

DRAFT “GENI Structure Overview” Document

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

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Origin of “GENI Structure Overview” Document

- Opt-In WG “writing meeting” in NYC on April 14
 - See <http://groups.geni.net/geni/wiki/041409NYCOptInWGAgenda>
- Objective, which was met:
 - Provide a baseline view of GENI opt-in that can be expanded in the coming months
- Based on contributions and notes from meeting, wrote DRAFT document: “GENI End-User Opt-In Overview”
 - But, this was intertwined with the structure of GENI
- 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
 - Functions such as mitigating opt-in risks and issues will drive need for particular agreements

- **GENI Entities and Actors**
 - **Aggregates that provide resources**
 - **Actor: Management Authority (MA)**, responsible for the management of the aggregate, can delegate selected functions to other actors
 - **Other actors: Aggregate Administrator; Aggregate Operator, ...**
 - **MA can enter into agreements for the Aggregate**
 - **An aggregate may often be provided by a research institution, e.g., a research group at a university; then, that research group becomes the “management authority”, perhaps in combination with other university officials and/or groups.**

- **GENI Entities and Actors**

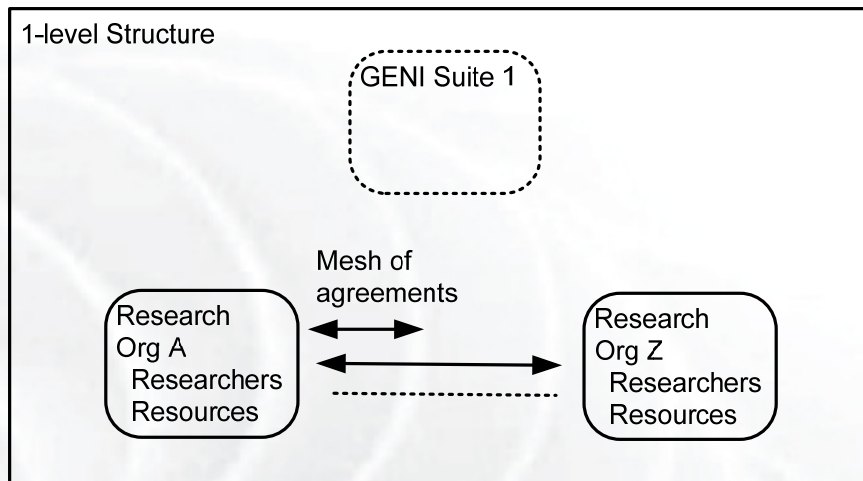
- Slices that utilize resources

- Slices (abstract entities) “contain” resources to support experiments (abstract entities)
 - Each slice contains from zero to many resources (named “slivers”), obtained from zero to many aggregates.
 - Actor: 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.
 - Other actors: Slice Administrator; PI; Researcher
 - The slice authority can enter into agreements for the slice.
 - A slice is almost always utilized by researchers at a research institution, e.g., a research group at a university; then that research group becomes the “slice authority” , perhaps in combination with other university officials and/or groups.

- Opt-In and 3rd part users

- **Necessary Agreements**
 - **Resource usage**
 - **Would typically allow resources from any (or all) of the aggregates to be used in any (or all) of the slices, and the rules (or policies) for assigning resources, particularly any exceptions.**
 - **Cooperative operations**
 - **Acceptable use agreements, and other agreements on best practices for managing the suite and conducting experiments.**

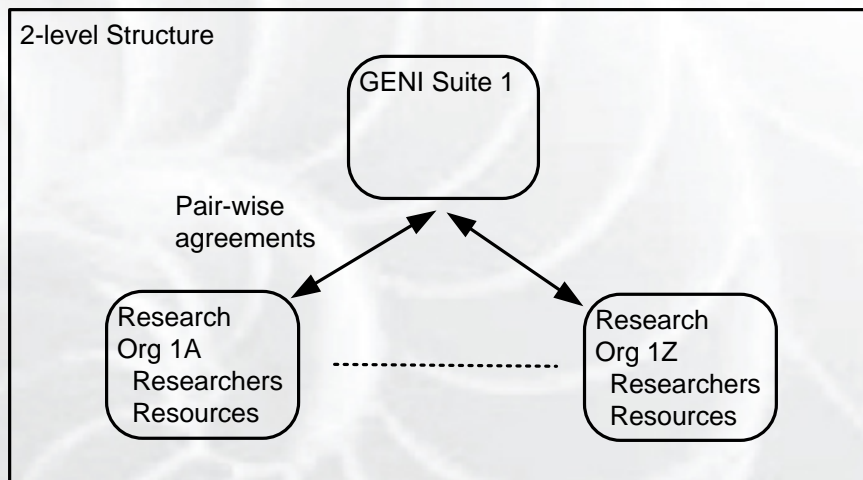
- **GENI Structure Options**
 - **One-level mesh, between MAs and SAs**
 - **Not scalable, not expected**



