partner for the establishment and improvement of large-scale projects with advanced CI architecture designs

Alliance for Cyberinfrastructure

https://alliance4ci.org/

Alliance4CI builds on and amplifies the alliance members' expertise in the areas of cybersecurity, science gateways, and CI for the Large Facilities' data lifecycle. The alliance strives to enhance Cyberinfrastructure (CI) for science, to serve as a resource for the CI practitioners, and to build best practices around CI community engagement.

The Alliance4CI is a partnership between three NSF-funded projects:

https://trustedci.org/

https://sciencegateways.org/

https://cicoe-pilot.org/

- **CI CoE Mission Statement:**

  CI CoE provides leadership, expertise, and active support to cyberinfrastructure practitioners at NSF Major Facilities and throughout the research ecosystem in order to enable ongoing evolution of our technologies, our practices, and our field, ensuring the integrity and effectiveness of the cyberinfrastructure upon which research and discovery depend.

- **CI CoE Vision**:

  The CI CoE envisions a cyberinfrastructure ecosystem, composed of people, practical knowledge, processes, and cyberinfrastructure, that enables research communities to efficiently and effectively attain the NSF's vision of a nation that is the global leader in research and innovation.

Deep engagement:
- *Identify a topic that is important and not-yet fully solved by the LF,*
- *Conduct focused discussions, mix of virtual and in-person presence, hands-on work*
- *Includes an engagement template that defines scope, sets expectations, identifies products*
- Work products: documents/papers, prototypes, schema implementations, demos

Topical discussions:
- Identify a topic that is important to a number of LFs
- Facilitate virtual discussions, sessions at conferences, collect and share experiences, distill best practices
- Discover opportunities for shared infrastructure

Community building:
- Identify related efforts
- Collect and disseminate information about the broad community activities
- Maintain a living resource for community information
- Host community activities

Goals

- Learn about LFs (operations, enhancements)
- Understand how a CI CoE can help with planned CI enhancements
- Inform the model for a CI CoE
- Address issues related to sensor data collection and processing
- Help with NEON data annotation and discovery
- Visualize AOP data and enhance access
- Design an IDM solution

The CI CoE had four types of profound influence on NEON developers. First, as we transitioned from construction to operations, our developers benefited from greater awareness of the wider NSF CI community practices. Second, deep engagement with CI CoE experts produced three major technologies insertions into NEON CI, remarkably within 6 months. Third, open dialog and prototyping with CI CoE experts affirmed our workflow-based sensor message handling strategy and built our confidence to invest in this novel method. NEON's CI and Data Sciences team mission includes advancing methods and ecological science; interaction with CI CoE nudged our efforts ahead significantly through community workgroup involvement, presentations and publications.

– Tom Gulbransen, NEON

Products: *software prototypes, documents, schema designs, presentations, videos, publications*

GOALS

- Combine UNAVCO and IRIS or SAGE/GAGE in a Common Cloud Platform (CCP) project

- Pilot/implement the transfer of an initial subset of their collective data resources and services from in-house to the cloud.

CI CoE Pilot Engagement

- Gained knowledge from a large-scale, extremely complex, real-time system & understanding of important design considerations for cloud migration

- Contributed to the CCP documents

- Jointly created a companion document which covers cloud migration considerations for data, resource orchestration, cloud storage, messaging, supporting FAIR data principles, identity management (in collaboration with Trusted CI)

- Expect to engage further

GOALS

- Combine NEON ecosystem data with NCAR atmospheric and land modeling capabilities

- Inspire new discoveries with integrated data from NEON and NCAR modeling

- Use cloud technologies to enable data modeling and wide community access

CI CoE Pilot Engagement

- Consult on cloud technologies, including data, containers, etc.

- Helped inform NEON/NCAR's proposal to NSF

- Expect to engage further once funded (CI CoE Pilot provided letter of collaboration)

Deep Engagements

- **OOI** - help with the new datacenter provider selection
- **ARECIBO** - help with cloud data processing considerations
- **GAGE (in collaboration with Trusted CI) -** Recommending a federated IdM platform for GAGE to identify and track usage of data available through their research portal.

Working Groups & Community Engagement

- **Identity Management WG (in collaboration with Trusted CI) -** Disseminate IDM information
- **CI/CS Workshop (in collaboration with ResearchSOC) -** 2-day workshop

CI/CS WORKSHOP
THE COMMUNITY TOGETHER

2020 Cyberinfrastructure/Cybersecurity Workshop

August 18 and August 20, 2020

https://cics-workshop.org

- Continue Engagement (Deep, Working Groups, Community)
- Finish the analysis of the data lifecycle and workforce development interviews and disseminate the results

- **Finalize the Blueprint for the CI CoE**
- **Propose the CI CoE to NSF**

Thank you!

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