

Connecting people and resources to accelerate discovery by empowering the science gateway community

Approaching Project Sustainability with Techniques from an Entrepreneurial Mindset

Claire Stirm, Juliana Casavan, Michael Zentner

Science Gateways Community Institute

Christine White – ESIP Annie Burgess, Erin Robinson – ESIP Labs Ziheng Sun – Geoweaver Nancy Hoebelheinrich – Data Management Training Clearinghouse Sean Gordon - MetaDIG

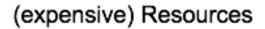


Pain Points

Connecting expensive resources & data to

scientist authors that write codes to utilize them to

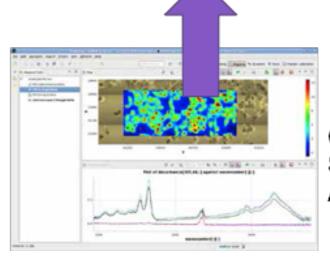
audiences that use those codes, data, and instruments en masse







Audience(s)



Collaborating Scientist Software / Data Authors



Chances are you are...

Developing advanced web interfaces to:

- Data collections
- Analysis capabilities
- Instruments
- Sensor data
- Citizen science projects
- Much more







We call these

science gateways /sī' əns gāt' wāz'/ n.

- 1. an online community space for science and engineering research and education.
- 2. a Web-based resource for accessing data, software, computing services, and equipment specific to the needs of a science or engineering discipline.

Also known as: research platforms, virtual laboratories, virtual research environments, advanced web portals, etc.





Fortunately you are not alone.







Science Gateways Catalog

Save time — reuse gateway technologies or discover gateways and virtual research enviro research, teaching, and learning

Total Entries: 449

Search









UNFortunately you are not alone.

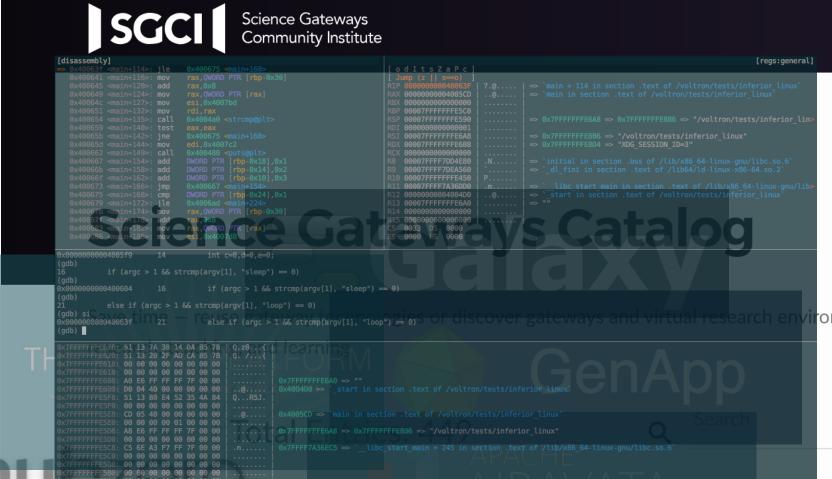








UNFortunately you are not alone.







The formation of an institute... to institutionalize best practices







Our Products: Technology Consultation

- Technology selection, planning
- Development process implementation
- Co-developer placement
- Cybersecurity scanning, design & remediation
- Usability Assessment / Design





Our Products: Annual Conference

Sign up for newsletter conditions or science Gateways. Or of science Gateways.

To be held in San Diego in conjunction with eScience

- Gateways 2019: 23-25 September
- eScience 2019: 24-27 September

Learn and interact with the community of more than 100 gateway stakeholders.



Our Products: Gateway Catalog

Look for a gateway with a pattern you like, and emulate rather than re-invent:

- Comprehensive listing of > 400 gateways
- Information about gateway supporting frameworks / technologies





Our Products: Prototype Hosting Environment

Experiment with creating your

gateways with minimal investment in

hosting resources





Our Products: People

- Enroll in educational opportunities related to gateway development and usage
- Find an intern to assist with your project for a summer
- Compete for a Young Professional of the Year award
- Assist with / participate in a variety of hackathons





Our Products: Business Consultation

- Marketing approach development
- Communication assistance
- Funding / sustainability planning
- Graphic design
- Licensing issues
- Activity based budget development / resource planning
- Understanding your market
- Developing expertise on your campus





Our Products: Gateways Bootcamp... a week long deep dive into your strategy

I have an idea!

Articulate the value of your gateway and how it's distinctively different from what already exists.

Who benefits?

Identify audience and stakeholder groups and consider how they impact your success.

Where does it fit in?

Establish where your gateway solution fits within the existing market landscape of partners and competitors.

How do I make it happen?

Define measurable goals for success and sustainability. Consider multiple needs such as technology, security, project management, usability, and funding.

SGCI

How do I sell it?

Spread the word! Plan how to tell the unique story of your gateway. I have an idea!

Articulate the value of your gateway and how it's distinctively different from what already exists.

Who benefits?

Identify audience and stakeholder groups and consider how they impact your success.

Where does it fit in?

Establish where your gateway solution fits within the existing market landscape of partners and competitors.

How do I make it happen?

Define measurable goals for success and sustainability. Consider multiple needs such as technology, security, project management, usability, and funding.

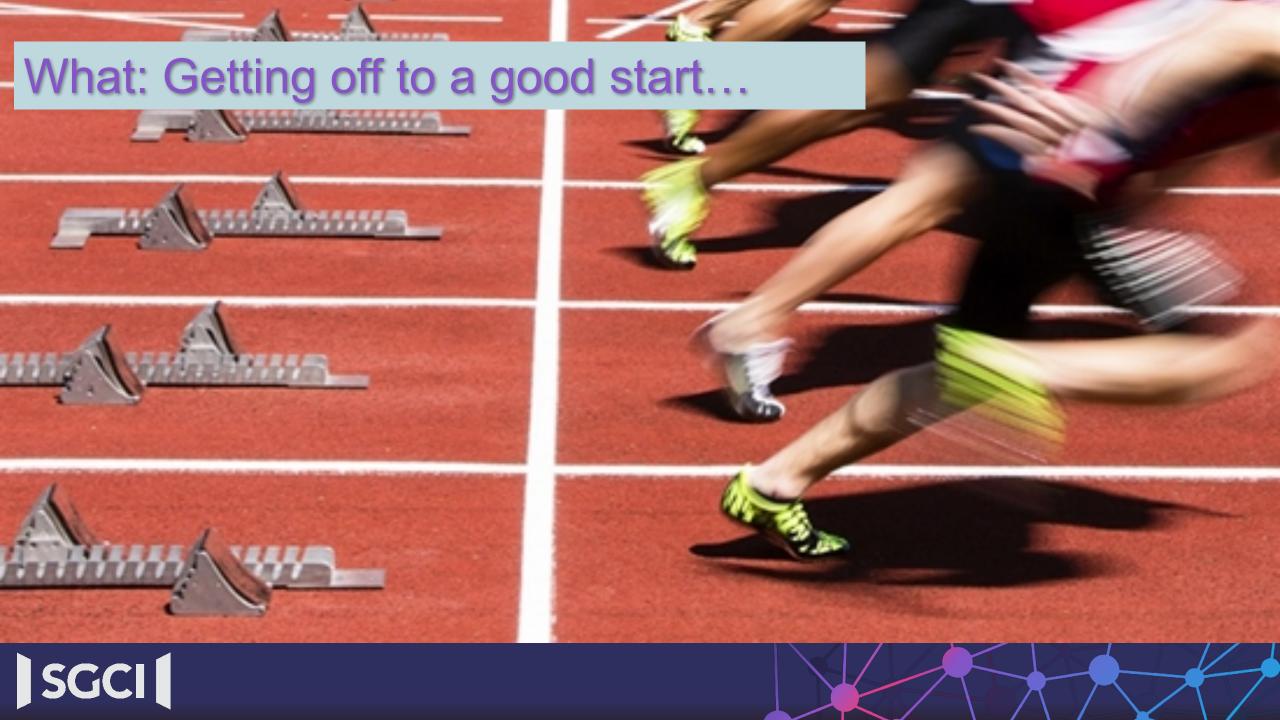
How do I sell it?

