



Enabling Grids for E-science

## Plans for the future

*Bob Jones – Project Director - CERN*

*EGEE-II final EU Review (CERN)*

*8-9 July 2007*

[www.eu-egee.org](http://www.eu-egee.org)

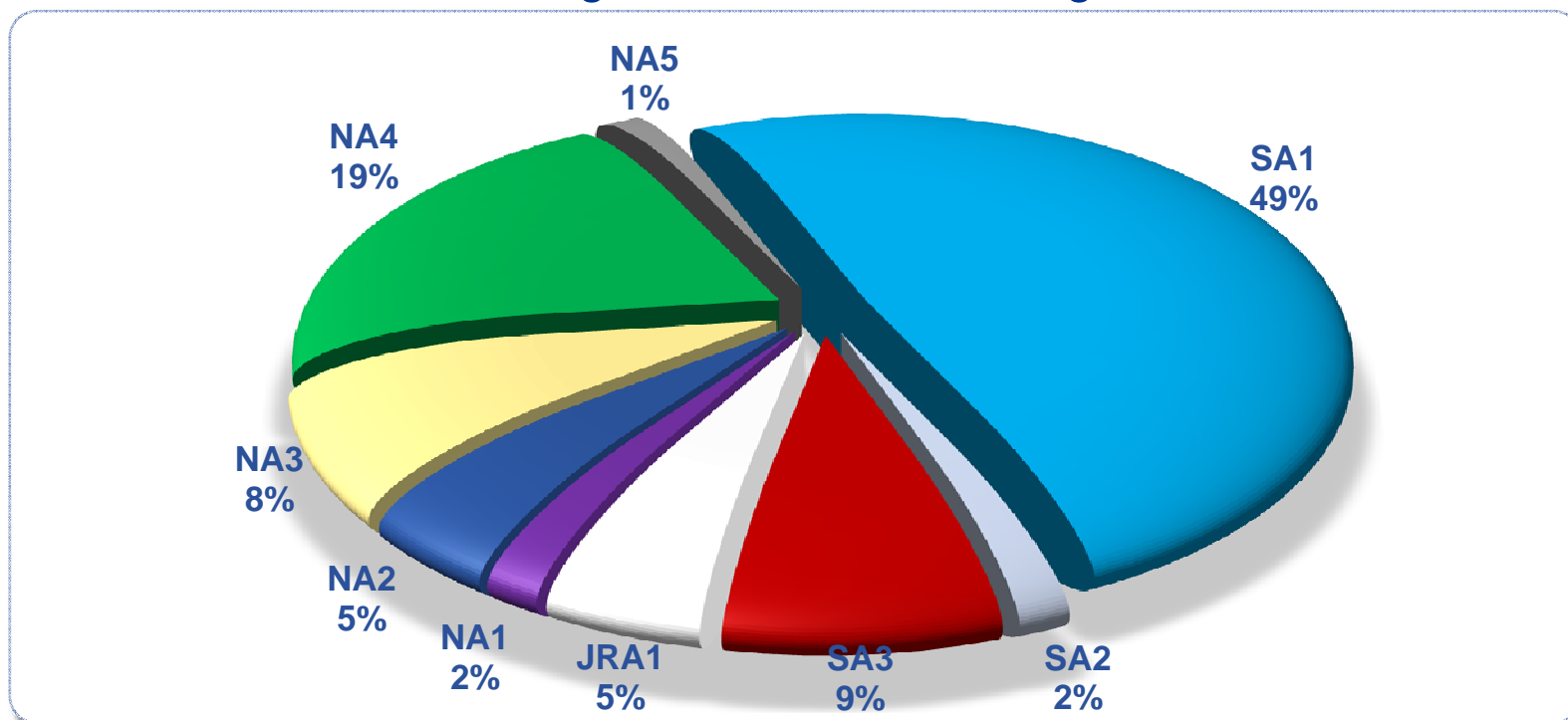


- **EGEE-III**
- **The European Grid Initiative (EGI)**
- **EGEE and EGI**
- **EGEE support for FP7 projects**
- **EGEE and ESFRI**
- **Summary**

