ITEA 2

INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

ITEA2: a potential framework for developing industrial HPC applications and infrastructures

Gérard Roucairol - Vice-Chairman ITEA 2

ITEA2: a EUREKA ICT Cluster
Success Patterns

- Bottom up : Vision, Strategic Research Agenda & Roadmap
- Core Group of Global Players
- Large Community of SMEs, Universities and Academic Research Institutes
- Well defined Organisation (Industry // Public Authorities): Board//DC, Board Support Group//AC, Steering Group, Office
- Well defined Processes: Calls, POs, FPPs, Labelling, Funding, Reviews, Exhibition & Award Competition

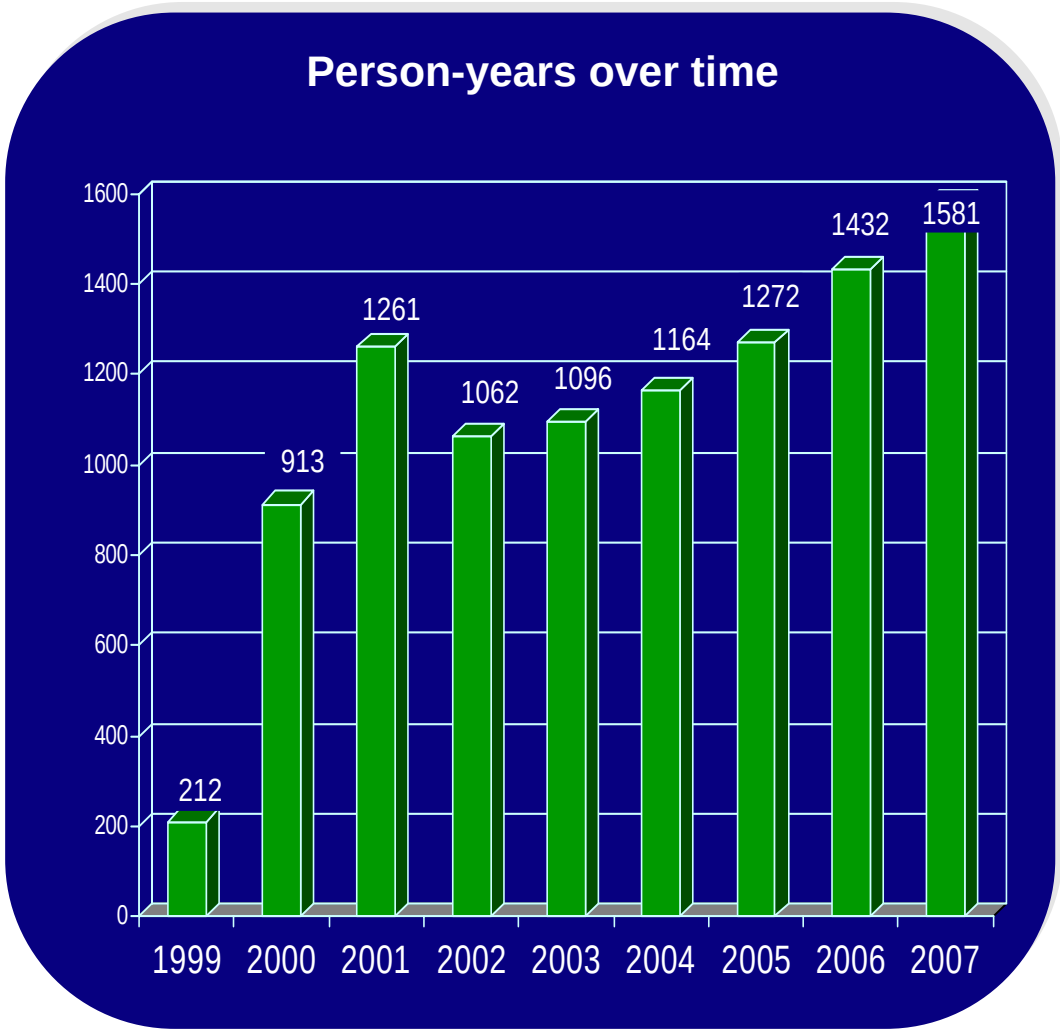
The initiators of ITEA 2

- The ITEA 2 Board members are:

  Airbus, Alcatel, Barco, Bosch, Bull, DaimlerChrysler, European Federation of High Tech SMEs, Nokia, Philips, Siemens, Telvent, Thales and Thomson.

