EGEE: Enabling Grids for E-sciencE

(How I survived being an EC project coordinator)

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IT department

CERN

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CERN stands for over 50 years of…

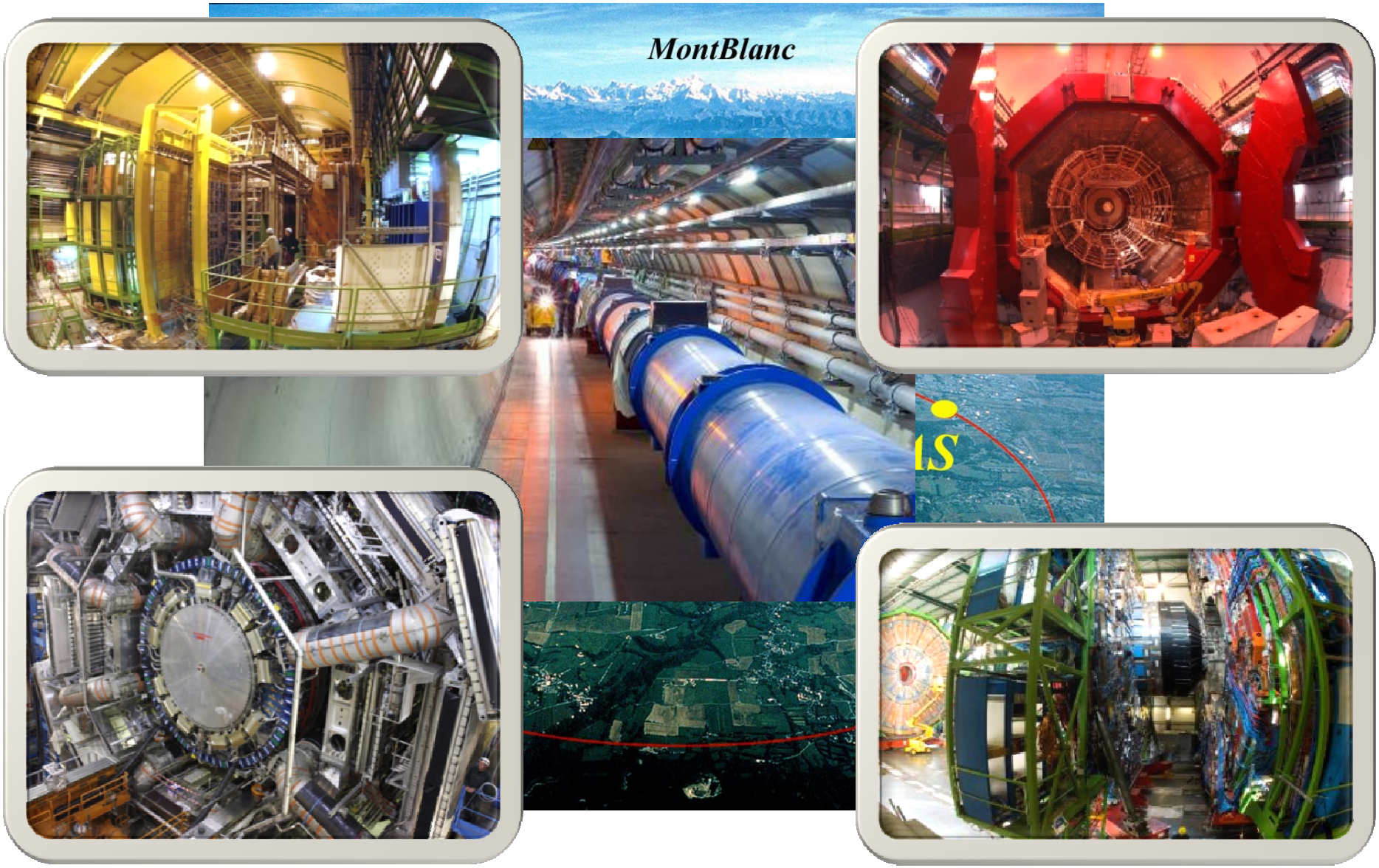
- **fundamental research and discoveries**
- **technological innovation**
- **training and education**
- **bringing the world together**

