FAIR Instruments and Facilities: Increasing the Discoverability and Traceability of Research Facilities and Instruments through Persistent Identifiers

NSF FAIR Open Science (FAIROS)
Research Coordination Network (RCN)

NSF Awards #2226396, 2226397, 2226398

https://ncar.github.io/FAIR-Facilities-Instruments/

Organizations and Project Personnel

NCAR | NATIONAL CENTER FOR ATMOSPHERIC RESEARCH

Matt Mayernik
Greg Stossmeister

University of Colorado Boulder

Andrew Johnson
Aditya Ranganath
Matthew Murray

NSF Awards
2226396
2226397
2226398

FLORIDA STATE UNIVERSITY

Renaine Julian

Stanford University

Claudius Mundoma

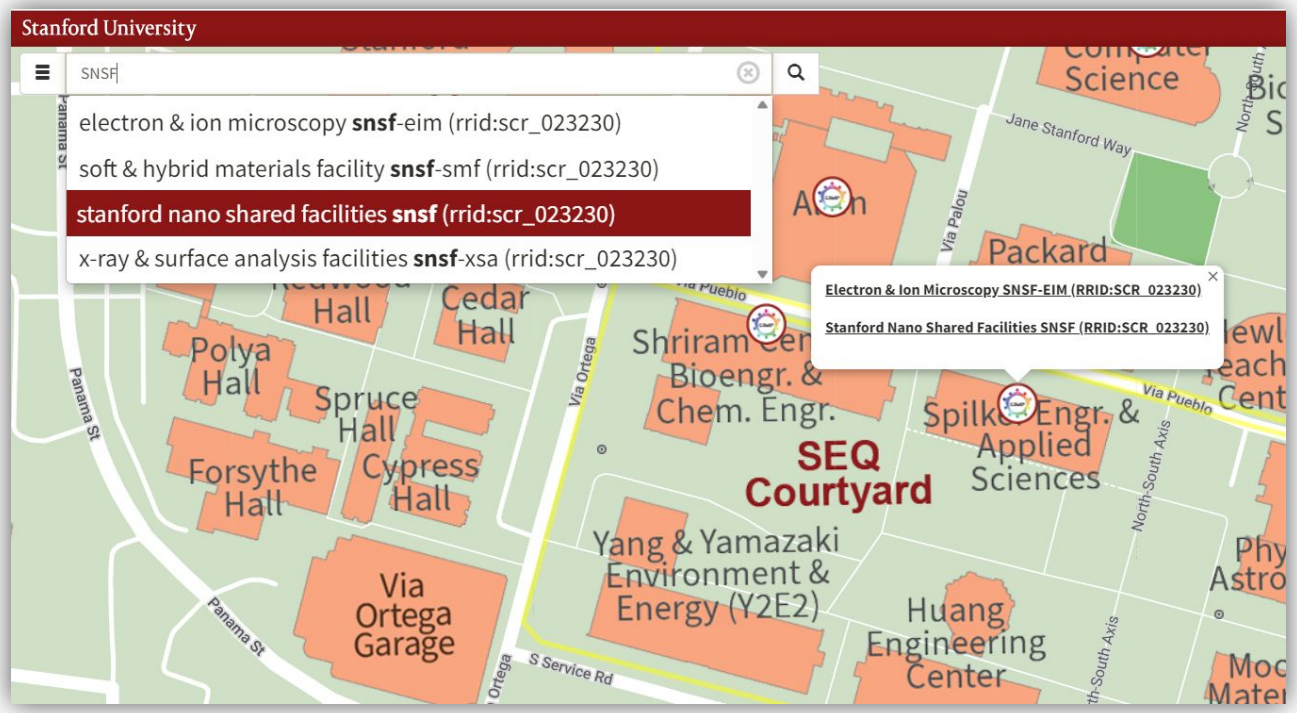
Project Goals

- Create and facilitate Research Coordination Network (RCN) focused on the assignment of Persistent Identifiers (PIDs) to research facilities and instrumentation
- Aggregate use cases for why/how PIDs can assigned to facilities and instruments
- Facilitate the generation of expertise and guidance on the key topics of interest
- Provide recommendations and lessons learned targeted to the multiple communities involved

