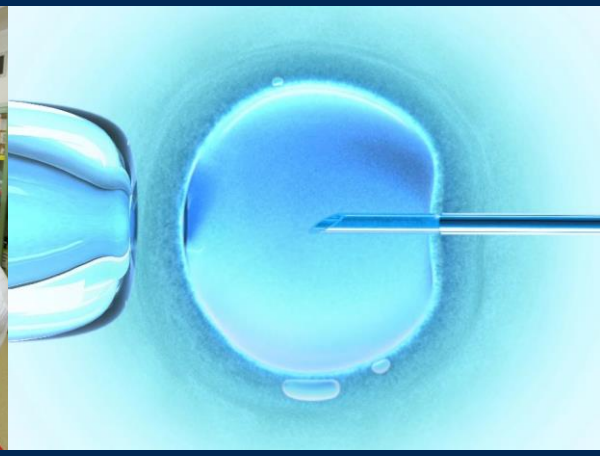
Building Successful Research and Project Collaborations



Presented By:
Interdisciplinary Research Support

UC DAVIS
UNIVERSITY OF CALIFORNIA

Interdisciplinary Research Support Team

Who we are, what we do

Funding Opportunities Identification
- Set-up personalized searches
- Coordinate internal selection processes

Grant writing and coordination
- Large-scale interdisciplinary projects
- Small to medium-scale projects
- Training grants

Workshops
- Grant-writing
- Budget development
- Funding identification

One-on-One Support Programs
- New Faculty development
- Drop-in Office Hours

Interdisciplinary Research Support Team

Who we are, what we do

13

13 years of experience on grant proposal writing an coordination, primarily for Center grants and Large-team grants

We have seen teams of collaborators working together on a project at their best and at their worst

We live and breathe grantsmanship

Overall success rate of approximately 50%

Large library of proposal components, especially those sections that are not about the research

- Management Plan
- Training components
- Data Management
- Budget justifications (e.g. for admin support)

Collaborative Research

What will you get out of this discussion?

Practical advice and specific tools for

- Finding collaborators
- Writing a collaborative proposal
- Sustaining a long-term team project

Collaborative Research

Who are you?

What do you do?

What do you hope to get out of this discussion?

Types of Collaborative Research

What do we mean by collaborative?

Types of collaboration

- Disciplinary, multidisciplinary and interdisciplinary
- Different roles on the project such as with non-academic partners (industry, Nat'l Labs)
- Inter-institutional
- International

Types of funded arrangements

- Subaward to academic institution
- Linked but separately funded projects
- Service agreement
- Consultant (brains and briefcase)

Importance of Collaborative Research

Why?

We live in an increasingly connected world

- There is an expectation that all research and scholarship will result in some benefit or outcome that impacts “me”
- Partnerships allow for plug-and-play solutions or applications from one domain to be applied to a new area
- Partnerships permit translation from basic research to applied functions

Importance of Collaborative Research

Why?

In an competitive world, you have to share the pie

- Low-hanging fruit has been picked in the disciplines, but lots of low hanging fruit remains between the disciplines
- That's where the money is

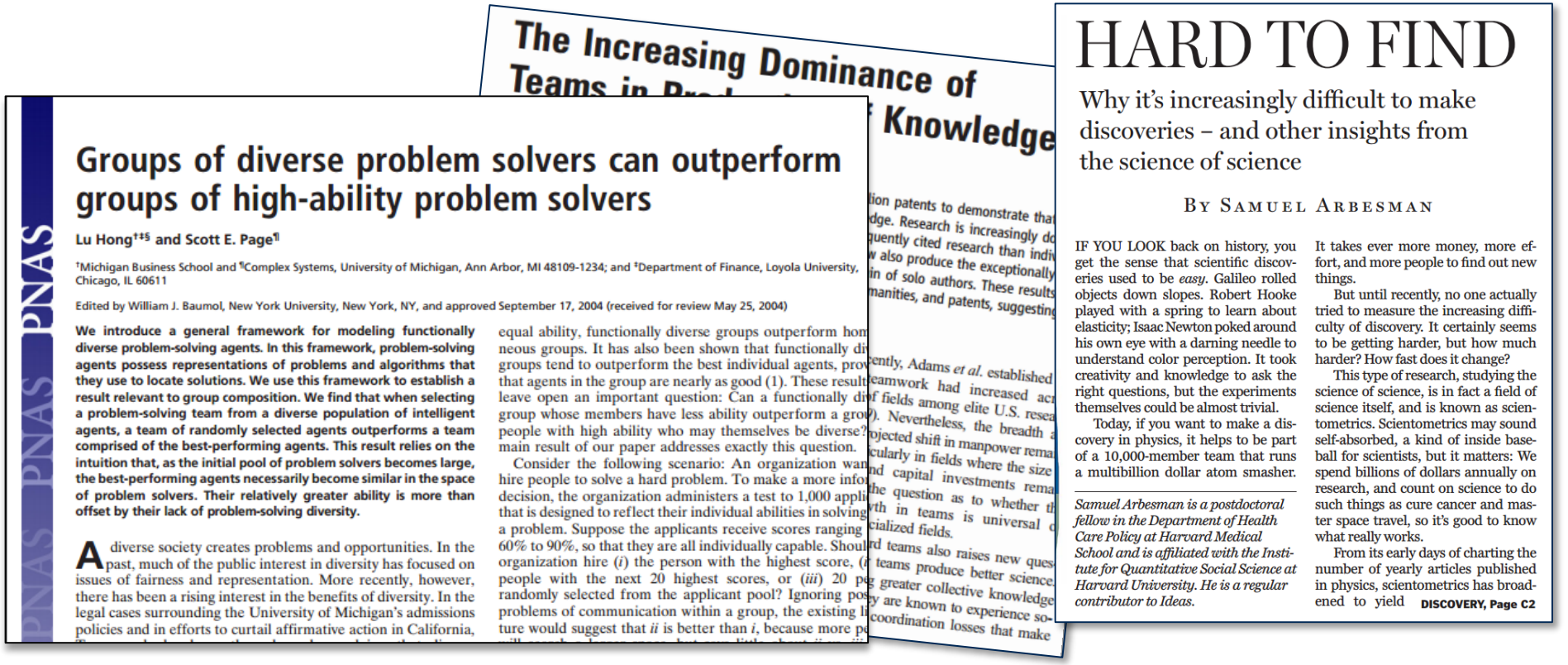
At NSF, the number of awards to projects with multiple PIs increased from fiscal year 2003 to fiscal year 2012, while the number of awards to individual PIs remained steady
--National Scie

At the National Institutes of Health (NIH), the number of multiple PI grants grew from 3 in 2006 to 1,098 in 2013, or 15–20 percent of all major grants funded
--Stipelman et al., 2014

Importance of Collaborative Research

Why?

Teams typically produce higher impact work than individuals



PNAS

Groups of diverse problem solvers can outperform groups of high-ability problem solvers

Lu Hong[†‡§] and Scott E. Page[¶]

[†]Michigan Business School and [¶]Complex Systems, University of Michigan, Ann Arbor, MI 48109-1234; and [‡]Department of Finance, Loyola University, Chicago, IL 60611

Edited by William J. Baumol, New York University, New York, NY, and approved September 17, 2004 (received for review May 25, 2004)

We introduce a general framework for modeling functionally diverse problem-solving agents. In this framework, problem-solving agents possess representations of problems and algorithms that they use to locate solutions. We use this framework to establish a result relevant to group composition. We find that when selecting a problem-solving team from a diverse population of intelligent agents, a team of randomly selected agents outperforms a team comprised of the best-performing agents. This result relies on the intuition that, as the initial pool of problem solvers becomes large, the best-performing agents necessarily become similar in the space of problem solvers. Their relatively greater ability is more than offset by their lack of problem-solving diversity.

A diverse society creates problems and opportunities. In the past, much of the public interest in diversity has focused on issues of fairness and representation. More recently, however, there has been a rising interest in the benefits of diversity. In the legal cases surrounding the University of Michigan's admissions policies and in efforts to curtail affirmative action in California,

equal ability, functionally diverse groups outperform hom
neous groups. It has also been shown that functionally di
groups tend to outperform the best individual agents, prov
that agents in the group are nearly as good (1). These result
leave open an important question: Can a functionally di
group whose members have less ability outperform a grou
people with high ability who may themselves be diverse?
main result of our paper addresses exactly this question.

Consider the following scenario: An organization wan
hire people to solve a hard problem. To make a more infor
decision, the organization administers a test to 1,000 appli
that is designed to reflect their individual abilities in solving
a problem. Suppose the applicants receive scores ranging
60% to 90%, so that they are all individually capable. Shoul
organization hire (*i*) the person with the highest score, (*i*
people with the next 20 highest scores, or (*iii*) 20 pe
randomly selected from the applicant pool? Ignoring pos
problems of communication within a group, the existing li
ture would suggest that *ii* is better than *i*, because more pe

The Increasing Dominance of Teams in Pro... Knowledge

...ion patents to demonstrate that
...dge. Research is increasingly do
...quently cited research than indiv
...w also produce the exceptionally
...in of solo authors. These results
...manities, and patents, suggesting

...ently, Adams *et al.* established
...eamwork had increased acr
...f fields among elite U.S. resea
...). Nevertheless, the breadth a
...ojected shift in manpower rema
...cularly in fields where the size
...nd capital investments rema
...he question as to whether th
...th in teams is universal o
...cialized fields.
...rd teams also raises new ques
...teams produce better science
...g greater collective knowledge
...y are known to experience so-
...coordination losses that make

HARD TO FIND

Why it's increasingly difficult to make discoveries – and other insights from the science of science

By Samuel Arbesman

IF YOU LOOK back on history, you get the sense that scientific discoveries used to be *easy*. Galileo rolled objects down slopes. Robert Hooke played with a spring to learn about elasticity; Isaac Newton poked around his own eye with a darning needle to understand color perception. It took creativity and knowledge to ask the right questions, but the experiments themselves could be almost trivial.

Today, if you want to make a discovery in physics, it helps to be part of a 10,000-member team that runs a multibillion dollar atom smasher. It takes ever more money, more effort, and more people to find out new things.

But until recently, no one actually tried to measure the increasing difficulty of discovery. It certainly seems to be getting harder, but how much harder? How fast does it change?