1954 Rebuilding Europe
First meeting of the CERN Council

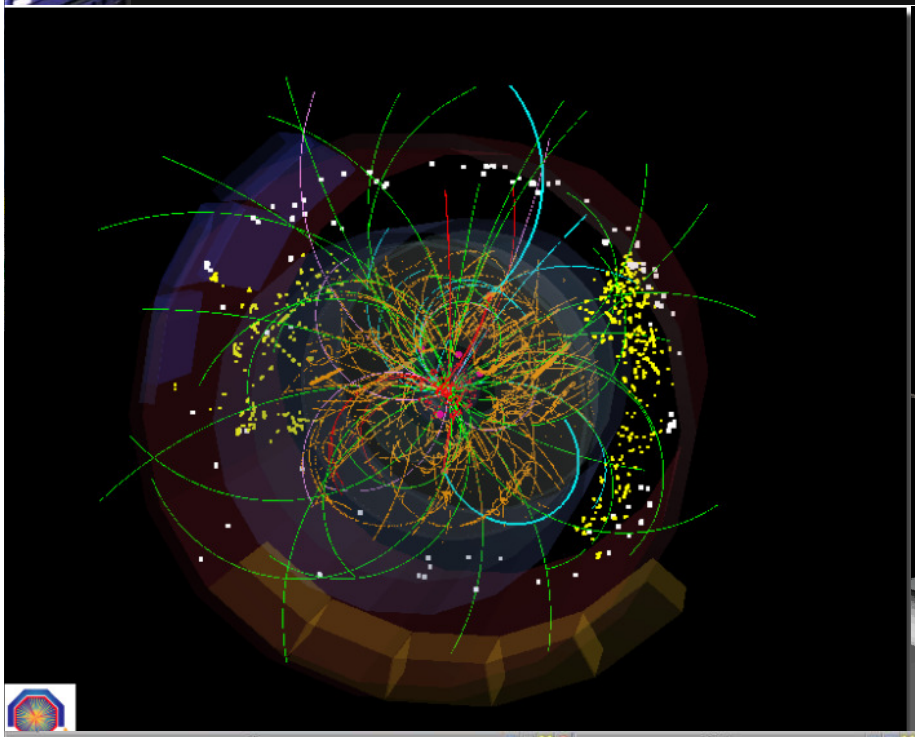
1990s Where the web was born

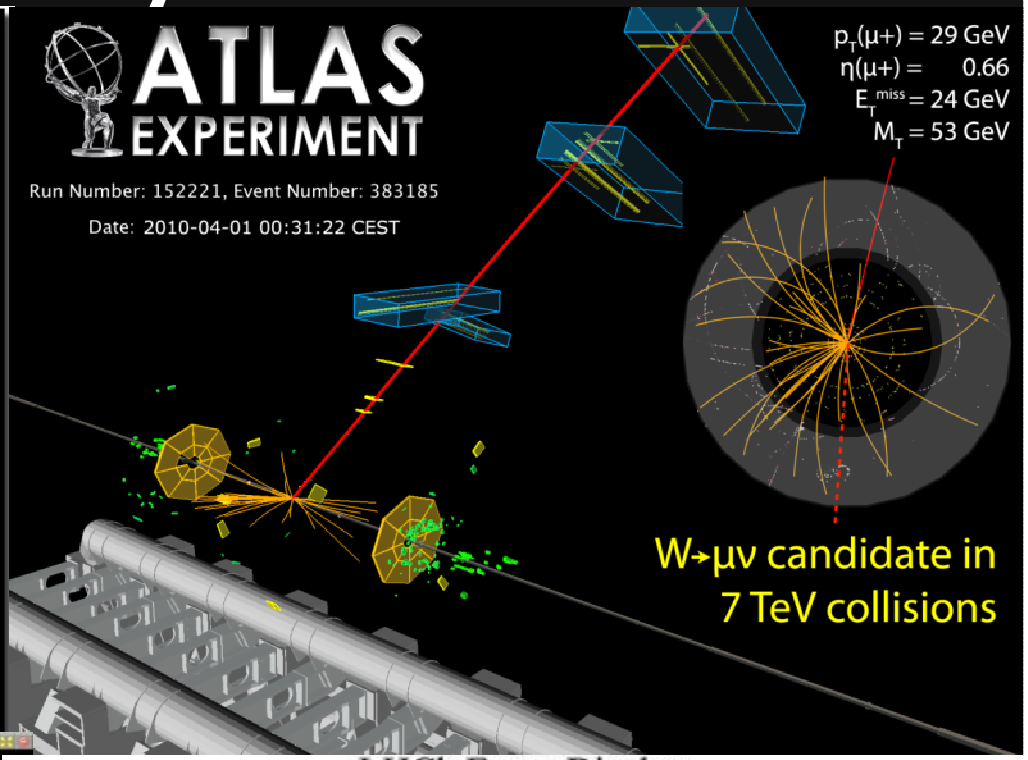
2010 Global Collaboration
The Large Hadron Collider involves over 100 countries

