



2022 RESEARCH INFRASTRUCTURE WORKSHOP

Plenary Session

Mid-Scale Research Infrastructure: an NSF overview

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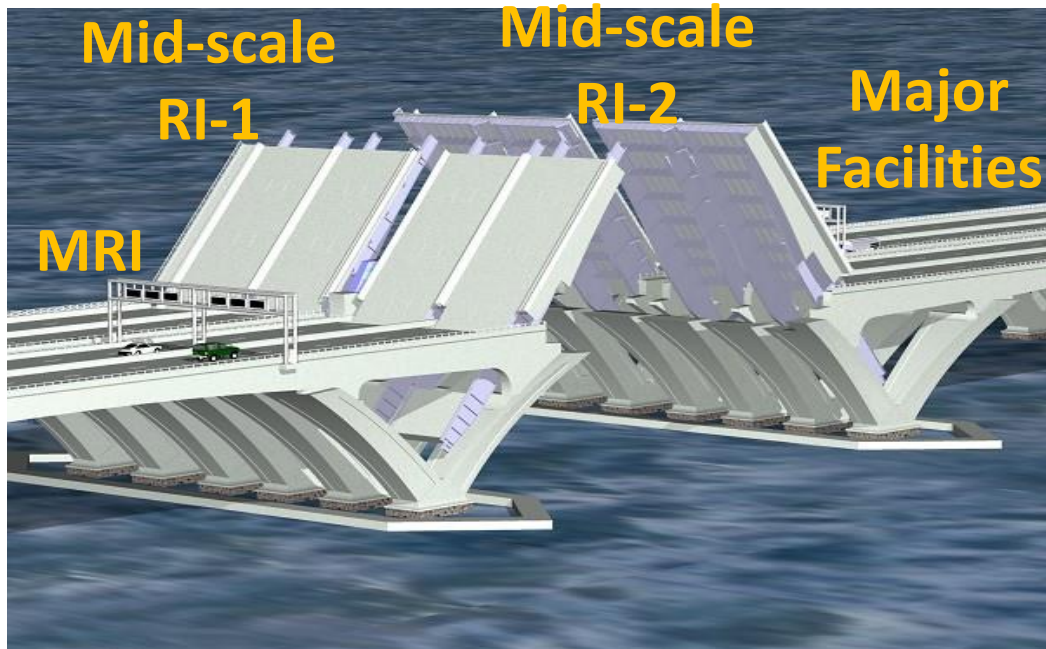


Presentation Outline

- Mid-scale RI Motivation
- Mid-scale RI Definition
- Programmatic Commitment
- Portfolio Characteristics
- RIG: Concepts and Flexibilities
- Questions



Recognition of the Need for mid-scale RI



- Many important potential experiments and facilities fall between the Major Research Instrumentation (MRI) program and the Major Multi-user Facilities range.
- Missed opportunities that may leave essential science undone.
- NSF created a new agile process to support experimental research capabilities at this scale of investment.



Congressional and NSB Support

2017 American Innovation and Competitiveness Act (AICA), directed NSF to “evaluate the existing and future needs, across all disciplines supported by the Foundation, for mid-scale projects.”

2018 House of Representatives encouraged the NSB “to consider further changes that would bridge the gap between the Major Research Instrumentation program and the MREFC account while also developing processes appropriate for mid-scale infrastructure, cyberinfrastructure, and instrument upgrades to be funded through the MREFC account.”

NSB issued a report (NSB-2018-40) that made several recommendations, including “a long-term agency-level commitment to mid-scale research infrastructure.”



Definition: Midscale Research Infrastructure

Congressional Definition of Mid-scale Project

Per Section 109 of AICA 2017 (Section 1.4.4 of the RIG), a mid-scale project means: research instrumentation, equipment, and upgrades to major research facilities or other research infrastructure investments that exceed the maximum funded by the Major Research Instrumentation (MRI) program and are below that of a Major Facility.

