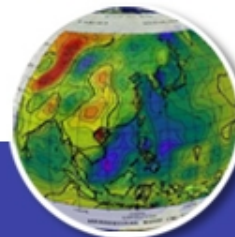




EUAsiaGrid – e-Infrastructure Platform for Asian-Pacific Region

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*EGEE User Forum V, Uppsala, Sweden***



Outline



- **EUAsiaGrid project**
- **Application achievements**
 - Data challenges
 - Application domains supported
 - Underlying infrastructure
- **Sustainability analysis**
 - Roadmap document
- **Beyond EUAsiaGrid**

EUAsiaGrid consortium



- 01** Istituto Nazionale di Fisica Nucleare (Italy) (coordinator)
- 02** CESNET (Czech Republic)
- 03** University of Manchester (United Kingdom)
- 04** HealthGrid (France)
- 05** Ateneo de Manila University (Philippines)
- 06** Australia National University (Australia)
- 07** Academia Sinica (Taiwan)
- 08** Advanced Science and Technology Institute (Philippines)
- 09** Hydro and Agro Informatics Institute (Thailand)
- 10** Infocomm Development Authority (Singapore)
- 11** Institute of Information Technology (Vietnam)
- 12** Institute Teknologi Bandung (Indonesia)
- 13** National Electronics and Computing Technology Center (Thailand)
- 14** University Putra Malaysia (Malaysia)
- 15** MIMOS Berhad (Malaysia)
- 16** Institut de la Francophonie pour l'Informatique (Vietnam)
- 17** National University of Singapore (Singapore)

EUAsiaGrid project aims

- **Promote awareness** in the Asian countries of the EGEE infrastructures, middleware and services
- **Capture local e-Science user requirements** in terms of resources, Grid services, applications
- Build a EuroAsian Grid community
- **Assist regional integration** with the wider Grid infrastructure in collaboration with the EGEE III
- Promote common e-Science applications in Asia and Europe
- **Provide specific training** materials and events targeted to the needs of users in Asian countries

Internal project structure

- **WP1**
 - Project management
- **WP2**
 - Requirements capture
- **WP3**
 - Support of applications
- **WP4**
 - Dissemination
- **WP5**
 - Training

INFN

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UNIMAN

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CESNET

L. Matyska

ASGC

S. Lin

INFN

M. Fargetta

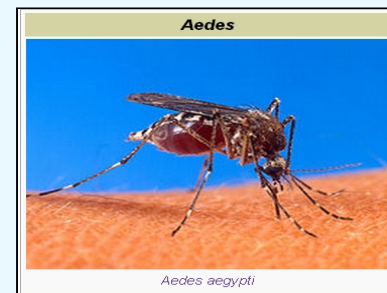
Application achievements



- **Data challenges as activity**
 - in which more than two Asian partners take part
 - that requires non-trivial use of resources
 - that requires long sustainable effort
 - that utilizes grid for collaboration, compute power and necessary logistic arrangements
- **EUAsiaGrid data challenges**
 - Dengue fever forerunner, already finished
 - Earthquake mitigation key area, currently active
 - Climate change key area, currently active
 - Social simulations newly derived, planned

Data challenges

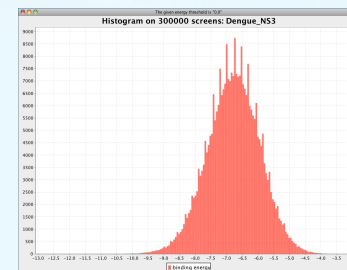
- **Dengue fever**
 - used as a test case of established infrastructure
 - kind of feasibility study to computationally evaluate EUAsiaGrid environment
- **Objective**
 - reduce time and money for drug discovery by Grid *in silico* simulation
 - 2,5 B people are at risk, 50 M cases/year in more than 100 countries
 - 95% cases are children younger than 15 years in South-East Asia



Data challenges

- **Dengue fever**

- screening on 300 000 compounds
- extraction of the top-most 10 % compounds according to their binding energy
- preparation for the first phase wet-lab assay for the most potential 200 compounds



