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OPEN world

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The Netherlands on top

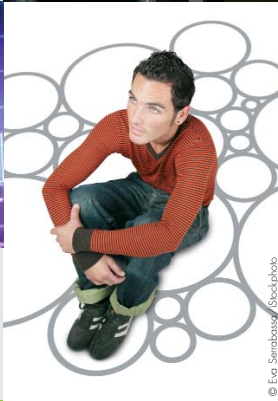
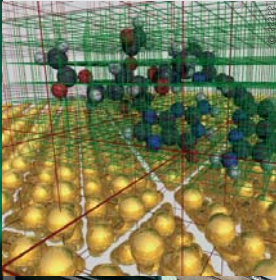
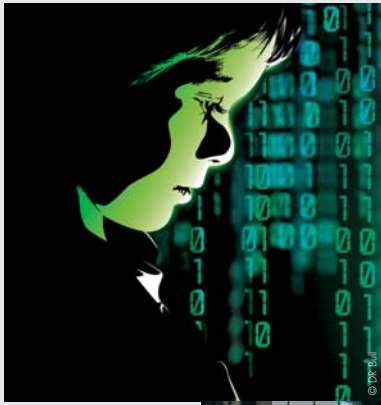
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BULL

Architect of an Open World™



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editorial

by Didier Lamouche, Bull Chairman and CEO



© Dominique Mabire

“In today's world: success can only be achieved by exchanging ideas and combining talents.”

Open world, collective success

Initiated at the very highest level, the approach taken in recent Franco-Brazilian agreements illustrates an undeniable reality in today's world: success can only be achieved by exchanging ideas and combining talents. As one of the “high-level group” of ten companies put in place to drive forward new joint initiatives, Bull is proud to be playing an active part in this bilateral collaboration, most notably through major projects in Open Source and computer simulation.

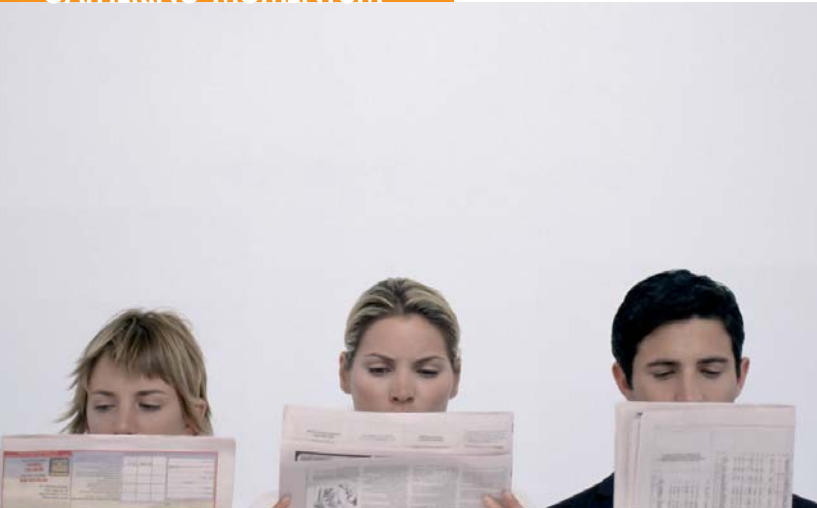
In an environment that is as complex, constantly shifting and demanding as the one we live in now, no-one can achieve everything alone. In many respects, economic activity is becoming like very high-level sporting achievement: requiring advanced technology, fine-tuning, and an exceptional capacity to adapt and innovate... Success is only really possible, in any field, as a collective effort. So the biggest challenge is to assemble the right team and get the best from everyone. Often there is no need to go a long way or invest a great deal to find the assets that facilitate success. From our own businesses to our customers, our ecosystems contain a wealth of ideas and skills. It was precisely this insight that drove Bull to bring its R&D closer to the field. The result: globull and bullx, two major innovations in the space of just a few months.

Bull also views its outsourcing activities in this spirit of close collaboration. More than just a service provided by an external supplier, outsourcing has to be a partnership that creates real value. As a result, information systems should be stronger, more flexible, better managed, and better equipped to cope with rapid evolutions in business and technology. The customer and the outsourcer have to build a cohesive team focused on a shared objective: the performance of a highly-competitive information system. In a world constantly being turned upside-down, flexible outsourcing is a reliable way to keep control over your information systems, while ensuring they are just as agile as they need to be.

OPEN world

TRENDS | INITIATIVES | INNOVATIONS

GATHERING MOMENTUM



© Image Source/Corbis

→ Recruitment continues, even during the recession

BULL'S FIRM BELIEF THAT INVESTMENT AND INNOVATION ARE THE KEY TO SURVIVING THE CRISIS MEANS ITS RENEWAL CONTINUES WITH THE RECRUITMENT OF NEW TALENT.

Proving its resilience in the face of the economic crisis, Bull is maintaining the momentum it has built up over several years. To support its on-going policy of business transformation and innovation, the Group is getting stronger all the time, particularly by recruiting more people into jobs that require technical expertise and experience (project managers, system architects, consultants...). In 2009, Bull is planning to recruit 600 new people, 250 of them in France, continuing the spectacular renewal of its workforce (45% of its staff have been with the Group less than four years). To help meet the challenge of recruiting and integrating this new talent, Bull can draw on the expertise of Anne-Marie Cambourieu, appointed as VP of Human Resources and a member of the Group's Executive Committee in January 2009.

OPEN SOURCE COLLABORATIVE DEVELOPMENT SUITE FOR BELGIAN FINANCE MINISTRY

The Belgian Finance Ministry is focusing on innovation to help enhance its operational efficiency; choosing the collaborative Open Source development platform from French start-up eXo Platform. The highly innovative new tool, which has been implemented by Bull, includes messaging, calendar, address book, document management, forums and chat-rooms, whiteboards and video-conferencing functions. It also offers a Web OS, which means it provides a complete working environment accessible from anywhere via a simple Web browser. Open, flexible and functionally rich, it will enable civil servants in the Ministry to take full advantage of Web 2.0 collaboration. With some 30,000 users, this constitutes one of Europe's largest Open Source projects.