This type of research, studying the science of science, is in fact a field of science itself, and is known as scientometrics. Scientometrics may sound self-absorbed, a kind of inside baseball for scientists, but it matters: We spend billions of dollars annually on research, and count on science to do such things as cure cancer and master space travel, so it's good to know what really works.

From its early days of charting the number of yearly articles published in physics, scientometrics has broadened to yield

DISCOVERY, Page C2

Samuel Arbesman is a postdoctoral fellow in the Department of Health Care Policy at Harvard Medical School and is affiliated with the Institute for Quantitative Social Science at Harvard University. He is a regular contributor to Ideas.

So you want to work collaboratively…

Finding collaborators

- Take advantage of every opportunity to network with people in your field and outside of your field. You never know when these connections will come in handy
- Work through your grad students and postdocs for horizontal connections and future peers
- Keep your relationships fresh – mention shared connections whenever possible

So you want to work collaboratively…

Finding mentors

- Build a community of mentors
- Talk to the people whose work you respect
- Look outside your local community
- Make it a two-way street

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Mentworking

So you want to work collaboratively…

Picking collaborators for a specific project

- Pick people who value working in a team and have demonstrated that ability previously
- Pick people who get things done
- Pick people who can work in a hierarchy

- Don't pick people you dislike, but you don't have to necessarily like them either
- Don't pick people who ignore deadlines
- Don't pick people who don't respond

So you want to work collaboratively…

Picking collaborators for a specific project

- Pick a group of investigators with an appropriate mix of skills that complement each other
- Develop a shared vision that everyone can buy into, be open-minded about everyone's contribution

- Don't pick people who have the same research expertise
- Don't pick people solely to "fill a hole" in the team

So you want to work collaboratively…

Resources for Building Collaboration

Collaboration Portals

Interdisciplinary pivot

Biomedical KNODE

Health System and Veterinary Medicine SciVal

UC Davis Faculty with International Linkages UCDAVIS UNIVERSITY OF CALIFORNIA

Resources for Building Collaboration

Pivot Profiles

1. Claim or create a profile
   a. View relevant funding opportunities
   b. Be “searchable” by others
2. Find collaborators
   a. Browse UC Davis Profiles
   b. Create an advanced search
   c. From a funding opportunity

Resources for Building Collaboration

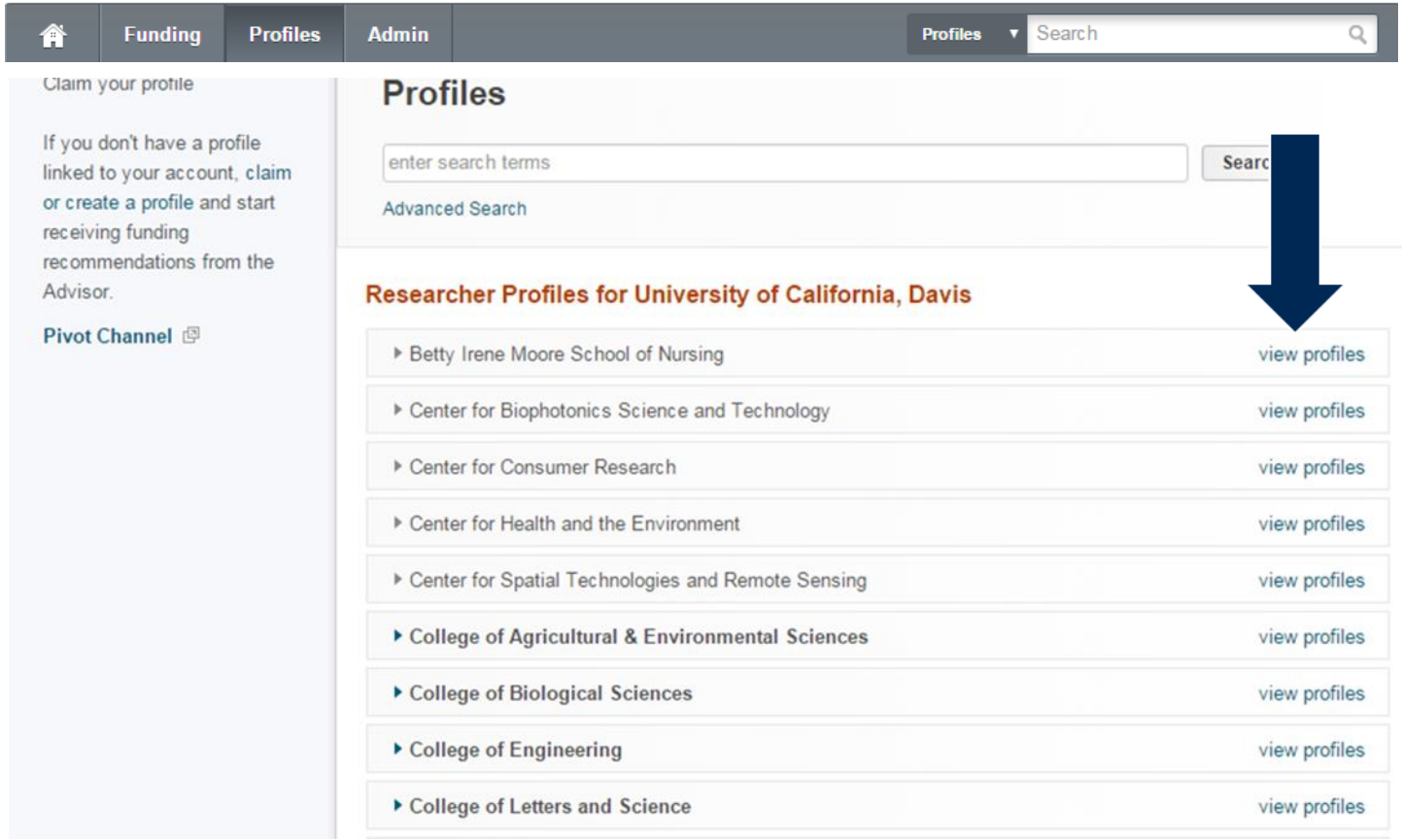
Pivot Profiles

1. Claim or create a profile

Resources for Building Collaboration

Pivot Profiles

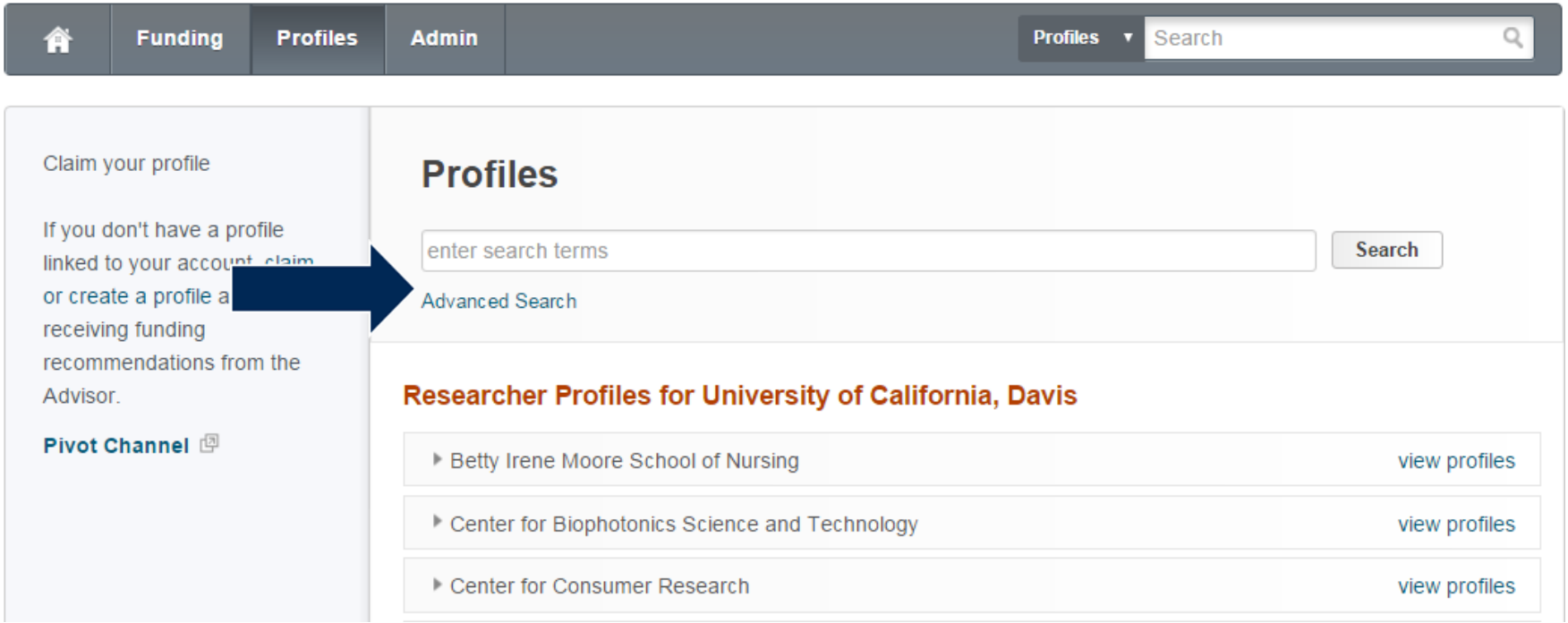
2. Find collaborators
    a. Browse UC Davis Profiles