- **EGEE-III**
  - Co-funded under European Commission call INFRA-2007-1.2.3
  - 32.0M€ EC funds compared to ~36.9M € for EGEE-II
- **Key objectives**
  - Expand/optimize 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
- **2 year period – 1 May 2008 to 30 April 2010**
  - No gap between EGEE-II and EGEE-III (1 month extension to EGEE-II, ended 30 April 2008)
- **Similar consortium**
  - Now structured on a national basis (National Grid Initiatives/Joint Research Units)

<b><i>Networking activities</i></b>	<b><i>Specific Service Activities</i></b>
<b>NA1: Management</b> <b>Bob Jones, CERN</b>	<b>SA1: Operations</b> <b>Maite Barroso Lopez, CERN</b>
<b>NA2: Dissemination</b> <b><i>Catherine Gater, CERN</i></b>	<b>SA2: Networking Support</b> <b>Xavier Jeannin, CNRS</b>
<b>NA3: Training</b> <b>Robin McConnell, UEDIN</b>	<b>SA3: Integration, testing &amp; cert.</b> <b>Oliver Keeble, CERN</b>
<b>NA4: Applications</b> <b>Cal Loomis, CNRS</b>	<b><i>Joint Research Activities</i></b>
<b>NA5: International Coop. &amp; Policy</b> <b>Panos Louridas, GRNET</b>	<b>JRA1: Middleware engineering</b> <b><i>Francesco Giacomini, INFN</i></b>

- **Total of 375 FTEs in EGEE-III**
  - 9010 person months (vs. 11165 PMs in EGEE-II; ~20% less)
  - Grand total combining funded and matching contributions