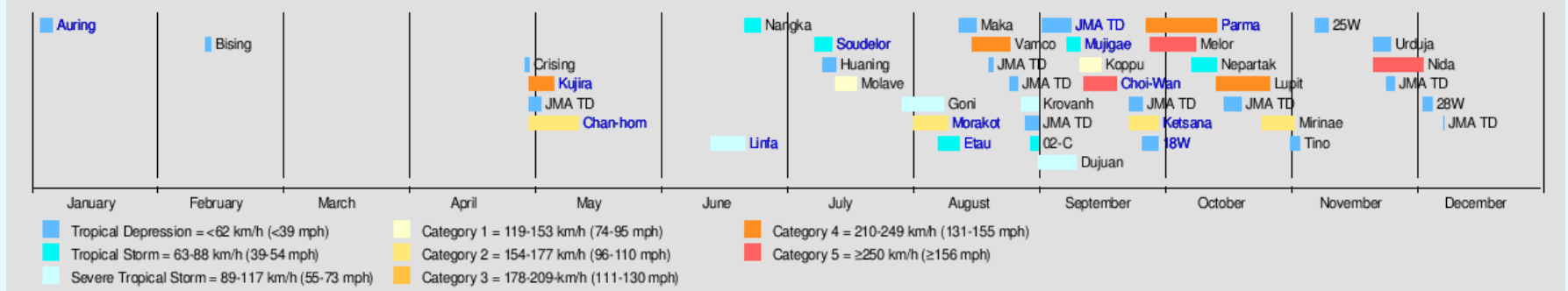
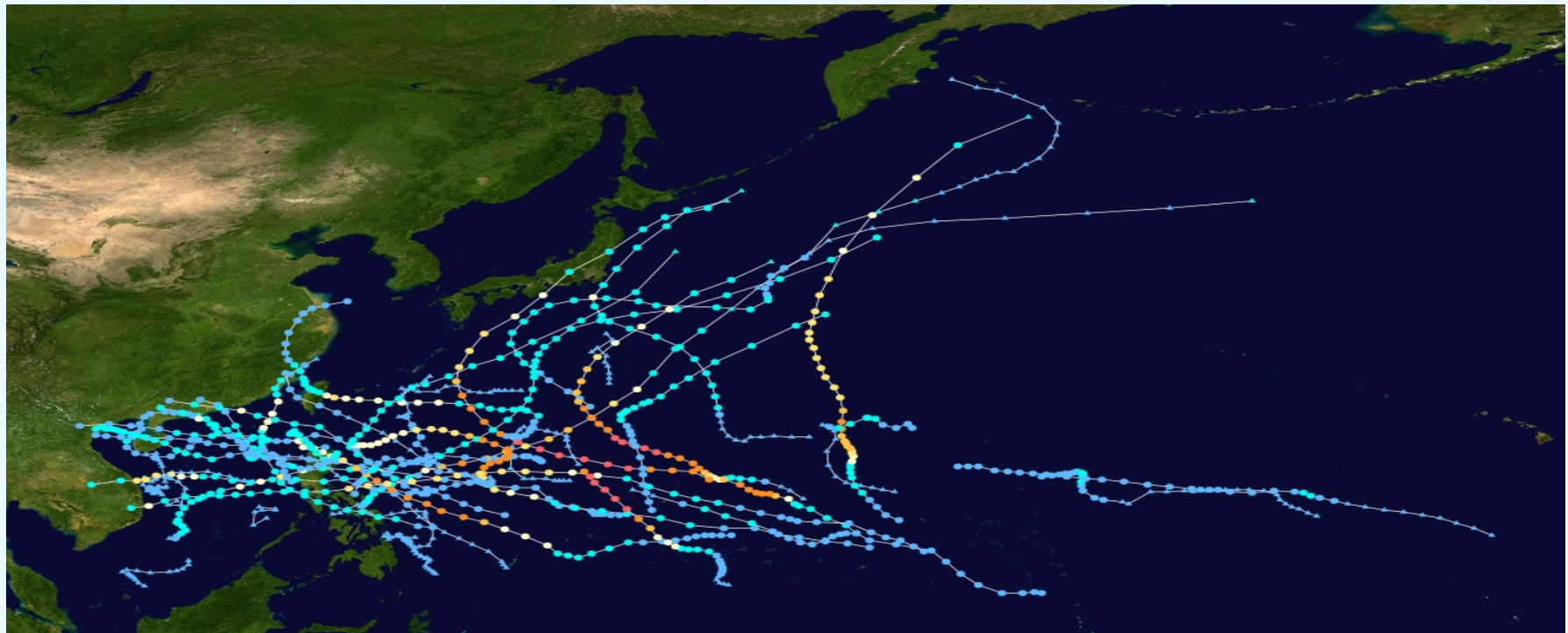
No. of docking jobs	300 000
Estimated computing power	4 167 CPU*days
Experiment duration	60 days
Cumulative results	42,5 GB
Compute resources	268 cores
No. of used CEs	6

