



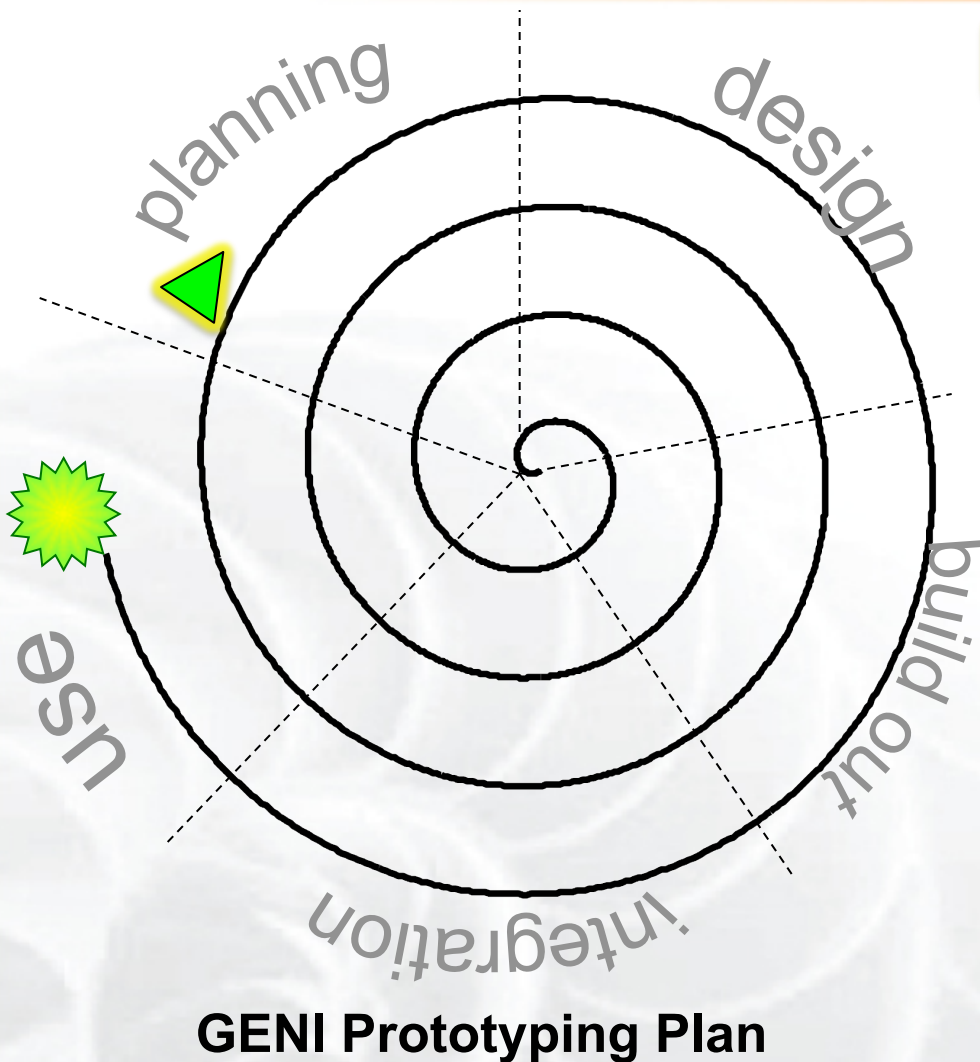
GENI

GEC17

Spiral 5 Goals & Progress

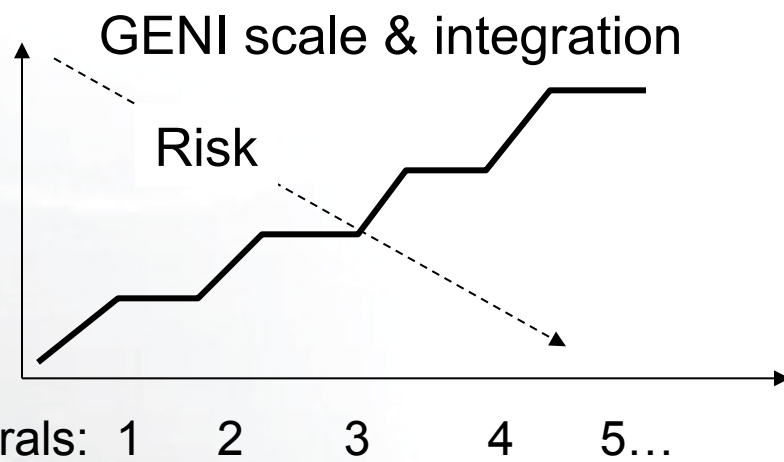
Mark Berman
July 22, 2013
www.geni.net

Reminder: Spiral 5 High-Level Goals



▶ Key Spiral 5 Goals

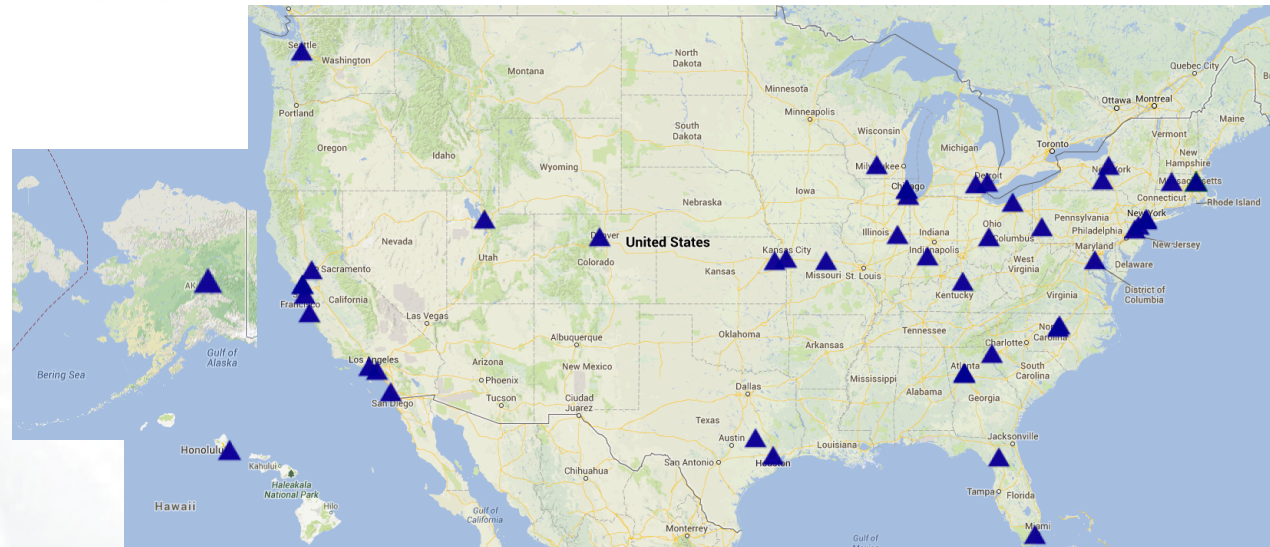
- Rapid growth in GENI resources (racks, campuses, regionals)
- Clean, consistent experimenter experience
- Steadily increasing experiment and classroom use



Make GENI bigger. Make GENI better. Bring your friends.

- The GENI community is making excellent progress in meeting Spiral 5 goals
 - Continuing nationwide deployment of racks and WiMAX
 - Stitching heterogeneous resources across the GENI network
 - Integrating tool sets across the experiment lifecycle
 - Expanding GENI tutorials, training, and outreach
- Meeting key GENI promises is bringing results
 - Rapid growth in experimenter uptake and research impact

GENI is emerging as the experimenter-owned, nationwide, distributed, programmable cloud environment that we've all been working to create.



