FAIR Facilities and Instruments: Enabling transparency, reproducibility, and equity through persistent identifiers

NSF FAIR Open Science (FAIROS)

Research Coordination Network (RCN)

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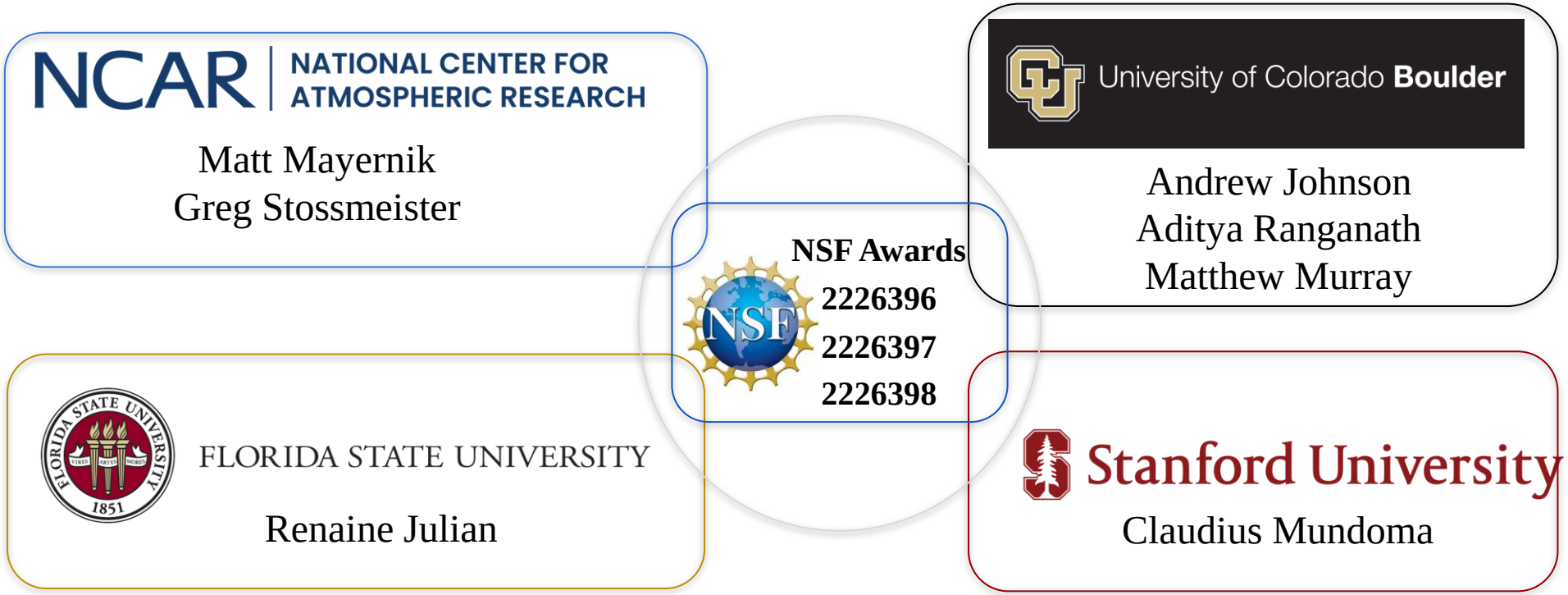
Florida State University Libraries

Project goals

Develop	Compile	Facilitate	Produce
Develop a Research Coordination Network (RCN) focused on the assignment of Persistent Identifiers (PIDs) to research facilities and instrumentation	Compile use cases for why and how PIDs might be assigned to facilities and instruments	Facilitate the generation of expertise and guidance on the key topics of interest	Produce recommendations and lessons learned targeted toward the specific use cases

Organizations & Personnel



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

Key Questions

F

Findable - How do we enable people to find relevant facilities or instruments?

A

Accessibility - How do we enable facilities and instruments to be accessible by wider audiences?

I

Interoperability - How do we consistently capture relationships between persistent identifiers?

