

Ter@tec

A benchmark player in European intensive computing

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The strategic importance of digital technologies and, specifically, that of high-performance simulation, is recognised by every player in the scientific, economic and industrial worlds. Since August 2005, Ter@tec Technopole and its 43 partners⁽¹⁾, companies and research organisations, have offered a unique setting for taking up the challenges in this area, by uniting all of France's intensive computing skills around a number of large collaborative R&D projects. Ter@tec provides access to some of the most powerful data computing and storage resources in Europe. The business dynamic it generates creates large numbers of jobs and is expected to help France and Europe return to the fore, in an extremely active global competitive arena – a position they never should have left.

Large-scale Research Projects

As a member of the System@tic competitiveness cluster, Ter@tec is a major player in large-scale projects such as FAME 2 (Flexible Architecture and Multiple Environment) aimed at developing a new generation of servers for intensive computing and information processing; CARRIOCAS (Distributed computation over an ultra-high optical internet network), aimed at

developing and building high-speed networks, at 40-gigabits per second; IOLS (simulation infrastructure and software tools). Together, those three projects are expected to provide all of the basic tools required for high-performance computing. Two new projects are also being launched: POPS (petasolutions per second) and EPHOC (High-Performance Environment for Optimisation and Design).

Many projects are supported by ANR⁽²⁾. Examples include PARA (Parallelism and Improving Application Output), LN3M (New-Generation Software for Multi-Scale Material Modelling), NUMASIS (Seismology Application Performance Optimisation) and the SCOS platform, which is aimed at uniting French initiatives in open-source software for intensive computing. In addition, joint research laboratories have been instituted, between CEA, the University of Versailles Saint-Quentin (UVSQ), the Paris Ecole Centrale and ENS Cachan.

Unique Infrastructures

Now that the Arpajon Municipality Community (CCA) and CEA have purchased an activity zone in Bruyères-le-Châtel, Ter@tec will be able to develop significant business operations. An extensive real

estate complex will be built to host enterprises and laboratories, as well as a computation centre, where petaflop machines will be installed as early as 2010, thereby creating the first-ever European intensive computing technopole. As early as 2007, the available computing power will exceed 50 teraflops, with the CCRT centres (Joint Research and Technology Centres) Bull and HP; the petaflop mark should be reached in 2011, in synergy with European initiatives.

Training and Promotion Action

Ter@tec has established a collaboration agreement with three Master's Degree programmes specialising in high-performance simulation: MN2MC (digital methods for models in continuous environments), M2S (modelling and simulation) and COSY-AHP (from concepts to systems – high-performance architecture). Continuing training activities will also begin this year, targeting in particular SME-SMIs where proficiency with intensive computation tools has become a necessity. Moreover, Ter@tec launched, as early as 2006, a "European High-Performance Computing Forum", designed around a series of conferences and extensive exhibit hall. The 2007 forum will take place on 20 June, at the University of Versailles Saint-Quentin. **C. S.**

(1) Ter@tec is composed of IT companies (Aria Technologies, Bull, Cluster Vision, CS, Data Direct Networks, Distène, ESI Group Eurobios, Fluent, Fujitsu, HP, Intel, Numtech, OpenCascade, Oxalya, Serviware, SGI, Sun, Transtec), industrial players (Airbus, Bertin Technologies, CSTB, Dassault Aviation, EDF, Principia, Snecma, STMicroelectronics, Total), universities and research laboratories (CEA, Cenaero, Cerfacs, CNRS, École centrale Paris, ENS Cachan, IFP, Inria, INT, École des mines Paris, Supélec, UVSQ) and local governments (CCA, Ollainville City Council, Bruyères-le-Châtel City Council).

(2) ANR: National Research Agency