Resources for Building Collaboration

Pivot Profiles

2. Find collaborators
    b. Create an advanced search



Resources for Building Collaboration

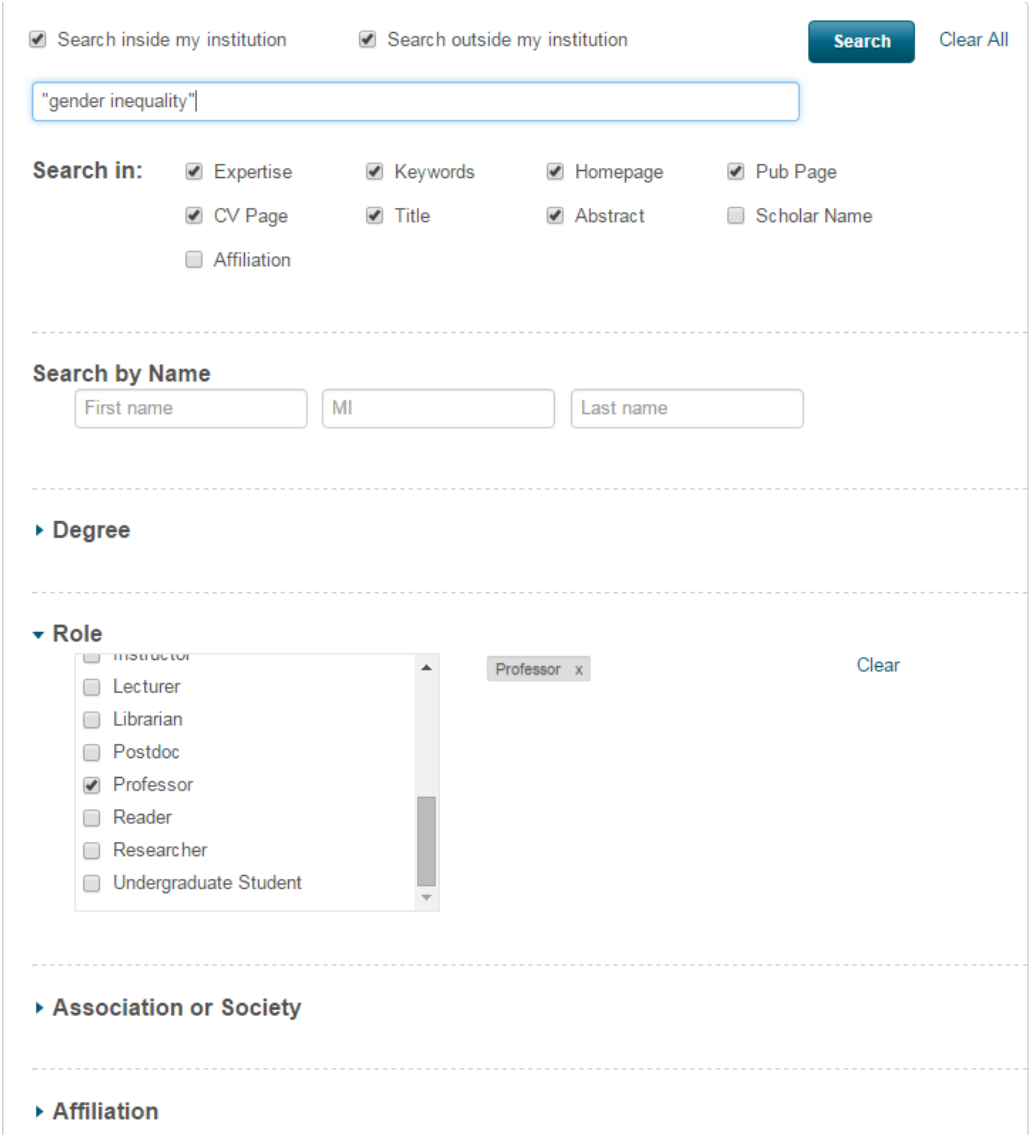
Pivot Profiles

2b. Find collaborators:

Create an advanced search

Search Tips

- Select internal/external
- Use “quote” to keep phrases together
- Think in broad terms
- Refine as you go



Resources for Building Collaboration

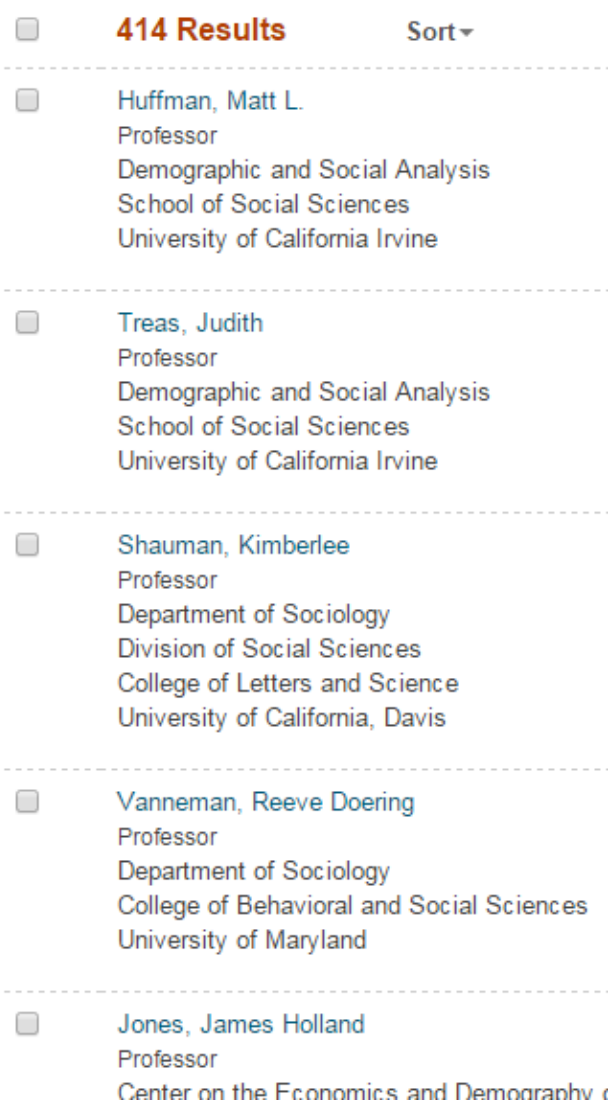
Pivot Profiles

2b. Find collaborators:

Create an advanced search

Filter

- Internal vs External
- Discipline
- Country



Resources for Building Collaboration

Pivot Profiles

2b. Find collaborators:

