

SA2 “Testbeds as a Service”

LHCONE Meeting

May 2/3 2013

Geneva, CH

Jerry Sobieski (NORDUnet)

GN3+

- GN3 is done..... GN4 is not yet specified.....
- “GN3 Plus” is a 24 month project to carry the GEANT services forward while GN4 architecture emerges
 - Begins April 1, 2013
- Production Services:
 - SA1: Core Backbone Services (GEANT core network engineering)
 - **SA2: Testbeds as a Service**
 - SA3: Network Service Delivery (BoD, Wave services, VPN)
 - SA4: Network Support Services
 - SA5: Application Services (edu*)
 - SA6: Service Management & Operation (NOC)
 - SA7: Support to Clouds
- Research Activities
 - JRA1: Network Architectures for Horizon 2020
 - JRA2: Technology Testing for Specific Service Applications
 - JRA3: Identity & Trust Technologies for GÉANT Services
- Network Activities
 - NA1: Management
 - NA2: Communications & Promotion
 - NA3: Status & Trends
 - NA4: International & Business Development

SA2+: Testbeds as a Service

- Objective: Provide rapid prototype network testbeds to the network research community
 - Draws from numerous predecessor projects:
 - FEDERICA, Network Factory, OFELIA, NOVI, MANTICHORE, GEYSERS, DRAGON, GENI, PLANET LAB,
- Activity leader: Jerry Sobieski (NORDUnet)
 - T1: Hardware and Systems Engineering: TL TBD
 - T2: Software Development TL: Blazej Pietrzak (PSNC)
 - T3: Service Management TL: Peter Szegedi (TERENA)
 - T4: Multi-Domain Interoperability TL: TBD
- 2 Key aspects to the Testbeds Service:
 - “Packet” Testbeds – dynamically allocated, virtualized networks over packet oriented infrastructure with a pan-European footprint.
 - “Photonic” Testbeds – manually engineered testbeds over dark/dim fiber for photonic and/or long haul transport services research.

