



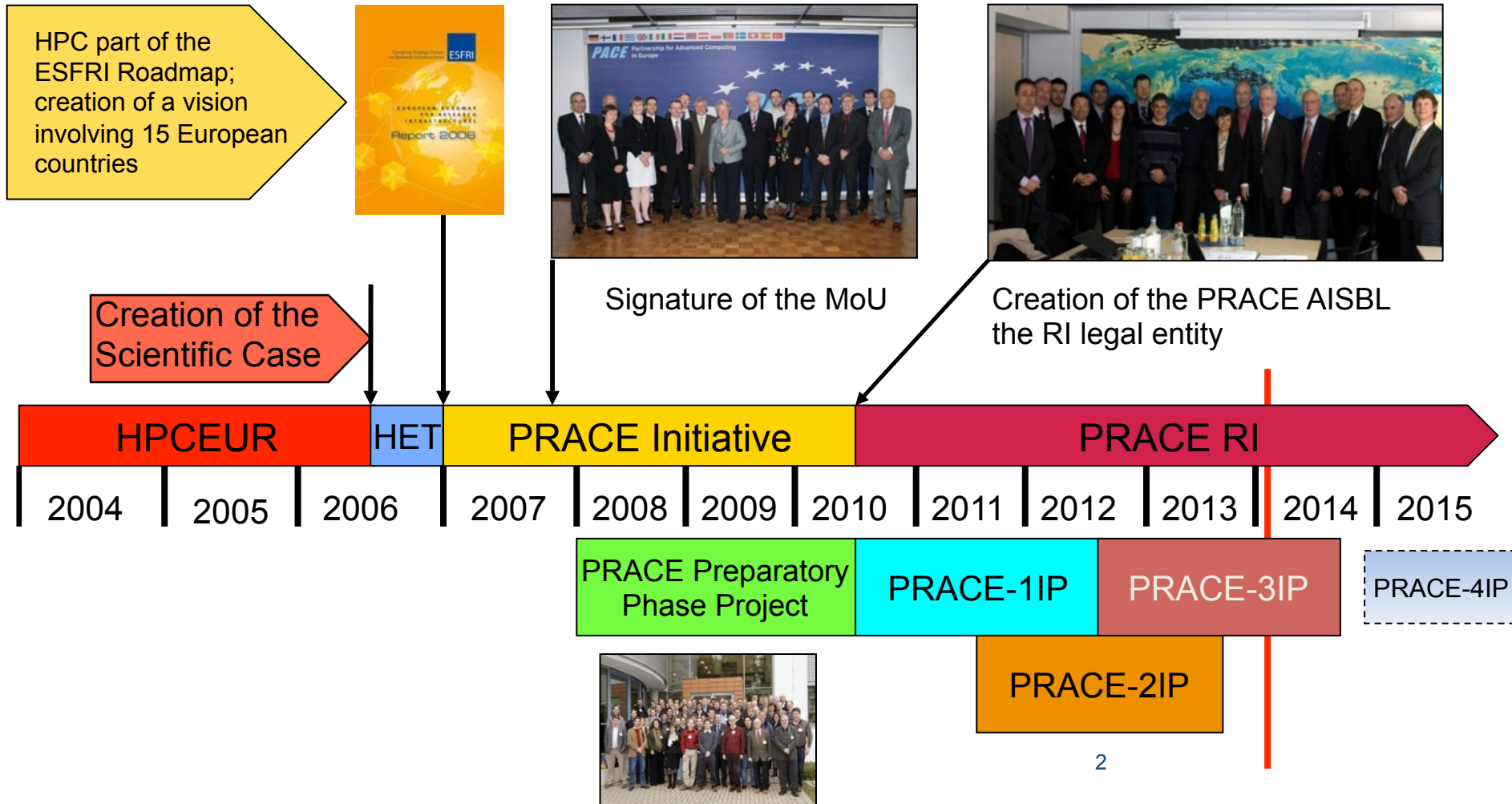
PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE

PRACE the European HPC infrastructure: World Class HPC Services for Science

Sergio Bernardi (CINECA), PRACE Board of Directors
E-Infrastructure support for the life sciences, May 2014