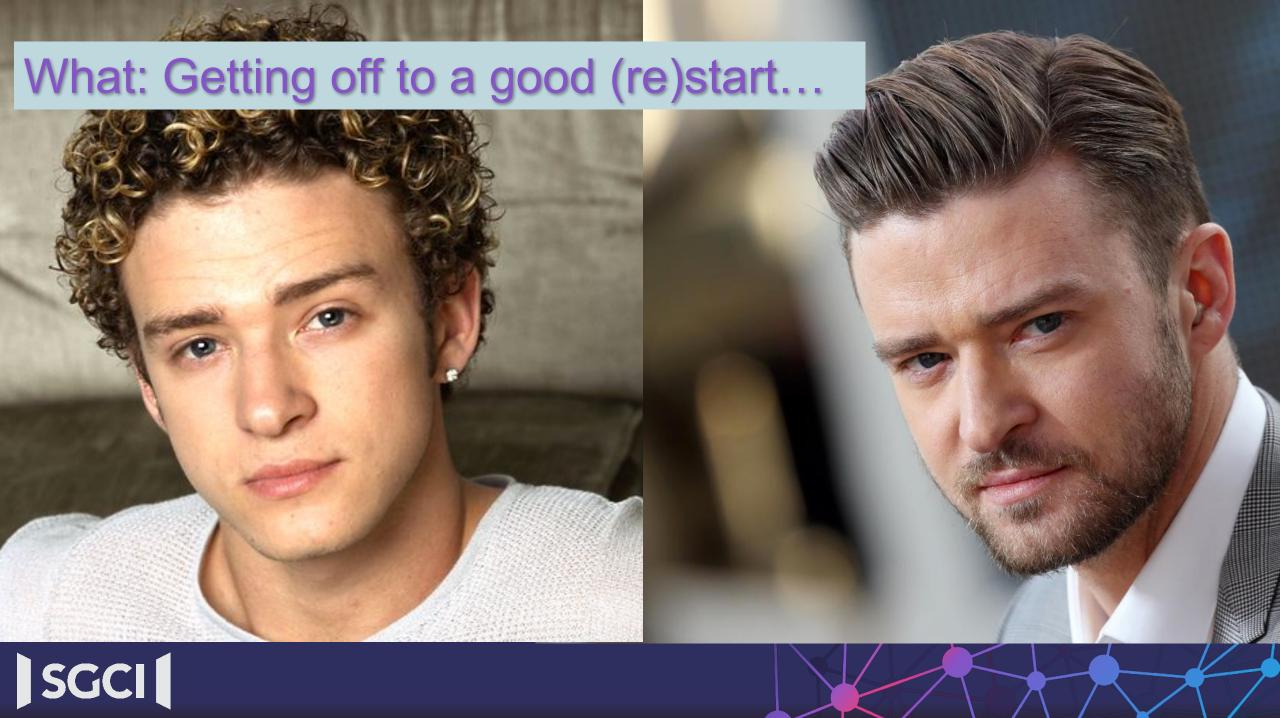
Spread the word! Plan how to tell the unique story of your gateway.

Bootcamp at a Glance

- Full 5 days
- Knowledge dissemination
- Interactivity
- Community formation
- Putting away the normal daily routine
- Homework







What: Knowing how to know if you have a good start...



SGCI

What: Creating an in person sense of community...



SGCI

What: Creating an in person sense of community...



Patterned after...













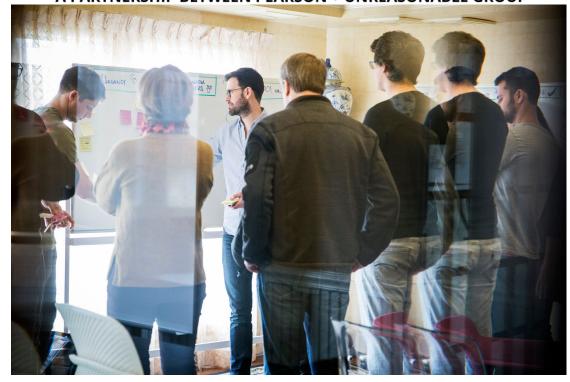
Patterned after...





PR@JECTLAB

A PARTNERSHIP BETWEEN PEARSON + UNREASONABLE GROUP





(some of the) Key Elements to Cohort Formation

- Out of the ordinary
- Forced away time
- Extended period of time
- A common non-trivial task/ordeal
- Forced unfamiliar interactivity
- Common decompression time
- A deliverable
- An experience

Feeling like it is taking 115% of your effort to participate



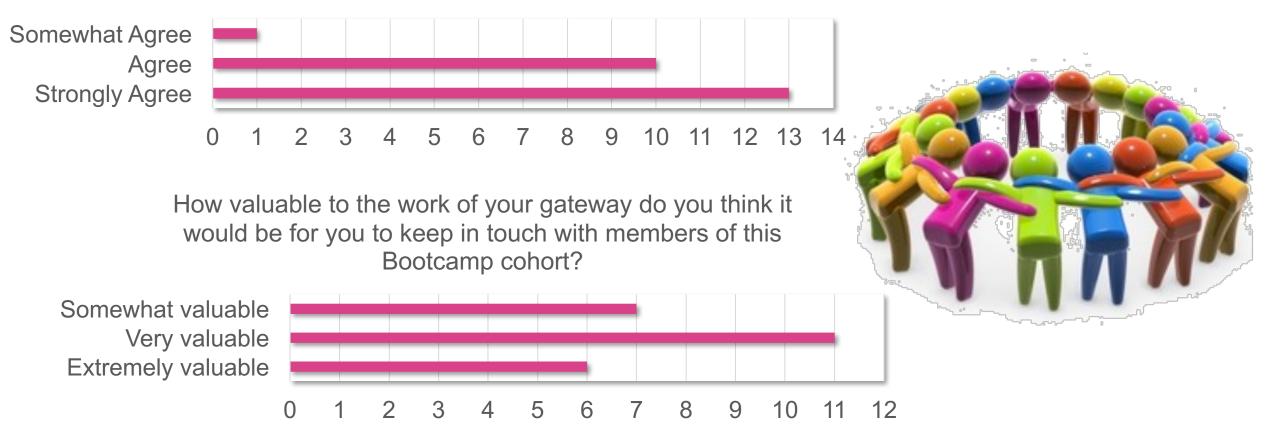






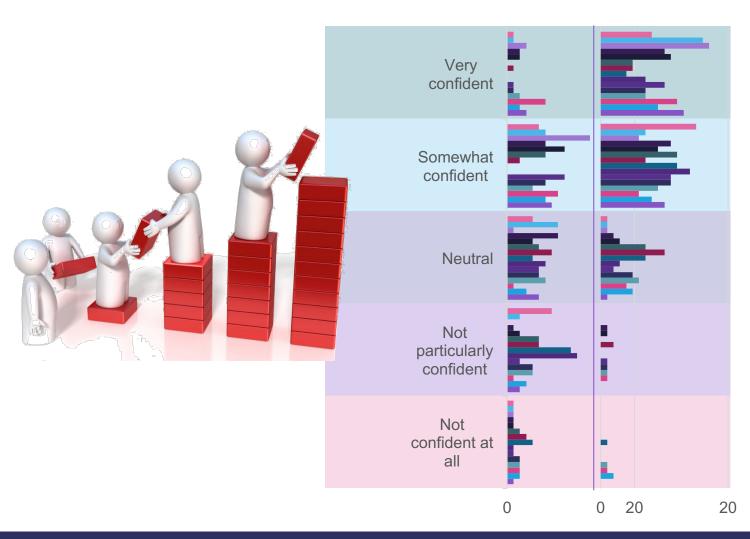
Quantitative Importance of Community

I made social connections at the Bootcamp that will be beneficial to my work with my gateway.



