

AutoBAHN
BoD research and service development in
GN3

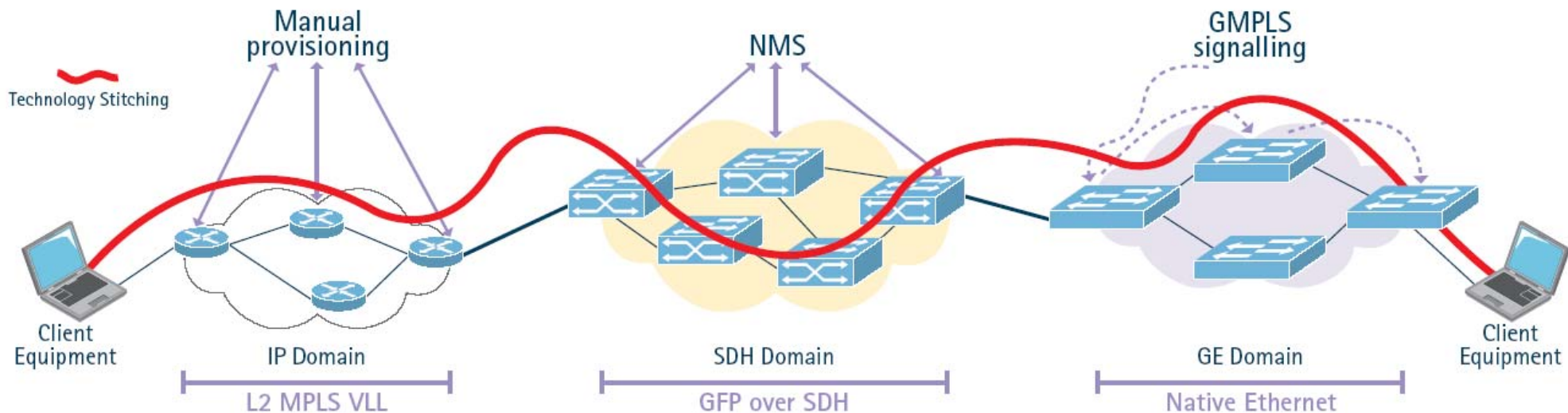
Afrodite Sevasti, GRNET

On-demand Infrastructure Services Provisioning Workshop
Amsterdam, 8th December 2009

