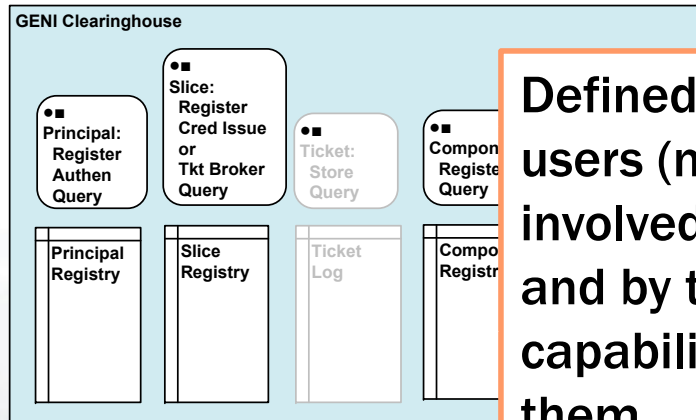
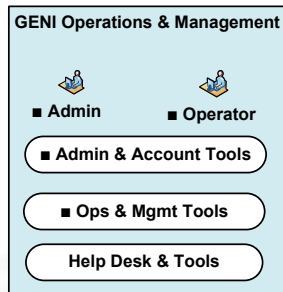


System Engineering Report

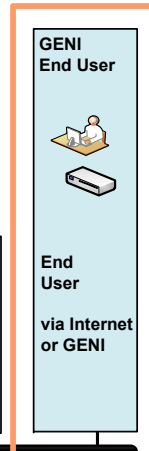
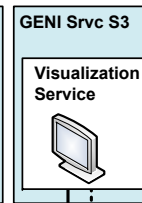
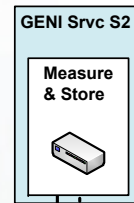
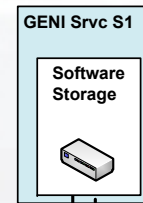
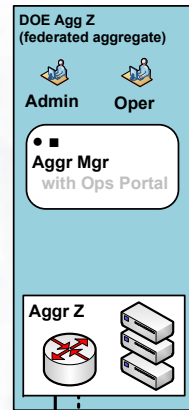
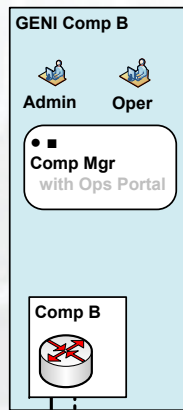
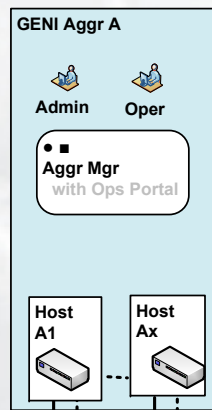
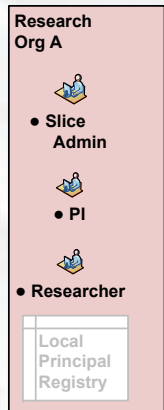
GENI Engineering Conference 5 End-User Opt-In Working Group Seattle, WA

**Harry Mussman
July 21, 2009
www.geni.net**

What is GENI End-User Opt-In?



Defined by: Use cases where end users (not researchers) become involved with GENI experiments; and by the services and capabilities necessary to support them.



- **WG “writing meeting” in NYC on April 14**
 - See <http://groups.geni.net/geni/wiki/041409NYCOptInWGAgenda>
 - Several attendees, many references, several contributions
- **Objectives were met, including:**
 - Baseline view of GENI opt-in
 - Based on contributions and notes from meeting, wrote DRAFT document: “GENI End-User Opt-In Overview”
- **To expand one key topic, wrote separate DRAFT document: “GENI Structure Overview”, including entities, actors and agreements.**
 - Expected range of GENI structures must be supported by GENI architecture, particularly control framework
 - Mitigating opt-in risks and solving opt-in issues will drive need for particular agreements
 - More in separate talk