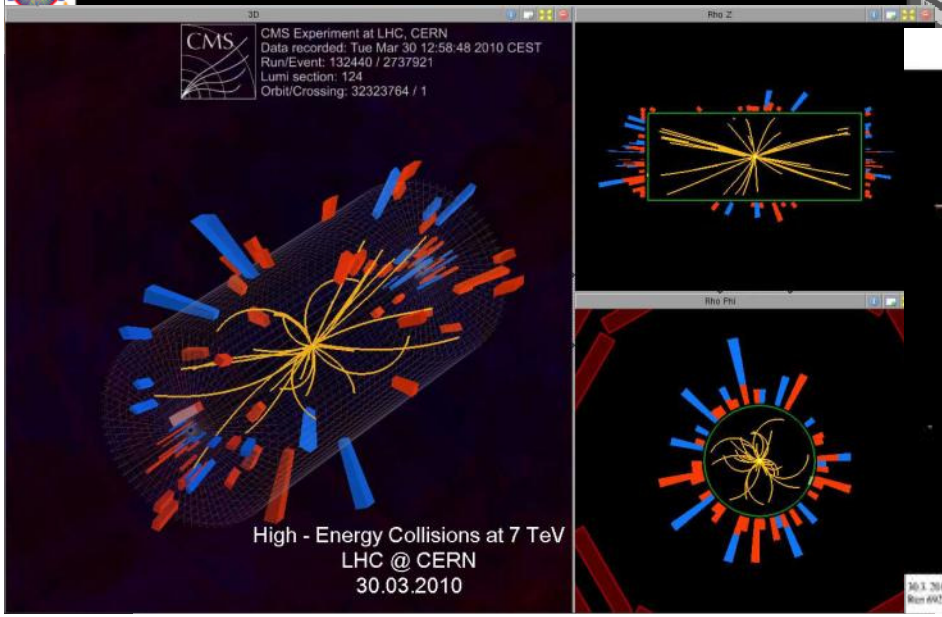
LHC: accelerator & experiments

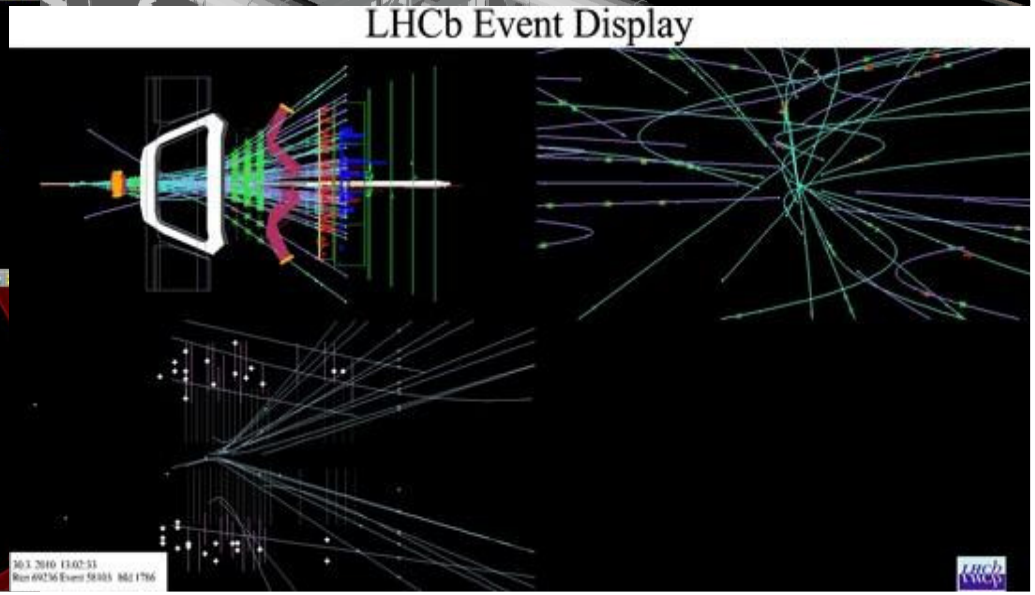


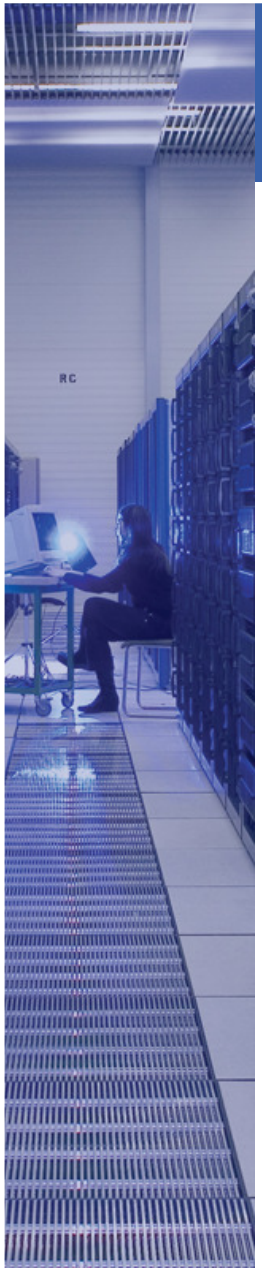
now at 7 TeV




ATLAS
EXPERIMENT
Run Number: 152221, Event Number: 383185
Date: 2010-04-01 00:31:22 CEST
$p_T(\mu+)$ = 29 GeV
$\eta(\mu+)$ = 0.66
E_T^{miss} = 24 GeV
M_T = 53 GeV
W→μν candidate in
7 TeV collisions


CMS
CMS Experiment at LHC, CERN
Data recorded: Tue Mar 30 12:58:48 2010 CEST
Run/Event: 132440 / 2737921
Lumi section: 124
Orbit/Crossing: 32323764 / 1
High - Energy Collisions at 7 TeV
LHC @ CERN
30.03.2010


