Multi-domain Network Provisioning using GLIF/fenius interface

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SC09

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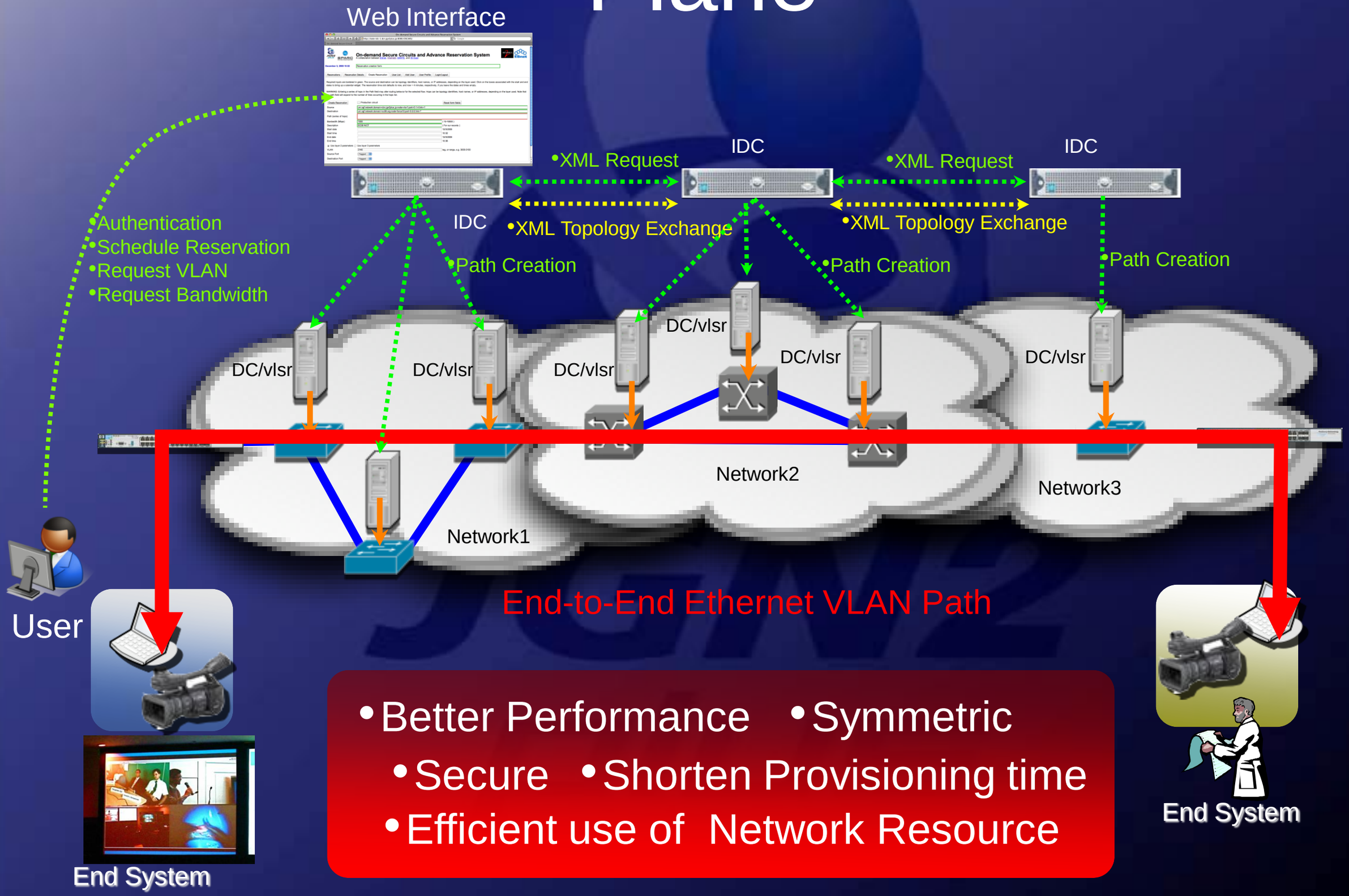
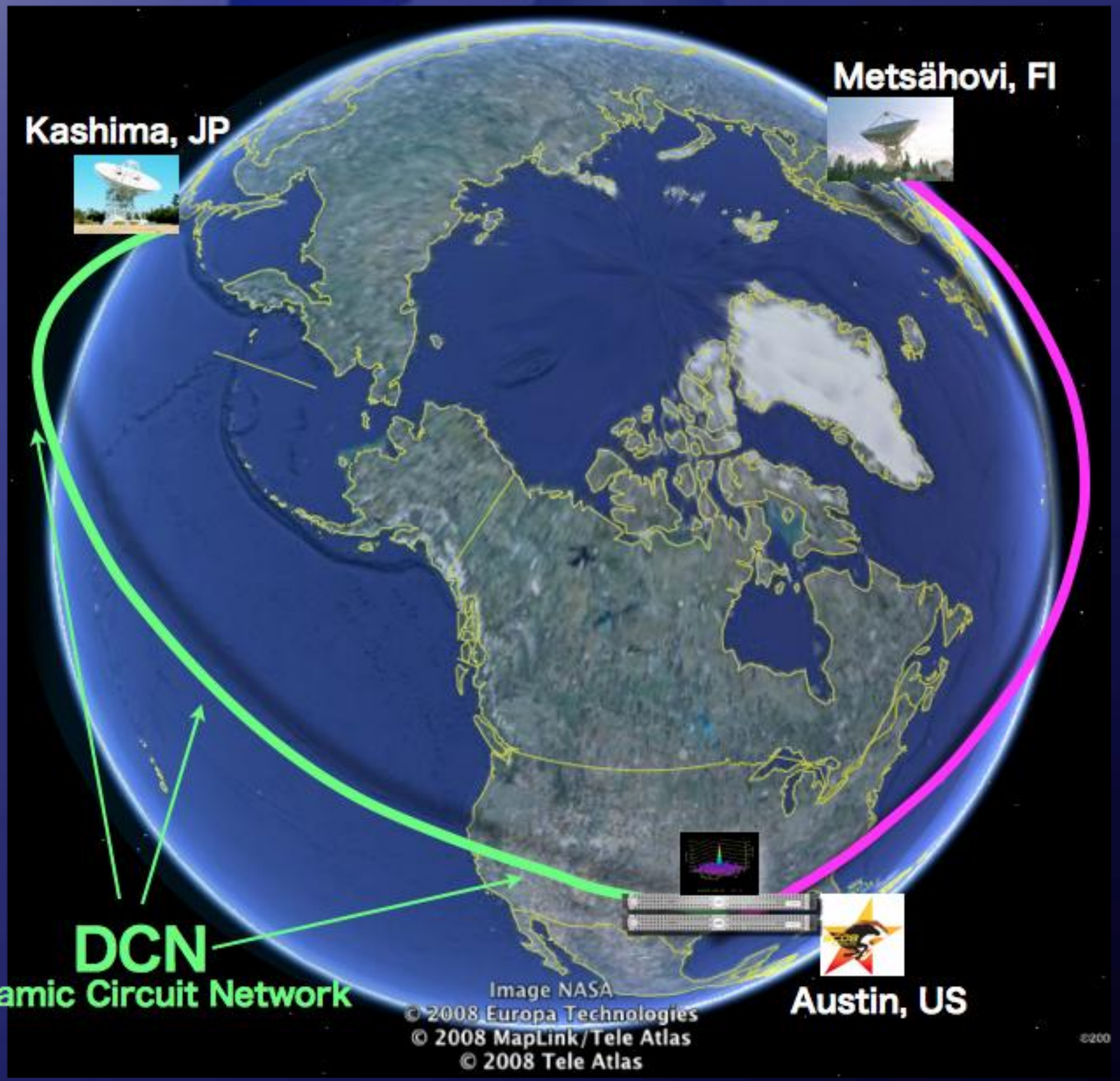
DCN Multi-domain Control Plane

