Support for Campus-based Digital Resource Creation through the Science Gateways Community Institute

Rob Quick
Indiana University & Science Gateways Research Center (SGRC)
SGCI Slides Provided by Katherine Lawrence (University of Michigan)
Science Gateways Community Institute
What is a gateway?
It’s a Fan!

It’s a Wall!

It’s a Spear!

It’s a Rope!

It’s a Snake!

It’s a Tree!
What is a gateway?

- an online community space for science and engineering research and education
- a Web-based resource for accessing data, software, computing services, and equipment specific to the needs of an academic discipline
- A way to help researchers, educators, students, and the public gain access to sophisticated or limited resources
OOI: Ocean Observatories Initiative

Research Arrays
Select an array on the map or choose from the list.

- Cabled
- Coastal Endurance
- Coastal Pioneer
- Global Argentine Basin
- Global Irminger Sea
- Global Southern Ocean
- Global Station Papa

https://ooinet.oceanobservatories.org
QUBES: Quantitative Biology Education Resources

The Power of Math × Biology × Community

QUBES is a community of math and biology educators who share resources and methods for preparing students to tackle real, complex, biological problems.
...the student/researcher can do their own analysis.
CIPRES: Cyberinfrastructure for Phylogenetic Research

Armand Bilge, 10th grader at Lexington High School, next to a poster explaining his award-winning research project, a map and timeline that identified when HIV arrived in the Americas.

- **1.36 million** jobs on TeraGrid/XSEDE submitted by **33,195 unique users**.
- Used for **curriculum delivery** by at least 93 instructors.
- Supported **4,500+ publications**.

https://www.phylo.org/portal2
CERA: Coastal Emergency Risks Assessment

https://cera.coastalrisk.live/
Social Media Macroscope

The Social Media Macroscope is a project by University of Illinois Technology Services and the National Center for Supercomputing Applications (NCSA) with the goal of making social media data, analytics, and visualization tools accessible to researchers and students of all levels of expertise. More information about this project can be found at: https://doi.org/10.6084/m9.figshare.6855269.v2

Login/Register  View Available Tools

https://socialmediamacrooscope.org
Citizen Science: Zooniverse and CitSci

https://www.zooniverse.org/

https://www.citsci.org/
Diverse Qualities

Users
• Researchers
• Educators
• Students
• Policy makers
• Citizen scientists

Functions
• Data collection from sensors or instruments
• Community resource sharing
• Analysis or computation
• Data sharing
• Platforms

Development Stage
• Nascent idea
• Startup
• Operational
• Mature
Services and Resources

Support for Building & Running Gateways

Education & Training

Opportunities for Networking & Community
Support for Building & Running Gateways

Consulting Services

Gateway Catalog with Projects and Software Components

Hosting Services
Education & Training: Face-to-Face

Conference & Tutorials

Bootcamp

Student Programs
Online Resources

Education & Training: Online

SGCI Helped nSides Use OSG and Form to Augment Its Drug Side Effects

Tech Blog: Benefits of Application Programming Interfaces (APIs)

What are APIs?

In software development, Application Programming Interfaces (APIs) open up the power of computers to interact with other systems or services. By defining the ability to make requests and receive responses, APIs allow for the sharing of data and functionality between different systems.

Why?

As technology continues to evolve, the demand for APIs also grows. From creating web applications to integrating different software systems, APIs provide a flexible and powerful way to connect and communicate between different components.

Tech Blog: Using Keycloak to Provide Authentication, Authorization, and Identity Management Services for Your Gateway

By Marcus Chukun

An image representing the comparison of the traditional approach to managing data compared to using a cloud-based solution. The cloud-based solution allows for much easier and more efficient data management and access.
Opportunities for Networking & Community

Annual Conference

Community Forum & Resources

Connect with other gateways community members

SGCI created a Google Group discussion forum to enable members of the community to pose questions, offer help, share announcements, and connect with each other. To join the discussion forum, all members must apply, and applications are reviewed to avoid spam. Simply fill out the "Apply for membership" form below to request approval for joining.
Funded in August 2016:

- **63 gateways supported** with direct consulting services
- **1534 participants** in 42 educational and training programs & events
- **$47.7M in grants** awarded with a Letter of Commitment from SGCI (41% success rate)
- **498 gateways** and **87 software components** listed in our Catalog
Ways that SGCI might be helpful for you

- **Consulting** expertise & direct support
  - Support and networking opportunities for building [campus-based development capacity](#)

- **Gateway Catalog** can help you find (or promote) projects hosted on your campus ([https://catalog.sciencegateways.org](https://catalog.sciencegateways.org))

- **Education & training**: Bootcamp, conference, webinars, online content

- **Community resources**: Forum, job postings (post your own), news & events
Connect with us at sciencegateways.org

• Rob Quick rquick@iu.edu
• Sign up for our newsletter: https://sciencegateways.org/community/newsletter
• Email a question: help@sciencegateways.org
• Social media
  • Follow @sciencegateways on Twitter
  • http://sciencegateways.org/linkedin
Other Related Projects
XSEDE Extended Consulting and Support Services - Gateways

• Consulting for XSEDE Allocated projects interested in developing a gateway environments and communities.
• ~4 FTE Split up in 0.25 FTE consults
• [https://www.xsede.org/ecosystem/science-gateways](https://www.xsede.org/ecosystem/science-gateways)
• Very few currently requesting HTC resources.
Campus Queue

• Locally hosted HTCondor Queue that is integrated with local CI (authentication, storage, policy, support, etc) but allows use of external resources.

• Successful at IU to move HTC work to local and national CI.

• Research proposal underway to look into solutions for scaling.
Robust Persistent Identification of Data

- Testbed looking to provide the foundational services to provide a FAIR Digital Object Architecture.
- RPID project funded March 2017 - February 2019 (NSF 1659310) implemented PID and Data Typing Services
- Enhanced RPID project began October 2018 (NSF 1839013) adding repository mapping services and implementing the DOIP
- Fanciful way of viewing by George Strawn is 3 eras of computing.
  - 1950-1995 Many computers, many data sets
  - 1995-2025? One computer ("The network is the computer"), many data sets
  - 2025?- One computer, one data set
- [https://rpidproject.github.io/rpid](https://rpidproject.github.io/rpid)
CODATA/RDA Schools of Research Data Science for LMICs

- Two week foundational course in data science targeting ECR in LMICs
- Open Science, Open Data, Data Ethics, DMP, UNIX, R, Git, Visualization, Security, Machine Learning/AI, Computational Infrastructures
- 2019 – 5 schools planned (Addis Ababa, Trieste, Kigali, San Jose, Abuja)
- 2020 – A dozen hosts at LMICs on 6 continents
- Special thanks to OSG Connect for its support
- http://www.codata.org/working-groups/research-data-science-summer-schools
Come work at the SGRC

Full Stack Cloud Developer/Engineer

https://iujobs.peopleadmin.com/postings/72366
Utterly shameless advertisement: follow @scinode on Twitter (it’s free and it’s great)