Create an advanced search

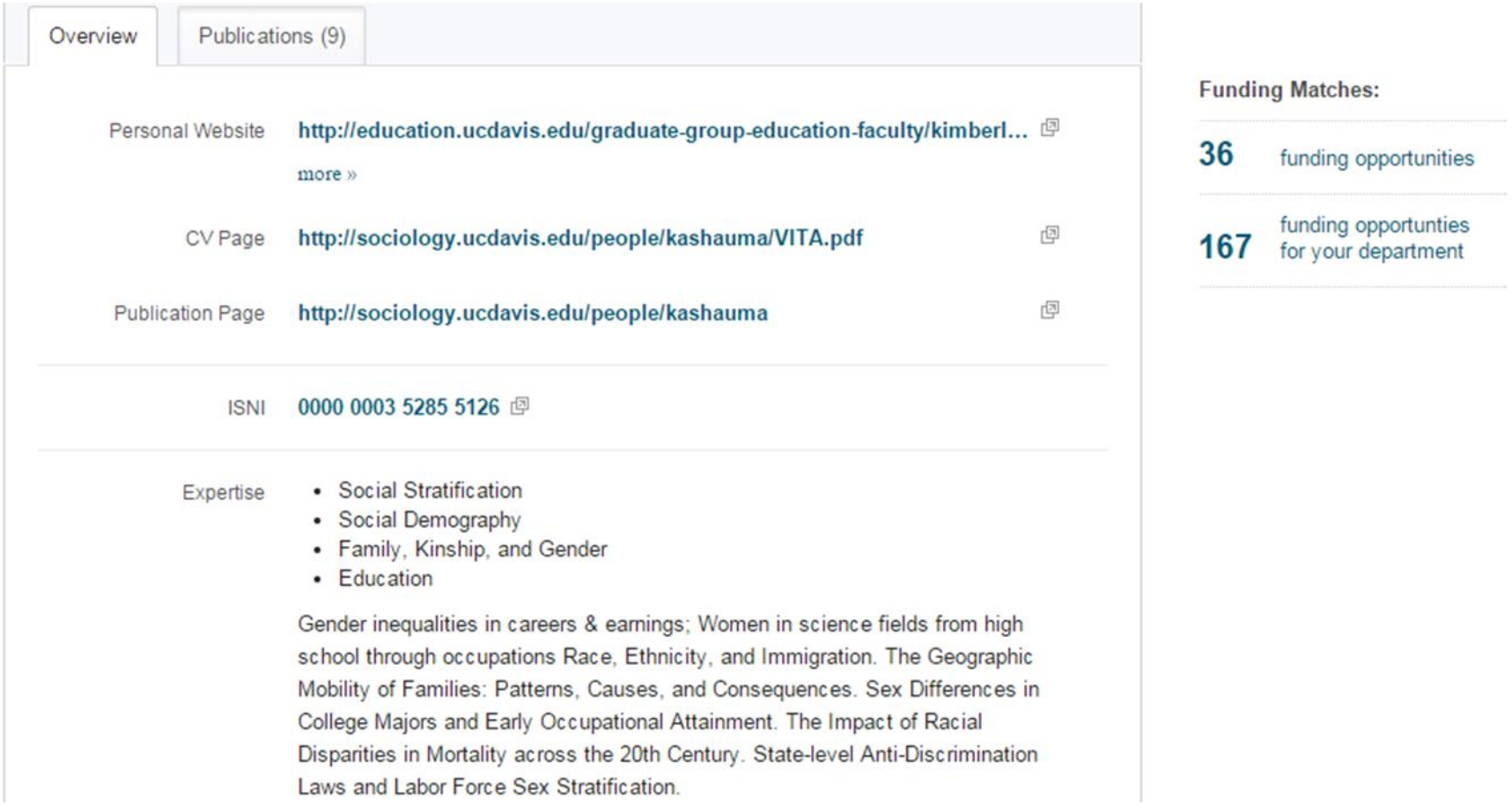
View Filtered List

- Review results for relevance

Resources for Building Collaboration

Pivot Profiles

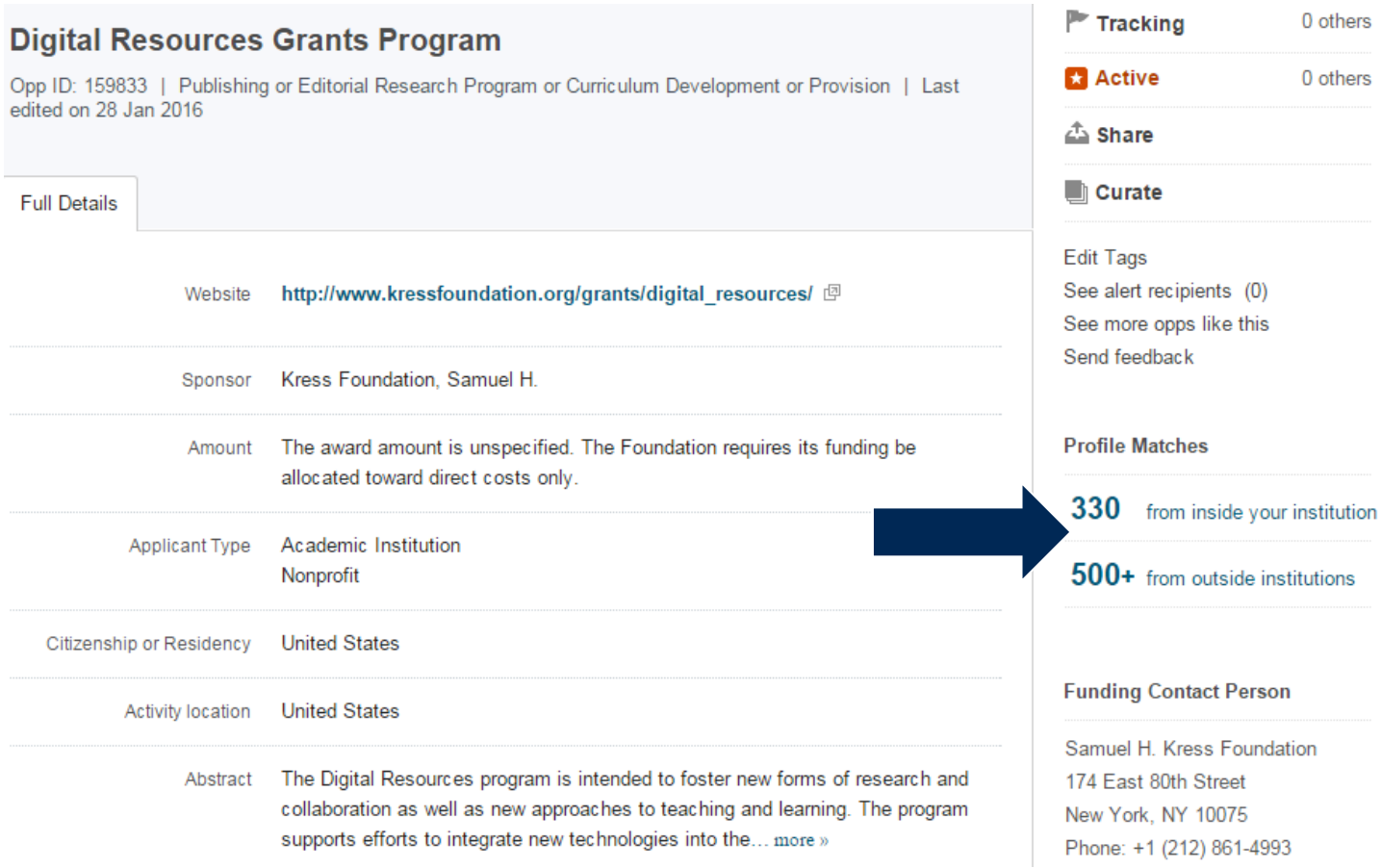
2b. Find collaborators: Create an advanced search



Resources for Building Collaboration

Pivot Profiles

2c. From a Funding Opportunity



Digital Resources Grants Program

Opp ID: 159833 | Publishing or Editorial Research Program or Curriculum Development or Provision | Last edited on 28 Jan 2016

Full Details

Website	http://www.kressfoundation.org/grants/digital_resources/
Sponsor	Kress Foundation, Samuel H.
Amount	The award amount is unspecified. The Foundation requires its funding be allocated toward direct costs only.
Applicant Type	Academic Institution Nonprofit
Citizenship or Residency	United States
Activity location	United States
Abstract	The Digital Resources program is intended to foster new forms of research and collaboration as well as new approaches to teaching and learning. The program supports efforts to integrate new technologies into the... more »

Tracking 0 others

Active 0 others

Share

Curate

Edit Tags
See alert recipients (0)
See more opps like this
Send feedback

Profile Matches

330 from inside your institution

500+ from outside institutions

Funding Contact Person

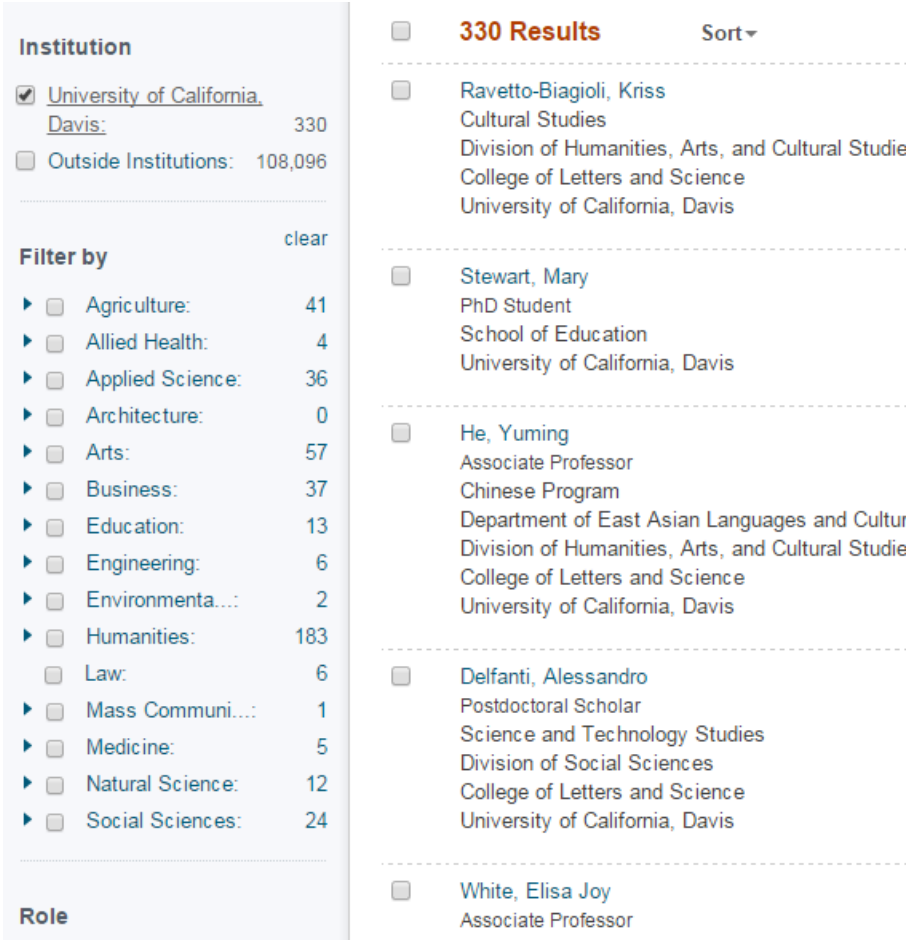
Samuel H. Kress Foundation
174 East 80th Street
New York, NY 10075
Phone: +1 (212) 861-4993

Resources for Building Collaboration

Pivot Profiles

2c. From a Funding Opportunity

- Filter the list as before
- Open the profiles ensure relevance
- Make contact with potential collaborators



Resources for Building Collaboration

Questions

Applying for a collaborative grant

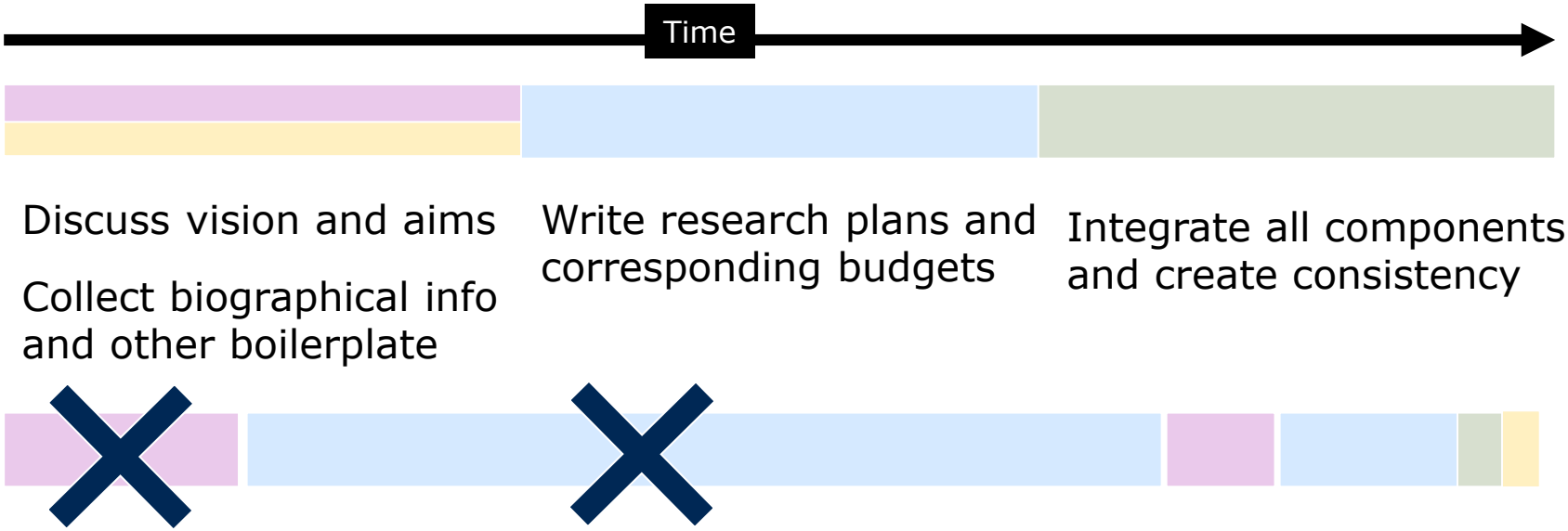
The research grant application process.

