

NSF and Campus Cyberinfrastructure Plans: Enabling Access for Academic Collaborations

IAM Online

Wednesday, January 20, 2021

Presenters:

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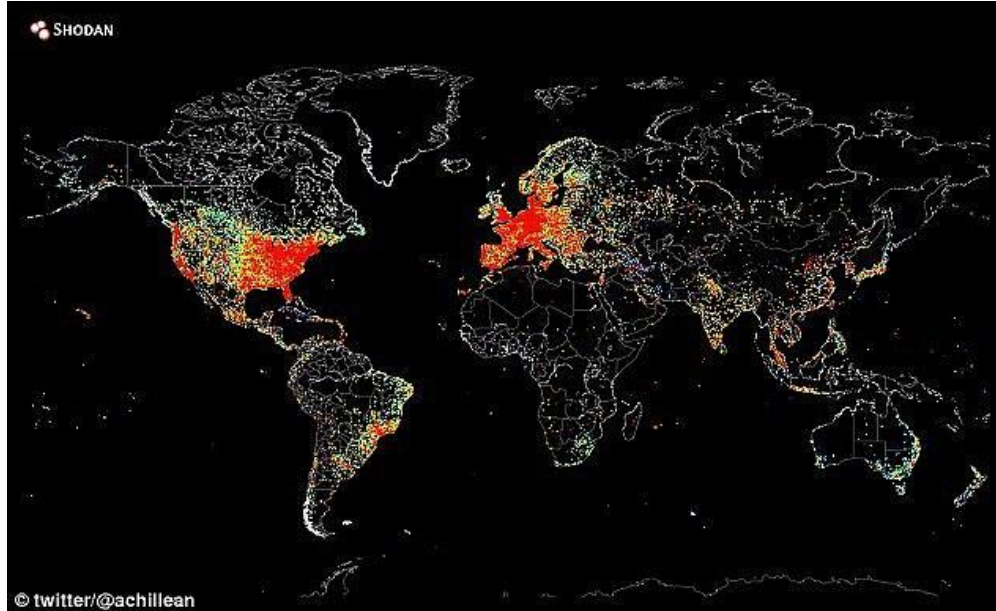
Tom Barton, University of Chicago and Internet2

NSF CC* Campus CyberInfrastructure plans

The NSF CC* program reinforces adoption of these best (or required) practices by having proposers specifically address them:

The [Campus CI] plan should include the campus status and plans with respect to federated identity and specifically InCommon, including: if the campus is registered with InCommon as supporting the Research and Scholarship (R&S) Entity Category to streamline integration with research applications, and if the campus meets the InCommon Baseline Expectations for Trust in Federation.