Both GENI rack teams are working to aggressive deployment schedules

- ExoGENI and InstaGENI racks are actively supporting experimenters and education (e.g., tutorials this week)
- Working partnerships between GENI researchers and two “spontaneous” rack vendors





Thirteen GENI WiMAX sites (26 total base stations)

- Researcher owned and operated 4G cellular systems
- Each site supports local and remote experiments
- Standardized mobile client integrated with OMF and GENI portal for single sign-on, experiment configuration, and management
- Master EBS band license agreement in place with Clearwire

SciWiNet: a Science Wireless Network for the Research Community

- **Problem:** the wireless networks research community does not have access to a wireless testbed that scales in terms of geographic footprint as well as in terms of diversity of radio access and device technology.
- **Solution:**
 - Partner with Sprint and Arterra to create and trial a Mobile Virtual Network Operator (MVNO) that serves the academic research community.
 - Experimenter access
 - ‘Airtime’ is managed through a ‘bucket’ model. Researchers purchase data usage (i.e., Gbytes of network data) to fill the bucket.
 - Participating projects must pay for devices and data...however costs should be cheaper than alternatives!!
- **Key objectives of the trial:**
 - Evaluate the efficacy of an MVNO model to provide a wireless testbed for the academic research community;
 - Integrate and build upon innovations and resources made available from the GENI community

Contact Jim Martin (jim.martin@cs.clemson.edu) to participate.

- Integrated experimenter tool sets make life easier for experimenters
 - You saw these tools in the new getting started with GENI tutorial sequence yesterday
 - Plenary demonstration this morning

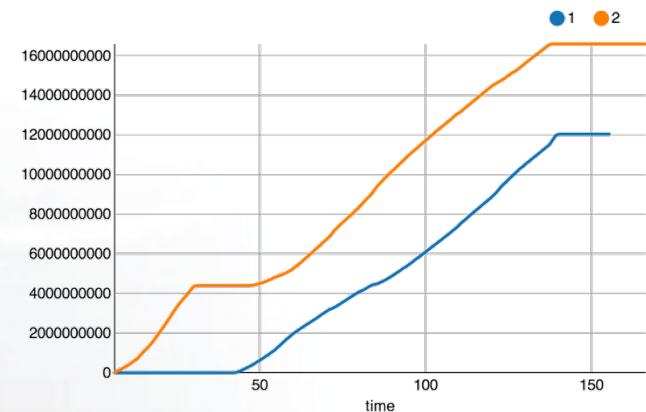
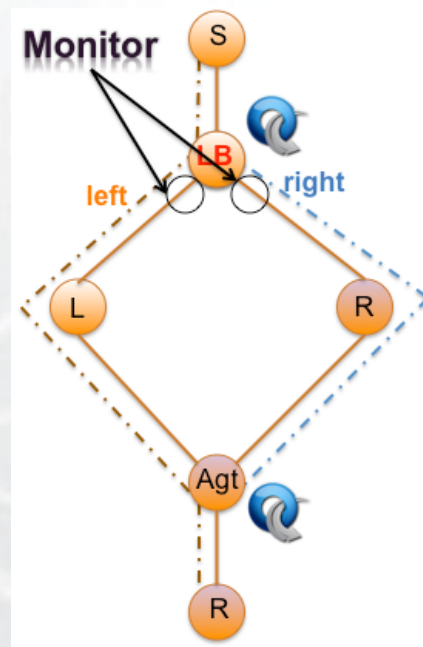
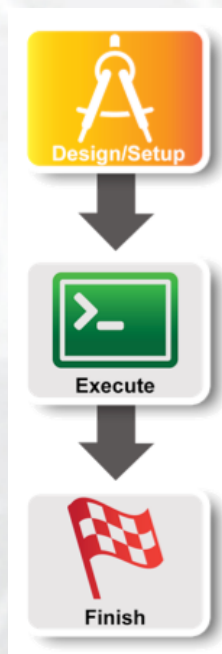