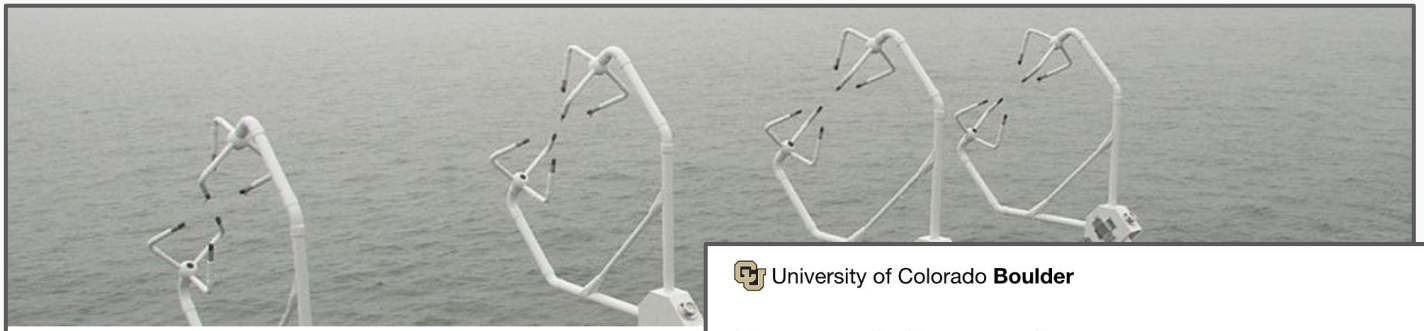
Examples of PID adoption for facilities and instruments

Mapping of Stanford Shared Instrumentation Facilities with RRIDs helps you search, locate, access and cite research capabilities at your fingertips

search,
locate,
access, ...
cite



Examples of PID adoption for facilities and instruments



Integrated Surface Flux System

ISFS DESCRIPTION

University of Colorado **Boulder**

Research Computing

OFFICE OF INFORMATION TECHNOLOGY

Menu

Alpine

Alpine is a heterogeneous supercomputing cluster based primarily on the AMD EPYC "Milan" CPUs with Nvidia A100 GPUs; AMD MI100 GPUs; HDR InfiniBand; and 25 Gb Ethernet. Alpine is jointly funded by the University of Colorado Boulder, the University of Colorado Anschutz, Colorado State University, and the National Science Foundation (award 2201538).

To learn more about how to use Alpine, including information on logging in, modules, running jobs, and file systems, visit our Alpine documentation for more details.

https://doi.org/10.5065/D6ZC80XJ

https://doi.org/10.25811/k3w6-pk81

Year 1 Project Efforts

- Compiling information and resources
- Project web site: https://ncar.github.io/FAIR-Facilities-Instruments/
- Compiling relevant people, projects, and documents
- Conference engagement - AMS, ABRF, ESIP
- Focus groups & presentations to relevant groups
  - NSF FAIR Open Science RCN project cohort
  - Focus group discussion with Earth science facility users
  - Focus group discussion with Earth science facility providers
  - FSU campus facilities staff
  - CI Compass - FAIR Data Working Group
- Sept 2023 Boulder Workshop

Workshop #1 Boulder, CO

- 35 participants
  - 30 in-person and 5 remote
- Participants from 17 different states
- Academic institutions, national laboratories, nonprofit organizations, and private industry
- 18 short presentations
- 3 breakout sessions - each with 3 groups
- Google Drive for presentations and breakout materials - https://buff.link/fair

Workshop Observations

1. There was a stated **need** for PID assignment to research instrumentation. Encourages scientific reproducibility, ensure provenance of data, and provides credit for instrument developers and providers.
2. The current use of PIDs for instruments is scattered/inconsistent in how/which ones are used. **Multiple PID systems** being used for the purposes of identifying research instrumentation.
3. Deciding which PID system to use is less critical than finding ways to **lower barriers for adoption** of PIDs and better communicate their use and value.
4. **Metadata** may sometimes be more appropriate than PIDs for solving challenges related to research traceability, transparency, and reproducibility.

Workshop Observations (cont.)

5. **Granularity and evolution** considerations can be complicated for instrumentation. Start simple, and then move to more complicated approaches as needed.
6. Instrument and facility providers face **resource limitations** that make assigning, managing, and promoting PIDs difficult.
7. Convincing users of the **value** of citing PIDs for instruments will be important to advance adoption.
8. A lack of shared understanding among stakeholders' **incentives** may be challenging. Creating and communicating incentives with the research community will be important to adoption.

Changes to facilitate PID adoption

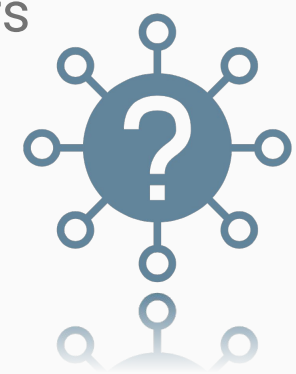
Culture change: It is important to create a widespread norm around the citation of research instruments. Creating a cultural norm around instrument citation in relevant scholarly communities will take time, but we can begin to catalyze it through small steps.

Policy change: Change will also require relevant stakeholders (such as funders, journals, and universities) to adopt policies that encourage the citation of instruments.

Institutional change: Relevant institutions must change and further develop their infrastructures in order to support instrument citation. PID providers need to ensure that efforts are coordinated, and not duplicated or working at cross purposes.

What do you think?

- From your point of view, are some of the potential use cases or benefits of PID adoption for research instrumentation and facilities?
- What are some of the anticipated challenges or barriers to the adoption and use of PIDs for facilities and instruments?



Staying connected

Project website:
https://ncar.github.io/FAIR-Facilities-Instruments/

Sign-up for project communications here