Enabling Grids for E-science in Europe

www.eu-egee.org

JRA4-F2F

CERN
14/15 OCt 2004

Pete playing devils advocate

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

Critique of Subactivity: NPM

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- What are we trying to achieve ?
  - See TA high level description

Critique of Subactivity: NPM

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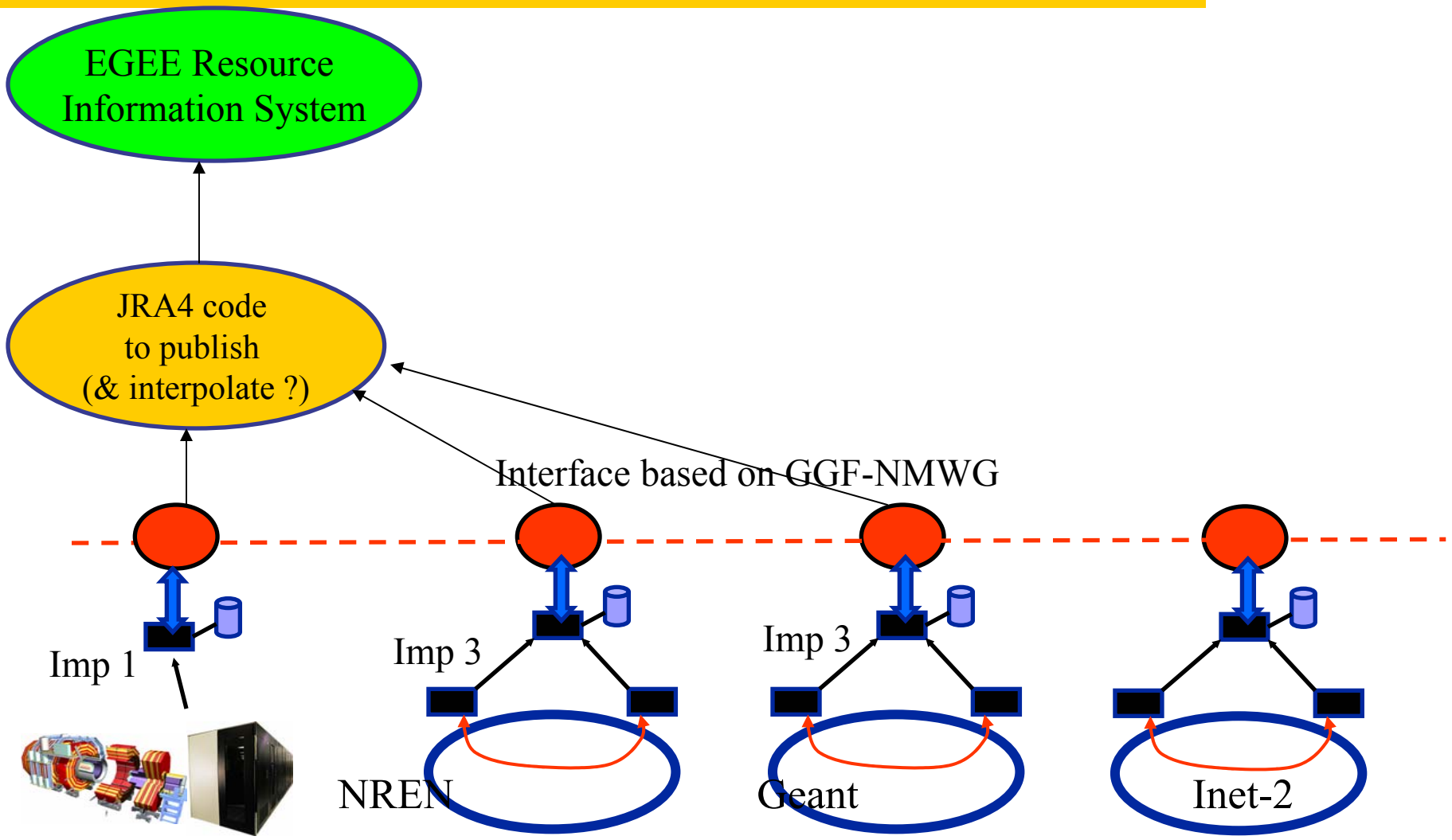
- What is it primarily about
  - Standardising meaning of NP information
  - Deploying standardised access to NP information for a range of consumers
  - First opportunity for coherent scheme including EGEE sites and GNs domains
  - Recasting existing work into web services framework
  - Getting agreement form all sites and domains to deploy a standard framework (regardless of its initial content)
  - Developing diagnostic tools for GOC and ROC
  - Making the information useful to Higher Layer Middleware (HLM) in EGEE
- What is it NOT about
  - Developing yet another implementation with no context (enough of these exist: WP7, IEPM, Pipes, GridMon, Perfmonit, MonaLisa). These are all potential backends/frontends.
  - Deploying an arbitrary implementation at EGEE and other sites (we could have just used WP7 for this).
  - Monitoring tool development (IPerf, Ping….) (this is secondary)
  - Worrying unduly about what measurements mean (at least in first instance)

Strawman architecture (not rpoperly designed yet)



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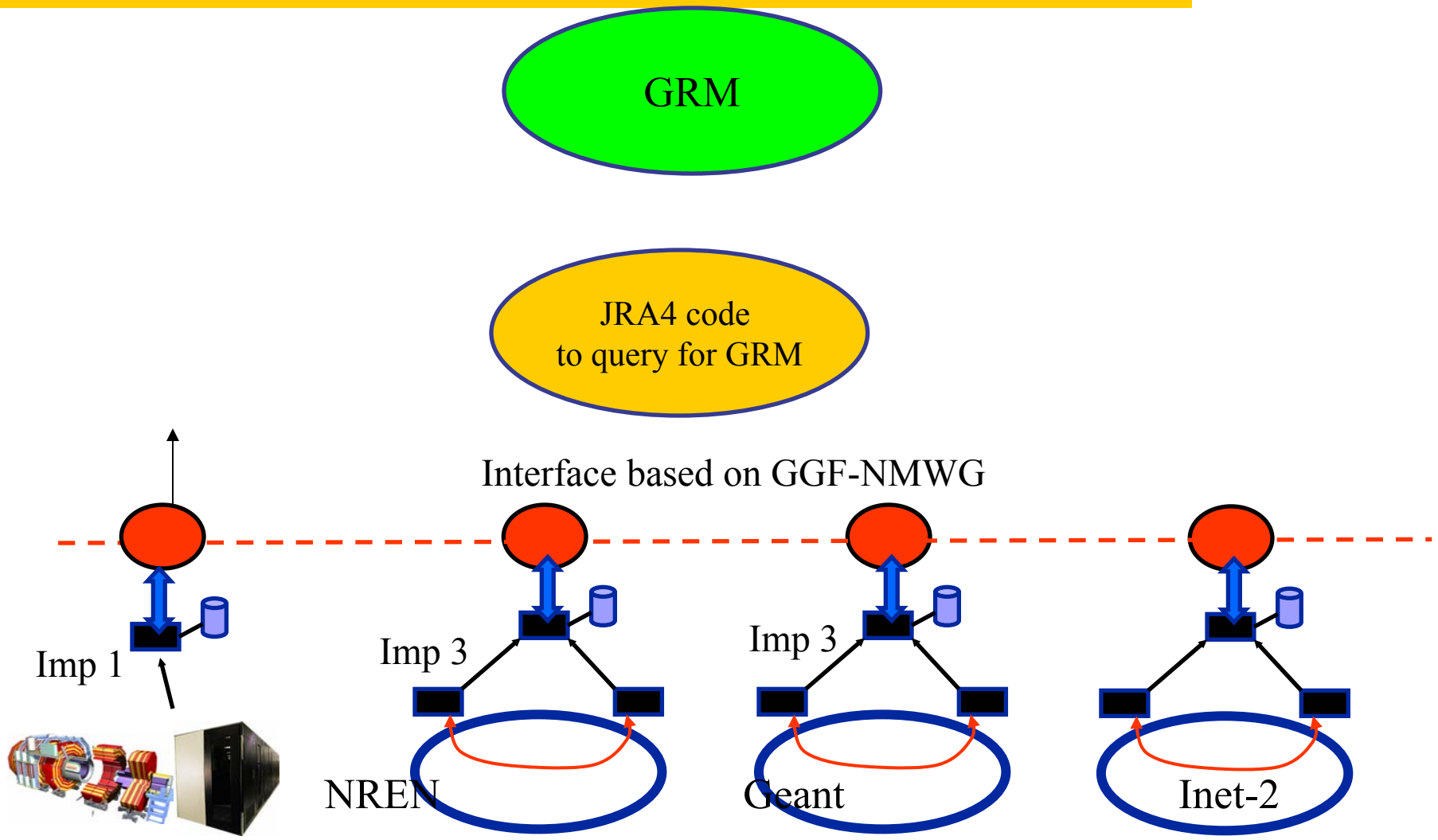