LHCb Event Display



CERN and computing grids

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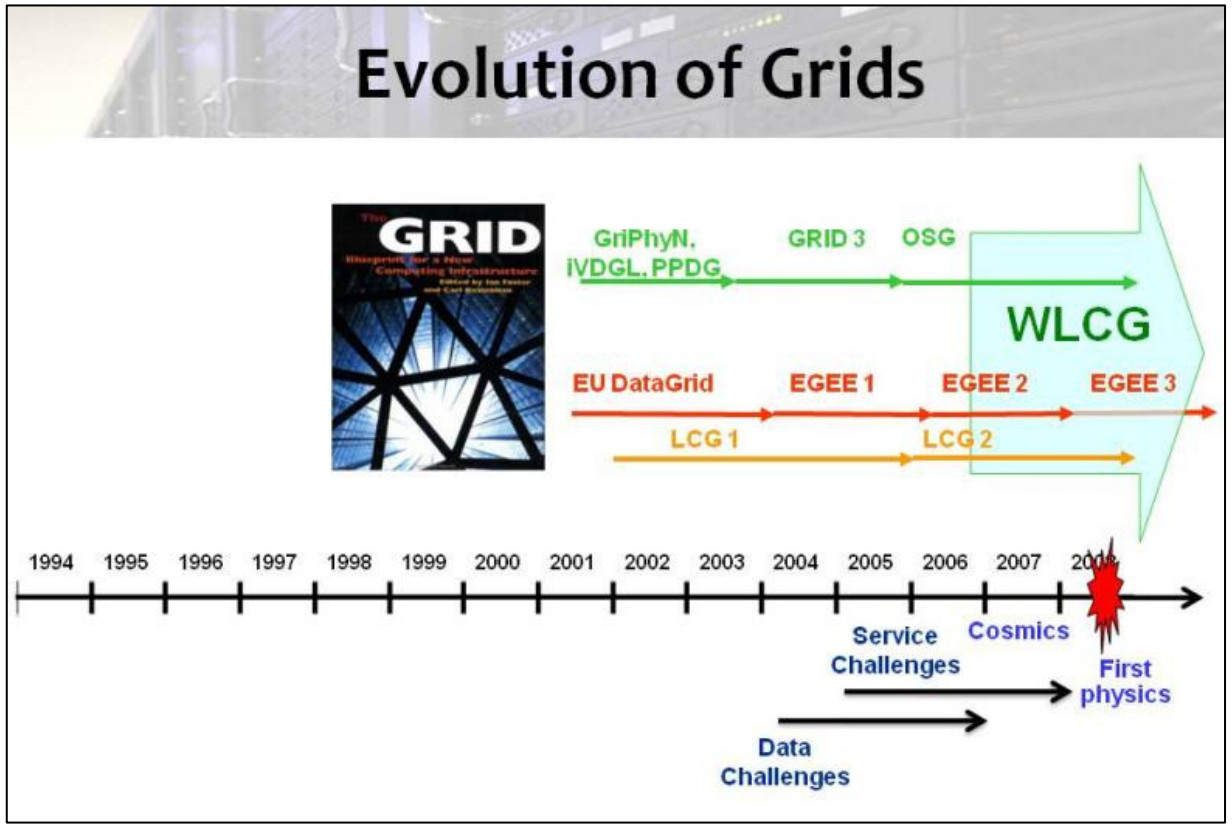
- CERN and the High Energy Physics community have been involved with grids from the beginning
- Recognised as a key technology for implementing the LHC computing model



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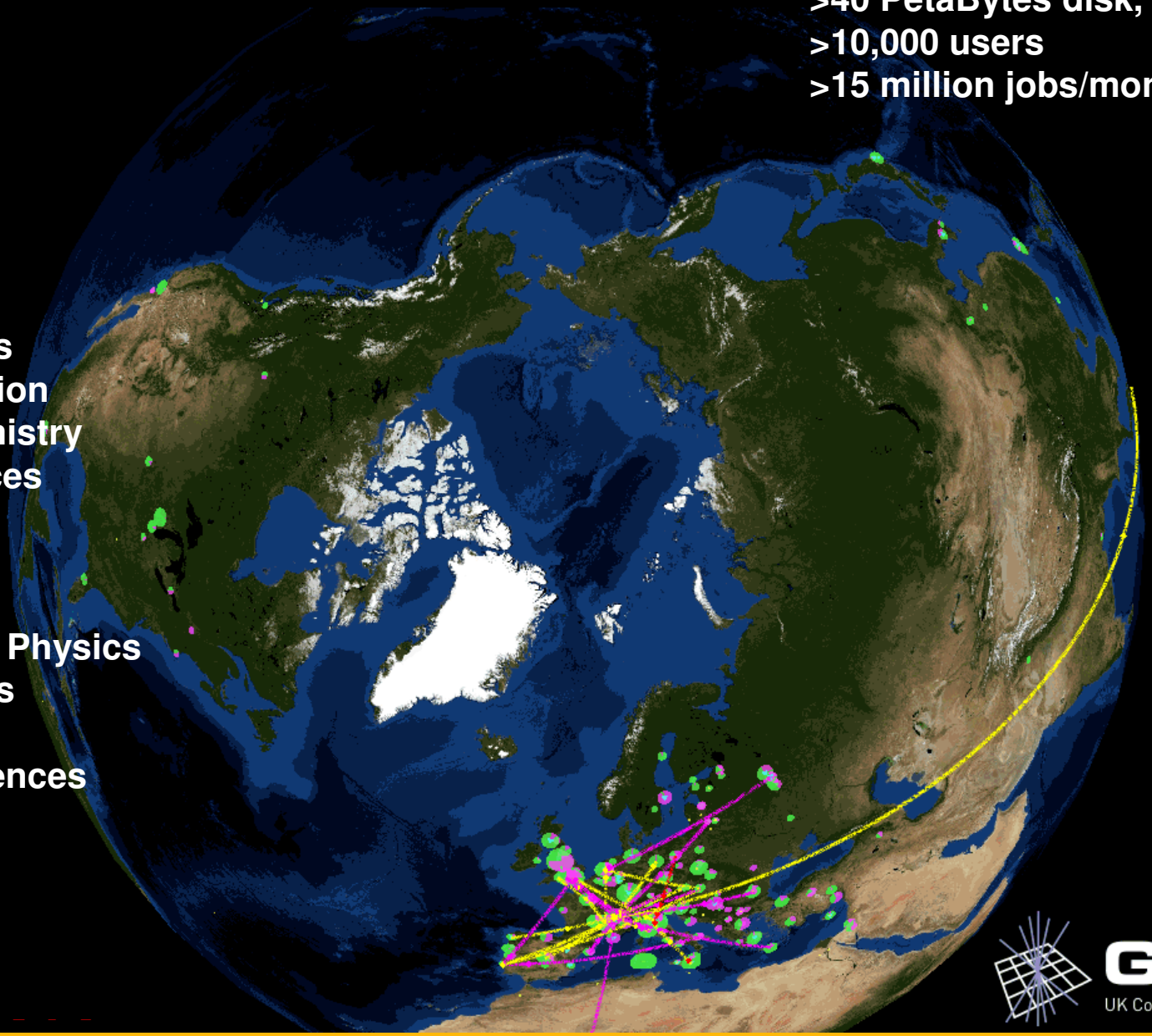
Enabling Grids for E-sciencE