EXTREME COMPUTING BULL BEHIND THE SCENES OF PLANET 51

Planet 51, to be distributed by Sony Pictures, will be one of the big movie events of this winter when it is released. The 3D animation is pushing back the boundaries of the genre, and is being made in Spain by ILION Animation Studios with the help of a Bull supercomputer. The system, installed by Bull and specialists Tangram, has been specifically optimized for the latest-generation graphics rendering

software. Because it is so fast, it is enabling perfect, seamless collaboration between the 300 or so people working on the movie.

PUBLIC SERVICES NEW VEHICLE REGISTRATION SYSTEM FOR FRANCE

Since 15 April 2009, there has been a new vehicle registration system in France. The Ministry of the Interior awarded the development and implementation of this huge new system – which manages 40 million drivers, 120 registrations and over 25 million operations a year – to a consortium led by Bull. Using leading-edge technologies for guaranteed robustness and performance, the solution has enabled the whole vehicle registration process to be computerized, and an unprecedented database of information about the country's vehicle park to be put together.

SSO BULL EVIDIAN SECURES P&TLUXEMBOURG'S "CLOUD"

As the country's leading postal and telecommunications services operator, P&TLuxembourg is developing an integrated IT outsourcing offering in "Cloud Computing" form, aimed at business customers. This kind of system demands complete security and usability, which is why P&TLuxembourg has chosen Evidian's Single Sign-On (SSO) solution, having already tested and adopted it for internal use. Users of the new service will be able to log on to their private "Cloud" of applications and resources using



1



2



3



4

- 1// Planet 51, a movie milestone.
- 2// The new French vehicle registration system.
- 3// Bull and SERPRO: partnership in Brazil.
- 4// Secure mobile computing with globull.

a single password, for maximum protection and comfort.

COOPERATION
MAJOR AGREEMENT WITH BRAZIL

Bull, one of the major French businesses in the high-level group of ten charged with enriching technological collaboration between France and Brazil, has signed a partnership agreement with SERPRO – the largest State-owned IT agency in Brazil. The agreement was signed in Brazil by Marcos Vinícius Ferreira Mazoni, Chairman and CEO of SERPRO and Didier Lamouche, Chairman and CEO of Bull, in the presence of Alberto Araujo, General Manager of Bull Latin America. Bull and SERPRO will be collaborating on the development of Open Source solutions, most notably in the areas of portals, development tools (NovaForge™), e-government and education. Brazil is one of the most advanced countries when it comes to using Open Source and developing expertise in this area.

MOBILITY
FRENCH MINISTRIES SIGNED UP FOR GLOBULL

The French Defense Ministry's Inter-Forces Infrastructure, Networks and Information Systems Department (DIRISI) is responsible for protecting sensitive government information, and provides the secure systems needed to do this to numerous key

Ministries including Defense, Interior and Foreign Affairs. With this in mind, DIRISI has found globull™ the ideal tool for storing and transporting confidential data. DIRISI has signed a four-year framework contract with Bull to supply, personalize and implement globull for the relevant government departments.

ZOOM

→ **RESULTS**

A solid first six months

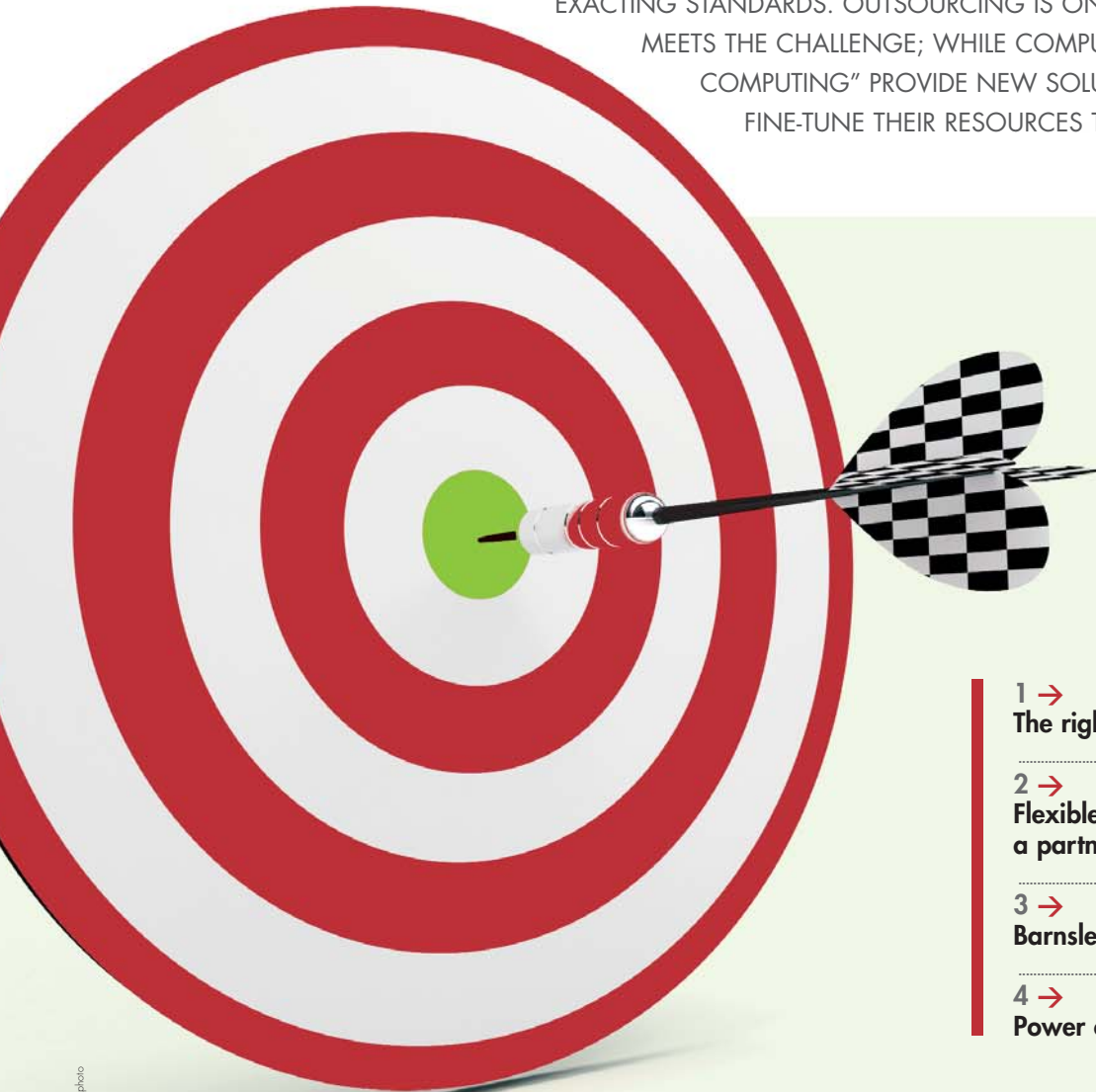
Despite the difficult economic climate, Bull sustained its business performance in the first six months of 2009. Group consolidated revenues for the period grew by 1.5%. Apart from sales of third-party products – which Bull has decided to gradually wind down – order intake is up in all parts of the business. In particular, Hardware & Systems Solutions recorded a 15.8% increase in revenues. Extreme Computing solutions – now the Group's most successful product offering – made a particularly significant contribution to these results. So Bull is enjoying the fruits of its on-going efforts towards business transformation and innovation, and given this very encouraging performance the Group has increased its target EBIT for the 2009 financial year.