- **Goal: document baseline view of GENI opt-in**
- **Outline:**
 - **GENI Entities, Actors and Agreements**
 - **Opt-In Users**
 - **Opt-In Goals**
 - **Opt-In Use Cases**
 - **Opt-In Mechanisms**
 - **Opt-In Risks to Entities and Actors**
 - **Reference Single-Suite GENI Structure and Agreements**
 - **Best Practices to Mitigate Risks and Solve Issues**

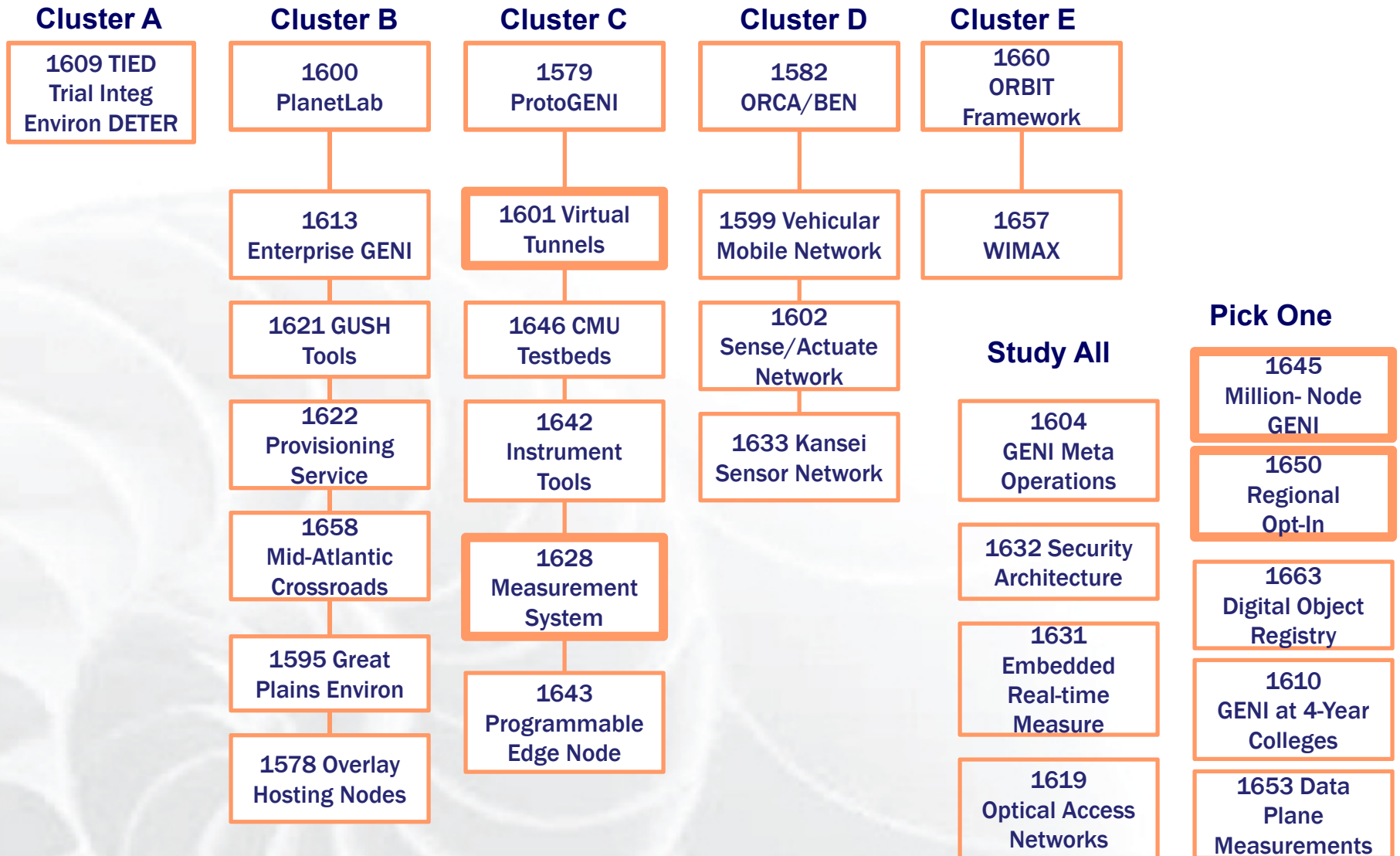
- **Aggregates that provide resources**
 - Management Authority (MA), responsible for the management of the aggregate, can delegate selected functions to other actors
- **Slices that utilize resources**
 - Slice Authority (SA), responsible for the management of the slice, and the experiments conducted with the resources assigned to that slice, and which can delegate selected functions to other actors.
- **Opt-In and 3rd part users**
- **Necessary Agreements**
 - Resource usage
 - Cooperative operations
 - Acceptable use, various best practices
- **See DRAFT “GENI Structure Overview” document**
 - More in separate talk