Collaboration is how The Academy does research and scholarship



faculty, students, staff

data sets

intellectual property

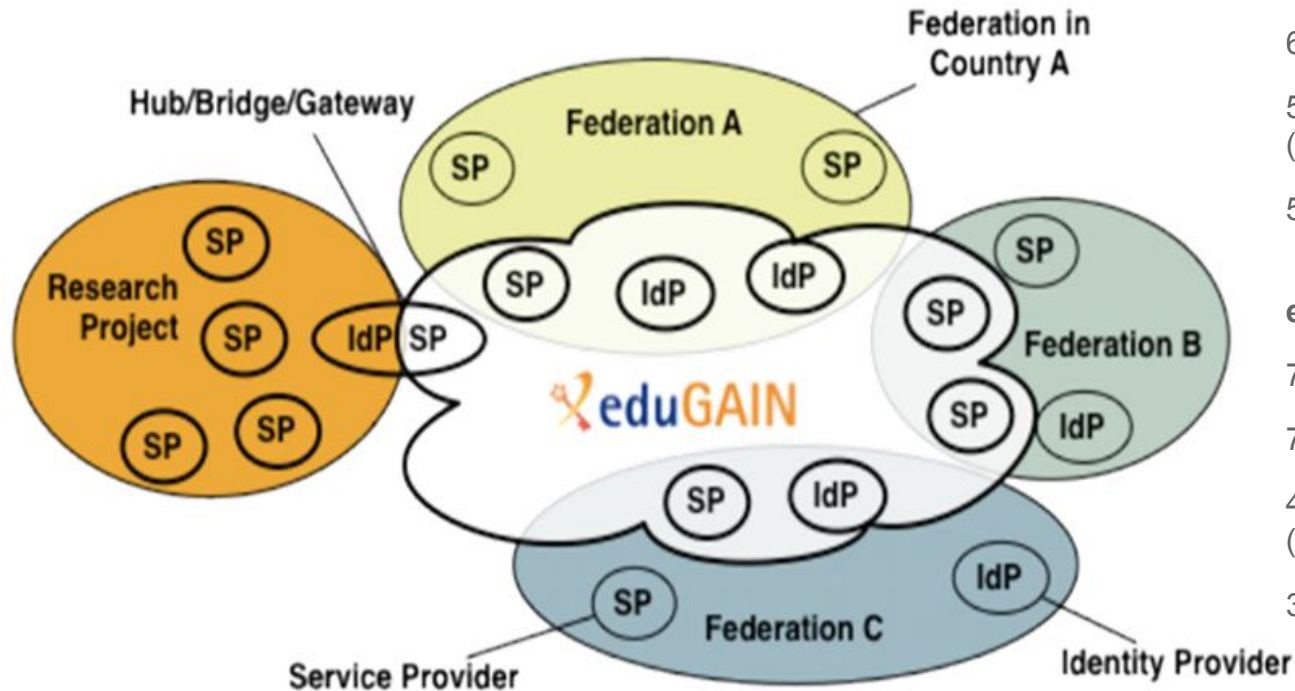
specialized instruments

specialized computing

at organizations everywhere

connected by global research
networks and federation

Trusted Identity Federations



InCommon: US Federation

6000+ Registered Systems

578 Authentication Systems
(Identity Providers)

5435 Services (Service Providers)

eduGAIN: Global Interfederation

70 Countries

7100+ Registered Systems

4046 Authentication Systems
(Identity Providers)

3119 Services (Service Providers)

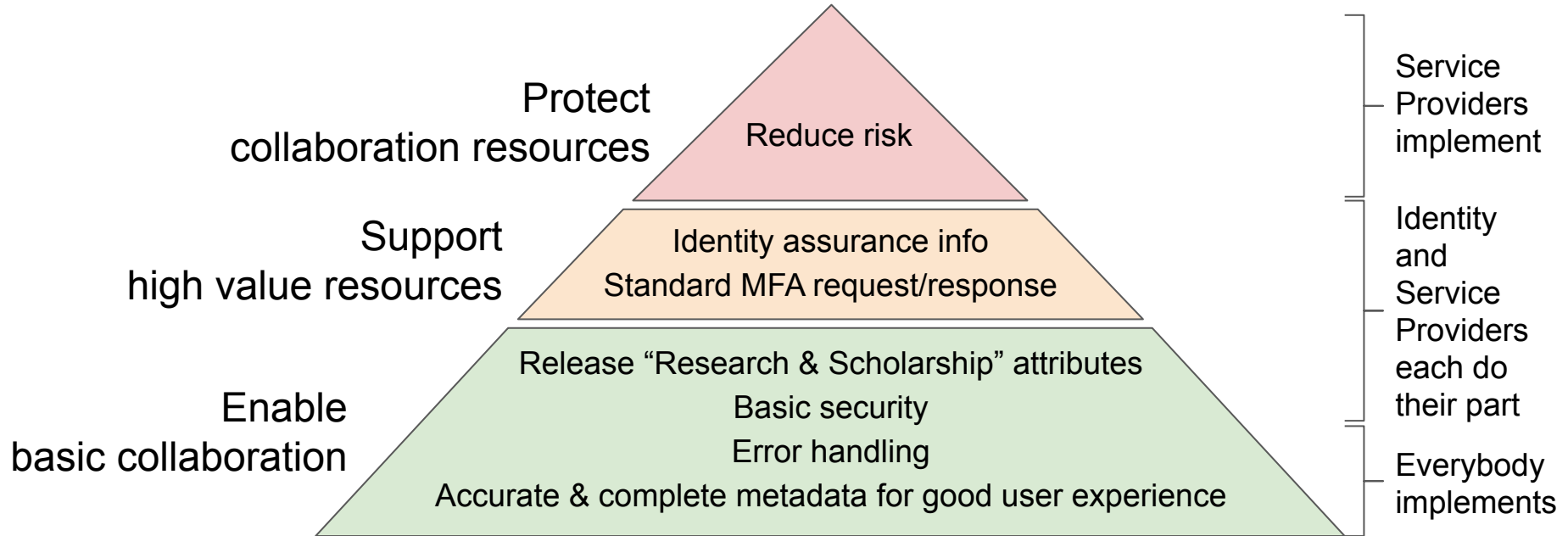
How federation enables academic collaboration