Outsourcing

Computing at the competitive

INCREASINGLY, BUSINESS SUCCESS DEPENDS ON THE SAME QUALITIES AS HIGH-LEVEL COMPETITION: CUTTING-EDGE TECHNOLOGIES, FINE-TUNING, EXTREME RESPONSIVENESS, ELIMINATION OF ALL WASTE, ABSOLUTE SECURITY, STRICT COST CONTROL... AS AN ESSENTIAL DRIVER OF COMPETITIVENESS, INFORMATION SYSTEMS MUST ALSO MATCH UP TO THESE EXACTING STANDARDS. OUTSOURCING IS ONE FORM OF I.T. GOVERNANCE THAT MEETS THE CHALLENGE; WHILE COMPUTING-ON-DEMAND AND "CLOUD COMPUTING" PROVIDE NEW SOLUTIONS THAT ENABLE ORGANIZATIONS FINE-TUNE THEIR RESOURCES TO CLOSELY MATCH THEIR NEEDS.



- 1 →
The right resources at the right time

- 2 →
**Flexible outsourcing:
a partnership for performance**

- 3 →
Barnsley and Bull, a winning team

- 4 →
Power on demand for Société Générale



© Eva Spreitzer, James Smirnov / Stockphoto

[IN AN UNCERTAIN WORLD, IT'S BETTER TO KEEP ALL YOUR OPTIONS OPEN: AND TO HAVE A SPECIALIST LIKE BULL AT YOUR SIDE.]

AGILITY

The right resources at the right time

From BMW's revival of Mini to the explosion in Netbook computers, there are many illustrations around a fundamental truism of the early 21st century economy: in a hyper-competitive globalized environment, nothing is set in stone. With innovation, understanding of demand and clever marketing, it's possible to take off very quickly, especially in times of crisis. But perfect execution is absolutely essential to success, because it enables good ideas to be transformed into reality as fast as possible, at optimum cost and with the requisite levels of quality and security. So the real challenge is to access the right resources at the right time. In a climate where speed and initiative are of the essence, much better to call on specialist suppliers and state-of-the-art infrastructures when needed, than to maintain a vast team and expensive assets in house.

Constantly evolving business practice

Today, IT is at the heart of every business process and every innovation: so, first and foremost, it must respond to these new demands. It must allow you to develop new services in a highly responsive way, deal effectively with peaks in workload, match the rapid evolution of your business... And ideally – bearing in mind budget constraints – you should only have to pay for what you actually use. Today's systems must combine flexibility, modularity, openness, security and performance, in a way that responds closely to expectations and can rapidly fit in with any technical or business changes. To achieve this, IT Departments have several options: consolidating technologies and capitalizing on standards, notably Open Source, to facilitate

Better to call on specialist suppliers than a vast in-house team.



■ ■ ■ interoperability and re-use; using Service-Oriented Architectures (SOAs) and on-line applications (SaaS) to accelerate deployment; sharing systems in “Cloud Computing” mode, for overall control of resources; using outsourcing for optimum responsiveness and permanent access to state-of-the-art technologies and practices.

Service makes all the difference

These different approaches are even more effective when used together in a coherent way, which is why Bull

has developed complete offerings and expertise: High Density Hosting (HDH), ERP outsourcing, operating critical applications.... What’s more, the Group puts particular emphasis on professional services – systems design, scoping and optimization – which draw out the full value of technology. From initial analysis to operation and to business application evolution, Bull supports public and private sector customers in implementing global solutions, for IT that is totally adapted to their needs.

[BY RETHINKING THE GOVERNANCE AT THE HEART OF OUTSOURCING, BULL HAS CREATED THE CONDITIONS FOR DYNAMIC, SECURE SERVICE DELIVERY THAT CREATES REAL VALUE.]

Flexible outsourcing: a partnership for performance

As information systems play a greater role in the organization, they have to satisfy ever more intense demands... To be capable of absorbing a new business entity or on-line service, and coping with season fluctuations in transactions, they must be robust and agile, with access to secure infrastructures, systems admin tools and high-level skills. In recent years, outsourcing has established itself as the ideal answer, along with “Software as a Service” (SaaS) and “Cloud Computing”. By handing over the running of all or part of their information systems, IT Departments can concentrate on supporting the core business, while still having cost-effective access to the best possible resources.



© DR Bull

Transparent and proactive

However outsourcing must be able to support fast economical and technological mutations. When you need to move quickly, you cannot afford to be held back by overly strict contracts or arduous procedures! Which is why Bull’s offerings are based on a new, more flexible type of governance that adapts to changing needs. Constant dialogue, tools that provide guaranteed control over the services being provided, modular services and in-built variability mechanisms allow a true relationship of trust to be established, where the supplier becomes a proactive partner creating real value.

To achieve this combination of dynamic service delivery and rigorous, structured “industrialization”, Bull leverages its teams, with their constantly increasing business and technical skills. And with its international Data Centers, Bull offers a production resource that benefits from constant investment, particularly when it comes to security and environmental protection.

[BARNSELY IN NORTHERN ENGLAND HAS CREATED AN INNOVATIVE JOINT VENTURE WITH BULL,
TO IMPLEMENT ITS BOLD DIGITAL STRATEGY.]