Strawman architecture (not rpoperly designed yet)

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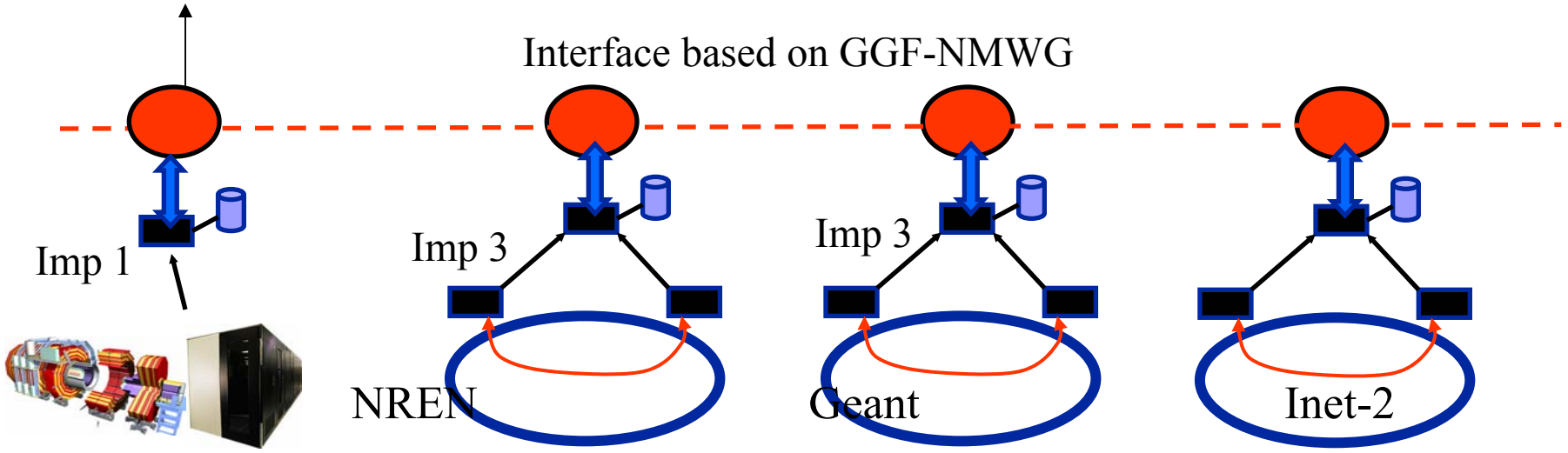
Diagnostic Services for GOCs

JRA4 code For network diagnostics



Where might existing work fit in this ?

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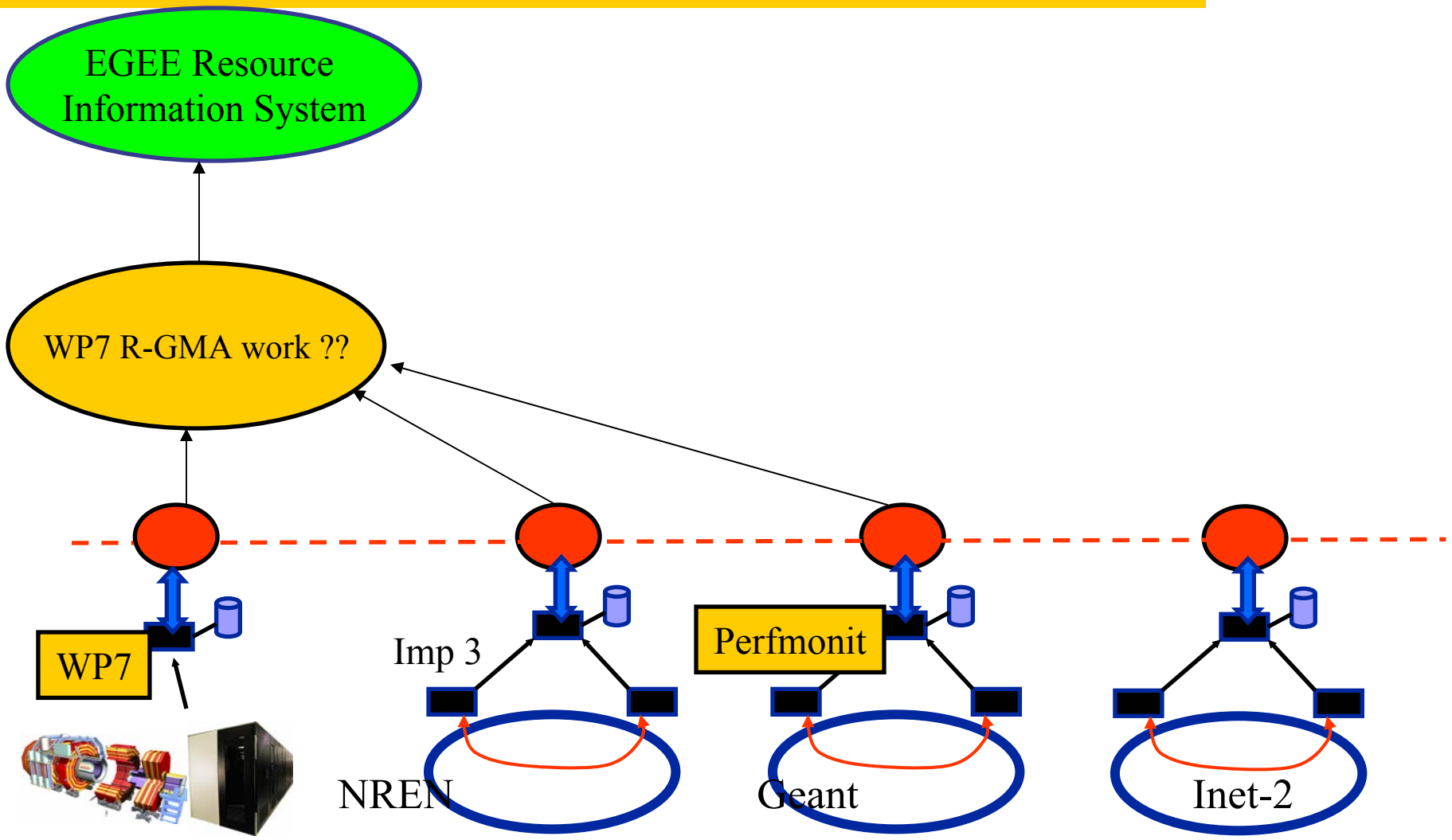

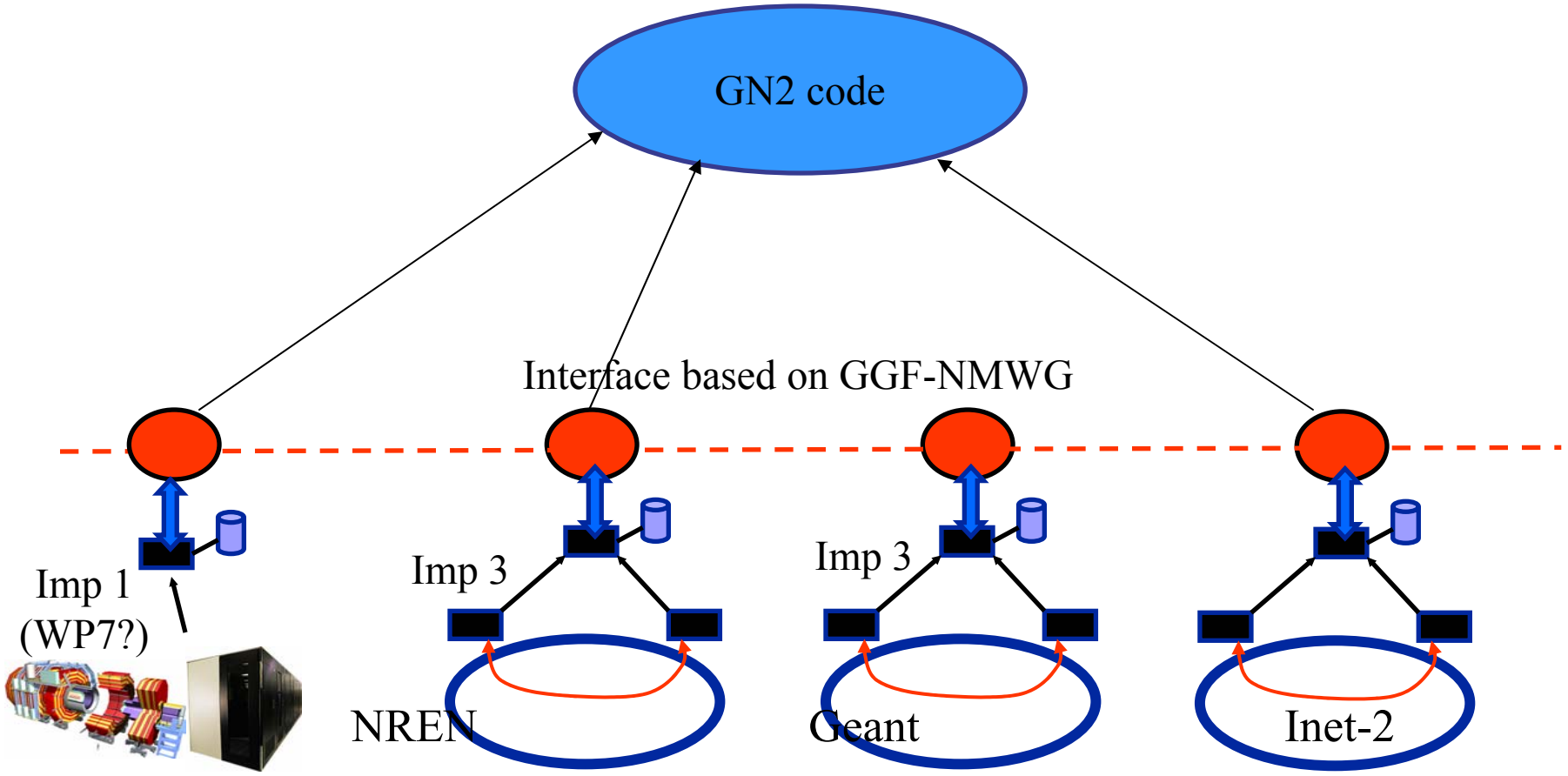
GN2 code
Interface based on GGF-NMWG
Imp 1
(WP7?)
Imp 3
Imp 3
NREN
Geant
Inet-2