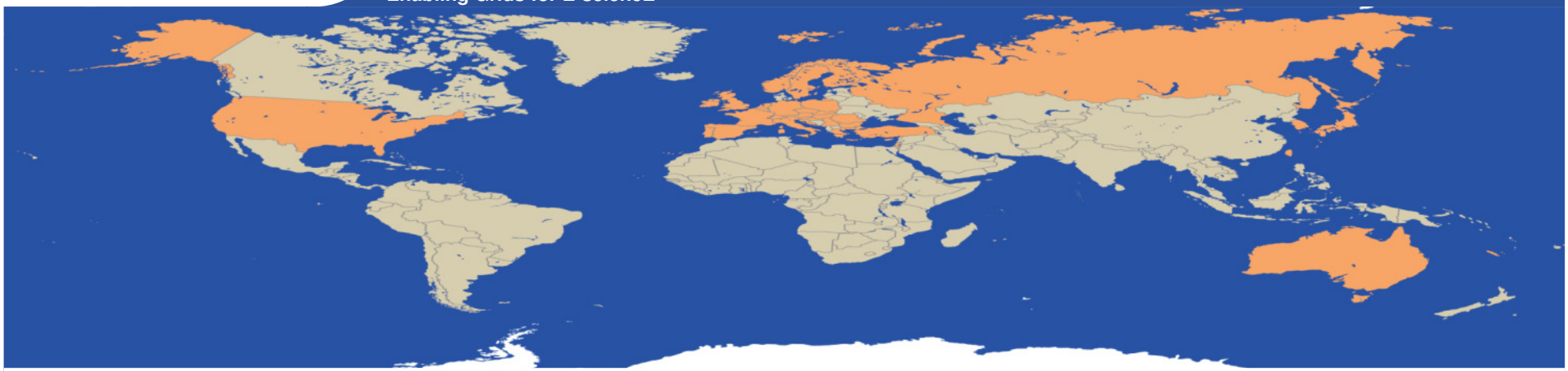
>315 sites in 52 countries
>240,000 CPU cores
>40 PetaBytes disk, >61 PB tape
>10,000 users
>15 million jobs/month



Archeology
Astronomy
Astrophysics
Civil Protection
Comp. Chemistry
Earth Sciences
Finance
Fusion
Geophysics
High Energy Physics
Life Sciences
Multimedia
Material Sciences
…

GridPP
UK Computing for Particle Physics

EGEE-III



Flagship Grid infrastructure project co-funded by the European Commission

- **Main Objectives**
  - Expand/optimise existing EGEE infrastructure, include more resources and user communities
  - Prepare migration from a project-based model to a sustainable federated infrastructure based on National Grid Initiatives
- **Duration: 2 years**
- **EC co-funding: 32 Million €**
  - Total budget: ~47 Million € + ~50 Million € computing equipment
  - Total effort: 9132 person months (~382 FTE)

Consortium

- **42 Beneficiaries in EGEE-III (+ 100 JRU members)**
  - Joint Research Units provide national grouping of partners in preparation for a sustainable infrastructure based on a federation of national e-Infrastructures
    - Originally 92 beneficiaries were identified in the proposal since we did not have confirmation that the EC recognised the JRUs (proposal was 228 pages long and consortium represented 70 pages)

- **Joint Research Units (precursors to National Grid Initiatives):**
  - Austria
  - Belgium
  - Bulgaria
  - Croatia
  - Cyprus
  - France
  - Germany
  - Greece
  - Hungary
  - Israel
  - Italy
  - Netherlands
  - Norway
  - Poland
  - Romania
  - Russia
  - Spain
  - Sweden
  - Switzerland
  - Turkey
  - United Kingdom

- **JRU members are invited to Collaboration Board meetings as Observers**

JRUs help distribute administrative effort but
- **must exist before the project starts**
- **individual member still submit cost claims**

Consortium – beyond Europe

- **USA: middleware development, interoperability, support to new user communities, dissemination**
- **Asia Pacific: expanding EGEE infrastructure within Asia Pacific**
  - Australia, Japan, Korea, Taiwan
- **Commonwealth of Independent States (CIS)**
  - Initial contact to encourage them to join the infrastructure
- **➔ For these regions the NA1 budget includes limited funds to provide financial assistance to attend EGEE events**

• Legal issues for US partners when signing the EC Grant Agreement
• For Eastern Europe & Asia, becoming a member shows international recognition and often secures local funding

EGEE-III federations

- **Beneficiaries & JRU members, academic & business, organised in regional federations:**
  - **Asia Pacific (Australia, Japan, Korea, Taiwan)**
  - **Benelux (Belgium, the Netherlands)**
  - **Central Europe (Austria, Croatia, Czech Republic, Hungary, Poland, Slovakia, Slovenia)**
  - **France**
  - **Germany/Switzerland**
  - **Italy**
  - **Nordic countries (Finland, Sweden, Norway)**
  - **South West Europe (Portugal, Spain)**
  - **South East Europe (Bulgaria, Cyprus, Greece, Israel, Romania, Serbia, Turkey)**
  - **Russia**
  - **United Kingdom/Ireland**
  - **USA**

Federations gave groupings to form a Project Management Board of 12 instead of 42!