R

Reusability - How can we incorporate information about facilities and instruments into data set provenance metadata more consistently?

PIDs for Facilities and Instruments - NCAR

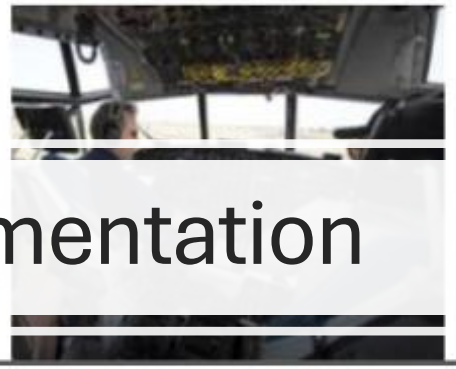
Integrated Surface Flux Sy

ISFS DESCRIPTION

NSF/NCAR C-130

Aircraft Overview

The Lockheed C-130 "Hercules" aircraft is a four-engine, medium-size utility aircraft that has proven to be one of the most well-known and versatile aircraft ever built. The NSF/NCAR aircraft is a model EC-130Q, similar to the more common model C-130H model except for electrical and air-conditioning modifications. The aircraft is an all-metal, [illegible] T-56-A-15 turboprop engines. It is equipped with dual-wheel, tricycle landing gear with the main gear wheels arranged in tandem and the nose gear arranged side-by-side. The C-130, maintained and