Critique of Subactivity: NPM

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- How to plan
  - Develop a project plan based upon what we need to achieve by when
  - Look at bigger picture than simply the " titles of the deliverables"
  - Realise this is first opportunity for coherent scheme including EGEE sites and GNs domains, and just getting a basic framework deployed will be a major achievement. Getting the content perfect is a secondary goal.
  - Re assign effort to achieve (i) consolidation i.e. no 0.5 PM here and there (ii) use strengths
  - Put in place a much more formal project mangement structure so that every one knows what they are meant to do
- Milestones and deliverables
  - Merely a punctuation of project plan – not a definitive receipe for success
  - These DO NOT define a complete project plan.
- Current WBS
  - Only a first iteration
  - Fine up to PM6 in most places (requirements, surveys)
  - Inadequate in terms of getting a framework deployed in a timely fashion
    - Not enough understanding of time needed to get first iteration of architecture & interfaces defined
    - No explicit planning for a long and resource intensive software development cycle to get prototype framework on ground by PM9 (this is a fault of the TA)

Critique of Subactivity: NPM

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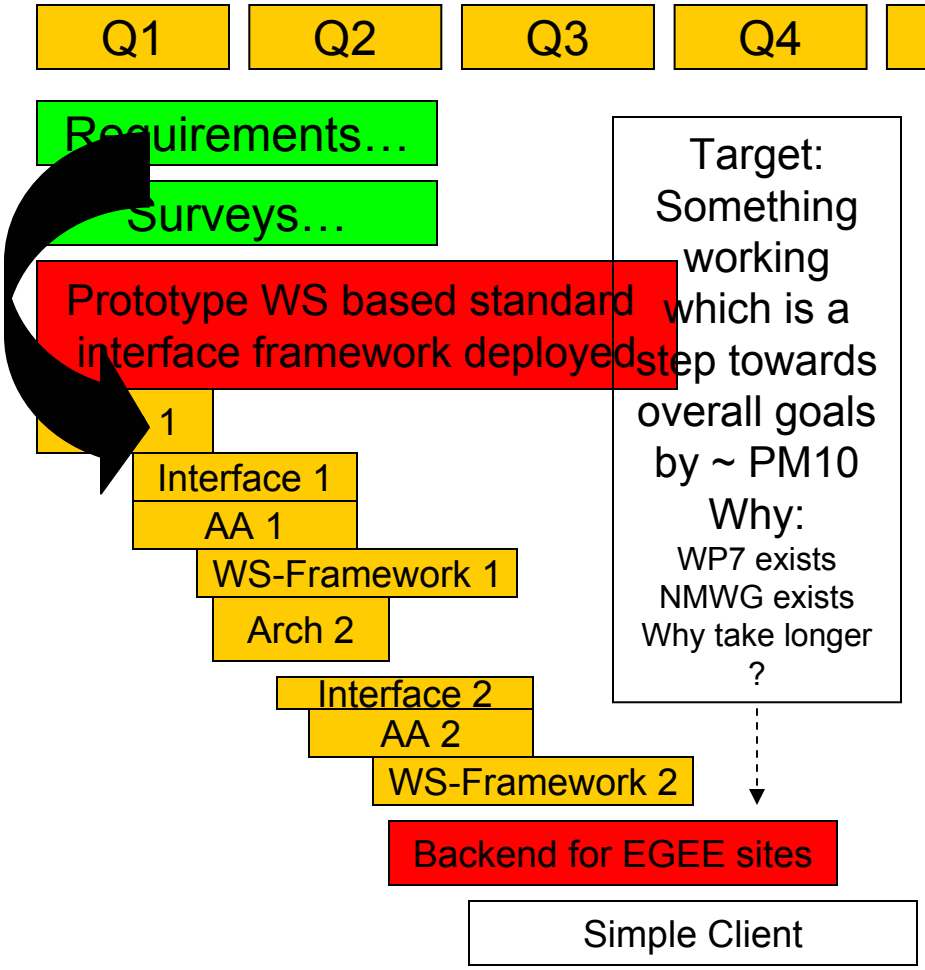
- Key omissions in WBS
  - Understanding that prototype work is needed to define interfaces
    - You don't just write them down and assume they work
  - Understanding that web services framework development is needed for any of this to mean anything, and that this needs
    - a proper canonical software development approach,
    - a long lead time
    - This has nothing to do with measurement implementation, which is a back end to the framework
    - Should have started much earlier
  - Understanding that defining an AA solution requires serious effort

In my opinion



Performance Monitoring

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Project Month	Deliverable or Milestone	Item
M6	**Milestone** MJRA4.1	Requirements and use cases for monitoring and diagnostics tools for users, middleware and operations.
M6	**Milestone** MJRA4.2	Definition of initial network performance metrics and composite measurements required.
M9	**Deliverable** DJRA4.2	Definition of standardised network measurement query/response interfaces, with adequate authorization.
M12	**Milestone** MJRA4.3	Prototype tool to access network performance metrics from a limited set of measurement points.
M18	**Milestone** MJRA4.6	Specification high-level monitoring and diagnostics tools. Revision of network performance metrics.
M21	**Deliverable** DJRA4.5	Service to supply network performance information to resource brokering middleware.
M24	**Deliverable** DJRA4.7	Report on network monitoring within EGEE.