- The combined 2004 totals of this group are:
  - Total turn-over: **€380 billion**
  - Total R&D spend: **€29 billion**
  - Total no. of employees: **1.5+ million** of which 210.000 in R&D (12% of Europe's total number of researchers)

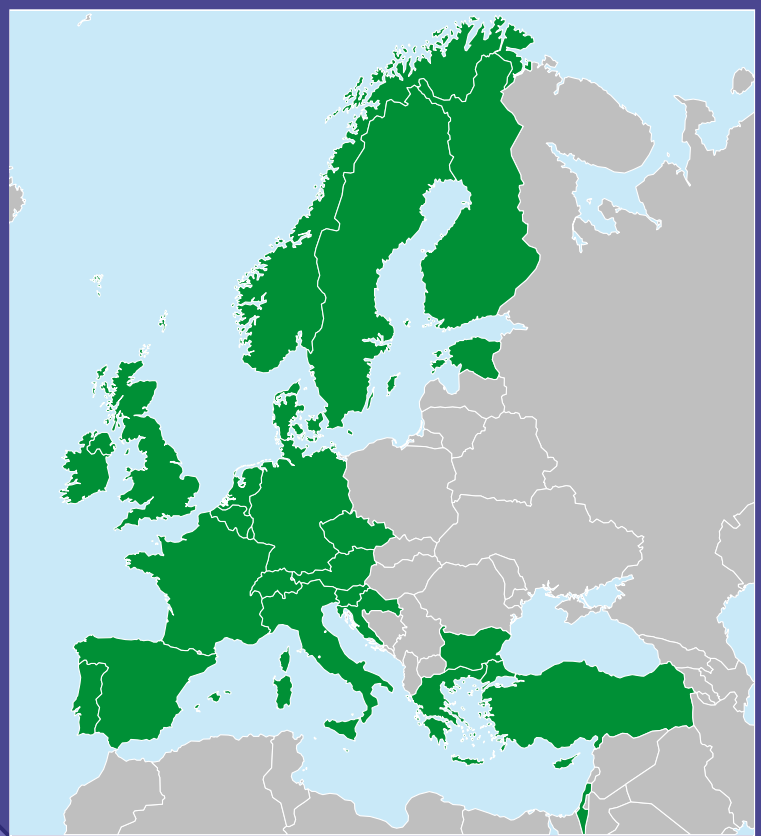
There's growing interest in ITEA



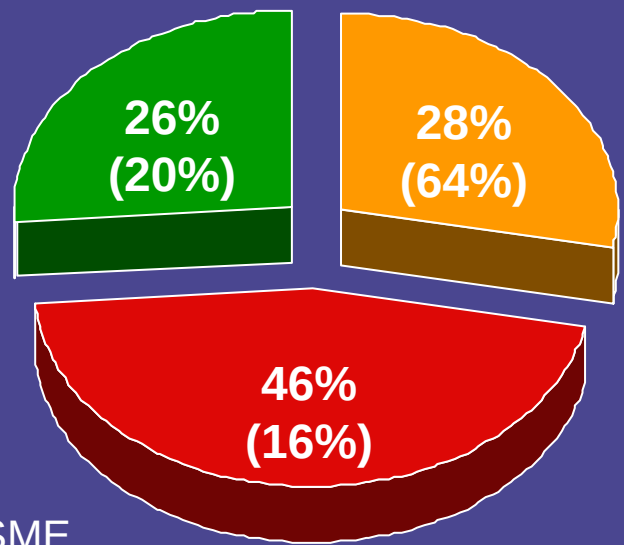
Forecast September 2006

Growing ITEA community

25 countries



540 partners in 86 projects



- SME
- Research institutes & universities
- Large industries

( ) : effort

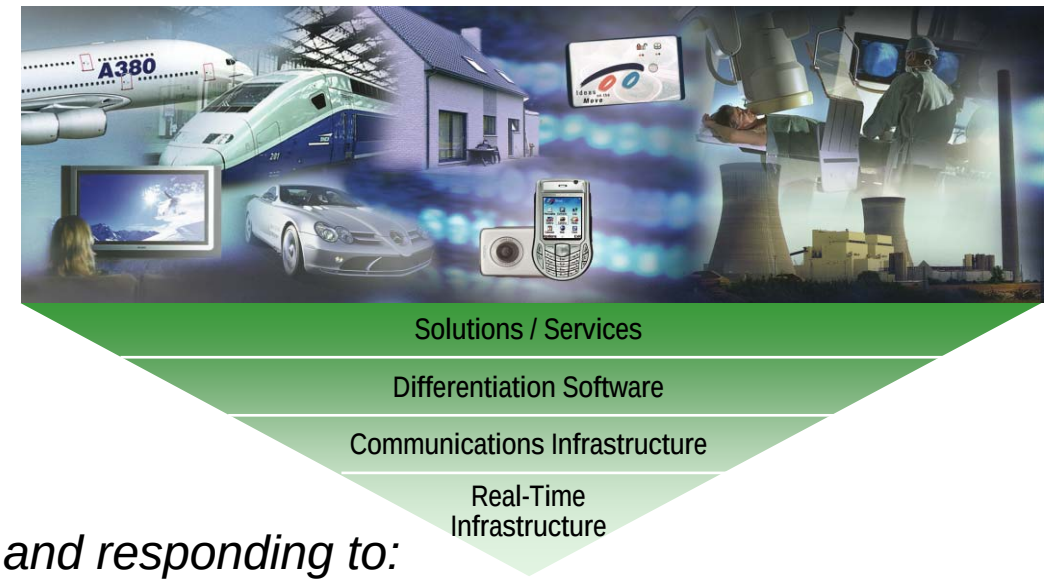
Status September 2006

ITEA in numbers

Effort top countries	94% total	France	31 %
		Netherlands	19 %
		Spain	11 %
		Finland	10 %
		Germany	9 %
		Belgium	8 %
		Italy	7 %
Exploitation	450	No. of expected product references	185
		No. of expected OEM references	55
		No. of expected results used for internal purposes	120
