

GLIF Future Directions

GLIF TECH Meeting,
14th Annual Global LambdaGrid Workshop

Queenstown, NZ, 29 Sep 2014

Lars Fischer



- What is the GLIF (TECH) "Mission statement"?
- What are GLIF (TECH) Deliverables?

- Mission: advance circuit-oriented network services for (large-scale) e-Science
- Deliverables
 - Deploy GOLEs
 - Operate & Coordinate GOLEs
 - Agree Technical & Operational Specification
 - Promote and Develop supporting Technologies
 - ...

- GOLE Functions (Cees de Laat):
 - Traffic Exchange among peers
 - Adapt data / traffic formats where possible
 - And nothing more
- A protocol-agnostic optical cross connect
 - Other functions at layers above the GOLE
 - ... which is where we put the AutoGOLE
- Transport and service layer separation
 - Transport GOLE vs Service GOLE?

- Open Exchanges are
 - Moving beyond GLIF
 - Moving beyond big science, data-intensive projects
 - Becoming key element in R&E transport infrastructure
 - Moving into the mainstream
- GLIF was never a network
 - ... and in the future, (transport aspects of) GOLEs may not be GLIF resources

- (1) They will remain
 - Optical cross-connects
 - Data format adaptors
 - Run by and for R&E networks, facilitating inter-continental transport hubs
 - Key element of R&E network infrastructure
- (2) They will become
 - Highly dynamic facilitators of advanced, programmable network service architectures
 - Key to the end-to-end GLIF Service Architecture
 - The lab for next-generation science applications
- Both will co-exist, sometimes in the same room