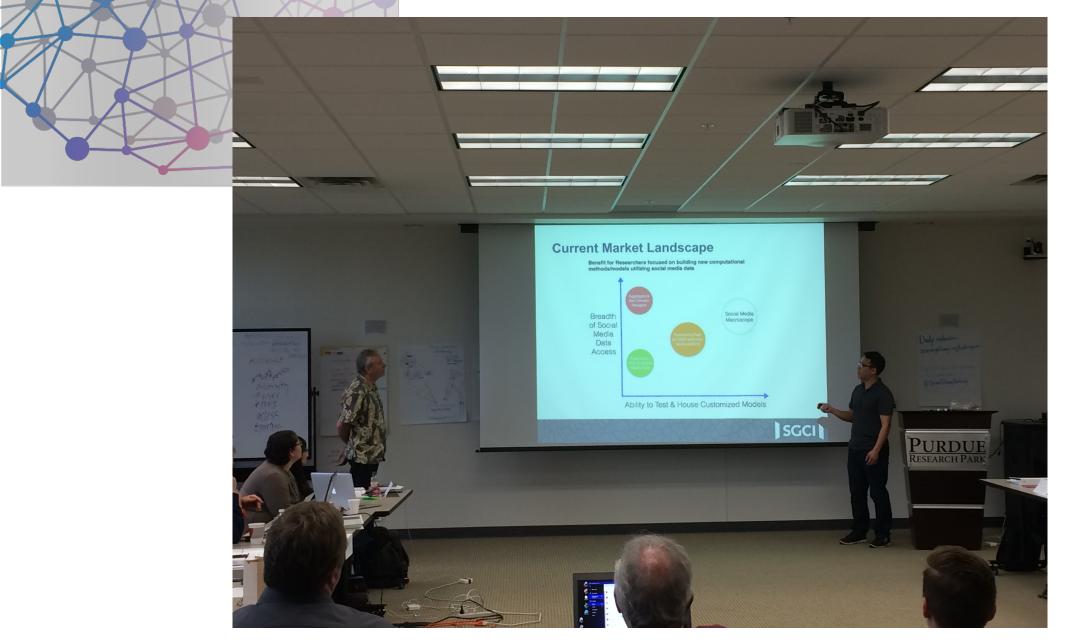


Impact on Confidence in Ability to Perform



- Identify the key factors that make a project sustainable
- Define a value proposition that captures how our project delivers value to users
- Identify key audience segments
- Identify what motivates key audience segments to use our Gateway
- Identify relevant direct and indirect competitors to our Gateway
- Pinpoint measurable targets that will help our Gateway attain its mission
- Develop a budget that will allow us to support the activities needed to reach our goals
- Design a funding model that includes multiple sources of reliable, renewable support
- Employ marketing tools to reach and engage our Gateway's target audience
- Provide a postive user experience
- Obtain on-campus resources
- Devise a strategy for measuring impact in more than one way
- Make technology choices and open source decisions
- Identify cybersecurity best practices for our Gateway
- Effectively communicate what our gateway offers









Pitch Deck Alpha Science Gateways Bootcamp

Hosted by the SGCI Incubator November 6-9, 2018 Boulder, CO





What is it? What does it do?
What purpose does it serve?
Include your concrete language

Value Proposition



[MY PROJECT].....

WILL HELP [WHO?].....

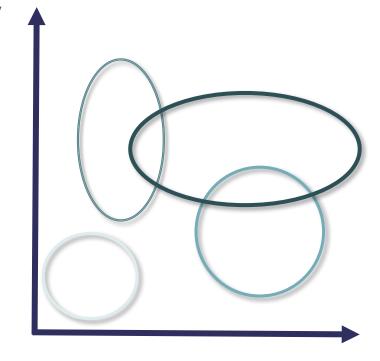
DO [WHAT?].....

BY [HOW?]

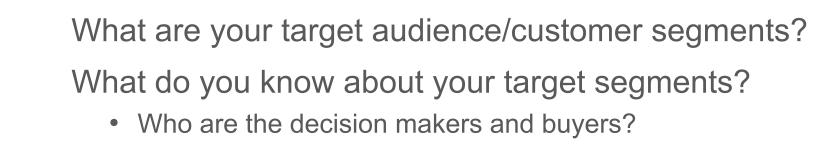
Current Market Landscape



- Discuss the key drivers impacting this market space
- Discuss the alternative categories and their positioning
- Highlight your opportunity



Target



- What criteria do they use?
- How long does it take?

How many customers are there?

Who are your early adopters/evangelist?

What are your secondary segments?



Financial Model



- My sources of support will include:
 - Grants



Support from my institution



Support from other partners



• Revenue from...



Goal Setting

3 Month Goals

1.

2.

3.

6 Month Goals

1.

2.

3.



Pitch Deck for Science Gateway for Data Management Education

From Science Gateways Bootcamp in Oct 2017

Nancy Hoebelheinrich (& Erin Robinson)

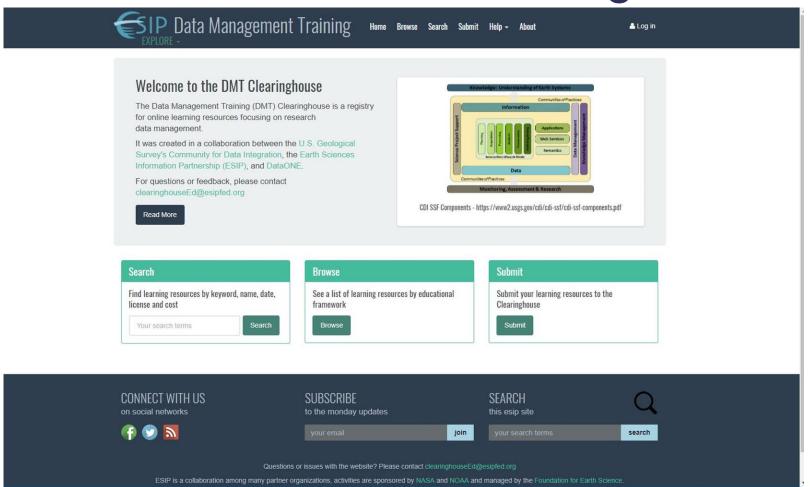
ESIP Winter 2019

Tuesday, January 15, 2019

Bethesda, MD



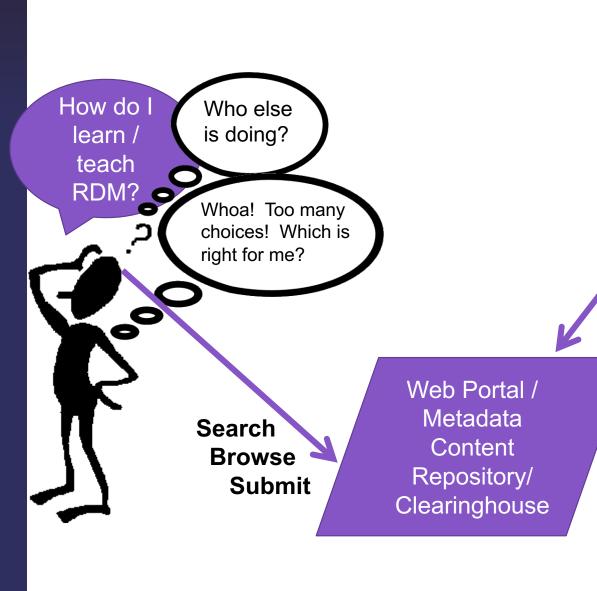
Motivation: Turn a *Project* into a *Gateway*: Data Management Training Clearinghouse → Data Management Education Gateway

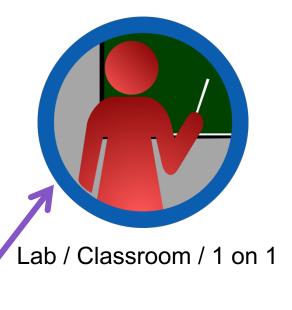


http://dmtclearinghouse.esipfed.org



Napkin Drawing







Self – taught Researcher

Target Audiences



Research Data Management Learner

- Academic researchers & their teams who want to learn just what they need to know, just when they need to know it
- Independent & government researchers who create and provide data

Contributor

- Key segments within science research data communities whose job it is to teach about data management:
 - Data repository team members
 - Academic & govt. data librarians
 - Data science educators



The Science Gateway to Data Management Education

WILL HELP Science Researchers......

TO find, use and recommend specialized & targeted learning resources on research data management......

BY searching and browsing the Data Management Training Clearinghouse, and using the recommender, ranking & learning facilitation services of the Science Gateway.

Value Proposition for Content Contributor

The Science Gateway to Data Management Education

WILL HELP Research Science Data Management Educators

• • • • • • • • •

TO find, use and share and get credit for specialized educational content on research data management.......