Figure: Cumulated Number of Bytes on each Path

Improved Experimenter Environment GENI Portal – A Great Example

- Challenge: new (and not so new) experimenters were deterred by too many steps, accounts, and credentials
- Approach: Create a simplified point of entry for experimenters: portal.geni.net
 - Tie in with InCommon to help onboarding
- Results: 500+ accounts in first eight months, strong positive feedback from experimenters and educators



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My Projects


[Create New Project](#) | [Join a Project](#)

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MEBTestProject	Mark Berman	Mark's Testing	1	Create Slice
tutorial	Sarah Edwards	GEC16 tutorial prep3	0	Create Slice

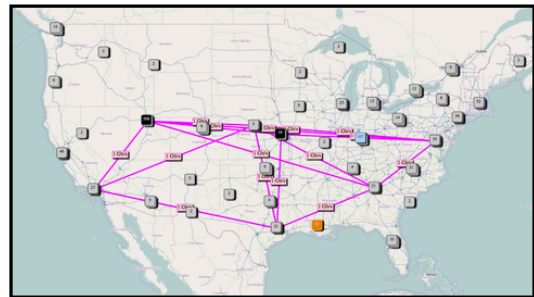
No outstanding project join requests by you.

My Slices

You have access to 1 slice.

Slice Name	Project	Slice Expiration	Slice Owner	Actions
MEBClickRouter	MEBTestProject	2013-07-26 19:24:15 UTC	Mark Berman	Add Resources Resource Status Details Delete Resources  GENI Desktop

