Pre-Interview Questionnaire

Study Information Sheet

INDIANA UNIVERSITY STUDY INFORMATION SHEET FOR RESEARCH

Big Science Projects: Expert Interviews (IRB # 2012929244)

About this research
You are being asked to participate in a research study. Scientists do research to answer important questions which might help change or improve the way we do things in the future. This form will give you information about the study to help you decide whether you want to participate. Please read this form, and ask any questions you have, before agreeing to be in the study.

Taking part in this study is voluntary.
You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect your current or future relations with Indiana University.

This research is intended for individual 18 years of age or older. If you are under age 18, do not complete the survey.

Why is this study being done?

The purpose of this study is to advance our understanding of what makes Big Science projects successful and how success can be measured and communicated to improve project management and evaluation.
You were selected as a possible participant because you have relevant subject matter expertise.
The study is being conducted by Dr. Katy Börner from the Luddy School of Informatics, Computing, and Engineering at Indiana University.

What will happen during the study?

If you agree to be in the study, you will do the following—all completely online.

You will be presented with a “Pre-Interview Questionnaire” Qualtrics survey that aims to capture information on your background and experience. You will enter relevant information (e.g., about demographics, work practices, etc.) into Qualtrics.

Next, you are presented the “Big Science Project Questionnaire” Qualtrics survey with questions and visualizations that aim to increase our understanding of what makes Big Science projects successful and how success can be measured and communicated to improve project management and evaluation.

Lastly, you are presented with a “Post-Interview Questionnaire”, also in Qualtrics. We will ask

you if you would like to review/comment on aggregated survey results before the paper is

submitted.

The whole procedure will take ~60 mins.

What are the risks and benefits of taking part in this study?

The risks of participating in this research are discomfort answering questions and commenting on unfamiliar visualizations. Please be aware that you can terminate your participation in the study at any time.

You might benefit from taking part in this study by learning about Big Science metrics and data visualizations. Most importantly, we hope the study will increase our understanding about the structure and dynamics of Big Science projects.

How will my information be protected?

All efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Your identity will be held in confidence in papers in which the study may be published.

Will I be paid for participation?

There is no payment for participation.

Who should I call with questions or problems?

For questions about the study, contact Dr. Katy Börner (katy@indiana.edu).

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, please contact the IU Human Subjects Office at 800-696-2949 or at irb@iu.edu

Accept this SIS by clicking 'Next Page' arrow.

Pre-Interview Questionnaire

Please answer the questions below to help us understand your background and experience.

Block 5

Demographics

Job Title

Type of Institution

- ○ Government
- ○ Private Foundation
- ○ Commercial
- ○ University
- ○ Other

Academic Background

Age

- ○ 21-30
- ○ 31-40
- ○ 41-50
- ○ 51-60
- ○ 61-70
- ○ >70

Sex

- ○ Male
- ○ Female
- ○ Non-binary / third gender
- ○ Prefer not to say

Native Language

- ○ English
- ○ _____ Other

Work Practices

In your daily work, what % of total work time do you spent on these activities:

	% of total work time spent on activity
Meetings with 1 other person	0
Meetings with 2-5 persons	0
Meetings with 6-20 persons	0
Emails, IM, Slack	0
Reading documents, e.g., papers, books, news	0
Writing documents, e.g., papers, grant proposals	0
Running experiments	0
Analyzing and/or visualizing data	0
Other	0
Other	0
Other	0

What is your preferred problem-solving style?

- ○ Clarifyier: Analyzes current reality
- ○ Ideator: Challenges current reality/envisions future reality
- ○ Developer: Analyzes future reality
- ○ Implementer: Executes future reality
- ○ Integrator: Empowers the team, fills style gaps as needed

Big Science Projects

	Number
Number of big science projects you work(ed) on	0
Number of big science projects you led/lead	0

Big Science Projects Questionnaire

Big Science Projects Questionnaire

Please list major Big Science projects (completed or ongoing)

What is unique about Big Science projects when compared to other research projects?