These research and scholarly communities spent 18 months to distill what they most need from academic Identity Providers*



* [“Federated Identity Management for Research, version 2”](#)

Federation needs of research communities & others



InCommon climbs the pyramid with Baseline Expectations



Participation Agreement

requires *everyone* to adhere to Baseline Expectations

Governance

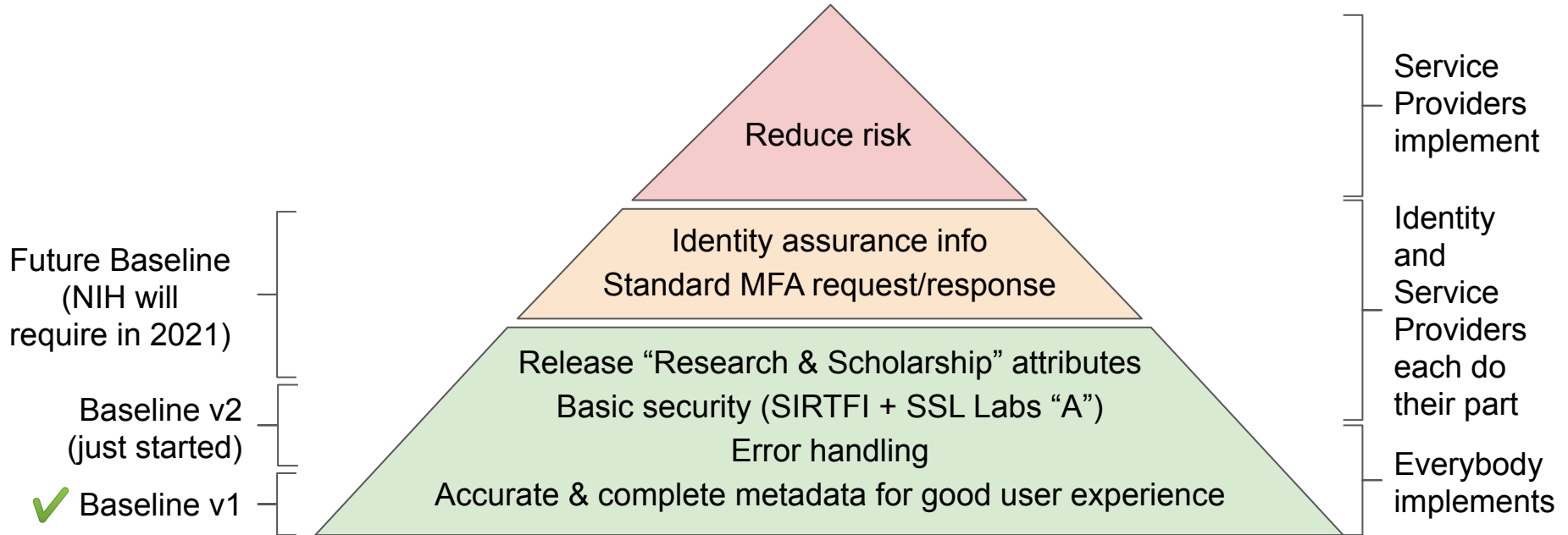
- ❑ InCommon Community Trust & Assurance Board (CTAB)
- ❑ InCommon Steering Committee