BY contributing (submitting) to the Data Management Training Clearinghouse.

Functionality



Current

- Search
- Browse
- Metadata submission
- User profiles
- Limited capacity for efficient editorial review processes
- Minimal security
- Minimal built in usage metrics (based on Google Analytics)

Desired (current +)

- Better security options for spamming and for more advanced usage metrics
- Mechanisms to:
 - Allow users to annotate & rank resources based on an embedded community built assessment framework
 - Facilitate the curation of resources, such as using current & ongoing gap analyses, and gather user analytics
 - Create customized lists of resources from inventory
 - Provide real-time educational offerings that can be accessed via the educational gateway
 - Improve the efficiency of editorial review processes in order to maintain quality control & currency of resources, e.g., by targeted URL checking and notifications

Goals



3 Month Goals

- 1. Plan, prepare & implement awareness & usability testing event at AGU for data management learner Clearinghouse user
- 2. Increase inventory of resources in portal by 25 50 percent
- 3. Develop and begin implementing an ongoing marketing plan to raise awareness (so people care)

6 Month Goals

- 1. Identify, invite and plan for face to face meeting of potential Advisory Board members
- 2. Adapt usability testing framework to content contributor user and conduct usability testing at ESIP Winter meeting
- 3. Explore the options for moving from current hosting infrastructure to HubZero infrastructure

What has happened since October 2017?

Found some funding!!

- Found a partner with the University of New Mexico to seek funding
- Together we were awarded a 3
 year National Leadership Grant
 by the Institute of Museum &
 Library Services which will move
 us forward toward our desired
 functionality (2018 2021)

Added functionality from list of desired adds:

- Mechanisms to:
 - Allow users to annotate & rank resources based on an embedded community built assessment framework
 - Facilitate the curation of resources, such as using current & ongoing gap analyses, and gather user analytics
 - Create customized lists of resources from inventory
 - Provide real-time educational offerings that can be accessed via the educational gateway
 - Improve the efficiency of editorial review processes in order to maintain quality control & currency of resources, e.g., by targeted URL checking and notifications

What else has happened since October 2017?

- Found new collaborative partners:
 - AGU / RDA Enabling FAIR project stakeholders
 - Australian Research Data Commons
 - A number of other U.S. research libraries
 - European Commission's GO FAIR Project
- Organized two successful crowdsourcing events (helped test that method for community engagement & sustainability)

- Expanded reach from US-centric to include:
 - European organizations & resources
 - Australian organizations & resources
 - Soon to be reaching out to Africa & hopefully, South America
- More than doubled size of inventory of educational resources
- Diversified the range of science (& some social science) disciplines covered

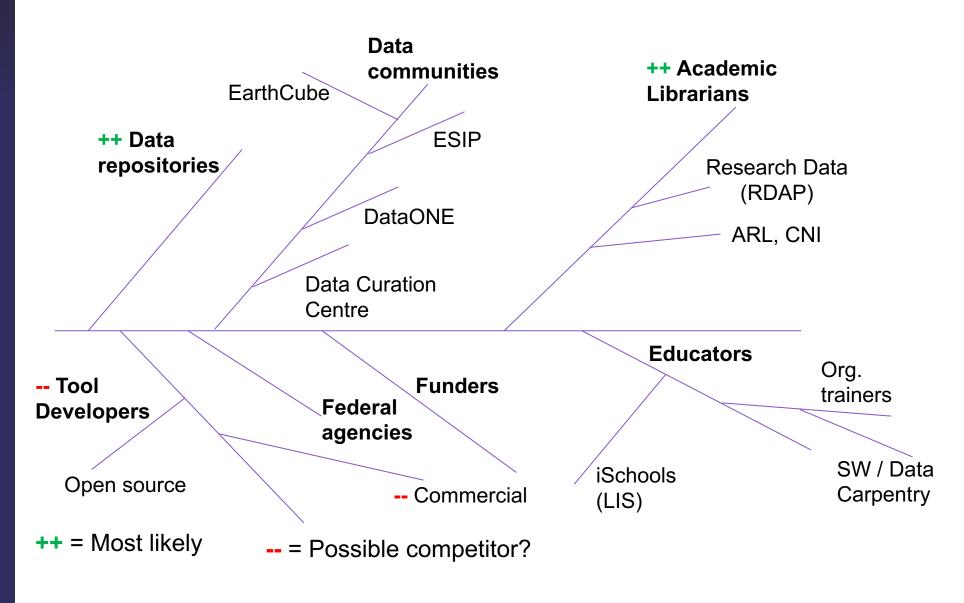


What did we do / are we doing?

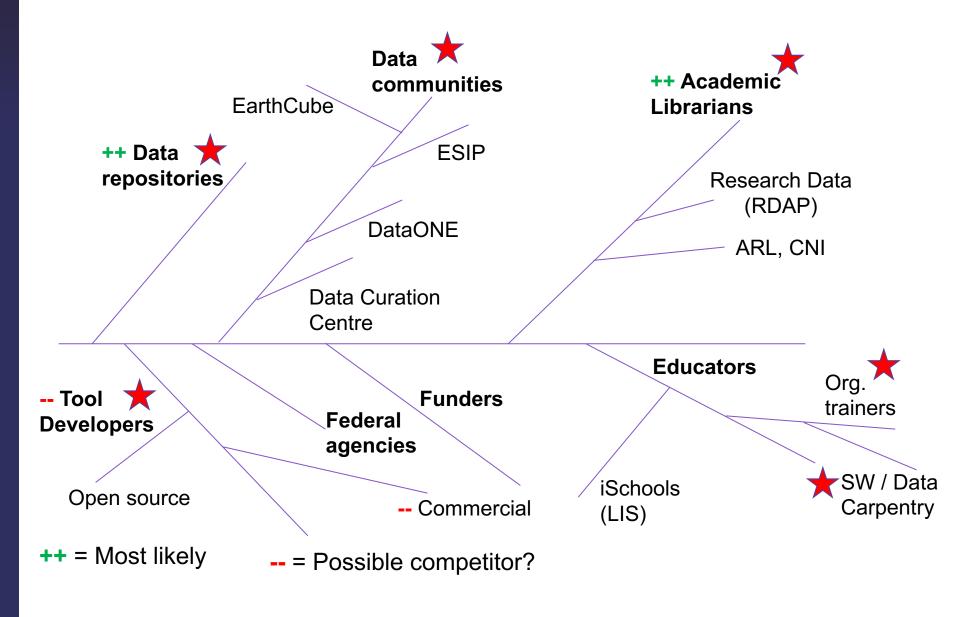
- Kept things simple & looked for incremental progress
- Broadened the scope a bit to include training during the entire research / data lifecycle
- Jumped to help on aligned projects, i.e., AGU / RDA Enabling FAIR Data Project
- Found dedicated partners who believe in the need & approach & help to spread the word
- Seem to have hit the right market niche



Market Development for Contributors



Market Development for Contributors



What's next?

- Fulfill our existing obligations per the IMLS grant
- Continue to look for longer term funding, especially for:
 - More robust technical infrastructure
 - Filling the gaps in topics and dearth of creators / contributors of educational resources
 - Expand rewards for content contributors & content users / re-users
- Keep our eyes & ears out for other collaborators!
 - Interested???



What's next - continued...

Keeping our eyes & ears out for other collaborators!

Interested???



