www.teratec.eu

European technopole dedicated to high-performance simulation and computing

The TERATEC Association

The TERATEC Technopole

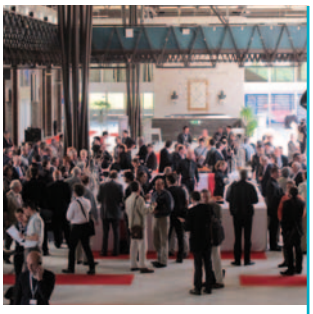
The TERATEC Campus

The TERATEC Association

Members

High-performance numerical simulation and design have become essential to industry and research. More than 70 stakeholders in the field - providers, users and researchers - have joined forces within the TERATEC association to:

- contribute to the development of a wide variety of uses for high-performance computing while making them widely accessible,
- accelerate the design and implementation of new computer systems with increasingly powerful hardware and software,
- advance the development of new simulation methods and related tools,
- encourage skill building and creation of highly qualified jobs in the field.



Initiatives

Promotion & the TERATEC Forum

Cooperating with its members and partners, TERATEC holds promotional events throughout the year targeting the entire industrial and academic community in the field.

The TERATEC Forum is the leading European event for HPC, bringing international experts together to discuss the technological and economic challenges linked to high performance computing and numerical simulation.

The plenary sessions, which feature top international industrial users, leading providers of these technologies and major names from political, economic and academic spheres, illustrate the growing impact of high-performance computing in a wide array of areas of industry and research, as well as its role in meeting major scientific and technological challenges.

The technical workshops address key aspects of HPC and provide an opportunity to take stock of the most important collaborative projects between industry and research.

Finally, a large exhibition presents the solutions and innovations available from the major players in HPC: manufacturers and editors, suppliers and integrators of hardware, software and service solutions, universities and research laboratories, competitiveness clusters and public entities, etc.

Collaborative research projects

TERATEC has initiated or helped put together multiple major collaborative projects within the framework of the Systematic Paris Region global competitiveness cluster and with the French National Research Agency, as well as on the European stage by supporting FP7 and ITEA 2 projects.

Current investigated domains:

- Optimization algorithms for Robust Design
- High speed networks
- Open source platform for remote collaborative multi-domain visualization and pre/post-processing
- Energy optimization for datacenters
- Collaborative decision-making environment for complex system design
- European Exascale Software Initiative
- High-performance environment for optimization and design
- Optimize HPC Applications on Heterogeneous Architectures
- Optimizing thickness, topology and shape of high performance steels
- Integrated and open platform to assist industrial and academic code parallelization for GPU & hybrid architectures
- Open source software for high performance computing
- Optimization of design simulations
- Uncertainty treatment in simulation software
- Parallel Programming for Multi-core Architectures
- Parallelization for material simulation
- Designing systems for a wide range of HPC needs

Training

To develop training for high-level researchers and engineers, TERATEC has partnered with the MIHPS (Masters in High Performance Computing & Simulation), the first Masters degree in France entirely devoted to HPC, organized in partnership between Université de Versailles-Saint-Quentin, Ecole Centrale de Paris and Ecole Normale Supérieure de Cachan.

The TERATEC Technopole

Created by an initiative of CEA to develop and promote high performance simulation and computing, the TERATEC technopole uses its resources to improve and disseminate knowledge, and also to enhance skills and services, in the field of high performance computing to support research, industrial companies and technology providers.