Data challenges



- **Climate change**
 - climate change causes more frequent and
 - severe weather extremes, the “unusual” events are becoming “usual” and more frequent
- **Objectives**
 - understand changes and trends of sea level and weather conditions
 - track sea surface temperature and sea surface height anomalies
 - forecast typhoons and change of season
 - pilot platform for weather simulation on Grid

Data challenges



Data challenges



- **Earthquake mitigation**
 - provide improved risk analysis by
 - better understanding of fault rupture mechanism
 - detailed knowledge of local geological structure
 - more accurate simulation of 3-D seismic wave propagation
- **Objectives**
 - collect as much data as possible for each earthquake events and related disasters
 - sensor networking and earthquake data center
 - hazard mapping, early warning, also for tsunami

Data challenges

Welcome!

This wizard will help you set up simulation parameters:

- Location and tomography model
- Earthquake Source (CMTSOLUTION format)
- Stations

Available models:

Global (1D_isotropic_prem)

Global (1D_isotropic_prem)

Southeast Asia (1D_isotropic_prem)

Taiwan (1D_isotropic_prem)

Simulation Wizard


Earthquake Source
choose a source for simulation.

Source

User Uploaded:

Global CMT Site: 100700A

Information



Description: MINDORO, PHILIPPINE ISLA
Date: 2000 1007
Time: 08:49:43
Location
Latitude: 13.4100
Longitude: 120.5200
Depth: 135.8000
Magnitude
Body-wave: 5.0
Surface-wave: 0.0
Moment Tensor
Mx: 5.067000e+23
Mt: -1.693000e+23
Mr: -3.374000e+23

Simulation Wizard

Stations
add extra stations.

New Station

Station: TW

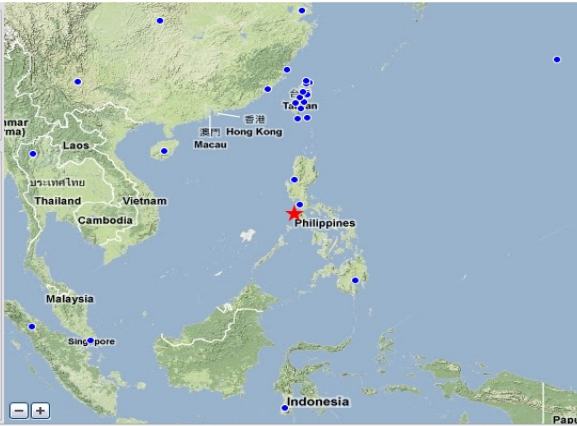
Latitude (deg):

Longitude (deg):