What is most challenging about Big Science projects when compared to other research projects?

For the Big Science project you are leading, what is the promised result?

In your project, what percentage of total project effort is devoted to advancing research, technology, other goals?

	% of total effort devoted to this goal
Research progress	0
Technology development	0
Education & training	0
Other, e.g., improving health	0
Outreach	0
Other	0
Other	0
#Conjoint, Total#	0

How do you measure progress toward project success?

Do the following metrics indicate that a Big Science project is successful?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Som a
Deliver on promised result	○	○	○	
#Experts involved	○	○	○	
#Students trained	○	○	○	
#Papers published	○	○	○	
#Citations from same field	○	○	○	
#Citations from other fields	○	○	○	
#Dollars spent	○	○	○	
#Instruments invented	○	○	○	
#Datasets	○	○	○	
#Dataset users	○	○	○	
#Data/code portal users	○	○	○	
#People reached via press/outreach	○	○	○	
Other	○	○	○	
Other	○	○	○	
Other	○	○	○	

What is important for ensuring project success?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Som a
Engage the best experts	○	○	○	
Engage team players	○	○	○	
Hire professional project manager(s)	○	○	○	
Collaborate with industry	○	○	○	
Work closely with policy makers/funders	○	○	○	
Other	○	○	○	
Other	○	○	○	
Other	○	○	○	

Project Phases: Which phases exist and what are typical durations?

	Duration in months
Project initiation stage: understand the goals, priorities, deadlines, and risks of the project	0
Project planning stage: outline the tasks and timeline required to execute on the project	0
Project execution stage: turn plan into action and monitor project performance	0
Project closure stage: analyze results, summarize key learnings, and plan next steps	0
Other	0
Other	0
#Conjoint, Total#	0

Please estimate total numbers over entire project effort for these measures:

(Powers of ten are best, e.g., 1, 10, 100, 1k, 10k, 100k, 1M, etc.)

	Total (estimated) number over entire project as INTEGER
#Dollars spent	0
#Experts involved	0
#New datasets generated	0
#New instruments developed	0
#New software packages	0
#Papers	0
#Citations	0
#Users (of data, instruments, software)	0
#People reached via outreach	0
Other	
	0
Other	
	0

Science communication. Big Science teams need to generate support from the larger scientific community, university/research center administrators, funders and funding agencies, media, and the public at large to acquire/sustain necessary resources. Effective science communication is critical.

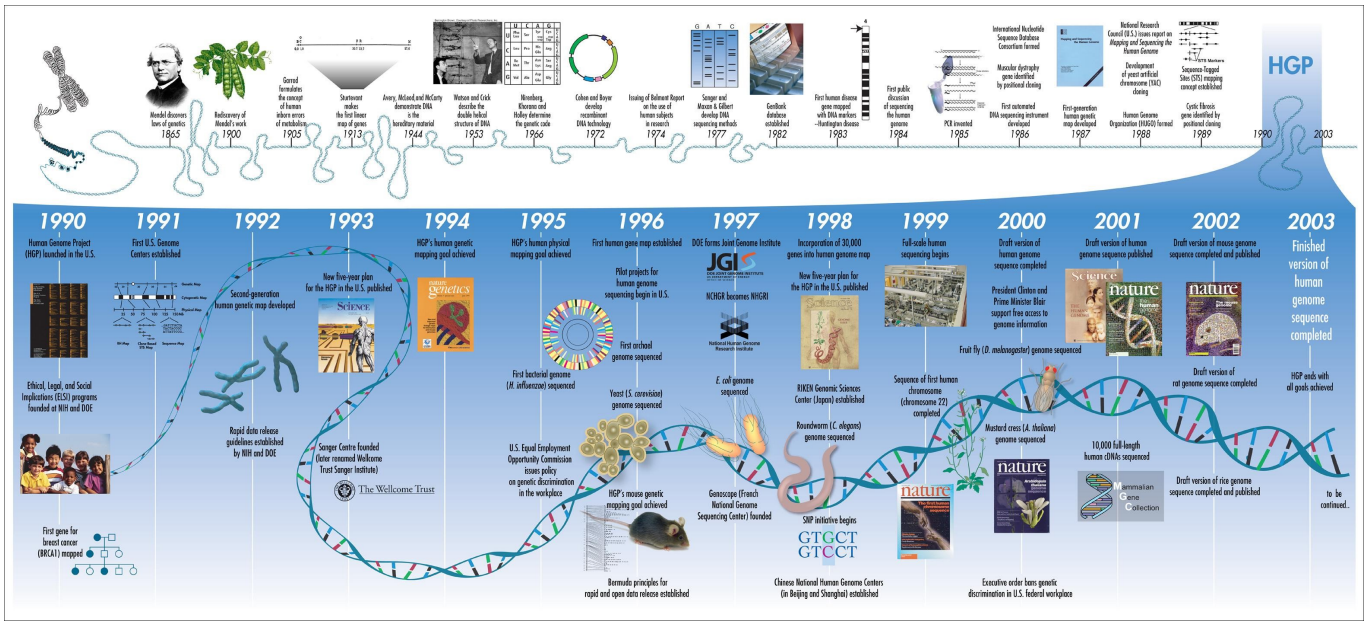
What % of total project effort is devoted for outreach via