Activities

Networking

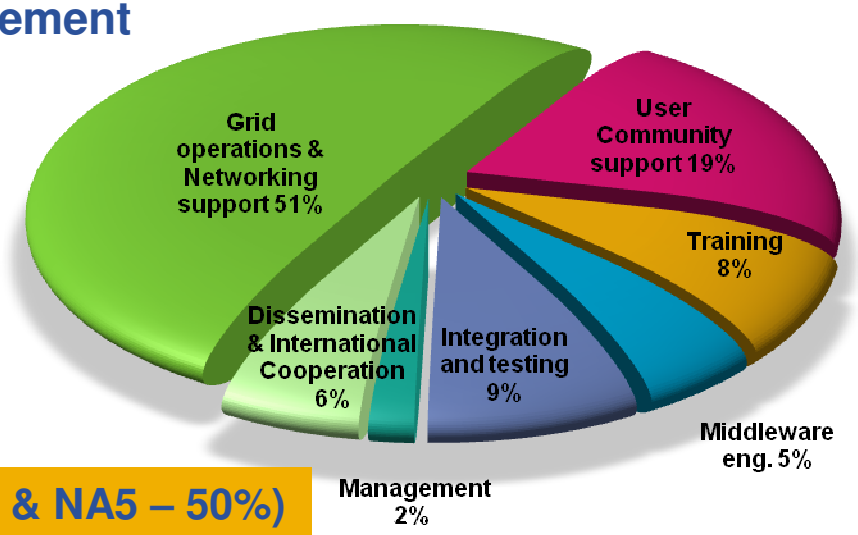
- NA1: Project Management
- NA2: Dissemination, Communication and Outreach
- NA3: User Training and Induction
- NA4: User Community Support and Expansion
- NA5: Policy and International Cooperation

Services

- SA1: Grid Operations, Support and Management
- SA2: Networking Support
- SA3: Integration, Testing and Certification