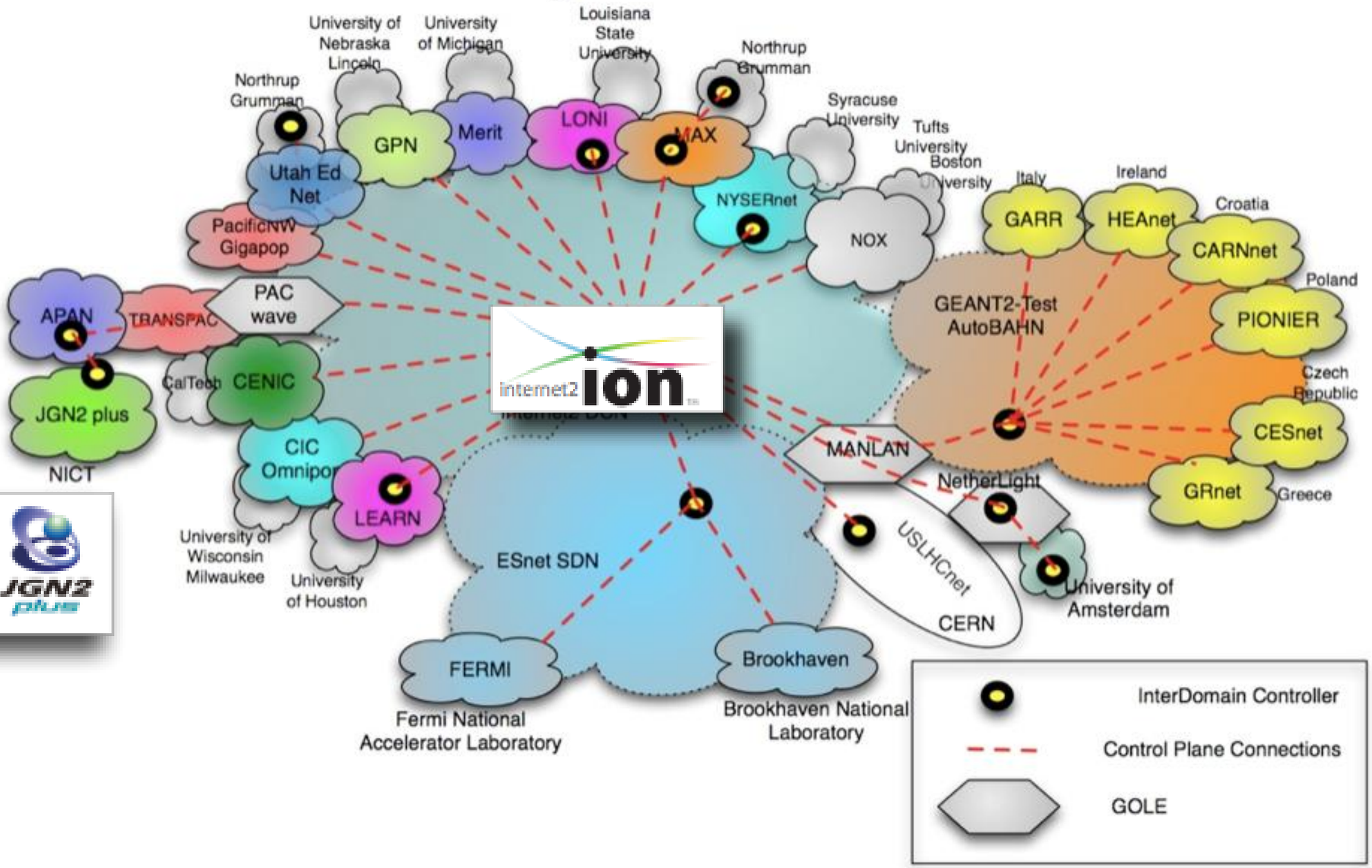


Example of DCN Utility

NICT e-VLBI Correlation over DCN at SC08

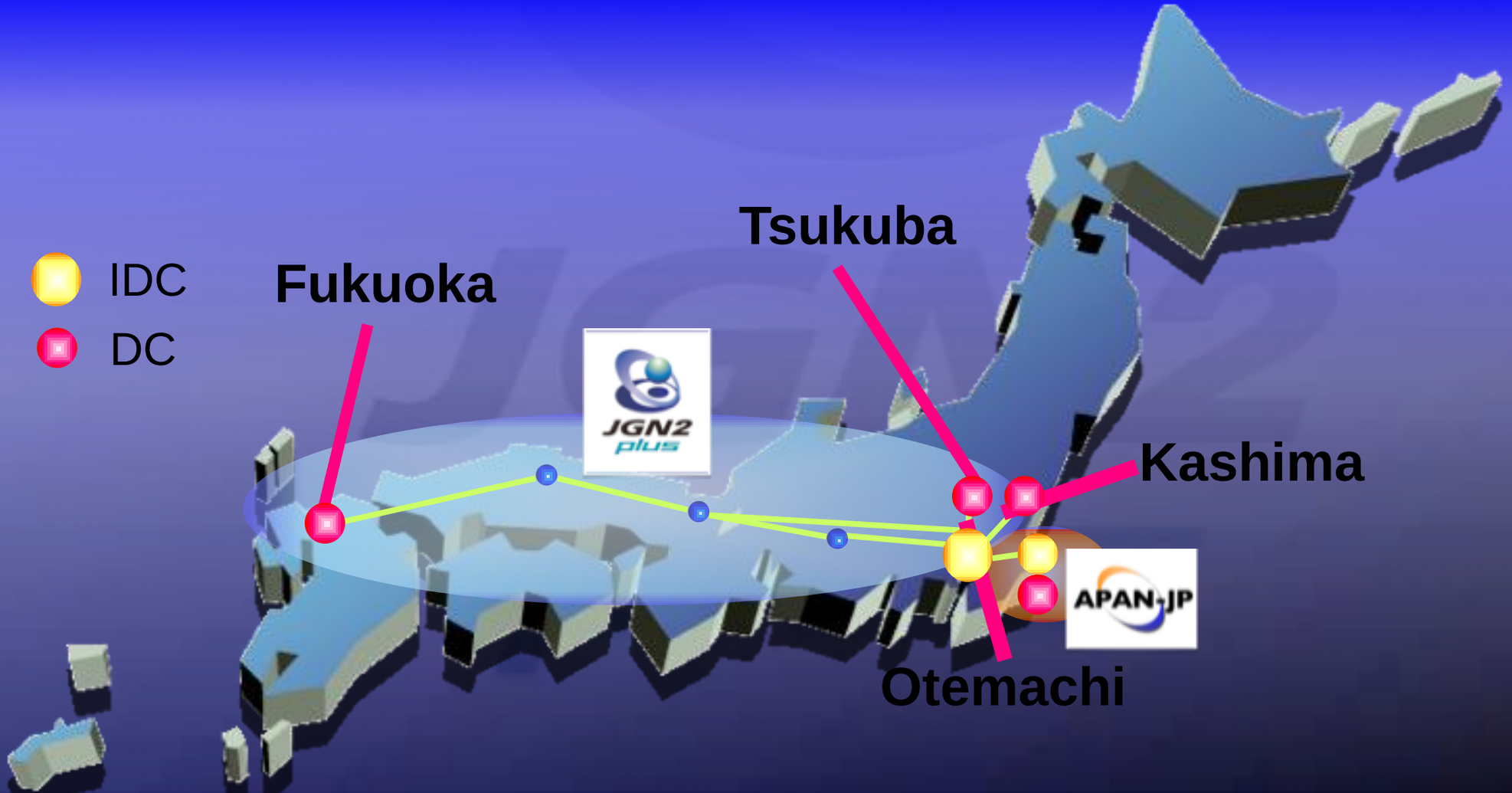


Global Dynamic Circuit Network

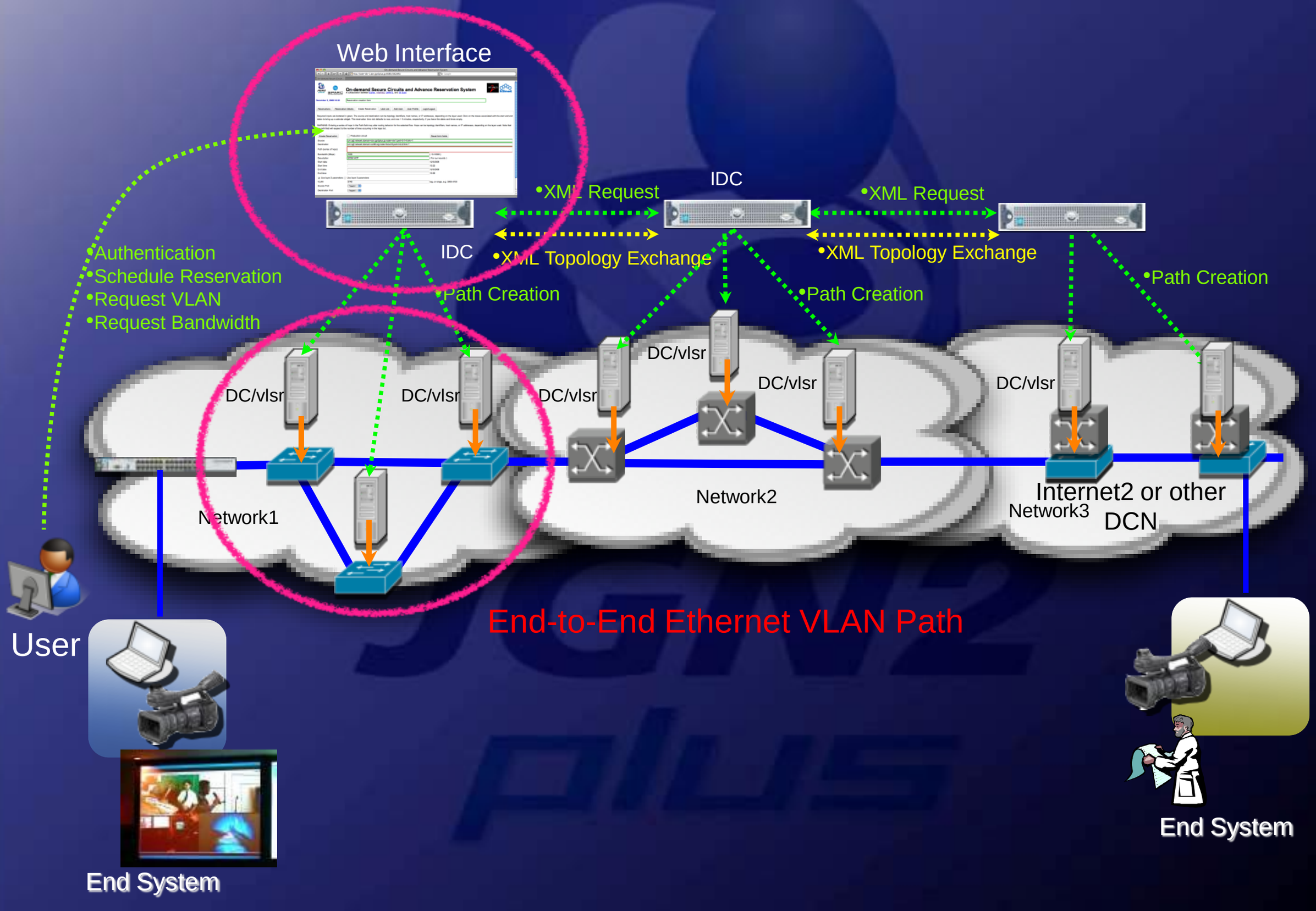


Deployment Status in Japan

- Installation of DCN systems in JGN2plus and APAN-JP
  - Linux based IDC and DCs / DCN Software Suite version 0.5.2
  - Establish control plane(dcn.jgn2plus.jp) and data plane on a nationwide