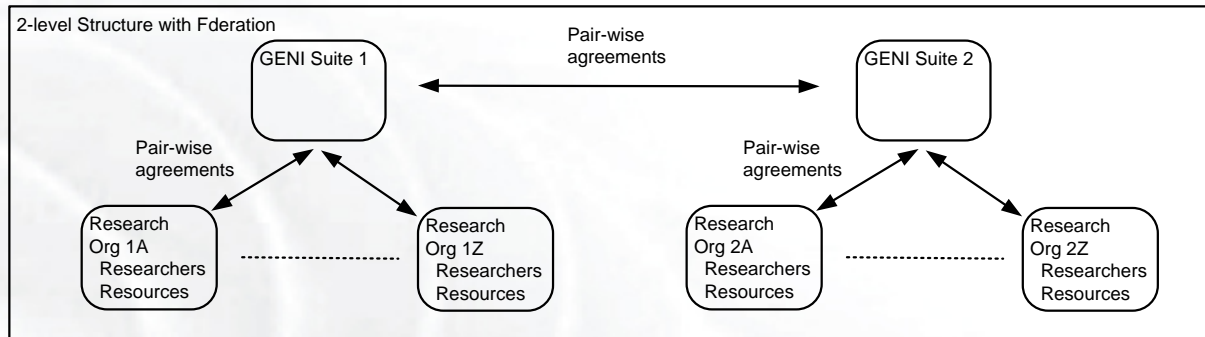
- **GENI Structure Options**

- **Two-level hierarchy**

- Introduces a **GENI Suite Authority**, who in turn has agreements with all **MAs** and **SAs**
 - **All MAs agree to follow a resource use policy that makes resources available to all SAs (all slices) in the GENI suite.**
 - **All actors agree on cooperative operations policies.**
 - **All actors agree to follow a common set of best practices.**
 - **Like PlanetLab**
 - **Often assumed as basis for GENI**



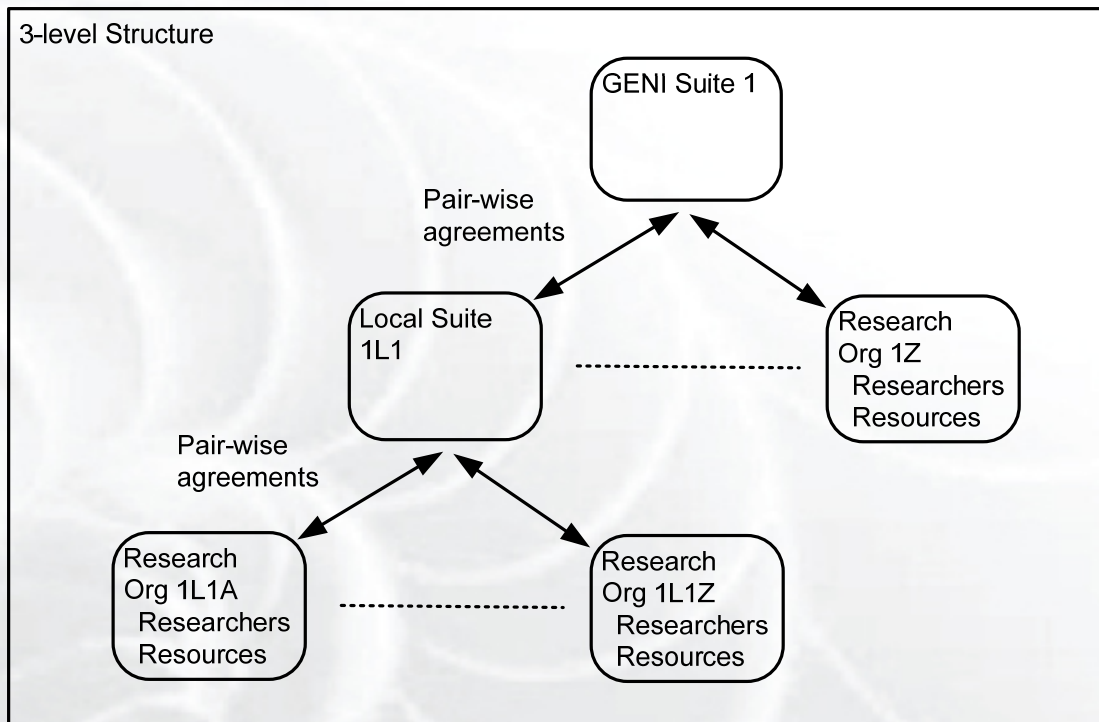
- GENI Structure Options
 - Two-level hierarchy with federation
 - Typically assumed as GENI extension