Applying for a collaborative grant

Steps for developing a collaborative proposal

Create a checklist and timeline

- Make a list of everything you need to do and assign roles and responsibilities
- Add the elements to your calendar
- Build in 1/3 of your timeline for review of combined elements



Applying for a collaborative grant

Steps for developing a collaborative proposal

- Create a checklist and timeline
- Thoroughly discuss proposal elements that require collaborative input
  - Designate an “Executive Committee” to make decisions
  - The PI should not be a figurehead

Broader
Impacts
Vision
Metrics
Communication Strategy
Budget
Data Sharing
Management Plan

Applying for a collaborative grant

Steps for developing a collaborative proposal

- Create a checklist and timeline
- Thoroughly discuss proposal elements that require collaborative input
- Be smart about the budget

Applying for a collaborative grant

Steps for developing a collaborative budget

- Engage the team
- Allocate budget based on value added contributions
- Keep budget open and fluid as project develops and if possible, during project period
- Keep process transparent
- Adequately justify the budget

- Dictate allocations
- Divide total project cost by the number of team members
- Make commitments prematurely
- Make secret promises or fund existing staff just to keep their positions
- Trivialize the importance of budget justification

Applying for a collaborative grant

Applying for a collaborative grant

Tools for developing a collaborative proposal

- Templates for collaborative proposal elements
- Guide to developing your vision (“one-pager”)
- Schedule of common deadlines

Applying for a collaborative grant

Tools for developing a collaborative proposal

- Budget templates

Applying for a collaborative grant

Tools for developing a collaborative proposal

Developing and Articulating a Shared Vision

Personnel who can enact the activities

Activities needed to achieve specific goals

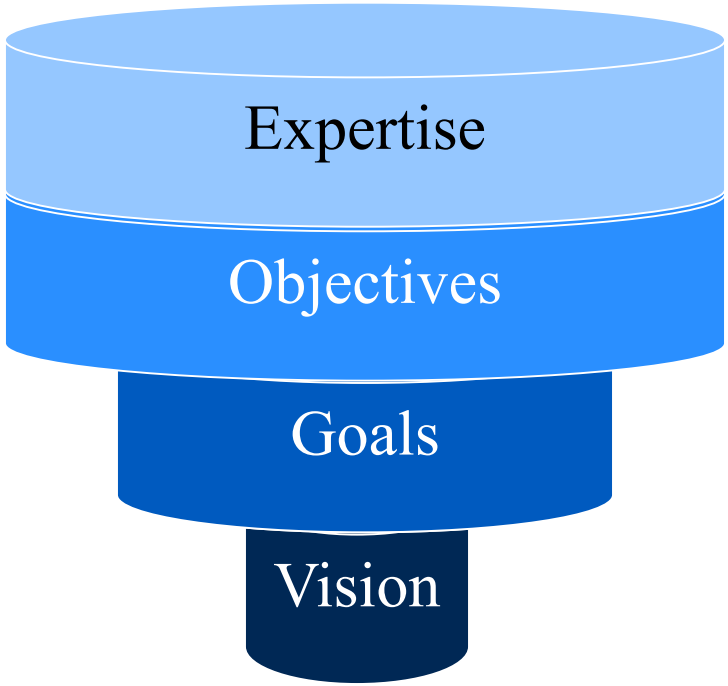
Anticipated core outcomes of the program

Overarching strategic reason for the program

Applying for a collaborative grant

Tools for developing a collaborative proposal

Developing and Articulating a Shared Vision



Applying for a collaborative grant

Developing and Articulating a Shared Mission

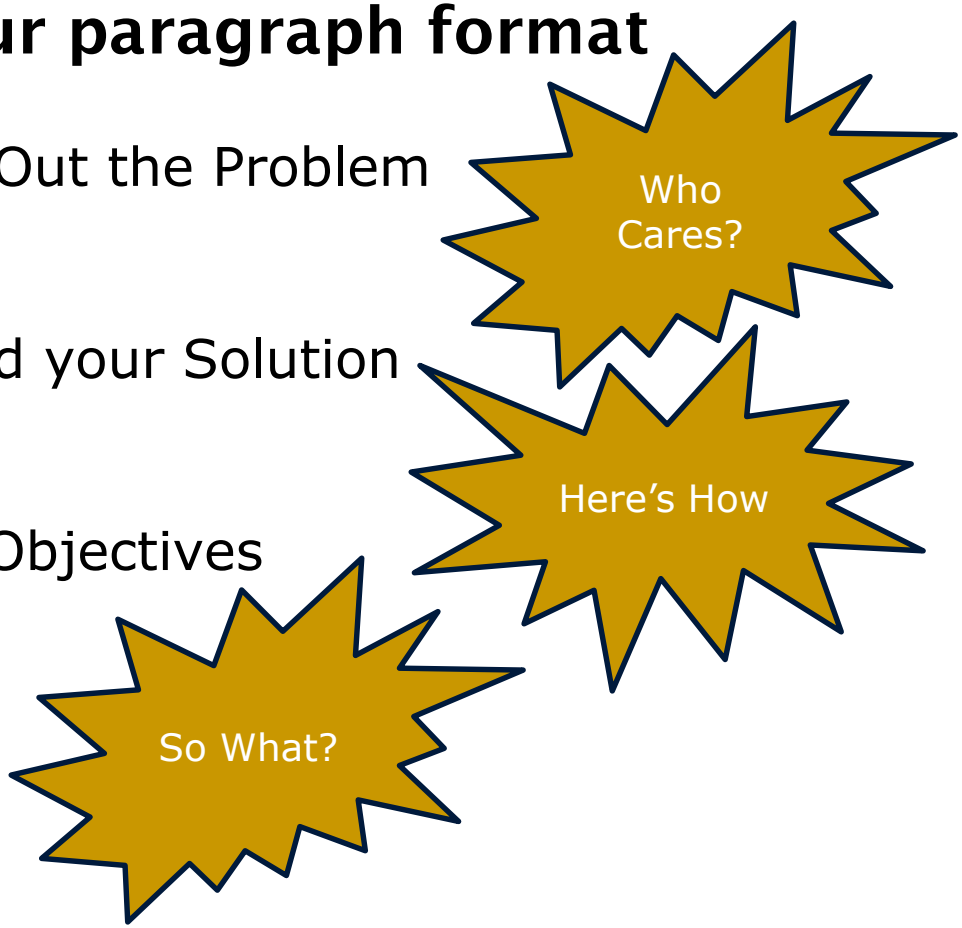
Overview: The four paragraph format

Set the Stage—Lay Out the Problem

State the Theme and your Solution

State your Specific Objectives

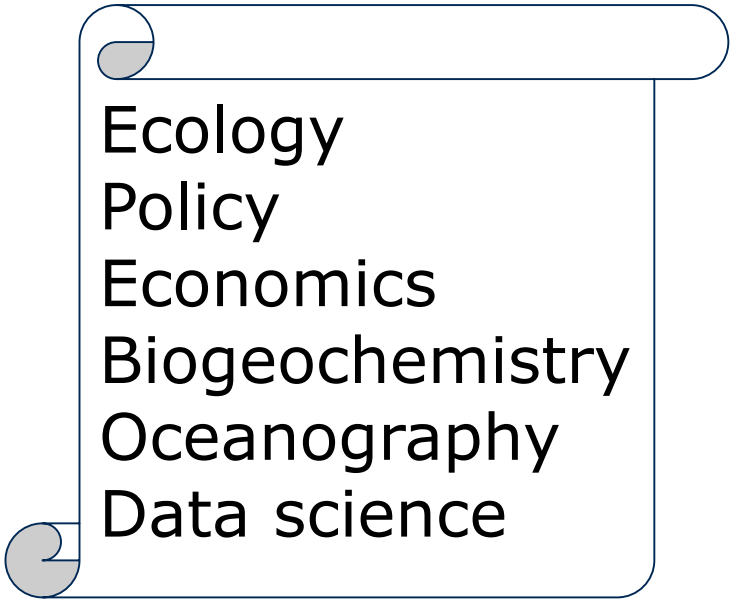
Create a Vision



Applying for a collaborative grant

Tools for developing a collaborative proposal

Developing and Articulating a Shared Vision



Applying for a collaborative grant

Tools for developing a collaborative proposal

Developing and Articulating a Shared Vision

Vision: Transform the science that underpins decision-making in the management of natural resources

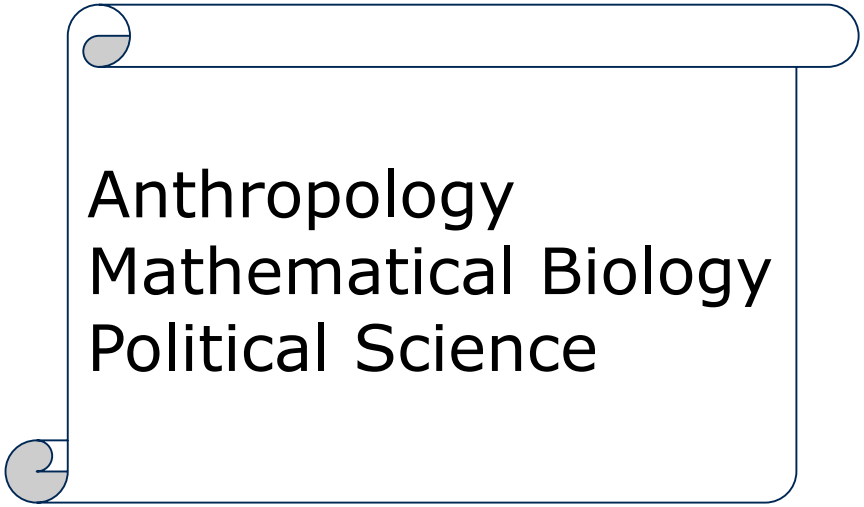
Goals: Generate use-inspired research questions by starting with the decisions facing policy makers, integrate complex data to inform decision-making, quantify the effects of anthropogenic change on marine systems

Objectives: (1) Train students in causal chain analysis; (2); train students to aggregate and integrate of data from multiple sources and scales (3) measure the effects of ocean acidification on coastal ecosystems

Applying for a collaborative grant

Tools for developing a collaborative proposal

Developing and Articulating a Shared Vision



Applying for a collaborative grant

Tools for developing a collaborative proposal

Developing and Articulating a Shared Vision

Vision: Mitigate environmental health risks in ways that are consistent with the cultural beliefs and practices of affected communities

Goals: Analyze environmental health risk among communities who harvest and consume mercury-contaminated fish to develop culturally appropriate interventions to reduce risk of mercury poisoning

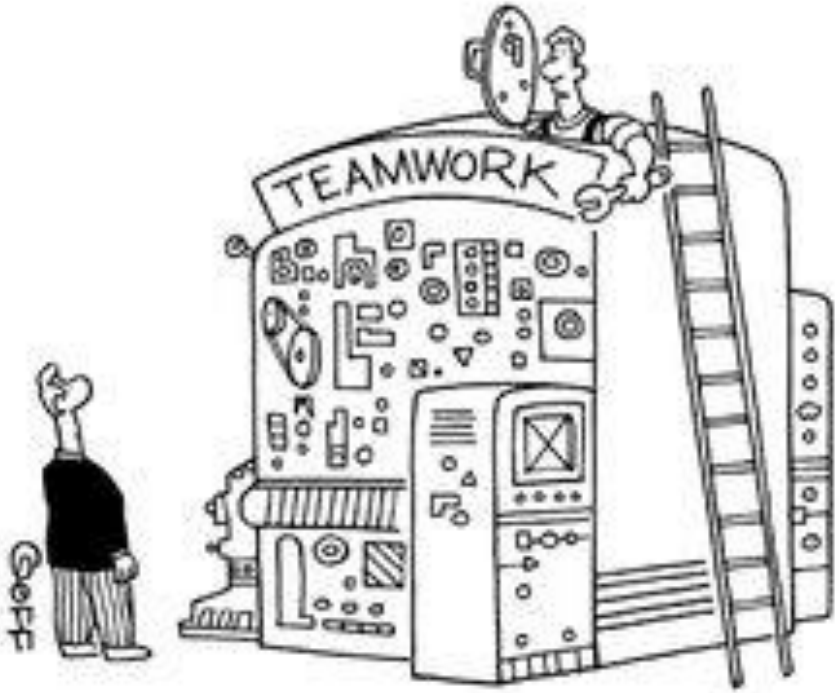
Objectives: (1) Develop mathematical models of behavioral transmission in Hmong communities in the Sacramento Delta; (2) Use gamification to test hypotheses about the consequences of social learning strategies; (3) translate findings into recommendations for the Delta Environmental Health Partnership, which will develop new strategies for risk communication.