  - Connection test on multiple VLSRs in JGN2plus intra-domain
  - Connection test over inter-domain between JGN2plus and APAN-JP
  - Preparation works for the beginning of JGN2plus DCN pilot service



nstallation of Control Plane Software



Control Plane Software (1)

Domain Controller

DC(Domain Controller)

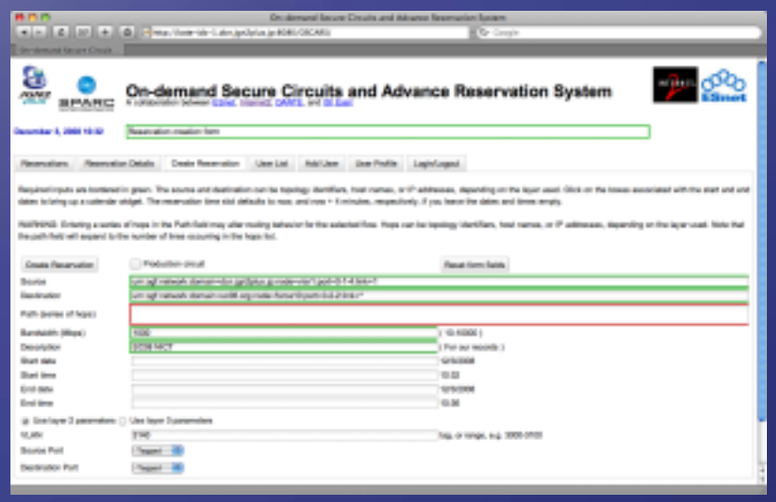
JGN2plus and APAN-JP hardware
- HP ProLiant DL360 G5
- Intel Xeon X5260 3.33GHz DualCore
- DDR2-667 2GB * 2
- SAS146GB*2 (RAID1)
- 10/100/1000 base-T * 2

