

GENI Aggregate Manager API

A Pragmatic Approach To GENI Interoperability

Tom Mitchell
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www.geni.net

Plenary Demos used the GENI AM API!

One GENI account can be used across multiple aggregates!

**OpenFlow, PlanetLab and ProtoGENI are
FEDERATED!**



- A Common AM API...

- Levels the playing field for:

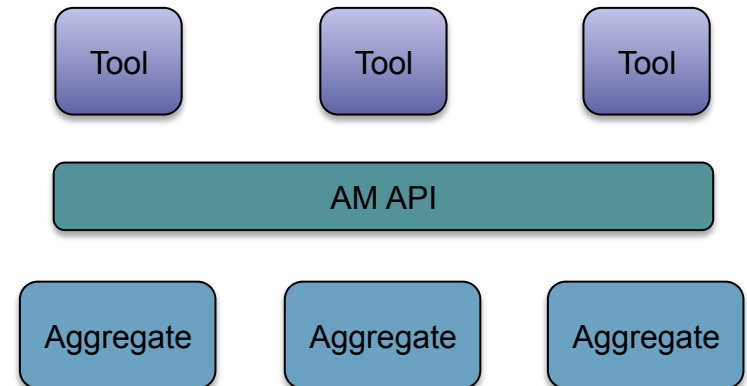
- Aggregate providers
- Tool builders

- Enables interoperability

- Tools don't need to change for new aggregates
- Aggregates can leverage existing tools

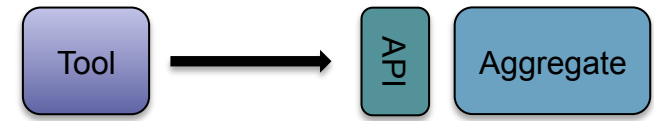
- Enhances the experimenter experience

- More resources are available to researchers
- More tools can be built



- PlanetLab & ProtoGENI
 - Supported similar SFA-based architecture
 - Exposed similar SFA-like APIs
 - Large number of resources
 - Large installed user base
- OpenFlow
 - Key network substrate
 - No existing aggregate API

- Operations
 - GetVersion
 - ListResources
 - CreateSliver
 - SliverStatus
 - RenewSliver
 - DeleteSliver
 - Shutdown