PUBLIC SECTOR

Barnsley and Bull, a winning team

Having been hit hard by the mining industry crisis in the 1980s, today Barnsley is putting its faith in new technologies. The town, with its 220,000 inhabitants, has an ambitious plan to be the first in the country where everyone is online, by 2012. So Barnsley Metropolitan Borough Council (BMBC), which manages the majority of public services locally, not only has to set the right example, but also to drive this initiative forward.

A unique project

Back in 2006, BMBC was looking for a partner to support its digital strategy, by helping to modernize and manage its IT infrastructures. To meet its own objectives, and those set by central government in terms of cost reduction and e-government, BMBC's plan was to set up a joint venture with a specialist outsourcing supplier. This had the advantage of offering both autonomy and flexibility in the way it was organized, while protecting the borough's interests, especially by safeguarding the jobs of its 106 IT workers. After a rigorous selection process, BMBC signed a ten-year 110 million euros contract to set up Bull TCL, owned 20% by the council. *"As well as the skills it provides, Bull has proved it has the capacity to adapt and the determination needed to see this unique project through successfully,"* confirms Phil Coppard, Chief Executive of Barnsley MBC.

A technological center of excellence

Bull TCL's role is to manage BMBC's IT assets and develop innovative service and support activities to sustain the local economy. Its main work is to design,

build and operate a new secure, highly robust Data Centre, capable of adapting to the future needs of the borough and other hosted customers. Phil Coppard is delighted with the result: *"By in-sourcing our IT in this way we have created a unique centre of technological excellence in Barnsley, which encourages business and employment in the region."*



© DK Bull

Savings and service improvements

Thanks to the new Data Centre, Barnsley is on track to avoid a 20% additional cost in IT spending, and to benefit from other significant improvements in service quality, reliability and responsiveness. Local schools as well as a major bank are benefiting from its hosting capabilities. And with protecting the environment another of BMBC's key priorities, consolidation and virtualisation – going from 150 servers to just five while increasing available power – have already delivered a significant cut in energy consumption. A sign of success Barnsley and Bull are officially opening their new Data Centre, one of the most modern and powerful in the UK, in October.



→ PHIL COPPARD, CHIEF EXECUTIVE OF BARNSELY MBC

« By in-sourcing our IT we have created a unique centre of technological excellence in Barnsley »

[THANKS TO BULL'S HPC-ON-DEMAND SOLUTIONS,
SOCIÉTÉ GÉNÉRALE ALWAYS HAS ACCESS TO THE COMPUTING POWER IT NEEDS.]

Power on demand for Société Générale

To absorb extra demands
and respond to peaks
in workload.

High-Performance Computing (HPC) helps organizations constantly push back the boundaries of computer simulation, modeling and digital analysis; making it an essential driver for innovation and competitiveness. But in certain businesses, the opportunities it offers and ways it could be used are still sometimes hard to predict. The processing power that is needed can fluctuate considerably, depending on the circumstances and algorithms involved. This definitely applies in financial services, where the volume, nature and complexity of computations to be performed vary greatly in an especially dynamic context. Faced with this issue, SG CIB, Société Générale Corporate and Investment Banking, was looking for a solution that would give it both the performance it needed and great flexibility of use.

A flexible, highly secure architecture

So SG CIB turned to Bull, whose HPC-on-demand offering corresponded to its demands: power, flexibility, responsiveness, high levels of security, commitment and cost control. Bull not only provides servers for processing but also network infrastructure, security, hosting and associated services. Not only the architecture itself, but also the way the services are delivered, are set up to absorb Société Générale's extra demands and respond to peaks in workload. So ultra

high-density systems can be made available to users very quickly, in a totally transparent way, to meet their changing needs, especially when they are carrying out complex calculations around share derivatives or risk management. This highly innovative approach responds perfectly to the needs of a business where the capacity for analysis and speed of decision-making make all the difference. The success of the initiative demanded a unique blend of creativity, flexibility and operational excellence from Bull, and it heralds the development of similar computing-on-demand solutions for other enterprises.

FINANCIAL SERVICES REQUIRE
POWERFUL ANALYSIS AND MODELING TOOLS.



[WITH PHILIPPE MILTIN

BULL, FOR WHOM INNOVATION IS A KEY PRIORITY, HAS REVITALIZED ITS RESEARCH AND DEVELOPMENT BY BRINGING IT CLOSER TO CUSTOMERS. BULLX, GLOBULL AND THE BIO DATA CENTER ALL RESULTED FROM THIS APPROACH.]

“Innovation: creating vital momentum”

Innovation has a key role to play in Bull's strategy and the way it presents itself. But how exactly would you define it?

Philippe Miltin – There are three main kinds of innovation. First of all, you have product innovation, which involves investing in R&D: that's all about improving performance, adding functionality or new components, developing new ways of using the product, creating a new design... It could equally involve creating a whole new kind of product, destined to occupy a new segment of the market, just like globull, the world's first secure mobile computing platform.

The second kind of innovation involves solutions: it means bringing together products, services and sales promotions in new and original ways, to respond in a holistic and appropriate way to market demands. The Bio Data Center™ and HPC-on-demand offerings, as well as the options we are currently exploring around “Cloud Computing” are all good examples of this. Finally, the third major area of innovation is internal to the organization: improving business processes, adopting new ways of working, optimizing the organization structure, hiring new



© D. Mahé/Bull

→ PHILIPPE MILTIN

VICE-PRESIDENT, BULL'S PRODUCTS AND SYSTEMS. HAVING STARTED HIS CAREER IN 1988 IN SALES WITH RANK XEROX, PHILIPPE MILTIN JOINED ALTOS IN 1990 WHERE HE SPENT THREE YEARS DEVELOPING THE SALES NETWORK. IN 1993, HE TOOK OVER RESPONSIBILITY FOR SALES DEVELOPMENT AT DELL CORPORATION, WHERE HE GREW THE BUSINESS SIGNIFICANTLY. IN 1995, PHILIPPE MILTIN JOINED SILICON GRAPHICS. HE WAS APPOINTED AS MANAGING DIRECTOR OF SILICON GRAPHICS FRANCE IN 1999, AND THEN HELD THE SAME ROLE FOR SOUTHERN EUROPE BETWEEN 2001 AND 2004. BEFORE JOINING BULL IN 2006, HE WAS VICE-PRESIDENT AND MANAGING DIRECTOR, EMEA (EUROPE, MIDDLE EAST AND AFRICA).

skills, bringing new energy to marketing... Even if it is sometimes less visible, this kind of innovation is essential, because it means we can offer our customers high-quality, responsive, competitive, skilled services, at the leading edge of technology. We try to act effectively across all these areas. For example, thanks to the NovaForge™ software forge our services teams develop innovative applications using new collaborative development methods.