Bandwidth on Demand

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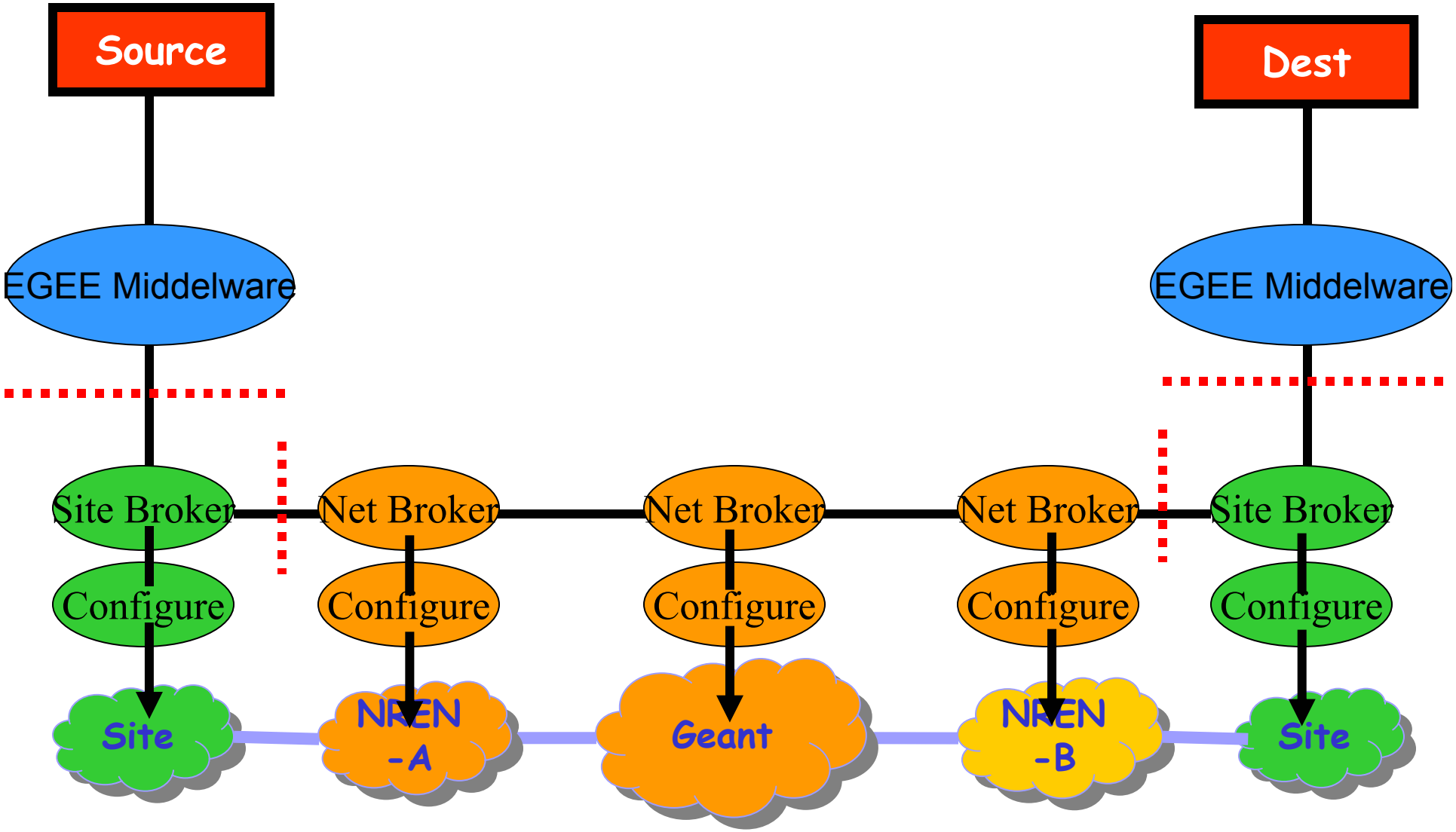
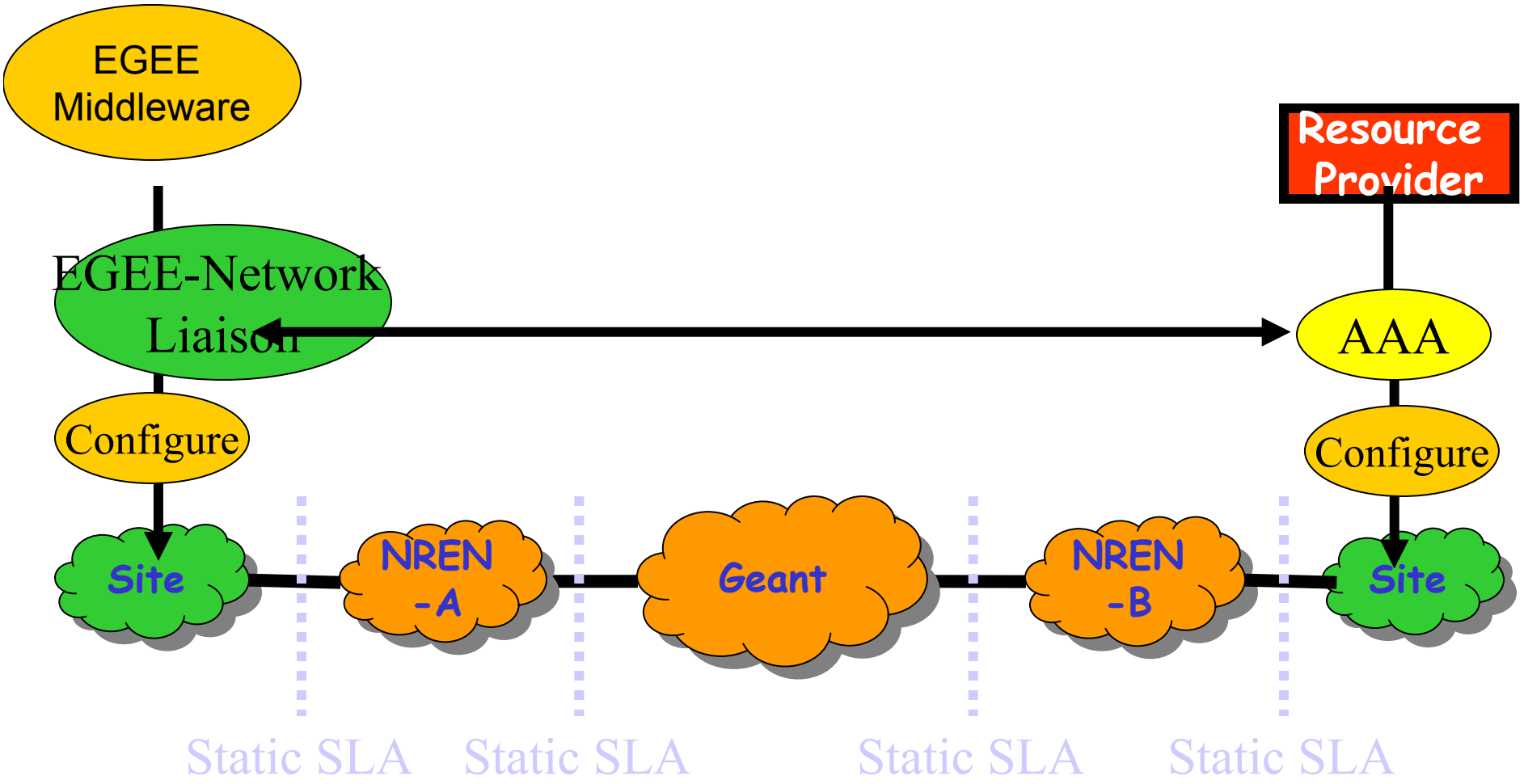
Project Month	Deliverable or Milestone	Item
M6	**Deliverable** DJRA4.1	Specification of interfaces I) to network control plane, II) to global resource reservation middleware for bandwidth allocation and reservation.
M15	**Milestone** MJRA4.4	Prototype Implementation of bandwidth allocation and reservation service at specific network ingress points using static network configuration.
M15	**Milestone** MJRA4.5	Specification of end-to-end bandwidth reservation system.
M18	**Milestone** MJRA4.7	Dynamic re-configuration of key ingress points in response to reservations.
M21	**Deliverable** DJRA4.4	Implementation of pilot single-domain bandwidth allocation and reservation service in the network core (GEANT and NRENs).
M24	**Deliverable** DJRA4.6	Report on bandwidth allocation and reservation in EGEE.

Network Resource Allocation and Reservation





[Note: For example, GRS project of S.Bhatti, UCL]

IPv6

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Project Month	Deliverable or Milestone	Item
M18	**Deliverable** DJRA4.3	Report on implications of IPv6 usage for the EGEE Grid.

JRA4 IPv6 Policy Statement

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- EGEE agreed with 6NET at the time of the original proposal to work with 6NET to
  - promote IPv6,
  - make EGEE software developers aware of IPv6 coding practice,
  - investigate the possibility of trying some EGEE code on a limited IPv6 testbed

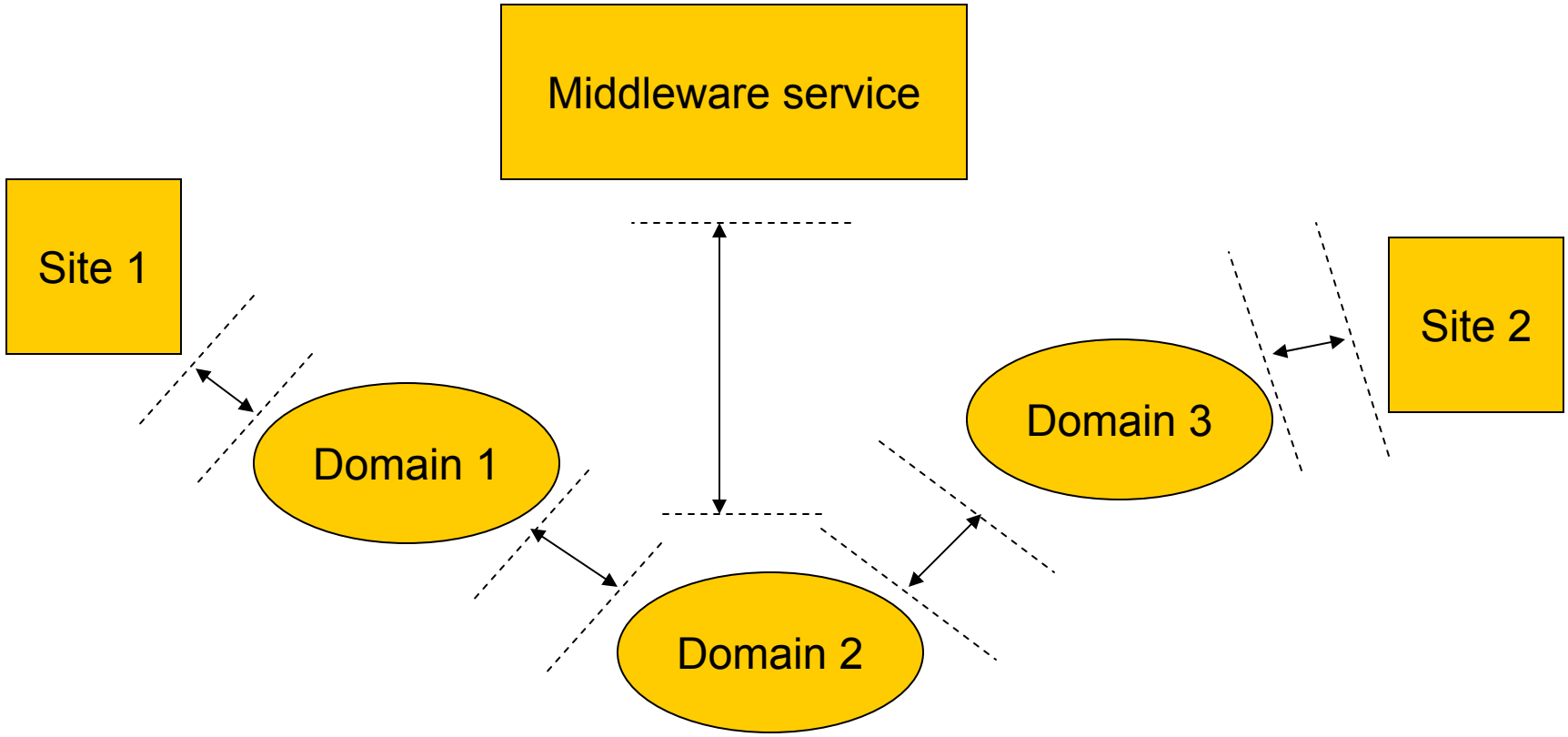
- This agreement is codified in the relevant deliverable DJRA4.3

