



Bull's monthly newsletter

ÉDITORIAL

Taking innovation to heart



Innovation in today business is absolutely vital. There are many technologies to speed up innovation. And we're particularly interested in one of them, computer simulation: one of the everyday strategic challenges that characterizes the competitive landscape.

Simulation can be applied in every industry sector, whether it's used to model complex phenomena, manage risks in the financial sector using mathematical models, provide real-time decision support or carry out multi-media research on massive volumes of data. In industry, it has become an essential element in product design and development, and in research. It can deliver significant cost savings and considerably speed up development lifecycles, by providing very accurate predictions of all the conditions under which products will be used, and so really helping to optimize designs.

But for SMEs and medium-sized research establishments, access to simulation technologies is not yet a systematic thing. The upfront investment, the technical complexity, the difficulty of ensuring they have appropriate skills... all these are major issues holding them back.

With our extensive experience gained on very large-scale simulation systems, we have taken it upon ourselves to ensure that all businesses and all research centers – no matter what size they are – have access to these kinds of solutions.

With this aim in mind, we are today launching our latest initiative, aimed at "Accelerating innovation". High-performance computing is now accessible to everyone, through new, "plug and play" configurations featuring the kinds of quintessential technologies first developed for large-scale computing centers.

Everyone's entitled to power: and more than ever, high-performance computing is at the heart of Bull's strategy.

Didier Lamouche,
Bull's Chairman and CEO

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7i PROGRAM – INITIATIVE 2

Bull launches its latest initiative, to "accelerate innovation"

Everyone's entitled to power. Leveraging its experience in some of the world's largest supercomputers, and in open systems, Bull is making available to any kind of organization a new range of high-performance computing solutions, which are... *(page 2)*

7i PROGRAM – INITIATIVE 2 / TRIBUNE

Everyone's entitled to power, innovation within everyone's reach

Par Benoît Hallez, Director of Bull HPC Business Unit

The capacity for innovation is a crucial and universal issue that concerns business decision makers in most industry sectors because it is at the heart of performance and competitive positioning for public and private sector bodies and research centers alike. *(page 5)*

BUSINESS NEWS

The German federal scientific computing network D-Grid now features a Bull NovaScale® supercomputer

Hosted by the Leibniz Universität Hannover, it provides German higher education and research centers with new levels of computing power *(page 10)*

INITIATIVE 2

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Everyone's entitled to power. Leveraging its experience in some of the world's largest supercomputers, and in open systems, Bull is making available to any kind of organization a new range of high-performance computing solutions, which are:

- **Easy to implement:** pre-configured and pre-tested “turnkey” clusters running under Microsoft Windows or Linux environments
- **Simple to manage:** thanks to a single point of control that enables the cluster to be administered as easily as a single system
- **Economical and compact, with the best performance/watt and performance/square meter ratios in their category.**

As part of its 7i program, Bull is launching its latest initiative to democratize high-performance computing (HPC), with the aim of helping enterprises and research centers accelerate the process of innovation.

Bringing together its experience gained in building some of the biggest supercomputers in the world, and its know-how in enterprise-class open systems, Bull is setting out to support research centers and businesses in their efforts to innovate, so they can design and develop tomorrow's products more rapidly.

“Enterprises and research centers are currently facing a real challenge: they need to be able to innovate faster, and at a lower cost. Bull and its partners have developed a new range of high-performance computing solutions for just these kinds of organizations,” explained Benoît Hallez, Director of High-Performance Computing solutions at Bull. *“Democratizing HPC is a major issue for our society today. With our new solutions, we are bringing down the total cost of ownership. And with predefined ‘turnkey’ clusters and powerful system administration tools, we are putting supercomputers within the reach of smaller and medium-sized businesses and research centers.”*

Three “turnkey” cluster series running Microsoft Windows or Linux environments.

As part of this second initiative, Bull is launching the Bull NovaScale Clusters, three series of pre-configured, production-ready clusters, optimized to deliver maximum performance while reducing the Total Cost of Ownership (TCO). Capitalizing on its expertise in supercomputers and open systems, Bull has defined clusters that combine all the advantages of standard solutions with maximum flexi-

bility and modularity that enable them to precisely match customer requirements. These clusters have been designed so they can be operated and administered with limited resources, without any need for large numbers of technical staff that only the very biggest research centers or very large enterprises can typically afford. They are available in a wide range of performance levels, with configurations ranging from three to many hundreds of nodes, and offer a wide choice of processors, interconnect networks, and operating environments.

Bull NovaScale Cluster Series all offer the following key features:

- Optimum application performance and footprint
- Turnkey systems, fully factory-integrated and tested in our European plant, and ready to be integrated into production infrastructures
- Modular, scaleable solutions that can be extended to match workload increases
- Highly efficient cluster management, with Bull HPC environment for Linux so clusters can be administered as easily as a single system, or with Microsoft Windows CCS 2003
- High-performance technologies, with the latest dual core and quad core Intel® Xeon® processors, and dual core Intel® Itanium® 2 processors

Bull is now offering three series of Bull NovaScale Clusters, each available with different performance levels:

- **The Bull NovaScale Cluster 400-W Series**, running under Windows, is equipped with Intel® Xeon® processors. It is ideally suited for teams or workgroups that want to acquire independent high-performance computing resources while



capitalizing on their knowledge of the Windows environment.

- **The Bull NovaScale Cluster 400-L Series**, running under Linux, is equipped with Intel® Xeon® processors. It provides different solutions sized for a workgroup, a department in a large company, or for a full-scale data center.
- **The Bull NovaScale Cluster 3000 Series**, running under Linux, is equipped with Intel® Itanium® 2 processors, and is designed specifically to fulfill the complex code computing requirements of company departments.

“These three kinds of preconfigured clusters are primarily targeted at organizations that want to equip themselves with industry standard solutions, and need a solution that is operational within a very short time, that integrates easily within their existing infrastructure, without requiring huge back-office teams,” added Benoît Hallez.

Bull's latest range of offerings is aimed mainly at:

- Medium-sized research centers, often already part of an existing grid computing network, but keen to have access to their own, local HPC resources, for reasons of simplicity and speed of access. Smaller and medium-sized businesses in almost all market sectors, such as the pharmaceutical industry for example, for developing new drugs; banking and insurance for analyzing financial risks; the chemical industry, for testing and designing new substances; the automotive industry to help design and produce more reliable and cost-effective vehicles... In all these cases and others besides, the aim is the same: to help enterprises face ever-increasing competition, which is affecting their ability to innovate and create new products rapidly, at the lowest possible cost and with increasingly high levels of quality... a key challenge.

For further information on the 7i program:
www.bull.com/7i

INITIATIVE 2 – TRIBUNE



Everyone's entitled to power, innovation within everyone's reach

Par Benoît Hallez, Director of Bull HPC Business Unit

Innovation is key to our future. High-Performance Computing (HPC) is undergoing a democratic revolution, and is finally becoming widely available.

The capacity for innovation is a crucial and universal issue that concerns business decision makers in most industry sectors because it is at the heart of performance and competitive positioning for public and private sector bodies and research centers alike. Its main driving force comes from the information technologies which not only provide tools, but also the kinds of new collaborative innovation development models that we are increasingly see appearing in our day-to-day lives, from Web 2.0 and Open Source software, to co-operative publishing tools.

A number of challenges still remain, however, the main ones being how to access and master these tools most effectively.

Race for power

A critical feature of this decade, and of the digital society more generally, is the race for ever more computing power. Until now, technology itself has been the limiting factor when it comes to how much power we can deploy. Now it seems the technological obstacles are falling away, one by one.