- DRAGON(Dynamic Resource Allocation via Gmpls Optiacl Network)
  - Open source implementation of GMPLS maintained by MAX, USC ISI EAST, and George Mason University
  - VLSR (Virtual Label Switched Router)
    - Zebra PC based control plane software
    - Provides GMPLS protocol support for devices which do not support GMPLS
    - OSPF-TE, RSVP-TE
    - Provision the Ethernet Switch and SONET/SDH Switch
    - Switch setting method: SNMP, CLI, TL1, other script
    - Provisioning request via CLI, XML
  - System Requirements for Installation
    - DRAGON System
      - Linux BOX
      - RedHat Enterprise Base (Kernel version 2.4.2 or later)
      - Software Requirements
        - DRAGON Software package (VLSR, NARB, RCE, ASTB)
        - Dependence-package (SSH, GNU Compiles, Net-SNMP, libxml2, zlib-1.2.3)

Control Plane Software (2)

Inter-Domain Controller

IDC(Inter-domain Controller)



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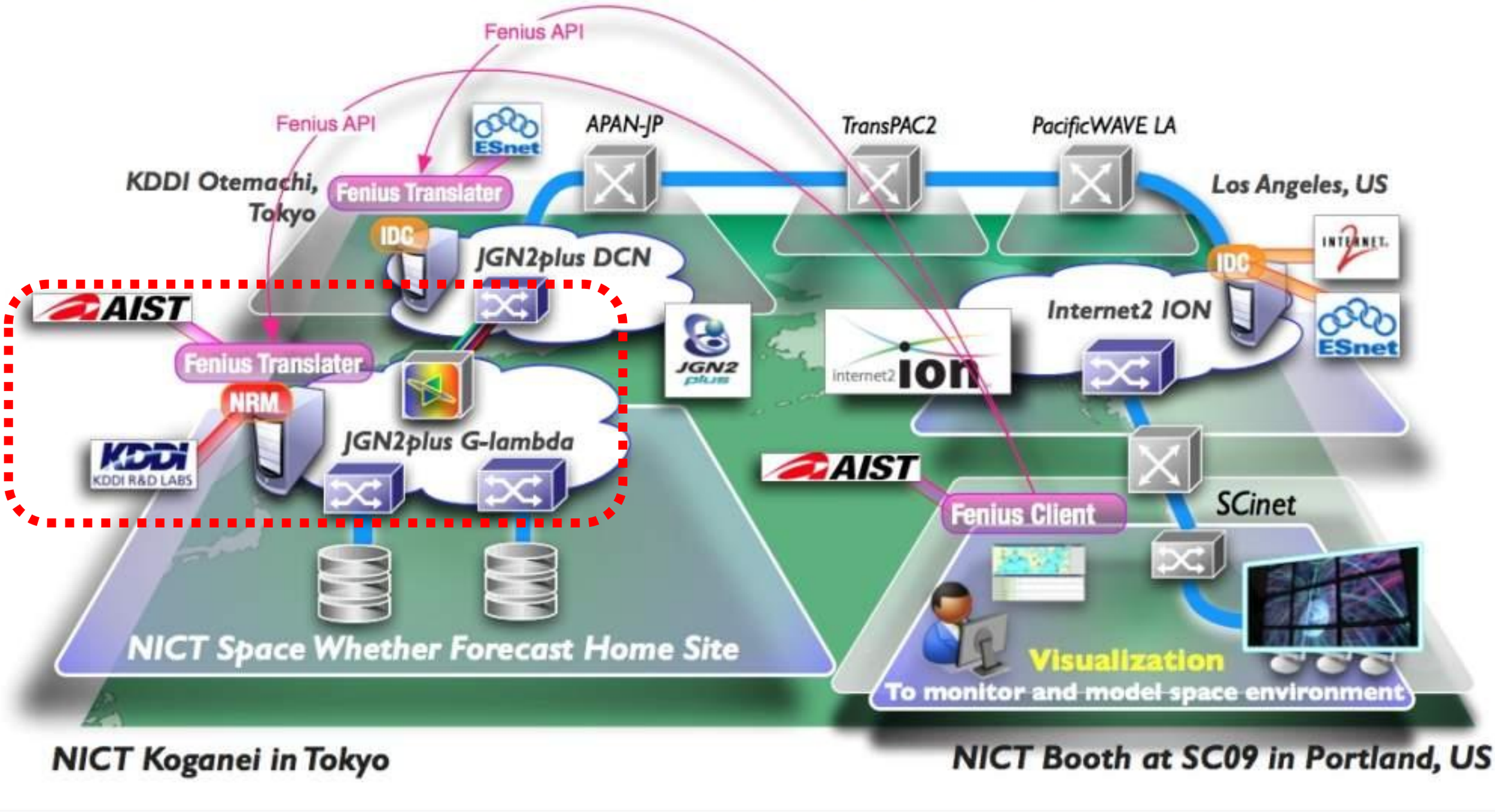
- OSCARS
  - Open source project maintained by Internet2 and ESnet
  - Accept circuit requests from users
  - Use IDC protocol which consist of web services as a messaging among Inter-domain
  - Web User Interface function for users
  - Book-ahead and manage the scheduling of circuits
  - System Requirements for Installation
    - OSCARS System
      - Linux BOX
      - RedHat Enterprise (Kernel version 2.4.2 or later)
    - OSCARS Package Software
      - Third-Party Library and Package Requirements
        - OSCARS Package Software
        - MySQL5.0 / JDK5.0 / Tomcat 5.5 / Axis2 1.4.1/ Rampart 1.4.1/ Ant 1.7
    - SMTP(sendmail) for e-mail notification of circuit activity
    - NTP source

NICT Space Weather Forecast & GLIF/Fenius Joint Demonstration at SC09

Data transfer over Global Dynamic Circuit Network



G- lambda project overview

- Joint project of NICT, AIST, KDDI R&D labs. and NTT.
- G-lambda project has been started in December 2004.
- The goal of this project is to define a standard web services interface (GNS-WSI) between Grid resource manager and network resource manager provided by network operators.