- This has not been critical path in comparison to initial requirements gathering deliverables an milestones, and hence it was natural and timely to leave this until after PM6

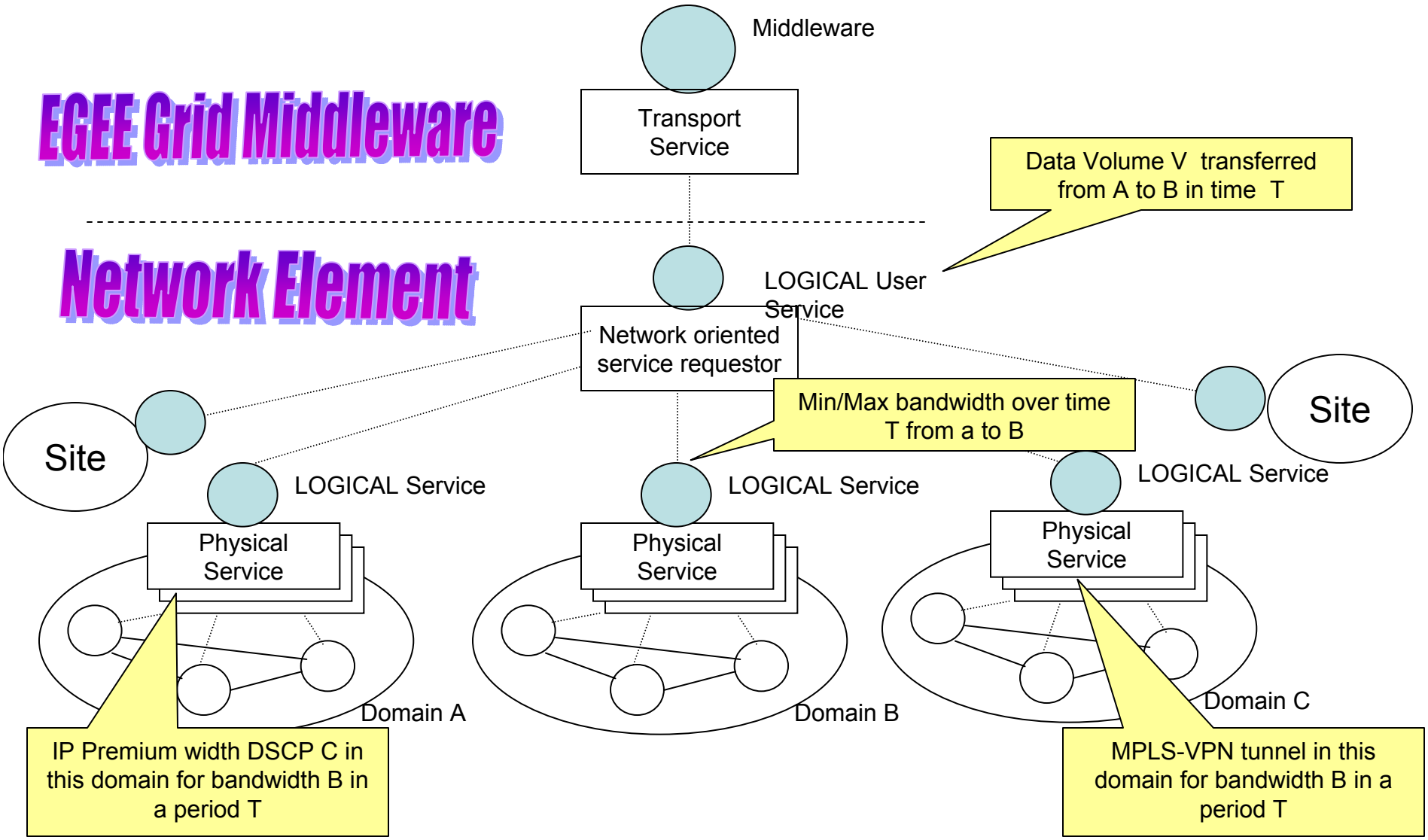
- JRA4 has now started on this. We have
  - held a preliminary meeting with Piers O'Hanlon from 6NET
  - spoken at high level with senior 6NET personnel (Kirstein, Butler) to re-affirm intentions

- We remain as committed as ever to work with 6NET, and our intentions are to
  - hold sessions on IPv6 awareness raising (NeSC training)
  - promote good practice for writing code independent of IPv4/6 (NeSC training
  - Investigate whether some joint IPv6 testbed work is feasible.

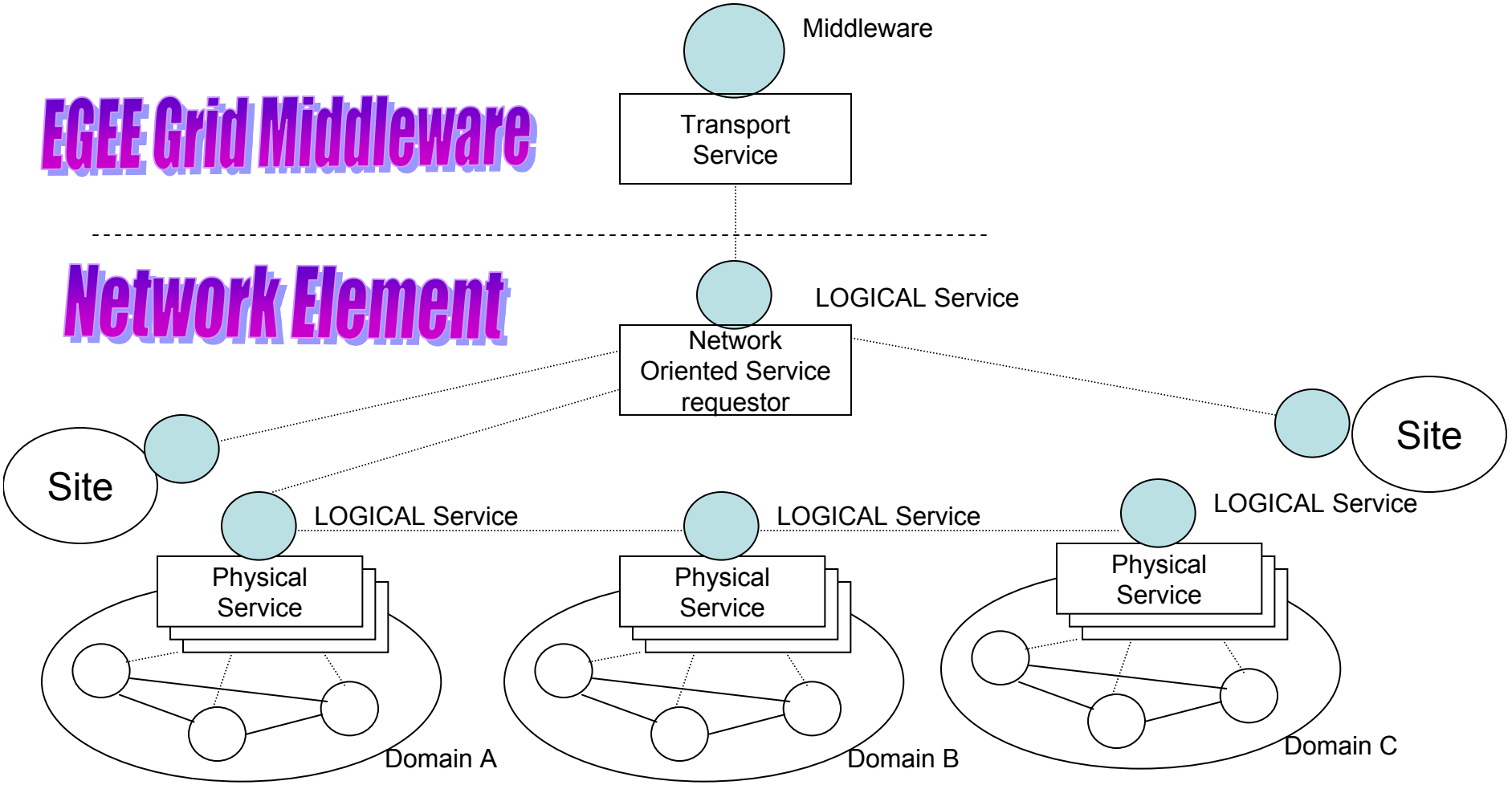
- We now plan to hold a telecon soon in October to take this forward


