2nd GENI Instrumentation and Measurement Workshop
Chicago, IL, June 8-9, 2010

1. Technical Goals

The first GENI measurement workshop was held on June 26, 2009[1]. It brought together measurement experts to review the following topics: 1) measurement architecture, 2) instrumentation, 3) experiment specification, and 4) data management. The speakers suggested approaches to each topic that would allow GENI to meet its goals.   The consensus was that the design of an effective GENI measurement architecture had just begun.

To continue the effort, six GENI Instrumentation and Measurement (I&M) prototyping projects were established following Solicitation 2, joining three I&M prototyping projects continuing from Solicitation 1. Also, a GENI I&M Working Group (WG) was formed at the beginning of Spiral 2.

The WG has affirmed that GENI I&M systems will provide broad data gathering, analysis and archival capability, sufficient for GENI's research mission and sufficient for operations. Furthermore, the GENI I&M WG will create and document a GENI I&M architecture in Spiral 2, and coordinate the design and deployment of a first GENI I&M system in Spiral 3.

The objective of this 2nd GENI I&M workshop is to gather contributors from key I&M prototyping projects to define priority pieces of the I&M architecture by consensus, assemble teams to complete the documentation, and draft a roadmap for implementations during Spirals 2 and 3.

A GENI I&M Capabilities Catalog[2] has been drafted, which reviews each current GENI I&M project, and other selected projects, and lists: architecture components addressed or implemented; implementations in GENI or elsewhere; and uses in GENI or elsewhere. This document identifies projects that can best contribute to architecture topics and to identify projects that can implement enhanced GENI I&M capabilities in Spirals 2 and 3.

Based upon this catalog, several key projects were identified (see invitee list below) that could contribute to a GENI I&M architecture because they have already implemented pieces of I&M functionality in a manner consistent with GENI goals. Four of these projects were invited to give presentations at the GEC7 WG meeting, highlighting how their work mapped into the evolving GENI I&M architecture. Since

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[1] See http://groups.geni.net/geni/wiki/GENIMeasWS

[2] See http://groups.geni.net/geni/wiki/GENIIandMCAPCAT

then, the organizing committee has gathered technical references from and had extended discussions with these projects, and gained a better understanding of how they can best contribute to the GENI I&M architecture.

An early draft of a GENI I&M Architecture document was completed[3] and reviewed at the GEC7 WG meeting. Although there was general agreement on the draft of the architecture, the following priority topics were identified as needing to be defined first:

- o GENI I&M use cases
- o GENI measurement plane
- o GENI I&M services
- o Interfaces, protocols and schema for measurement data in GENI

This workshop will:

- o Gather contributors from the key projects (see invitee list below).
- o For each priority topic, the organizers will outline a suggested approach or solution, including how certain key projects might contribute functionality.
- o Then, a representative from these key projects will review how they could best contribute the suggested functionality.
- o Finally, each priority topic will be discussed in a structured manner, with the goal of achieving a consensus on a proposed solution or approach, plus identifying gaps that need further work.
- o Assemble teams for each priority topic, identify the action items required to close any identified gaps, complete the proposed solution or approach, and write a revised section(s) for the architecture document
- o Draft a roadmap for implementations in Spiral 2 and 3 by the key projects to realize the proposed solutions.

The revised architecture document will then be reviewed by the WG. It and the roadmap will be used for guiding future work on GENI I&M systems.

2. Organization

Dates: Tuesday, June 8, 2010, 1:00 pm – Wednesday, June 9, 2010, 2:00 pm

Location: Hilton Chicago O'Hare Airport, Chicago, IL,
http://www1.hilton.com/en_US/hi/hotel/CHIOHHH-Hilton-Chicago-O-Hare-Airport-Illinois/index.do

By Monday, May 24, please contact the hotel at 773-686-8000 , and book a room using the code "BBN".

Number of attendees: 18+

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[3] See http://groups.geni.net/geni/wiki/GeniInstrumentationandMeasurementsArchitecture

Agenda for June 8:

1:00 pm	Welcome and introductions
1:15 pm	Suggest a basic set of GENI I&M use cases, and review contributions from key projects
1:45 pm	Discuss basic set of GENI I&M use cases, summarize consensus and identify gaps
2:30 pm	Break
2:45 pm	Suggest definition of GENI I&M measurement plane, services, interfaces and protocols (APIs), and review possible contributions from key projects
4:15 pm	Break
4:30 pm	Discuss GENI I&M measurement plane, services, interfaces and protocols (APIs), summarize consensus and identify gaps
6:00 pm	Adjourn
7:00 pm	Dinner

Agenda for June 9:

8:00 am	Suggest contents and structure of GENI measurement data schema, and review possible contributions from key projects
9:30 am	Break
9:45 am	Discuss contents and structure of GENI measurement data schema, summarize consensus and identify gaps
11:15 am	Break
11:30 am	Identify teams for each priority topic, draft action items to close identified gaps, and make writing assignments for revised sections of the architecture document
12:30 pm	Lunch

1:00 pm	Review consensus of GENI I&M use cases; GENI I&M measurement plane, services, interfaces and protocols (APIs); and contents and structure of GENI measurement data schema; and draft roadmap for how key projects could implement them in Spirals 2 and 3
2:00 pm	Adjourn

Participation: Attendance will be limited to invitees. The capacity of the current room is 16+ attendees. Currently, we expect at least 18 attendees to be present, and we are looking to accommodate even a few more if at all possible,

It is important that each attendee come prepared with possible contributions from their project for certain priority topics, as requested by the organizers (coming soon), and be willing to help write revised sections for the architecture document.

Sponsorship: Funding for the workshop will be provided by the NSF through the GPO. This will cover all expenses associated with the workshop itself, including travel expenses for all participants.

 Within 30 days upon returning from your trip, please submit a brief invoice, along with receipts for all travel expenses incurred (*including meals*), to BBN Technologies. (See the attached instructions)

Please email your invoice and receipts as a single PDF file to: krich@bbn.com

Organizing Committee:
  Paul Barford - University of Wisconsin – Madison (yes)
  Bruce Maggs – Duke University and Akamai (yes)
  Harry Mussman – BBN/GPO (yes)
  Vic Thomas - BBN/GPO (yes)

Invitee List:
OML (ORBIT Measurement Library) OMF (ORBIT Management Framework)
  Max Ott – NICTA (yes, by phone)
  Ivan Seskar – Rutgers WINLAB (yes)
Instrumentation Tools
  Jim Griffioen - Univ Kentucky (yes)
perfSONAR
  Matt Zekauskas - Internet2
  Jason Zurawski – Internet2 (yes)
  Martin Swany - Univ Delaware
  Guilherme Fernandes – Univ Delaware (yes)
  Ezra Kissel – Univ Delaware (yes)
Scalable Sensing Service (S3)

Sonia Fahmy – Purdue (yes)
Puneet Sharma - HP Labs (yes)
OnTimeMeasure for network measurements
Prasad Calyam - Ohio Supercomputing Ctr (yes)
GENI Meta-Operations Center and NetKArma
Jon-Paul Herron - Indiana Univ
Camilo Viecco - Indiana Univ   (yes)
Chris Small - Indiana Univ (yes)
Virtual Machine Introspection (VMI)
Brian Hay – Univ Alaska (yes)
Data-Intensive Cloud Control for GENI
Michael Zink (yes)
Experiment Management Service – Digital Object Registry
Jim French - CNRI   (yes)
Giridhar Manepalli - CNRI   (yes)