C-130

NSF/NCAR C-130

NSF/NCAR C-130 Investigator Handbook

Airborne Instrumentation

NSF/NCAR C-130 Request Guidance

Aircraft Schedules

Request the NSF/NCAR C-130

Contact RAF

Example: doi Implementation

https://doi.org/10.5065/D6ZC80XJ

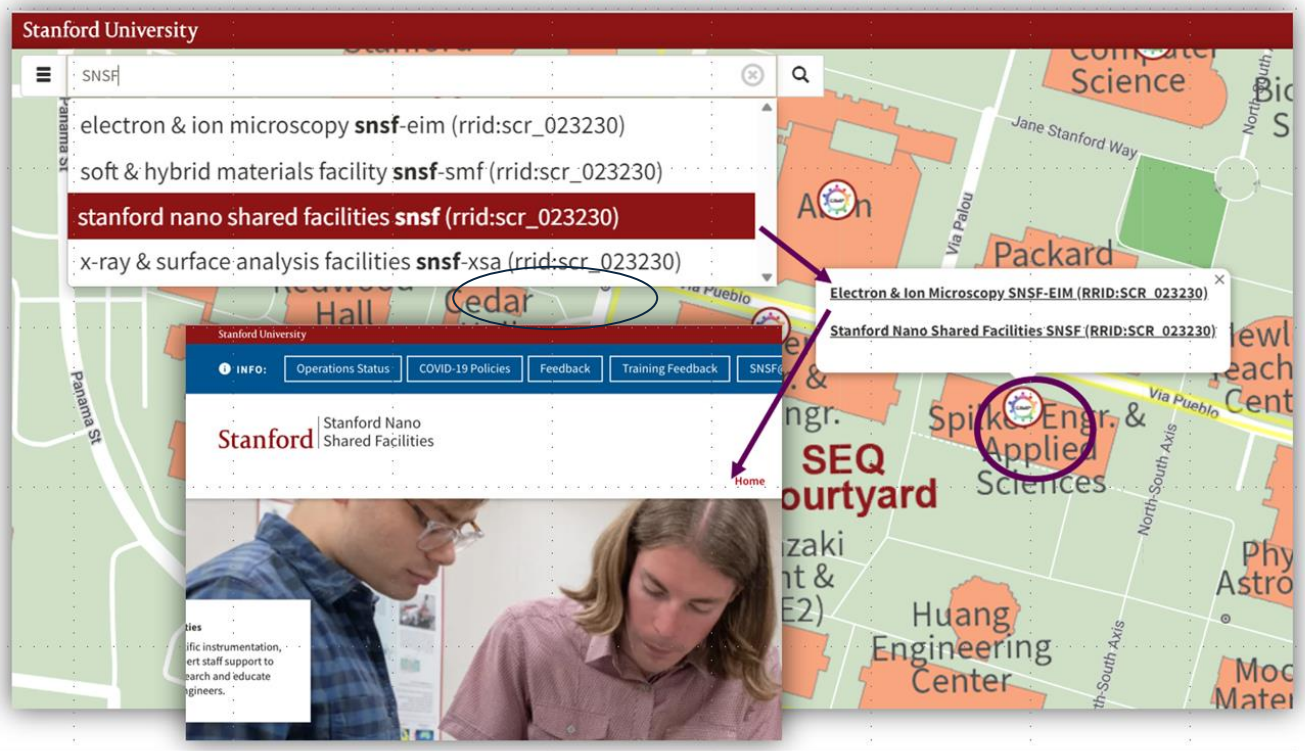
https://doi.org/10.5065/D6WM1BG0

RRID Implementation at Stanford

Easily locate 30+ shared instrumentation facilities

https://campus-map.stanford.edu/

search & locate...



Stanford | RESEARCH
Vice Provost and Dean of Research

Stakeholders

Academic research institutions

National laboratories

Nonprofit organizations

Private industry

Facility and instrument operators

Research scientists/users

Publishers and editors Instrument manufacturers

PID system providers (RRID, DOI, ARK)

