HP-SEE

High-Performance Computing Infrastructure for South East Europe's Research Communities

8th e-Infrastructure Concertation Meeting, November2010

www.hp-see.eu

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High-Performance Computing Infrastructure for South East Europe's Research Communities

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- **Contract n°:** RI-261499
- **Project type:** CP & CSA
- **Call**: INFRA-2010-1.2.3: VRCs
- **Start date:** 01/09/2010
- **Duration:** 24 months
- **Total budget:** 3 885 196 €
- **Funding from the EC:** 2 100 000 €
- **Total funded effort, PMs:** 539.5
- **Web site:** www.hp-see.eu

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HP-SEE Partnership

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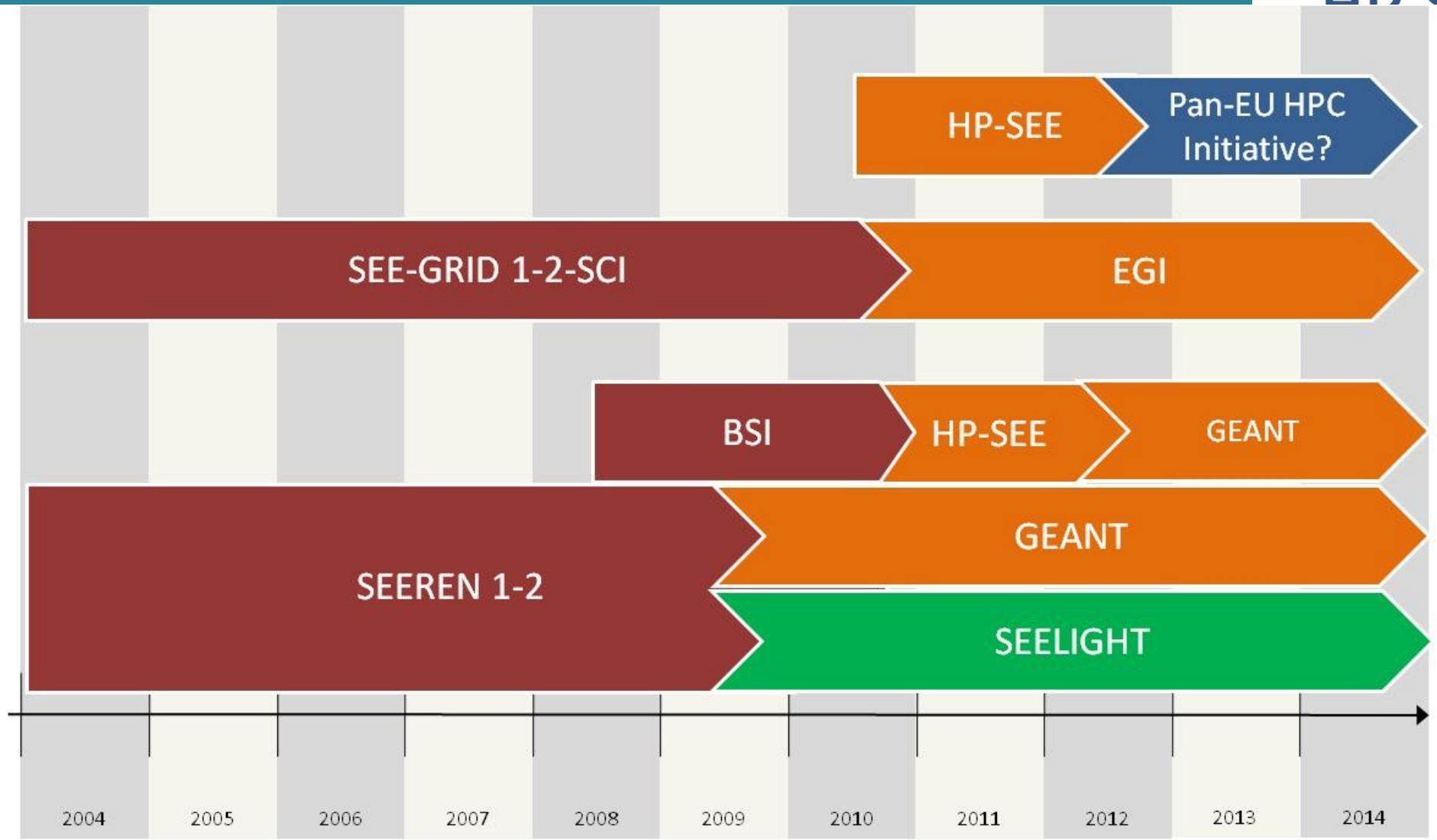
Contractors (14)

