



# **GENI Portal & Clearinghouse**

## **GEC 15**

### **Houston, TX**

**Marshall Brinn, Sarah Edwards,  
Aaron Helsinger, Tom Mitchell**  
**October 24, 2012**  
**[www.geni.net](http://www.geni.net)**



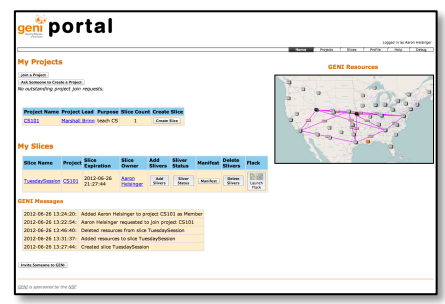
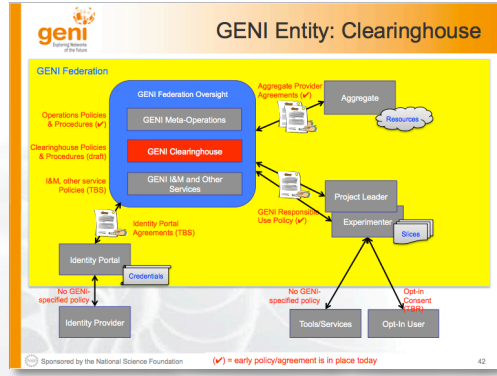
Sponsored by the National Science Foundation

- GENI Portal for Experimenters
  - Description
  - Demonstration
  - Discussion
- GENI Clearinghouse (time permitting)
  - For Developers
  - Architecture, APIs, Services
- Invited Talk: Jordan Augé, Loïc Baron (OneLab)  
*“Supporting the experiment lifecycle with MySlice”*

# GENI Portal for Experimenters

# Portal and Clearinghouse Evolution

Timeline from GEC 14

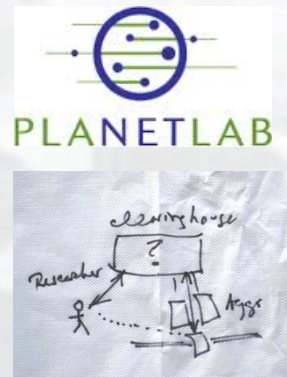


GEC11: Federation Session Defined Clearinghouse

GEC14

GEC15: Portal and Clearinghouse Available to early adopters

GEC13: Software Architecture Defined Clearinghouse Services



Accepting early adopters now.  
Let us know if you're interested.

[portal-help@geni.net](mailto:portal-help@geni.net)



*From GEC 14*

- The GENI on-ramp
- Easy things easy, hard things possible
- Leverage InCommon for single sign on authentication
- Integrate existing GENI tools
- Available to early adopters around GEC 15

*It should be easy to start using GENI!*

*Q: How do I get to GENI?*



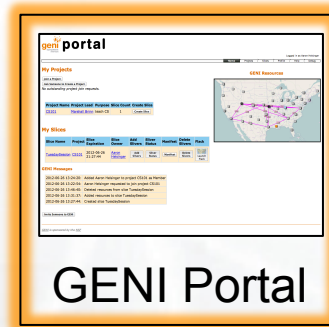
*Q: How do I get to GENI?  
A: It's complicated...*

## Get an account

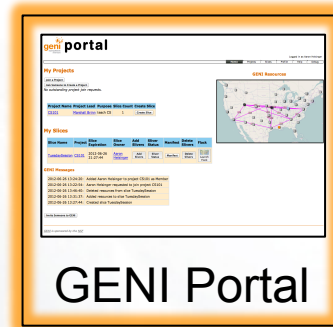
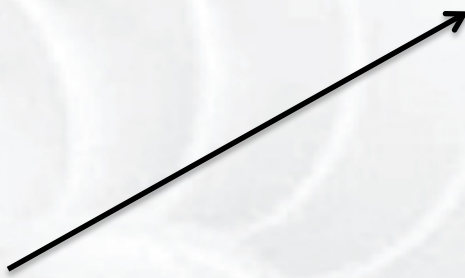




*Let's make it easier*



## The portal is a GENI on-ramp



- One stop shopping to:
  - get an account
  - create a slice
  - allocate resources

## Easy things easy...

### Feedback

- There are too many passwords.
- Certificate management is confusing.
- What's an RSpec? How do I write one?
- How do I install GENI on my computer?

### Solution

- Use one familiar password.
- Let the portal manage certificates.
- Include RSpecs for common topologies.
- Web-based; no software to download

...hard things possible

Manage project and slice membership

Upload complicated RSpecs

Download certificates/keys for use in other GENI tools

*We expect experimenters to “outgrow” the portal as their experience increases and their needs expand.*

### Leverage InCommon for single sign-on authentication

# InCommon®

Experimenters from 265  
educational and research  
institutions have  
InCommon accounts

For many experimenters:

- no new passwords
- familiar login screens



## Integrate existing GENI tools and services

*Demand-driven*

### Tool Integration



### Web-based Services



**Seattle**  
Open peer-to-peer computing

### External Tools



### Future?

INSTOOLS Portal

GIMI

GEMINI

LabWiki

MySLICE



# GENI Portal Demonstration

**Use GENI**

- Unprivileged accounts are automatic
- Easy to see your projects and slices
- Automatic certificate management
- RSpecs for common topologies
- Resource allocation with a few clicks
- Helpful displays for resource access
- Logs of recent activity



- Incorporate feedback from early adopters
- Improve RSpec management
  - Provide more RSpecs, improve RSpec sharing
- Improve resource allocation
  - Multiple aggregates simultaneously
- Integrate GMOC slice pages, map
- Reserve multi-aggregate VLANs (stitching)

Accepting early adopters now.  
Let us know if you're interested.