NA1: Project Management

NA2: Dissemination, Outreach and Communication

NA3: Training and Induction

NA4: Application Identification and Support

NA5: Policy and International Cooperation

SA1: Grid Operations, Support and Management

SA2: Networking Support

SA3: Integration, Testing and Certification

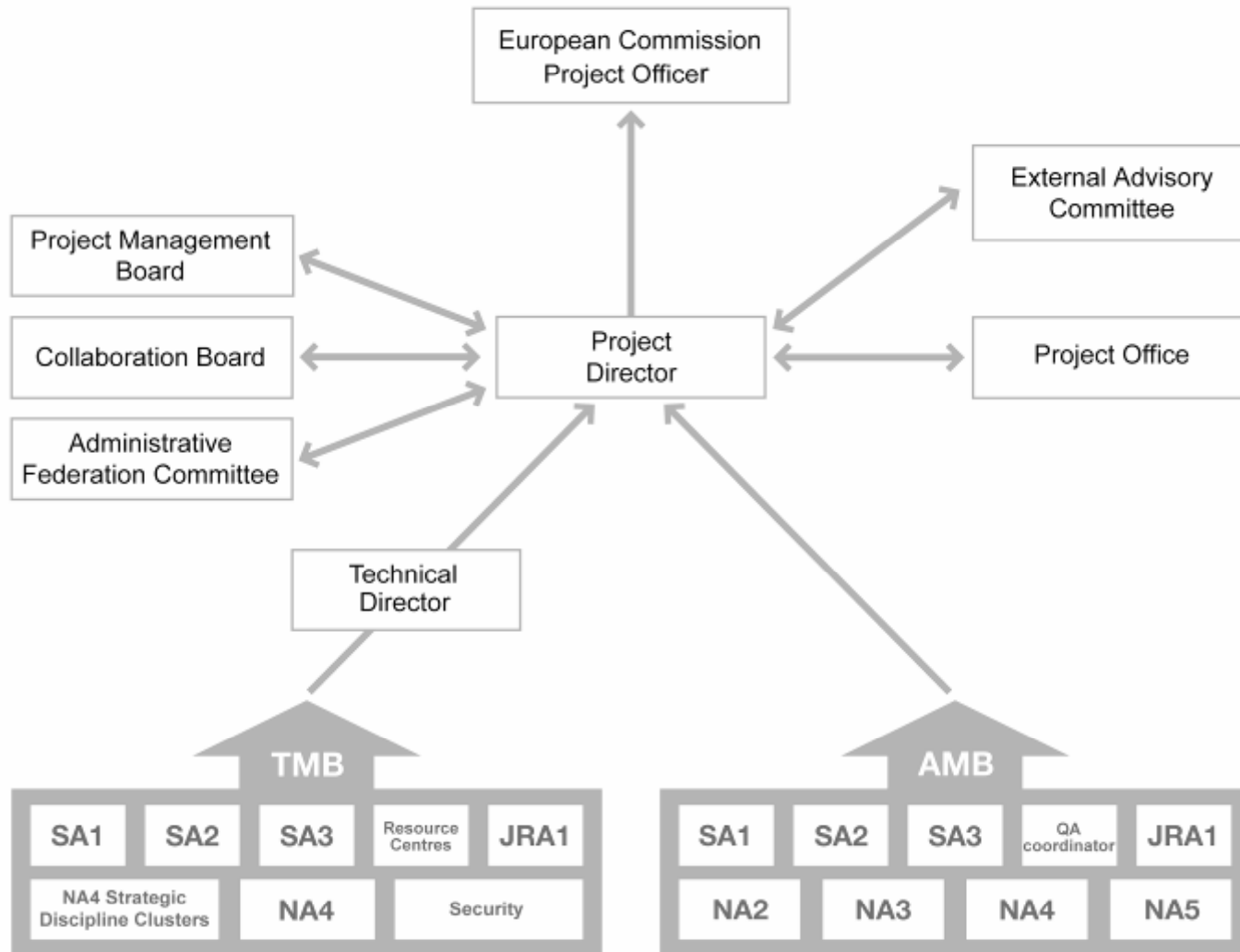
JRA1: Middleware Re-engineering

- **From 91 partners in EGEE-II (+ further 48 JRU members)**
- **To 42 Beneficiaries in EGEE-III (+ 100 JRU members)**
  - This change has been made in preparation for a sustainable infrastructure based on a federation of national e-Infrastructures
- **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**

- **US: middleware development, interoperability, support to new user communities**
  - Univ Wisconsin Madison - *Condor and VDT middleware*
  - Renaissance Computing Institute (RENCI) - *outreach for Open Science Grid*
- **Asia Pacific: expanding EGEE infrastructure within Asia Pacific**
  - ASGC, Taipei (SA1 Regional Operations Centre)
  - KISTI & CNU (Korea)
  - New partners: KEK (Japan), Univ. Melbourne (Australia)
- **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**

- 
- A world map with a blue background and yellow landmasses. The map is centered on the Atlantic Ocean, showing the Americas on the left and Europe, Africa, and Asia on the right. The map is used as a background for the text.
- **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





- The EGEE-III consortium is notable by its size and the inclusion of Joint Research Units and National Grid Initiatives facilitating the evolution to national structures
- Take into account the experience gained from the activity and partner reviews introduced during EGEE-II
- **Goals**
  - Monitor the progress of the programme of work in each country and the involvement of individual partners
  - Provide a forum to discuss issues, examine progress and contribution and establish better communication between individual partners, the activity managers and project management
  - Identify and promote regional successes and initiatives for re-use in other countries
  - Encourage national responsibility and reporting
  - Verify the state of readiness for the transition to EGI
- **Output**
  - Publishable report at the end of each year