PRACE History: An Overview of a Success Story





PRACE: *the* European HPC Research Infrastructure

- Enabling **world-class science** through large scale simulations
- Providing **HPC services** on **leading edge capability** systems
- Operating as a **single entity** to give access to **world-class supercomputers**
- **Attract, train** and **retain** competences
- **Lead** the **integration** of a highly effective **HPC ecosystem**
- Offering its resources through a **single** and **fair** pan-European **peer review process** to **academia** and **industry**



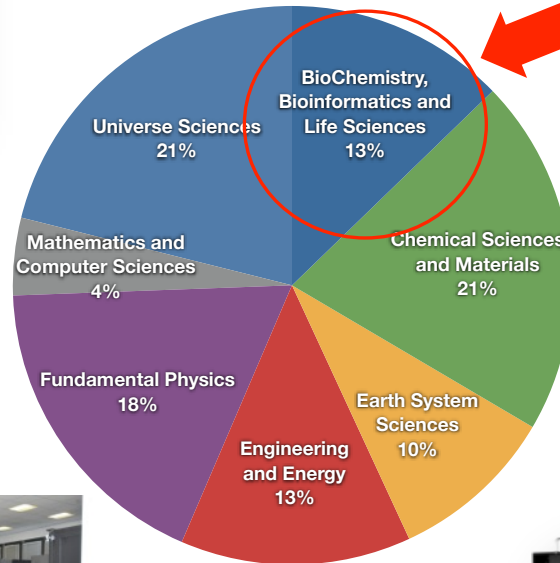
- **25** members, since 2010
- **6** supercomputers in **4** hosting countries, nearly **15 Pflop/s**
- Common operation procedure between **35** centers in Europe
- **22** prototypes evaluated
- **169** white papers produced
- **1500** communications from our users
- **166** Thesis
- HPC Community building: **183** events

- **8 billion** hours granted since 2010 (a system with 900k cores for 1 year)
- **303** scientific projects enabled from **38** countries
- More than **20 SME** and **industries** access in first year
- **360** PATC Training days
- **2734** Trained people
- **170** applications enabled