Nancy Hoebelheinrich, Knowledge Motifs LLC (nhoebel@kmotifs.com)





ESIPLab Geoweaver

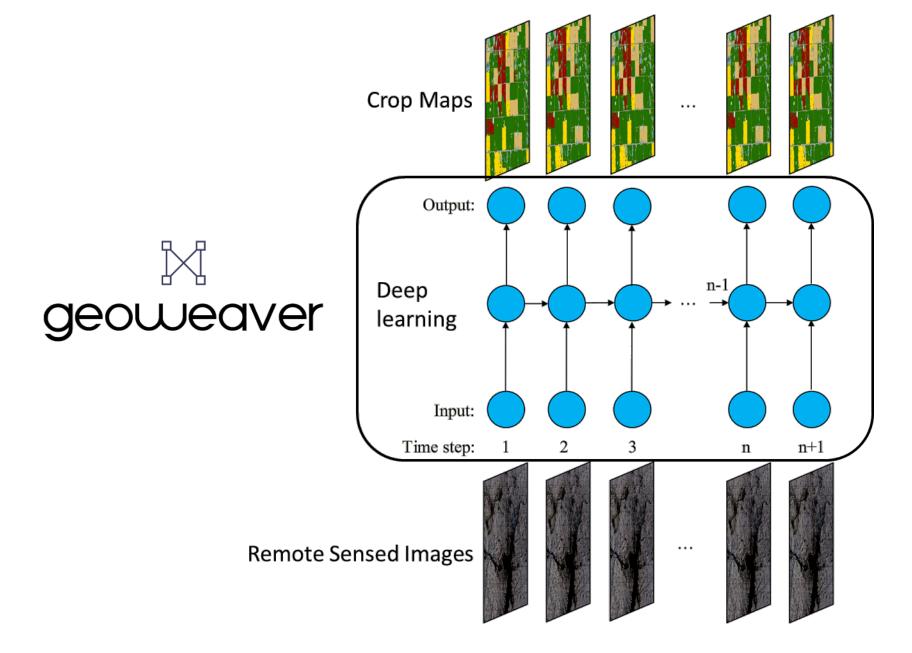
Ziheng Sun, Liping Di

Hosted by the SGCI Incubator November 6-9, 2018 Boulder, CO



Napkin Drawing







[Geoweaver].....

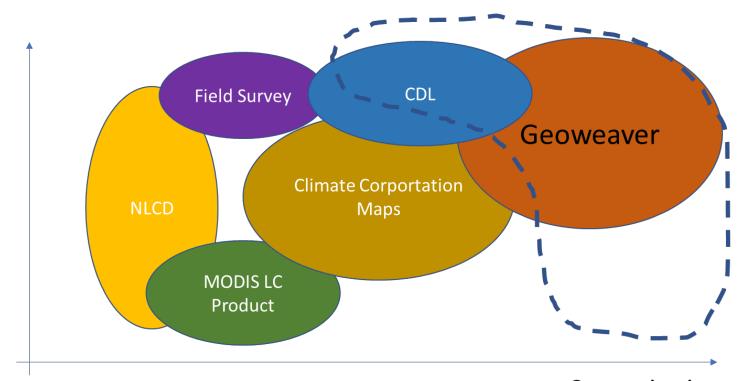
WILL HELP [crop map stakeholders]

[Get crop maps with higher accuracy and temporal resolution].....

BY [providing a deep-learning-powered and web-based workflow system]

Current Market Landscape

Overall accuracy (user risk)



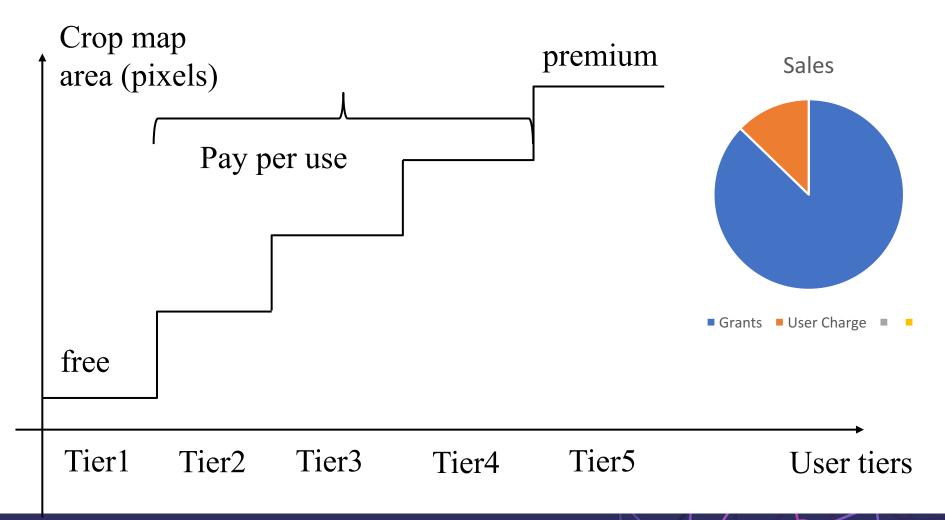
Customization (quantity, flexibility, ondemand, availability)

Target Audience



- Crop insurance companies
- Researchers on yield estimation
- Researchers on agricultural drought
- USDA policy makers
- Education on crop map classification
- Citizen scientists on crop mapping
- All kinds of Agricultural conferences, meetings, webinars, and workshops

Financial Model





Goals



3 Month Goals

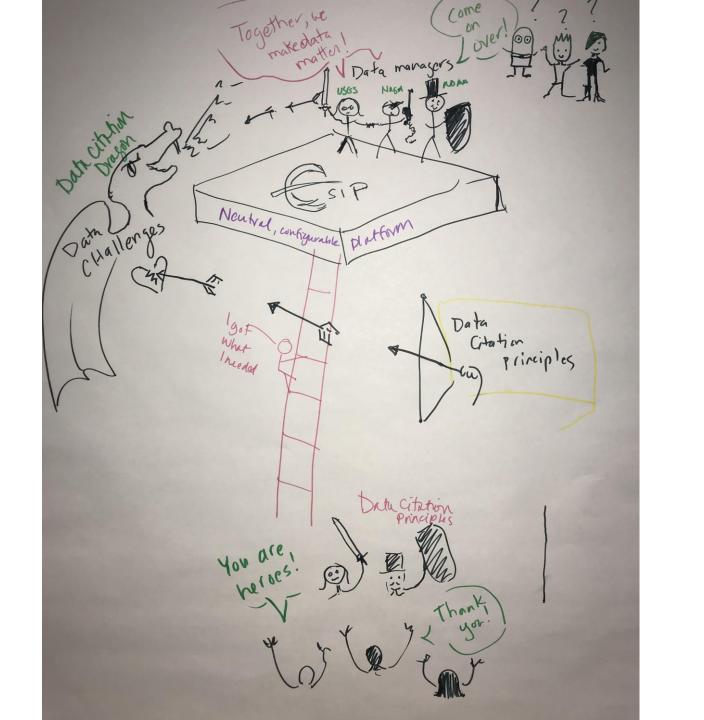
- Release Geoweaver software on Github
- 2. Publish a Geoweaver instance
- 3. Have first 50 users

6 Month Goals

- 1. helps crop map stakeholders have easier and flexible access to high quality crop maps
- 2. Geoweaver allows users to generate their own crop maps on demand or based on their own images
- 3. The crop maps produced by Geoweaver are used in downstream models like estimating yield, monitoring agricultural drought
- 4. educate deep learning practitioners and citizen scientists in producing crop maps.
- 5. Have 100 users

ESIP

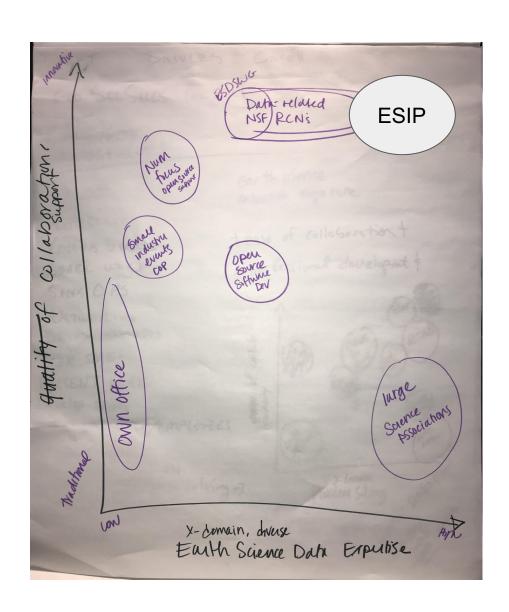
Hosted by the SGCI Incubator November 6-9, 2018 Boulder, CO



ESIP will help members of the Earth Science data community find each other across organizations by fostering rich collaborative experiences like meetings and seed funding to further data interoperability

Make Data Matter Together

Market Landscape



Drivers:

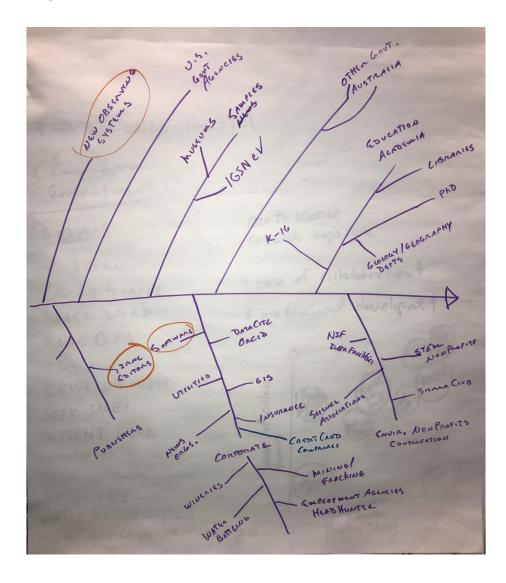
Quality of Collaboration Support

Cross-Domain Earth
 Science Expertise

Target Audience - Early Adopters

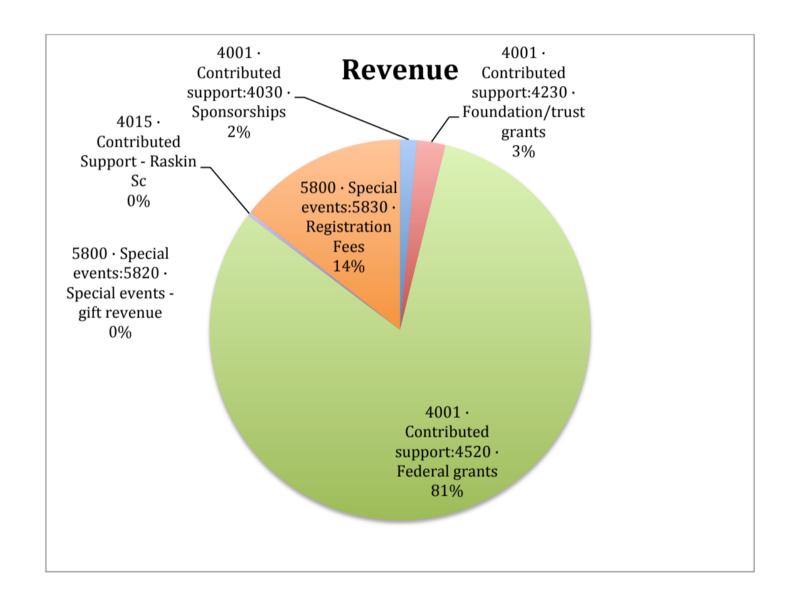
- Current ESIP Members
 - Data Managers Academic & Federal
 - Data-savvy Researchers
 - Application and Tool Developers
 - Current Federal Sponsors (NASA, NOAA, USGS)
 - Educators
- We have 110 member organizations
- ~300 people come to ESIP Meetings
- ~1000 people on our mailing list, Monday Update

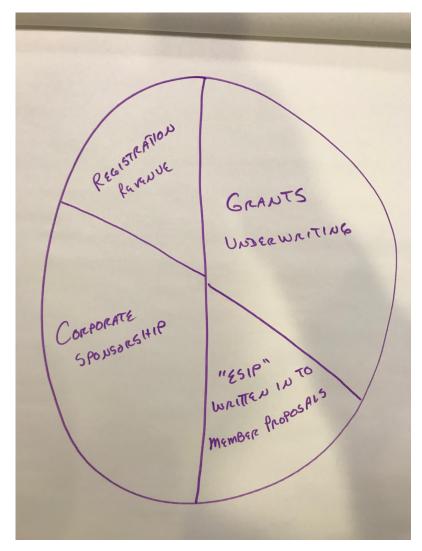
Target Audience



- Corporate
- Other U.S. Gov't Agencies
- Other Gov'ts (Australia, etc)
- Academia
- Non-profits (e.g., environmental)
- Physical Sample Communities
- New Observing Systems

Financial Model





3 Month Goals

- 1. Create marketing materials with membership benefits
- 2. Update website with corporate partner landing page, w/ analytics
- 3. Test value proposition at AGU Data FAIR and ESIP Winter Meeting and other meetings.

6 Month Goals

- 1. Develop cost model for tiered ESIP services.
- 2. Update 1-pagers for other audiences.
- 3. Gather community input on next phase of website development.

Want to connect with ESIP?

Text ESIP to 345345



MetaDIG

Ted Habermann, Sean Gordon, Anna Milan

Hosted by the SGCI Incubator

November 6-9, 2018

Boulder, CO

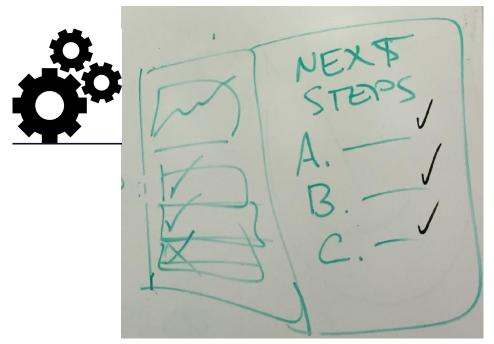


Napkin Drawing





MetaDIG provides custom metrics and insights that tame the Metadata Monster for repositories.



Target Audience

- Repositories (managers, curators, data managers), data providers
- What do you know about your target segments?
 - Repository Managers, Funders, Data Providers
 - What criteria do they use? Citations, data usage, visibility
 - How long does it take? Market education may slow us down.
- There are 2500 data repositories described in re3data
- Who are your early adopters/evangelist? BCO-DMO, DataONE, ESIP Documentation Cluster
- Secondary segments: Museums, Citizen Science, software developers and authors

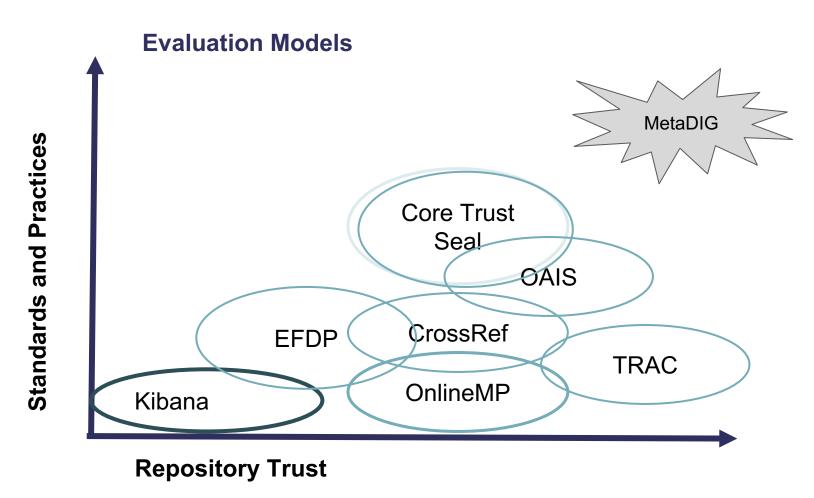
Value Proposition



- A. MetaDIG will help Repository Managers provide data that users can understand and trust by identifying opportunities for effective metadata improvements.
- B. MetaDIG will improve trustworthiness of repositories by enhancing use and understanding of their data