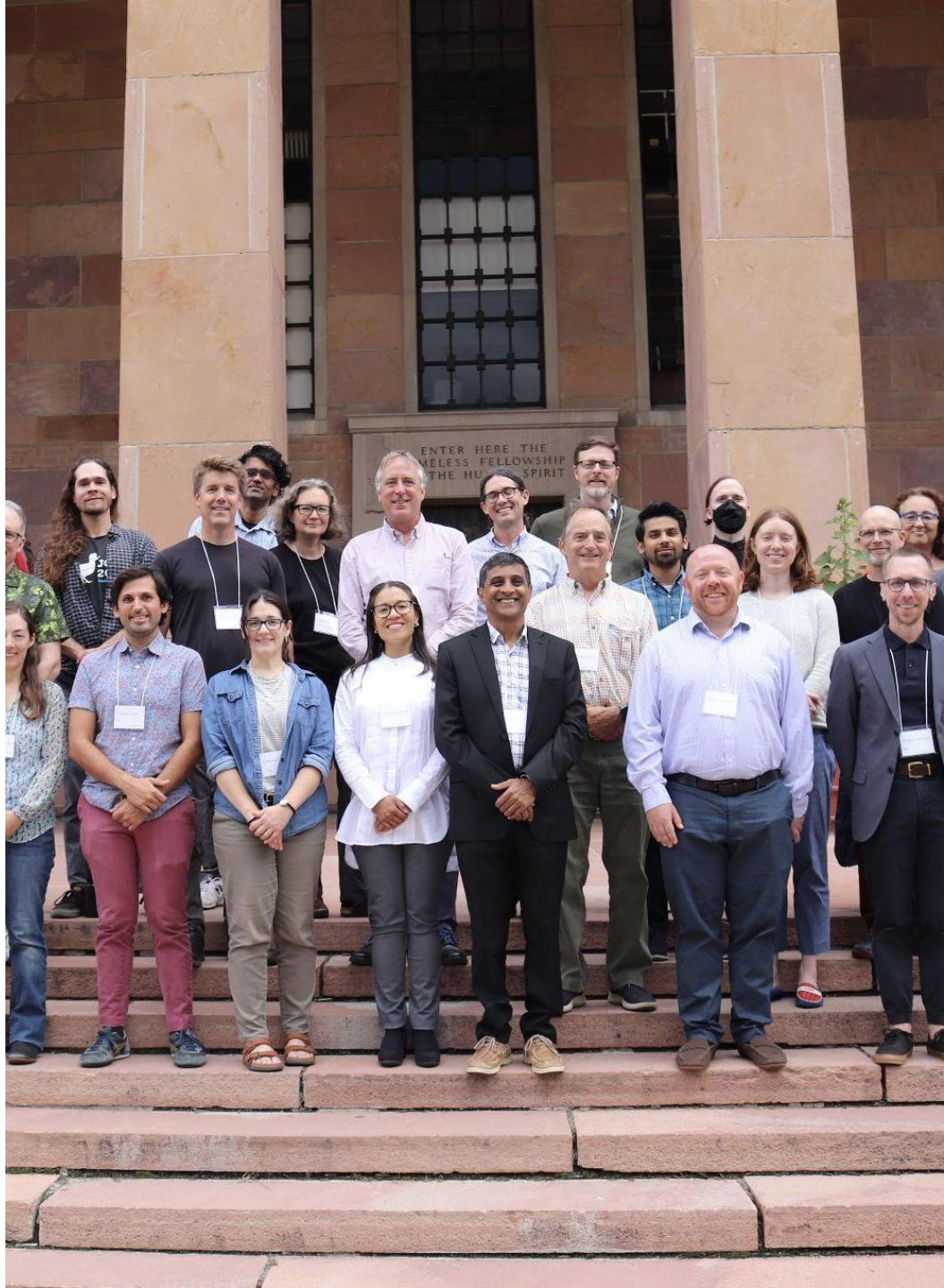
Milestones

- Two major workshops (2023 & 2024), each bringing together 30+ stakeholders
- Facilitated focus group sessions with facility and instrument operators
- Identified key challenges and opportunities around PID assignment and adoption
- Development of initial recommendations and best practices

Workshop #1: September, 2023 – Boulder, CO

- Need: PIDs are essential for scientific reproducibility, data provenance tracking, and crediting instrument developers/providers
- PID Systems: Current PID usage is scattered and inconsistent across different systems used for research instrumentation
- Adoption: The focus should be on lowering adoption barriers and communicating value rather than choosing specific PID systems
- Metadata: Consider metadata alongside PIDs - PIDs alone cannot solve all research traceability and reproducibility challenges
- Granularity: Start simple with granularity and evolution tracking, then increase complexity only as needed
- Resources: Instrument/facility providers face significant resource limitations in assigning and managing PIDs Value:
- Demonstrating clear value to users is critical for driving PID adoption and citation
- Incentives: Different stakeholders (researchers vs administrators) require different incentives for PID adoption

Workshop #1 report: doi:10.5065/zgsx-2d06



Workshop #2: August 2024- Tallahassee, FL

Emerging topics

- Need for facility and instrument PID recommendations as part of a national PID strategy
- Need for more robust infrastructure and services for facility and instrument PIDs
- Engagement needed with instrument manufacturers to adopt PID-supporting practices
- Engagement needed with journal publishers and editors on PID incorporation

Workshop #2 report: doi:10.5065/jea7-yf24

Synergies between workshops

- PIDs for facilities and instruments (RRIDs and DOIs) continue to proliferate and integrate into wider PID ecosystems
- Ongoing need for practical recommendations for facility/instrument operators on granularity and PID assignment
- Recommendations for users need clear value propositions for using PIDs

Reproducibility and Open Science

1

Supporting research transparency through: Clear attribution of facility/instrument contributions

- Enhanced instrument discoverability
- Better tracking of research outputs
- Improved metadata capture and creation

2

Enabling machine-readable connections between:

- Research facilities
- Instruments
- Datasets
- Publications

Potential impacts on OS and Reproducibility

- Consistent citation of research infrastructure
- Documentation of instrument configurations
- Linking of research outputs to source facilities
- Machine-readable provenance chains
- Automated tracking of facility impact

Looking forward

Developing	• Developing PID strategy recommendations for facilities and instruments
Creating	• Creating practical implementation guidelines
Building	• Building relationships with specific groups like publishers and manufacturers
Documenting	• Documenting cases of complex instrument documentation

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