		No. of expected licenses to be sold by partners	60
		No. of open source	30
Standardisation	150	No. of standardisation actions launched	20
		No. of actions in progress	100
		No. of actions issued or published	30
Dissemination		Publications & Conferences	1,650
		Project websites	55

Vision

‘Europe to maintain leadership in Software-intensive Systems and Services building on key European strengths and industries’



Recognising and responding to:

- the move from a product-oriented to a services-oriented world
- ‘time-to-market’, i.e. INNOVATION, is make or break
- the even more crucial role of SMEs and Academia
- strong ERA cooperation being mandatory (seizing FP7 opportunity)
- ***digital convergence is name of the game***

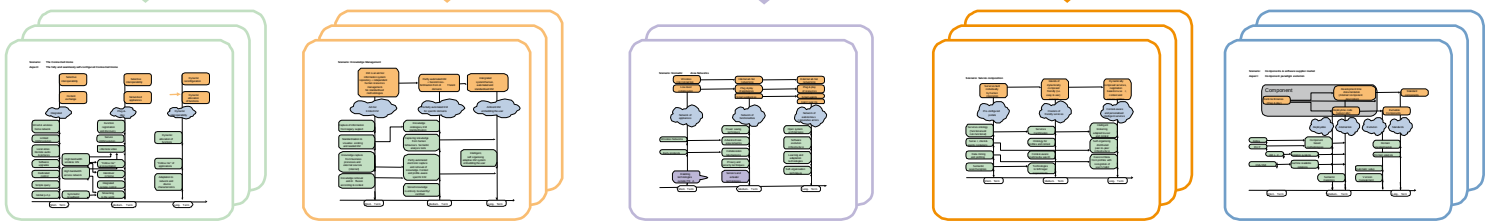
Executing the vision: the roadmap

Domains

Home | Cyber Enterprise | Nomadic | Intermediation Services & Infrastructures | Services & Software Creation