	% of total project effort
Popular science magazines	0
Popular science books	0
Press releases	0
Social media	0
Free courses, e.g., MOOCs	0
Science fairs/exhibits	0
Talk shows/Documentaries	0
Other	0
Other	0
#Conjoint, Total#	0

Big Science analyses and visualizations

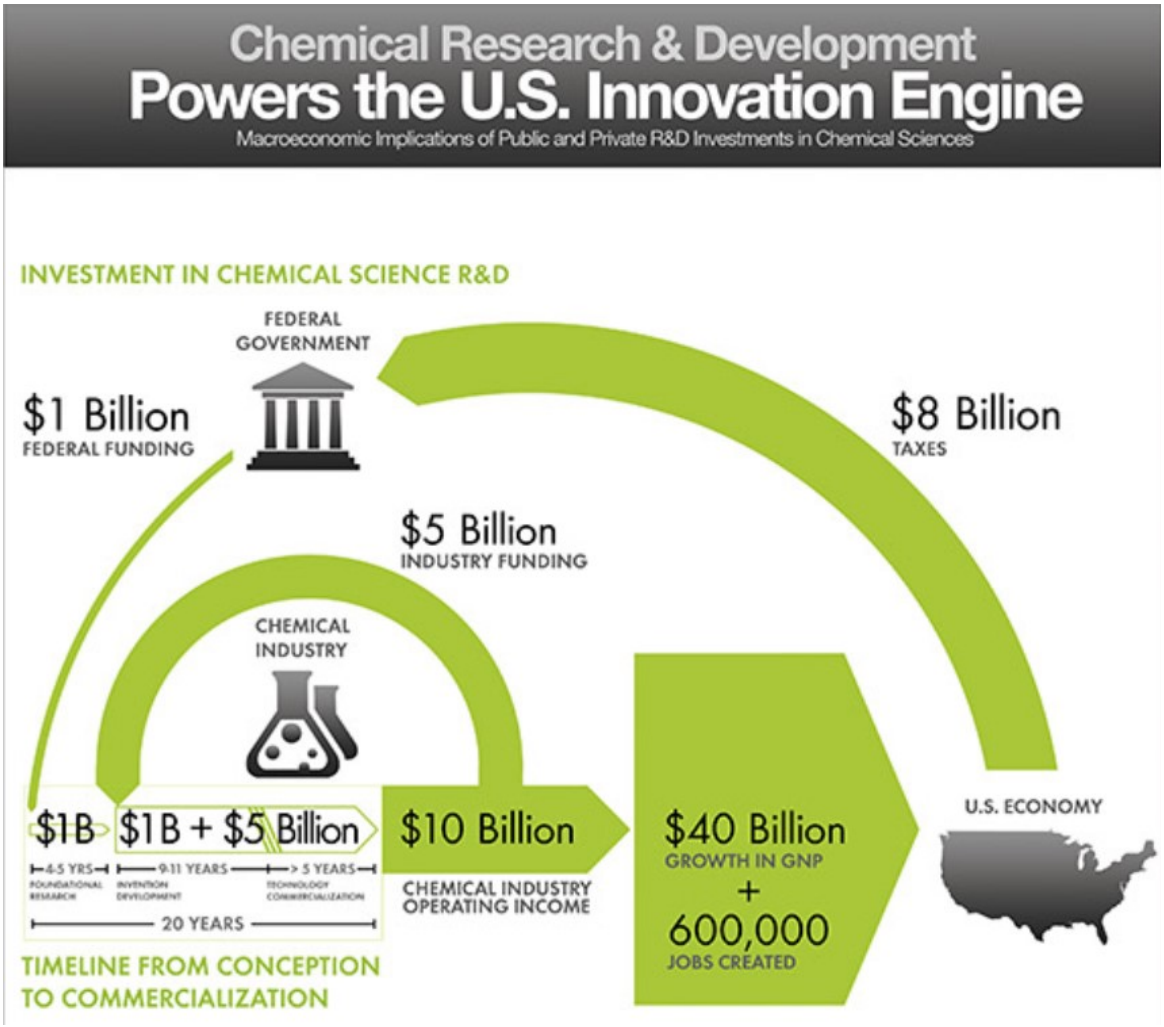
Publication, patent, funding, social media, and other datasets can be analyzed and visualized to understand, manage, communicate, evaluate big science projects.