So you believe that innovation is a new response to a customer requirement that already exists or is just emerging?

P. M. – Exactly right. You cannot innovate in a vacuum, or simply to make a splash in the media; you have to really bring something new and useful to the market, something that creates real value.

And to do that, it is essential to understand and anticipate customers' needs. That's why we decided two years ago to integrate our R&D function – which employs some 400 people – into our various lines of business. So each of our Business Units has its own R&D and support teams. This vertical integration makes it easier to cross-fertilize know-how and, in particular, to understand the idea of innovation from a "solutions" point of view more effectively. When we carried out this reorganization, we also re-evaluated our management methods and systems; for example, getting the sales network involved very early on. Their feedback sparked our interest in developing a dedicated

"bullx has really opened up a new market (...), production-level High-Performance Computing."

HPC container via our subsidiary Serviware. And if globull has successfully won over the major French government departments, it is undoubtedly because it was developed in our TrustWay™ business unit, which specializes in encryption solutions, and so it benefited from thinking that came straight out of the field.

Isn't bullx™ the most significant thing to come out of this dynamic approach to innovation?

P. M. – Absolutely. bullx is exceptional because it combines every aspect of innovation. In the first instance, it responds to a hitherto unfulfilled need, for a dedicated scientific computing solution that combines extreme power with ease of use. bullx has really opened up a new market here, which we are calling Extreme Computing; in other words, High-Performance Computing, but available to all. Then there are the technological innovations in bullx: it benefits from a ground-breaking architecture, designed and optimized exclusively for computer simulation, the very latest-generation components (processors, network, switches...), and very careful attention to energy consumption issues, with some specific new features such as the water-cooled doors, as well as an elegant and original design. And finally, it's very much a solution-focused approach because of its modularity, which means the power, memory and type of system (cluster or SMP) can easily be adapted to any situation. bullx had

a remarkably good reception from the market. We have already had some significant success stories, such as the University of Cologne, and we are pursuing exciting contacts in some key countries that should bear fruits.

So was it also an analysis of customer requirements that led to the Bio Data Center offering?

P. M. – Our starting point was a simple fact: on average, the mainframes in today's Data Centers are used to 85% of capacity, 25% for Unix® systems and falling to just 10% for x86 systems. Workload has little impact on a computer's electricity consumption, so the extent of the waste involved is immediately clear. If you add the fact that for every 1 euro spent on hardware, the energy costs currently amount to €50 and in four years they will be €71, it doesn't take long to work out just how expensive it could be. The Bio Data Center is a solution-focused innovation which aims to both eradicate that kind of waste and to ensure that information systems have the kind of flexibility which nowadays is an imperative. It involves a range of technologies and services which Bull offers in a coordinated package. It starts with systems virtualization and consolidation: an area where Bull has developed recognized expertise. Then there are some innovations at the software level, to optimize the administration and control of complex infrastructures, as well as in the areas of infrastructure services and auditing. We have



developed a unique energy auditing formula, in conjunction with Schneider/APC, as well as a storage systems audit offering with GlassHouse. In both cases, it's a question of surrounding ourselves with the best partners, so we can combine our expertise and put forward exceptional recommendations that deliver real value.

Can you tell us about your approach to technology watch and strategy that prepare the way for tomorrow's innovations?

P. M. – We do have an innovation team that is independent of the business units. They keep a watching brief on issues that we have identified as possibly offering opportunities in the medium term. For example, this includes “Cloud Computing” – which is certainly set to increase, but no-one is certain what form it will take or the timescales involved – and video-streaming, which will demand much greater storage and processing capacity as it becomes more widespread. This team is also responsible for managing our numerous collaborative initiatives with research bodies or as part of cooperative projects, particularly under the auspices of competitiveness clusters and European research programs (CATRENE/MEDEA and ITEA). This R&D work, which our engineers are actively involved in, generates ideas and contacts, and is very fertile ground for our future in innovations. For example, we developed a content management solution following a project run by the System@tic competitiveness cluster. In HPC, there are very specific application requirements in each area such as chemistry, physics, mechanical engineering, thermodynamics... So



BULLX COMBINES
TECHNOLOGICAL EXCELLENCE
AND INNOVATIVE DESIGN.

in order to optimize our systems and be prepared to give our customers clear advice, we also have to enlarge our vertical market expertise. Here too, partnerships with research centers are proving very useful and enriching.

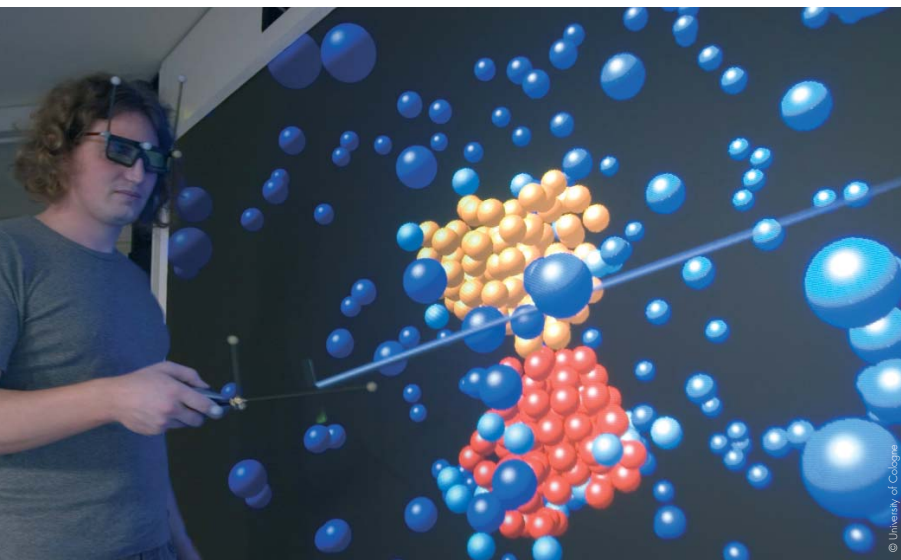
With both bullx and globull, it's clear that a lot of care has gone into the design. What part does this aspect play in your innovation policy?