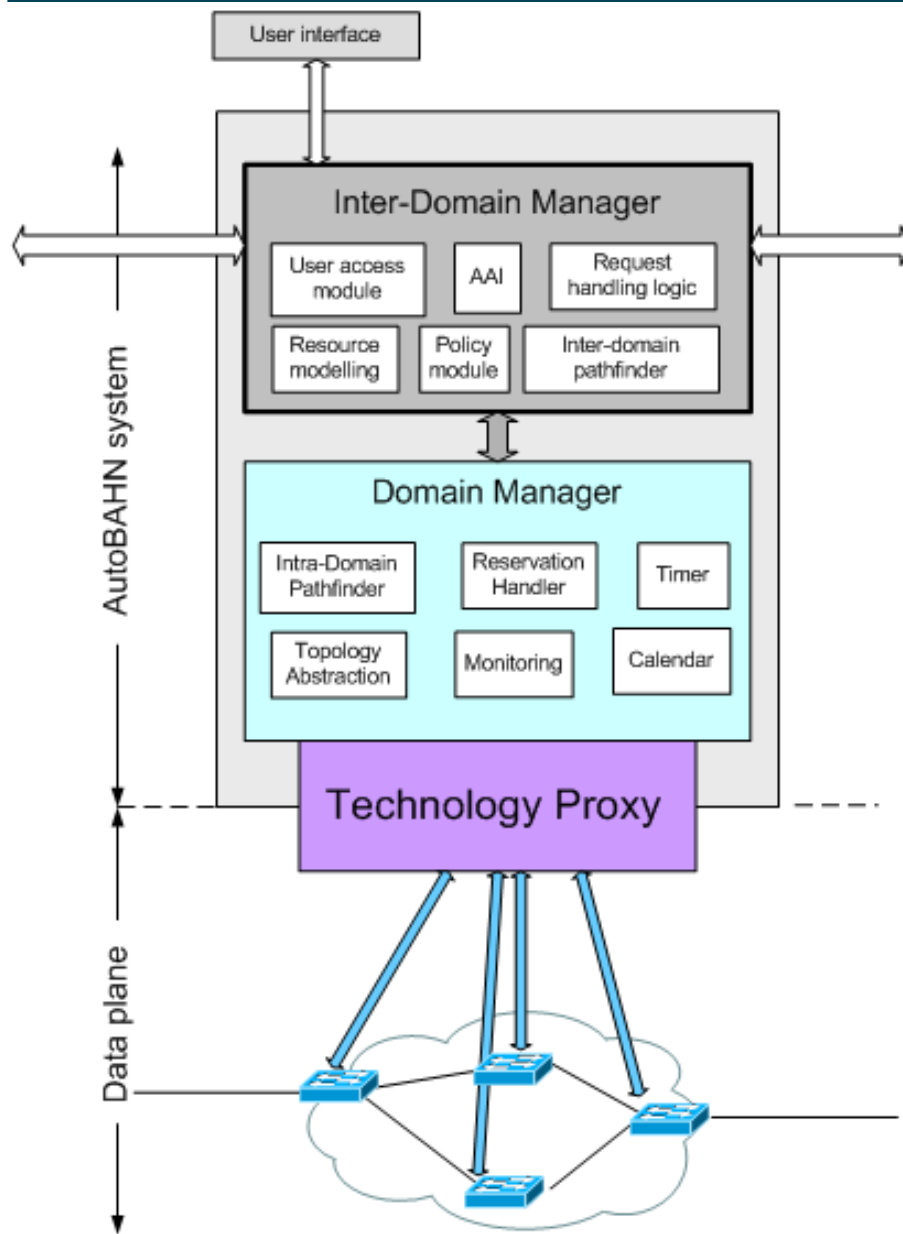
AutoBAHN approach for BoD



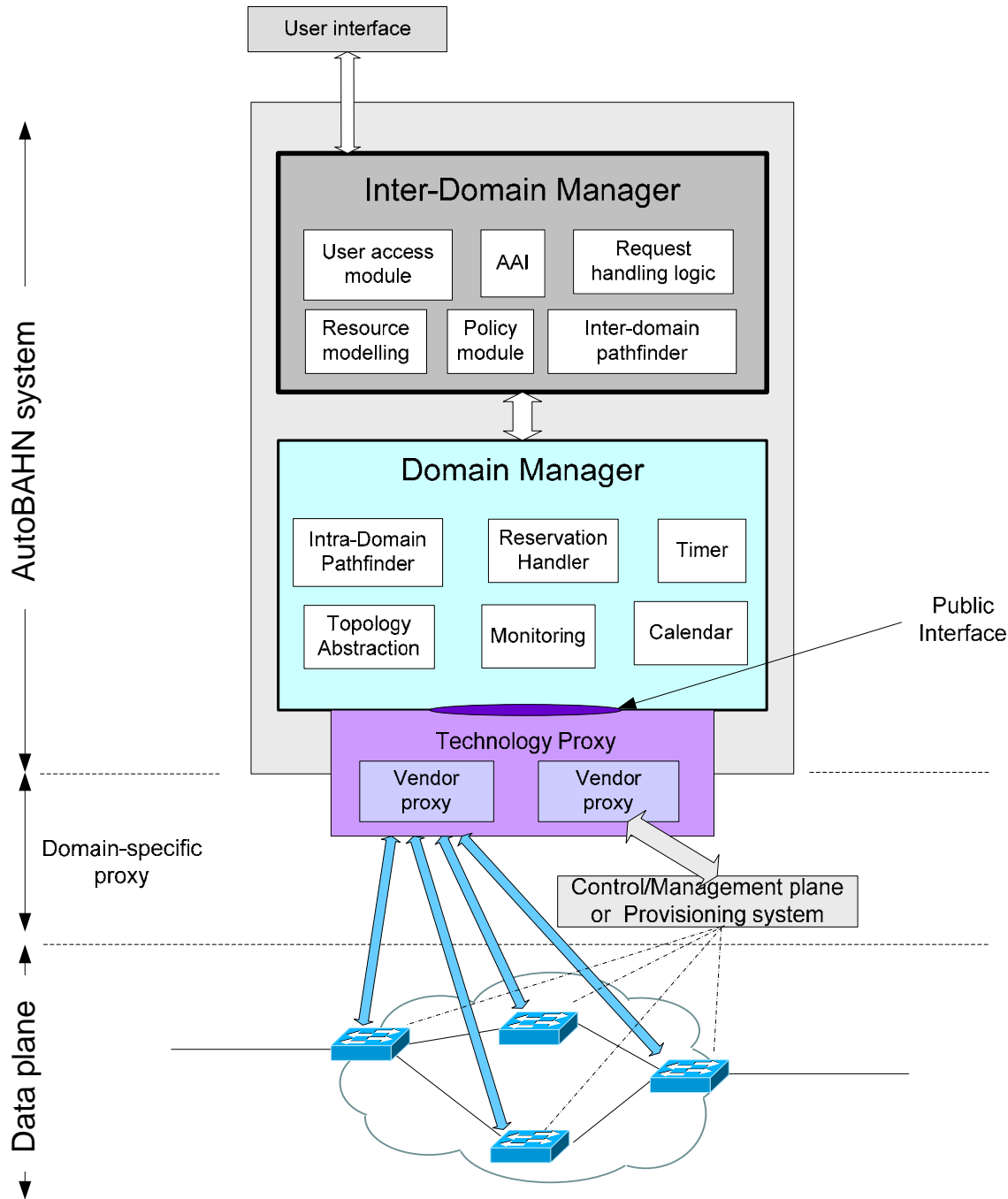
- Control and provisioning has to be distributed
- Business-layer related interactions include AA, policies, advance reservations etc.
- Privacy and control of intra-domain resources must be safeguarded