Here are just some examples from the world of high-performance computing – which incidentally is no longer the exclusive preserve of the engineering industry – to illustrate the potential for innovation that these technologies offer: in particular, shorter development lifecycles and considerable cost savings. In just ten years, digital simulation has led to a reduction in the design timescale for a new vehicle from five to two years. Between two Formula1 championships, the design of a car can be completely recalculated and a new model launched. This kind of computing power allows real-life simulation with an unprecedented

level of precision. No longer applicable just to components, but to entire systems: whether these are destined for the defense sector or nuclear simulation, automotive simulation, aeronautics, earth sciences (climatology, meteorology, geophysics) or life sciences. In the latter domain, having studied the human genome, they are now moving on to the study of the “physiome”, that is, the functioning of a complete sub-system of the human body such as the heart, lung or kidney.

In the automobile or aeronautical industries, crash simulations are infinitely less expensive than real-life trials. But this kind of computing power is also of interest to other sectors such as banking and insurance, where pure financial calculations are needed to measure and manage risk, using mathematical models. Simulation is therefore becoming a “real-time” tool, with immediate uses for example in stock trading, where it can be used to support decision-making on investments. We are also starting to see it being applied, for example, in production optimization (one manufacturer of potato crisps has saved millions of dollars by optimizing their shape so that as many as possible can be packaged in the shortest possible time, without them being damaged in the process...) and in the world of sport, where it is being used to optimize the design of equipment used by top sportsmen and women. Not to mention Business Intelligence, which relies on XML databases of several petabytes that also require phenomenal processing power.

So computing power can not only boost organizations' capacity for innovation, but also their responsiveness and time-to-market capabilities. Given what is at stake in terms of the economy, industry and at government level, this power still has to be accessible in terms of cost; it is yet another basic economic constraint

affecting world competition, and a daily challenge for our customers. A major pre-occupation for us, as the European IT manufacturer, is to anticipate this economic dimension on behalf our customers and help them access new technologies at optimum cost. So what does the future hold?

A new technological revolution...

Today it's no longer increasing processor frequency that drives the increase of the power of computers, but the number of processor cores on a single chip. The current decade will be characterized by the increased density of “multi-core” architectures, following the advent of clusters between the 1990s and up to the year 2000, which had themselves displaced the vectorial systems of the 1970s and 80s. And it is through this new technological revolution that Moore's famous law will continue to apply, and meet the requirements of the new generation of applications. Meanwhile, there are still some tricky challenges ahead, which only a small number of IT manufacturers the world over are capable of tackling, given the high degree of specialization required to deal with them.

The first, “eco-technological” challenge is focused on electrical consumption and cooling for the thousands of processors that go to make up these veritable “IT power stations”. Just to illustrate the significance of this: Google is apparently considering moving its “IT farm”, the largest in the world, within the Arctic Circle; it is anticipated that it will be consuming 70 MegaWatts¹ by the year 2020, equivalent to a tenth of a nuclear reactor!

This explains why we will be concentrating on applying our particular expertise in platform density and packaging, as well as in cooling and energy management and optimization for the petaflop² capacity machines on which we are cur-

INITIATIVE 2 – TRIBUNE (CONTINUED)

rently working. These will offer much higher granularity than current generations of servers, with 32- or even 64-core processors, compared with today's four-core models, with much better performance/Watt ratios. The use of dedicated accelerators will also deliver processing speeds between ten and a hundred times faster than today, while consuming between two and five times less electricity.

The second challenge concerns parallelization tools which will make it possible for applications to take advantage of these new architectures and the very large number of cores on which they are built. Because modifying the billions of lines of code in either bespoke or off-the-shelf software and applications to take these new architectures into account would be prohibitively expensive.

The solution includes the development of middleware that will virtualize the parallelization. We are working with ISVs and the scientific community to develop these virtual parallelization tools. This technology is of considerable importance because the middleware will render these architectures transparent to applications themselves, and will therefore enable them to reap the benefits of the huge amount of power these machines are capable of generating.

The third challenge is related to mastering complexity, through the development of systems administration tools for tomorrow's petaflop machines that will feature anything from 500 to 1,000 cores in a single rack.

We are well advanced in this area, having made our first successful foray with TERA-10, one of the most powerful supercomputers in the world featuring 625 nodes that has already been in production at the French Atomic Energy

Authority, the CEA, for more than a year now. We have developed unique expertise, and will be capitalizing on this as we move forward to develop the next generations of supercomputers, capable of managing vast file systems by optimizing the Lustre Open Source solution for large clusters, as well as administration of both the system and its components using NovaScale Master which has been adapted to the world of HPC together with a particularly powerful configuration manager.

Finally, over and above supercomputers running under Linux®, we have a range of turnkey systems operating in a Microsoft environment that are very simple to implement and run.

... and a huge evolution in usage

Finally, we are going to meet the increasing democratization of HPC, not just by integrating standard hardware and software – one of Bull's key strategic choices – but also in terms of usage, via a serviced approach. A service that is accessible to everyone, since all sectors without exception need power, as we have already seen. This type of approach can deliver high levels of flexibility to meet the challenges posed by our digital society. We talk about the "agile" enterprise, and this term seems to me to be especially accurate.

And in the world of HPC, Bull has shown an uncommon degree of agility. There are very few enterprises that could have in a single leap moved up from 229th to 5th position in the TOP500 listing the world's most powerful supercomputers. This was our achievement with TERA-10, and it demonstrated our exceptional capacity to mobilize Bull talent. Our know-how and our key differentiators are, and will in the future be, directed increasingly towards the area of high-perfor-

mance computing architecture and integration quality for all hardware and software components involved, as well as to maintaining the quality of our teams supporting customers in their projects to optimize their applications on our servers. Because service is also part of Bull's culture, a culture of commitment to high levels of service delivery.

As "Architect of an Open World", Bull is now in perfect step with the major trends of the decade. As the only European IT manufacturer, the Group is a major name in IT, and has an excellent record for technical expertise and a long history of technological innovations: from multiprocessor systems to smartcards, and including a range of especially powerful encryption tools. Bull has deftly navigated the tide of technological advance and grown its products and services appropriately, while consistently meeting the evolving needs of its customers and exploiting new technologies as they emerge. Today, we are helping a large number of industrial and academic research centers in their approaches to innovation, including: Alenia, the CCRT (Centre de Calcul Recherche et Technologie), Dassault Aviation, the French Atomic Energy Authority (CEA), Pininfarina, the UK's National Oceanographic Centre at Southampton, the Universities of Hanover, Manchester, Reims and Valencia, and Miracle Machines in Singapore, among others. These assets are testimony to the Group's emerging position as market leader in the HPC domain in Europe.

Everyone's entitled to power, choose Bull and fly the Bull flag!

(1) *MegaWatt (MW): one million Watts*
 (2) *Petaflop: one million billion operations per second*

INITIATIVE 2 – GUEST CONTRIBUTORS



New horizons: ten times our current research capability!

FAME2, at the heart of the digital innovation

Interview with Claude Camozzi, Director of Platform Strategy at Bull

What new avenues are being opened up by research into the field of high performance computing?

High Performance Computing (HPC) has seen prodigious growth over the past few years: The most powerful supercomputer installed to date is equivalent to the combined power of the 500 largest systems installed just six years ago. Tomorrow's challenge is to take this one stage further, since while the power available today offers substantial advances to industry, as well as to the research sector, some simulations are still not achievable. And this explains the driving force behind the race to achieve maximum computing power.

Currently, the most powerful supercomputers in the world have a capacity of several hundred teraflops¹. Tomorrow, the objective will be petaflop² capacity, effectively ten times as powerful! Such an increase will significantly speed up industrial design, applied research into petrochemicals, integrative biology... but will also play its part in handling the huge volumes of multimedia data that will be generated by Internet applications open to millions of Web users.