Middleware service
Site 1
Site 2
Domain 1
Domain 2
Domain 3

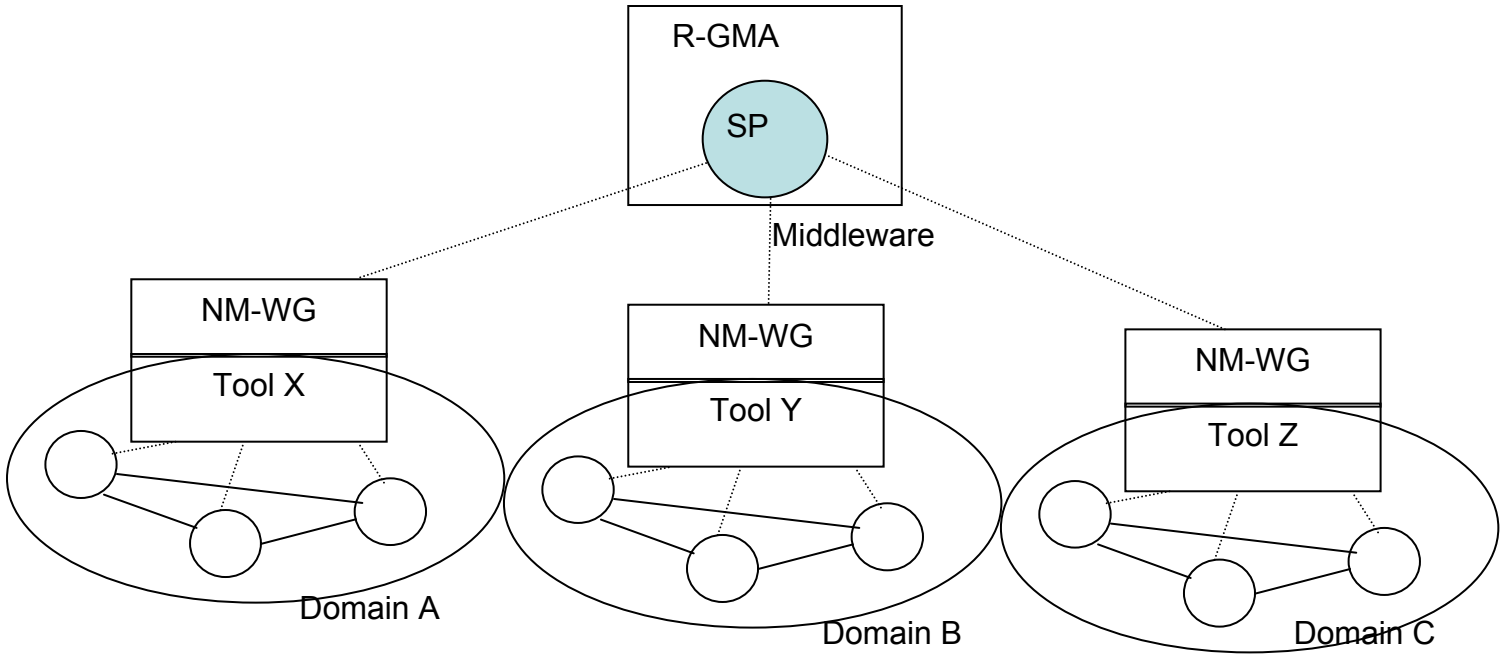
Suggestion 1: Hierarchical



Suggestion 2: Sequential



Network Performance Architecture



Interfaces with Grid Middleware

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