GRNET	Coordinating Contractor	Greece
IPP-BAS	Contractor	Bulgaria
IFIN-HH	Contractor	Romania
TUBITAK ULAKBIM	Contractor	Turkey
NIIFI	Contractor	Hungary
IPB	Contractor	Serbia
UPT	Contractor	Albania
UOBL ETF	Contractor	Bosnia-Herzegovina
UKIM	Contractor	FYROM
UOM	Contractor	Montenegro
RENAM	Contractor	Moldova (Republic of)
IIAP NAS RA	Contractor	Armenia
GRENA	Contractor	Georgia
AZRENA	Contractor	Azerbaijan

Third Party / JRU mechanism used

associate universities / research centres

Context: the Timeline



SEE eInfrastructure activities – past 6 years

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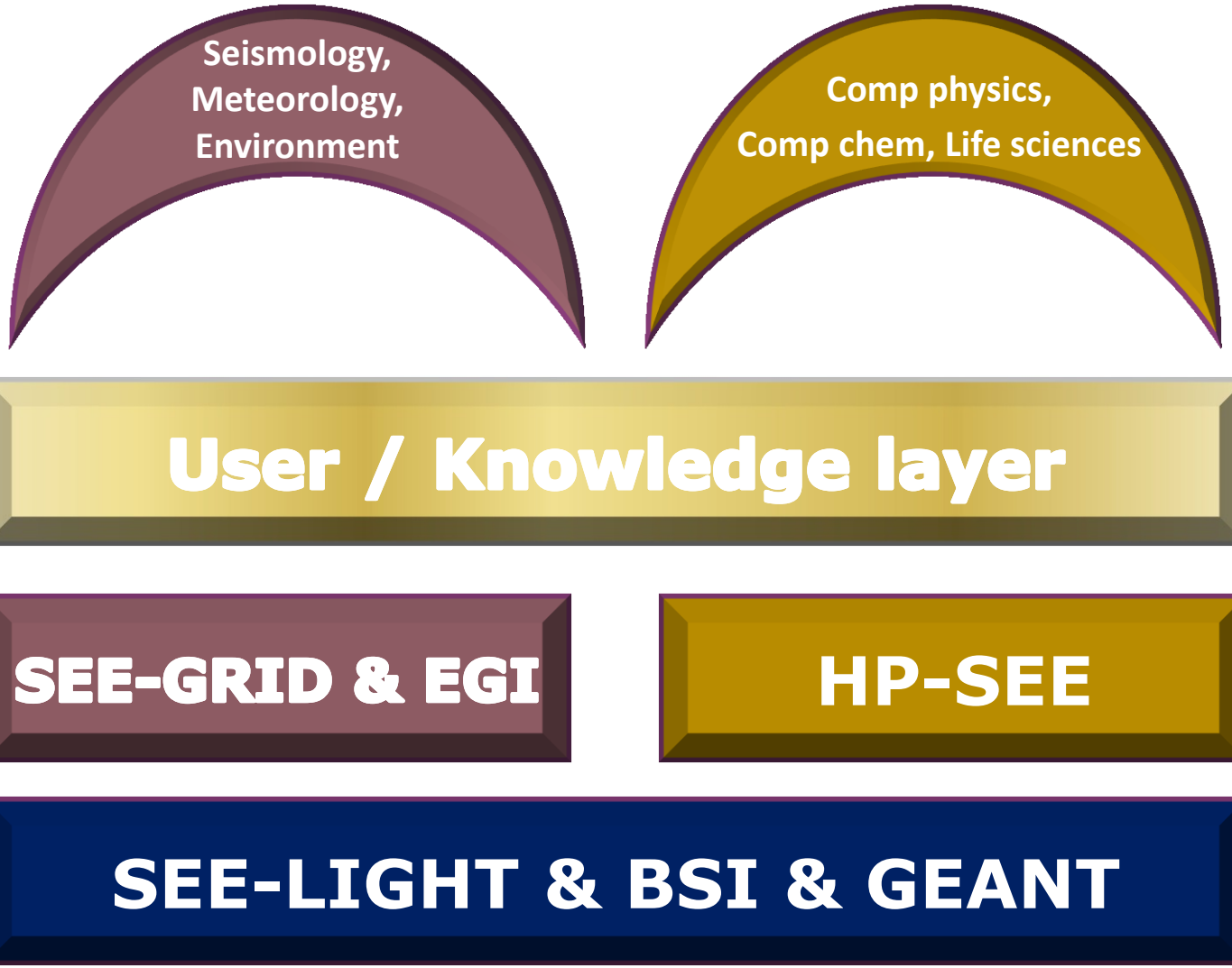
- **SEEREN1/2:** regional inter-NREN connectivity and GEANT links [DGINFSO]
- **BSI:** Southern Caucasus links [DGINFSO]
- **SEELIGHT:** lambda facility in SEE [Greek HiperB]
- *Result: sustainable national & regional networks, most countries in GEANT*