- **Opt-In users participate or “opt-in” to a GENI experiment, and become part of the slice.**
 - **Opt-In users who choose to “opt-in” to a GENI experiment**
 - **Opt-In users who are pulled into a GENI experiment as a group, e.g., because a site decides to participate in an experiment or service.**
 - **3rd-party users, who are outside the GENI suite, but may be undesirably affected by a GENI experiment from within the GENI suite (this may be considered a case of “unintended” opt-in by such users)**

- **Opt-In Goals**
 - Add realism to experiments
 - Facilitate key experiments, i.e., host ISP in a slice
 - Essential to do full scale, long-running experiments

- For each: description, implementations, issues
- **Use Case 1:** A user chooses to participate in a GENI experiment to receive a service
 - See Opt-in Workshop report by Craig Partridge.
- **Use Case 2:** A user chooses to participate in a GENI experiment to contribute resources for others
 - Studied in 1645 Million Node GENI project (Justin Cappos – U Washington).
- **Use Case 3:** A group of users are pulled into a GENI experiment
 - See DRAFT requirements from 1650 Regional Opt-In project (Matt Mathis – PSC).
- **Use Case 4:** A 3rd party use is undesirably affected by a disruptive GENI experiment
 - Consider experience from PlanetLab by Larry Peterson - Princeton.

Spiral 1 Projects with End-User Opt-In Capabilities



- **Choice options**
 - Point browser
 - Load software
 - Hijack traffic
- **Connectivity options**
 - Via Internet
 - Via native GENI network
 - Which layer?
- **Internet Gateway**

- **Risks to Aggregates**
 - Gather too many resources
 - Disrupt other slivers
- **Risks to Opt-in Users**
 - Loss of privacy
 - Loss of service
 - Virus on contributed node
- **Risks to 3rd-party Users**
 - Disruption

- **Includes “GENI Suite Authority”**
- **The GENI suite authority has agreements with all of the management and site authorities such that:**
 - All actors agree on an acceptable use policy
 - All management authorities agree to follow a resource use policy that makes resources available to all slice authorities (all slices) in the GENI suite (perhaps with some exceptions).
 - All actors agree on cooperative operation policies.
 - All actors agree to follow a common set of best practices.
- **See “GENI Structure Overview” document**

- **Mitigating opt-in risks and solving opt-in issues will drive need for particular agreements on best practices**
 - **Planning an Experiment**
 - **Setting Up and Running an Experiment**
 - **Enrolling Opt-In Users**
 - **Gathering and Storing Experimental Data**
 - **Dealing with Disruption to 3rd Party Users**
- **More in separate talk**

- **Goal: document baseline view of GENI opt-in**
- **Outline:**
 - **GENI Entities, Actors and Agreements**
 - **Opt-In Users**
 - **Opt-In Goals**
 - **Opt-In Use Cases**
 - **Opt-In Mechanisms**
 - **Opt-In Risks to Entities and Actors**
 - **Reference Single-Suite GENI Structure and Agreements**
 - **Best Practices to Mitigate Risks and Solve Issues**

- Review “GENI End-User Opt-In Overview” document
 - Goal to reach rough consensus
 - Further define acceptable use agreements, and best practices?
 - Who is willing to help?

How can you participate in the WG?

- **Check wiki for activities:**
 - <http://groups.geni.net/geni/wiki/GeniOptIn>
 - See meeting announcements, notes, presentations
 - Check work in progress, DRAFT documents, etc.
- **Join the mailing list!**
 - Listen, and then participate in a discussion.
 - Participate in document reviews
 - Once you are on a list, you can contribute to the wiki.
- **Attend meetings**