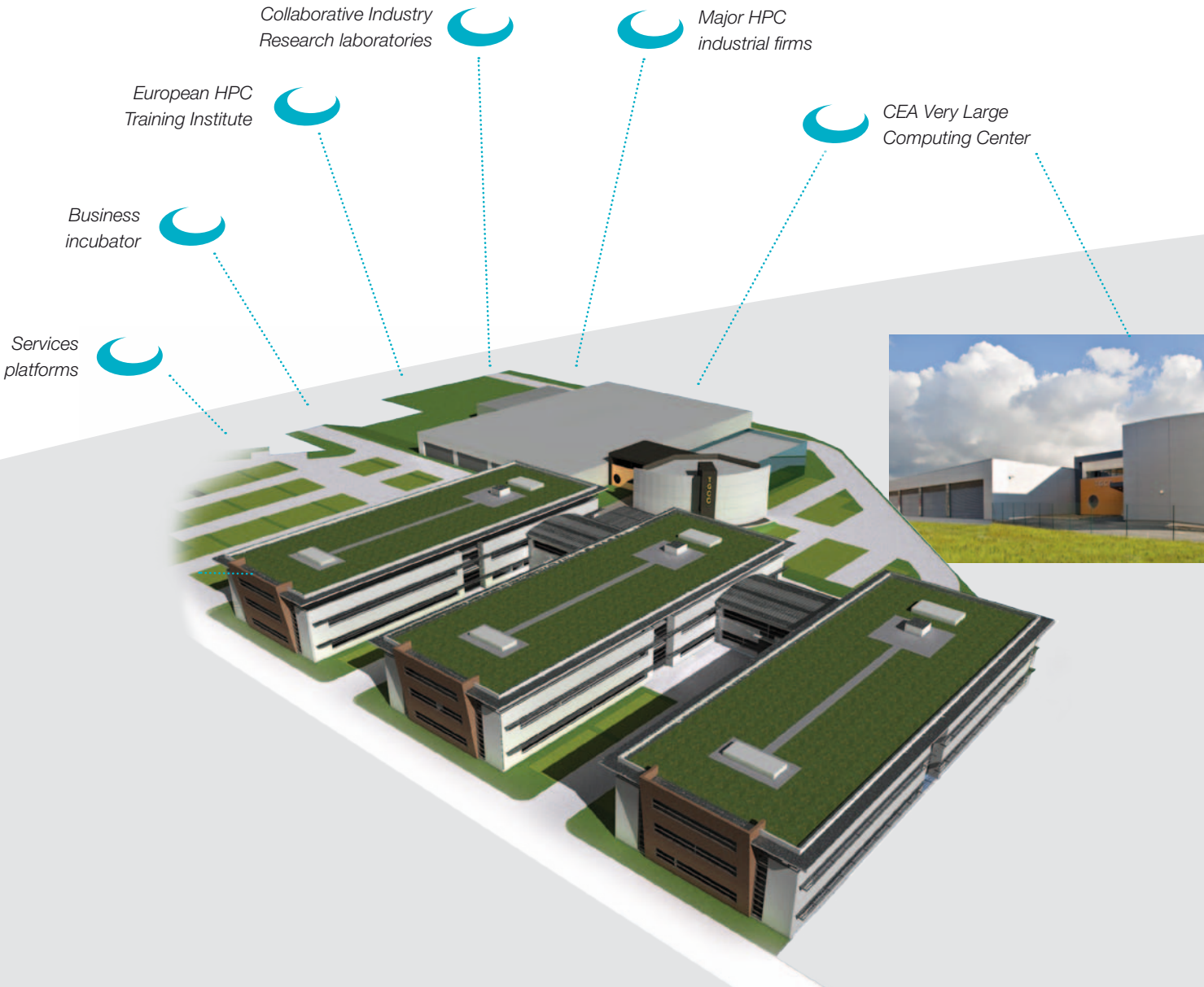
The Teratec technopole includes all elements in the HPC and simulation value chain around two entities:

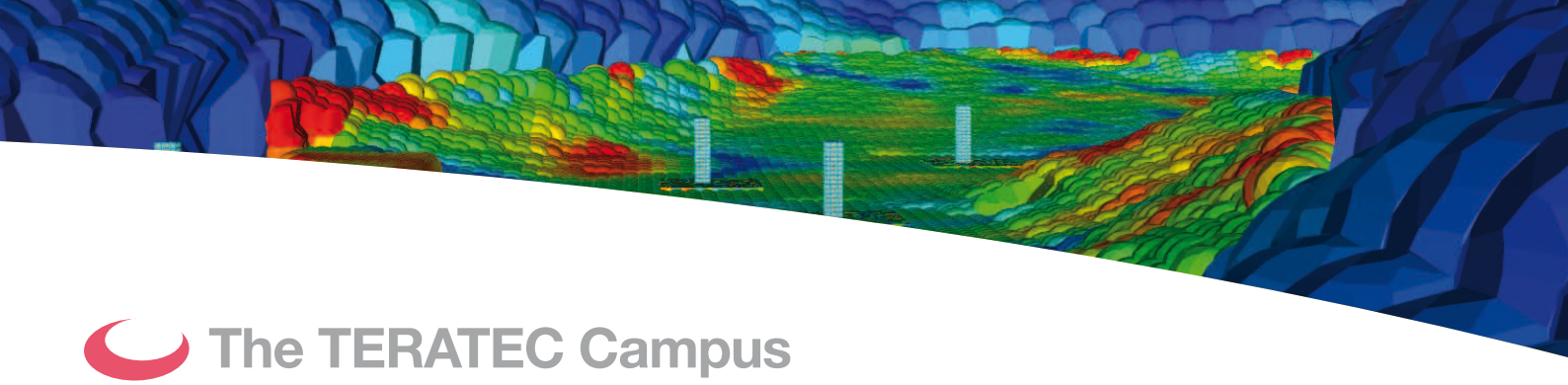
The TERATEC Campus

The TERATEC Campus will provide a home for industrial firms and researchers with industry/research laboratories, service platforms and a Masters-level training organization. The Campus (13,000 m^2 with a capacity of several hundred people) will bring together leading companies in the field of computing with medium-sized companies and startups (in a business incubator), together with research and educational institutions.