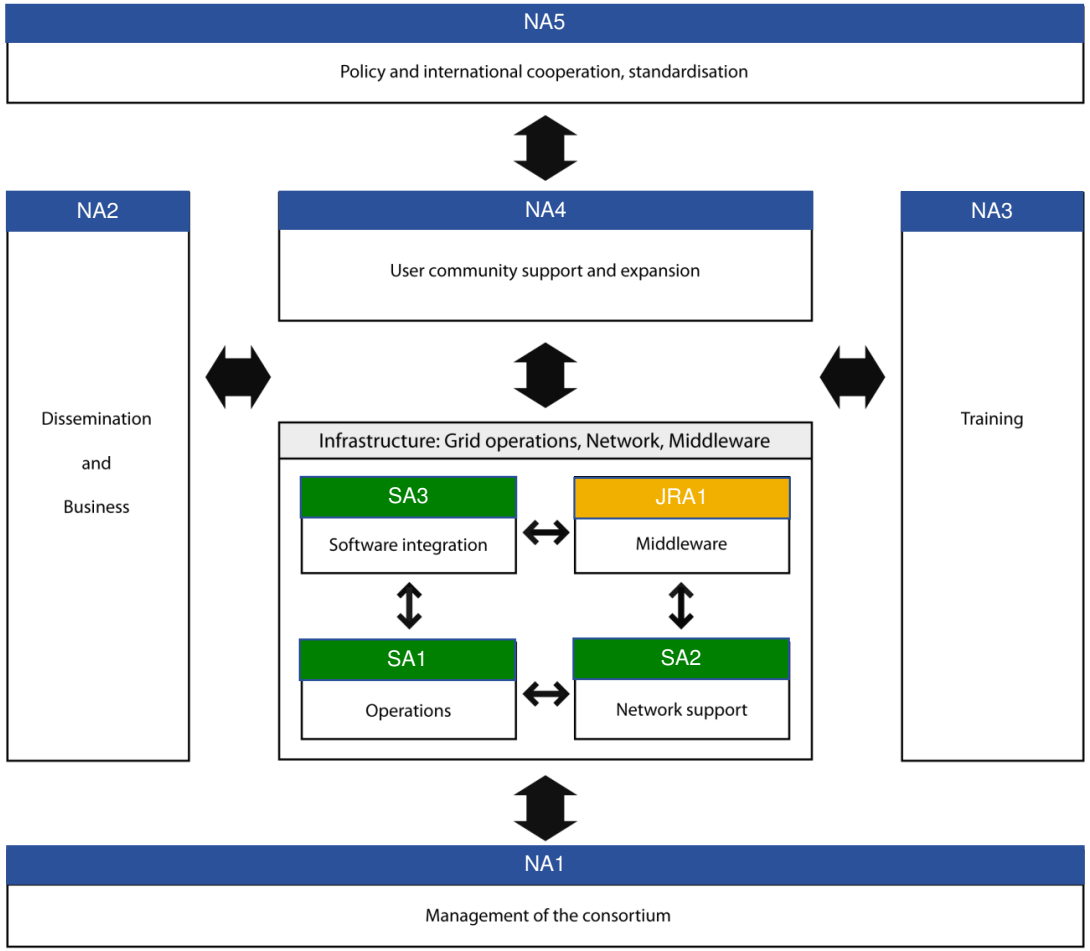
Joint Research

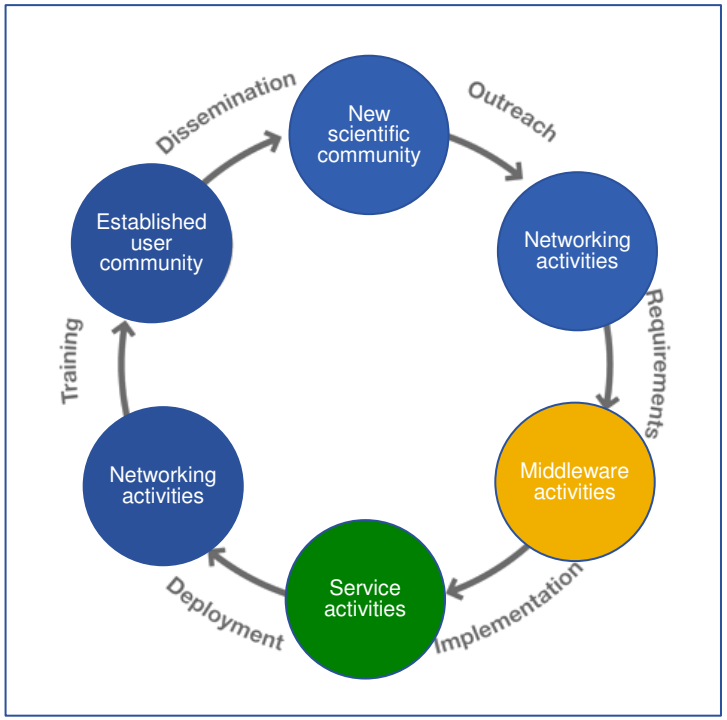
- JRA1: Middleware Re-engineering



All activity managers were dedicated (except SA2 & NA5 – 50%) to the project and approved by the Project Mgmt Board