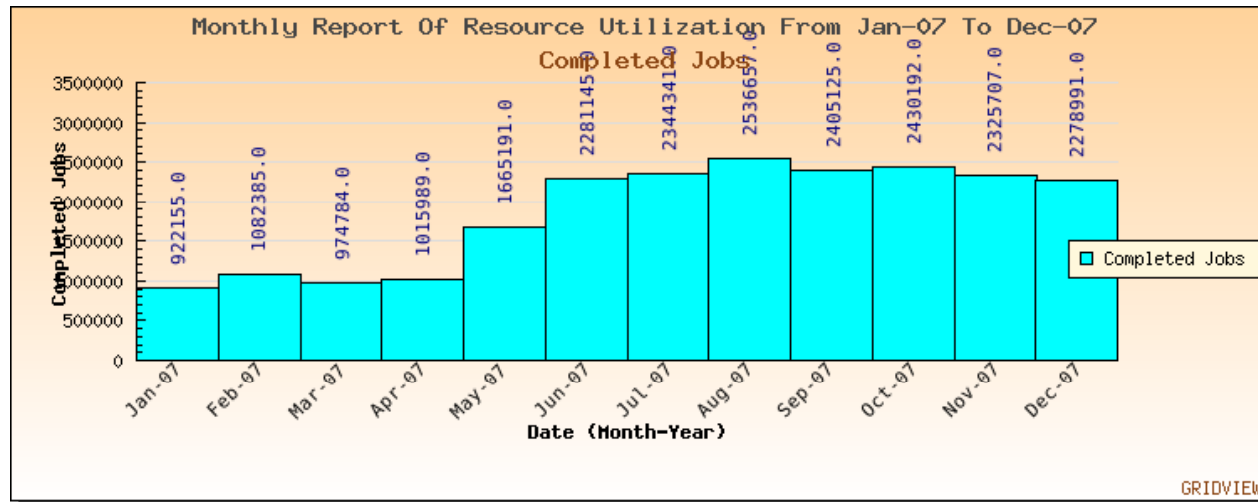
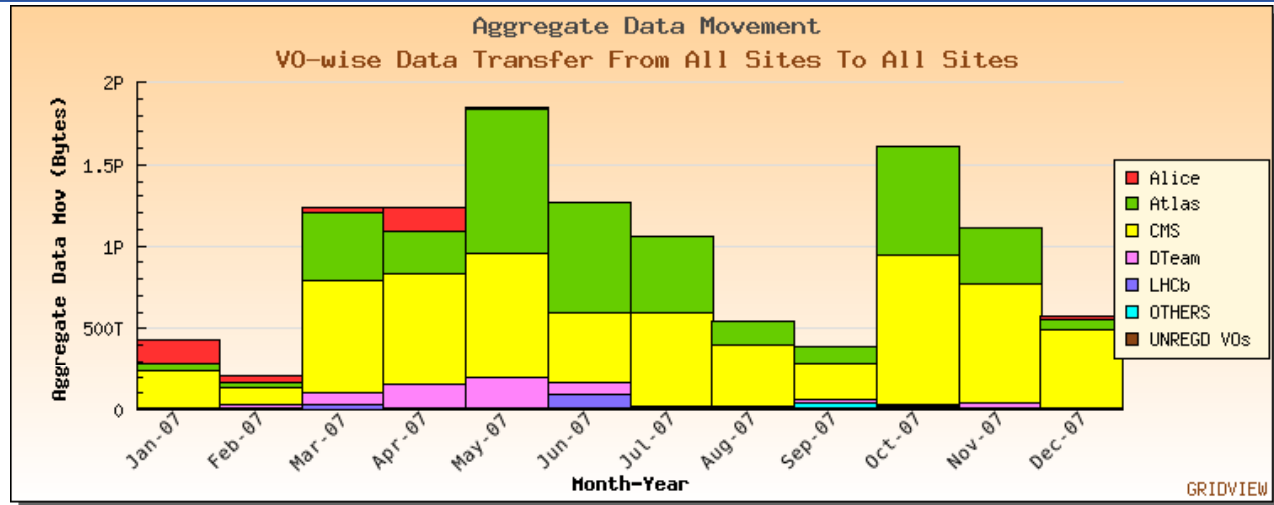
- **Collaborating Projects Liaison Office (CPLO)**
  - Supervises the liaison with all registered Collaborating Projects
  - Maintain database of Collaborating Projects
- **Development of a Memorandum of Understanding procedure to refine and detail collaborations and common programmes of work**
  - BalticGrid-II
  - EELA-2
  - SEE-GRID-SCI
  - OMII\_UK
  - ETICS-2
  - BEinGRID
  - GENESI\_DR
  - EUFORIA
  - EUAsiaGrid
  - OGF-EUROPE
  - GridTalk
- **On-going discussions with DEISA-2:**
  - e-Infrastructures Policy Group (OGF)
  - Joint working group for support of fusion and life science applications