Scenarios

Scripts



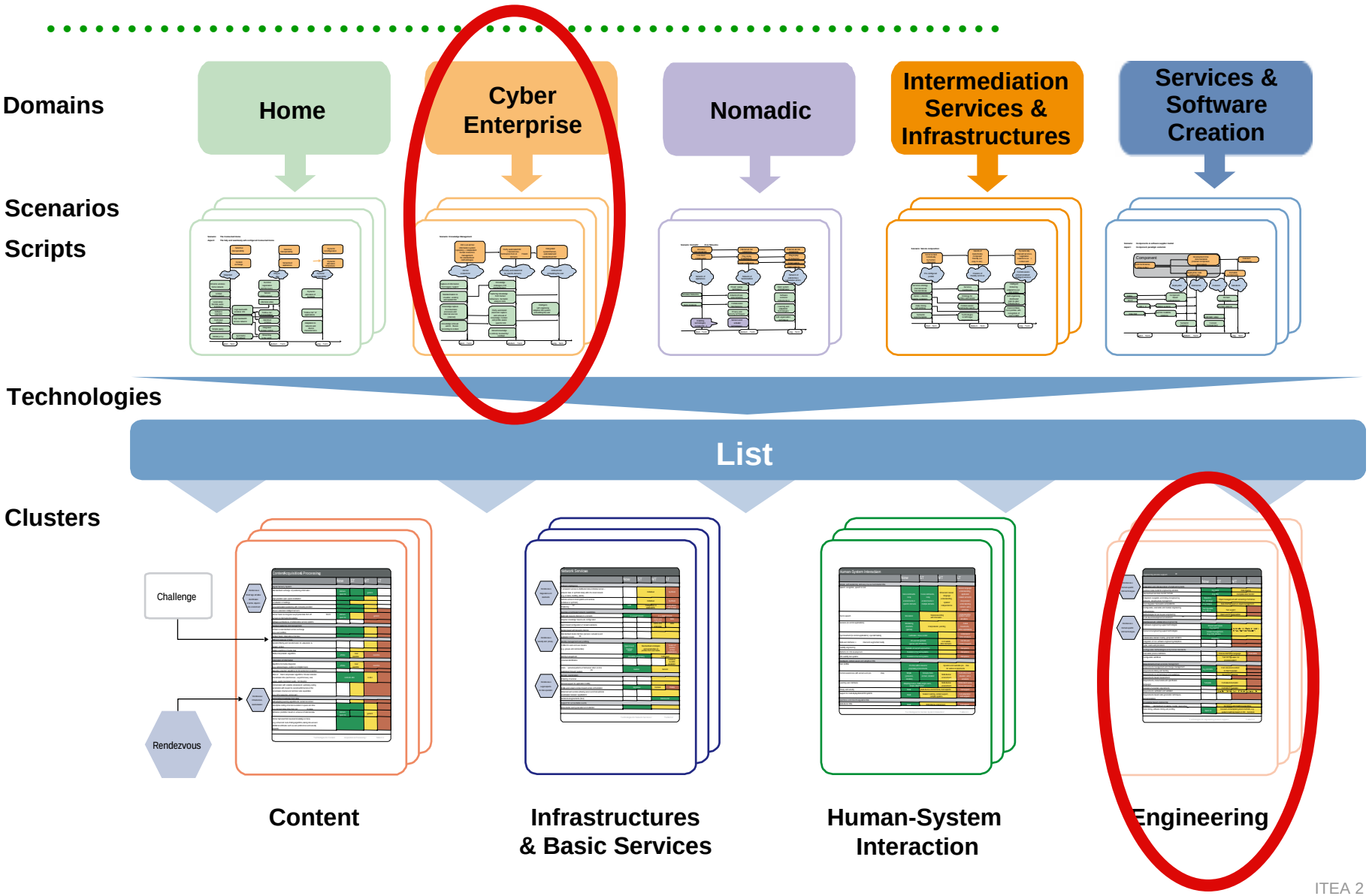
Technologies

List

Clusters

Content | Infrastructures & Basic Services | Human-System Interaction | Engineering

Welcoming industrial HPC applications and infrastructures



An illustrating example: the ParMA project

- **Par**allel programming for **M**ulticore **A**rchitectures

"New machines will be parallel machines, and this will require major changes in the way we develop software"

Software and the Concurrency Revolution by Herb Sutter and James Larus, Microsoft

ParMA Objectives

The objective of the ParMA project is to fully exploit the power of multi-core architectures

