

GENI Future Position Statement

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RESEARCH \ ENGAGEMENT \ INNOVATION

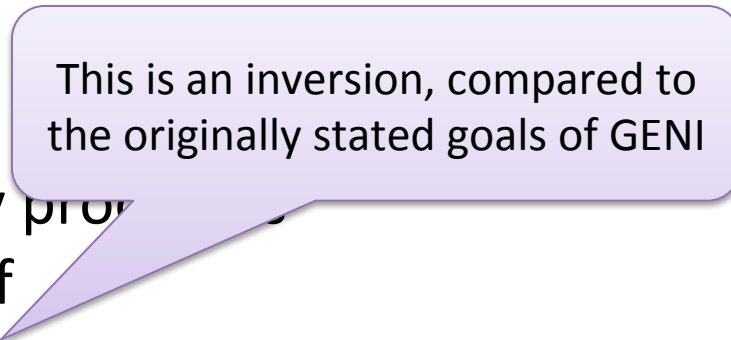


THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

What is the ROI of GENI to date?

From high to low

1. Community (national and international) and workforce training
 - Architects/developers
 - Experimenters
 - Students
2. Architecture
3. Operations procedures, community projects
4. Implementations as existence proof
5. Discovery/Experimental outcomes
 - Maybe not enough time or scale yet
 - Midscale deployments may change this



This is an inversion, compared to the originally stated goals of GENI

What do we do about it?

Outcome

Strategy

We can try to change this ROI

Emphasize stability and scale over new features

- I'm not arguing for abandoning CISE research as one of the drivers
- I am arguing for explicitly acknowledging the second focus and allocating time and effort to it

the architecture further

their requirements

- Make sure it gets adopted in other contexts and leaves a lasting impact

This position statement comes largely from this perspective

Main Points

- GENI Technologies are applicable across a wide range of domain science applications.
 - These should be investigated and incorporated into the architecture
- GENI Should
 - Continue to serve as an enabler of CS distributed systems/networking research
 - Should also serve as a testbed for investigating scalable infrastructure federation mechanisms and policies
- GENI Should seek to transition its technologies into broader use

Implications to research

- Scalable resource orchestration
- Resource accounting and exchange of consideration for resource use
- Domain-specific user interfaces
- Support for virtual providers that provide value-added services without owning infrastructure directly
 - Can't build a GENI that fits everyone's needs
 - Help think of GENI as a federation, rather than a hardware artifact
 - This is a forcing function and a way to stress the architecture
 - Creates opportunities for innovation without tightly coupling them to the ownership of hardware

Implications to outreach

- Reach out to domain science communities
 - Especially those that require coordination between data movement, computations, end-to-end orchestration, isolation (performance or security)
- Keep GENI free/cheap, reliable, easy and fast
 - Existence proof, a place to come and kick the tires

Implications to operations

- GENI operations model must reflect its distributed and federated architecture
- GENI operations must serve as a test environment for operating large-scale distributed infrastructure federations
 - Procedures for coordinating operations of edge, transit, federation service providers
 - SLAs from providers
- Operations must involve working with virtual providers as members of the federation

Implications to governance

- Must balance needs of different groups
 - Architects/researchers
 - Providers
 - CS user community
 - Domain science user communities
- Explicitly support technology transfer and transfer of operational procedures to other federations and the commercial sector
- Sustainability should not be the (only) goal – successful transfer of technologies, procedures and lessons learned should carry a significant weight

Specific comments to the documents

- GENI Governance
 - GENI Council + GENI Admin Office: Yes!
 - Consortium preferred, perhaps an IUCRC or similarly structured
 - NSF can kick in some funds for structuring and keeping it running
 - Should simplify IP ownership issues and provide a path for sustainability through e.g. membership fees
- Community engagement
 - Domain science
 - Domain science
 - Domain science

Thank you!