- **These FP7 projects are already collaborating with EGEE-III**
  - **DORII**: *Deployment of Remote Instrumentation Infrastructure*
  - **EDGeS**: *Enabling Desktop Grids for e-Science*
  - **e-NMR**: *Deploying and unifying the NMR e-Infrastructure in System Biology*
  - **D4Science**: *Distributed collLaboratories Infrastructure on Grid ENabledTechnology 4 Science*
  - **e-IRGSP2**: *e-Infrastructures Reflection Group Support Programme 2*
  - **BELIEF-II**: *Bringing Europe's eLectronic Infrastructures to Expanding Frontiers*
  - **GLOBAL** - *Global Linkage Over BroadbAnd Links (GLOBAL)*

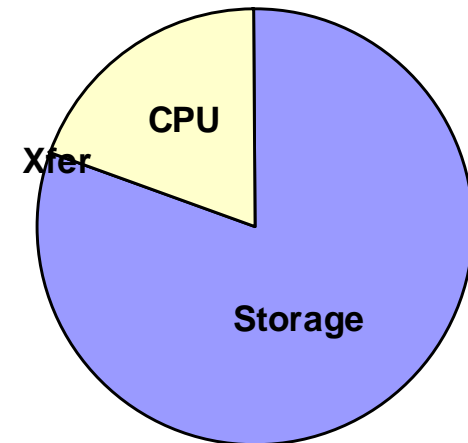
- Meeting held with Commission representatives from ERC in Nov'07
- ERC consider it “*too early*” to make commitments at this stage
- Agreed to target ERC *Starting Grant* researchers as potential new users
  - Scientific merit of grantees research has been reviewed by ERC committees
    - 200 Starting Grant researchers - only 3% of applicants were successful
  - In June'08 ERC distributed a letter from EGEE to their Starting Grant researchers inviting them to contact EGEE to discuss use of the grid infrastructure
  - To date we have received 7 responses in the following domains
    - Bandgap prediction of thermoelectrics
    - Light-complex matter interaction
      - *novel field of research, committing together optics, bio-physics, soft-matter, nonlinear physics, statistical mechanics and many other disciplines*
    - Post-transcriptional regulation of gene expression
    - Earth observation / Meteorology
    - Extreme parallelisation techniques for molecular simulations
    - Molecular evolutionary biology
    - Molecular systems biology
- COST – European Cooperation in the field of Scientific and Technical research
  - We are considering following a similar strategy with the COST running actions in a number of scientific domains to further increase usage and potentially as a means of funding user communities

- **Objective:**
  - As cloud computing gains popularity and traction, need to position grid computing with respect to cloud computing
  - Compare real implementations and production offerings
    - EGEE/gLite grid production service
    - Amazon Web Services, with focus on EC2 and S3
- **EGEE report produced**
  - “*An EGEE Comparative study: Grids and Clouds-evolution or revolution?*”
    - <https://edms.cern.ch/file/925013/3/EGEE-Grid-Cloud.pdf>
  - Presented at OGF23 (Barcelona, June'08) and covered in the press
- **Outcome:**
  - Identified convergence paths and
  - Recommendations for managing convergence going forward
- **Future:**
  - Investigate the possibility of gateways between EGEE and commercial cloud systems to offer a migration path for under-resourced applications (no national support or mature commercial applications)