PRACE operations after 4 years

> 15 Pflop/s provided

8 BILLION CORE HOURS
awarded since 2010



MareNostrum: IBM
BSC
Barcelona, Spain



JUQUEEN : IBM BlueGene/
Q
GAUSS/FZJ
(Forschungszentrum)
Jülich, Germany



CURIE : Bull Bullx
GENCI/CEA
Bruyères-le-Châtel,
France



SuperMUC: IBM
GAUSS/LRZ (Leibniz-
Rechenzentrum)
Garching, Germany



FERMI: IBM BlueGene/Q
CINECA
Bologna, Italy



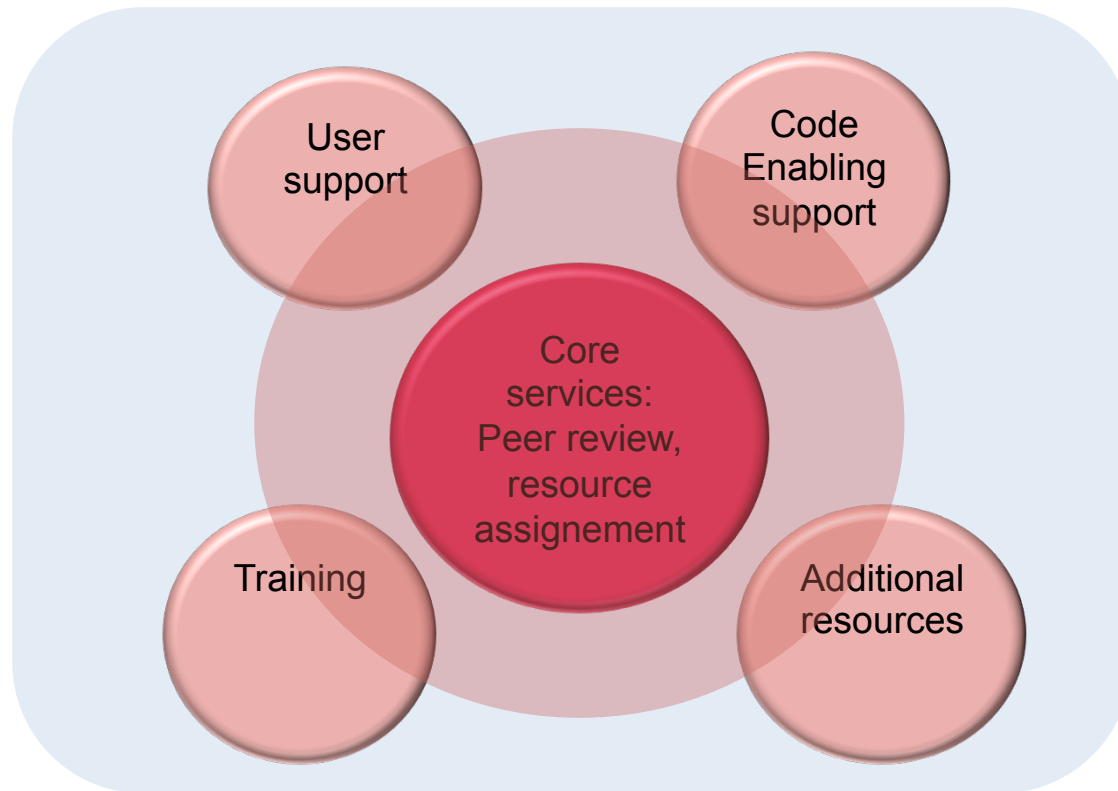
HERMIT : Cray
GAUSS/HLRS (High Performance Computing
Center Stuttgart)
Stuttgart, Germany

An access model focused on the sole criterion of scientific excellence

- ❑ Free at point of use, need to publish results at the end of the grant period
- ❑ Three types of resource allocations for scientists
 - **Preparatory Access**
 - optionally with support from PRACE experts
 - Prepare proposals for Project Access
 - **Project Access** (every 6 months)
 - For a specific project, grant period ~ 1 year
 - For individual researchers and research groups (no restriction of nationality for both researcher and centers)
 - **Programme Access**
 - Available to major European projects or infrastructures that can benefit from PRACE resources
 - Planned for 2 years allocation

50 or 200k CPU hours/ proposal

User oriented approach for the HPC ecosystem



Support for storage needs of PRACE users

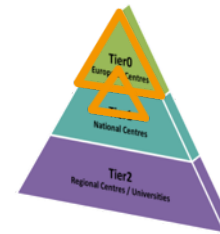
- PRACE HM centers provide the storage environment in terms of capacity focused on the life time of the awarded proposal (12 months)
- Present availability:
 - Storage transfer To/from production: 20-100TB
 - Short term storage: scratch (20-200TB), work(1-200TB), home(max 100GB), archive(>100TB)
 - Access by dedicated PRACE network (based on 10Gb technology)
- Data have to be transferred within 2 months from end of the project

Short/medium term plans

- To run a PRACE program access call jointly with available data infrastructure and services (pilot in preparation with EUDAT)
- Users will have the possibility to access data facilities and services for medium-long term storage as additional resources, free at point of use
- PRACE is open to collaboration with emerging and relevant players
- Interoperability and/or integration at service level is considered a key factor

The HPC European e-infrastructure: persistence, long term sustainability

- Provision of seamless and efficient Tier-0 services adapted to the needs of different user classes
- Activities that build on national Tier-1 capabilities (training, service prototyping, software development etc.)



- Governance, business models and long term financial sustainability
- Strategy for deployment of world-class HPC environment

- Infrastructure based on 50 Pflop/s systems (minimum)
- 100 M€ minimum TCO

- Openness to new user communities and new applications, and Industrial take-up of HPC services in particular by SMEs

- Work in synergy with:
 - Centres of Excellence
 - European Technology Platform for HPC by providing specs for future exascale prototypes and systems

Services/Ecosystem

- Training
- Mobility program to users
- Code porting, application enabling
- Communication, dissemination
- New types of access

- Training and skills development

Scope of the
EC H2020
HPC support