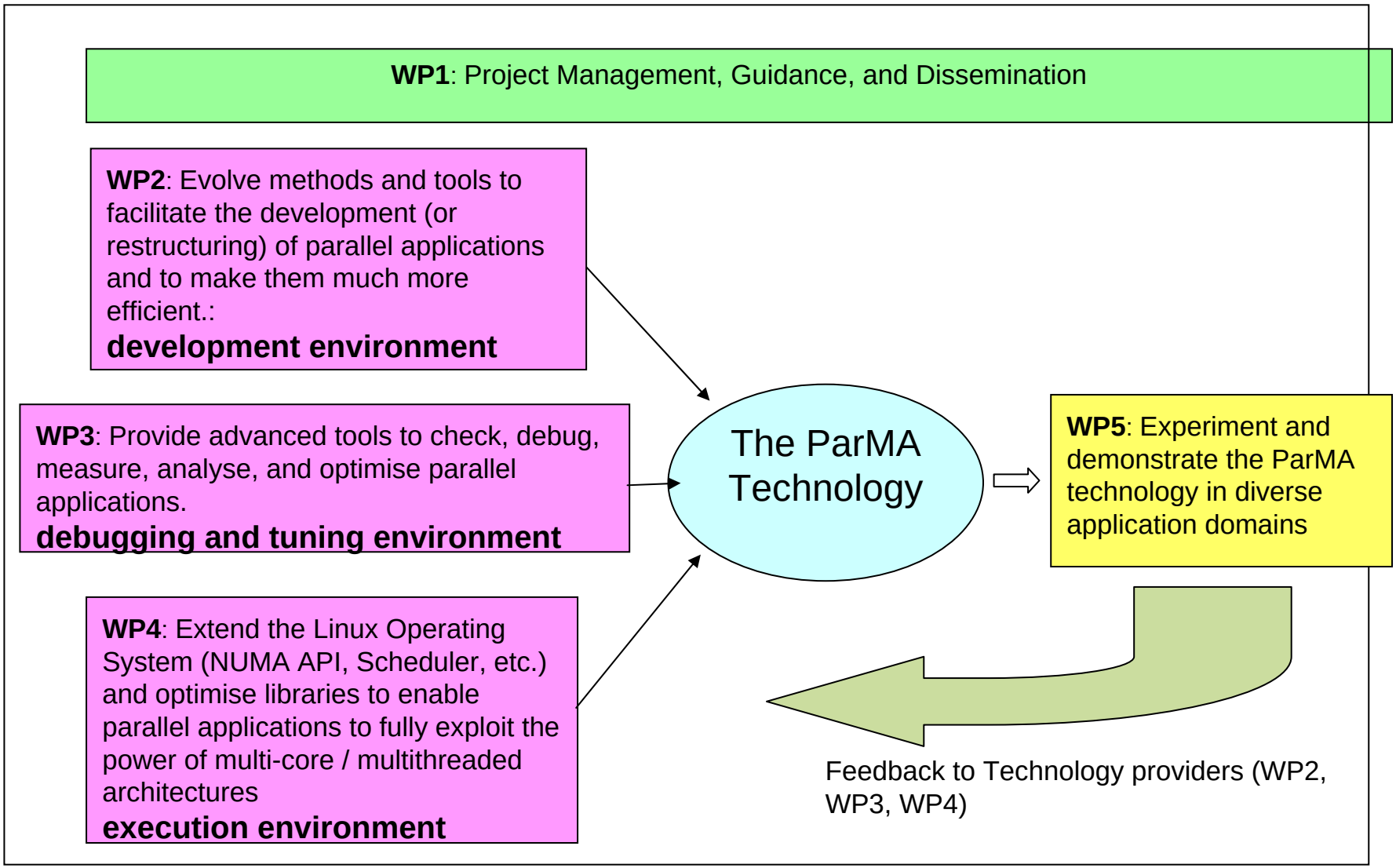
to:

- deliver substantial performance improvements for:
  - conventional HPC (High Performance Computing) applications
  - mainstream applications,
  - embedded systems (MPSoC: Multi-Processor System-on-a-Chip)
- enable the advent of power-intensive innovative applications

by:

- developing advanced technologies for exploiting parallel computing
- exploring commonalities between HPC, Multi-Core and MPSoC programming environments
- leveraging relevant technology and methodology between these domains

Project tasks



The consortium (1/2)

- Developers of parallel applications
  - HPC
    - Magma (D), Recom (D), GNS (D)
  - Embedded systems
    - Dassault aviation (F), Indra (S)

- Platform provider
  - Bull (F)