Applying for a collaborative grant

Questions

Managing a Long-term Collaborative Project

Your proposal was funded – HOORAY!
Be careful what you wish for



"There are some egos in here gumming it up."

Managing a Long-term Collaborative Project

Characteristics of Successful Collaborative Teams

Project Aristotle: What makes the perfect team?

Studied groups of people who work together – measured and counted everything they could think of

Individuals: Characteristics

- The most productive employees tend to build larger networks by rotating dining companions
- The most productive managers had good communication skills and avoided micromanaging

Google

The New York Times Magazine

Managing a Long-term Collaborative Project

Characteristics of Successful Collaborative Teams

Project Aristotle: What makes the perfect team?

Groups: Things that didn't matter

- Mixture of people: Specific mixture of personalities (introvert/extrovert), shared hobbies, same station in life or work, level of hierarchy in the group
- Structure of group: Strong leader, group consensus
- Conversation-style: collegial vs. business-like

Google

The New York Times Magazine

Managing a Long-term Collaborative Project

Characteristics of Successful Collaborative Teams

Project Aristotle: What makes the perfect team?

Groups: Things that did matter

- Group norms
  - All individuals spoke in roughly the same proportion
  - All good teams had high "average social sensitivity" and acted on it
- Why?
  - Individual value leads to accountability and productivity
  - Safe for interpersonal risk-taking

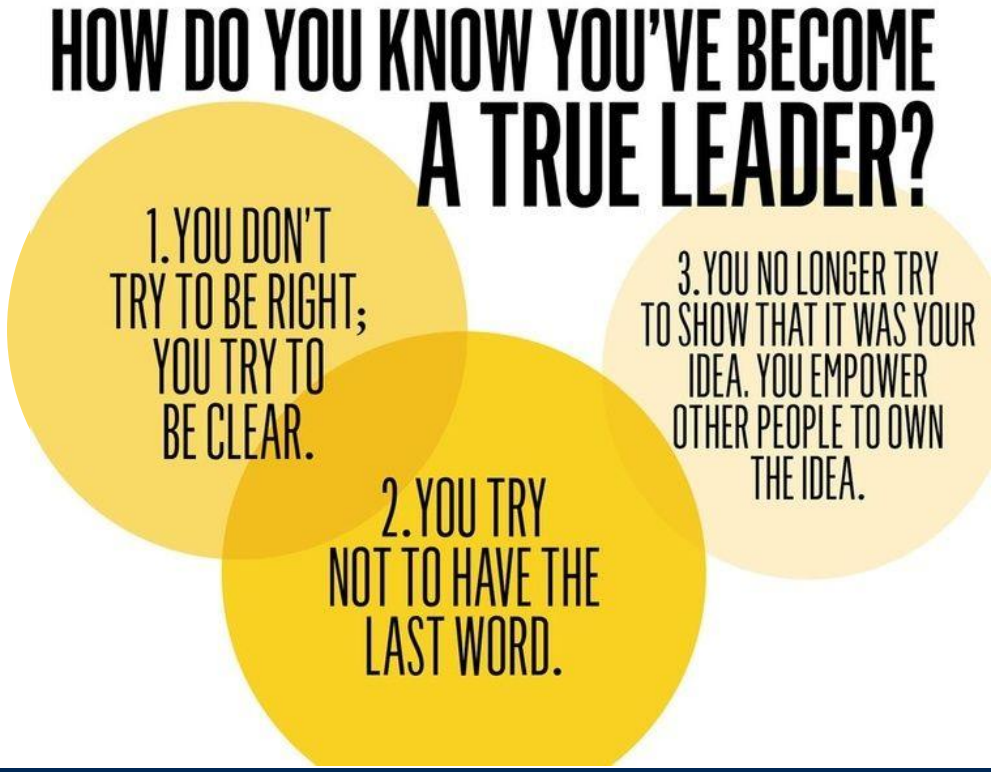
Google

The New York Times Magazine

Managing a Long-term Collaborative Project

Characteristics of a good leader

- Listening, Inclusiveness
- Delegation
- Morality – doing what is right for overall good
- Decisiveness
- Accountability, Honesty
- Optimism



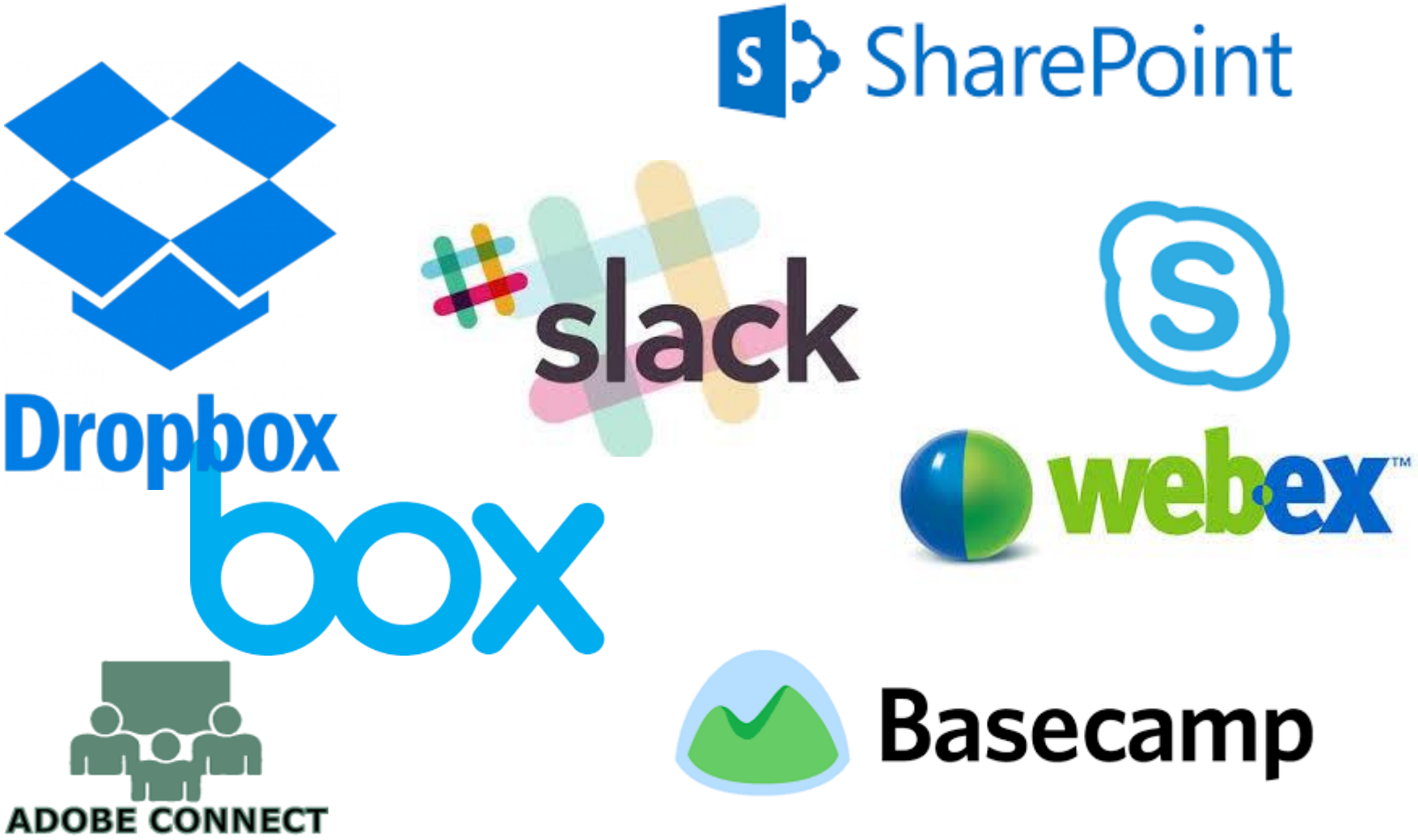
Managing a Long-term Collaborative Project

Common pitfalls of a leader

- Indecision, or the opposite, Micromanaging
- Poor communication
  - Unclear goals or expectations
  - Limited or delayed communication
  - Not keeping a record of communications/ collaborations
- Lack of Oversight
  - your collaborators mistakes (or worse yet, ethical lapses) are your mistakes
  - Data sharing and compliance (if one person is working with human subjects, everyone should have the training just to be safe)