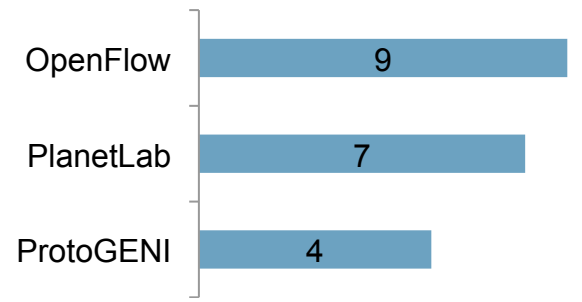


- Underpinnings
 - XML-RPC
 - URNs
 - Certificates
 - Credentials

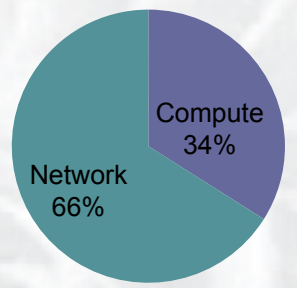
Current Status: AM API Rollout

**20 aggregates advertise
5,000+ resources
via the GENI AM API**

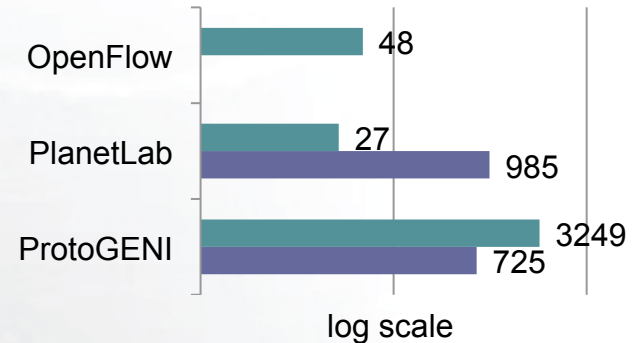
Aggregates



Resource Types

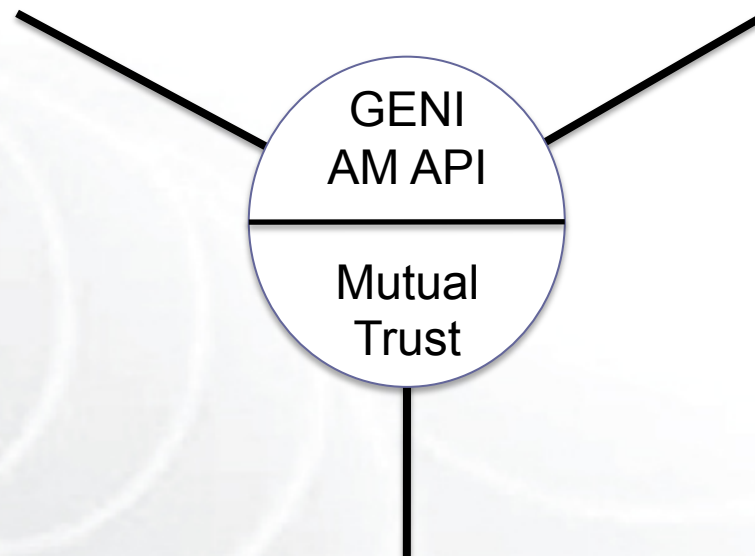


Resources



As of October 19, 2010
 Network Resources: OpenFlow switches, PlanetLab/VINI links, ProtoGENI links
 Compute Resources: PlanetLab nodes, ProtoGENI nodes

Current Status: Interoperability



Current Status: Available Software

Client software is available.

Documentation is available.

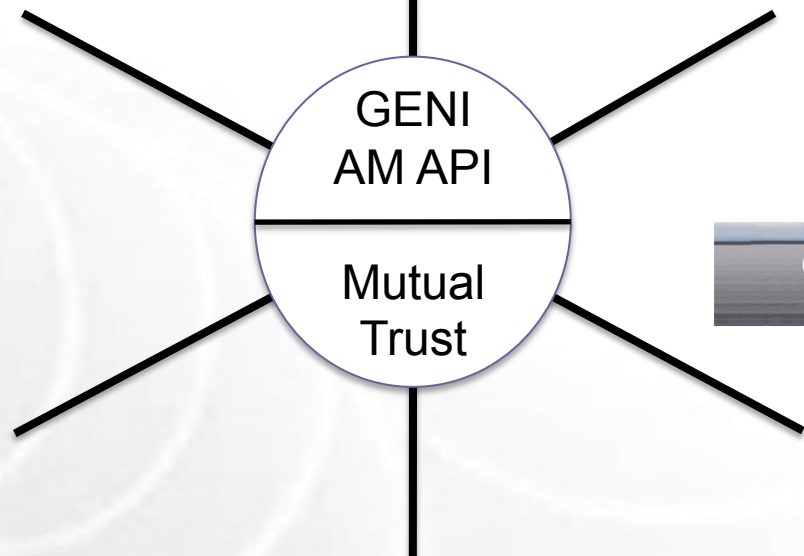
A reference aggregate is available.

You can use this *now*.

<http://trac.gpolab.bbn.com/gcf>

- Motivation
 - Improve experimenter and tool-builder experience
 - Increase operational capability / interoperability
- Proposed Tasks
 - Increase AM participation
 - Design and implement Clearinghouse 1.0
 - Design and implement Stitching 1.0
 - Revise Aggregate Manager API

Spiral 3: Increase AM Participation

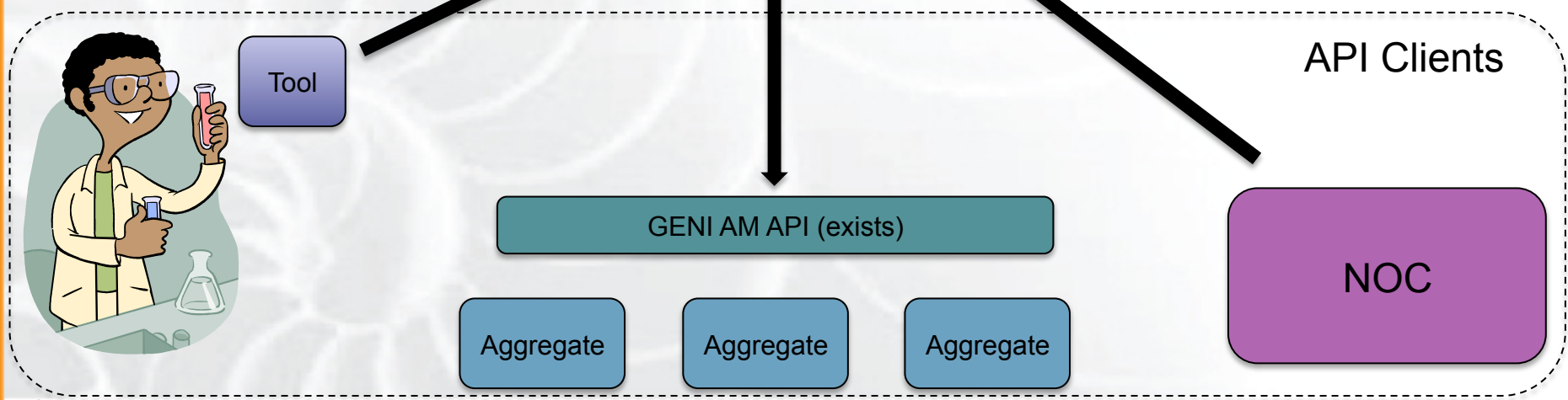
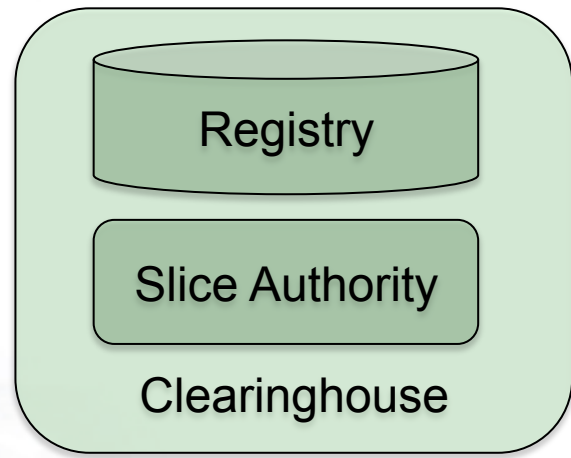


