Center for Research in Intelligent Storage (CRIS)
IAB Meeting
December 2, 2015

David Meyer, NSF Center Evaluator

- CRSS as an Ignorance Management Center
- Feedback to help build a strong center
- Project Presentation Feedback (LIFE Forms) and new project selection

NSF Industry / University Cooperative Research Centers Program
Ignorance
A place where the exiting data don’t make sense and cannot be used to make a prediction.

versus
Knowledgeable ignorance knowing what we do not know, *a shared gap* that allows us to frame better questions as a first step to getting better answers.

“Ignorance is really about the future; it is a best guess about where we should be digging for data”
–S. Firestein
• Nature, September 2015. Special issue on interdisciplinary research

Interdisciplinarity
Why scientists must work together to save the world
We need each other to be sure about what we “know”

Open Science Framework

centerforopenscience.org

WE FOSTER THE OPENNESS, INTEGRITY, AND REPRODUCIBILITY OF SCIENTIFIC RESEARCH

Validation by The Science Exchange Network

About

Mission

One of the most important principles of the scientific method is reproducibility, the ability to replicate an experimental result. The Science Exchange network can be used to confirm the reproducibility of key experimental results at independent research sites, making it easier for researchers, funders, publishers and investors to implement confirmatory studies into their work flow.

Elizabeth Iorns, Ph.D.
Co-founder & CEO, Science Exchange
IUCRC Membership: eat, drink, and increase your betweenness centrality

Degree Centrality: number of direct relationships that an entity has.

Betweenness Centrality: a person’s position within a network in terms of its ability to make connections to other pairs or groups in a network.

Mathew Effect: Tendency of the rich get to get richer as the network grows.
I/UCRCs Raise the R&D “tide”
Via trust and long-term collaboration

Center catalyzed by a small investment from NSF.

An I/UCRC is primarily funded by industry members

I/UCRC Technology Breakthroughs
The Industry/University Cooperative Research Centers (I/UCRC) Program

**Mission:**
- To contribute to the nation’s research infrastructure base by developing long-term partnerships among industry, academe and government
- To leverage NSF funds with industry to support graduate students performing industrially relevant research

**Vision:**
- To expand the innovation capacity of our nation’s competitive workforce through partnerships between industries and universities

40 years of fostering and growing long-term partnerships among industry and academe based on shared value
I/UCRC Fast Facts – FY15 Snapshot

Program Funding
• $20M in Program Funding (ENG, CISE)
• 6:1 Leveraging of NSF funds

Students
• Over 2000 students engaged
• 649 graduated in 2014, nearly 30% hired by members

Sustainability
• Over 40 Graduated I/UCRCs remain in operation true to model

6 International Sites: Belgium, China, Finland, Germany, India, Russia
The I/UCRC Model: Linking Industry to Fundamental Research

I-U Cooperative Research Domain

Academic Fundamental Research
- NSF, Agency Foundation, Funded

Sector Pre-Competitive Research
- User-Inspired Fundamental Research
  - Jointly Funded
  - Non-exclusive IP access
  - Trusted relationships based on delivery of value

Ideas, People

Industry Sector-Competitive Research
- Contract Research
- Master Agreements
NSF I/UCRC Annual Survey

- Track key center outcomes and improvement recommendations

- 30-year database of Industry-University research helps NSF learn what works over time & provides comparisons with 55 other currently active I/UCRCs

- Helps inform the conversation between Industry, University & NSF
Industry Survey due 5:00pm Today

You could WIN a Prize!

GREAT PRIZES AND AWARDS
7 NIGHTS BALI DREAM CRUISE PLUS FLIGHTS FOR TWO
3 NIGHTS BALI PLUS FLIGHTS FOR TWO

PRIZES
Level of Interest and Feedback Evaluation (LIFE) Forms

LIFE is...

- Used to support both project selection and on-going project feedback
- A way to get ideas from across all industrial advisory board (IAB) members and guests
- a dialog process that helps create better research projects.

But LIFE is NOT a voting process
How to Use 
Level of Interest Feedback and Evaluation (LIFE) Forms

http://iucrc.com

Click on the “Center for Research in Storage Systems” meeting:

Dec 2, 2015

Password:
2015CRSSsurf
SELECT YOUR ROLE

You will be asked to indicate whether you are an Industrial Advisory Board [IAB] member or a university researcher [PI].

Click on [IAB] to proceed to the project list.
Using the Level of Interest Feedback and Evaluation (LIFE) Form

After each presentation, select the “Evaluate Project” link.

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Title</th>
<th>Project Id</th>
<th>[Evaluate Project]</th>
<th>[Summary]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update</td>
<td>A Novel QoS Solution that Enables Software Defined Storage - (UMN)</td>
<td>01</td>
<td>[Evaluate Project]</td>
<td>[Summary]</td>
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<tr>
<td>Update</td>
<td>Backup Scheduling - (UMN)</td>
<td>02</td>
<td>[Evaluate Project]</td>
<td>[Summary]</td>
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<tr>
<td>Update</td>
<td>Data Prefetching - (TAMU)</td>
<td>03</td>
<td>[Evaluate Project]</td>
<td>[Summary]</td>
</tr>
</tbody>
</table>
What’s on the LIFE Form?

Project Updates: If you select “Needs Change” or “Off Course” please explain rating.

Your name and organization are not shared in summarized results

Press submit when finished.
What’s on the Proposed Project LIFE Form?

Level of Interest

- Very Interested
- Interested
- Interested with Change
- Not Interested

Abstain (Outside my group's ability to evaluate)

I've already rated - Providing additional comments

Please provide any comments, questions or suggestions you have about this project, the progress made, and technical or implementation issues.

Comments:

Provide any comments about this project here.

(optional)
IAB Feedback on Current Center Research: Your Comments Fuel Discussion and Understanding

What makes the project so “hot” or “transformational”? Comments can include:

- Suggestions for precompetitive work
- Potential applications & industry benefits
- Project improvement suggestions
- Industrial relevance
- Similar work done elsewhere
- Offers of help (mentoring?)

Real-time project revisions are encouraged if needed
### Project Selection: Ordered list of IAB priorities

<table>
<thead>
<tr>
<th>SUM</th>
<th>Project #</th>
<th>Title</th>
<th>IAB Votes (1 Membership=10 points)</th>
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</thead>
<tbody>
<tr>
<td>30</td>
<td>1</td>
<td>Leveraging Shingled Write Disk Storage</td>
<td>Comp 1 10</td>
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<tr>
<td>29</td>
<td>2</td>
<td>Improving Management of Long-term Archival Storage</td>
<td>Comp 2 10</td>
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<tr>
<td>16</td>
<td>9</td>
<td>Prediction and Grouping for Scalable Storage Mana ...</td>
<td>Comp 3 10</td>
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<tr>
<td>11</td>
<td>3</td>
<td>Approaches to Scalable Metadata Indexing</td>
<td>Comp 4 10</td>
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<td>11</td>
<td>4</td>
<td>Exploring the Efficient Use of Byte-Addressable NVRAM</td>
<td>Comp 5 10</td>
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<tr>
<td>4</td>
<td>8</td>
<td>Scalable and Secure Archival Storage</td>
<td>Comp 6 0  Comp 7 8</td>
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Questions?
Contact Information

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Information on I/UCRC Program
http://www.nsf.gov/eng/iip/iucrc

Information on I/UCRC Evaluation
http://www.ncsu.edu/iucrc/