Processes

- ❑ Community Consensus
- ❑ Community Dispute Resolution

*Mostly, it's tons of **communication** and **support to manage change***

Progress of Baseline Expectations program



Research & Scholarship attribute release

- Many services for research and scholarship need a few user attributes
 - Name, email, affiliation, persistent identifier
- Those service providers are reviewed using an international standard and “tagged” by their national federation operators as “R&S”
- Academic Identity Providers who opt-in automatically release the R&S attributes to R&S tagged services, at least for some of their users
- Such Identity Providers are also tagged as “R&S” so that services can elect to require R&S attributes in order to provide service
- The [R&S program contributes to good privacy practice](#) under the European General Data Protection Regulation (GDPR)



Rice University - CC* Grant

- Focus on data intensive science and engineering
- Deploy the Interactive Data Analysis Platform connected via Science DMZ to community cloud resources (Open Science Grid) and commercial cloud resources (Oracle Cloud).
- Utilize containerization so each researcher can leverage their own unique set of software and toolkits yet share common hardware and cloud access platform.
- Part of a larger technology ecosystem that leverages federated identity and access management as part of InCommon, advanced networking with science DMZ and Information Security Center that supports not only university data and technology security but has targeted outreach for research data and protocol security.



RICE

Science Drivers

- Image Processing and Modeling (Dr. Meng Li)
- High Energy Physics (Dr. Christopher Tunnell)
- Analysis of Petabyte Scale Geophysical Datasets (Dr. Jonathan Ajo-Franklin)
- Energy-Efficient Machine Learning (Dr. Yingyan Lin)
- Computer Vision (Dr. Ashok Veeraraghavan)

High Energy Physics (Dr. C. Tunnell)

- Understanding dark matter (one of the top 5 challenges in modern physics)
- Specialized measurement software developed by Dr. Tunnell - interface of physics analysis and data science
- Utilizes graphical models and graphical neural networks - more applicable to the multimodal spatiotemporal data.
- Already uses OSG but GPU capability will aid processing the stream of data from the detector.

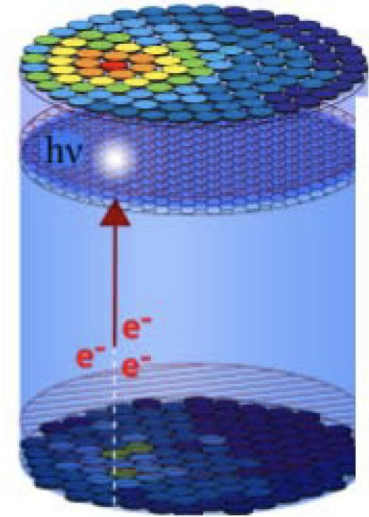


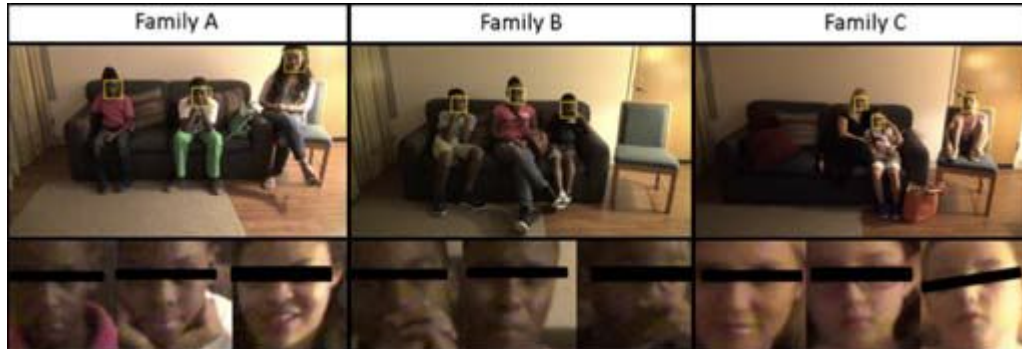
Figure 1: Photosensor array.

Computer Vision (Dr. A. Veeraraghavan)



RICE

- Automatic identification of both user identity and their screen viewing from cameras mounted on top of TV sets and the front-facing cameras on tablets and smart-phones.
- Computer vision algorithms based on deep neural networks - large-scale CPU and GPU clusters are needed to train these networks and use the trained networks for inference.