Project timelines help communicate the chronological order of events.



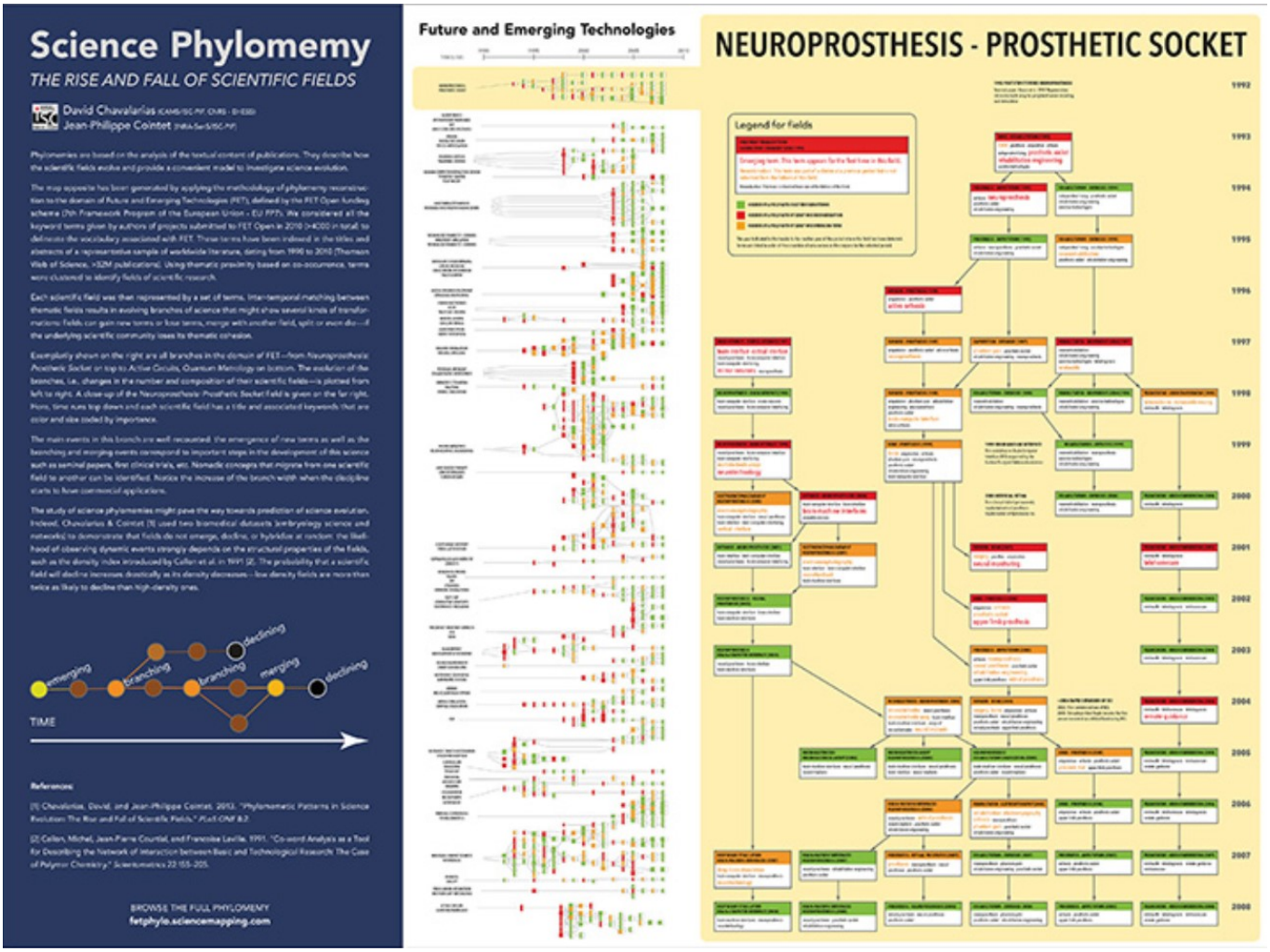
Human Genome Project Timeline
https://commons.wikimedia.org/wiki/File:Human_Genome_Project_Timeline_(26964377742).j

