GENI: Future Planning: Key Issues

Joe Mambretti
International Center for Advanced Internet Research
Northwestern University

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- GENI Has Been Extremely Valuable.

- Much Thanks To the National Science Foundation!

- And To the Many GENI Supporting Communities.

- Given Its Value, GENI Must Continue To Be Available As A Resource.

- Providing a <u>Clean Slate Remains</u> Critically Important.

- Existing Implemented Production Infrastructure (Static/Calcified) Is a Major Barrier To Innovation.

- Network Researchers Must Be Able To Design, Implement, and Operate Their Own Instruments -- Knowledge Discovery Environments .

- High Energy Physics: Synchrotrons.

- Astrophysics/Astronomy: Telescopes.

- Oceanography: Ocean Observatories

- A Open, Deeping Programmable Highly Extendible Highly Distributed Environment ---A Platform Optimized For New Knowledge Discovery.

- Open Architecture, Open Source, Open Interfaces, Open Inter-Operability, Open Services

- No Preconceptions About The Future Should Be Inherent Within The Design.

- GENI Must Be Governed *By and For* The Network Research Community

- Expansion To/Integration With Other Environments, Nationally and Internationally
  - Software Defined Network Exchanges (SDXs)
  - Software Defined Infrastructure (SDI)
  - NSFCloud Testbeds (Chameleon, CloudLab)
  - Optical/Photonics
  - Distributed Science Research Environments
  - Smart Cities
  - US Ignite
  - Digital Manufacturing and Design Innovation
  - Instrumentation, Including Science Instrumentation
  - Sensor Based Environments
  - FIRE/SAVI/Next Generation Internet Testbeds, Future Internet Testbeds, Open Science Data Cloud, Etc.
 - Cyberphysical Systems

- **GENI Is Also An Important Educational Tool**
  - Basic-Advanced Fundamental Concepts.
  - Methods Of Designing, Conducting, Analyzing and Describing Replicable Research Experiments.
  - Techniques For Innovation
  - Theories of Network Science – An Examination of Fundamental Concepts
  - Explorations of Basic Network <u>Design</u> Concepts (e.g., vs Applied Engineering)

- # GENI Must Be International (G=Global!)

Global Lambda Integrated Facility

- Opportunity: Using GENI To Develop Innovative Techniques for Extremely Close Integration of Research WorkFlows and Dynamic Programmable Network Resources

- Precision Workflows Enabled By Precision Networking

- Especially For Big Data Science

GEC22 Bioinformatics SDXs Demo Network
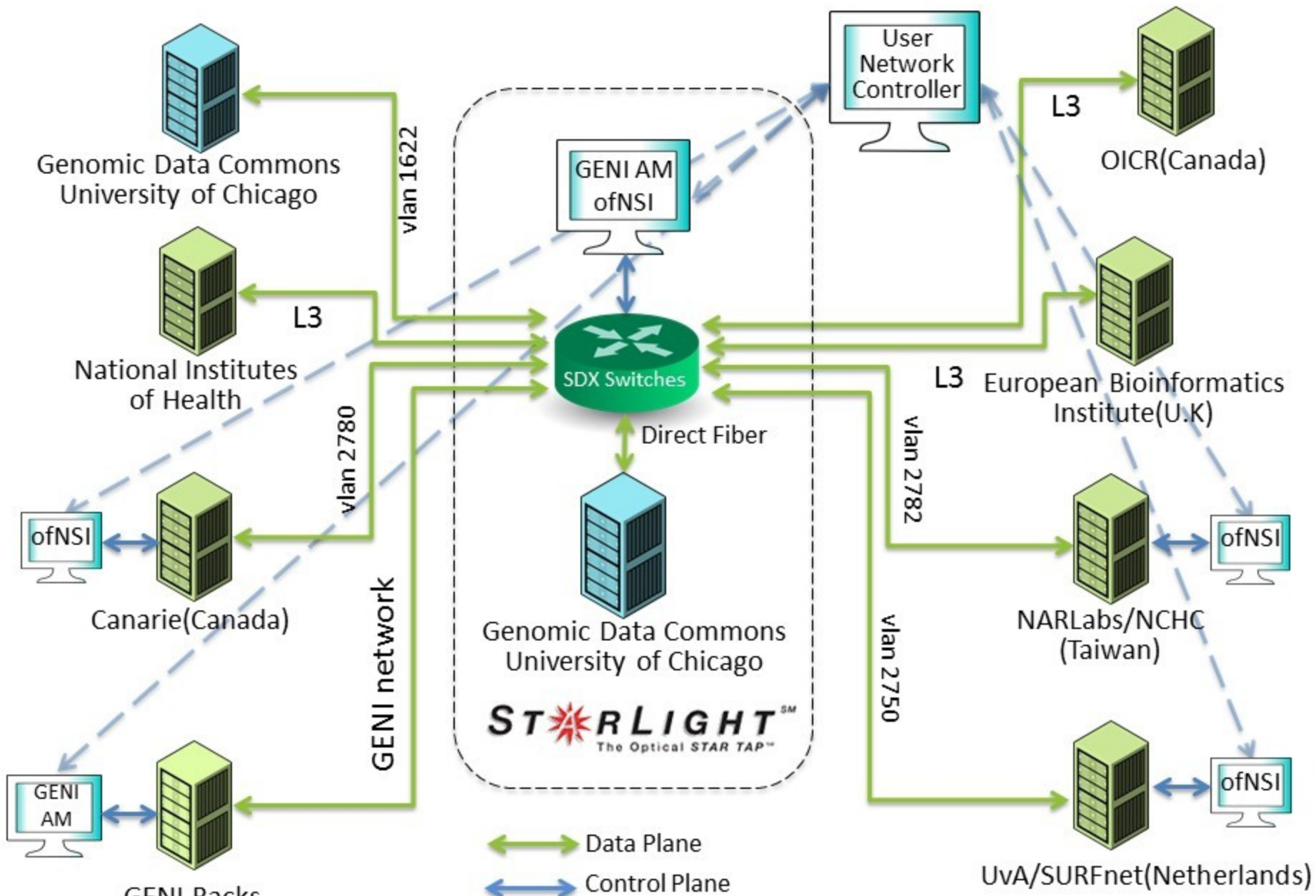
Precision Medicine Enabled By Precision Networking

- Budget Should Be As Minimal As Possible: Covering Only Essential Components

- Such Minimization Allows For Wide Participation By Contributors (i.e., N/D With Small N and Very Large D

- This Also Assists To Achieve Real Financial Sustainability Over Time

- NB: The Entity That Pays Should Be Carefully Selected