Bull is investing heavily in this area, in close collaboration with customers, industrial partners and research laboratories at the System@tic Paris-Région³ competitiveness cluster, in the framework of the FAME2⁴ innovation program.

What is the aim of the FAME2 program?

The program aims to ensure that our supercomputers – which will be petaflop capacity machines – are built to fulfill the future requirements of HPC as well as multimedia databases, and that they are delivered along with a comprehensive portfolio

of applications, libraries and optimized tools.

As "Architect of an Open World™", we have launched the FAME2 project with our partners so as to:

- Anticipate software and application development requirements
- Extend the range of application areas covered
- Ensure these supercomputers will be able to manage very large databases optimally.

One of the project goals is to find out how to exploit the very high degree of parallelism represented by more than 100,000 computing cores, most efficiently.

In the framework of the System@tic cluster, our partners are validating these supercomputers with their most advanced applications, and are anticipating extensions or upgrades to them to enable them to extract maximum power from their architecture. The annual workshop, which takes place in mid-October, has enabled us to evaluate the overall development and testing program with them, and I am pleased to say that FAME2 is progressing absolutely to plan.

What, in your view, is the main advantage offered by the competitiveness cluster?

System@tic has enabled us to considerably increase the level of collaborative work around FAME2, which was initially launched under the auspices of Ter@tec⁵, an initiative driven by the French Atomic

- As key strategy levers, High-Performance Computing (HPC) and simulation are helping researchers to overcome major scientific and technical hurdles, and industry to become more competitive through being able to design, develop and optimize new products more rapidly.
- In future years, we will be seeing what we now consider typical power levels concentrated into systems with ten times the processing capacity.
- Read on to find out how Bull, with the FAME2 customer-driven project and partners from the System@tic competitiveness cluster, is building the HPC solutions of the future. You may also discover these solutions have a great deal to offer your organization.

Energy Authority (the CEA). This has led to us bringing together players from the world of industry such as the CEA itself, Dassault Aviation, the French Petroleum Institute (the Institut Français du Pétrole), ILOG, young innovative companies such as NewPhenix (multi-criterion research), CAPS Enterprise (parallelization tools) and Resonate MP4 (multimedia), and research laboratories including ECP/MAS, INRIA/IRISA, INT/Artémis, IBISC, UVSQ/ITACA. The result is a powerful ecosystem enjoying the support of regional and national authorities, and an excellent dynamic for co-operation and innovation. The appeal of the cluster is such that co-operative ventures with other players interested in the project are taking shape, and these extend well beyond the formal contractual framework of FAME2.

Bull is also participating in three other projects in the System@tic cluster:

- **CARRIOCAS**⁶ or Calcul Réparti sur Réseau Internet Optique à Capacité Surmultipliée, a project looking to meet the computing and display requirements for interactive digital or virtual reality distributed applications (virtual factory)
- **SIC** or Sécurité des Infrastructures Critiques, a project aiming to resolve the security issues of critical infrastructures such as airports or railway stations, that have highly concentrated resources and vast numbers of people on the move
- **PFC** Plates-Formes de Confiance, a project aiming to develop the primary technologies for trust and sovereignty in information systems security

INITIATIVE 2 – GUEST CONTRIBUTORS (CONTINUED)

Can you tell us a bit more about the applications currently being optimized?

Before we look at applications, I would like to talk a bit about our work on very large databases, because all high-performance computing applications manipulate and generate huge volumes of data (up to hundreds of Terabytes with a very high number of access events). To cite just one example, the CEA's TERA-10⁷ supercomputer generates up to 10TB everyday. Therefore, we have identified the very large databases in XML format and multimedia flows, on which we are working with the CEA, Résonate MP4, INT/Artémis and NewPhenix, as particularly representative of emerging applications.

Returning to applications, the emergence of supercomputers has opened the way to a level of digital simulation bringing us closer to being able to faithfully reproduce very complex phenomena. These new applications are strategically crucial to resolving today's key challenges; they will have a huge impact on how we live in the decades to come.



Before handing over to our partners, I would just like to briefly describe some of them:

- New product design, and notably Dassault Aviation's aerodynamic simulation of air flows around its Falcon business aircraft
- Researching new energy sources by simulating, for example, oil reserve exploitation by the IFP using models comprising several tens of millions of grid cells

- Numerous applications in life sciences. To mention just a few, I will take the example of integrative biology that requires both integrated and multiple-scaled modeling of biological processes and integration of biological data which is as varied as it is abundant; two fundamental issues being taken on by the IBISC laboratory at the University of Evry. Among other examples of modeling applications are the study of how cancer cells behave, processing simulations, simulation of interactions between a virus and its 'host', molecule modeling used in the design of new medicines, etc...
- System failure simulation. In this domain, we have recently concluded a partnership with the ESI Group for its PAM-CRASH application, designed to strengthen security right at the design stage for new automobile models
- Climatology and seismic prediction of natural catastrophes
- Staff and vehicle scheduling for major transport companies
- Multimedia information research, natural language, business intelligence etc.

What, to sum up, are the main distinguishing features of these future petaflop systems?

Openness, balance, and power. Openness, because they are based on standard processors, supplied in volume by Intel. Their entire Open Source-based software environment is similarly optimized under Linux in the framework of the FAME2 project.

Another characteristic is that computing power and input/output power are balanced, and this makes them very powerful systems both for HPC and for large databases, as well as for the most demanding of business applications.

(1) **Téraflops** : 10¹², one thousand billion operations per second; Teraflop derives from the Greek word *τέρας*, denoting monster.

(2) **Pétaflops** : 10¹⁵, one million billion operations per second; Petaflop derives from the Greek word *πέντε*, five because it is equal to 1000⁵.

(3) **At the heart of the digital revolution, the global competitiveness cluster SYSTEM@TIC PARIS-REGION** brings together nearly 200 industrial players, academics, and French institutions around collaborative R&D projects spread over four markets with high added-value application: Telecoms, Security-Defense, Automotive-Transport, Systems Design and Development Tools. Collaborative research/industry projects launched from the **SYSTEM@TIC PARIS-REGION** cluster typically embody this kind of innovation dynamic, which is a key decisive factor when it comes to industrial competitiveness.

(4) **FAME** : Flexible Architecture for Multiple Environments, the architecture designed by Bull, and used in its NovaScale® servers.

(5) **Created by the CEA and backed by regional authorities, Ter@Tec** is a structure for exchanges and collaboration between the various players involved in high-performance digital simulation: researchers, computing and industrial companies.

(6) **The aim of the CARRIOCAS project** is to study and develop an ultra-high flow fiber optics network (40 Gigabits/s per channel) with access to very high capacity (10 Gigabits/s and more), capable of responding to industrial needs in terms of interactive digital simulation on remote supercomputers and handling very large volumes of remote data.

(7) **TERA-10**, the most powerful supercomputer ever designed and manufactured in Europe, N°7 in the world according to the Top 500 classification.

INITIATIVE 2 – GUEST CONTRIBUTORS (CONTINUED)

FAME2 : digital innovation and simulations

Comment from partners

CEA LIST

• **Christian Fluhr**, Director of Research:

// The multimedia information market, both for business and personal users, is undergoing a huge expansion. Media takeovers – such as the purchase at vast expense of Flickr by Yahoo, or YouTube by Google – show that while multimedia search applications were once the preserve of professional users, the general public is now taking a much bigger interest in them with the advent of Web 2.0. This is accompanied by a considerable increase in the volumes of image data needing to be processed. The techno-

logies used at the present time are rather simple: keywords inserted by authors or documentation providers, and pixel-by-pixel image comparison. In the future, the challenge will be to deliver automated and truly semantic descriptions of the multimedia in question even given the likely volume of data being generated via the Web. This evolution, of course, comes with a price tag. The semantic analysis of images, text, words and sounds requires an enormous amount of processing power to handle the huge volumes involved, and so recourse to large capacity multiprocessor machines such as those designed as part of the FAME2 program."