AutoBAHN architecture



- Distributed System
- Inter-Domain manager (IDM)
 - Inter-domain technology-agnostic functionality, inter-domain interfaces for peering
- Domain manager (DM)
 - Intra-domain functionality, topology information, resource availability information, signaling to the data plane
- Interfaces
- *Reference implementation including business layer and control plane functionality*



- Technology proxy between AutoBAHN and the data plane
- WS-based interface
- Vendor proxies for:
 - NEs
 - Control/Management plane
 - Provisioning system

- An advanced prototype after a series of demonstrations and trials involving user-communities/applications
- No operational experience
- No elaborate service definition
- Evolving standards
- Control plane functionality supported by NRENs-GEANT still limited

- Near future:
 - Analysis of NREN requirements' survey results
 - Operational pilot
- Longer term:
 - Integration in the multi-domain service portfolio of GÉANT
 - AutoBAHN transition to service
 - Rollout in European NRENs

AutoBAHN operational pilot



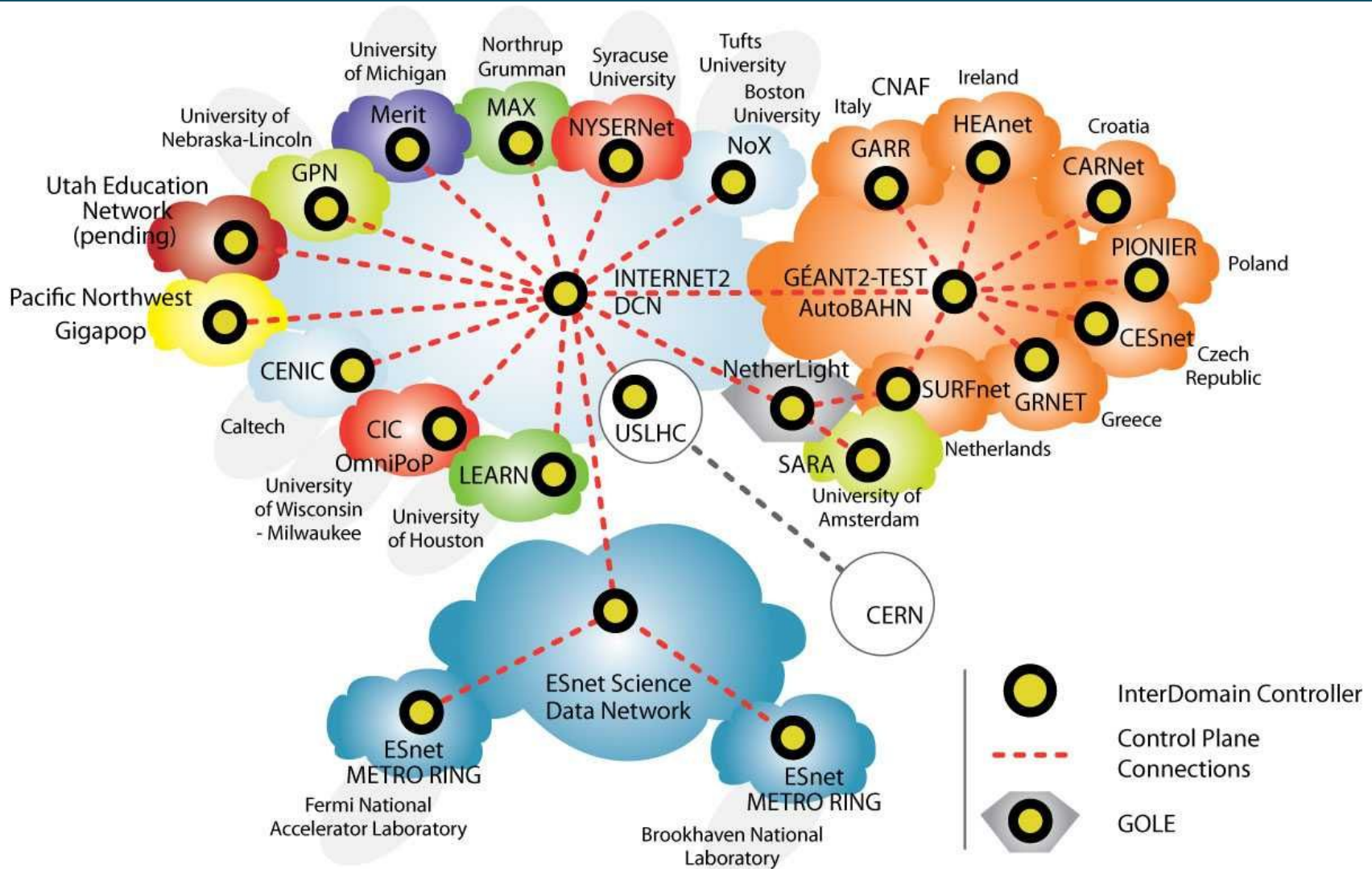
- GOAL: Address the operational transition to service gap
- PURPOSE: To assess and identify necessary operational capabilities of the NRENs and the GEANT backbone wrt introducing dynamic circuit services
- APPROACH:
 - A test of dynamic circuit services with AutoBAHN latest release as the tool
 - Focus on the operation of dynamic services work
 - *Use experienced sites or sites expressing an interest*
 - Run pilot on operational network if possible, or as a minimum, with operations people and procedures
 - *Define set up, troubleshoot and tear down use cases*
 - *Do not transition directly to service*
 - Synthesize operational & technical results for release candidate

- Dynamic circuit service definition (in progress)
- Operational pilot timeline
 - Dec-Jan '09: Prepare Pilot
 - Feb-Mar 2010: Run Pilot
 - Apr '10: Analyze Pilot
 - May-June '10: Operational Guidelines and Procedures
- Operational pilot results analyzed and fed into the dynamic circuit service definition and AutoBAHN system lifecycle
- Deployment in production environment
 - Expected 4-5 NRENs by March '11

- AutoBAHN fast track :
 - Developing user-friendly installer
 - Lookup Service deployment
 - Creating a testing platform allowing to automate functional tests across multiple domains
- AutoBAHN advancement track:
 - Dealing with a topology change
 - Achieving resiliency
 - Operational AuthN
- Integration with other GN3 service tools under the GN3 Network Management architecture and unified GN3 Service Delivery Platform
 - Integrated provisioning, monitoring, accounting, troubleshooting, security handling
 - Multidomain processes and workflows software integration – solid application stack

- Technology support
 - GMPLS technology proxy
 - Investigation of L1 data and control plane capabilities for a dynamic L1 technology proxy
- Inter-domain stitching issues
- ‘Auto-negotiation’ for inter-domain links
- Resiliency
- Lookup service
- AAI and accounting
- Last mile configuration issues & applications
- Following evolution in IETF, NSI-WG & DICE IDC

Global interoperability



AutoBAHN is IDC-compatible



- AutoBAHN implements the IDC protocol for inter-domain negotiations between different dynamic circuit provisioning systems
 - Topology exchange
 - Resource scheduling
 - Signaling
- Different implementations also from:
 - Internet2, ESnet, Nortel
 - ...