- **GENI Structure Options**

- **Three-level hierarchy with local suites**

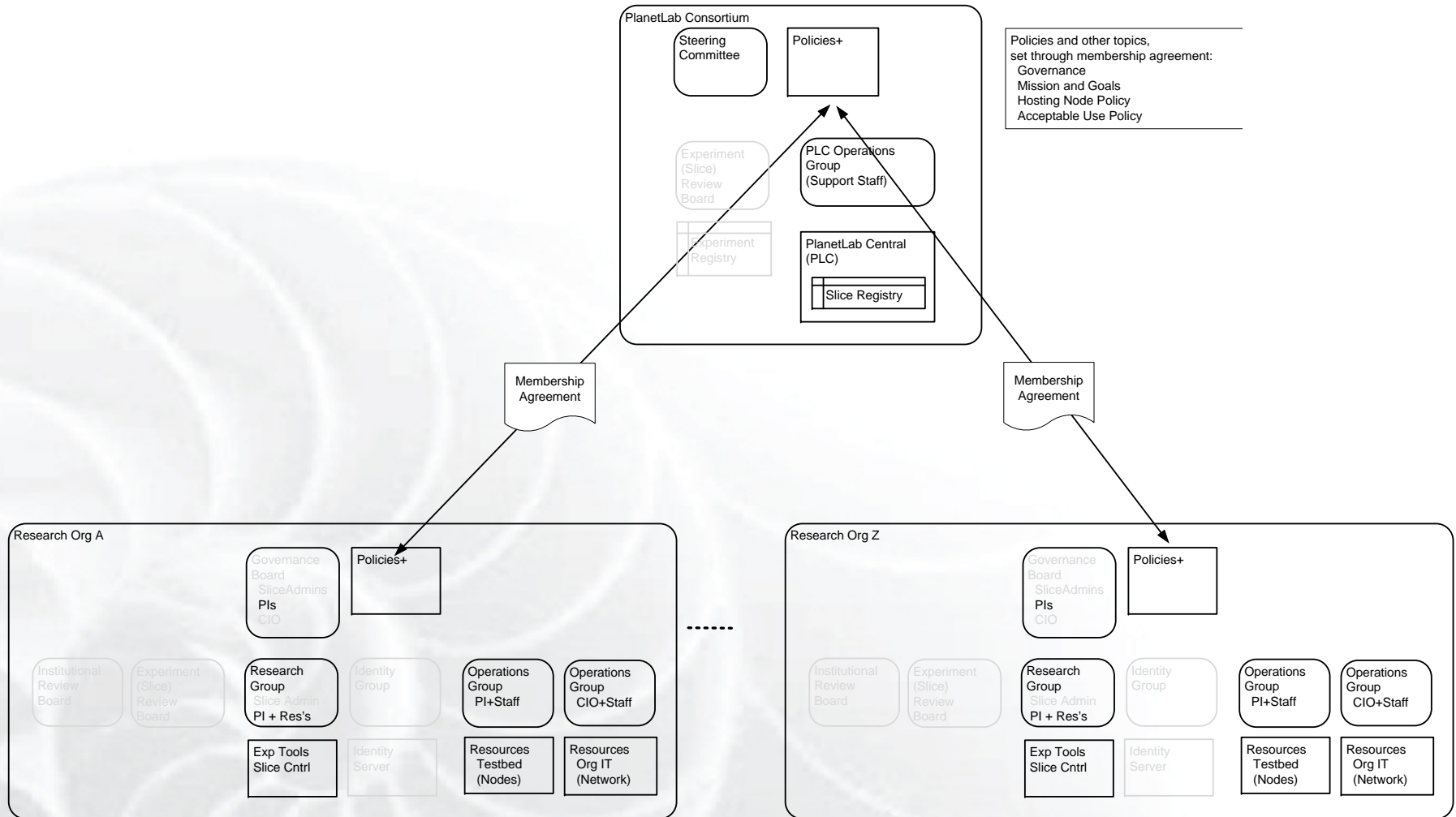
- **Local suites may form to serve particular groups of research institutions, defined by geography or function**