- SW tool vendors
  - HPC
    - Caps enterprise (F), GWT (D),
  - Embedded systems
    - Allinea (UK)

The consortium (2/2)

- Three large HPC centers
  - **HLRS / Universität Stuttgart** (D)
  - **ZIH / TU Dresden** (D)
  - **FZ Jülich / ZAM** (D)

- Academic and applied research labs
  - HPC
    - UVSQ (F)
    - INT (F)
  - Embedded systems
    - CEA-LIST (F)
    - UAB (S)
    - Robotiker (S)

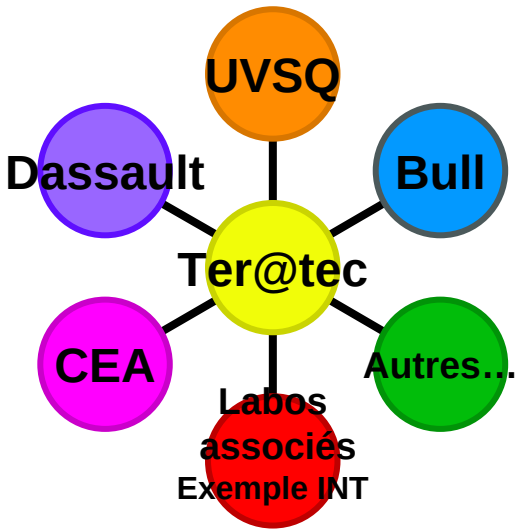
ParMA: A key investment

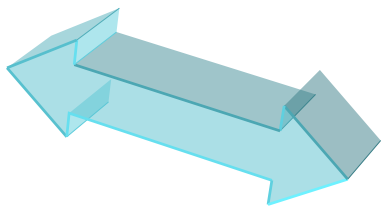
- Massively parallel programming to fully exploit the power of multi-core architectures is a very ambitious goal that requires a substantial research and experimentation effort

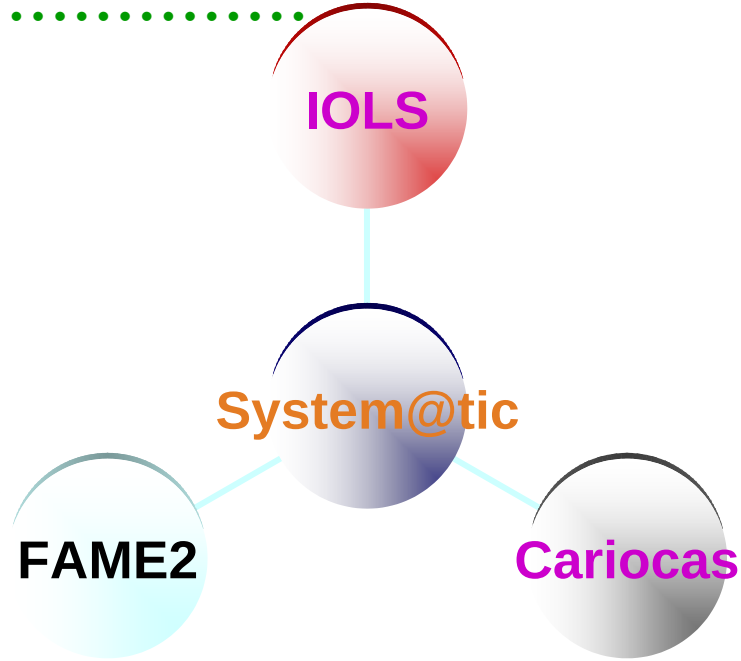
- ParMA builds on a broad participation across countries because
  - The knowledge and skills contributed by the various partners are complementary and cannot be found within a single European country,
  - Such endeavor requires a huge effort to cover a large enough perspective,
  - The whole HPC European research and industry is at stake.

- The expected results will strengthen the European Research expertise in this critical domain and, more importantly, the worldwide market position of European parallel programming tool vendors, multi-core processors-based systems manufacturers, HPC applications developers and distributors as well as high performance embedded systems suppliers

ITEA2: amplifying, extending System@tic/Teratec initiatives at European level







HLRS, FZ Jülich, Magma,GWT,GNS, RECOM, ZIH Dresden, INDRA, U BA, Allinea,...

ITEA2

www.itea2.org

Join the symposium in Berlin

October 18 and 19

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Thank you for your attention