Dassault Aviation

• **Alain Samblat**, Head of high-performance computing resources:

// Aerodynamic digital simulation is at the core of our design processes, notably for our Falcon business aircraft. The combination of fine modeling of flow physics with high-level computing power has enabled us to revolutionize aerodynamic design over the past few years. Our ambitious performance objectives

mean we need to combine intensive utilization of the most recent computing software with state-of-the-art resources and testing techniques. The FAME2 program is enabling us to anticipate the development of simulation resources, and is therefore contributing to the development of our design process and the construction of even more powerful aircraft, that are environmentally friendly while remaining highly competitive."

IFP

• **Stéphane Requena**, Head of high-performance computing resources:

// The increase in world energy demand and the progressive scarcity of petrol and gas, as well as environmental considerations and a problematic road ahead when it comes to finding viable alternatives in the transport and petrochemical sectors, are just some of the factors that are going to shape tomorrow's energy landscape. Thanks to the FAME2 program, we are able

to validate two major applications in this field: simulation of a complete car engine, which will enable us in turn to optimize consumption and reduce emissions of pollutants, and surveys on new oil reserves. FAME2 will allow us to increase the precision of this kind of research by a factor of 20 (112 million grid cells: a world first), enabling increased profitability (of between 10 and 15%) for any given oilfield, with the accompanying improved efficiencies in its exploitation. Uncertainty will soon be a thing of the past in these areas of research!"

IBISC Laboratory at the University of Evry

• **Fariza Tahj**, Assistant Professor, on the theme of: "Towards a data warehouse for integrative biology data - from the genome to man."

// Working with our international partners in the context of the European EuroPhysiome initiative – whose ambition is to analyze the human body as a unique and complex system through the creation of a Virtual Physiological Man – our laboratory is responsible (in collaboration with our international partners) for one of the vital organs, the kidney. As part of the FAME2 program, we

are developing a warehouse for storing heterogeneous Renal Physiome data under the XediX system (the CEA's native XML database). This means biologists will be able to model and simulate renal functioning using saved anatomical and functional data as a starting point; these simulations will make it possible to avoid lengthy and costly traditional experimentation programs. Research teams and medical staff will be able to formulate highly complex query routines and run them through this data warehouse to support diagnosis and treatment anywhere in the world."

INITIATIVE 2 – GUEST CONTRIBUTORS (CONTINUED)

The FAME2 project profile



PARTNERS

Three major companies, three start-ups, eight privately owned or academic research centers.

- **Bull**
the European IT manufacturer, designer and supplier of the TERA-10 to the CEA

- **CAPS Entreprise**
tools for software parallelization and support in optimizing high-performance computing code

- **CEA DAM**
the Military Applications Directorate of the French Atomic Energy Authority

- **CEA DRT**
the Technology Research Directorate of the French Atomic Energy Authority

- **Dassault-Aviation**
a major player in the civil and military worldwide aeronautical industry with the Falcon, Rafale, and Mirage aircrafts

- **ECP – MAS**
(Ecole Centrale Paris / Laboratoire Mathématiques Appliquées aux Systèmes)

- **IFP**
the French national petroleum industry institute

Objective: The main objective of the project is to validate by the end of 2008, the capability of Bull's new-generation servers to deliver the petaflop systems of tomorrow. In real terms, this project enhances the competitiveness of all players involved in each of their respective markets, and aims to consolidate French competitiveness in supercomputers, destined to be central to tomorrow's digital industry.

• **ILOG**

software components for business activity regulations handling

• **INRIA – IRISA**

the French national institute for IT and Automation Research and the Institute for Research into IT and random access systems

• **INT – ARTEMIS**

the French national telecommunications institute – Advanced Research Techniques for Multidimensional Imaging Systems

• **NewPhenix**

multi-criterion research tools, the art of finding one image in 500,000

• **Resonate MP4**

e-multimedia on Internet and mobile telephone networks

• **IBISC**

IT, integrative biology and complex systems laboratory at the University of Evry

• **UVSQ – ITACA**

University of Versailles Saint-Quentin-en-Yvelines / Innovation and Technology As Changing Achievement).

SCIENTIFIC ADVISORY PANEL

- **Claude Camozzi**
Director of Platform Strategy, Bull
- **Christian Fluhr**
Director of Research at CEA LIST (the CEA's systems integration and technology laboratory)
- **Pierre Leca**
Head of the simulation and information sciences department at the CEA/DAM
- **Prof. Dr.-Ing Michael Resch**
Director of the High Performance Computing Calculation Center (HLRS) at the University of Stuttgart in Germany
- **Cristoforo Romanelli**
Chairman and CEO, Quadrics, Italy
- **Karl Solchenbach**
Director of the Intel HPC Cluster Tools Center in Bruehl, Germany.

Investment: 100 staff per annum

Contacts:

Claude Camozzi, Bull
claudio.camozzi@bull.net
 Pierre Leca, CEA
pierre.leca@cea.fr

INITIATIVE 2 – HOT TOPICS

Challenges of supercomputing

“La Recherche” magazine special supplement to the May 2007 edition

“La Recherche”, the leading French monthly scientific magazine, is devoting a special supplement to supercomputing and its role in leveraging competitiveness.

This one-off supplement updates readers on the phenomenal growth of high-performance computing in Europe, and worldwide, across many industry sectors including avionics, cancer research, oil exploration and production, nuclear weapons test simulations, health-care and many other fields.

Designed with the collaboration of Bull, CEA, Dassault-Aviation and the French national petroleum institute, the French language version of the supplement will be available with the May 2007 issue of “La Recherche” (issue n°408).

The English version of the supplement will be available in June. If you are interested in this and would like to receive a copy when it is published, please submit your details here: hpc@bull.net



BUSINESS NEWS

The German federal scientific computing network D-Grid now features a Bull NovaScale® supercomputer

Hosted by the Leibniz Universität Hannover, it provides German higher education and research centers with new levels of computing power

The Regional Computer Center for Lower Saxony (RRZN - Regionales Rechenzentrum für Niedersachsen) has invested in a Bull NovaScale supercomputer, putting new levels of computing power at the disposal of the D-Grid community at federal level.

RRZN is one component in the intra- and inter-regional networks that have been created to supply German higher education establishments and research centers with state-of-the-art high performance computing resources. In order to achieve this, the Leibniz Universität Hannover is now hosting the NovaScale supercomputer.

"We are very pleased that RRZN now ranks among our major high-performance computing (HPC) customers. This new achievement confirms the progress our computing solutions are making in European and worldwide research. The choice made by RRZN, following is the footsteps of those made by other major research centers in France, Germany, Ireland, Spain, and the United Kingdom, supports our strategy to provide a highly innovative platform for HPC which has the capacity to combine the increased levels of power with an extremely compact, low-consumption and easily administered solution," declared Benoît Hallez, Director of Bull's HPC business.

63 servers and 2.5 Teraflops in just two racks

To meet the requirements of the European

tender set out by RRZN, Bull proposed a NovaScale cluster comprising 60 1U computing nodes equipped with Intel® Xeon® dual-core processors, and two 2U system administration nodes (NovaScale R460), also equipped with dual-core processors. This solution is completed by an image server (NovaScale R440), giving a total of 63 servers that are integrated into just two 40U racks.