National Institute of Advanced Industrial Science and Technology
AIST

KDDI R&D LABS

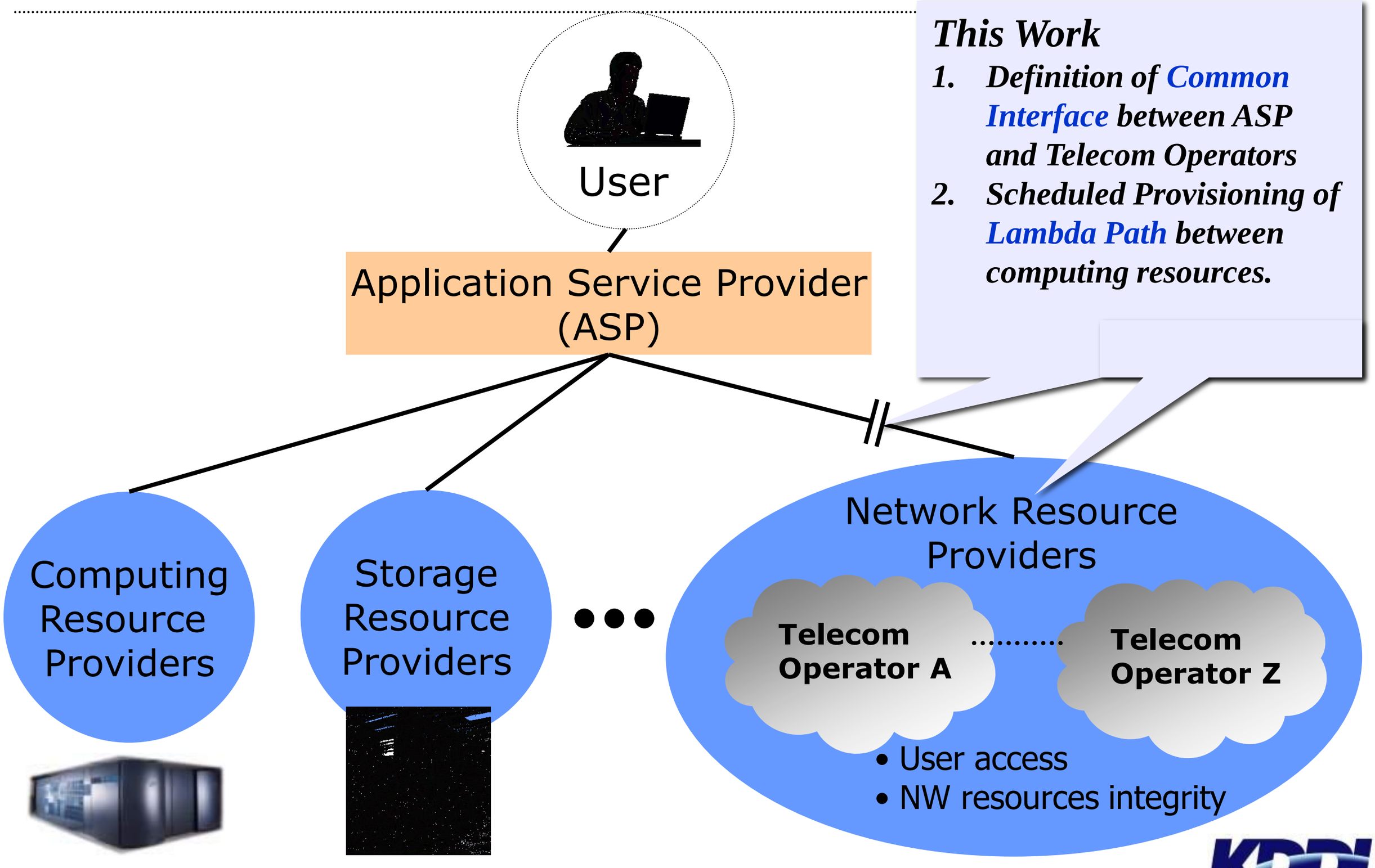
NiCT National Institute of Information and Communications Technology

JGN2 plus

NTT

KDDI R&D LABS

An Example Service Model of Commercial GRID

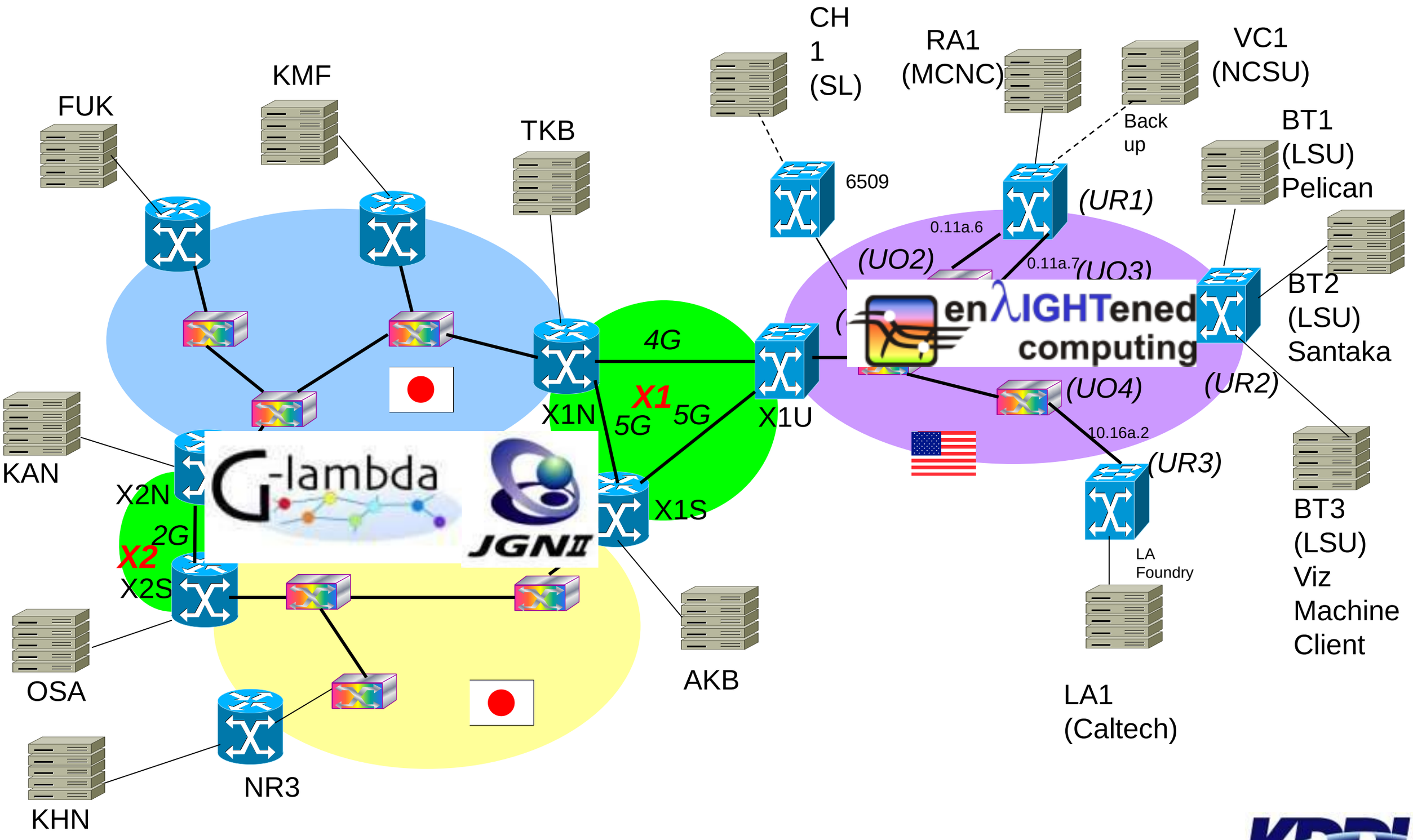


This Work

1. ***Definition of Common Interface between ASP and Telecom Operators***
2. ***Scheduled Provisioning of Lambda Path between computing resources.***

