Sommario della sessione:

Nuovi Sistemi e Tecnologie per il Calcolo Scientifico

Claudio Gheller, Antonia Ghiselli, Federico Massaioli

CSFI08, Senigallia, 31/05/2008

CINECA
Dipartimento Sistemi & Tecnologie

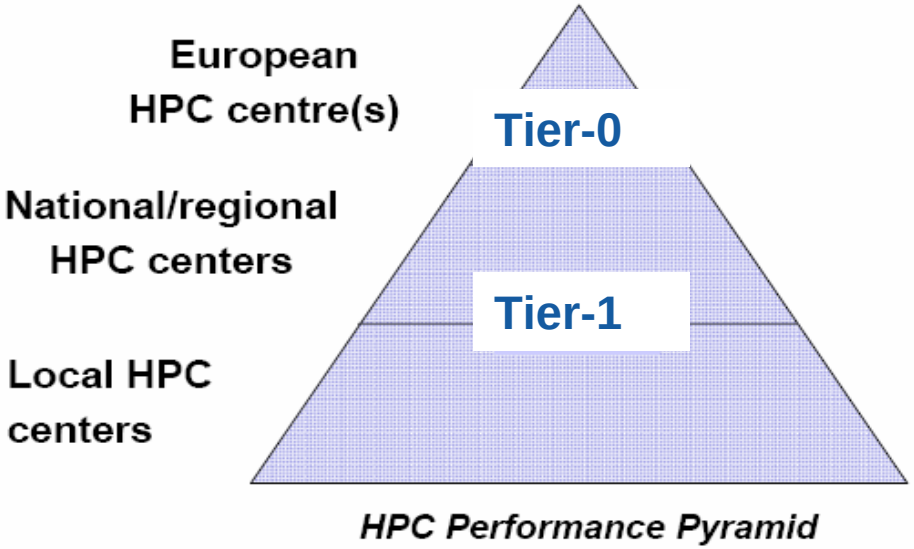
Iniziative europee per il calcolo

Sanzio Bassini

CINECA
Casalecchio di Reno (BO)
Via Magnanelli 6/3, 40033 Casalecchio di Reno | 051 6171411 | www.cineca.it

Il modello dell'ecosistema HPC Europeo

Implement a European HPC Platform – vision & ecosystem



HPC Performance Pyramid

- To support scientific applications *exceeding capacities* of national resources
- Any European HPC system needs to be significantly bigger than national systems in the same time frame
- Petaflop capacity by 2009

- The HPC infrastructure is a needed integral resource component of the *European Science Grid* infrastructure
- *Pyramid* or *two-tier shape* for infrastructure: Petaflop machines (Tier-1) at the pyramid top; existing National/Regional centres form Tier-2
- The two tiers to be strongly integrated together into *a global grid "à la DEISA"* with a unique operational & service provisioning model

PRACE, DEISA, HPC-Europa

- **PRACE:** State Member in kind funding for the computing infrastructure implementation, EU co-found the transnational access

- **DEISA:** deploy and operate a persistent, production quality, distributed supercomputing environment with continental scope.

- **HPC-Europa:** Provision of transnational access to HPC systems; provision of a suitable computational environment