- **SEEGRID1/2:** regional Grid infrastructure, building NGIs and user communities
- **SEE-GRID-SCI:** eInfrastructure for large-scale environmental science user communities: meteorology, seismology, environmental protection. Inclusion of Caucasus. [DGINFSO]
- *Result: sustainable national Grids, all countries within European Grid Initiative*

- **HP-SEE**: regional HPC interconnection and 2nd generation Caucasus link
- *Expected result: sustainable national HPC centers, long-term sustainable (hierarchical) model in collaboration with PRACE and DEISA*

- **SEERA-EI:** regional programme managers collaboration towards common eInfrastructure vision, strategy and regional funds [DGRTD]
- *Result: ensuring long-term national-level funds and regional funds to complement EC funds*

Context: the Model: Converged communication & service infrastructure for South-East Europe



HP-SEE Project Objectives

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- Objective 1 – Empowering multi-disciplinary virtual research communities
- Objective 2 – Deploying integrated infrastructure for virtual research communities
  - Including a GEANT link to Southern Caucasus
- Objective 3 – Policy development and stimulating regional inclusion in pan-European HPC trends
- Objective 4 – Strengthening the regional and national human network

Work Organization - PERT

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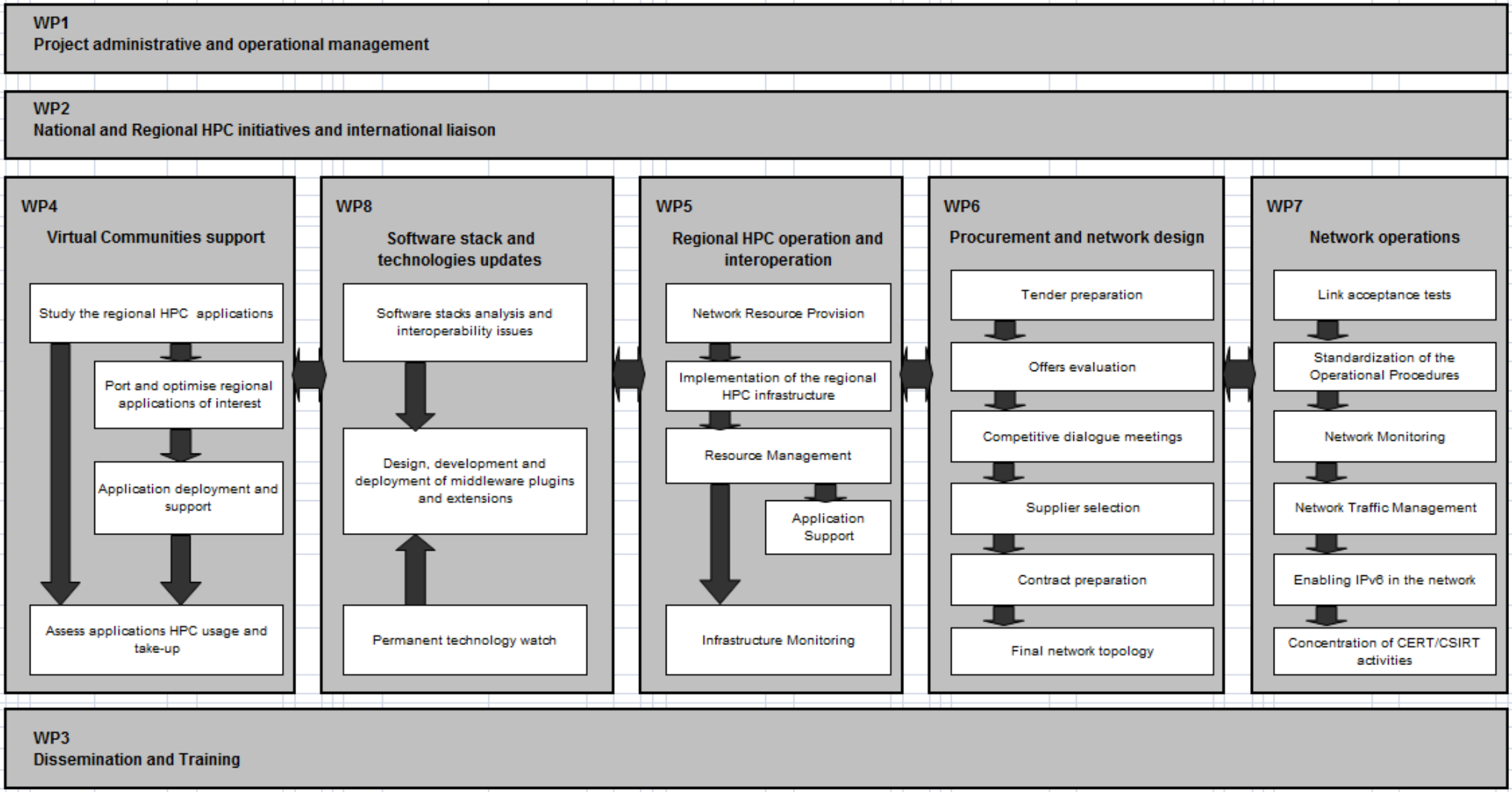