KDDI R&D LABS

Demonstration @ GLIF2006



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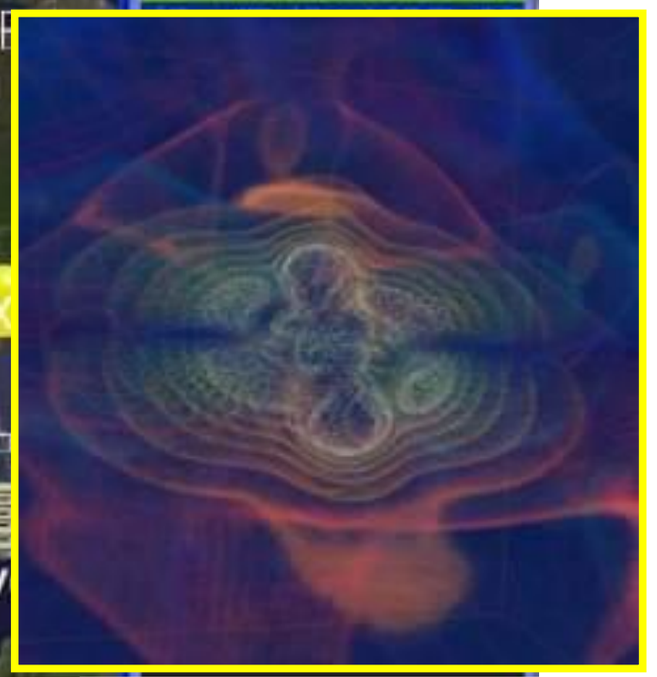
Resource Map



Simulation result

Time table (clusters)

Time table (networks)

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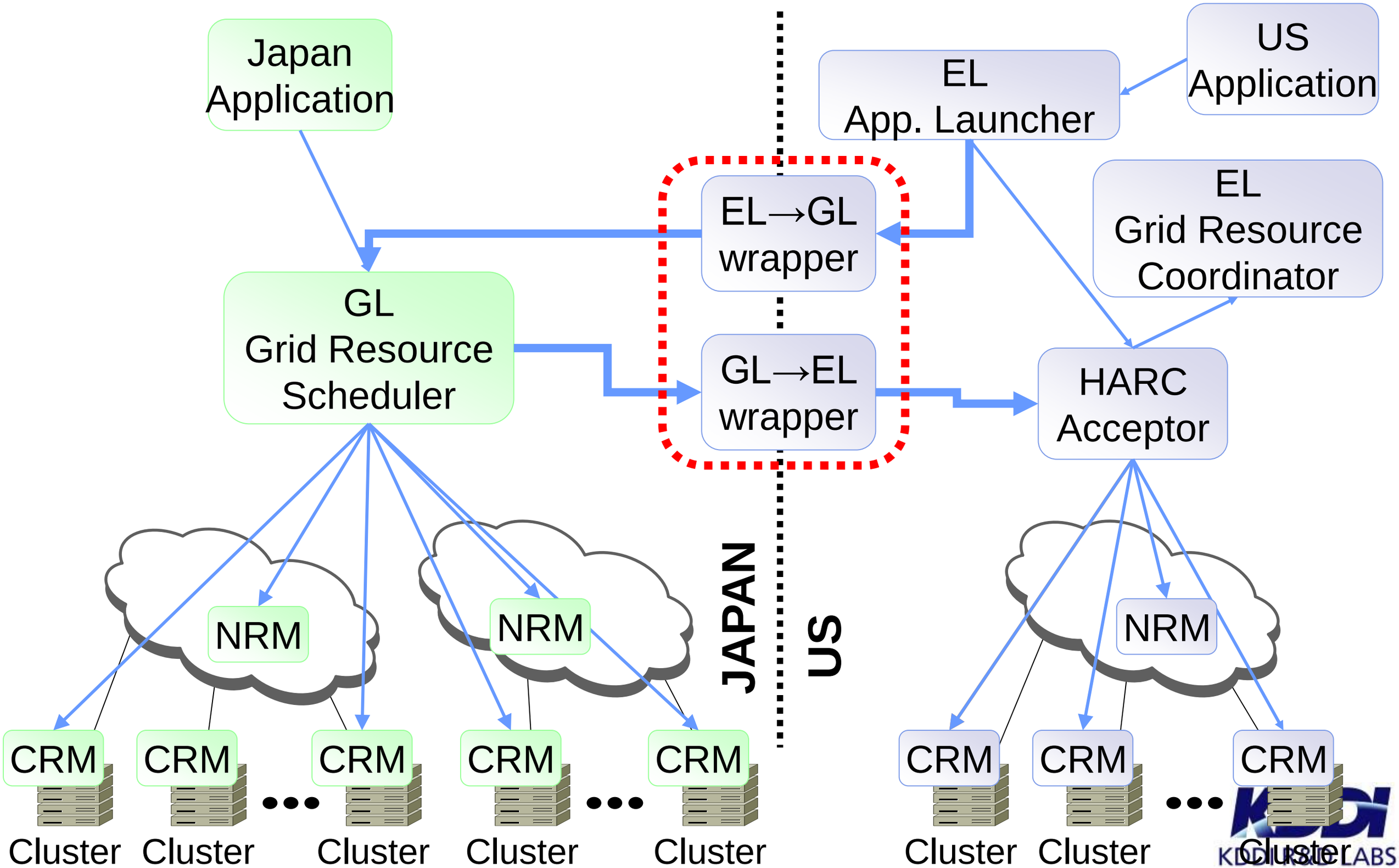
G-lambda/Enlightened middleware coordination diagram