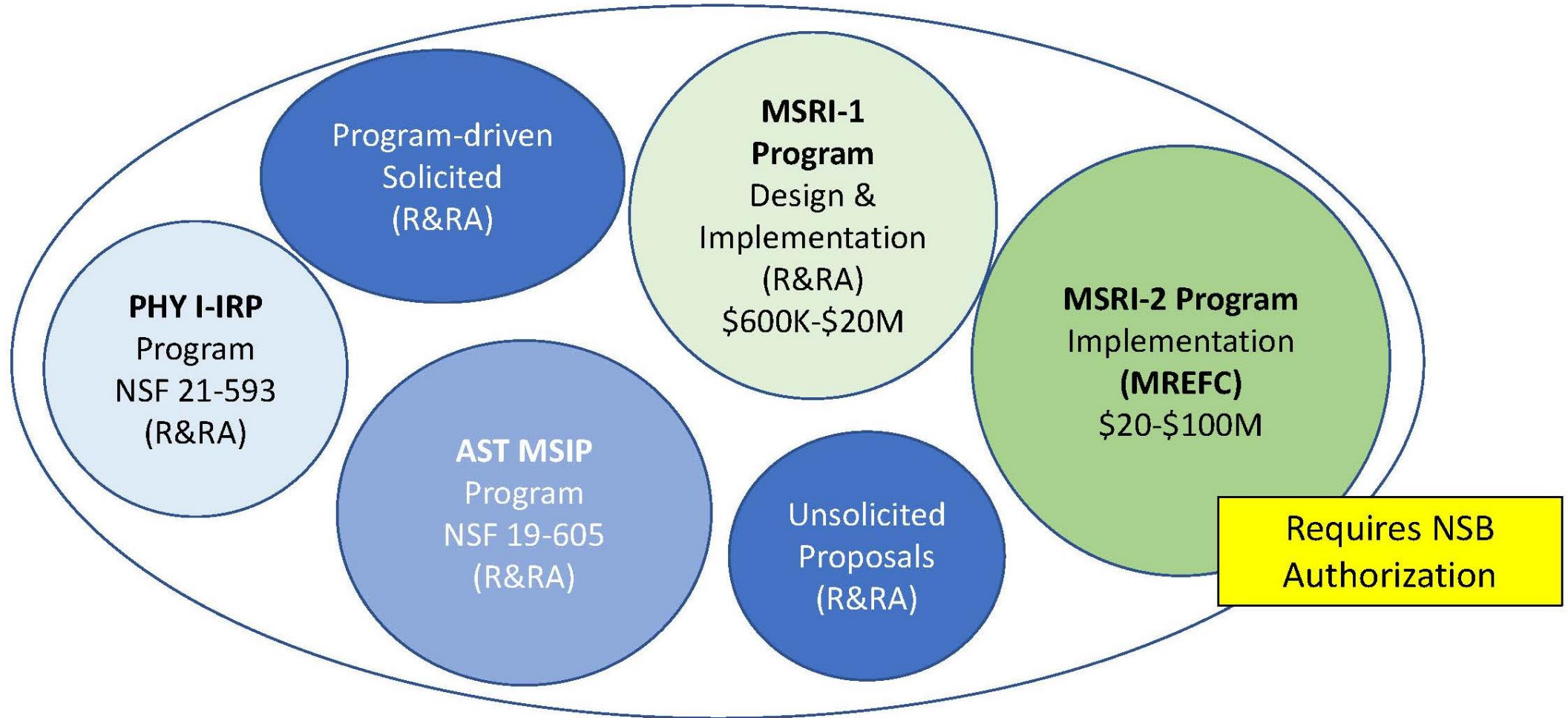
NSF Definition of Research Infrastructure (RI)

Per 2016 NSF Strategic Review (Section 9 of the RIG), any combination of: facilities, equipment, instrumentation, computational hardware and software, and the necessary supporting human capital.

RI with an implementation cost between MRI and MF



NSF's Mid-scale 'Umbrella'





Midscale Research Infrastructure Projects

Mid-scale RI Projects

Stand alone or coupled/associated with major research facilities or other research infrastructure investments.

Training a diverse workforce in design and implementation of Science and Engineering infrastructure.

Emphasize strong scientific merit and enable national research priorities.

Track - 1:

- Design and Implementation projects (Up to \$20M)

Track - 2:

- Implementation projects only (\$20 - \$100M)



Midscale Research Infrastructure

Mid-scale RI Proposal Review

- **Working Groups - with broad agency representation**
- **Cognizant PO assignment**
- **Reviews & Recommendation** – external experts and cross-agency groups
 - Science and technical – NSF Merit Review Criteria
 - Project readiness and project management
 - NSF Cost Analysis
- **Additional Review Criteria**
 - Diverse workforce development in design and implementation of S&E infrastructure
 - Strong scientific merit, enabling national research priorities.