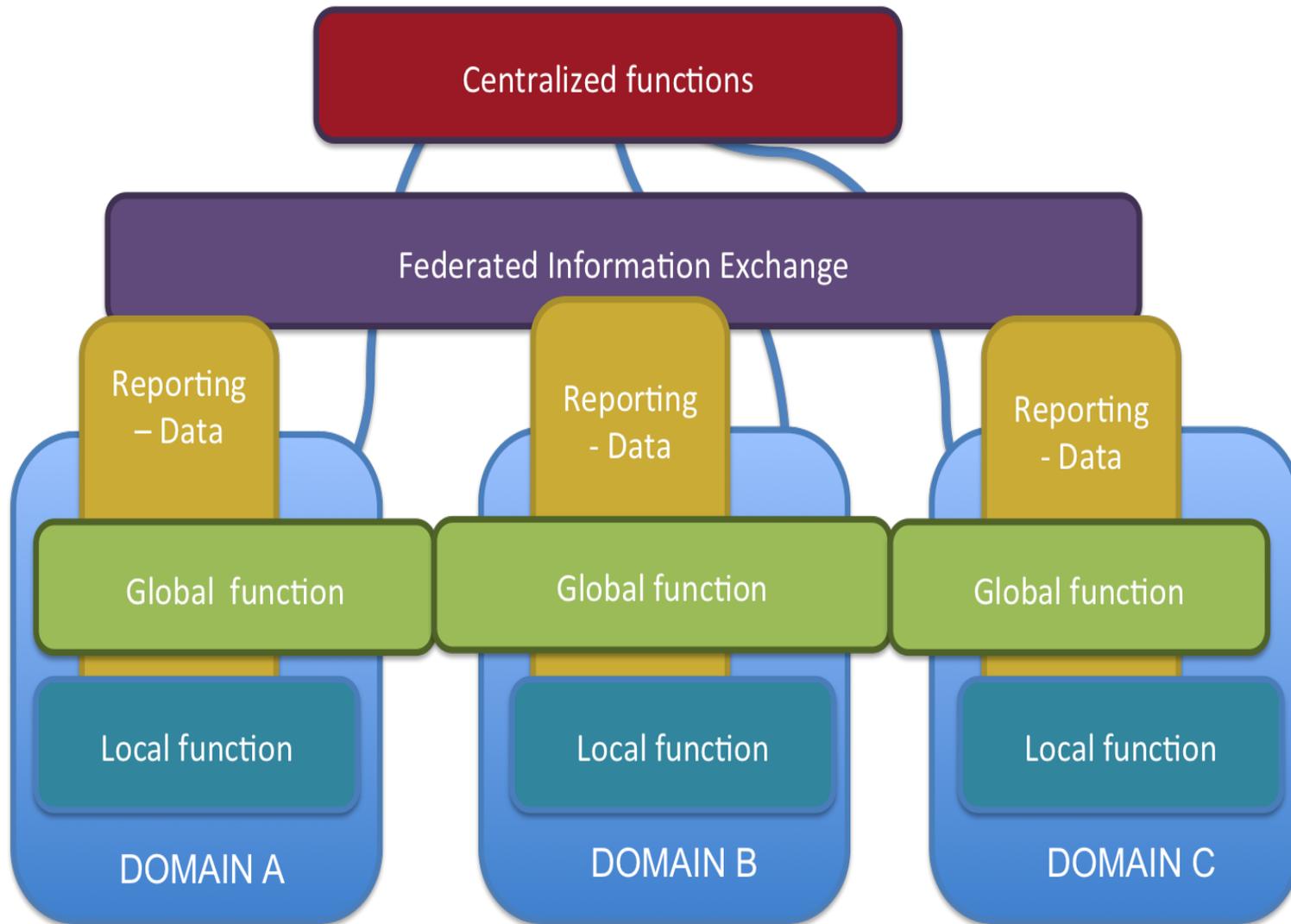
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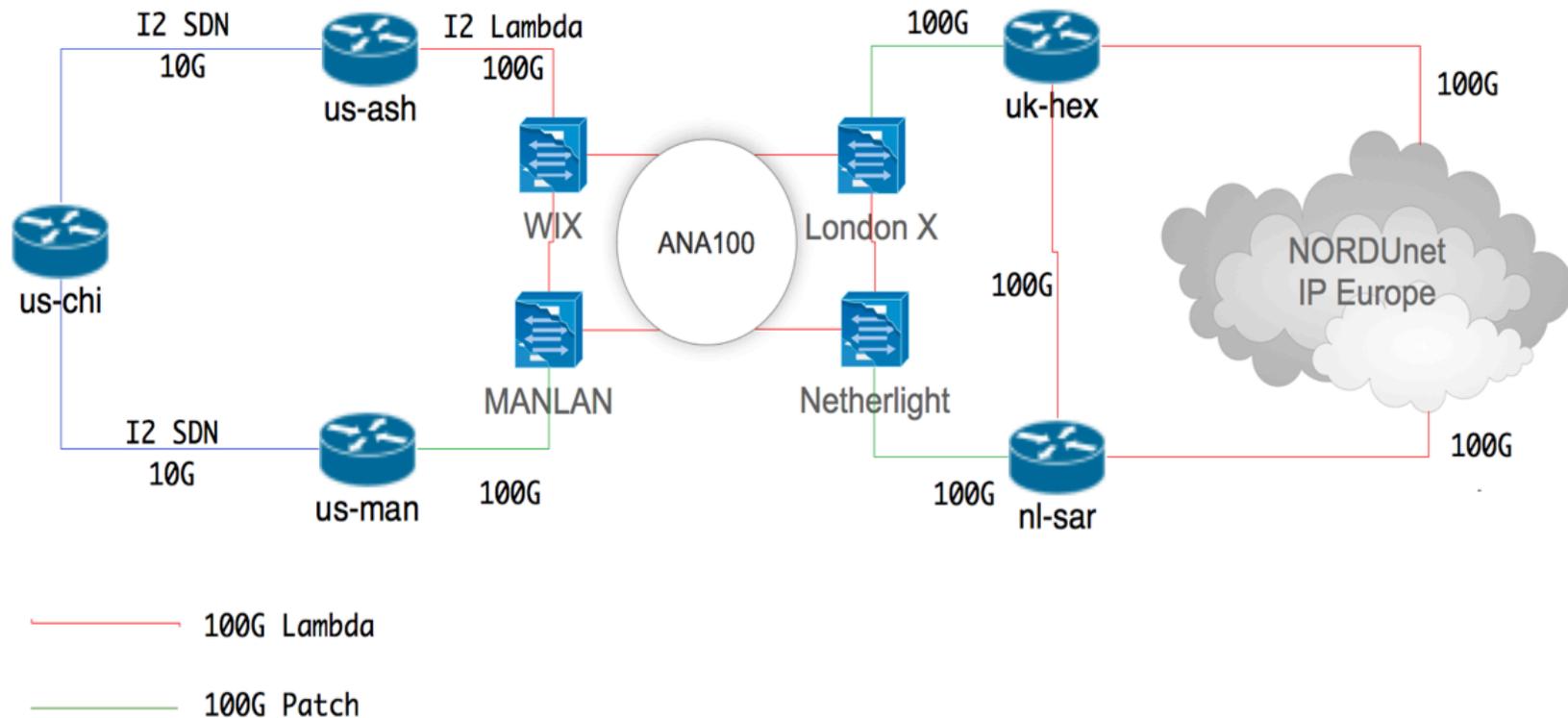
Nordic Infrastructure for Research & Education

Global Network Architecture



- Develop a data/health template to be applied to all physical devices and services
- Be minimally invasive. Strive for uniformity, but not at the expense of participation.
- Some of the functions may have to be globally organized, and made transparent to all. Other functions are local, with no global impact.
- Is there deliverables for GLIF (TECH) here?





- Federated network centred on GOLEs
- We need GOLEs to be dependable, trustworthy, safe
- Link sharing policy? Traffic management? Guarantees? Failover? We're missing technology & procedure
- We need it now



- Integration of NSI into production GOLEs
- Monitoring of GOLEs
- SDN / OpenFlow at GOLEs
- Programmable Networks
- Composable Networks & Network Orchestration?

- Transport – circuit capability ✓
- Cross-connect – circuit capability ✓
- Authentication ✓
- Identity Management (✓)
- Security
- Topology Exchange (✓)
- Link Policy management
- Performance Verification for end-to-end
- Service Level management
- Virtualization
- GOLE service architecture
- GOLE operator standards
- Programmability

- What do YOU want?

- What is the GLIF (TECH) "Mission statement"?
 - Enabling shared, flexible, automated, production-grade infrastructure services?
 - Facilitating large-scale e-Science with upper-layer, programmable exchange-points and network resources?
 - Finally making GLIF an *Integrated Facility*?
- What are the GLIF (TECH) Deliverables?