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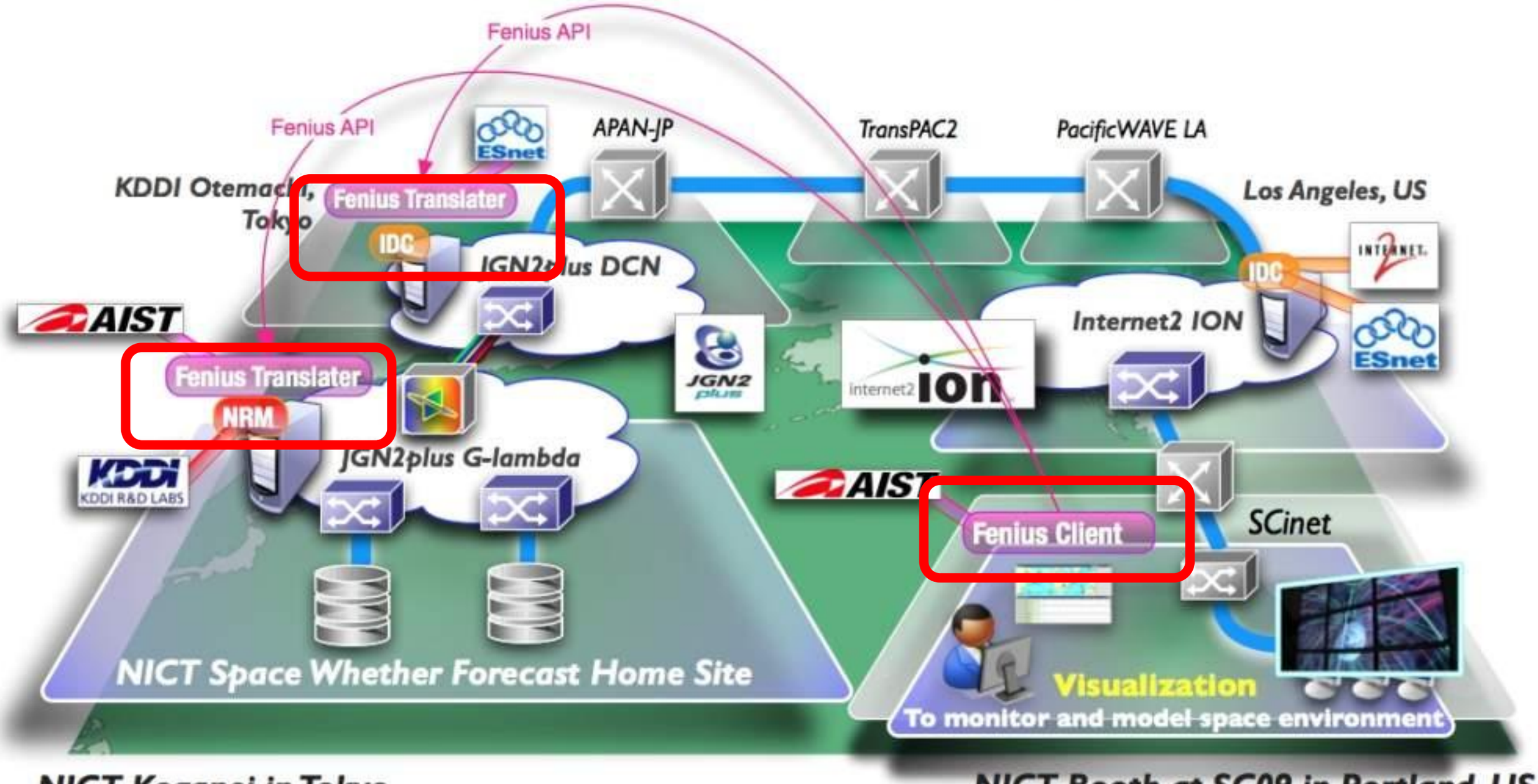
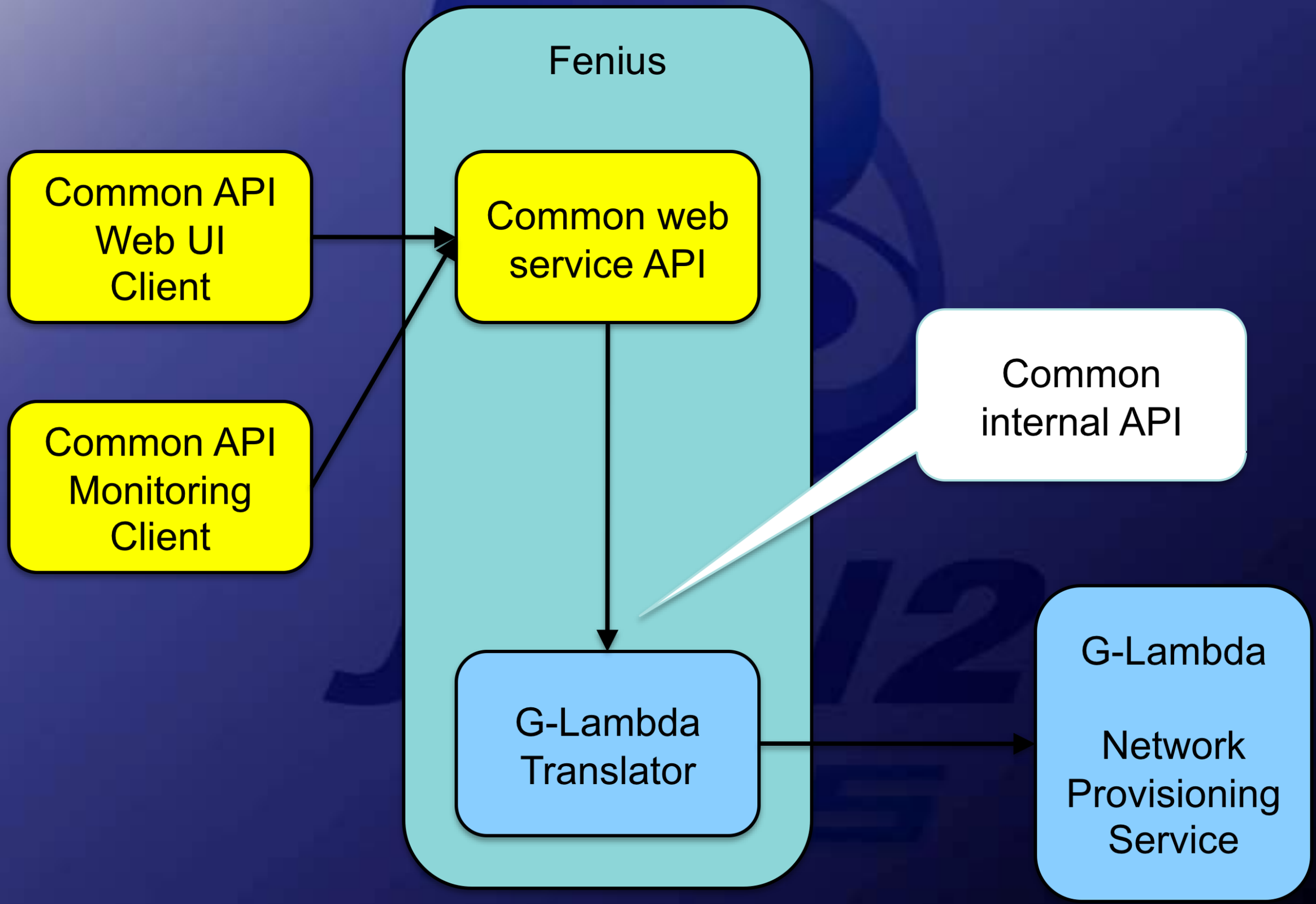
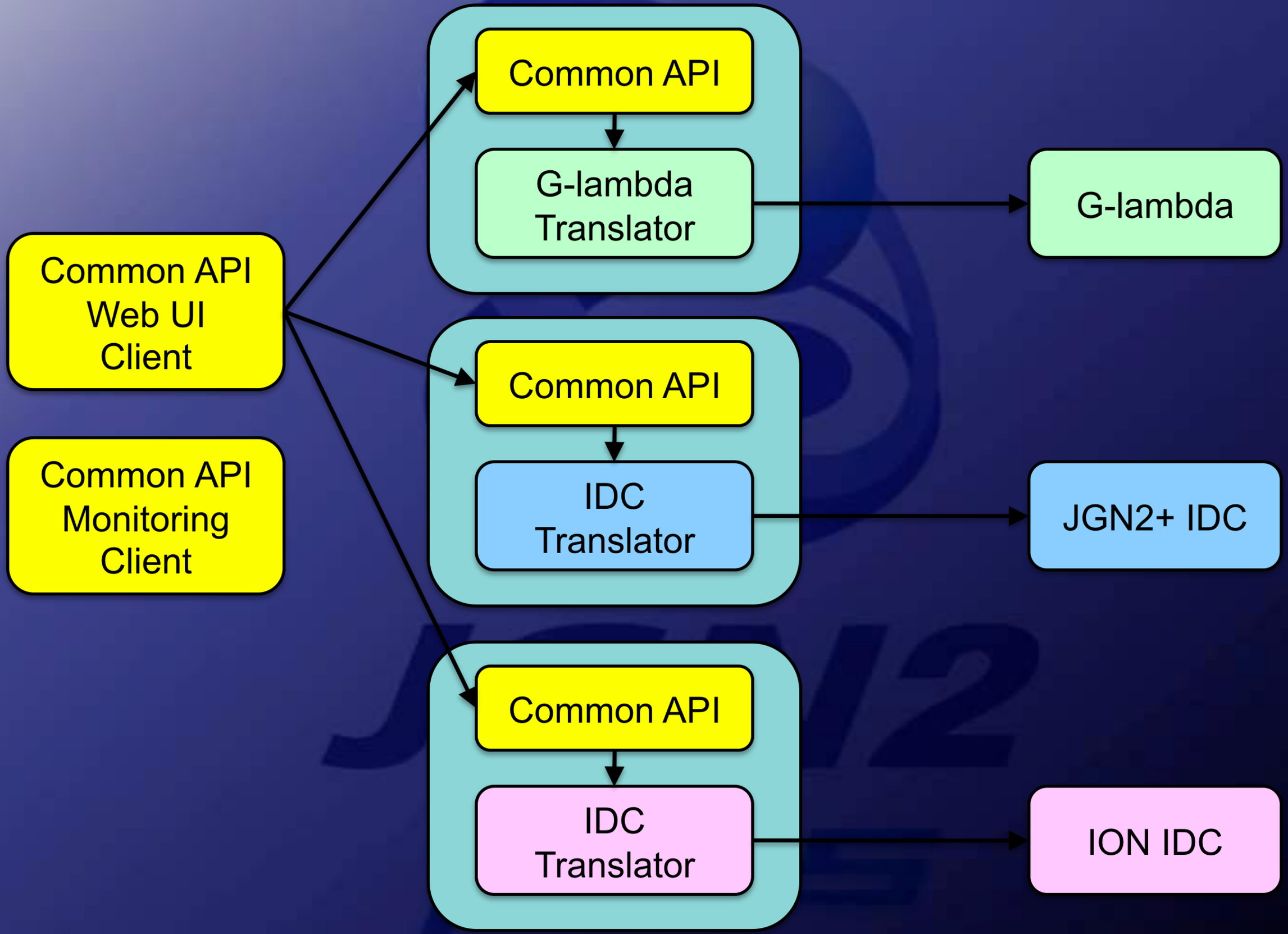