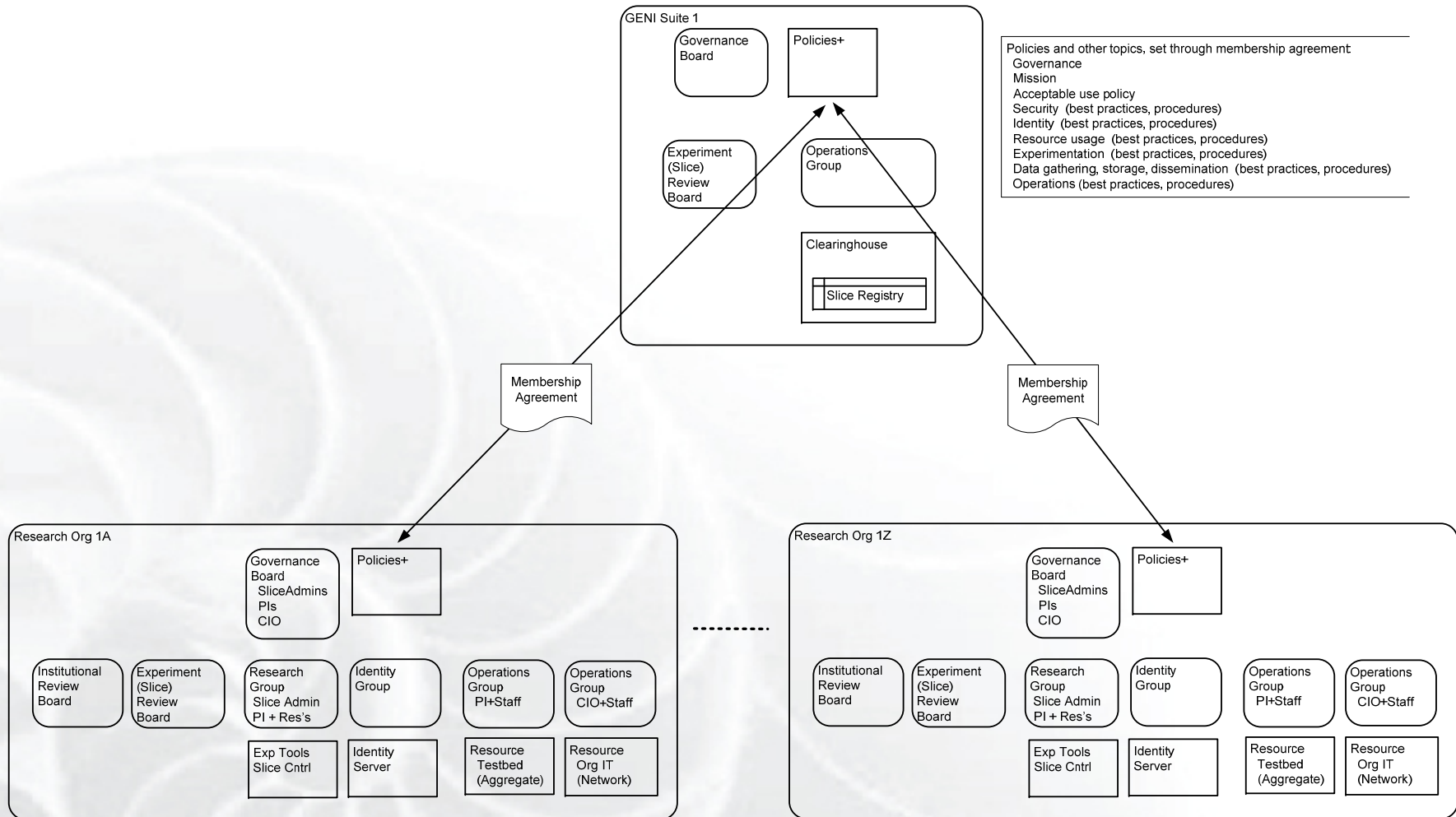
- **Structures of related projects**
 - PlanetLab
 - TeraGrid
 - Open Science Grid
 - Open Cirrus Cloud Computing
 - InCommon Federation

 - All need to be studied for guidance

 - PlanetLab approach often assumed as basis for GENI



Reference Single-Suite GENI Structure



- **Review “GENI Structure Overview” document**
 - Goal to reach rough consensus
 - Who is willing to help?
 - Need to involve other WGs.....how?
- **How do we further define expected range of GENI structures and agreements?**
 - What range of GENI structures must be supported by GENI architecture, particularly control framework?
 - What is first step, for end of Spiral 2?
 - Which functions will drive need for particular agreements?