GENI Resources



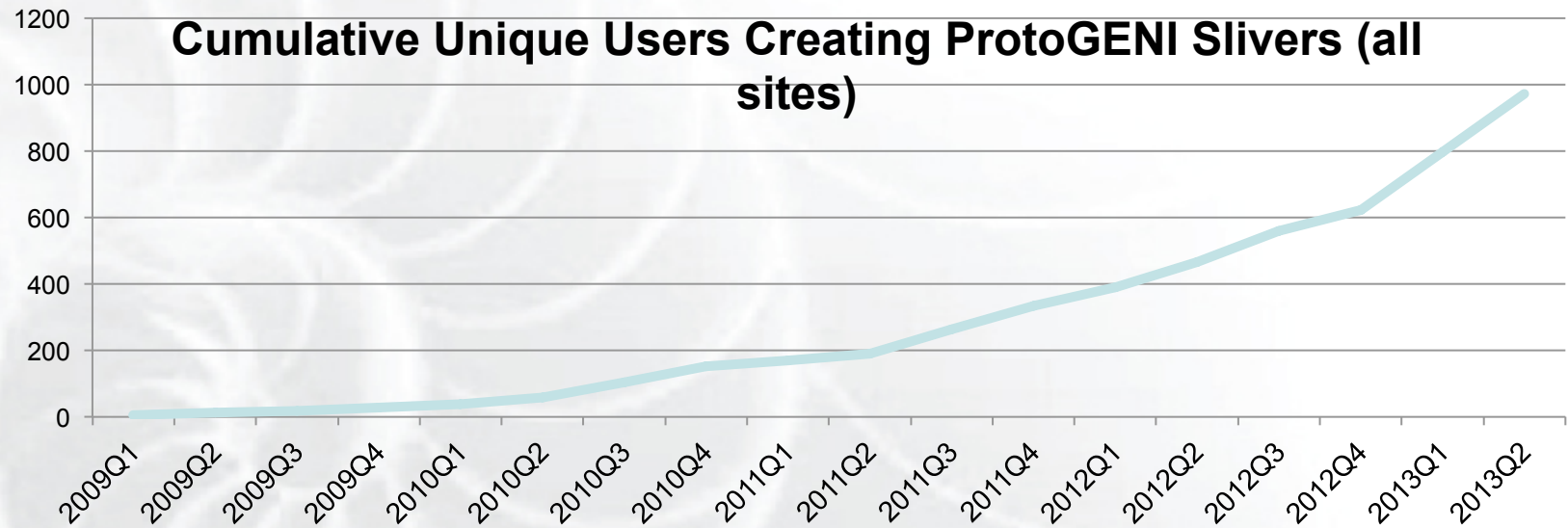
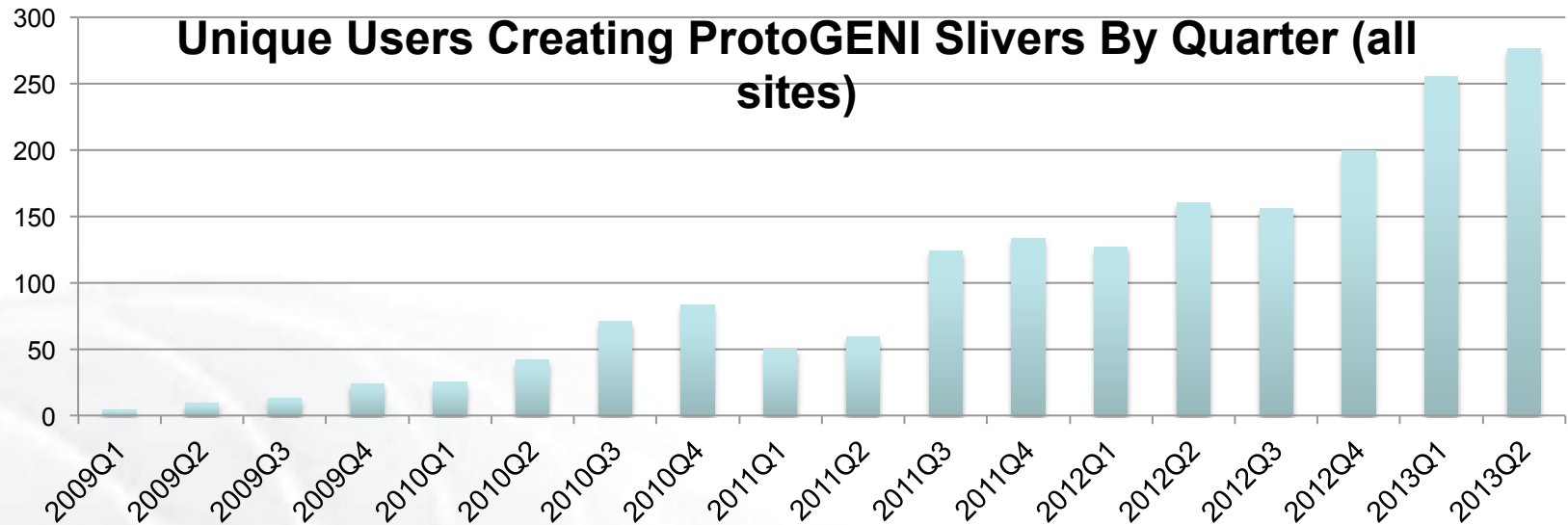
- Stepping up experimenter support, training, and education outreach across the board
 - Improved tutorial program at GECs
 - More GENI tutorials at non-GENI venues
 - Expanding use of GENI in classrooms at undergraduate and graduate levels
 - GENI camps and experimenter workshops

Second annual GENI Summer Camp



- 17 campers from across the US
- In-depth training and support in starting projects, including two demos featured last night

- GENI infrastructure is growing in size and getting easier to use
 - Will exceed 50 GENI-enabled campuses in current deployment phase
 - “Spontaneous” (non-GENI sponsored) racks
- Experimenter uptake
 - Growing user community
 - Strong classroom & tutorial participation
- Research impact
 - Growing body of academic literature
 - International collaboration & leadership



- Experimenter uptake continues at a rapid pace
 - Milestone: 1000 unique experimenters!
- GENI is having an impact in the research literature
 - Over 100 relevant papers
 - Let GPO (Vic & Niky) know if you're publishing GENI-relevant papers, for inclusion in GENI bibliography
- Partnering with peer projects worldwide
 - Working to federate resources and extend the reach of researchers around the world
 - Collaborating to develop interoperable technologies that make experimenters' lives easier

This is an exciting time for GENI!