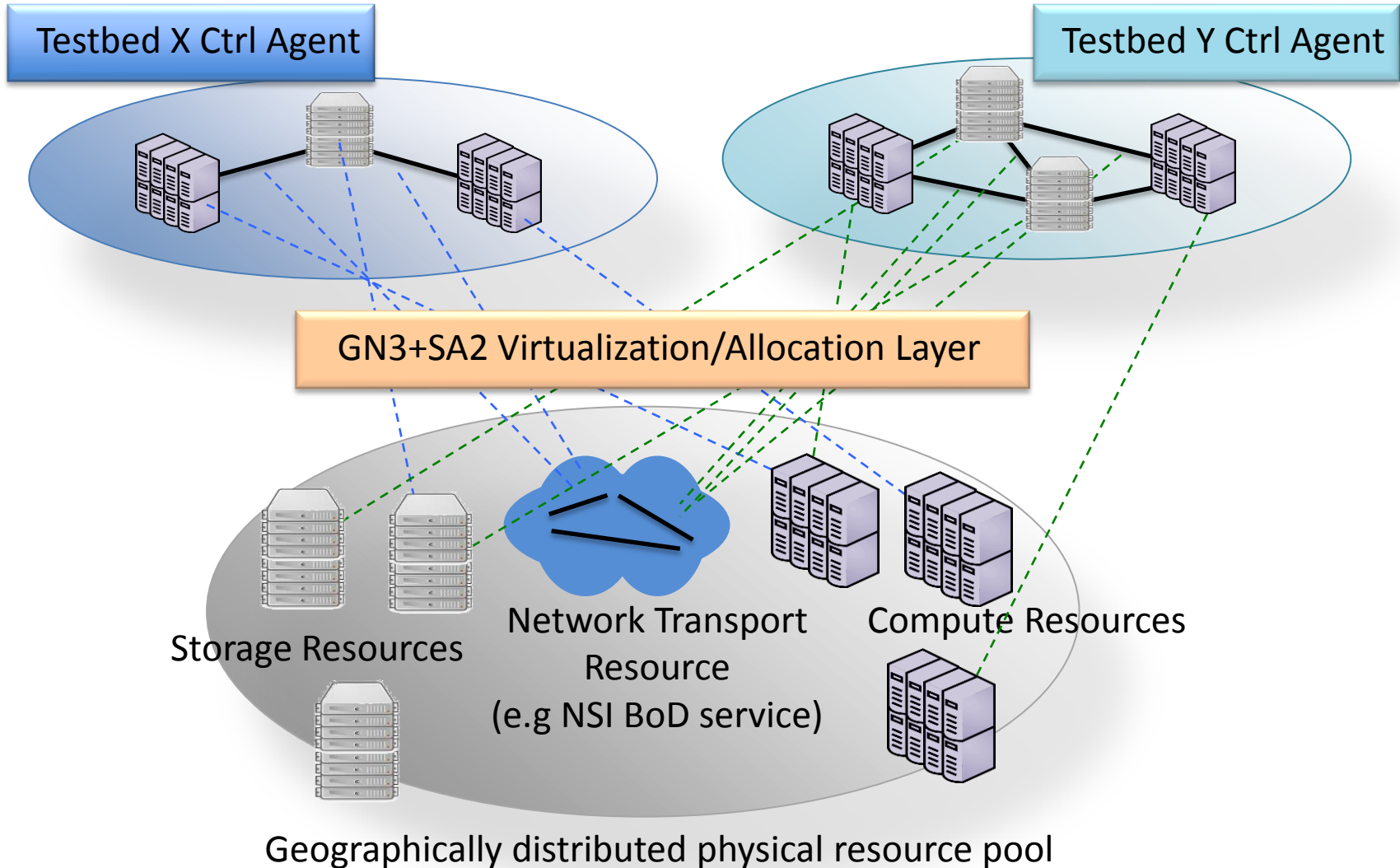
SA2: Packet Testbeds

- Phase 1: GEANT
 - Dynamically allocated virtualized resources:
 - General purpose computational nodes
 - Router nodes
 - Storage resources
 - Other hardware nodes: e.g. OpenFlow switch fabrics, ...
 - Network transport resources between nodes
 - GN3+ Resource pool will be geographically distributed across ~four GN3+ pops initially.
 - Intend to have approximately four participating NREN Resource pools
- Phase 2: Global interoperability architecture
 - Develop and deploy scalable secure virtualized network environments beyond the GEANT footprint
- A SA2 testbed instance is, by default, insulated from other testbeds or other production services
- Carefully managed access beyond the testbed hotzone can be requested in order to access external services
- An API will be provided to interface to the service and to allow the user to control the testbed elements
- A GUI will be provided (using the API) to provide basic interactive