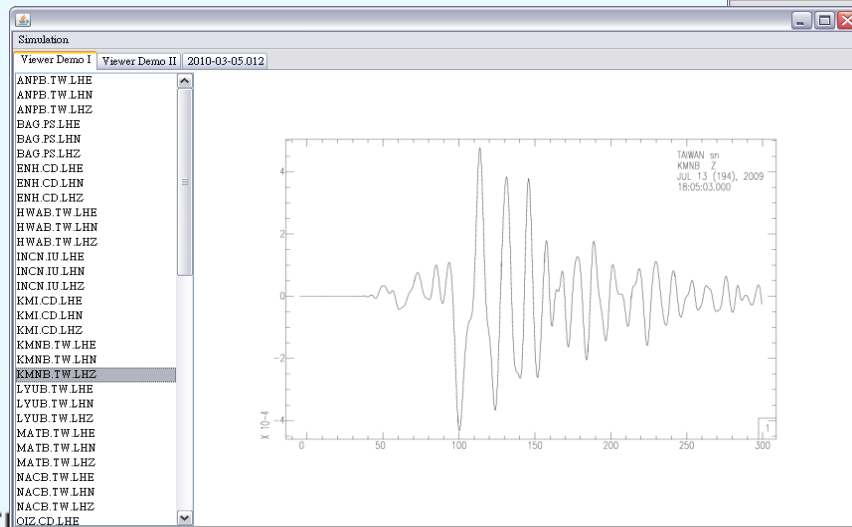
Elevation (m):

Station List

- MCK AK[63.73230, -148.9349]
- CTAO AS[-20.08820, 146.2545]
- KONO AS[59.64910, 9.598200]
- MAJO AS[36.54090, 138.2083]
- ZOBO AS[-16.27000, -68.12500]
- ASES AZ[33.62080, -116.4664]
- EZN AZ[33.49150, -116.6670]
- CRY AZ[33.56540, -116.7373]
- ELKS AZ[33.58130, -116.4496]
- FRD AZ[33.49470, -116.6022]
- GLA C AZ[33.05120, -114.8270]
- GLA C AZ[33.60140, -116.4781]
- KNW AZ[33.71410, -116.7119]
- LVA2 AZ[33.35160, -116.5615]
- MONP AZ[33.89270, -116.4225]
- PPO AZ[33.61170, -116.4594]



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Application achievements



- **Application domains supported**
 - Computational chemistry
 - Bioinformatics and biomedical research
 - Digital culture and heritage
 - Trade modelling
 - Engineering physics
 - Ecology and biodiversity
 -
- **Final Report on Applications under development!**

Application achievements



- **Currently on-going studies and analyses**
 - g-Info - grid-based international network for surveillance
 - HOPE – collaborative platform for telemedicine
 - GAP GVSS – virtual screening service
- **Application repository**
 - expected to contain up-to-date application programs information
 - description of their status, type of availability, porting process and instructions for direct utilization within EUAsia VO

Undelying infrastructure



- **EUAsia virtual organization**
 - generic, application neutral VO for AP region
 - starting from ASGC and UPM, now also EU resources from CESNET and INFN
 - based on “catch-all” approach established in EGEE for researchers from any discipline with a simplified registration procedure
- **Resources in EUAsia VO**
 - ~ 600 CPUs and 65 TBs, about 200 users
 - all partners have UI to access resources
 - all partners have set up RA/CA

