Possible Governance-Policy Framework for Open LightPath Exchanges (GOLEs) and Connecting Networks <u>Bill.St.Arnaud@gmail.com</u>

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Background

- Number of Open LightPath Exchange points increasingly significantly with facilities in Asia, Europe and North America
- Number of optical network connections between GOLEs also increasing significantly
- New major eScience programs such as LHCONE will further favor development of Open LightPath Exchange points
- New network initiatives from Internet 2, etc will further drive demand for this type of infrastructure e.g.
 - Internet 2 proposed "distributed" lightpath exchange points
- Future global eInfrastructure will be built around open lightpath exchange points and federated optical networks

Process

- Kick off meeting at Spring Internet 2 meeting
- Ongoing discussions at Terena meeting in Prague with DANTE, Internet 2, etc
 - Growing consensus and momentum towards OLE concept
- CCIRN discussions in Iceland
 - Agreement that OLE in London a top priority
 - Ideally a GN3 facility

Problem statement

21st century needs an

e-Infrastructure

but,

Research and education

networking is often still organised

in a 20th century way

R&E network evolution

- R&E networks played a major role in the Internet evolution and the transition away from the traditional, hierarchical, monolithic PTT networks
- Today many R&E networks operate in a hierarchical and monolithic way with little focus on innovation and a governance structure that often lacks transparency, flexibility and user involvement
- Many R&E networks dependent on leasing pipes or membership for financial survival with cross subsidy to small/remote institutions
- Need to focus more on network plus services that scale and serve needs of science and education e.g.
 - National R&E wireless networks
 - Content and peering networks
 - Low carbon and low energy networking and computing
 - Campus network services out sourcing, etc

Why Governance/Policy?

- As number of GOLEs increases and demand for lightpaths increases the need to have some broad frameworks and policies becomes important
- Governance/Policy framework will help minimize questions on AUP policies, escalation procedures, who to contact, etc
- Organizations may wish to donate resources such as international links to a common "federated" pool of resources with a commonly agreed policy and who can use the resources, priority of access, etc
- Governance/Policy body can address governments, external users, funding agencies with a single voice and policy
- Governance can help provide input and direction to technical and application committees

Governance does not mean central management or control

- Open Lightpath exchanges and interconnecting links will be a "federation" of exchange points and links
- Some links and exchange points may be dedicated to a federated common pool
- Some links may be dedicated to specific community or VO e.g. LHC
- "governance" in this framework refers to issues of policy of a federation of resources
 - Similar concept to Eduroam or Internet "governance"
- No central organization manages or controls Internet or Eduroam
 - Instead participants get together in technical and policy meetings to agree on how parties will interact to provide end to end solutions
 - Policy principles are agreement to support end-to-end principle, IPv6, etc

Some typical governance issues

- AUP at GOLES and optical links
 - Can commercial organizations get access?
 - Any restrictions on who can use GOLE or given lightpath?
- Who can be a GOLE or what defines a GOLE?
 - Can commercial facilities be GOLEs?
 - Does a GOLE have to interconnect to other GOLEs?
- What are "distributed" open lightpath exchange points?
 - How do they fit into the overall scheme ?
- Who has access to lightpaths at a GOLE when demand exceeds supply who gets priority?
 - Tributary access connections to GOLEs usually controlled and managed by 3rd party
- What are the escalation procedures, specifications and contact procedures for a given GOLE?
 - Should a GOLE be non-blocking
 - Should a GOLE allow user owned boards?
- Many GOLEs have different switches and equipment that are managed by separate organizations with no consistent policies on access, etc
- Etc

Next steps

- Governance/Policy meeting at GLIF in Rio de Janeiro
- Continued dialogue with governments and funding councils on importance of OLEs
- Ongoing innovation in OLE architecture and technology e.g. OS3E, NSI/DRAC
- Identification and communication with next big science communities eVLBI, WMO- meso climate modeling, etc

Further reading

- Open Networks for Open Science
- <u>http://www.glif.is/publications/papers/20110</u>
 <u>519BStA Open Exchanges.pdf</u>