The CEA Very Large Computing Center (TGCC)

This infrastructure includes an electrical facility and a building made of a large computing area and all outbuildings needed for supercomputers plus room for the future extensions, and a very high speed telecommunications network. It also offers a «conference area» with a 200-seat auditorium. Among other machines, the TGCC is equipped with CCRT machines and the European PRACE machine.





The TERATEC Campus

Set in the TERATEC Technopole facing the CEA Very Large Computing Center, the TERATEC Campus is currently being built on more than 13,000 m². It will open in the first quarter of 2012 and be home to:

Major players…

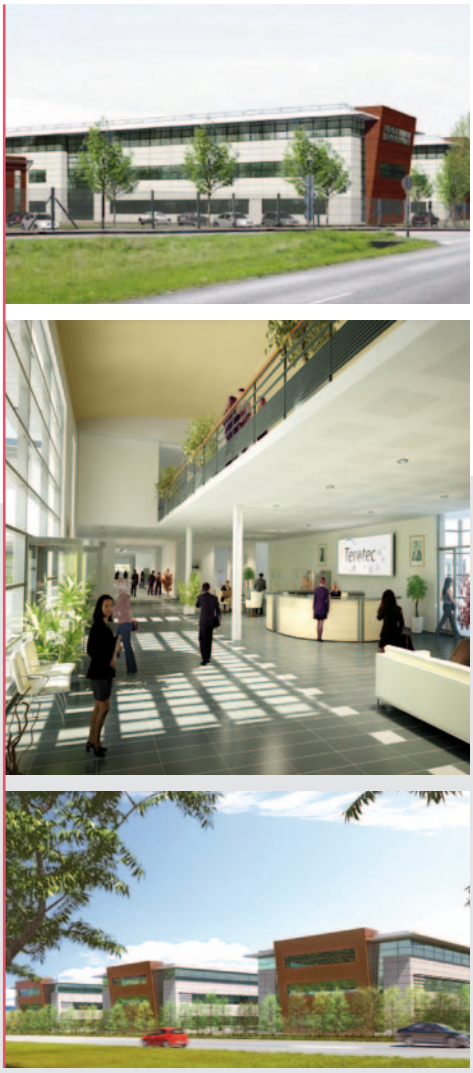
… in Industry and Computing

- Industrial companies (major and mid-size companies and SMEs).
- Equipment suppliers, software editors and service providers.
- Startups and young companies in a Business center plus an incubator that provide spaces designed to meet their needs, including a suite of shared services and personalized support.

Collaborative laboratories…

…for Industry & Research

- The Exascale Computing Research Laboratory (INTEL/CEA/GENCI/UVSQ) to meet technological challenges related to creating and building computers with performance levels one thousand times better than today's computers.
- The Extreme Computing Laboratory (BULL/CEA) to develop future architectures and the next generation of very high performance systems.
- Other laboratories and research activities in a variety of fields, from software development to design for complex systems.



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A European HPC Training Institute

This institute will train high-level scientists to master two major technological advances: high performance computers and digital simulation (MIHPS Master). Students will gain multidisciplinary expertise that combines high performance computer programming techniques and modeling and simulation expertise, with strong skills in parallelism (hardware, software and digital) and distributed computing.

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Services platforms

These platforms will be accessible to all industrial companies and research organizations in order to help them improve the effectiveness and productivity of their design and simulation work. In particular, the platforms will supply small businesses and industrial firms with the computing resources, software and technical expertise they need to realize their goals, providing them access to design and simulation techniques.

The objective of the TERATEC Campus is to provide professionals in the field of high performance simulation and computing with a dynamic and user-friendly environment to serve as a crossroads for innovation in three major areas: systems performance and architecture, software development and services.