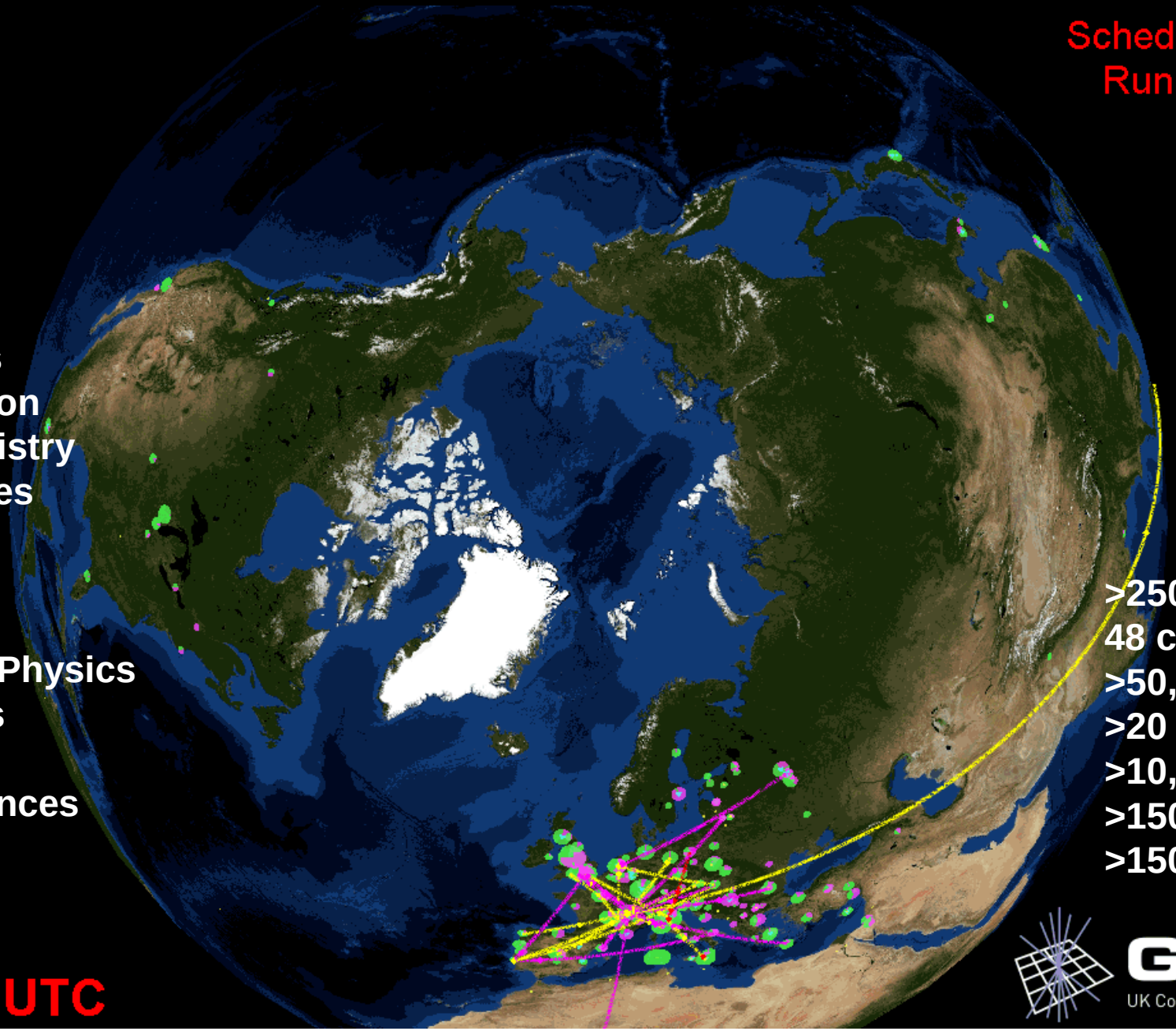
La Grid da EGEE a EGI
e da infn-grid a IGI

A.Ghiselli
INFN-CNAF
Bologna

Calcolo Scientifico nella Fisica Italiana
Rimini 27-30 maggio 2008

EGEE, a production grid infrastructure

Enabling Grids for E-sciencE



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

>250 sites
48 countries
>50,000 CPUs
>20 PetaBytes
>10,000 users
>150 VOs
>150,000 jobs/day

GridPP
UK Computing for Particle Physics

EGEE, EGI, IGI

Grids are all about sharing – they are a means of working with groups around the world:

- **EGEE:** operates the world's largest multi-disciplinary grid infrastructure for scientific research

- **EGI:** need to prepare the long-term to move grids from research projects to permanent production systems. Based on National Grid Infrastructures

- **IGI:** Italian Grid Infrastructure e' una EU Joint Research Unit; Interfaccia unica verso l'EU a livello Italiano Entro 3/2009 deve diventare un'entita' legale

