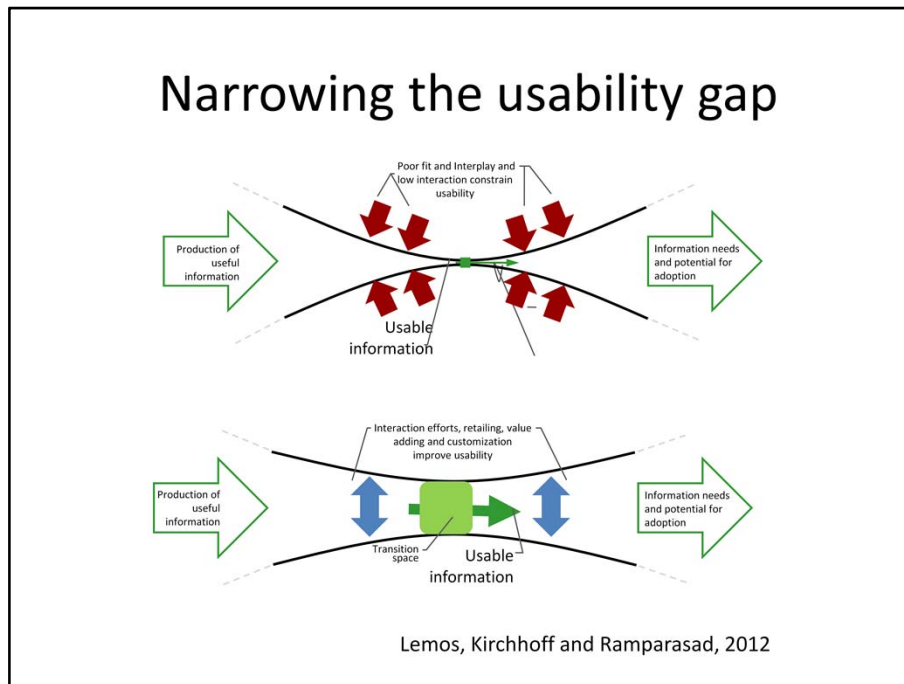




- Our research is focused on using scientific methods to investigate the usability of science.
- This is an area of interest to funders of research, researchers themselves who would like to see greater impact from their work, as well as myriad users interested in knowledge and tools to help them, particularly in the face of challenges like climate change.
- The many years of funding provided by NERRS is a tremendous opportunity for research. It's like a natural experiment in terms of how you design a program to generate usable knowledge.
- The outcomes of this research can inform the design of the NERRS program looking forward, as well as the many other agencies and programs seeking to produce usable knowledge that is actually used!
- Together with James Arnott, a PhD student, we are studying the history of NERRS-supported research to learn more about the drivers of science usability.



- Lots of empirical research indicates that while a great deal of knowledge is produced that is potentially useful, much of it does not actually get used.
- Traditional responses to this have focused on “educating the user or decision-maker.” It turns out that’s either insufficient or not entirely the right approach.
- Increasing attention has been placed on opportunities for interaction between researchers and end users, efforts to tailor and customize information.
- Meta analysis of use of climate information, for example, shows that the two main constraints for use are lack of fit (or how users perceive the information ‘fitting’ their decision-making need) and interplay, that is, how the potential users perceive the ways the new information will change the ways they make decisions (positively and negatively)
- By making a distinction between what is useful (from the point of view of the producer) and what is usable (what will enable the user to fill his/her needs) we can start to think about a transition in which we can intervene to increase use. Co-production of knowledge—that is, the meaningful interaction between producers and users to overcome obstacles for use can be an effective intervention. Other examples include two-way and better communication, visualization, improving accessibility, customization, etc.

Lemos, Maria Carmen, Christine J. Kirchoff, and Vijay Ramprasad. 2012. “Narrowing the

Climate Information Usability Gap.” *Nature Climate Change* 2 (11). Nature Publishing Group: 789–94. doi:10.1038/nclimate1614.

NERRS: a natural experiment in science usability



Codebook categories:

1. Outcomes
2. Decision relevance
3. User readiness
4. Research readiness
5. Information flow
6. Origin of design/?
7. Interplay
8. Interaction level
9. User involvement
10. User representation
11. Dissemination

- Our study looks at the history of NERRS research over four discrete stages, which track pretty well with the evolution of thinking about how to generate more usable, actionable knowledge.
- We're using documentary analysis (i.e. "coding") of the project reports to identify various factors associated with usability. We'll follow up with surveys and interviews to learn more about what actually was utilized and why.

How can the science of usability support NERRS?

- By rigorously evaluating how different past interventions (including carefully documenting our own interventions) in the project application, funding and communication processes have influenced use.
- And, adaptively applying what we learn to feedback into the funding/project implementation cycle. We believe this evaluation can support not only NERRS but also other US government agencies seeking to increase the use of science-generated information (Broader Impacts)

- Our aim, first and foremost, is to provide insights that will help the System as a whole. With that in mind we are carefully thinking about different instruments that can help us carry out this task.
- But the insights gained should extend beyond NERRS to support the wider USG and private philanthropic efforts to better link knowledge with action.

How can the science of usability support NERRS? (cont'd)

- By using the best available usability science to support the funding and project implementation cycle (including the co-production process)
 - Creating support tools such as evaluating formative and summative evaluation surveys that can inform not only the project team but also NERRS and other teams
 - Working with project teams to encourage early and efficient interaction with stakeholders (e.g. stakeholder typology table; avoiding 'arms race' in engaging in too many interactions)
 - Working with project teams to improve reporting to inform both outcomes and outputs (e.g. logic models, collaboration activities and stakeholder interaction activities)

Thank you!

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Please be in touch with either James or myself with questions.