The NovaScale supercomputer has achieved the best benchmark test results, and offered a very competitive price/performance ratio. It delivers a peak performance of 2.5 Teraflops, and fulfills a particularly demanding set of specification requirements, notably:

- The need to fit in a very limited floor space
- Moderate thermal dissipation, requiring air cooling only
- A cluster architecture of SMP servers running under Linux®
- Extended set of remote administration functionalities.

Available to the whole D-Grid community, the system has been in production since January 2007, having passed the benchmark compliance tests with flying colors and successfully undergone 14 days of intensive stress tests.

About the D-Grid community

The D-Grid initiative sets out to deploy integrated networks for sharing Grid resources enabling the computing of huge volumes of data, thanks to a high level of virtualization when it comes to managing resources and data.

D-Grid was first put forward in 2003 on the initiative of a number of German researchers and research institutes, who jointly published a common strategic declaration calling for, in particular, the development of grid network technology to make intensive computing available to the German scientific community. In 2004, the initiative received the support of the German Ministry for Research and Education (the BMBF, or Bundes Ministerium für Bildung und Forschung).

Work to deploy the new infrastructure began in 2005, with the creation of the D-Grid integration project and start-up of six community grids designed especially to cater for high-energy physics, astrophysics, medicine and life sciences, climatology and engineering.

More information:

<https://www.d-grid.de>

BUSINESS NEWS (CONTINUED)

University of Reims Champagne-Ardenne chooses Bull NovaScale supercomputers to host its high-performance computing (HPC) applications

Bull has signed a contract with the University of Reims Champagne-Ardenne to supply a Bull NovaScale® supercomputer. These servers have been deployed at the university's IT Resources Center since November 2006 to help expand the university's own scientific and industrial research, as well as its collaborative work with other research centers and enterprises in the region.



The Bull NovaScale supercomputer, code-named ROMEO II, delivers some 500 Gigaflops* of power. It enables the collaborative work between a number of partners – the University of Reims Champagne-Ardenne, acting as the contracting authority for the project; the University of Technology at Troyes; the Research and Study Center at the Ecole Nationale Supérieure d'Arts et Métiers (ENSAM) at Châlons-en-Champagne; and the French Atomic Energy Authority (CEA/DAM) in the Ile-de-France as part of the TER@TEC partnership agreement with the University of Reims Champagne-Ardenne.

An ambitious research program

Equipped with Intel® Itanium® 2 processors, the new NovaScale supercomputer

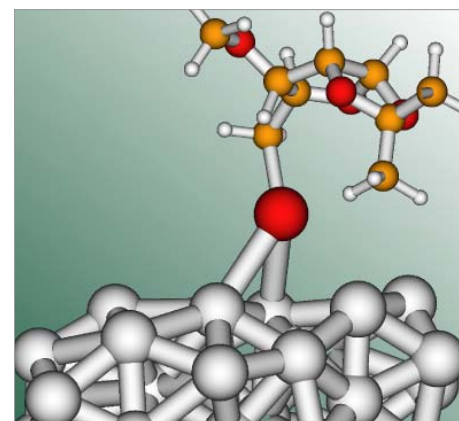
will supply the computing power required by the whole of the University's scientific community, as well as its partners in industry. The research activities being carried out range from optimizing the performance of swimwear worn by swimming champions, or improving our understanding of certain fundamental biological mechanisms, to resolving combination or scheduling problems.

The main areas of scientific research involved are:

- **Mathematics and information technology:** parallelization of non-numerical algorithms (optimizing task planning and scheduling, logic circuit design in electronics), performance and programming models for new computing architectures...
- **Engineering and physical sciences:** scientific computing applications in fluid mechanics, processes relating to particles in the atmosphere, mechanisms for shaping of new materials...
- **Molecular modeling:** modeling complex molecular systems (organic chemistry reactions, improved understanding of biological mechanisms, proteins and molecular dynamics, modeling of materials used for packaging)...
- **Implementation and operation of "multi-processor clusters"**, such as those used in ROMEO II itself.

According to Professor Michaël Krajecki, Head of the ROMEO project: "The implementation of our Bull NovaScale supercomputer is part of our strategy for the Champagne-Ardenne Region that aims to accelerate university and scientific research by giving enterprises and local research centers access to supercomputing resources. This infrastructure will enable the region to meet the growing demands for computing power coming from the University's research community and its partners."

"The choice made by the University of the Champagne-Ardenne region confirms Bull's strategy of providing a flexible and scaleable range of solutions based on standard components: enabling us to meet not only the needs of major world-wide research centers, but also the demands of smaller, local centers," explained Benoît Hallez, Director of Bull HPC Business Unit.



*1 Gigaflop = one billion operations per second.

BUSINESS NEWS (CONTINUED)

Quadrics selects Bull to provide the aeronautics industry in Italy with large-scale simulation capabilities

Quadrics, a Finmeccanica Company, and a leading supplier and developer of high performance networking products and resource management software, has commissioned Bull (through its Italian distributor, Eunics) to provide a supercomputer for a high-performance computing (HPC) center that Quadrics has built for its customer Alenia Aeronautica, also a Finmeccanica Company, one of Europe's leading corporations.



Leveraging its longstanding expertise and technology strength to the benefit of Alenia Aeronautica, Quadrics can combine world-leading technology and a collaborative industrial approach to develop new business.

The high-performance computing (HPC) center (called Pomigliano Center) will be used to run VP3S (Virtual and Physical Product Prototyping System). This system caters for the design and production of aero structures, commercial and military aircraft, plus their overhaul, maintenance and modification. Advanced virtual simulations for testing and validation, associated with PLM processes, plus a wealth of competence when it comes to "Extended Enterprise" technologies, will prove a key asset for enterprise competitiveness.

The offering of HPC computing resources and services to a wider spectrum of organizations is the latest outcome of the Bull-Quadrics partnership and means Quadrics is now ideally placed to remain at the forefront of supercomputing, with Bull as its preferred partner.

The customer naturally turned to Quadrics, whose networking products are behind some of the world's fastest computers. Quadrics, a Bull partner, selected Bull for its HPC expertise. The platform selected is the new standard for high end cluster solution based on Intel® Itanium® 2 dual core processor and Bull NovaScale servers.

In December 2006 the new supercomputer was installed in Alenia's facility in Pomigliano d'Arco (Naples). It will run advanced simulations for Finmeccanica Group companies and for industrial market design and research activities, such as structure analysis with Nastran, or aerodynamic studies with Fluent. One of Quadrics' major objectives was also to rationalize the HPC resources in one center.

To meet these needs, Bull's supercomputer is a hybrid cluster that will enable the company to efficiently run applications needing the power of Itanium-based servers, and also those that would rather use x86-64 based systems. In addition, the new computing resources and services

will be shared with other Finmeccanica subsidiaries and will also be offered to other manufacturers in the aeronautic and automotive industries as well as to universities and other research centers.

With a peak performance of almost 5 Teraflops, the Quadrics supercomputer will be one of the most powerful in Italy. Roughly half the computing power of the cluster is delivered by Bull's Intel® Itanium® 2-based NovaScale 3005 and 5165 servers. The other half comes from x86-64-bit commodity servers. The cluster's global infrastructure and architecture was designed and is being implemented by Bull, especially the single global file system common to all servers. All servers communicate through a high-performance Quadrics QsNet II interconnection network.

Bull is also providing its complete and integrated HPC software environment, including software development tools and cluster management tools, as well as the storage infrastructure based on the enhanced Bull version of the Lustre file system.

"We have a long history of successful cooperation with Bull on the most demanding HPC projects. The most famous one is the French Atomic Energy Authority's TERA-10, the most powerful computer ever designed and built in Europe. We are very pleased to be working again with Bull on the HPC center. They will benefit from Bull's HPC expertise, team spirit and knowledge transfer, which will help to open up this Center to the scientific community and to the private Research Departments" said Cristoforo Romanelli, CEO of Quadrics.

