



<sup>1</sup>Information Sciences Institute – University of Southern California, <sup>2</sup>RENCI – University of North Carolina at Chapel Hill, <sup>3</sup>University of Notre Dame, <sup>4</sup>Indiana University-Indianapolis School of Informatics, Computing and Engineering, <sup>5</sup>University of Utah, <sup>6</sup>Texas Tech University

# MAJOR MULTIUSER FACILITIES ENABLING BASIC RESEARCH

**OCEAN OBSERVATORIES INITIATIVE**  
Bermuda Array  
Deep-ocean Cable Array  
Shoals/FAR Array

**POLAR PROGRAMS - ARCTIC**  
Polar Research Vessel  
Ice Array  
South Pole Station, Alaska  
Summit Station, Greenland

**NATIONAL SUPERCONDUCTING CYCLOTRON LABORATORY**  
R/V Bionica  
R/V Oceanus (Working 2001-10; Transfer October 2002)  
R/V Endeavour (2002 Acquiring) (R/V Endeavour (2002)  
R/V Pelican (Lumped 2002 Acquiring 2002)  
R/V Collier (R/V Neos)

**U.S. ACADEMIC RESEARCH FLEET**  
RESEARCHER VESSELS  
R/V Endeavour (2002 Acquiring) (R/V Endeavour (2002)  
R/V Pelican (Lumped 2002 Acquiring 2002)  
R/V Collier (R/V Neos)

**LAZER HADRON COLLIDER**  
A tunnel LHC experiment  
Compact Rings Extended

**NATIONAL DEEP SEISMICITY FACILITY**

**SEISMOLOGICAL FACILITY FOR THE ADVANCEMENT OF GEOSCIENCE**

**NATIONAL CENTER FOR ATMOSPHERIC RESEARCH**  
NSF NCAR

**NSF/CASIO**  
Back Observing Laboratory's Research Activity  
Yellowstone NCAI Rupturing Suppression Facility  
High Altitude Observatory (NCAI/UCAR)

**GEOLOGIC FACILITY FOR THE ADVANCEMENT OF GEOSCIENCE**

**NATIONAL HIGH MAGNETIC FIELD LABORATORY**

**AMERICAN-SOVIET SOUTH POLE STATION**  
Palmer Station

**NSF PALMER & PALMER (teal)**  
R/V Latham & C. (dark green)

**INTERNATIONAL OCEAN DISCOVERY PROGRAM**  
JOIDES Resolution (blue)

**ARCTIC OBSERVATORY**  
Great Salt Observatory  
IceCube Neutrino Observatory

**NSF'S NATIONAL OPTICAL-IR ASTRONOMY RESEARCH LABORATORY**  
NSF's Park National Observatory  
Cerro Parí National Observatory  
Cerro Tololo Inter-American Observatory  
Very Large Array  
Very Large Telescope Array

**NATIONAL ECOLOGICAL OBSERVATORY NETWORK**

**NATURAL HAZARDS ENGINEERING RESEARCH INFRASTRUCTURE**

**GROUND-BASED ASTRONOMY AND ASTROPHYSICS**

**NATIONAL RADIO ASTRONOMY OBSERVATORY**  
Atmospheric Large Millimeter/Submillimeter Array  
Very Large Array  
Very Large Telescope Array

**NATIONAL ICE GREENHOUSE**  
Daniel F. Hooley Solar Neutron

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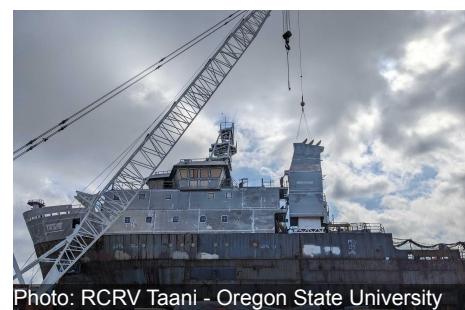
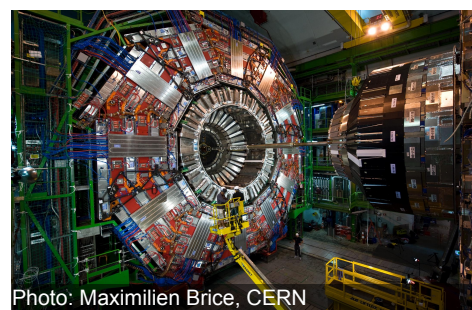
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**NATIONAL ECOLOGICAL OBSERVATORY NETWORK**