- **gLite Consortium** will preserve and evolve the EGEE middleware in the EGI

I progetti Grid nazionali e i collegamenti con la Grid italiana ed Europea

I Progetti PON Ricerca 2000-2006 CRESCO, CYBERSAR, PI2S2, SCOPE

Alberto Masoni

INFN SEZIONE DI CAGLIARI

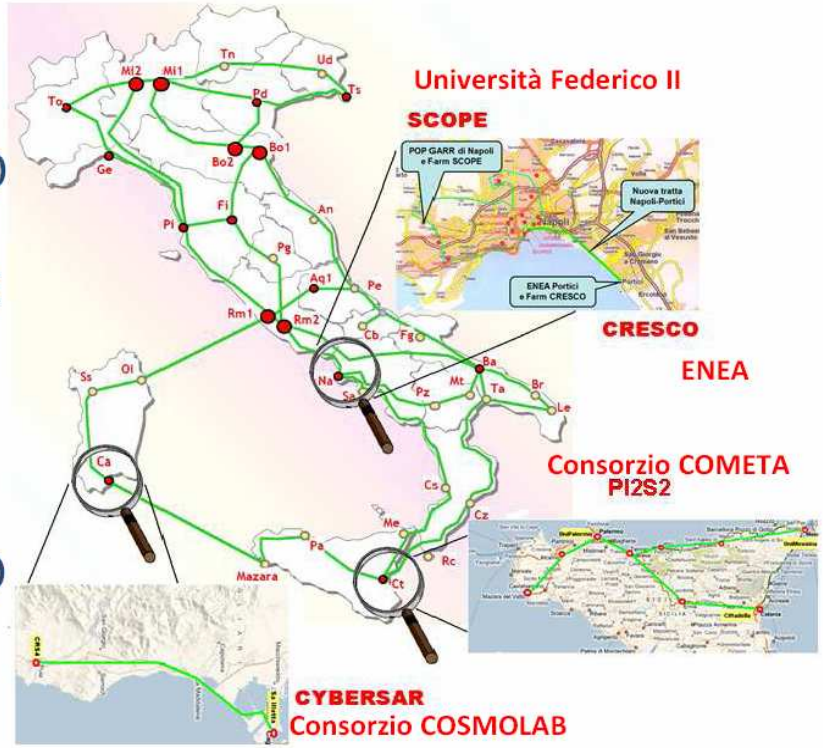
RESPONSABILE SCIENTIFICO PROGETTO CYBERSAR

I PROGETTI

- CRESCO
  - ENEA
- CYBERSAR
  - Consorzio COSMOLAB
- PI2S2
  - Consorzio COMETA
- SCOPE
  - Universita' Federico II Napoli

L' INFRASTRUTTURA

- 40 M-EUR DI INVESTIMENTO SU PERSONALE E INFRASTRUTTURE
- > 8000 CORE PROCESSORS
- > 500 TB DISCO



CONCLUSIONI

- 4 Progetti distinti interoperano per una la realizzazione di una grande infrastruttura per applicazioni di ricerca fondamentale e applicata
- Consistente Capitale di Risorse
  - Di calcolo: > 8000 core processors
  - Umano: rete di centinaia di ricercatori
- Futuro di sviluppo per una e-infrastructure italiana integrata in una visione europea

Resources and Services Virtualization without Barriers: Cloud Computing and RESERVOIR project

http://www.reservoir-fp7.eu

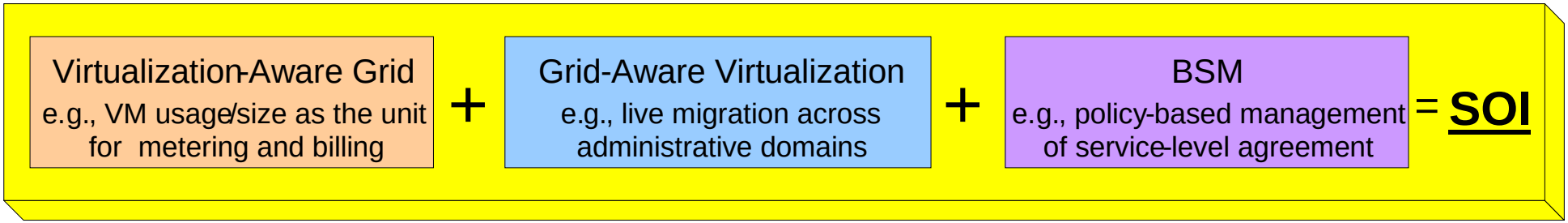
Author:Stefano Beco (stefano.beco@elsagdatamat.com)

The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n°215605.

Cloud computing is an information technology infrastructure in which computing resources are virtualized and accessed as a service.

Integration of virtualization technologies with grid computing driven by new techniques for **business service management**

Service Oriented Infrastructure (SOI) Equation



Il calcolo dedicato in fisica teorica: rassegna e prospettive

R. (lele) Tripiccione
Dipartimento di Fisica, Università di Ferrara
INFN, Sezione di Ferrara
tripiccione@fe.infn.it

CSFI2008, Rimini, 30 maggio 2008

università di ferrara
DA SEICENTO ANNI GUARDIAMO AVANTI.

INFN

My daddy said we looked ridiculous,
but, boy, we broke some hearts!

(from "I was only joking", Rod Stewart)

Conclusions (appropriate for fool's day 2008)

Tailoring a computer to a specific number-crunching application brings substantial technical and economic advantages

In the last two – three years...
New computer architectures (both at chip and system level) seem to have incorporated several lessons coming from LQCD computing

It is probably fair to say that LQCD computing has given a non trivial contribution to HPC computing at large

In the near future:
collaboration with industry is probably the most effective approach

but very specific niches, with huge potential for performance, are still open.