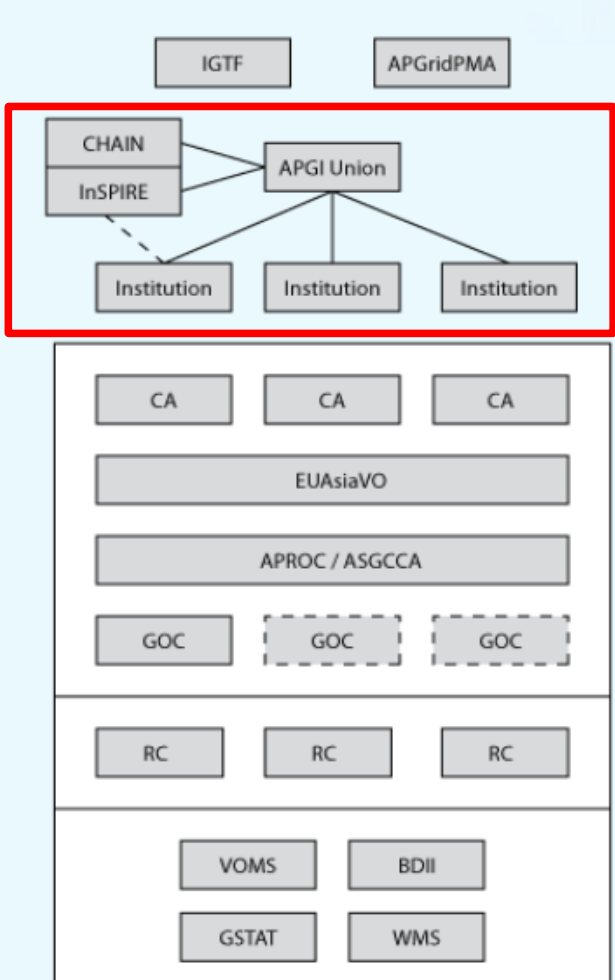
Sustainability analysis



- **Organisational and technical roadmap towards**
 - a robust, persistent and sustainable e-Infrastructure in Asia-Pacific region
 - integrated with EGI and the worldwide e-Infrastructure
- **Asia-Pacific Grid Initiative**
 - APGI Union as interim model
 - JRU for participation within international projects



Sustainability analysis



Governance

Certification

International Level

National Level

Support Structures

Certification

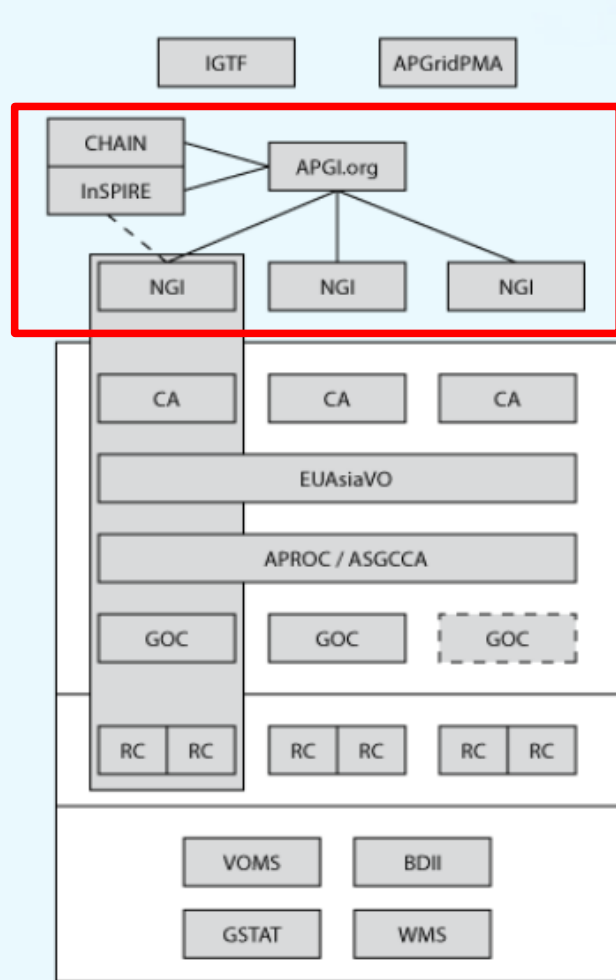
VO Management

Catch-All Support & Certification

National-Level Support

Resources

Core Services



Governance

Certification

International Level

National Level

Support Structures

Certification

VO Management

Catch-All Support & Certification

National-Level Support

Resources

Core Services

Sustainability analysis



- **Heterogeneity in policy formation and authority within and between countries makes an easy adoption of EGI/NGI model impossible**
- **APGI-Union as an interim model and transition mechanism from (proto-) NGIs into full-fledged NGIs**
- **APGI-Union**
 - institutions that are (emerging) resource providers
 - will evolve into APGI.org to reflect EGI/NGI model
 - will lobby at national and regional level for establishment of NGIs and suitable policy and funding support for APGI.org

- **Roadmap implementation**
 - establishment of JRU, APGI Union
 - regular roadmap updates
- **Project CHAIN**
 - Asian-Pacific support in global scale
 - Coordination and Harmonization of Advanced e-INFRAstructures
 - project accepted by European Union
 - negotiations currently on-going