## CI Compass: Strategy and Expertise

- 
- The diagram illustrates the NSF CI Ecosystem and the MF Data Lifecycle. On the left, the NSF CI Ecosystem is shown as a central hub labeled "CI CoE for SCIENCE" surrounded by "NSF Major Facilities" (MF) and "BETTER CI". The ecosystem is connected to "NSF CI Ecosystem" and "Broker connections". On the right, the MF Data Lifecycle is shown as a circular process with stages: Capture, Initial Proc., Central Proc., Storage, and Dissemination. The lifecycle is supported by "Deep expertise in CI & CI project management" and "Learn Curate best practices Collect data". The lifecycle is also connected to "Advise Prototype Evaluate" and "Disseminate knowledge & findings".



    	  	  
<p>Information, Resource Management Workflows, Project Management</p>	<p>Resource Management, Networking, Clouds, CI Architecture</p>	<p>Semantic Technologies, Sensors Operations, Workflows Development, Communication, Cloud/Cloudless</p>
  	  	  
<p>Data Archiving</p>	<p>Data Management, Visualization, Clouds, CI Deployment</p>	<p>Communication and Organization Science</p>



The NSF Cyberinfrastructure (CI) Center of Excellence for  
Navigating the Major Facilities Data Lifecycle

The diagram illustrates the data lifecycle for the FAIR Data Identity Management framework, consisting of five sequential stages:

- Data Capture:** Involves a **Sensor or instrument** (e.g., GPS, telescope, DOMs) collecting data.
- Initial Processing:** Data is processed by a **Processor**, often at or near the sensor site.
- Central Processing:** Data is processed at a **Main data center** and a **Secondary data center**.
- Storage, Curation, & Archiving:** Data is stored at a **Main data center** and a **Secondary data center**, with **Onsite storage** also indicated.
- Data Access, Dissemination, & Visualization:** Data is accessed and visualized (e.g., via a laptop and smartphone).

A green bar at the bottom highlights **CROSS-CUTTING CI ELEMENTS** that span all stages: **FAIR Data** and **Identity Management**.

Arrows indicate the flow of data from left to right, with feedback loops from the final stage back to the others. The final stage leads to **Scientists, Educators, Students, Public**.

Evaluate CI plans. Help architect new solutions. Develop proofs of concept. Assess applicability/performance of existing solutions. Help leverage existing technology.

**Engagements**

**Topical Working Groups**

**Workshops**  
*MF CI & Topical*

**Student Program**  
*CICF*

**Other**  
*Webinars, surveys, reports*

**Internal**  
*Planning, project mgmt*

**Engagements**

1 Understand needs

2 Learn

3 Provide expertise

4 Distill best practices

5 Disseminate knowledge

Evaluate

MF

- Email [engage@ci-compass.org](mailto:engage@ci-compass.org) to explore potential engagements with CI Compass

1. Identify a topic that is important to several MFs and form a topical working group (WG)
2. Facilitate discussions, organize sessions at conferences, collect and share experiences, and distill best practices

FAIR Data Topical WG

1. Share knowledge, build connections
2. Host community activities: workshops, training, webinars
3. Identify related efforts
4. Help connect people, projects, and communities
5. Collect information and disseminate information about the broad community activities and training opportunities



## CI Compass Student Fellowship (CICF)

- 
- Zoom Meeting
- CFCompass
- ## What is Object Storage anyway?
- OK, it's a persistent dictionary of keys and values
- Example: CO2 concentration over four year
- |        |       |
|--------|-------|
| 1.00mm | 1.42% |
| 2.00mm | 1.49% |
| 3.00mm | 1.42% |
| 4.00mm | 1.42% |
- The times are the keys, the percentages are the values
- Zoom Meeting
- Participants: 10
- Elia Farnes
- Zoom

## CONTACT US

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School of Engineering  
Information Sciences Institute

rencia



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