BUSINESS NEWS (CONTINUED)

Powerful Kraftway cluster enters list of TOP50 supercomputers in the CIS

(Commonwealth of Independent States)

A powerful cluster of Kraftway G-Scale computers installed at the company's Competence Center has been listed in the latest version of the TOP50 supercomputer rankings for the CIS (the Commonwealth of Independent States, which covers all the former USSR excluding the Baltic states), published on 11 April 2007.

The computers are ranked twice a year by the R&D Computing Center at Lomonosov Moscow State University and the Joint Supercomputer Center at the Russian Academy of Sciences.

The Kraftway system consists of a four-node cluster of eight processors, with 64GB of RAM in each node. The solution – based on a Bull platform – uses 32 Intel Itanium 2

dual-core processors (64 cores) with a frequency of 1.6GHz and 12MB of Level 3 cache memory per core. The system is unique, as it allows the use of different interconnections – QsNet2 (Quadrics), InfiniBand or Bull FAME (Flexible Architecture for Multiple Environments) NUMA interconnection – depending on the research requirements involved, without any changes to physical connections.

The Kraftway system appears in 20th place in the CIS TOP50 list of high-performance computers. It demonstrated Linpack performance of 377 Gflops and peak performance of 410 Gflops, with in excess of 0.9 efficiency.

Overall this, the sixth time these supercomputer rankings have been published, highlighted the record growth in the performance of the TOP50 high-performance computers in the CIS. In the six months since the last rating, overall Linpack performance of the systems has doubled and is now reaching 45.8 Tflops.

Large UK hospital chooses Bull Evidian's enterprise SSO solution

In order to secure and improve access to patient data, the Shrewsbury and Telford Hospital NHS Trust (UK) has decided to deploy an authentication and single sign-on solution to protect its healthcare applications.

With over 900 beds spread over two sites and 5000 staff, this large county hospital has significantly invested in IT over the last few years. As more and more health information was accessible on-screen, the need for secure and speedy access became critical.

The Evidian E-SSO solution will enforce a global authentication and access policy. It will provide fast user switching to doctors (with context preservation), smart-card authentication with CfH smart card, and single sign-on to all local applications. With Evidian E-SSO, a Hospital doctor

will be able to log onto any PC and access his or her applications instantly by inserting his or her CfH smart card. When the doctor walks away from the PC, the initial user gets back his or her application environment as it was when the doctor requisitioned the PC.

For information, you may download:
<http://www.evidian.com/fr/security/iam/wp-ssosih.php>

SOLUTIONS

Bull announces breakthrough computing density and energy efficiency with its new HPC-designed NovaScale® server

The NovaScale R422 combines high-level performance and optimum cost efficiency in an ultra-dense packaging

Bull has announced a new server to its NovaScale Universal range, which combines an outstanding computing density and space efficiency, an eco-friendly energy efficiency and an efficient cluster administration.

Philippe Milten, Vice-President of Bull's Products and Systems Division, said: *"By combining unmatched computing power with the flexibility of industry standards, Bull's solutions offer high performance computing a new world of performance, flexibility and openness. Bull draws on its expertise as a manufacturer of some of the world's largest supercomputers to design all types of infrastructures, finally making HPC affordable and flexible. Proof that our strategy meets customer's demands is that the University of Hanover has already chosen to deploy a large cluster based on this new range of Bull NovaScale servers, while the product was still in its development phase!"*

Outstanding computing density and space efficiency

With two servers in 1U, the NovaScale R422 is a standard server with the density of blades. It delivers savings in terms of chassis-related costs, power supply, cabling and rack costs. With double the computing power within the same space, customers can do more with less space, thus significantly reducing their real-estate or rental costs, and ultimately their total cost of ownership (TCO). More than 5.4 Teraflops peak performance can be packed within a single rack, delivering maximum performance per square meter.

Eco-friendly energy efficiency

The NovaScale R422 chassis features a highly efficient power supply unit (PSU) that allows significant savings on energy costs on the long term, thus considerably lowering the TCO. Whereas conventional PSU efficiency rarely reaches above 75%, the NovaScale R422 offers an outstanding power utilization rate of 92%.

Efficient cluster administration

The NovaScale R422 clusters are delivered with a choice of the Bull Advanced Server (BAS) Linux environment or Microsoft's Windows Compute Cluster Server 2003. The BAS software suite for Xeon-based servers is built on top of standard Red Hat Enterprise Linux 4 or 5. This integrated and comprehensive package – designed by Bull – includes the best of Open Source and industry-standard software, together with specific features developed by Bull for high-performance computing (HPC) clusters. It includes comprehensive management tools to allow an entire cluster – including the platform and interconnect network – to be as easily monitored and managed as a single system.

Technical specifications

The NovaScale R422 features up to two dual or quad-core Intel® Xeon® proces-



sors (5100 or 5300 series). This rack-mount server incorporates innovative technologies including the 'Atoka' motherboard jointly designed by Supermicro and Intel, that allows two servers to be fitted into a single 1U chassis: i.e. up to 16 cores, or up to more than 170 GigaFlops in 1U.

The NovaScale R422 is ideally suited for use as a compute node in NovaScale clusters, in combination with NovaScale R440/460 service nodes. With its on-board InfiniBand connector, it offers unlimited scalability while minimizing interconnect cost. Whether for a small, medium or large-scale configuration, anything up to several thousand NovaScale R422 servers can be clustered together to deliver the required computational power.

The NovaScale R422 is available now.

WHAT'S NEW

Bruno Sehabiague, High-availability Services Consultant, Bull

Bull, provider of professional High-Availability services

High-availability, an ever-increasing requirement

Major public and private sector organizations have a natural interest in the various techniques available to improve the productivity of their IT assets. The higher the level of real availability, the better the return on investment (ROI) on IT solutions. Increasing computing power is not the only way to drive up productivity.



The high-availability (HA) market is expanding rapidly. In the previous decade, HA services were mainly associated with large-scale systems running 'mission-critical' applications for the enterprise. But today, HA is key to four times as many systems: supporting applications that underpin daily business activities, such as production overflows and round-the-clock mass-market e-commerce online transactions. The ever-increasing globalization of business activities is also driving up demand, with the need for servers to remain accessible around the clock from any point on the globe, and no matter what time zone the user may be in.

Another factor driving up demand is the growth and development of system architectures and infrastructures. HA services are now possible on most configurations and operating systems, no matter what size they are.

Quality assurance, guaranteed results and financial terms meeting customer's demand

When they first came onto the market, HA services were undertaken as stand-alone projects in the same way as an application development might have been: and this is still the case for many

service providers. This meant that a number of specialists had to get involved in the early stages of the project, and significant specialist system supervision and task-execution resources had to be put in place. All this came at a cost.

Bull realized from an early stage that these kinds of high added-value services would eventually become a necessity for most of its customers, and so established a range of pre-defined services around a core support contract: HA999 (High Availability 99.9%). Located at Echirolles near Grenoble, our specialist European support center has been up and running since 1999; monitoring, diagnosing and carrying out tasks remotely our customers' mission-critical systems. Moving away from 'project mode' towards a more structured, professional and automated approach to support has significantly reduced operational loading and resulted in a big increase in the number of systems now being supported under HA contracts.

Professional HA999 services for end-to-end support

The High-Availability Center of expertise at Echirolles in France is the cornerstone of Bull's HA initiatives. All our customers with systems managed under HA contract are monitored by this specialist center; with all customer requests, automatic alerts and queries being handled directly by this group. All hardware and software configurations are archived and monitored by the center. We have developed several dedicated tools, including automated 24/7 alert tools that have considerably reduced the number of straight system failures, thanks to proactive actions. When local Bull offices get requests for on-site interventions, these are always monitored by the HA Center right through to their operational conclusion. Every

quarter, the customer receives a comprehensive report of all the tasks carried out on each system, along with both an analysis of the problems encountered and appropriate recommendations. Serving as a reference point from one quarter to the next, this report enables both the Bull team and the customer's own staff to improve the way each system is managed under an HA contract.