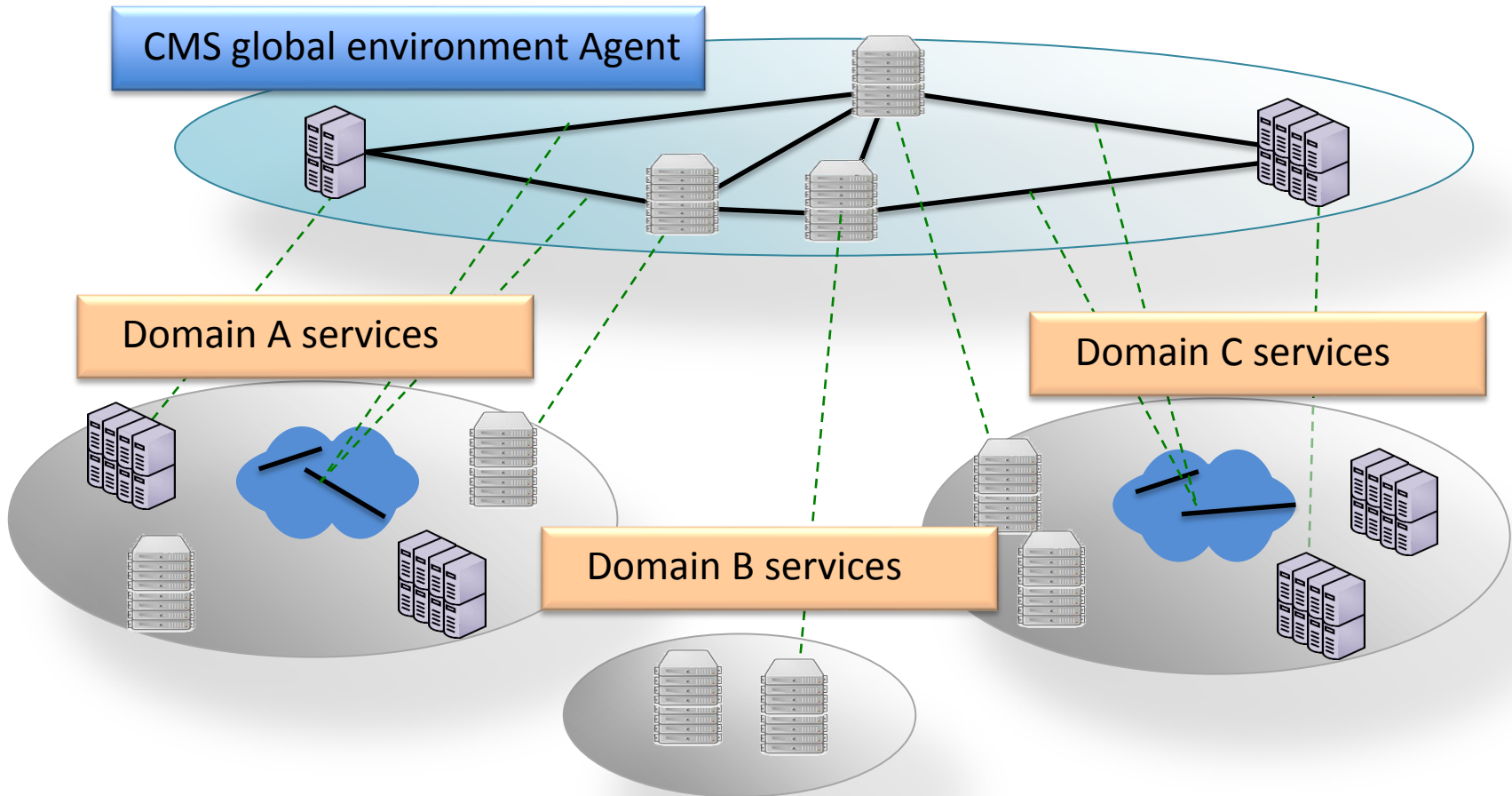
Photonic Longhaul Testbeds

- Leverage unused LH fiber segments for photonic/optical technology field tests
- Five (5) segments available:
 - London-Paris, 673km
 - Frankfurt-Geneva, 749km
 - Amsterdam-Frankfurt, 665km
 - Amsterdam-Brussels, 290km
 - Milan-Finkenstein-Vienna, 643km+ 462km
- SA2 Engineering will work with “well defined” research programs to engineer these segments for their research