Managing a Long-term Collaborative Project

Managing a Long-term Collaborative Project



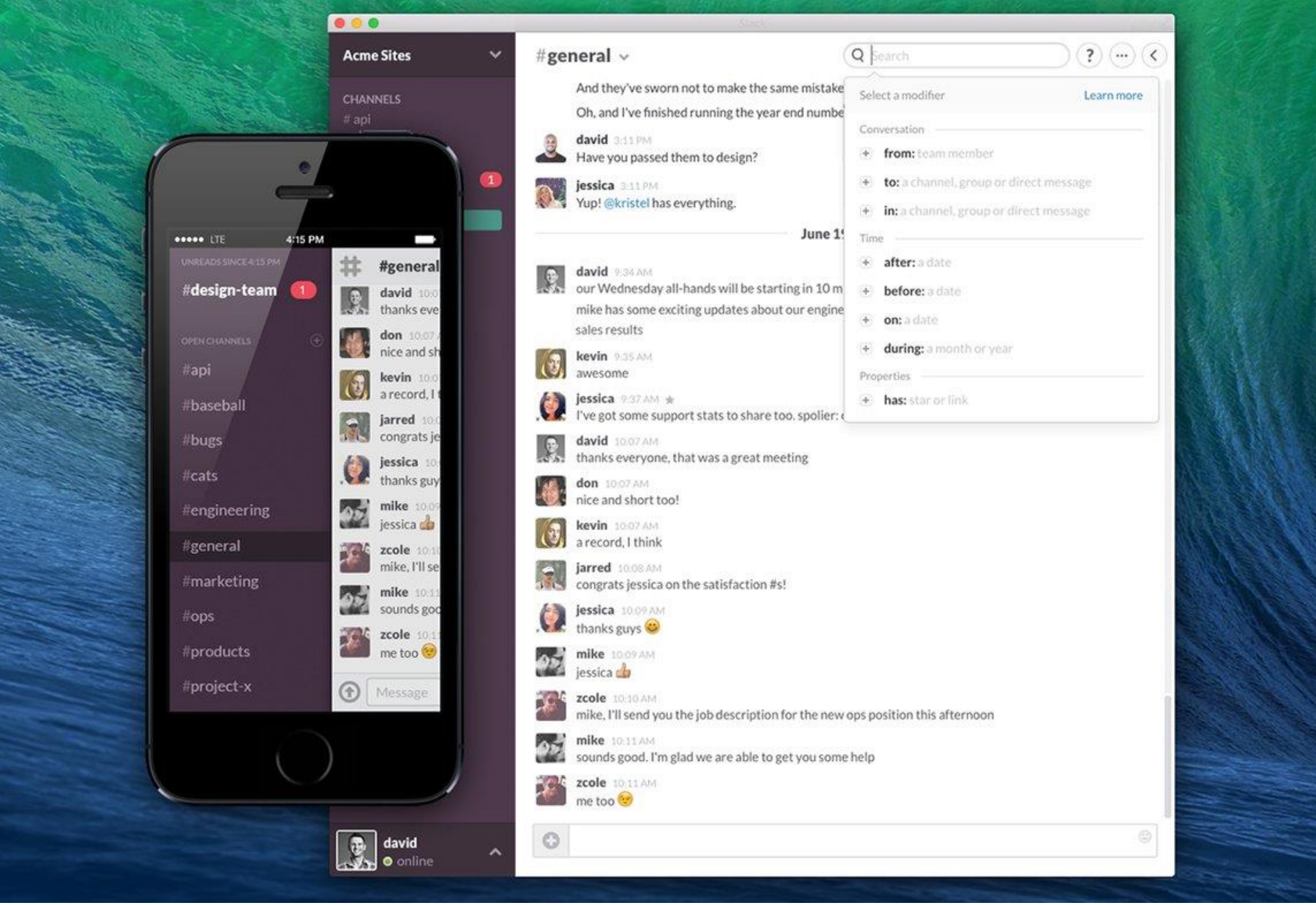
Managing a Long-term Collaborative Project

On-line collaboration tools

- File-sharing, content management
  - Good for sharing and archiving documents
  - Some are better than others for version control
  - *Limitations*: Not much room for discussion
- Discussion and dialog
  - Allows for conversation on certain topics
  - Conversations can take place anytime, anywhere
  - *Limitations*: Must remember to check another website
- Meeting facilitation
  - Allows for face-to-face conversation
  - Some permit screen-sharing, voting, Q&A
  - *Limitations*: Multitasking during meetings, audio feedback

Managing a Long-term Collaborative Project

On-line collaboration tools


Acme Sites
CHANNELS
api
#general
Search
Select a modifier
Learn more
Conversation
from: team member
to: a channel, group or direct message
in: a channel, group or direct message
Time
after: a date
before: a date
on: a date
during: a month or year
Properties
has: star or link
david 3:11 PM
Have you passed them to design?
jessica 3:11 PM
Yup! @kristel has everything.
david 9:34 AM
our Wednesday all-hands will be starting in 10 m
mike has some exciting updates about our engine
sales results
kevin 9:35 AM
awesome
jessica 9:37 AM
david 10:07 AM
thanks everyone, that was a great meeting
don 10:07 AM
nice and short too!
kevin 10:07 AM
a record, I think
jarred 10:08 AM
congrats jessica on the satisfaction #s!
jessica 10:09 AM
thanks guys
mike 10:09 AM
jessica
zcole 10:10 AM
mike, I'll send you the job description for the new ops position this afternoon
mike 10:11 AM
sounds good. I'm glad we are able to get you some help
zcole 10:11 AM
me too
david
online
LTE
4:15 PM
UNREADS SINCE 4:15 PM
#design-team
OPEN CHANNELS
#api
#baseball
#bugs
#cats
#engineering
#general
#marketing
#ops
#products
#project-x
Message

- Ability to create multiple groups, one for each project, with each one linked to a different set of documents (via Box.com, Dropbox, Google docs, etc.)
- Not just a message board, also file sharing, calendars, and ability to host (and archive) conference calls including video
- Also linked to other academic boards and topics so that the generic "newsfeeds" are on academic topics, not social ones

Trellis | AAAS

CREATE + | ALL | Search Trellis | 100

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C4Sci - Communities For Science Communication

C4Sci

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What's on your mind? Tell the group! | Post

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ANNOUNCEMENT

Tips for Getting Started in the C4Sci group(s)

08 Dec, 2015 | **Last edited:** 02 Jun, 2016

Welcome to the C4Sci family of groups on Trellis! I'm reposting an updated version of this announcement as a reminder about how to get started. I look forward to learning how each of you are working with scientific communities online and off!

Any questions, do get in touch: lwoodley@aaas.org

Read more

All
People
Status
Groups
Events
Discussions
Documents

Gabrielle Rabinowitz posted a new event in C4Sci - Communities For Science Communication
3 hours ago

The "Toolbox" Project virtual workshop for Trellis members

We recently featured Stephanie Vasko and Michael O'Rourke of the "Toolbox" project in our first C4Sci Mini Master Class. You can catch up on the discussion here:

C4Sci Mini Master Class #1: The "Toolbox" Project

1 Attendee
0 Votes
0 Comments
4 Followers

Topics: research collaboration, The Toolbox Project, Virtual workshop

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Follow
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Enter Keywords

C4Sci - Communities For Science Communication

This is a group for anyone interested in - or involved with - working with (online) communities for science projects. You might already be an admin of a group on Trellis and/or using other social media platforms such as Twitter and Facebook to build and maintain scientific communities. Or perhaps you're a researcher studying online communities or a technologist building new tools. All welcome!
This group will provide a place to share tips and information about new tools and

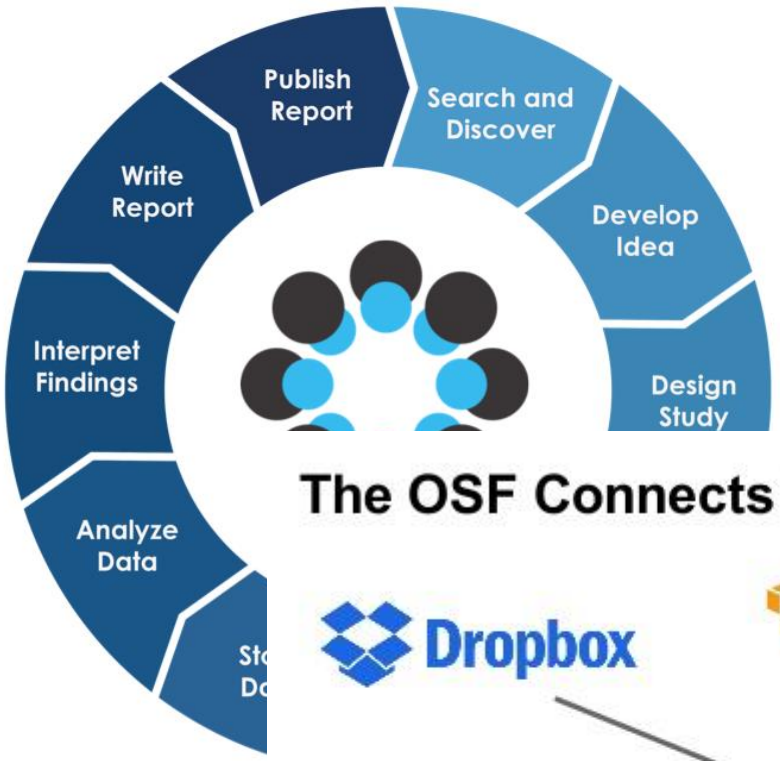
Read more

Open Science Framework

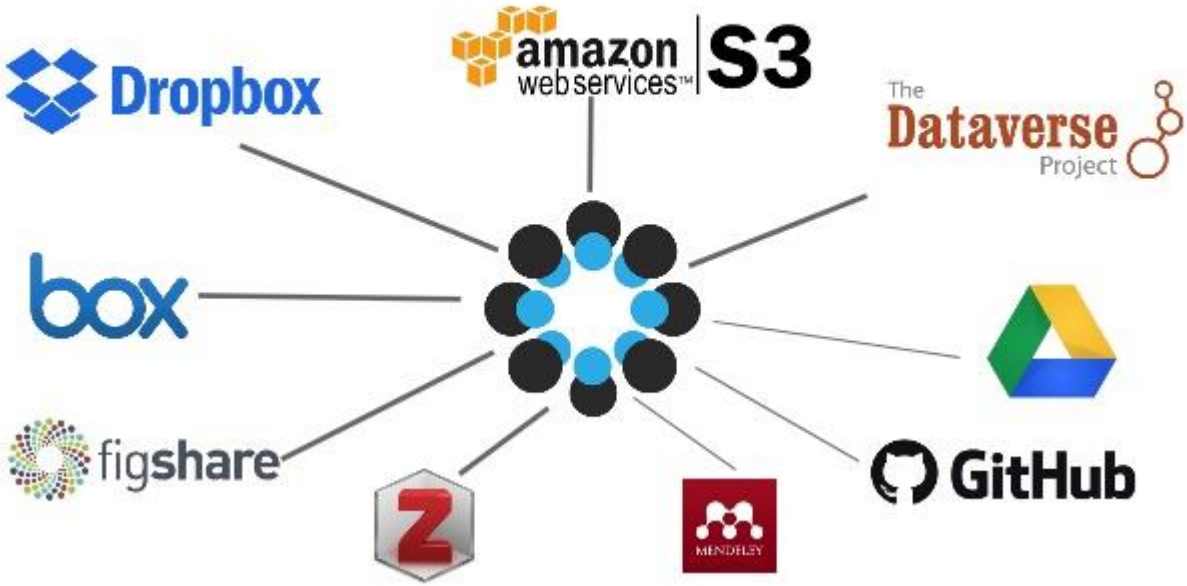
A scholarly commons to connect the entire research cycle