Services offered by the Center include:

Configuration audit. The first stage generally involves producing a 'status report on the current system', as well as a technical report covering all known versions of hardware, firmware and software installed at the production site. Recommendations for any further development work are also given, to ensure overall technical coherence. At this point, tools are also installed that will collect and upload data to the European Support Center.

Optimizing version management.

Analysis of the existing versions can also be accompanied by a report on all the technical and organizational actions to be implemented, with the aim of:

- Improving the level of consistency between versions of hardware, firmware and the operating system, so that it is compatible with the various versions of applications
- Controlling the attendant risks and costs of a change in system maintenance
- Securing the changes and system updates, from the production point of view
- Optimizing and synchronizing the evolution and updating of versions, to achieve better operating reliability and better configuration control.

Proactive surveillance of in-production versions.

Bull's European Support Center automatically collects version control data for installed systems, and analyses this is on a month-to-month basis to:

SOLUTIONS (CONTINUED)

- Ensure systems running under the operating environment concerned conform to an authorized standard for versions
- Enable on-going verification of the integrity of versions installed and in use
- Help anticipate future needs for developments and technical upgrades.

Production continuity support. This service is designed to support the production team, particularly during off-peak periods, by checking the conditions for production system continuity, and hel-

ping to restart production following an incident. This support service is provided in the form of remote surveillance of the availability levels of IT production resources by our specialists at the European Support Center, who are familiar with the relevant operational management details and the customer's disaster recovery plan. The customer keeps overall technical responsibility for system operation.

Therefore with its European Support Center, Bull has developed a highly structured, professional approach to deli-

vering the High-Availability contracts entrusted to it by customers, with:

- Proactive support (systematic measurement, change management, ITIL practices...)
- Automatic technical alerts
- A dedicated, high-availability support center running 24/7
- Monitoring, diagnostic and remote intervention tools
- Skilled local teams of technical staff ready to take action rapidly on site
- Close technical collaboration between customer teams and Bull.

WHAT'S NEW

Bull: Revenue growth at constant structure for its first quarter 2007

Sustained momentum in Services and Solutions Continuation of Maintenance recovery

Financial highlights of first quarter 2007, compared with 2006 recast for the sale of the Italian operations in December 2006.

Revenue of 247.1 million euros grew 2.4% year over year. Revenue from the service activities progressed by 17.7%, registering the eighth consecutive quarter of growth. Maintenance activities' revenue

grew by 3.8%, confirming the value of the actions initiated in 2006: the new worldwide organization and differentiating offers. The products revenue decreased by 7.9%. The reversal of this trend over the coming quarters is under control with an 8.3% growth in order intake in the first quarter, driven by a renewed offer and the development of integrated solutions.

With a 19% increased in order intake, the first quarter business activity was vigorous, particularly in the United States, where a \$44 million contract was signed with the State of California; also in Latin America and in Germany where orders grew by 64% and 35% respectively.

Order intake was particularly strong, +28.5% in the service and solutions activity, confirming the trend seen in previous semesters. The strategy aiming to increase services as a proportion of overall Group revenues continues to be executed.

Integration of Bull's e-biscus solution with SAP NetWeaver® opens new horizons to Customs worldwide

Bull announced that its e-biscus solution has achieved "Powered by SAP NetWeaver®" certification. By achieving this level of certification, Bull's e-biscus is now integrated with SAP technology.

The combination of Bull's e-biscus™ with SAP NetWeaver provides a new comprehensive solution to address the entire scope of Customs administrations needs. e-biscus is the comprehensive software solution designed by Bull for Customs authorities and Trade communities. It allows processing in real time all Customs declarations and complies with the guidelines of the World Customs Organization (WCO) such as the revised Kyoto Convention, the SAFE framework of standards and the EU regulations.

Bull's expertise in customs management integrated into the e-biscus software suite combined with the SAP business process platform provides Customs authorities with an open, interoperable, reliable, and secure IT environment. Bull e-biscus combined with SAP NetWeaver delivers

robust and standard-based business integration capabilities for growth on enterprise Service-Oriented Architecture (eSOA).

Bull also became a member of the SAP Industry Value Network initiative (IVN) for public sector. SAP Industry Value Networks bring together customers, partners and SAP to co-innovate and quickly develop solutions to solve industry-specific customer challenges.

"We are delighted with the evolution of our collaboration with SAP" said Jean-François Betbeder, Bull Tax and Customs Solutions Director. "Driven by experience, powered by technology, this new solution running on SAP NetWeaver will enable Customs administrations to build and extend their IT environment to face their challenges such as globalization of exchanges, increasing e-services demand, and fast changing legal requirements. Bull, as a leading IT solution provider for Customs administrations worldwide trusts that this cooperation will open new horizons to Customs administrations".



Long-term partnership with SAP

This latest certification further strengthens the 16-year partnership between Bull and SAP. A Global Technology Partner since 1991, Bull has well-established Centers of Excellence in France and in the German town of Walldorf, as well as specialist SAP teams in many countries worldwide. Bull supplies the hardware platforms (from its Escala and NovaScale servers ranges) for some of SAP's largest customers in Europe.

When it comes to implementation of SAP applications, Bull operates throughout the entire "Design, Build, Operate" value chain: from architecture definition, systems integration and implementation, to outsourcing services.

WHAT'S NEW (CONTINUED)

Bull opens an off-shoring services center in Morocco

Bull has announced the signature of an agreement with the Government of the Kingdom of Morocco under the terms of which Bull is to create a new service center dedicated to off-shoring at the Casashore off-shoring park

The agreement was signed on 12 April with the Moroccan Government, in the presence of Didier Lamouche, Bull's Chairman and Chief Executive Officer, who declared: "This service center will be dedicated to project management and integration in the telecommunications sector, as well as to e-government projects, these being the main business activities where Bull Morocco can capitalize on its

recent success in becoming one of the market leaders in this country".

In a market where offshore business activities are continuing to grow steadily, the Moroccan government has decided to make off-shoring – or the business of providing remote services – a strategic axis for developing the Moroccan economy over the course of the next few years. For its part, Bull's presence over more than 50 years in Morocco, and its accumulated experience on major services-led projects, today makes Bull the strategic partner of choice for the Kingdom of Morocco, and one of the most appropriate partners to support the targets set by the government with respect to modernization.

With 200 new posts due to be created between now and 2009, and the new recruits joining 100 staff already in place, growth objectives for the service center are certainly ambitious, and aim to contribute to extending Bull's range of products and services, and to its international development more widely.

"This center will provide a central point for consolidating the Group's know-how and for extending our frontiers internationally, particularly in the French-speaking markets," added Didier Lamouche. "We are taking this step as part of Bull's wider ongoing international expansion, having already opened services centers in Brazil, China, France and Poland".

Bull and Telemac Form Strategic Partnership in the Telco industry

Bull reinforces its presence in the telecommunications sector and integrates Telemac Prepaid Technology® in its mobile solutions

Bull and Telemac, the global leader in network-edge real-time accounting and billing technologies for the wireless industry have entered into a multi-year teaming agreement pursuant to which Bull will participate in marketing, managing and supporting implementations of Telemac Prepaid Technology in Europe, the Middle East and Africa. This strate-

gic partnership will offer Bull's clients access to Telemac's innovative solution for pre-paid billing and also give Telemac's licensees access to Bull's full range of integration and support capabilities.