Spiral 3: Clearinghouse APIs

One API or a family of APIs?

Identity provider?

Loosely coupled services or integrated functions?

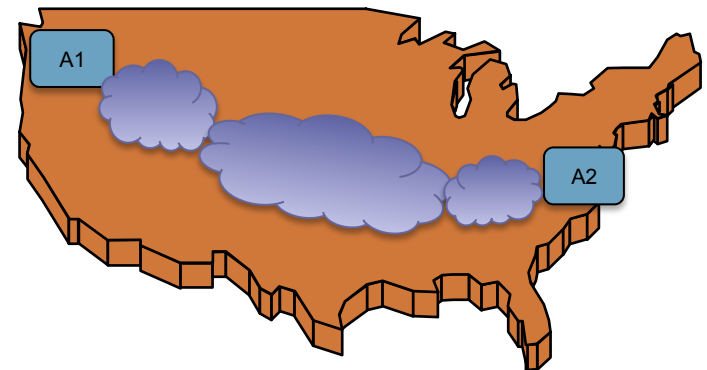
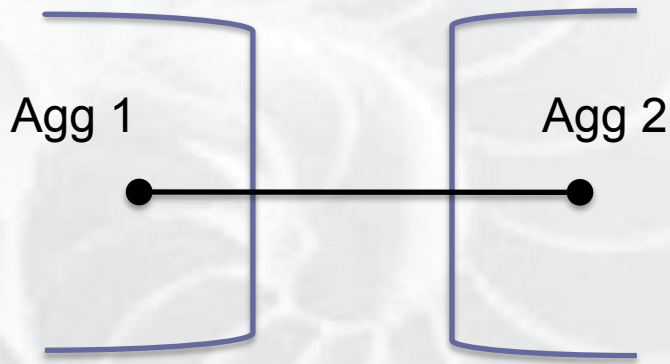


Spiral 3: Stitching

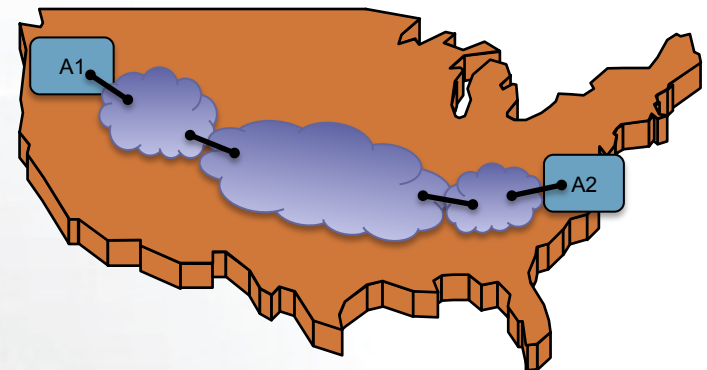
Connecting a slice within one aggregate to a slice within another aggregate to create a single slice across both.



Example 1



Example 2



Spiral 3: Aggregate Manager API

- AM API 1.x - Small Changes TBD
- and / or
- AM API 2.x - Larger Changes TBD
- Lots of suggestions on and off the mailing list
- We've had a taste of our own medicine
 - First hand use of AM API
 - Helped GEC 9 demo experimenters
- Eager for consensus

Your Turn

- What should be changed?
- What should be added? Removed?