Interaction between the activities

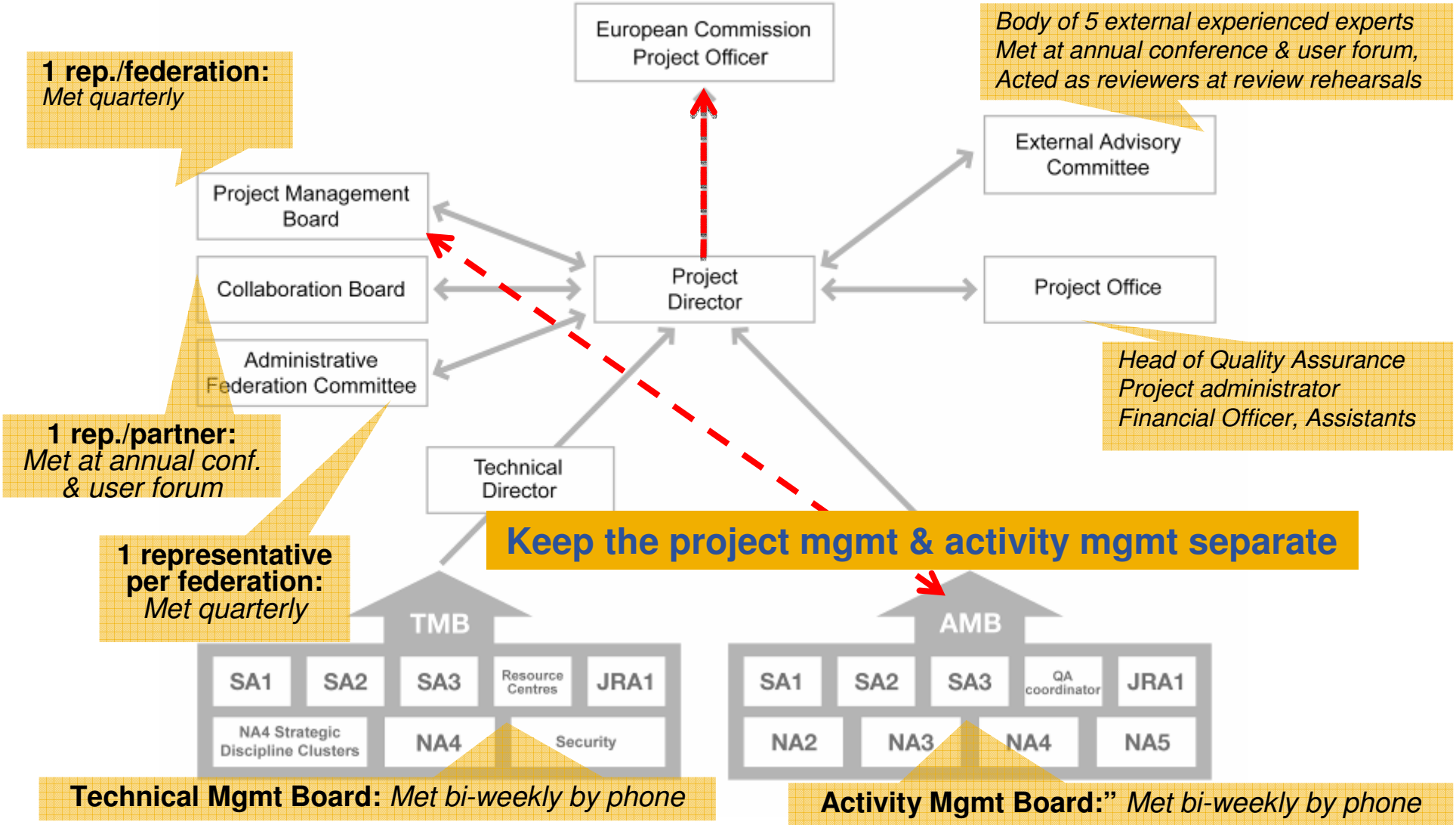




Activity interaction kept project focused and 'service' oriented

EGEE-III management structure

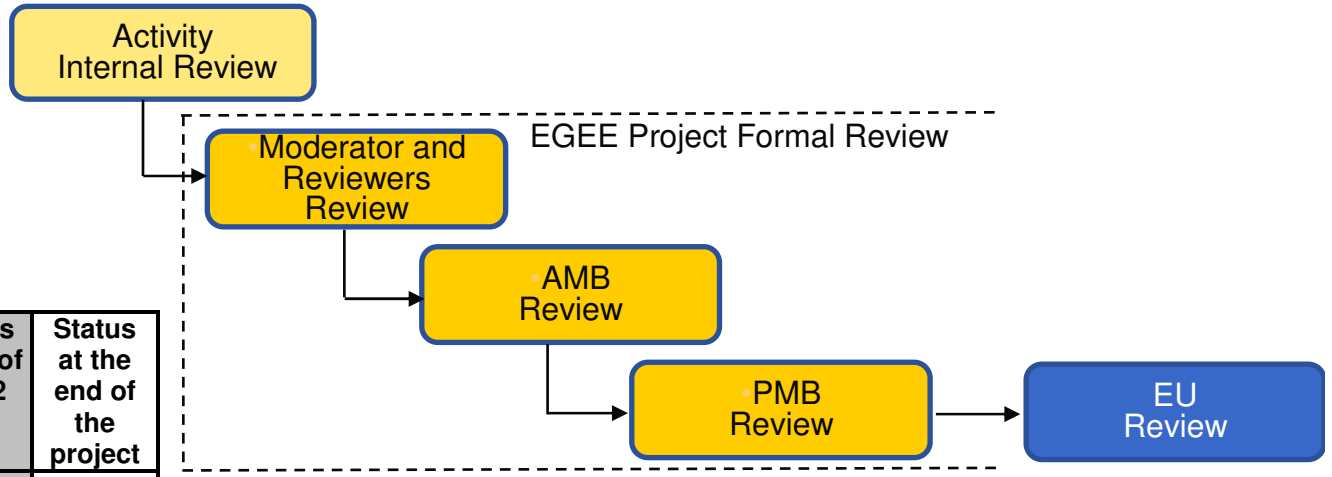
Ensure official communication comes from the Project Director



Quality Assurance

Formal review process – Quality Assurance of "reports"

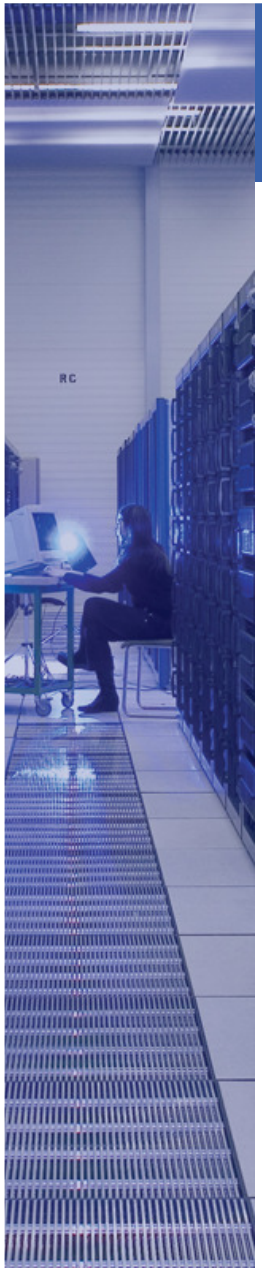
Key to having an objective evaluation of material



Metrics	Targets at end of Year 1	Targets at end of Year 2	Status at the end of the project
Number of users	1750	2100	>9000
Number of people benefiting from the existence of the EGEE infrastructure	4000	5000	10000s
Number of application domains making use of the EGEE infrastructure	7	8	10
Number of organisations making use of the EGEE infrastructure	75	100	~140
Number of languages in which material is available	10	12	Up to 15
Number of attendees trained	750	1500	3079
Dissemination events in which EGEE-II is represented	200	400	622

- **Metrics programme**
  - **Quality Assurance of tasks in each activity**
  - **Measured every quarter**

Essential to measure what has been achieved
Provide early warning of issues



Final remarks

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- Preparation of the project took significant effort and lasted approximately 18 months before the start-date
- Do not underestimate the importance of the Consortium Agreement
  - it is like insurance – you need it when something goes wrong
- Do not divide the resources too thinly
  - Having 12 people working for 1 month each is not as effective as having 1 person work for a year and will require far more coordination
- Set a “milestone” for the end of the first quarter when each partner has to do “something” – just to see who is active
- Organise rehearsals for project reviews
- Being the coordinator means you will spend far more time, effort and air-miles than you estimated
- It is hard work but very rewarding if you get it right

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