Telemac Prepaid Technology is Telemac's patented state-of-the-art real-time service control platform for prepaid wireless services. It enables each wireless device to securely monitor the value of all voice and data calls, charge usage values against the customer's credit balances in real-time, and bar calls

when a customer reaches his or her credit limit, among other features. Unlike typical network-centric solutions, the intelligence to meter, rate, bill, settle and collect resides in Telemac's patented IMA-Module® software within the wireless device or SIM.

Telemac Prepaid Technology has been used by 25 million customers receiving wireless services in Europe, the United States, Latin America and China. Telemac's licensees include leading mobile phone and SIM manufacturers and wireless operators on four continents.

Evidian E-SSO software wins SC Mag's 4-star rating

In its February 2007 issue, SC Magazine, the leading international security magazine, published the results of its tests of key products on the market for Identity & Access Management.

Products were tested by an independent expert and rated on features, ease of use, performance, documentation, support and value for money.

A component of Evidian's Identity and Access Management suite, Evidian E-SSO software won a global 4 star rating amid strong competition. The magazine particularly praised its range of features

and performance. "Considering the scope of the identity management provided by the Evidian suite, it really covers the greatest number of options. The modular approach of the product allows the suite to be scaled for medium-sized enterprises" concluded the magazine.

SC Magazine is the largest information security magazine in the world and has

been in print for over 15 years. Published monthly, it has a global circulation of over 100,000 and is read by many thousands more. SC Magazine is internationally recognized for its outstanding technical reviews and its comprehensive coverage of the information security marketplace.

More information:
www.evidian.fr



EVENTS

New breakfast seminars on Open Source

Each month Bull offers an open invitation to its breakfast-time seminars, each focusing on a theme linked to implementing Open Source in information systems. Led by experts ready to share their experiences as regards methodologies, tools, solutions and best practices, these morning sessions offer pragmatic solutions to IT managers seeking to integrate open source software in their information systems.

After the April 26 session dedicated to

Software development, the forthcoming breakfast seminars include:

- **May: Thursday 24** - Migration
- **June: Thursday 21** - Workstations
- **July: Thursday 5** - Monitoring and administration

The **May breakfast seminar** will take place at the Régus center, 68 rue du Faubourg Saint-Honoré, Paris, on 24 May, from 8.30-11.00am. The meeting will be focused on three critical domains



to successfully migrate to Open Source:

- Software costs optimization
- Databases migration
- Application servers migration.

Santiago de Compostela in Spain, 14-16 May

IBERGRID, 1st Iberian Grid Infrastructure Conference

IBERGRID is organized by CESGA (Galicia Supercomputing Centre) and University of Coruña). It is promoted by the Portuguese Ministry of Science, Technology Higher Education and the Spanish Ministry of Education & Science. **As sponsor Bull will be present and Jean-Marc Denis, HPC Business Manager, will run a conference on Tuesday 15 May at 5:30pm (room A) on the theme: "Interfacing issues between Job Scheduler and Resource Manager"**. The conference aims to foster and promote R&D activities in



Iberian countries and their links to Latin America, by bringing together academics that are cooperating in computer and computational sciences applied to grid infrastructures and technologies.

Topics of interest include: Grid Middleware, Grid Computing, Data and Networking Infrastructures, Distributed and Large-Scale Data Access and Management, Distributed Resource Management

and Scheduling, Supercomputer/cluster/grid integration issues, Grid Applications including e-Science and e-Business (e-health, environmental sciences, climate modeling, civil protection, computational sciences, high energy physics, e-administration...).

For more information:
www.ibergrid.eu

Paris, Porte de Versailles, 7-9 June

3rd European Research and Innovation Exhibition

Research and innovation, driving the global economy

The European Research and Innovation Exhibition is the annual meeting for all main players in research and industry, providing a focal point for all the driving forces of people and organizations that have recognized that investing in science has become a key priority in guaranteeing growth in an ever more competitive world.

Bull will be taking part in the exhibition along with two of its partners, Intel and Microsoft. This will include:

- **A panel discussion on 7 June, from 11:30 to 12:15am in the Agora room.**

With the theme: "Digital simulation at the forefront of innovation. How to make it accessible?", it will be chaired by Jean-Michel Ghidaglia, Scientific Director

of "La Recherche" magazine, with:

- **Benoît Hallez**, Director of Bull HPC Business Unit
- **Marc Dollfus**, Director, Intel France
- **Bernard Ourghanlian**, Technical Director, Microsoft France

- **A seminar hosted by Bull and Intel with the participation of Microsoft, Altair and**

"La Recherche" magazine, on Friday 8 June, 9:30am to 12:30pm (Agora room), on the theme: "Everyone's entitled to power, HPC within everyone's reach".

- **Welcome to our stand (# D62):** experts from all partners will be happy to demonstrate our latest innovations.

EVENTS (CONTINUED) **Biarritz, France, 7-8 June****CUBE (Bull European User Group)**

The 23rd Annual General Meeting of the Bull European User Group will be held at the Hôtel du Palais in the southern French seaside town of Biarritz, June 7-8.

The theme of the meeting is: *“Open Source software and mobility: major components of Information Systems”*.

The meeting will be chaired by Germain Zimmerlé, President of CUBE, and it will also be attended by Bernard Carayon*, MP for the Tarn region and Mayor of Lavaur, who will be speaking on the theme of: *“European Competitiveness: the challenge of information technologies, and the opportunities offered by Open Source software”*, and by Didier Lamouche, Bull's Chairman and CEO, whose contribution will round off the first

day. Also taking part are Alexis Monville, from the DGME (the French State Modernization Agency) and Jean-Christophe NGuyen, IT Director of the Moselle regional council. Jean-Pierre Barbéris, General Manager of Bull Services and Solutions, will present the initiatives taken by Bull in the world of Open Source, and Bull's Nova Forge™ software development factory.

The second day will be dedicated to the theme of *“Mobility, an engine for transforming Information Systems”*, presented by Patrick Coilland, Consultant in security and network architecture. This will be followed by a talk by Alain Fabre from Orange Labs, Hervé de la Morsanglière, Director of Transdev, Rémy Rio, Director of the Network Management Center for

the CNAM-TS, and Alain Filée, Director of Bull TrustWay business unit on The secure mobile office.

This 23rd meeting will offer many opportunities for exchanges between user group members and Bull senior executives on the challenges involved in the accelerated development of information systems today.

** Bernard Carayon is renowned for having created the enterprise foundation Prometheus, dedicated to analysing the wider technological, legal, financial and globalized marketing themes that unite the largest industrial, financial and banking interests in France.*

 Dresden, in Germany, June 26-29**ISC (International Supercomputing Conference)**

The International Supercomputing Conference (ISC) – the largest supercomputing event in Europe – will be held on June 26-29 at the Dresden International Congress Centre in Germany.

The exhibition will gather over 80 of the world's leading supercomputing companies, which will showcase their high performance computing, networking and storage technologies.

The four-day conference features a mix of research presentations and talks on business and industrial topics, including:

- Computational fluid dynamics

- Financial applications and HPC
- Processor and chip innovations
- Operating systems and algorithms for petaflop computers. Are we prepared?
- High performance networking
- The new “Automotive afternoon” dedicated to the uses of HPC for automotive engineering.

The eagerly-awaited TOP500 list will also be announced.

Bull presence

Jean-Marc Denis, Bull's HPC Sales Development Manager, will present the most recent additions to our HPC offer in



his presentation entitled “Bull HPC clusters: performance at the service of innovation” at the Exhibitor Forum.

Meet our experts at **Bull booth C06-C08** and see our latest HPC solutions at work on a Bull NovaScale® cluster!

More information on ISC'07 from:
<http://www.isc07.org>