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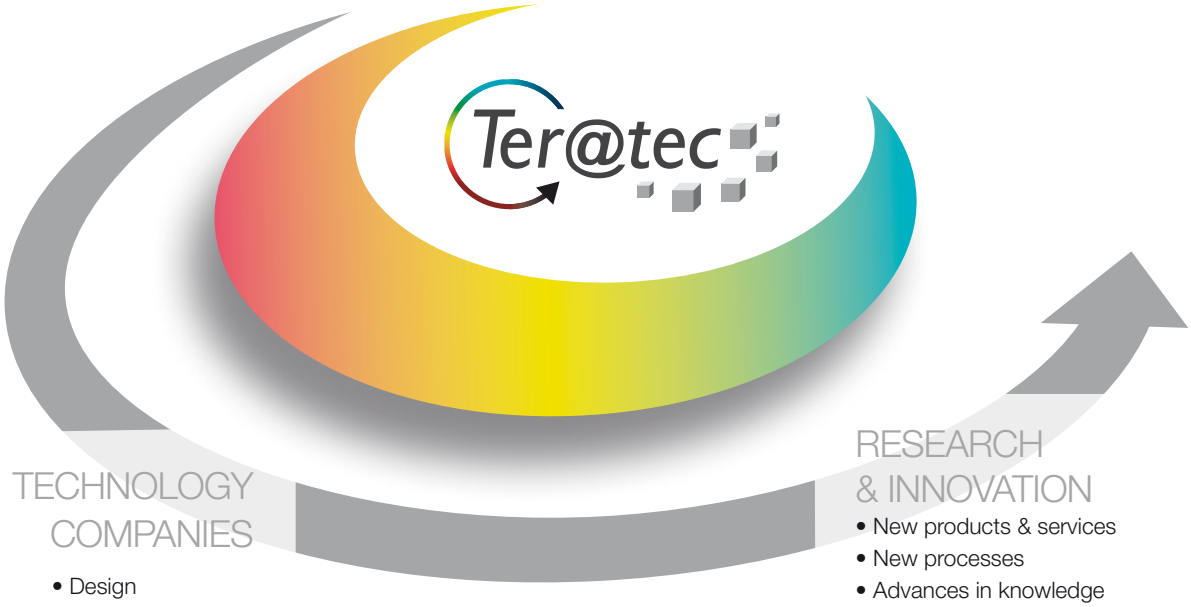
TERATEC: an Association…

… a key player to host, lead and foster collaboration on HPC:

- uniting all of the industrial and academic players in the field;
- facilitating the emergence and implementation of collaborative R&D projects between various partners;
- developing skills through training initiatives, seminars, conferences, etc;
- promoting the field and boosting its appeal by facilitating job creation and economic development.

INDUSTRIAL COMPANIES

- Competitiveness
- Master technology



TECHNOLOGY COMPANIES

- Design
- Simulation
- Optimization

RESEARCH & INNOVATION

- New products & services
- New processes
- Advances in knowledge

TERATEC: an European technology park…

… dedicated to high-performance simulation and computing:

- in partnership with major European technology and industrial companies,
- open to international collaborations at the very highest level.

Industrial companies

Airbus
Air Liquide
ArcelorMittal
Bertin Technologie
Dassault Aviation
EADS
EDF
Faurecia
L'Oréal
Medef Ile-de-France
National Instruments
Schneider Electric
Snecma Groupe Safran
Total

Technology companies

ActivEon
Alcatel Lucent
Alineos
Allinea Software
Altair Engineering
Alyotech
AMD
Ansys
Aria Technologies
Bull
CAPS Entreprise
Carri Systems
CD Adapco
Cenaero
Cluster Vision
Communication et Systemes
DataDirect Networks
Dell
Distene
EnginSoft
ESI Group
Eurodecision
Fujitsu
HP
HPC Project
Intel
Kalray
Mathworks
Medysys
Mentor Graphics
Microsoft
MSC Software
Nice Software
Noesis Solutions
Numtech Groupe SETH
NVidia
Open Cascade / Euriware
Oxalya
Panasas
Samtech
Scilab Enterprises
Serviware
SGI
SysFera
Transtec

Universities and research laboratories

Andra
CEA
Centre Scientifique et Technique du Bâtiment
CERFACS
CNRS
Digiteo
École Centrale de Paris
École Nationale Supérieure des Mines de Paris
École Supérieure d'Électricité
École Normale Supérieure de Cachan
Ecole Polytechnique
École Supérieure d'Ingénieur Léonard de Vinci
GENCI
Institut Français du Pétrole
Institut Telecom
INRIA
Université de Versailles St-Quentin-en-Yvelines

Local authorities

Chambre de Commerce et d'Industrie de l'Essonne
Conseil Général de l'Essonne
Communauté de Communes de l'Arpajonnais
Ville de Bruyères-le-Châtel
Ville d'Ollainville

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At the heart of a technopole labeled as an R&D zone, TERATEC is a member of the Systematic Paris-Region global competitiveness cluster.