P. M. – Design plays a vital role. Elegance and high-technology have to be closely linked: a product cannot just be new; it has to clearly demonstrate that newness. It has to capture people's imagination. Of course, that's fundamental in consumer markets, but it also counts for a

great deal in B2B environments. The colors used, its shape and overall design... even a server has to convey the values of modernity, creativity, dynamism which reflect well on the organization which has chosen it, as well as on the IT maker which has designed and developed it. Above all else, an innovative product has to communicate these values because it acts as an ambassador for the business. When it is visible and successful, innovation stimulates a real sense of pride among the whole workforce and creates an invaluable momentum and desire to emulate that success. So innovation breeds innovation; and that driving force is at the heart of Bull's strategy.

“This R&D work (...) generates ideas and contacts, and is very fertile ground for our future in innovations. »

[PERFECTLY SUITED TO THE DEMANDS AND CONSTRAINTS OF UNIVERSITY RESEARCH AT A REGIONAL OR NATIONAL LEVEL, THE NEW BULL SUPERCOMPUTER WILL BE USED MOST NOTABLY IN CHEMISTRY AND THE LIFE SCIENCES.]



EXTREME COMPUTING

The University of Cologne and bullx: a perfect match



UNIVERSITY OF COLOGNE

- FOUNDED IN 1388
- 6 FACULTIES
- 472 ACADEMICS
- 44,000 STUDENTS

(OF WHOM 10% COME FROM ABROAD)

- 445 MILLIONS EUROS BUDGET (2007)
- 2ND LARGEST UNIVERSITY IN GERMANY.



Research has an insatiable appetite: there are always new ideas to be tested and new fields to be explored, models to be validated and theories to be verified... That's what makes it such an exhilarating endeavor. It also explains why researchers always make maximum use of the computing capacity at their disposal. But by implementing an Extreme Computing solution that delivers overall computing power of 100 Teraflops, the University of Cologne should now be able to satisfy the infinite hunger for discovery among its own researchers' and the

wider regional scientific community, at least for a while.

A significant breakthrough

One of Germany's largest and most prestigious universities, the University of Cologne also has a long standing tradition in applying simulation techniques supported by a highly-skilled computing center (the RRZK), responsible for providing the systems and services that are essential to its research and teaching activities. As well as traditional IT infrastructure – including workstations, networks, email and Internet access, storage...

– since 2004, the RRZK has had a dedicated cluster and SMP system for scientific computing. But faced with an explosion in demand from this area, the Center decided it needed an HPC solution which would help it step up to deliver a whole new level of performance and services to users, within given financial, human and building resources.

The new system had to fulfill the requirements of a regional-scale research center, which are very demanding and complement national infrastructures such as the Jülich Research Center (where Bull has

installed the JuRoPA supercomputer, ranked no.10 in the world). This meant it needed a sufficiently robust, cost-competitive and easy-to-use system, within a given budget. It also needed to fit into an existing machine room, which has initially not been designed to accommodate the very latest generation, extremely high-density supercomputers. With this in mind, the innovations that bullx delivers in terms of lower energy consumption and cooling requirements (especially the water-cooled doors) played an important role in the competitive procurement procedure at the RRZK.

Power and flexibility

Bringing together all the very latest available technologies (quad-core Intel® Xeon® "Nehalem EP" processors, an InfiniBand QDR (Quad Data Rate) network, 36 port switches) in an architecture exclusively optimized for High-Performance Computing, bullx is the ideal solution in this context because it combines power, robustness and ease of use, extremely cost effectively. *"The flexibility of bullx was also a decisive factor, because we wanted a system that could be used by different disciplines, so it had to be capable of executing numerous types of tasks and algorithms,"* explains Professor Ulrich Lang, Director of the RRZK and holder of the Chair in Computing Sciences. Bull's solution successfully proved it was up to the job, passing a comprehensive acceptance process with no fewer than ten test programs.

As well as the technical solution, the RRZK was also won over by Bull's teams providing expert support (located in France). With the largest collection of Extreme Computing resources in Europe and a long tradition of working closely with the

world of higher education, Bull is committed to providing a flexible and responsive service, and does not hesitate to get involved in partnership programs. At Cologne, for example, Bull and the RRZK will collaborate on leading-edge subjects, such as accelerating processing using graphical processors (GPUs), exploring the possibility of using HPC in research into ageing, and improving myJam, and innovative solution for administering heterogeneous HPC clusters developed by the University of Düsseldorf in collaboration with Bull.

100 Teraflops by 2010

The supercomputer will be deployed in two stages. The first consists of the overall infrastructure (racks, networks, operational tools...) and 215 processing nodes, which will go live when the new university term starts in Autumn 2009. In Summer 2010, a further 602 nodes, based on hex-core Intel Westmere processors, will be added. The solution will also be further enhanced with four SMP machines, one of them offering 1 Terabyte of live memory. In total, the RRZK will then have access to 100 Teraflops of computing power, 26 Terabytes of live memory and 500 Terabytes of storage, which will allow it to carry out distributed, parallel and centralized processing tasks, depending on the circumstances. As Prof. Lang confirms: *"We had very demanding requirements and constraints. Bull has*

**Power, ease of use,
and energy consumption
under control.**

proved that it has the necessary flexibility and creativity to fully answer these needs, both on the technical level and in terms of the support it provides."

The University of Cologne has a long tradition of excellence in Chemistry (with Kurt Alder winning the Nobel Prize in 1950), so chemists will naturally be some of the principal users of the new supercomputer, especially for running Gaussian and Gromacs chemistry applications. But it is also expected to be used in other fields including physics, computing, economics, medicine and biology. A "Cluster of Excellence" in life sciences, the University of Cologne is also becoming an international benchmark in these scientific domains, with many first-rate researchers including Prof. Jens Claus Brüning (winner of the Leibniz Prize) and the forthcoming establishment of the Max Planck Institute for research into ageing. The new computing capacity provided by the bullx solution will enable the University's researchers to push back the boundaries of knowledge a bit further.