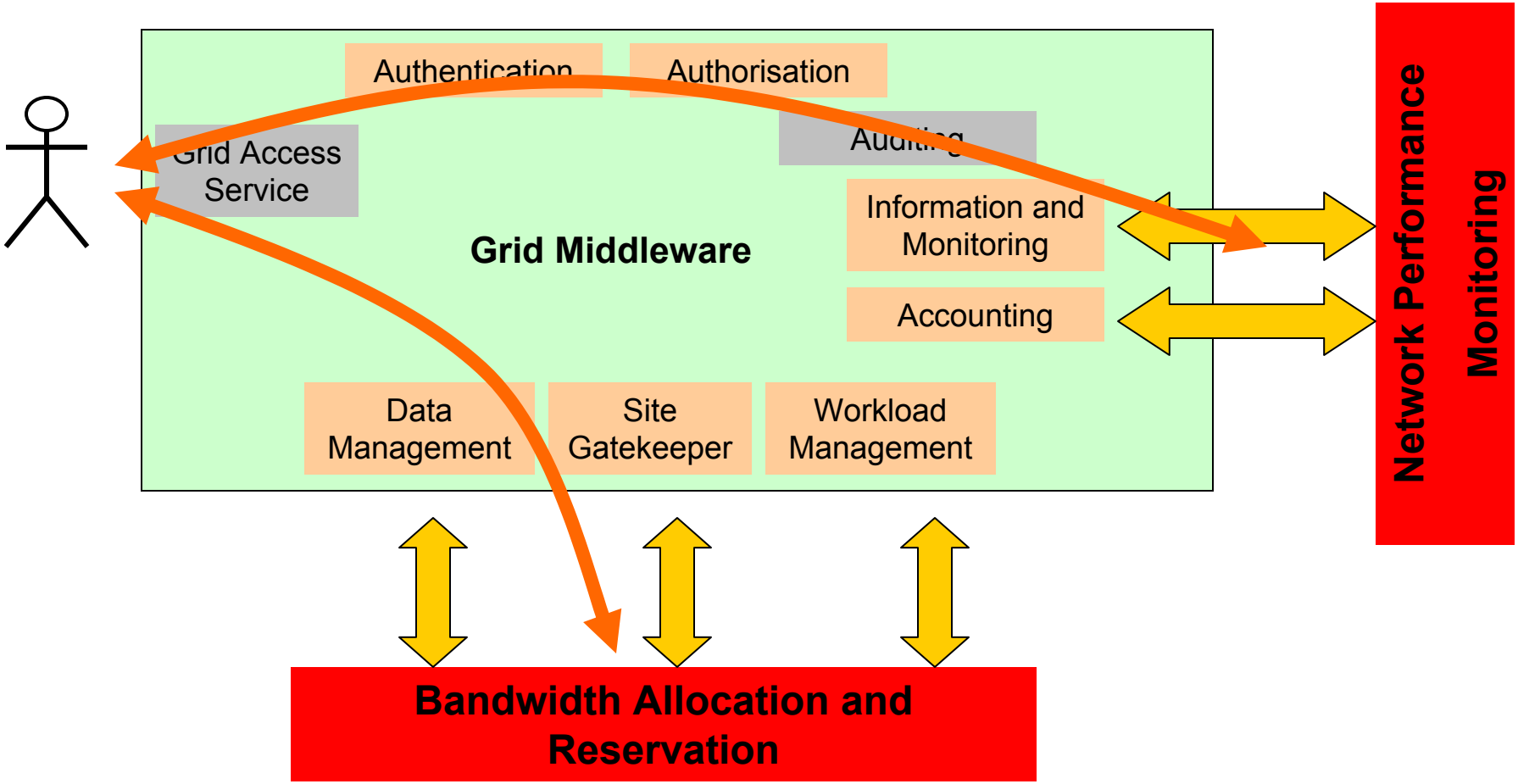
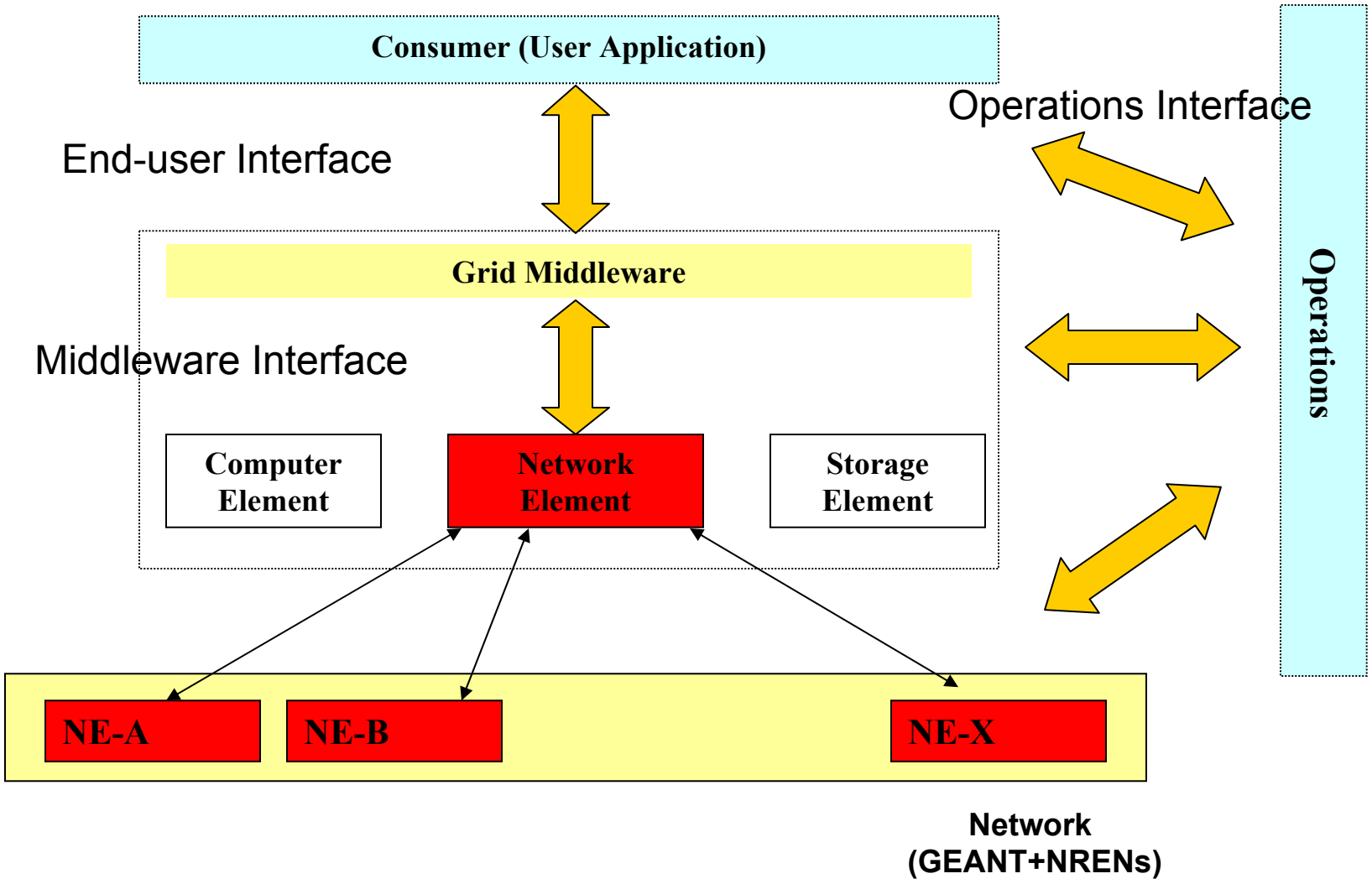
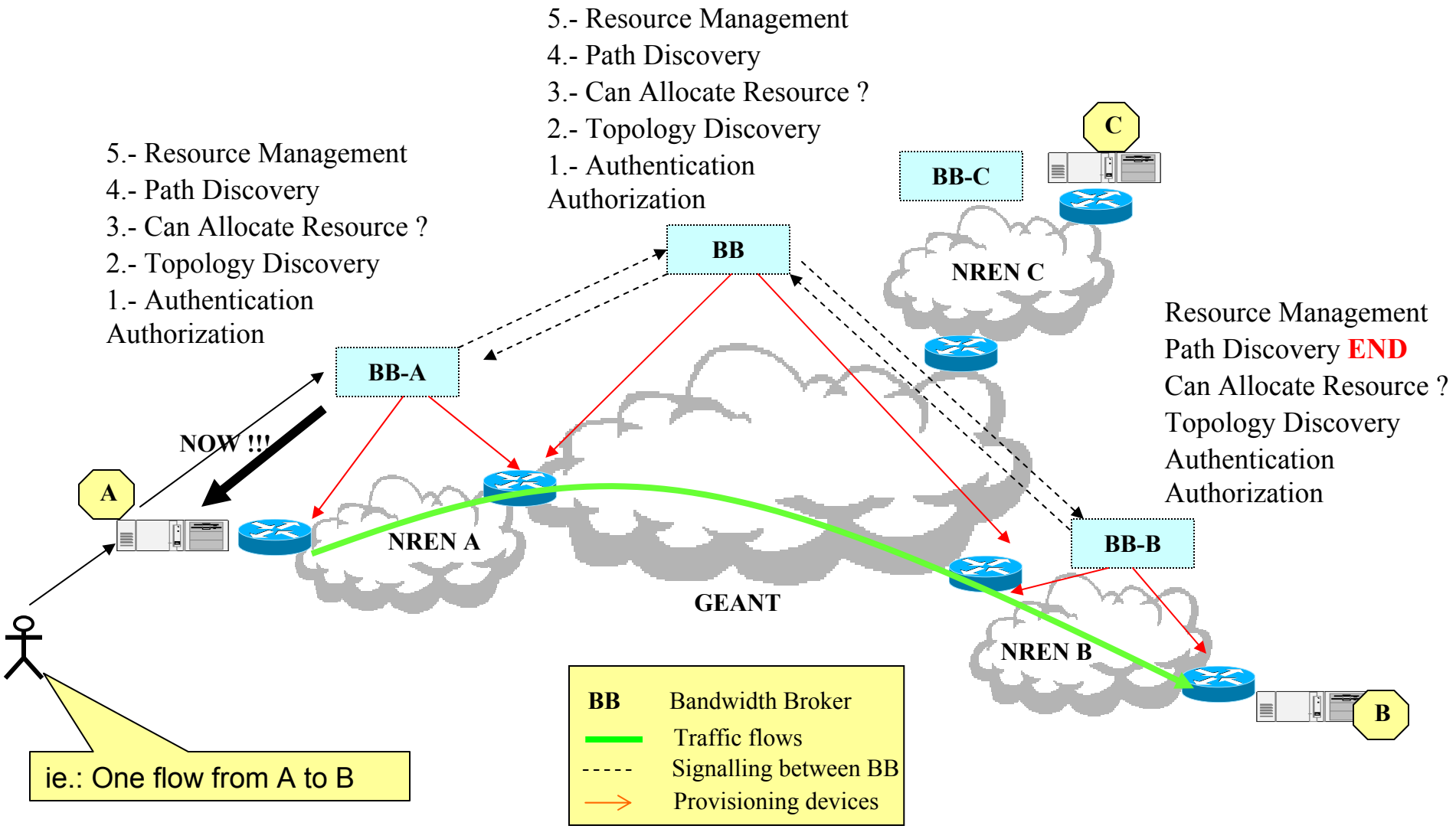


- Review WBS [P.Clarke]
- Review and assign effort allocation to this task, a sit needs both
  - Network experts
  - Experienced software developers