SA2 Testbeds Phase 1

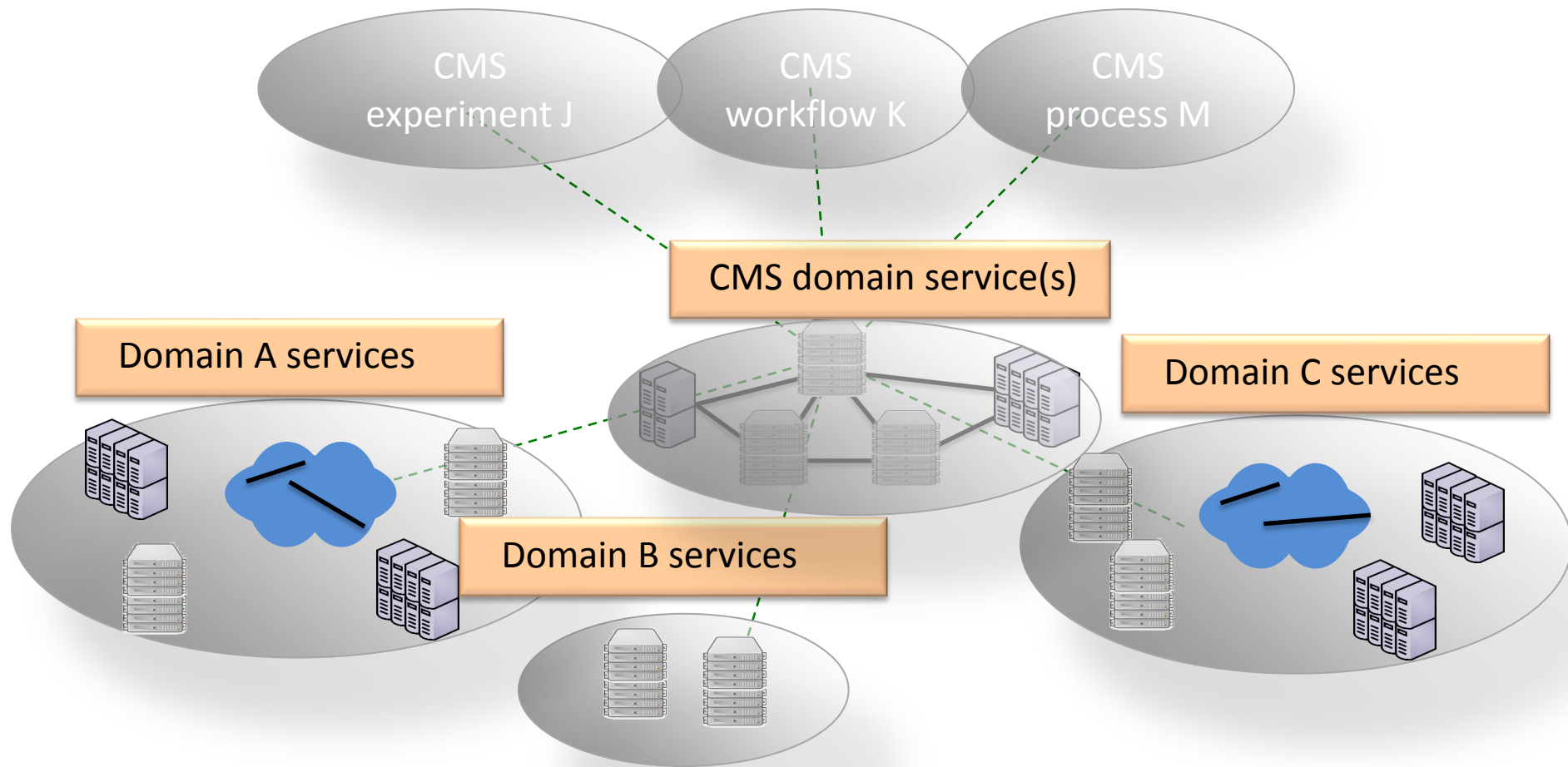


SA2 Testbeds Phase 2



Geographically distributed physical resource pool

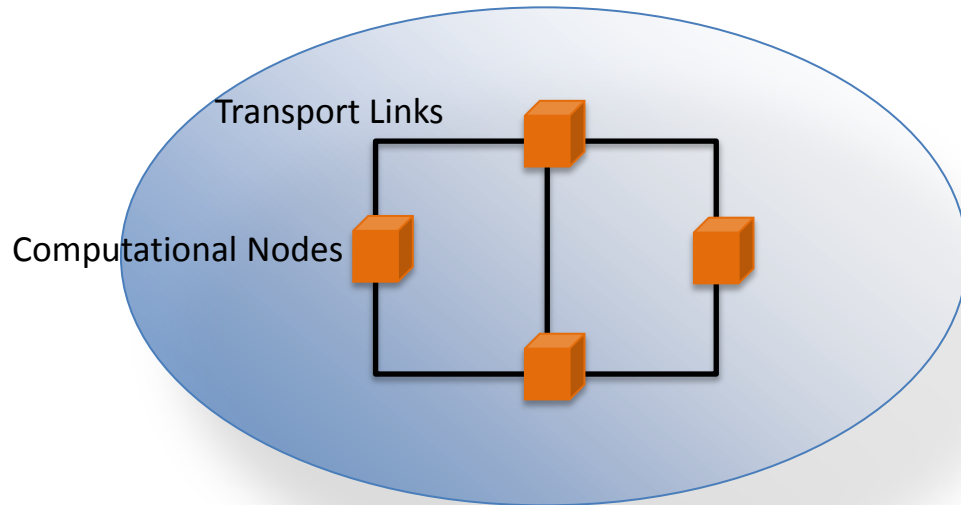
Virtualized HEP Services

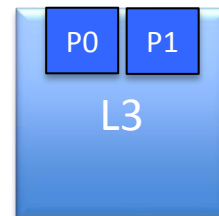
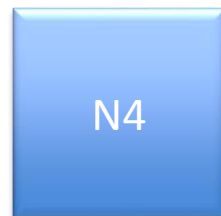
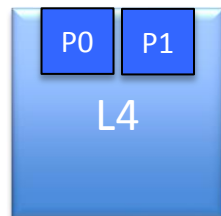
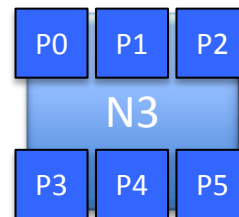
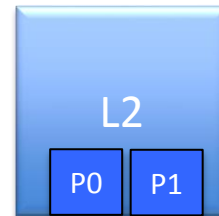
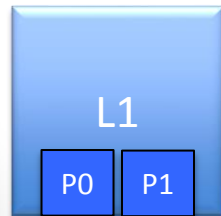
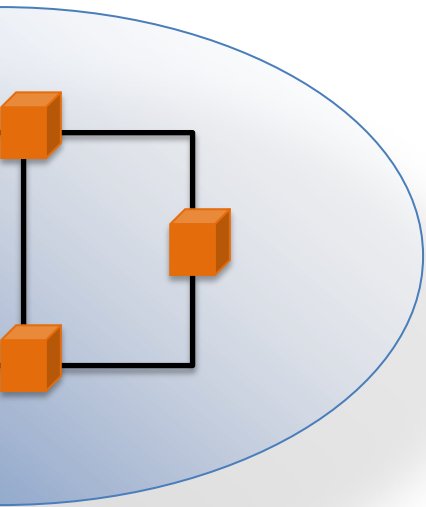


GÉANT Open Calls

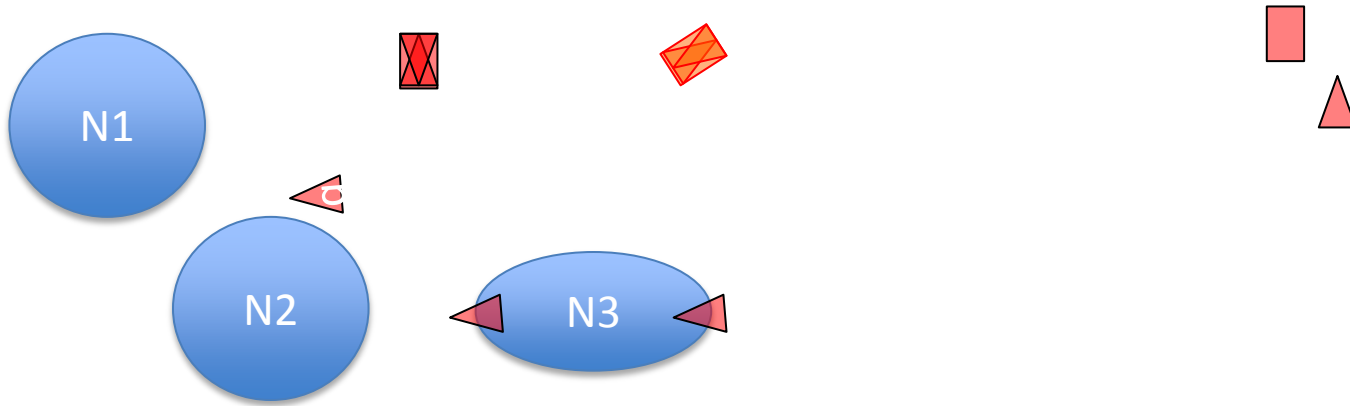
- GÉANT Open Calls are structured around three key themes:
 - *Use cases to run on existing GÉANT production and experimental network facilities.*
 - *Ex: Mixed mode guaranteed+scavenger, or policing/shaping at 100G to support LHCONE*
 - *Self-contained Research and Technology Development (RTD) work packages to support on-going project activities.*
 - *CDN networks*
 - *RTD to promote, develop and demonstrate Innovation in a Multi-Domain Research and Education Networking Environment.*
 - *LHCONE virtualization over multiple domains....*
- *Lightweight proposals, due by end of June*
- *Approximately 150 kEUR- 300 kEUR per award (total approx 3M EUR)*
- *To be completed by March 2015 (end of GN3plus project)*
- *See www.geant.net*

Basic Self-Contained Testbed





Resource Graph



Resource Graph