Federated Access Management

- Rice is a long-standing member of InCommon supporting Research and Scholarship (R&S) entity category.
- Rice uses primarily open source products to support identity and access management including Shibboleth and Grouper.
- Dedicated centralized IAM team working closely with CRC on integrating federated identity management services with the Interactive Data Analysis Platform.

North Dakota State University - CC* Goals

- Support North Dakota EPSCoR activities
- Facilitate collaborations with **public higher education** institutions in North Dakota (11 total) and **tribal colleges** (5 total)
- Targeted research programs:
 - Precision agriculture (NDSU)
 - Polymers and coatings (NDSU)
 - Climate studies (UND)

North Dakota State University - CC* Grant

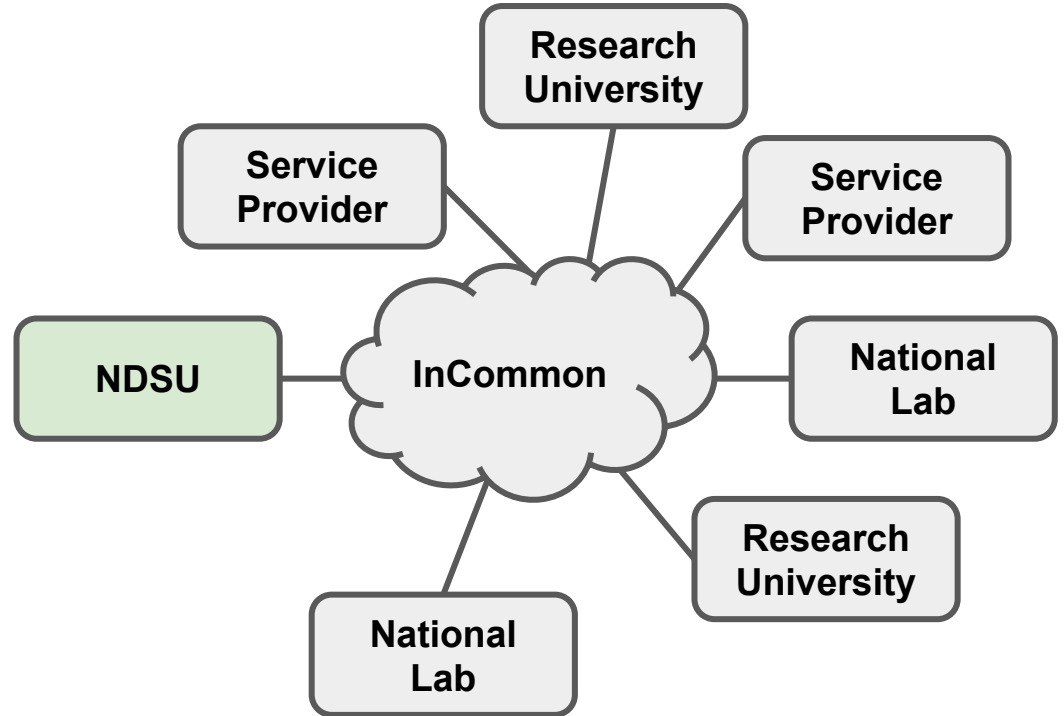
- Collaborative grant with the University of North Dakota
- Deploy Science DMZ
- Deploy Data Transfer Nodes at both universities
- Upgrade network connectivity to 100Gbps

Award #1826993

On the Sideline in ND (14)

ND Tribal	CCCC	TMCC
	NHSC	SBC
	UTTC	BSC
ND Public Regional	DCB	DSU
	LRSC	MaSU
	MiSU	NDSCS
	VCSU	WSC

In the Club



Need a path forward for non-research universities

- Identity management is often below levels needed for InCommon participation (especially at tribals)
- Difficult to instill a sense of need at small campuses that will allow them to justify both time and cost.
- Expertise often lacking

Some technical options exist that will help the situation, but addressing the issues above is a prerequisite.

Want some help with your Campus CI plan?

Detailed guidance on meeting the NSF CC* Campus CI plan InCommon requirement:

<https://www.incommon.org/news/meeting-the-nsf-cc-incommon-related-requirements/>

Email: ci-plan-help@incommon.org

February IAM Online: Growing an IAM Team

IAM Online

Wednesday, February 10, 2021

Presenters:

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