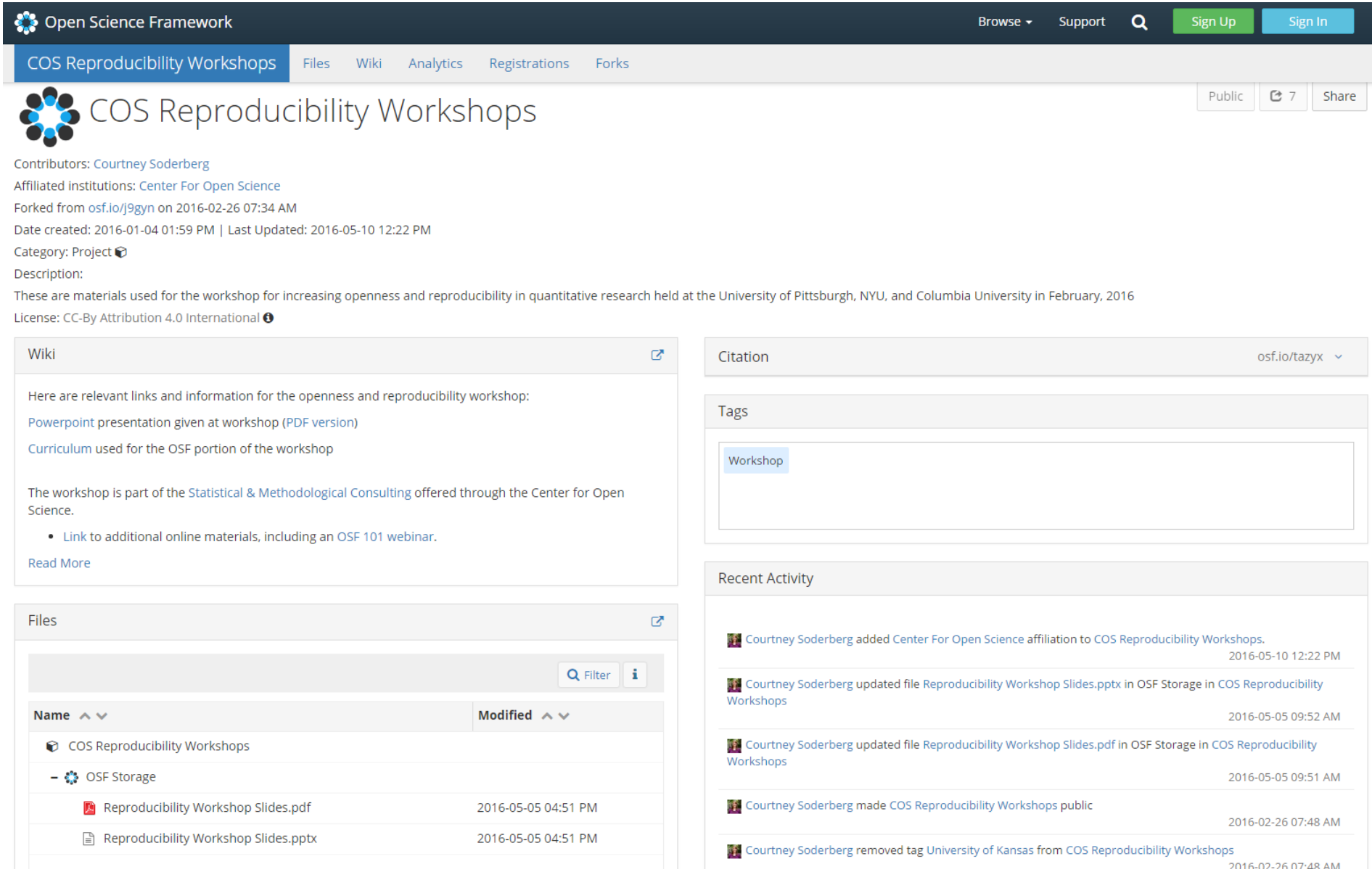
CENTER FOR OPEN SCIENCE

Contribut



The OSF Connects Services You Already Us

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Category: Project
Description:
These are materials used for the workshop for increasing openness and reproducibility in quantitative research held at the University of Pittsburgh, NYU, and Columbia University in February, 2016
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Wiki
Here are relevant links and information for the openness and reproducibility workshop:
Powerpoint presentation given at workshop (PDF version)
Curriculum used for the OSF portion of the workshop
The workshop is part of the Statistical & Methodological Consulting offered through the Center for Open Science.
Link to additional online materials, including an OSF 101 webinar.
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Managing a Long-term Collaborative Project

On-line collaboration tools

	Pros	Cons
Slack	• Easy to create multiple channels for many different projects • File sharing via drag and drop • All devices are linked • Notifications from other apps	• Not intended as an organization system for file sharing • Designed for business, not academics
Trellis	• Easy to create multiple message boards for many different projects • Developed and maintained by AAAS for an academic audience • Library feature for file sharing	• Not well linked to other apps • Collaborators must be faculty at universities who are granted access by AAAS
Open Science Framework	• Excellent for data sharing, especially for projects that require reproducibility • Developed for an academic audience	• Clunky when it comes to making only certain elements private • Not well linked to other apps

Managing a Long-term Collaborative Project

Pitfalls of on-line collaboration tools

- Must be actively managed
  - Must remember to check websites regularly
  - Email notifications of changes/updates
  - Different projects may use different platforms
  - Version control differs among projects
  - Controlling access
- Unreliability
  - If a server or connection fails close to the deadline…
  - Sites may not be secure enough to prevent IP issues
- Other pitfalls?

Managing a Long-term Collaborative Project

Run a successful meeting – the importance of face-to face communication

Build relationships

Immediate Response

Take risks

Interpret Reactions

Accountability

Direct contact creates a sense of shared experience that makes people feel more comfortable with one another and allows them to do better work.

One study at UCLA indicated that the impact of a performance was determined 7 percent by the words used, 38 percent by voice quality, and 55 percent by the nonverbal communication.

Meeting in person helps collaborators feel valued and gives them a chance to contribute input to organizational strategies and communication. It gives the leader a chance to confirm people's understanding of key issues and identify gaps

When a manager chooses to inform employees of unpleasant news through email it makes him appear cowardly.

Managing a Long-term Collaborative Project

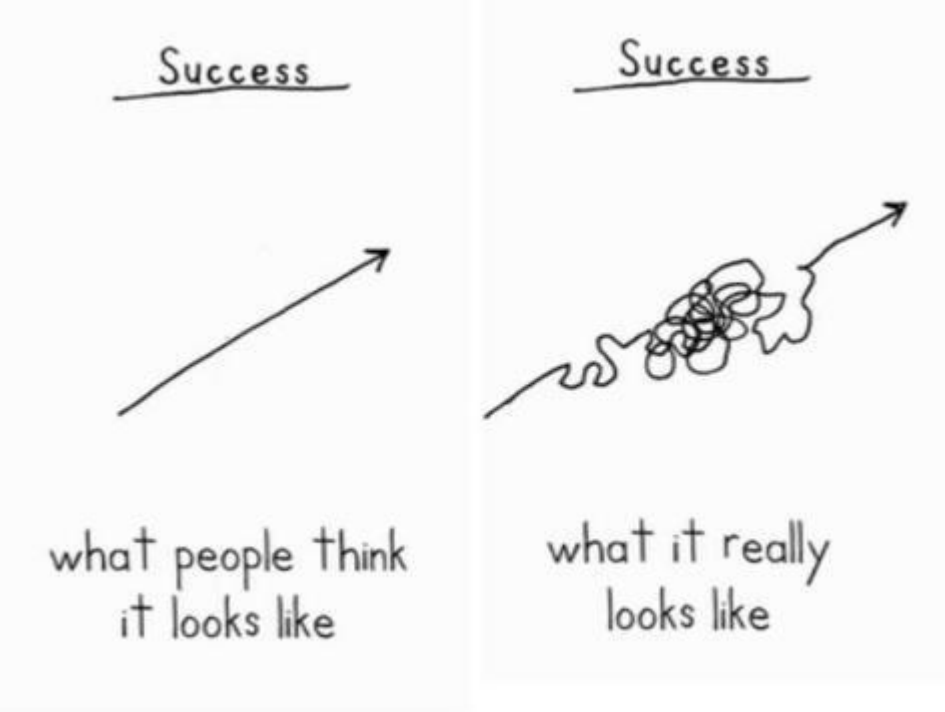
Run a successful meeting

Managing a Long-term Collaborative Project

Run a successful meeting

- Start on time, end on time
- Hand out an agenda in advance of the meeting
  - Meeting objective
  - Schedule
  - Action Items
- Give everyone the opportunity to speak
  - What do you want to get out of the meeting? (write this on board)
  - What will you work on when we leave this meeting?
- Stick to the schedule, and summarize the conversation at the end of each time period

Managing a Long-term Collaborative Project



Managing a Long-term Collaborative Project

Questions

Other things you can do

More on collaboration…

- For compliance and regulatory issues related to research collaborations, take the RCR Course "Collaborative Research"
  - October 19th from 12:00 – 1:00
  - Genome Center 1005; broadcast to Med Ed Bldg 1222
- Attend the Science of Team Science Conference
  - June 12-15, 2017 in Clearwater Beach, FL
  - http://www.scienceofteamscience.org/
- Attend the ADVANCE Brown Bag Seminar: The Art and Craft of Team Science
  - April 19, 2017, 12:30-1:30 pm, 1100 Surge III (The Grove)

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