This graph shows the quantitative impact of research and development (R&D) in chemical sciences.



Chemical R&D Powers the U.S. Innovation Engine
http://scimaps.org/mapdetail/chemical_rd_powers_t_89

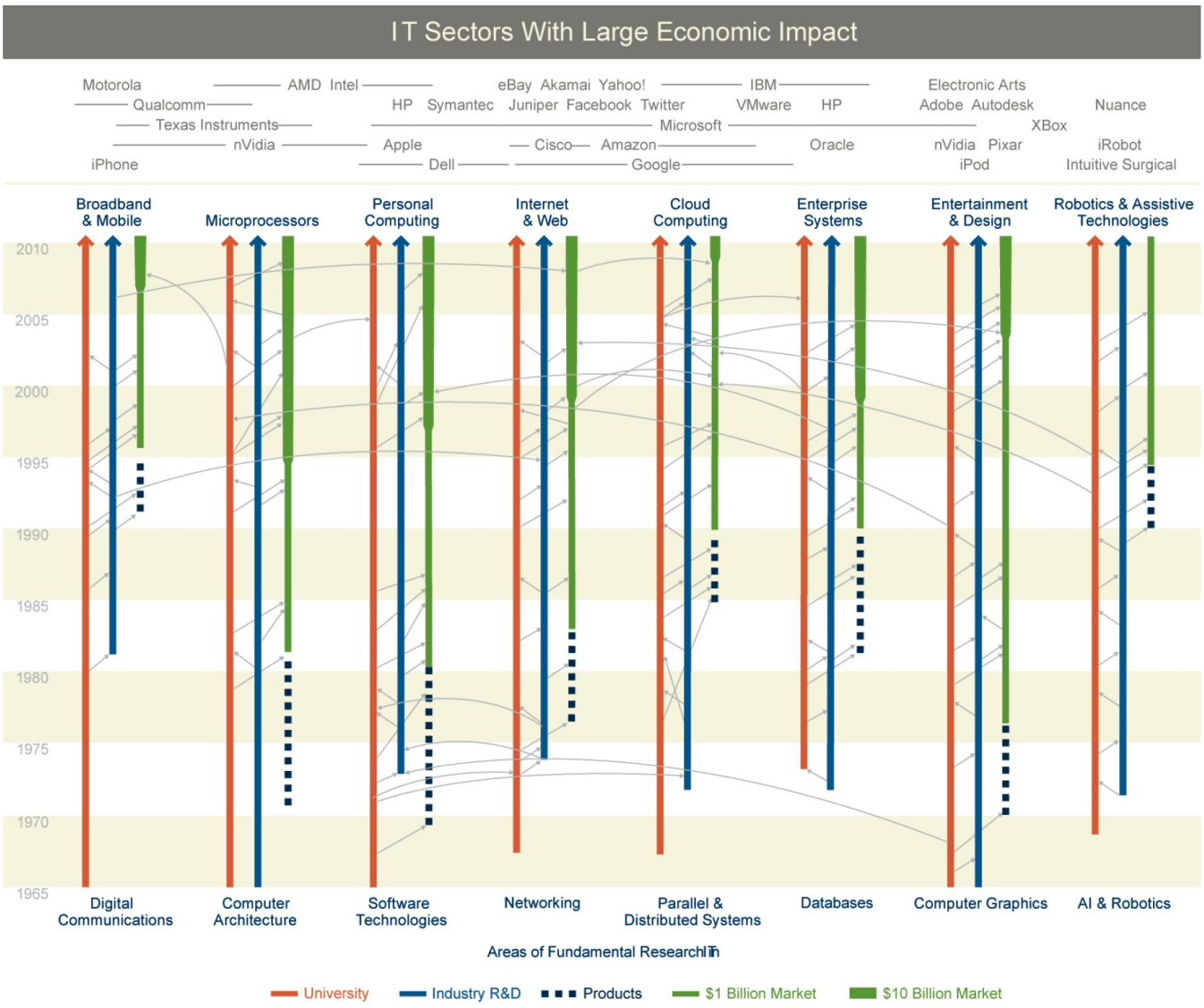
Other data visualizations show the rise and fall of scientific fields.