**Data:**  
**25Pb stored**  
**11Pb transferred**



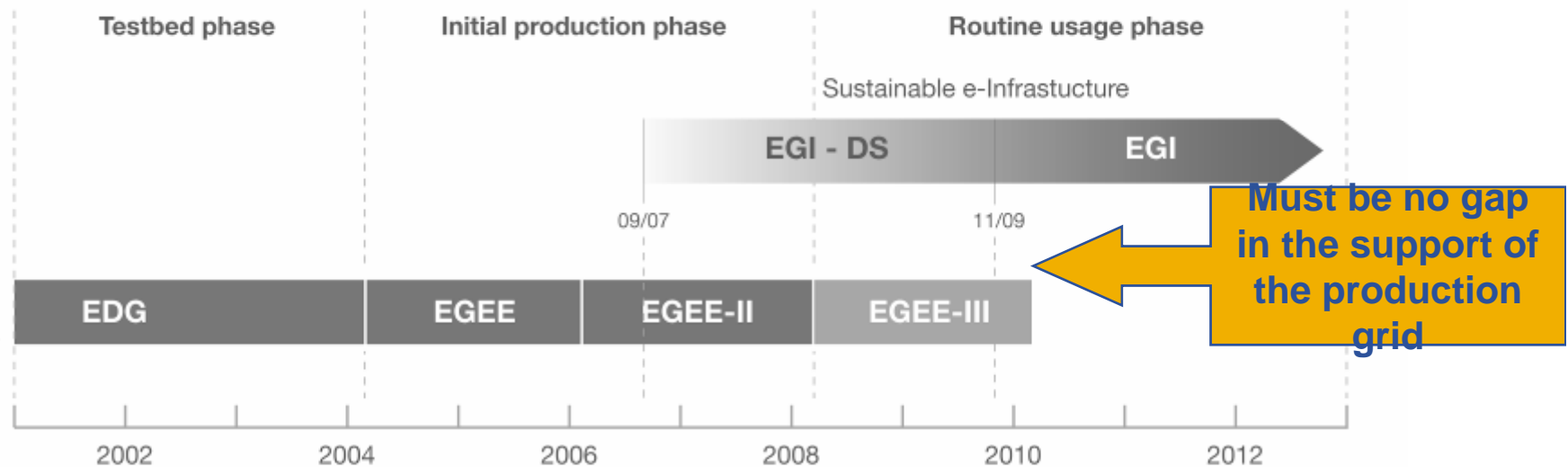
**CPU: 114 Million hours**



**Estimated cost if performed with Amazon's EC2 and S3: € 37,624,412.52**

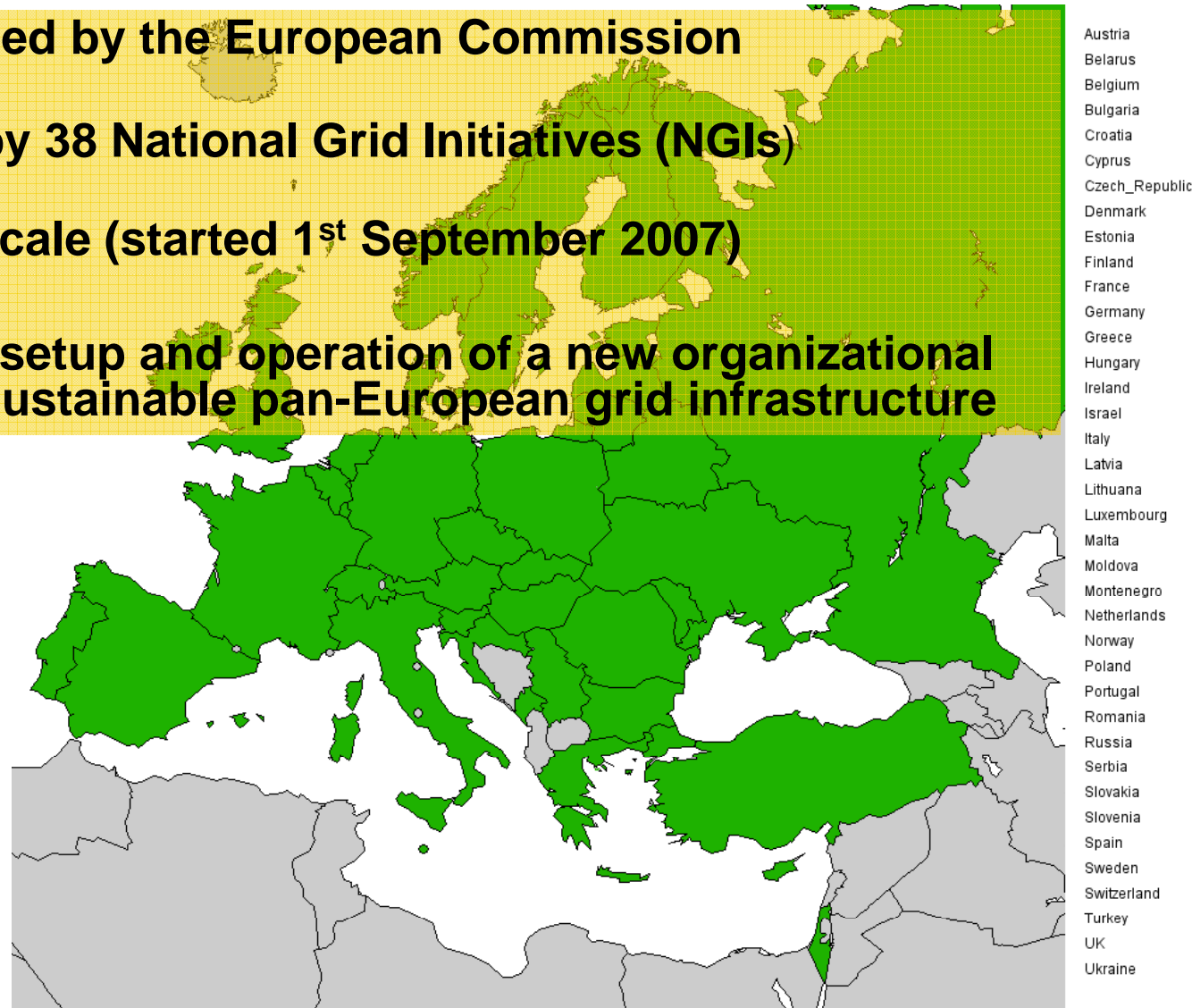
[http://gridview.cern.ch/GRIDVIEW/same\\_index.php](http://gridview.cern.ch/GRIDVIEW/same_index.php) <http://calculator.s3.amazonaws.com/calc5.html?> 17/05/08 \$58688679.08