[portal-help@geni.net](mailto:portal-help@geni.net)



# Questions?

# The GENI Clearinghouse

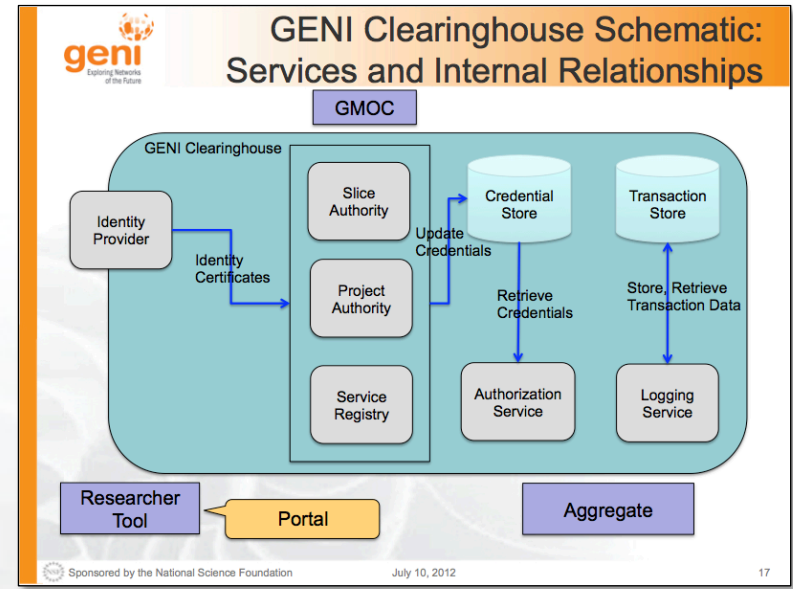
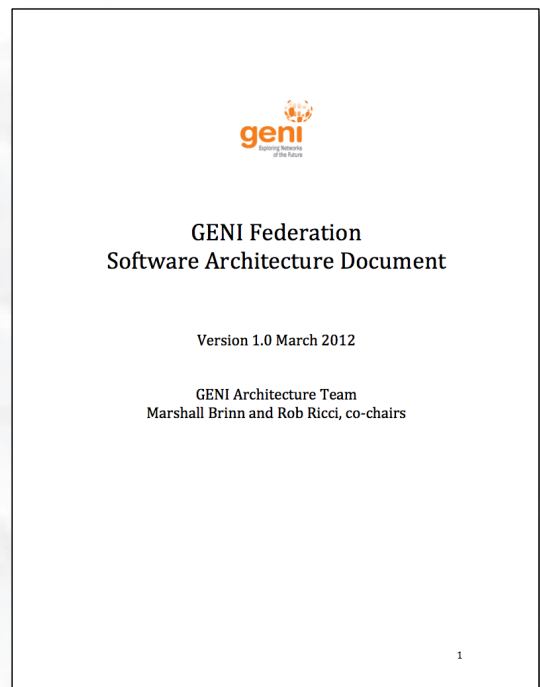
\*for developers

## Agenda

- Architecture
- APIs
- Wiki, issue tracker, code
- Tool integration
- Key Manager

# GENI Clearinghouse Architecture

The GENI Clearinghouse is an implementation of the GENI Software Architecture.



