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Face to Face Partners Meeting
University College London
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eGee

Enabling Grids for
E-science in Europe

JRA4
Technical Overview

EGEE is proposed as a project funded by the
European Union under contract IST-2003-508833

Outline

- **JRA4 Context**
- **SA2 Overview**
- **JRA4**

JRA4 Context

- **Close relationship with SA2**
  - SA2 responsible to coordinate network activities, and therefore JRA4
  - SA2 provides SLR/SLS/SLA definitions $\rightarrow$ Input for JRA4

- **JRA4 Partners**
  - UCL
  - CNRS / UREC
  - DANTE
  - DFN
  - GARR

- **Close collaboration with DANTE's GN2 project**
  - GN2 will deploy new Network Services inside GEANT
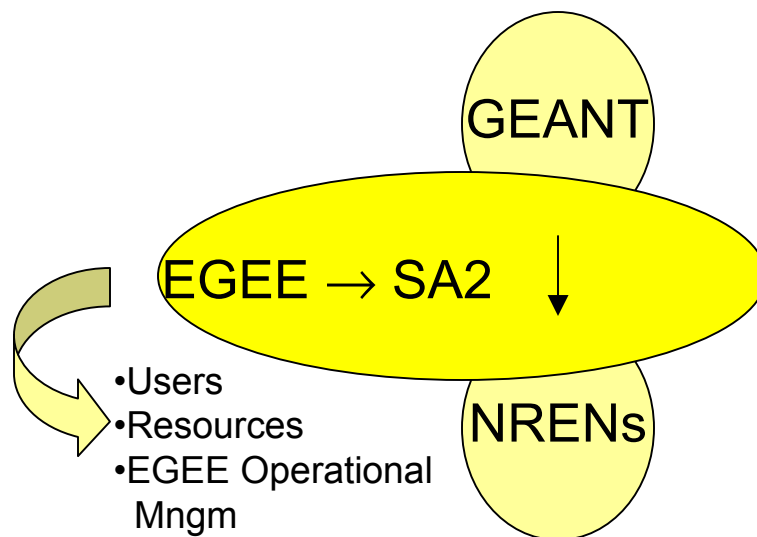 - ....like Network Bandwidth Allocation and Performance Monitoring
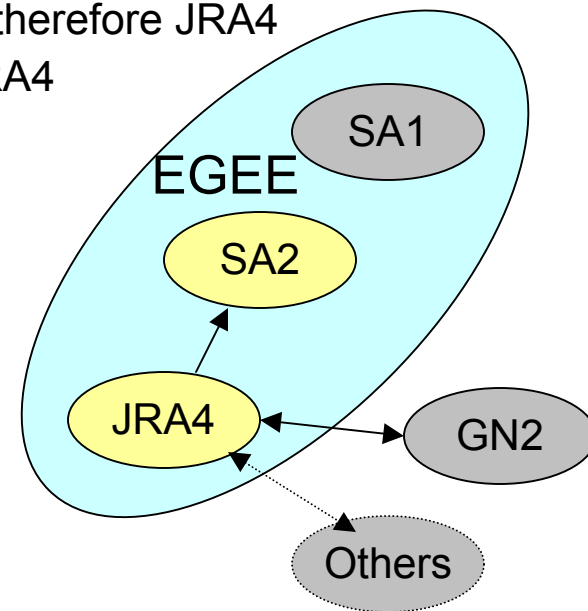
Other EU Projects in Framework 6

- **EU will approve soon other projects, candidates:**
    - GRANDE: lead by T-Systems
    - GARDEN: lead by Cisco
    - INVITED: lead by Alcatel

- **Commonalities**
    - All these projects will set up testbeds for high speed networks (10 – 40Gbps)
    - Aiming to deploy new network services to manage bandwidth
    - Letter of collaboration already sent to these projects

- **Others**
   - Internet 2 (PiPES)
    - 6NET

SA2 Overview

Ensure EGEE can access the new network services that will be provided by GN2 running on GEANT and NRENs.

GEANT

EGEE → SA2

- Users
- Resources
- EGEE Operational Mngm

NRENs

Policies defining Grid access to the Network:

- Definition of Requirements
- Specification of Services
- Monitoring Service-Level provision

Modelling Operations:

Network Operation Center ⟷ **Grid Operation Center**
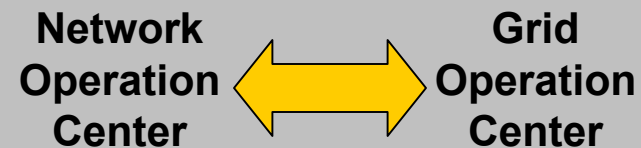
JRA4

- **Two main tasks inside JRA4:**
  - Bandwidth Allocation and Reservation
  - Network Performance Monitoring and Diagnostic tools
- **GEANT already deploying basic infrastructure:**
  - Introduction of Layer 3 differentiated services
  - Instrumentation for network measurement

JRA4 will provide interfaces between Grid middleware and Network Resources
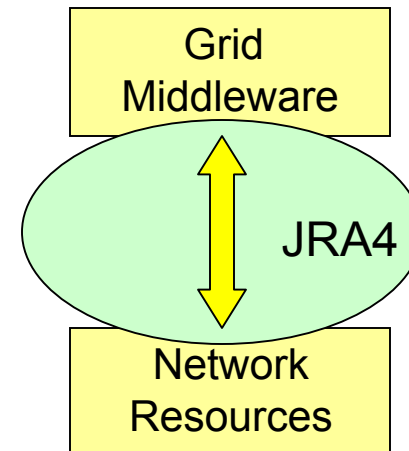
JRA4 : Bandwidth Allocation & Res.