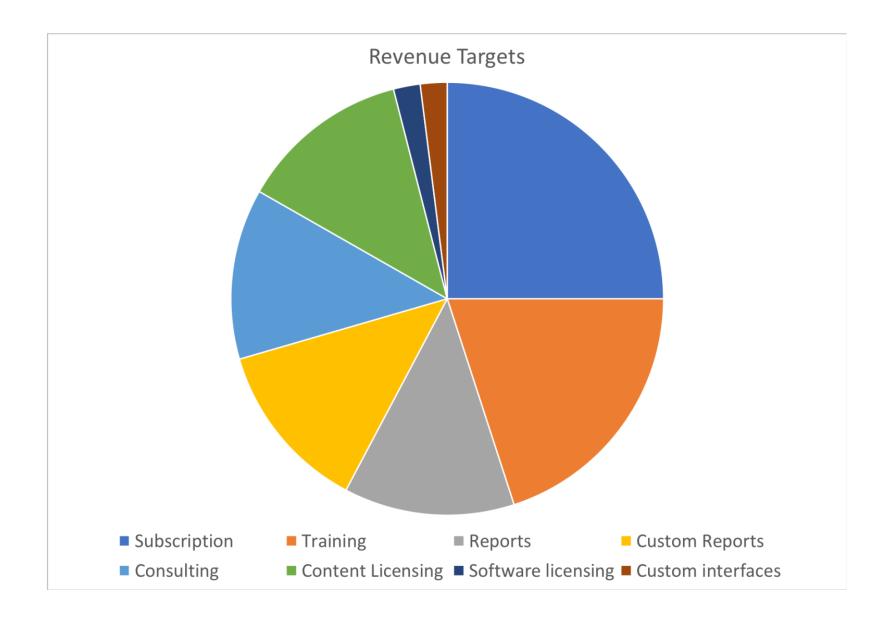
Current Market Landscape





Financial Model





Goals

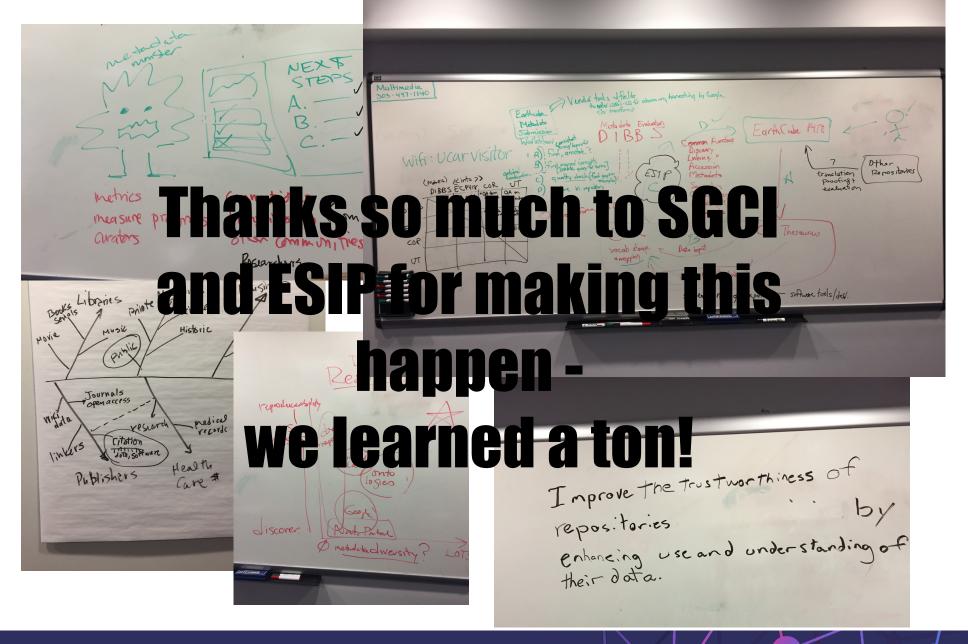


3 Month Goals

- 1. Get out of the building (Marketing Calls, PIDapalooza, AGU, ESIP...)
- 2. Demonstration Video
- 3. User success stories BCO-DMO

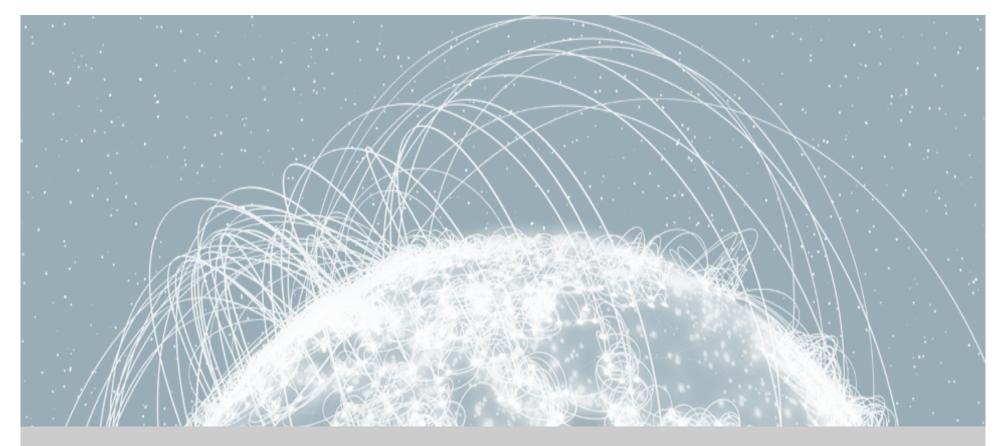
6 Month Goals

- 1. SME contributions to guidance
- 2. Playground place to run it (AWS Credits)
- 3. 5 customers





Pitch Deck Alpha | ESIP LAB



SGCI Bootcamp

August 17, 2018 | Rosemont, IL

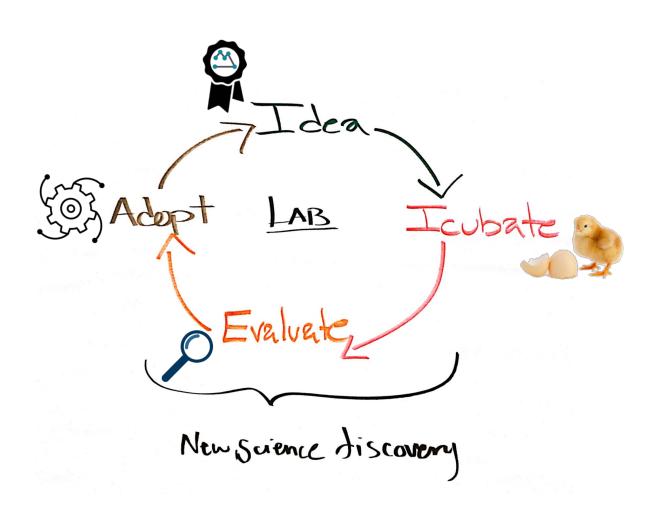






Napkin Drawing





ESIP Lab Output Example

Science Outcomes

- 1. Transitioned a published hydrologic model from "research grade" science to a cloud-based operation.
- 2. Processing speed improved from 1.5 days to 0.5 hours using only a web browser.
- 3. Minimal training needed.
- 4. No need to download/reproject/store data

Outreach/Collaboration

- 1. Surveyed water resource managers. Overwhelmingly positive response.
- 2. 2017 ESIP Summer Meeting Presentation
- 3. 2017 Pacific North West Climate Conference Presentation
- 4. 2017 Esri Educator's Summit Presentation
- 5. 2017 AGU Oral Presentation & Google Booth Demo
 - a. A lot of positive AGU-community response.

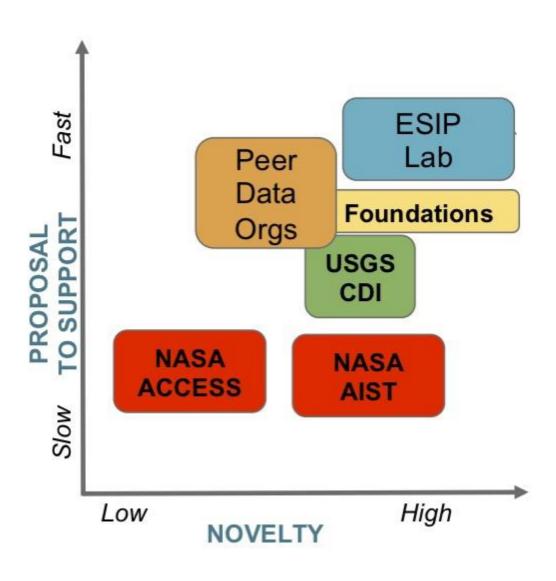
Value Proposition: What is distinct about the Lab within ESIP?

The ESIP Lab will support Earth science developers build useful, applied technologies through funding, strategic outreach, and community input.