GEC 13  
March, 2012

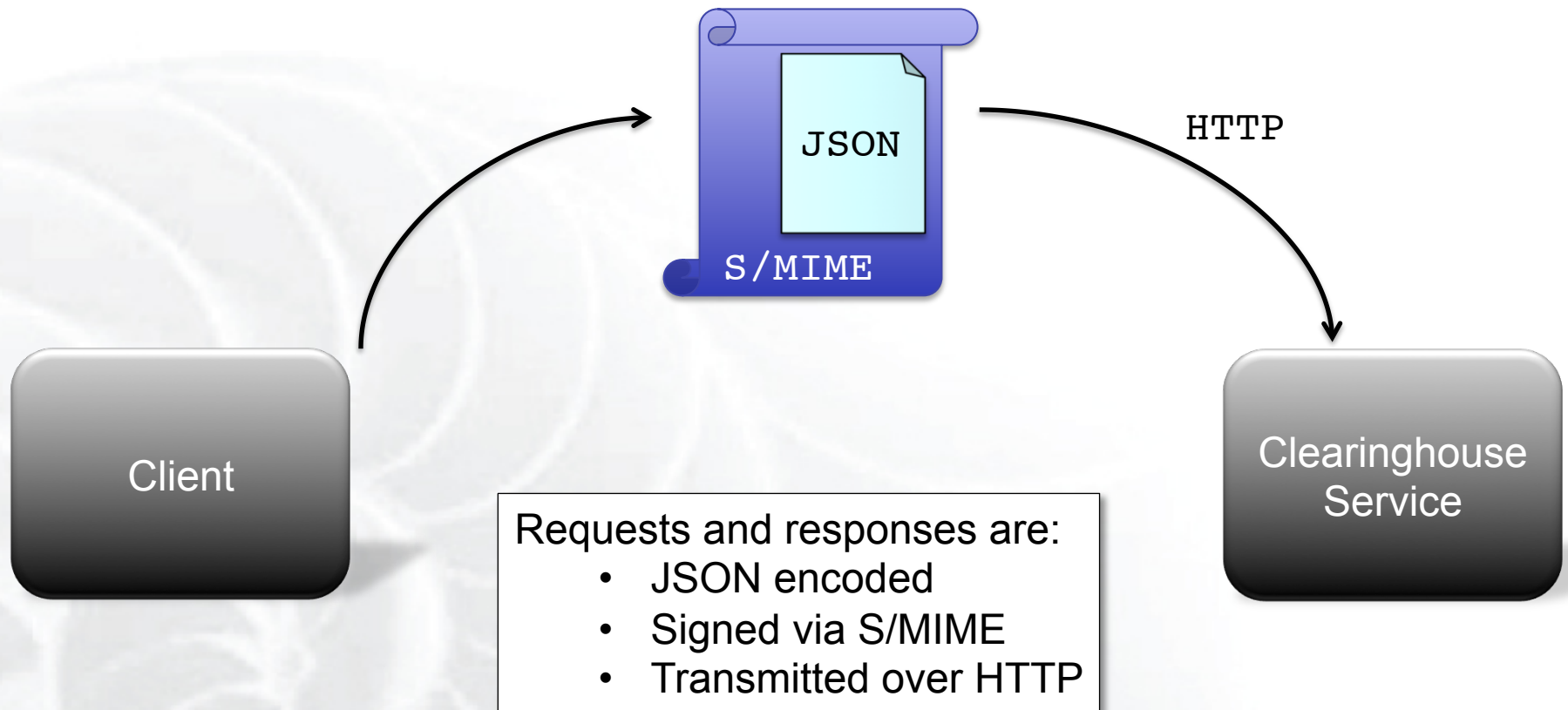
GEC 14  
July, 2012

- Each clearinghouse service has its own API
- The services invoke each other via these APIs
- All APIs use signed message passing
- Services of interest to developers:
  - Service Registry – “*what services exist?*”
  - Authorization Service – “*who can do what?*”
  - Logging Service – “*what has happened?*”
- We anticipate the APIs will evolve

<http://www.geni.net/clearinghouse/api/>

# GENI Clearinghouse Protocol

Requests and responses are signed messages





## Sample Requests

Ask Service Registry for a list of services:

```
{  
  "operation" : "get_services"  
}
```

Log a request for a manifest RSpec:

```
{  
  "operation" : "log_event",  
  "event_time" : "1351083600",  
  "user_id" : "<user id>",  
  "attributes" : { "slice_id" : <slice id> },  
  "message" : "ListResources"  
}
```

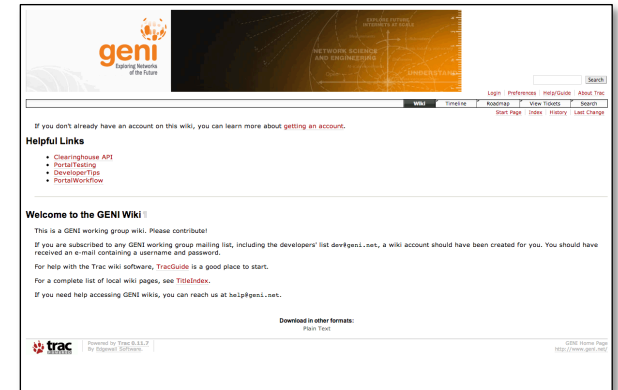
## Sample Response

Responses match the GENI AM API, always returning a triple of “code”, “value”, and “output”

Sample response from Service Registry get\_services:

```
{  
  "code" : 0,  
  "value" : [ <service>, <service>, ... ],  
  "output" : ""  
}
```

- Trac for wiki, issue tracking
- git for SCM
- Code carries the GENI License
- Open to members of the GENI community



<http://trac.gpolab.bbn.com/proto-ch>

- **Embedded Tools**
  - Data hand off via HTML and JavaScript
  - Context information is available
    - experimenter, project, slice
- **External Tools**
  - Use X.509 certificate signed by Clearinghouse
  - Access Aggregates and Clearinghouse Services
  - Configuration file generation
- **OpenID**
  - Authentication hand off to peers
  - Testbeds, tools, services

- Responding to feedback at GEC 14 Coding Sprint
- Requires experimenter to authorize tools to “speak as” them
- Other tools can be added to the key manager database
- Key manager provides UI for authorization and deauthorization

# The End.