→ **PROFESSEUR ULRICH LANG, DIRECTOR OF THE RRZK**
"Bull has proved that it has the necessary flexibility and creativity to fully answer these needs."



[A LONG-ESTABLISHED PLAYER IN THE DUTCH I.T. MARKET, **BULL NETHERLANDS IS FLOURISHING DESPITE THE ECONOMIC CRISIS**, THANKS TO ITS STRATEGY TO REFOCUS ON SERVICES.]

EUROPE

The Netherlands on top



IN 2008

AREA: 41,526 km²

POPULATION: 16.5 million

GROWTH: 4%

GDP: 29,512 euros per capita

UNEMPLOYMENT RATE: 3.3%

→ Source: Eurostat



⁽¹⁾: Including consolidation, virtualization, high-availability/disaster recovery site, Green IT, and IT security projects.

Every year the influential Dutch magazine *Computable* asks almost 2,000 IT Managers to judge their suppliers. The last time this eagerly anticipated survey was published, Bull Netherlands was ranked number one for storage, with an average score of 7.5 out of 10. Even better, Bull beat its competitors on every single criteria – know-how, price, service quality, reliability, meeting deadlines, budget and communication – also achieving good rankings in several other areas, most notably infrastructure services. This achievement is all the more remarkable given that Bull went from fourth to the first place in a year.

This impressive recognition confirms the renewal of one of the Group's oldest subsidiaries, originally established in 1948. Bull Netherlands is reaping the benefits of the policies set by Dick Fens, head of the Dutch business. Historically a major player in the Dutch IT market, Bull was relatively anonymous in more recent times, which was holding back its

growth. *"When you are playing in a small-size market, where everyone in the profession knows each other and reputations are made and destroyed extremely rapidly, it is essential to have the right level of visibility to trigger the virtuous circle of success breeding success,"* explains Dick Fens. And for Bull Netherlands' this is not just a question of recognition: in the first six months of 2009, the business recorded a nearly two-digit increase in revenues, in line with the results recorded in previous years.

Redefining strategy

The starting point for this new-found momentum was a fundamental redefinition of strategy. Bull Netherlands took the decision to focus on services activities in high-potential areas, where Bull has recognized expertise, and to target specific market sectors where the company's existing network of customers, its business heritage and the relevance of its new offerings all represented real and

immediate competitive advantages. As a result, Bull Netherlands now has a well-established position in three of the Group's key areas of excellence: storage, outsourcing and infrastructure optimization¹. In terms of its target markets, these include retailing and industry, where the business has a number of loyal customers, as well as other newer sectors that are hungry for the kinds of solutions it offers such as healthcare, finance and the public sector. *"With greater computerization,*

→ **DICK FENS,**
CEO OF BULL NETHERLANDS

"(...) it is essential to have the right level of visibility to trigger the virtuous circle of success."



the healthcare sector, for example, is undergoing a fundamental revolution which has resulted in an explosion in its storage requirements," Dick Fens points out.

Close proximity and responsiveness

Over and above the state-of-the-art technological solutions it offers, which are absolutely in tune with current demands, Bull Netherlands has another major advantage which is attractive to its prospects: its size. This means the team can be extremely flexible when it comes to following its customers' key concerns. "The combination of the wealth of possibilities that a major player in the IT market can offer, and the flexibility of an organization that operates very much on a "human" scale, we can deliver our customers the real expertise, responsiveness, close local proximity, availability and the independence

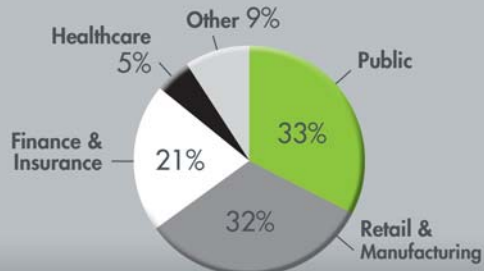
that they have every right to expect from a services provider," Dick Fens stresses. The business is constantly updating its skill-set in its key areas of expertise, and makes an effort to ensure that its management structure is as flat as possible; keeping communications circuits to a minimum. This regeneration of its organization structure is a key factor in Bull Netherlands success.

A unique position in the market

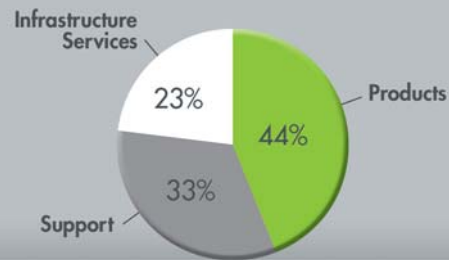
This unique combination of highly relevant offerings, expert resources and a dynamic organization has helped Bull Netherlands achieve many successes in recent years. For example, on-line broker Alex Beleggersbank (BinckBank) chose Bull Netherlands to totally update its IT infrastructure, to support its growing business and guarantee high levels of availability to its clients. Using the very latest consolidation, virtualization and storage techno-

BULL NETHERLANDS

Revenue breakdown in 2008 BY INDUSTRY



BY BUSINESS



Growth (CAGR 2007-2008):

- Bull Netherlands' Revenue: + 7.4 %
- The Netherlands' IT Industry: - 3.3%

AT THE CROSSROADS OF EUROPE, DESPITE THE RECESSION, THE NETHERLANDS CONTINUES TO PROVE ITS DYNAMISM.



The outsourcing business is experiencing a significant boom (...)



logies, the number of servers was cut from 400 to just 50, with significant improvements in the performance, robustness and scalability of the information system. Bull Netherlands has also supported the giant mail-order retailer Wehkamp in the rationalization and modernization of its IT infrastructures, which are now supervised by Bull under an HA999 high-availability contract. And the outsourcing business is experiencing a significant boom, thanks to contracts such as the one with office products retailer Overtoom. The advantages of this approach, particularly when it comes to cutting costs, are clear in a country which has been hard hit by the current economic crisis. Supported by a powerful communications campaign, these kinds of success stories have initiated just the kind of virtuous circle that Dick Fens was hoping for, and taken Bull Netherlands to the top of its market. *"Our secret is to win the loyalty of our customers by exceeding their expectations,"* he confides.