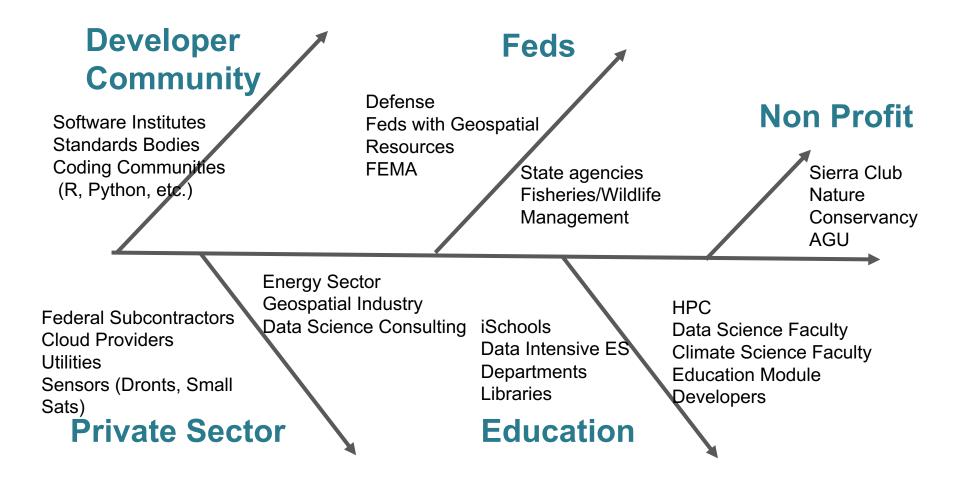


Current Market Landscape



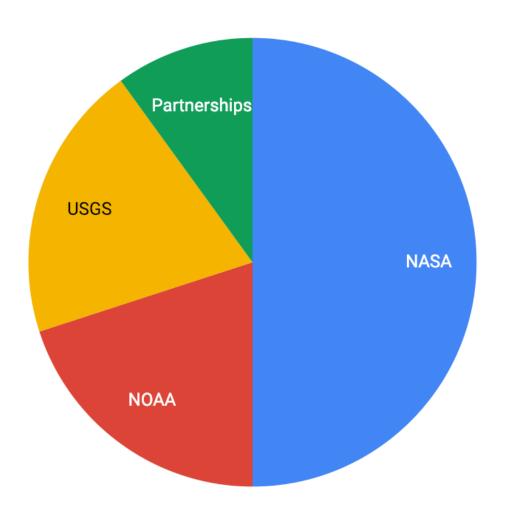


Target Audience: Where we want to grow

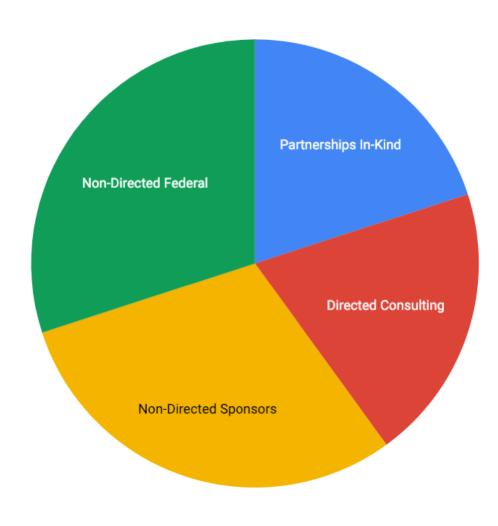




Current Funding Model



Future Funding Model SGCI 1



Goals



3 Month Goals

- 1. Reach out to SGCI for Marketing Consultation.
- 2. Create strategy for communication with each of our audience member groups.
- 3. Recruit 5 individuals to do usability testing on our website.

6 Month Goals

- 1. Create quarterly budget objectives
- 2. Draft sponsorship prospectus.
- 3. Organize Bootcamp-like activity for Labfunded projects





Thank you! bit.ly/ESIPLabUpdate

SGCI Bootcamp

Rosemont, IL







- Can you describe any examples of your before and after thinking? If something resulted in a "turning on the lights" experience what was it?
- Has any of your thinking between the end of the bootcamp and now changed, have you noticed changes in how you think or work, and what lessons can the rest of the room take away from that?
- What surprised you about the bootcamp that you didn't expect to learn about/happen?
- If you recommended this event to your peers, how would you explain the value?
- Based on bootcamp, and any other thinking you have had related or unrelated to the bootcamp, what would be an ideal service, which if provided by the SGCI, would be helpful to the ESIP community? What would you outsource and why?
- Based on the problems you face, how would you ideally like to see a group like the SGCI foster synergies so you're not alone in solving those problems? How can SGCI be a catalyst to the communities in which you participate?

Panel



- Can you describe any examples of your before and after thinking? If something resulted in a "turning on the lights" experience what was it?
- Has any of your thinking between the end of the bootcamp and now changed, have you noticed changes in how you think or work, and what lessons can the rest of the room take away from that?
- What surprised you about the bootcamp that you didn't expect to learn about/happen?
- If you recommended this event to your peers, how would you explain the value?
- Based on bootcamp, and any other thinking you have had related or unrelated to the bootcamp, what would be an ideal service, which if provided by the SGCI, would be helpful to the ESIP community? What would you outsource and why?
- Based on the problems you face, how would you ideally like to see a group like the SGCI foster synergies so you're not alone in solving those problems? How can SGCI be a catalyst to the communities in which you participate?

- Can you describe any examples of your before and after thinking? If something resulted in a "turning on the lights" experience what was it?
- Has any of your thinking between the end of the bootcamp and now changed, have you noticed changes in how you think or work, and what lessons can the rest of the room take away from that?
- What surprised you about the bootcamp that you didn't expect to learn about/happen?
- If you recommended this event to your peers, how would you explain the value?
- Based on bootcamp, and any other thinking you have had related or unrelated to the bootcamp, what would be an ideal service, which if provided by the SGCI, would be helpful to the ESIP community? What would you outsource and why?
- Based on the problems you face, how would you ideally like to see a group like the SGCI foster synergies so you're not alone in solving those problems? How can SGCI be a catalyst to the communities in which you participate?

- Can you describe any examples of your before and after thinking? If something resulted in a "turning on the lights" experience what was it?
- Has any of your thinking between the end of the bootcamp and now changed, have you noticed changes in how you think or work, and what lessons can the rest of the room take away from that?
- What surprised you about the bootcamp that you didn't expect to learn about/happen?
- If you recommended this event to your peers, how would you explain the value?
- Based on bootcamp, and any other thinking you have had related or unrelated to the bootcamp, what would be an ideal service, which if provided by the SGCI, would be helpful to the ESIP community? What would you outsource and why?
- Based on the problems you face, how would you ideally like to see a group like the SGCI foster synergies so you're not alone in solving those problems? How can SGCI be a catalyst to the communities in which you participate?

- Can you describe any examples of your before and after thinking? If something resulted in a "turning on the lights" experience what was it?
- Has any of your thinking between the end of the bootcamp and now changed, have you noticed changes in how you think or work, and what lessons can the rest of the room take away from that?
- What surprised you about the bootcamp that you didn't expect to learn about/happen?
- If you recommended this event to your peers, how would you explain the value?
- Based on bootcamp, and any other thinking you have had related or unrelated to the bootcamp, what would be an ideal service, which if provided by the SGCI, would be helpful to the ESIP community? What would you outsource and why?
- Based on the problems you face, how would you ideally like to see a group like the SGCI foster synergies so you're not alone in solving those problems? How can SGCI be a catalyst to the communities in which you participate?

- Can you describe any examples of your before and after thinking? If something resulted in a "turning on the lights" experience what was it?
- Has any of your thinking between the end of the bootcamp and now changed, have you noticed changes in how you think or work, and what lessons can the rest of the room take away from that?
- What surprised you about the bootcamp that you didn't expect to learn about/happen?
- If you recommended this event to your peers, how would you explain the value?
- Based on bootcamp, and any other thinking you have had related or unrelated to the bootcamp, what would be an ideal service, which if provided by the SGCI, would be helpful to the ESIP community? What would you outsource and why?
- Based on the problems you face, how would you ideally like to see a group like the SGCI foster synergies so you're not alone in solving those problems? How can SGCI be a catalyst to the communities in which you participate?



Our Products: Gateways Bootcamp... a week long deep dive into your strategy

Next Bootcamp:

May 13-17, 2019, in Indianapolis, IN

Sign up for our newsletter at sciencegateways.org to be informed



















What's the catch?

One week business planning bootcamp (you cover travel)

AND...your time. You need to care more about your gateway than anyone else to get the most out of your consultant.

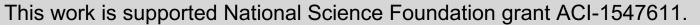




We'd like to work with you

- Learn more at sciencegateways.org
- Register for our newsletter
- Sign up for an event









Most importantly, we'd like your participation in achieving our mission

"By 2026, be the autonomous world class leader and premier think tank for science gateways"

Email: mzentner@purdue.edu





This work is supported National Science Foundation grant ACI-1547611.