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Project Summary

- *Primary Goal*: Determine the requirements for providing attribution within the GENI system:
    - Those that the experimenters require/would find useful/want
    - Those that the managers of GENI would find useful
- *Secondary Goal*: Develop a better understanding of the types of attribution that will be useful in the next generation Internet (including a framework for attribution)
    - Attribution will be critical component of next generation Internet
    - It's much, much more than a technical problem
- Sender, recipient, other policies involved
    - Note policy composition problem
    - Policies for different stake holders might be in conflict
- Some types of attribution
    - Perfect non-attribution (cannot attribute)
    - Perfect attribution (can attribute)
    - Perfect selective attribution (can attribute some attributes, but not all)
    - False attribution (can attribute, but always incorrectly)
    - Randomized false attribution (false attribution, but without consistency)
    - Imperfect attribution (can attribute data to a degree of accuracy, but not perfectly)

Milestone & QSR Status

ID	Milestone	Status	On Time?	On Wiki?	GPO signoff?
1	Outline of report including description and background of problem	*Completed*	On time	Yes	?
2	Report updated with several example scenarios, including possibly one involving privacy as a motivation. The scenarios will revolve around both situations arising in GENI and in the next generation Internet.	*In progress*	On time	No	N/A
3	Updated report including suggestions for further work related to Attribution for GENI	*In progress*	On time	No	N/A
	QSR: 2Q2010	*Completed*	< 2 months	Yes	?
	QSR: 3Q2010	*In progress*	On time	No	N/A

- *Continuous Experimentation:* This study will describe a set of attribution requirements that experimenters can combine in various ways, to enable them to use the combination most effective for their needs.

- *Integration:* The requirements are being drawn from the needs of an experimental testbed (GENI) and provide flexibility for users and infrastructure of the next generation Internet.

- *Instrumentation and Measurement:* If implemented, we plan to include performance and use instrumentation to develop measures of impact and use.

- *Interoperability:* ProtoGENI has been selected as the future testbed for the implementation of attribution infrastructure and mechanisms.

- *Identity management:* Identity is a key attribute, so this work speaks to identity management in the sense of managing attribution infrastructure. However, the focus of this work is not on the creation of identities nor on their management as a separate attribute.

- Examined governance issues as well as technical issues
  - Governance issues are critical in a multinational environment
  - Leads to policy negotiation, and a supporting structure
  - Also leads to a need for conflict resolution
- Examined relationship of attribution and privacy
  - Especially attribute privacy
- Developed 19 general requirements for attribution systems
  - Most involve technical and non-technical elements
  - Many apply to GENI
  - All apply to the next generation Internet in some form

- Attribution is both a *technical* and a *non-technical* problem

- It is unclear how well GENI can handle the governance aspects of attribution, because of the differences in laws in the different jurisdictions in which GENI resides. Once the draft report is completed, should this work continue it will be necessary to get guidance from the GPO on the consequences of implementing the various types of attribution.

- What role will non-technical considerations play in guiding the development, architecture and deployment of Spiral 3?

Plans

- What are you plans for the remainder of Spiral 2?
  - Continue development of requirements, analysis of attribution
  - Develop scenarios for attribution both in GENI and in the next generation Internet

- The GPO is starting to formulate goals for Spiral 3. What are your thoughts regarding potential Spiral 3 work?
  - Work in Spiral 3 will focus on implementing the ideas in Spiral 2, including software design and (if possible) implementation. This includes validation of the design, and updating the report from Spiral 2 to take into account experience with, and reaction to, the design.
  - Ultimately we would like to implement an attribution infrastructure in Spiral 3.
  - The GPO would do well to consider how people interact with GENI in Spiral 3, because "it is not just technology" in the next-generation Internet.