

# PLATFORM FOR SUCCESS

Can 'grid computing' really help improve your position *on* the grid? Red Bull Technology believes so, which is why it has signed Platform Computing as an innovation partner. By **William Kimberley**

**AT FIRST** sight, it does not make sense. But then the more you think about it, the more it does and then you wonder why it has not been done before.

The question is this – how many of you turn off your PC when you leave the office at the end of the day? How many of you put it on standby or hibernate it when taking a short break?

Well, it seems that those who make a business of studying working methods notice that the PC spends more of its time in the switched on but dormant mode than when someone is tapping away at the keyboard giving it a workout. Apart from the ecological aspects – wasting energy etc – it represents quite a waste of a resource with computing power just twiddling its thumbs so to speak.

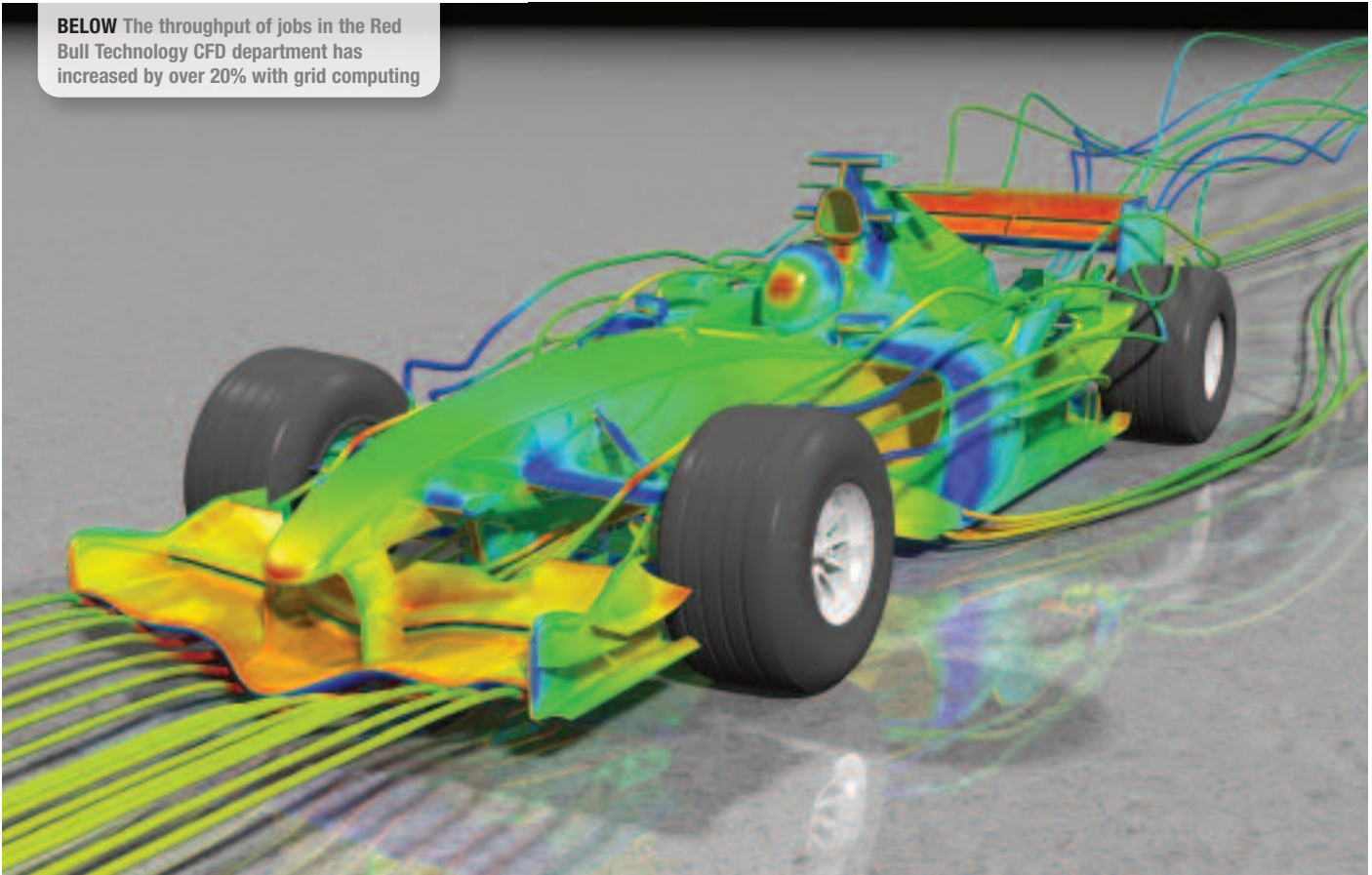
The concept behind this is quite simple: you hook up PCs, servers and even mainframes when not being used to incorporate them into a virtual network. That network might be across a business on one site, a business on several sites, or indeed in different countries in different parts of the world.