BULL NETHERLANDS' HEAD OFFICE IS IN AMSTERDAM, THE COUNTRY'S ECONOMIC CAPITAL.



© DR Bull

→ INFRASTRUCTURES

Bull updates Mn Services' storage environment



With a new, state-of-the-art storage area network, Mn Services is preparing for business and technological change.

One of the leading pension funds in the Netherlands, Mn Services administers the retirement funds for over a million customers, representing 56 billion euros of capital. In such a sensitive business, where every entry is critical, saving and protecting enormous amounts of data is a major challenge. So when, towards the end of 2008, Mn Services faced having to replace its storage area network (SAN),

the IT management wanted to put in place an integrated solution, capable of increasing its storage capacities to support the expansion of the business. In particular, Mn Services has to prepare for doubling its customer base from 1 January 2010, when it takes over the pension funds of Metalelektra (PME) and the Dutch merchant navy. This growth will not only impact the amount of data but also the performance of the storage system, which is why Mn Services was also looking for a SAN environment that would enable it to be ready for high availability, with synchronization and load-balancing between its two production sites.

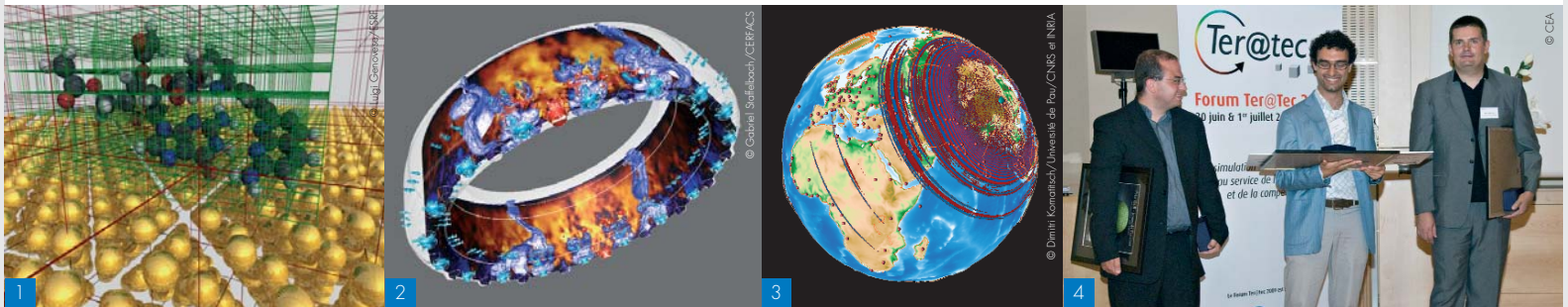
Bull: solution integrator

Bull stood out among the IT suppliers who responded to this challenging invitation to tender, with a solution that brought together the best available technologies (NetApp in particular) to respond perfectly to Mn Services' needs. *"Bull demonstrated its systems integrator capabilities. It's nice to work with someone able to leverage this knowledge to team up with other suppliers, to provide advice on the best solution,"* explains Ronald van Bebbber, IT Manager for Infrastructure and Facilities at Mn Services. Despite the very tight timescales (just two months), the implementation lived up to all expectations. And Mn Services is already considering going still further with Bull in deploying a highly available cluster.

[THE THREE WINNERS OF THE BULL-JOSEPH FOURIER PRIZE EMBODY ALL THE VITALITY AND DIVERSITY OF A HIGHLY PROMISING FIELD OF RESEARCH.]

BULL-JOSEPH FOURIER PRIZE

Rewarding success in computer simulation



- 1/ ADSORPTION OF MOLECULES BY A SURFACE (1ST PRIZE).
- 2/ REACTOR IGNITION SEQUENCE (2ND PRIZE).
- 3/ MODELING THE EARTHQUAKE IN SICHUAN, CHINA, 12 MAY 2008 (3RD PRIZE).
- 4/ THE PRIZE WINNERS (LEFT TO RIGHT): GABRIEL STAFFELBACH, LUIGI GENOVESE, DIMITRI KOMATITSCH

Bull established the Bull-Joseph Fourier Prize – in association with GENCI, the French national High-Performance Computing organization, and in partnership with financial newspaper *La Tribune* – to stimulate the growth of computer simulation in France. With its 15,000 euros first prize, the competition aimed to recognize the work of researchers working in the field of computer application simulation parallelization under the auspices of a French R&D lab, whether in the public or private sector. The jury, made up of independent experts from industry and academia, received a large number of high-quality submissions: confirmation that this area of research is extremely vibrant and exciting at the moment. Ultimately, they narrowed the field down to three young researchers, who were awarded their prizes by Didier Lamouche, Bull Chairman and CEO, and Catherine Rivière, President of GENCI, at the Ter@tec Forum 2009.

First prize: Luigi Genovese

Luigi Genovese works in the area of nano-sciences at ESRF (the European Synchrotron Radiation Facility) at Grenoble. He has been recognized for his work on parallelization in hybrid systems using graphics accelerators (GPU). This research, designed to improve the understanding of the electronic structure of materials, offers enormous

potential in the areas of novel materials and new molecules.

Second prize: Gabriel Staffelbach

A young researcher at CERFACS (the European Center for Research and Advanced Training in Scientific Computation) in Toulouse, Gabriel Staffelbach was acclaimed for his work on the use of massively parallel technologies for the execution of a specialist code (AVBP). This has led to record levels of accuracy in the simulation of internal combustion in engines, which will help the aeronautical and automotive industries design more fuel-efficient engines. GENCI has awarded him 500,000 hours of machine time.

Third prize: Dimitri Komatitsch

A researcher at the CNRS Geosciences Modeling and Imaging Laboratory at the University of Pau and the Pays de l'Adour, Dimitri Komatitsch was awarded Third prize for his work on code parallelization to simulate global geo-phenomena. The jury particularly highlighted the impact of his research, which enables earthquakes and their aftershocks to be predicted more accurately and has already been used by the Italian authorities following the earthquake in Aquila in April 2009. GENCI has offered him 100,000 hours of machine time.

bullx

Designed without compromise for
UNLIMITED INNOVATION.



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Find out more about bullx, instruments for innovation on
www.bull.com/extremecomputing



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