Science Phylomemy. http://scimaps.org/mapdetail/science_phylomemy_159

This graph shows the impact of federal funding for fundamental research on IT sectors with large

economic impact.



https://cccblog.org/wp-content/uploads/2016/07/Screen-Shot-2016-07-25-at-11.13.39-AM.png

National Academies of Sciences, Engineering, and Medicine. 2016. Continuing Innovation in Information Technology: Workshop Report. Washington, DC: The National Academies Press.

What visualizations would be most valuable for the Big Science project you are leading/managing?

How would you use these visualizations in your work?

Please rate visualization tool functionality listed below according to their utility for your daily work/decision making.

	Not useful	Neutral	Very useful
Identify all works on a topic	○	○	○
Within that topic, identify top-n researchers	○	○	○
top-n institutions	○	○	○
top-n countries	○	○	○
show co-author network	○	○	○
show paper-citation network	○	○	○
show geospatial distributions	○	○	○
Other	○	○	○

Compare:

	Not useful	Neutral	Very useful
Researchers	○	○	○
Teams	○	○	○
Institutions	○	○	○
Countries	○	○	○
Funding agencies	○	○	○
Other	○	○	○

Identify correlations between:

	Not useful	Neutral	Very useful
Funded grants and papers	○	○	○
Papers and patents	○	○	○
Academic/industry/govt activities	○	○	○

What questions do you have about the structure and

dynamics of the project(s) you are leading?

What data, analyses, tools, or visualizations would be most valuable for planning, managing, evaluating, and communicating research collaborations within and across big science projects?

What data, analyses, tools, or visualizations do (or would best) support your daily decision making?

Post-Interview Questionnaire

Post-Interview Questionnaire

What survey question(s) did you find most interesting?

What survey question(s) did you find irrelevant?

What was missing in the survey?

If you can give one piece of advise to future leads/managers of Big Science projects, what would it be?

Would you like to review/comment on aggregated survey results before they are written up in a scholarly paper?

- ○ Yes
- ○ No

Thank you for your expert input.