Existing infrastructure – Blue Gene/P

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- IBM Blue Gene/P –**two racks**, 2048 *PowerPC 450processors (32 bits, 850 MHz), a total of **8192 cores**;*
- Double-precision, dual pipe floating-point acceleration on each core;
- A total of **4 TB** random access memory;
- 16 I/O nodes currently connected via fiber optics to 10 Gb/s Ethernet switch;
- Theoretical peak performance: Rpeak= **27.85 Tflops;**
- **Energy efficiency: 371.67 MFlops/W: Green top 10**

- Smaller HPC machines in **Romania**, **Bulgaria**, **Hungary**
- Upcoming purchases in **Hungary**, **Serbia** and **Greece**

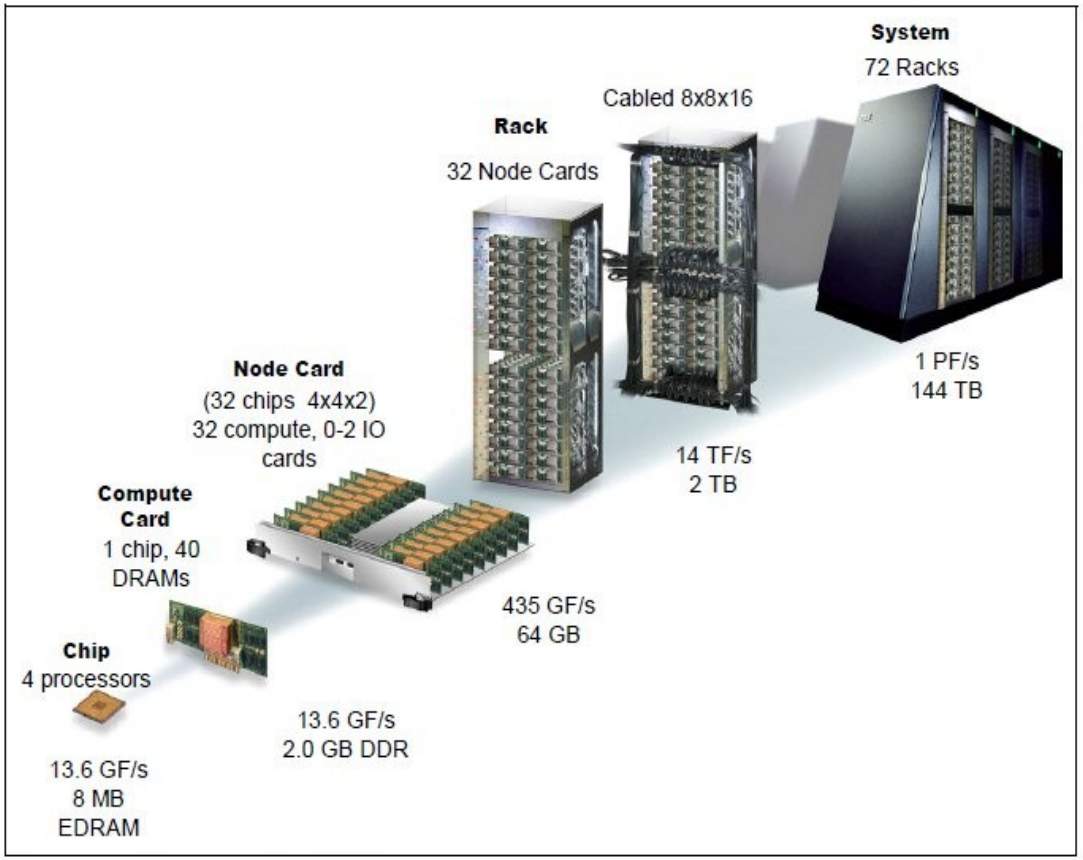

Figure 1-2 Blue Gene/P packaging

Introduction to VRCs

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- Comp. Physics
  6 countries,
  8 apps.
- Comp. Chemistry
  6 countries,
  7 apps.
- Life Sciences
  5 countries,
  7 apps.

Country	Physics	Chemistry	Life Sciences	TOTAL
Albania	1			1
Armenia			1	1
Bosnia-Herzegovina		1		1
Bulgaria	2	2		4
Georgia			1	1
Greece		1	2	3
Hungary			2	2
Moldova	1			1
Montenegro			1	1
FYR of Macedonia	1	1		2
Romania	2	1		3
Serbia	1	1		2
TOTAL	8	7	7	22

Long-term vision…

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- Being on the technological par with the rest of Europe
- Enabling local scientists to use their potential
- Role-model for regional developments
- Leading the way in wider contexts