WG-overlap Session

- Describe overlap of substrate working group with other groups
    - Services
    - OMIS
    - Narrow Waist
    - Opt-In

- Begin to identify interfaces/joint-definition/information-exchange needed across working groups

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Notes From Substrate Working group meeting 10/10/07

Services/Substrate working group overlap

- Substrate needs from Services Group:
  - Need the workflow cases to extend down into the substrate.
  - GIMS (GENI instrumentation and measurement system), management hooks for researchers: need desires from Services.
  - Resource requirements: descriptions, granularity, parameters, etc.
  - Programmability requirements: what level of control, granularity, dependencies, interfaces, which resources are invoked and which are programmable?
  - What do requests look like, how are services bundled?
    - Are things invoked, or programmed?
- Substrate provides to Services:
  - What resources are available to slices.
  - What level of programmability is possible on different components and their associated resources.
- General question: is middleware a substrate element or a service element—e.g. authentication?

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OMIS/Substrate working group overlap

- Federation of substrates questions:
    - Dependencies across/amongst substrates—can OMIS supply substrate requirements?
    - What are appropriate interfaces—can OMIS supply substrate requirements?
    - Have we established a structure of management information in managing a federated arrangement?
    - Is the control plane centralized?
- Measurement is a triangle between substrate/OMIS/services
    - Substrate supports collection of measurements and a place to keep the results, Services tells us how much and when, and then OMIS gets involved.
- How to separate the experiment from the operation?
    - OMIS data **is** separate from the GENI data.
- Substrate needs from OMIS:
    - Fault tolerance—requirements
    - Security requirements
- Substrate provides to OMIS:
    - Substrate must define what can be kept stable and what variable for OMIS.
    - Is there a difference between "commodity" component that is just invoked and one that is programmed?
    - What security will be provided by substrate.

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Narrow Waist/Substrate working group overlap

- What does it mean for an existing facility to be GENIized? Desirable to avoid a cluster of existing testbeds with an API. Need a part that feels centrally managed.
    - Authentication/Authorization mechanism alone (certificate authority) seems too skinny
    - If the federated control plane isn't user friendly it won't be used.
- Substrate supplies to Narrow Waist
    - keep the narrow waist narrow.
    - Substrate needs to be mindful of "scale" and complication of so many "moving parts" this also includes the ability to isolate functions to support sliceability.
- Substrate needs from Narrow Waist
    - Definition of narrow waist, where does it stop, what are the boundaries, who owns it?
    - What is the minimal set of things built into every node to be able to support end-to-end experiments. (Bandwidth, bandwidth granularity, delay, etc.)?
    - Is control plane centralized or distributed? This could be resource dependent.
    - What are the interfaces to the Narrow Waist?

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Opt-in/Substrate working group overlap

- What is the role for Substrates in User Opt-in?
  - Supply sufficient footprint and user connections—otherwise none.
- Perhaps the substrate can facilitate a way of encouraging large blocks of users. Should this be a design driver?
- Substrate needs to support innocent traffic that can be subjected to experimental queuing schemes of GENI researchers (e.g. by using mirroring to "protect" the innocent user traffic)
- Can the industry participants help encourage block opt-in?
- How can the substrate foster more users:
  - End-user facilities? How many and where?
  - Wireless: what does it take to get a Linux-based cell-phone onto GENI?
  - Optical: assume campus access, but what about consumer access nets?
  - What about municipalities, would they sign up?
- Substrate WG should provide some proposals for how the substrate can facilitate user opt-in to the Opt-In WG.

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