- **Grid projects have shown Grid applications can :**
  - Generate high volume of network traffic
  - Require higher priority than current Best-Effort service

- **therefore…**

  ...new services required to control and balance the network usage between grid and non-grid applications.

- **EGEE will need to allocate network bandwidth to Grid applications immediately and in advance (reservation)**

- **Bandwidth allocation will need to happen across multiple domains and require Authorization and Authentication from the users.**

JRA4 :Network Performance Monitoring

- **Grid Performance closely linked to Network Performance**
- **Network Performance?, what for? :**
  - Problem diagnostic and rectification
  - Facilitate resources allocation
  - Performance monitoring and SLA adherence
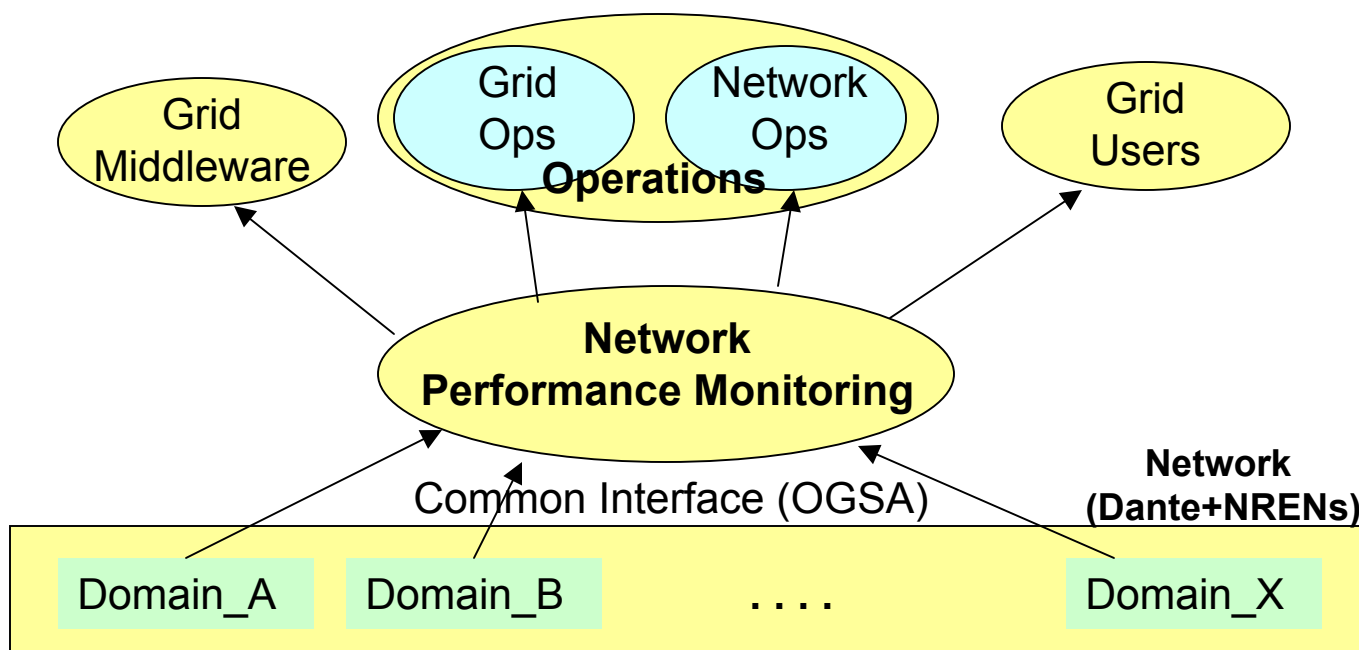
JRA4 : IPv6

Study of the advantages of using IPv6 in Grid context:

- DANTE deploying IPv6 in the same time-frame of EGEE
- IPv6 is effective if deployed in all domains

The report will cover:
- Study of features of IPv6, highlighting the ones of interest for Grids
- Availability of IPv6 in NRENs and access networks
- EGEE internal awareness of IPv6

Also:
- Collaboration with 6NET. Letter from EGEE to be sent
- Possibility of building a testbed, needs to be agreed

JRA4 : Deliverables

- Bandwidth Allocation & Reservation:

    - DJRA4.1 (M6, Sep/04): Specification of Interfaces (network control plane & global resource reservation middleware)

    - DJRA4.4 (M21, Dec/05): Implementation of pilot

    - DJRA4.6 (M24, Mar/06): Final Report

- Network Performance Monitoring & Diagnostic tools:

    - DJRA4.2 (M9, Dec/04): Definition of standardised network measurement query/response interfaces

    - DJRA4.5 (M21, Dec/05): Service to supply network perf. Information to resource brokering

    - DJRA4.7 (M24, Mar/06): Final Report

- IPv6:

    - DJRA4.3 (M18, Sep/05): Final Report

JRA4 : Relation with other JRAs

JRA1 : Middleware Engineering and Integration:

- JRA4 is closely related to this activity since the "bandwidth allocation and reservation" function
- JRA4 caters for the network-specific aspects
- "Network Cost Function", JRA1 or JRA4 needs to continue

JRA2: Quality Assurance:

- JRA4 will follow recommendations and processes from JRA2 to keep high quality products

JRA3: Security

- JRA4 need make use of AAA inside of activities
- IPv6 and security issues
- Use of Firewalls