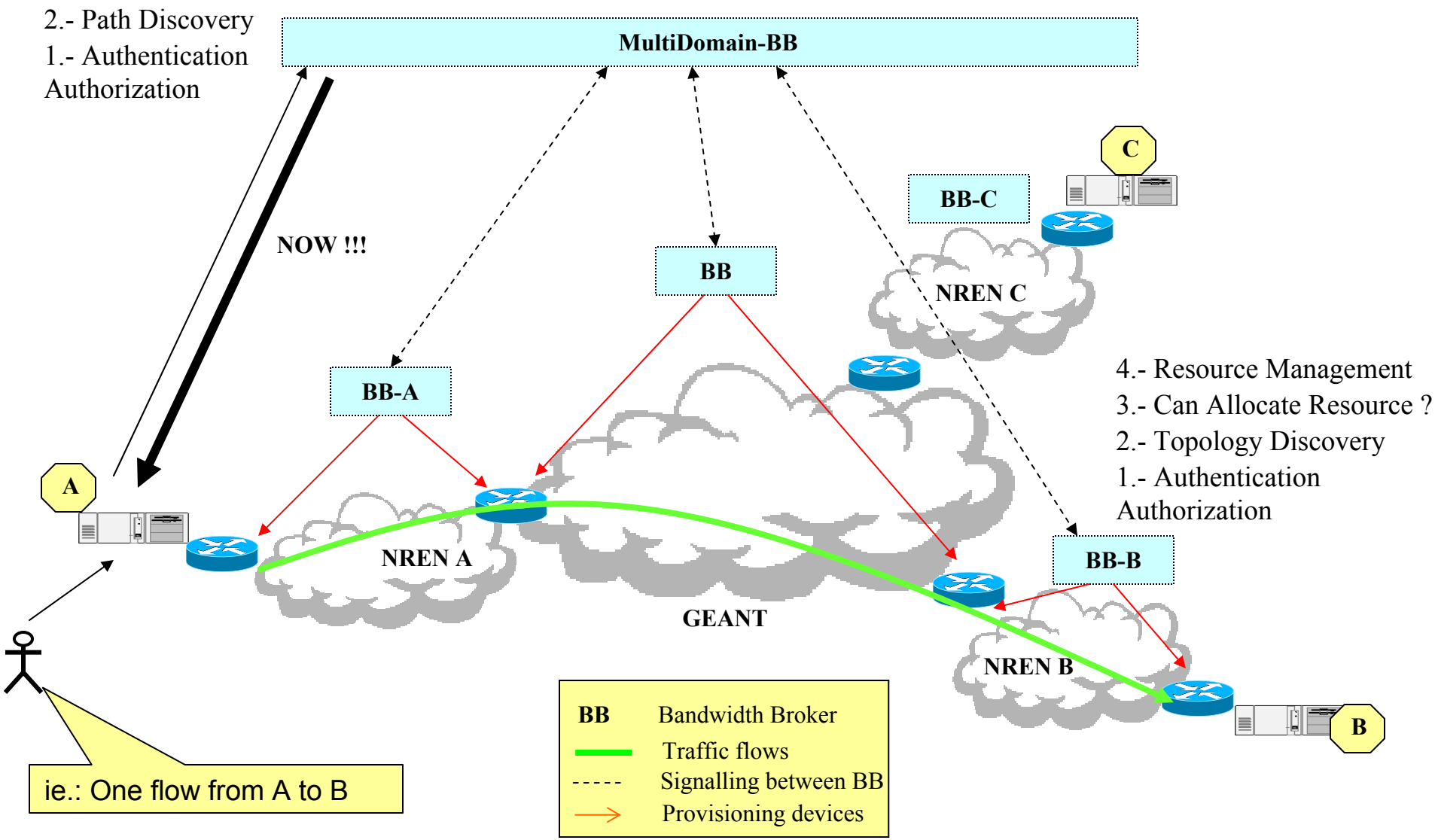
Components and Requirements



Bandwidth Allocation & Reservation

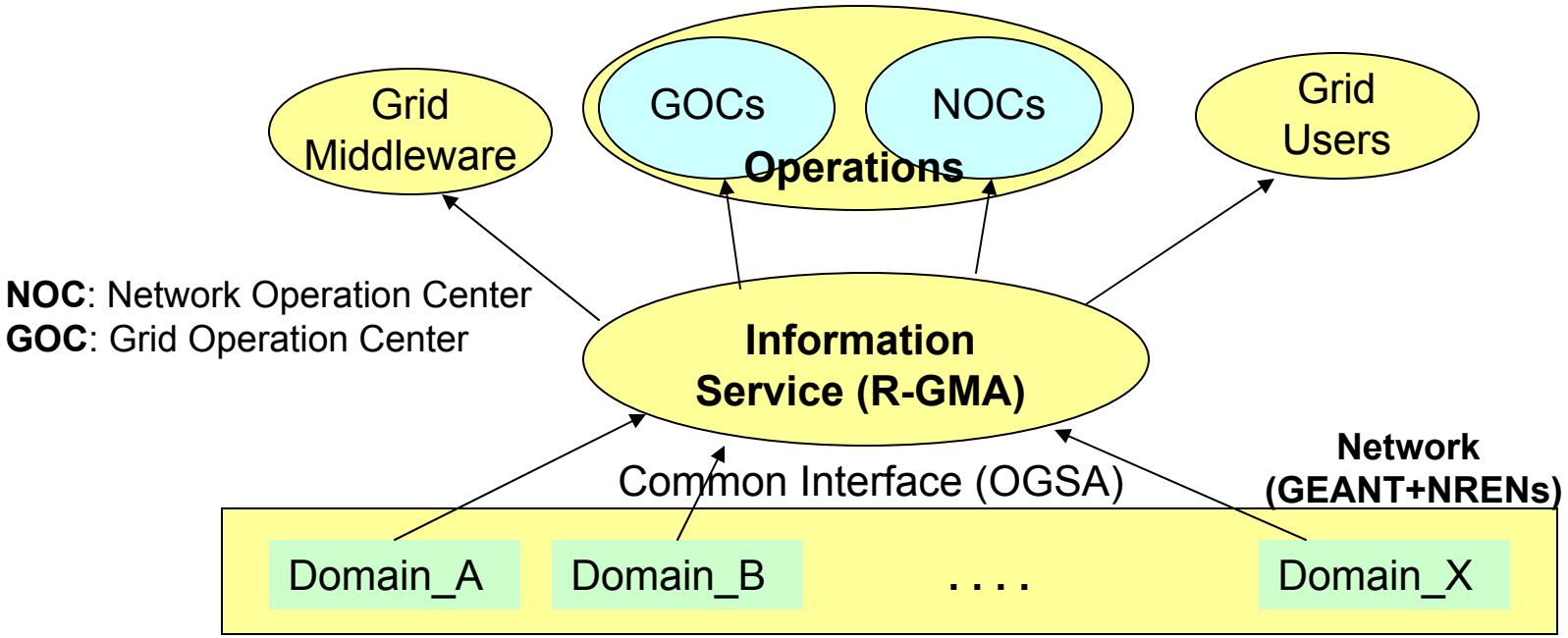


Bandwidth Allocation & Reservation

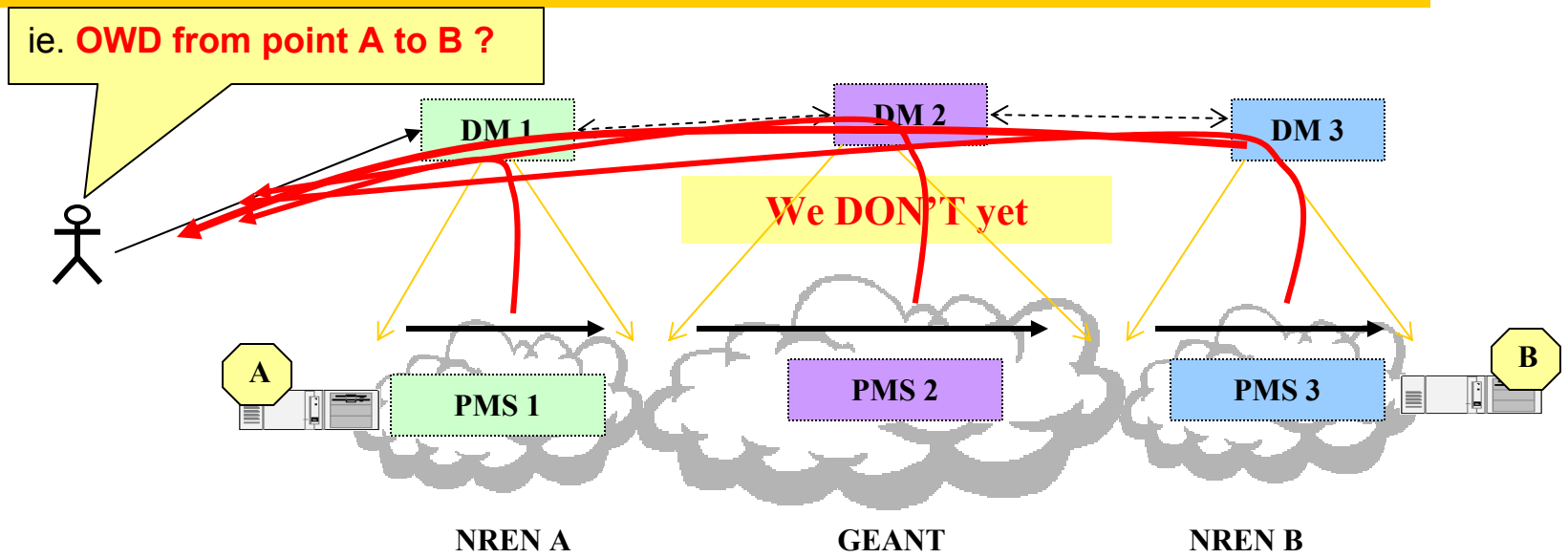


Network Performance Monitoring

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



Net. Perf. Monitoring: Use case example



OWD=OWD1+OWD2+OWD3

- PMSx and DMx
  - Are independent implementation for the measurements
- Features
  - Multiple domains, AAA, OGSA/OGSI

DM Domain Manager
PMS Performance Monitoring System

----- Signalling between DM
⟶ Request of Measurement

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Thank you

Questions?