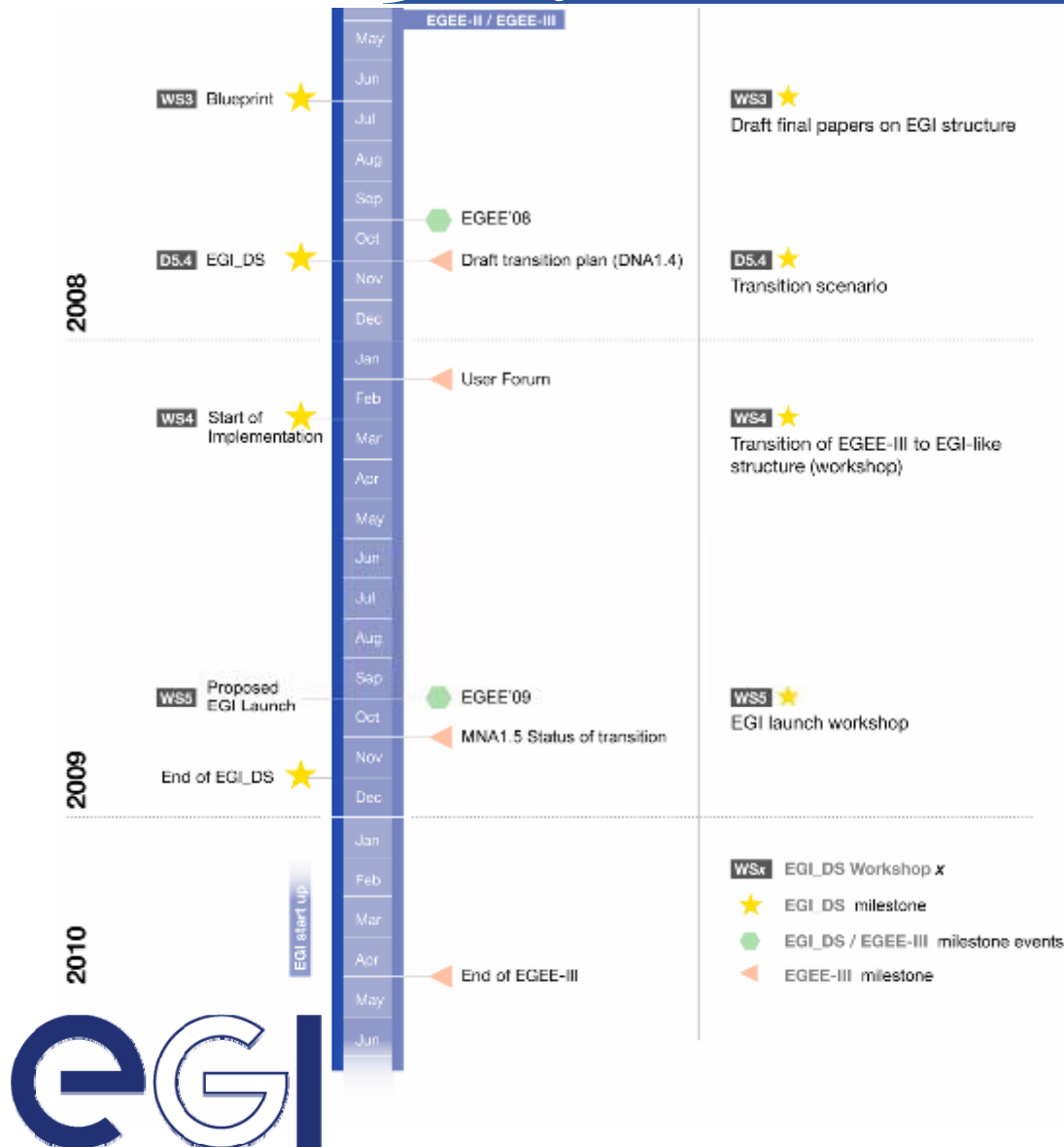
- Need to prepare permanent, common **Grid infrastructure**
- Ensure the long-term sustainability of the European e-infrastructure independent of short project funding cycles
- Coordinate the integration and interaction between National Grid Infrastructures (NGIs)
- Operate the European level of the production Grid infrastructure for a wide range of scientific disciplines to link NGIs