Midscale RI Portfolio Distribution

Directorate/Discipline

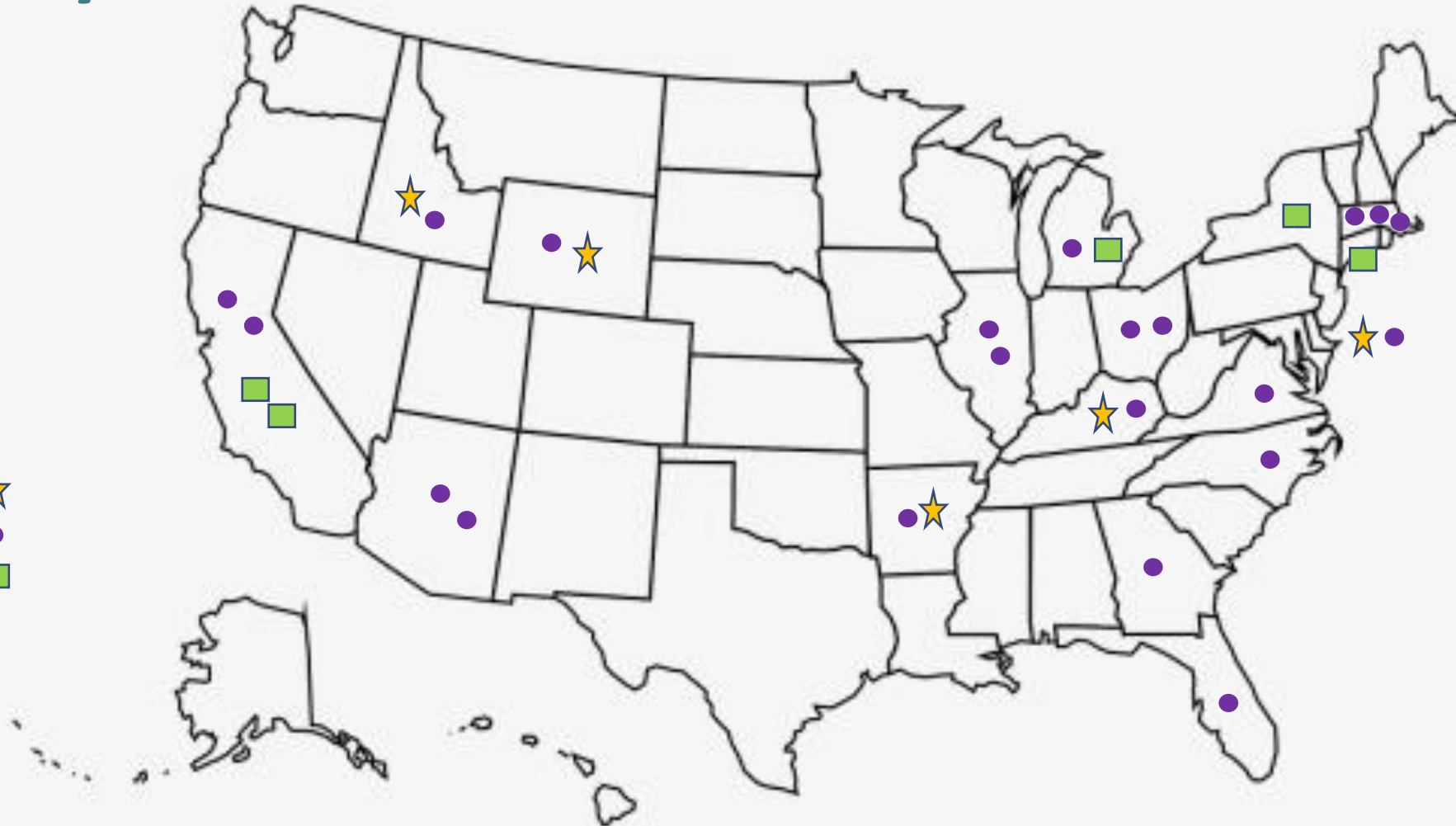
Directorate	Mid-scale RI 1	Mid-scale RI 2
Biological Sciences (BIO)	3	1
Computer Information Science & Engineering (CISE)	4	0
Engineering (ENG)	1	1
Geosciences (GEO)	6	1
Mathematical & Physical Sciences (MPS)	6	1
Social, Behavioral & Economic Sciences (SBE)	1	1



Midscale RI Portfolio Distribution

Geographic by lead Institution

- EPSCoR ★
- Mid-scale RI-1 ●
- Mid-scale RI-2 ■





Midscale Research Infrastructure

Status of Mid-scale RI Programs

Track - 1:

- New solicitation in development
- Publication soon

Track - 2:

- Review of proposals for 2nd cycle ongoing
- Awards planned for early CY 2023



Midscale Research Infrastructure

Section 5 of the 2021 *Research Infrastructure Guide* (RIG)

What changed:

- Clarity on use of EVM > NOT required
- *“The project management controls should identify the methods and quantitative measures to compare the technical progress and costs during execution to the planned schedule and budget.”*

What will be changing in next RIG revision:

- RIG Section 3.4.2 - Detailed Guidelines for PEP with focus on Mid-scale RI minimums



Midscale Research Infrastructure

Section 5 of the 2021 *Research Infrastructure Guide* (RIG)

What has not changed:

- Stage-gate review process & prescribed life-cycle Stages do not apply:
 - “Implementation” is analogous to the Construction Stage
- No Cost Overrun Policy (NCOP) does not apply:
 - Risk-adjusted TPC at PDR > **No PDR**
- **The PEP is critical** > Tailor to the project

Flexibilities offered do not preclude rigor!
“Operate at speed and scale”