NICT Koganei in Tokyo

NICT Booth at SC09 in Portland, US


Fenius
Common API
Web UI
Client
Common API
Monitoring
Client
Common web
service API
G-Lambda
Translator
Common
internal API
G-Lambda
Network
Provisioning
Service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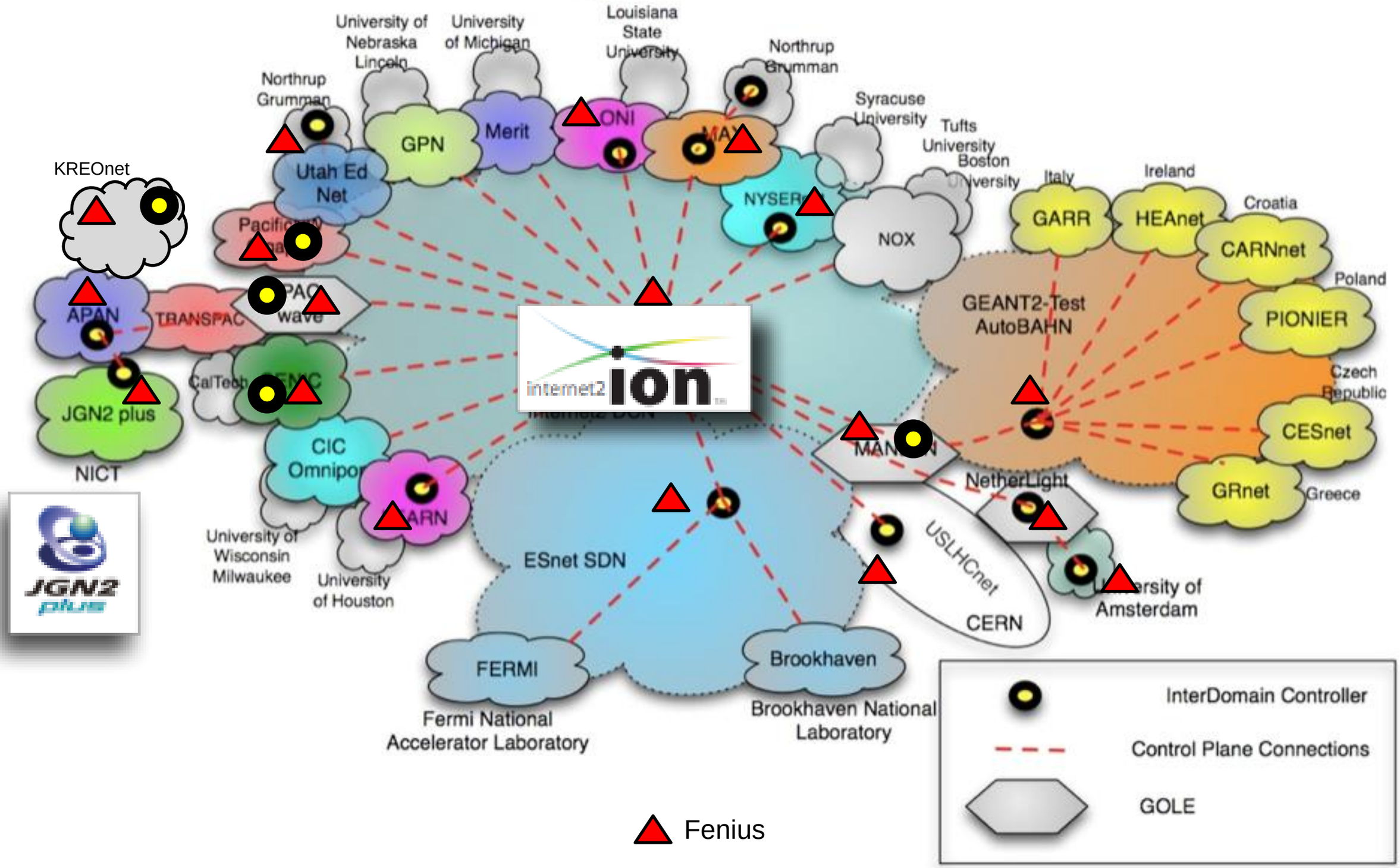
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