- **Project funded by the European Commission**
- **Supported by 38 National Grid Initiatives (NGIs)**
- **2 year timescale (started 1<sup>st</sup> September 2007)**
- **Prepare the setup and operation of a new organizational model of a sustainable pan-European grid infrastructure**





- A plan has been made with the EGI Design Study project to ensure the knowledge and experience gained by EGEE is fed into the EGI planning process
- EGI\_DS produced a draft blueprint in June 2008
- Discussed at workshop on 30<sup>th</sup> June (~100 participants)
- Updated blueprint to be discussed at EGEE'08
- Produce revised programme of work based on changes possible in year 2 of EGEE-III

## EGEE '08 CONFERENCE

22-26 September 2008

Harbiye Askeri Museum - Istanbul, Turkey

[www.eu-egee.org/egee08](http://www.eu-egee.org/egee08)



- Opening (Monday, AM) – EC position on funding opportunities through to 2012?
- EGI plenary (Monday, AM) – present updated blueprint
- EGI sessions (Monday, PM) – discuss the transition from EGEE & collaborating projects
- Business track (Monday, PM) – get feedback from business community
- Exhibition (Monday - Wednesday) – NGIs & collaborating projects can reserve booths

- The majority of the ESFRI projects will require a distributed computing infrastructure
- The diverse range of user communities supported by EGEE demonstrates that a shared infrastructure for such projects is possible
- EGEE will work with ESFRI projects during their design phase to study suitable computing architectures
  - LIFEWATCH example: EGEE will provide access to the GILDA testbed with associated training and consultancy to allow LIFEWATCH partners to prototype applications
    - LIFEWATCH representatives attended EGEE07
    - EGEE was invited to LIFEWATCH kick-off meeting
  - Contacts with other ESFRI projects are in the process of being established
    - CESSDA – social sciences (will attend EGEE'08)
    - ICOS - Integrated Carbon Observation System
    - EATRIS - European Advanced Translational Research Infrastructure in Medicine



- **EGEE-II has completed successfully**
  - Exceeded all of the targets defined for the project
  - All deliverables have been produced and major milestones met
- **EGEE is THE largest multi-disciplinary research Grid infrastructure in the world**
- **A clear strategy exists for building on the results, knowledge and experience gained**
- **EGEE-III started on 1<sup>st</sup> May and will run for 2 years**
- **EGEE has led the way in building a consistent European view of grid infrastructure via a number of related projects and international collaborations**
  - The success of several collaborating FP7 projects depends on EGEE-III
- **EGEE is the driving force behind preparations for a sustainable grid infrastructure in Europe**
  - If EGI is “late” we will need another mechanism for continued support of the production grid infrastructure at the end of EGEE-III