If this sounds far fetched, the principle is already being used by massive international

**BELOW** The Toro Rosso of Sebastien Bourdais was one of the stars of the show in Melbourne's season-opener. Red Bull Technology believes its partnership with Platform will be reflected directly in increased pace on the track



**BELOW** The throughput of jobs in the Red Bull Technology CFD department has increased by over 20% with grid computing



companies so that as people clock off in Asia, their hardware is linked into the virtual network as Europe comes on stream. The same then happens between Europe and North America on the “follow the moon” basis.

#### **INTELLIGENT SYSTEM**

Initially this has a great deal of the Big Brother feel to it – the thought that while you make yourself a cup of coffee your machine is being “hijacked” is a little off-putting. However, what is being used is the processing power and not some spyware snooping around in the nether regions of the hard drive. Should the “owner” of the PC return, his desktop will immediately drop out of the virtual network with the first press of the key or movement of the mouse. He or she will never know and the work that was being done on that PC is immediately allocated to another one.

However, there is more to the system than simply incorporating the extra muscle power of desktops, servers and mainframes regardless of the operating system as it has a certain amount of intelligence. For example, rather than jobs being manually scheduled, it has the ability to schedule and prioritise jobs

going through the system.

What all this means is that the system has more processors at its disposal, it can prioritise the jobs, seamlessly follow one job on from the other and document everything that is taking place. Should one virtual network go down, it has the ability to switch to another one even if it is already

being used. It was then that the company looked into grid computing and started talking to Platform in late 2006.

This Canadian company has been around for 16 years specialising in grid computing – except that in those days the terminology had not come into existence. Its products and expertise are used in a

**“ When the designer leaves the office, his machine can still be working away on CFD, stress or vehicle dynamics analysis ”**

running another job, but one with a lower priority. It also recognises timescales and dates and allocates jobs accordingly.

Red Bull Technology, the operation that has both the Red Bull Racing and Toro Rosso Formula One teams as its customers, has been undergoing an upgrade to its entire IT system for the last couple of years but realised early on that it was not really getting full value for money. It was fine when the PCs were strutting their stuff, but then for many hours of the day or night, they were not

wide range of industries from the financial and insurance services to the automotive, aerospace and leisure sectors.

The principle behind its modus operandi is saving time. By careful use of existing resources, the customer can either achieve more in the same time or, if inclined, do the same in the same time but with less resource.

As far as Red Bull Technology was concerned, it wanted to do more, much more, in less time.

Last year it completed updating its entire IT ▶

system but it was facing a dilemma. While everyone had been equipped with new, more powerful PCs, the demands of the CFD department in particular were never-ending. Simulation in all its forms was the name of the game and the demands it was making on processing power was overwhelming.

"We have around 1,500 cores making CFD calculations for us," says Steve Nevey, business development manager for Red

"consumers" to accelerate application performance at the speed of business demand and fully utilises resources regardless of operating system, including desktops, servers and mainframes, to ensure policy-driven, prioritised service levels for always-on access to resources.

What it means for Red Bull Technology is that it has allowed its CFD department to increase the throughput of jobs by over 20%.

"We have 150 CAD and CAM

**Should the PC's 'owner' return, his desktop will immediately drop out of the virtual network**

Bull Technology. "This is very much a key part of what we're doing now and is where we can really gain our competitive advantage. It's also a major investment and as with any investment you really need to be sure that the usage of that technology is fully optimised – and that's where our friends at Platform come in as an innovation partner."

Platform LSF software manages and accelerates workload processing for data intensive applications. As part of Platform's Enterprise Grid Orchestrator (EGO) it can intelligently schedule and guarantee the completion of workload across a distributed, virtual IT environment. It dynamically allocates resources between

workstations but there are times when those powerful processors are laying idle and one of the facilities that Platform LSF gives us is the ability to identify those that can be used as processors as well which can then be incorporated into the virtual cluster," says Nevey. "This means that when the designer leaves the office, his machine can still be working away on CFD, stress or vehicle dynamics analysis in his absence. It also enables us to schedule all those jobs which can be prioritised rather than being done manually which meant being on hand to re-submit the next job even if it was in the middle of the night."

"We found we were growing very rapidly ▶

**RED BULL TECHNOLOGY**

RED BULL Technology entirely develops its cars in software using UGS NX for the modelling and required tooling as well as performing vehicle dynamics simulations and stress analysis.

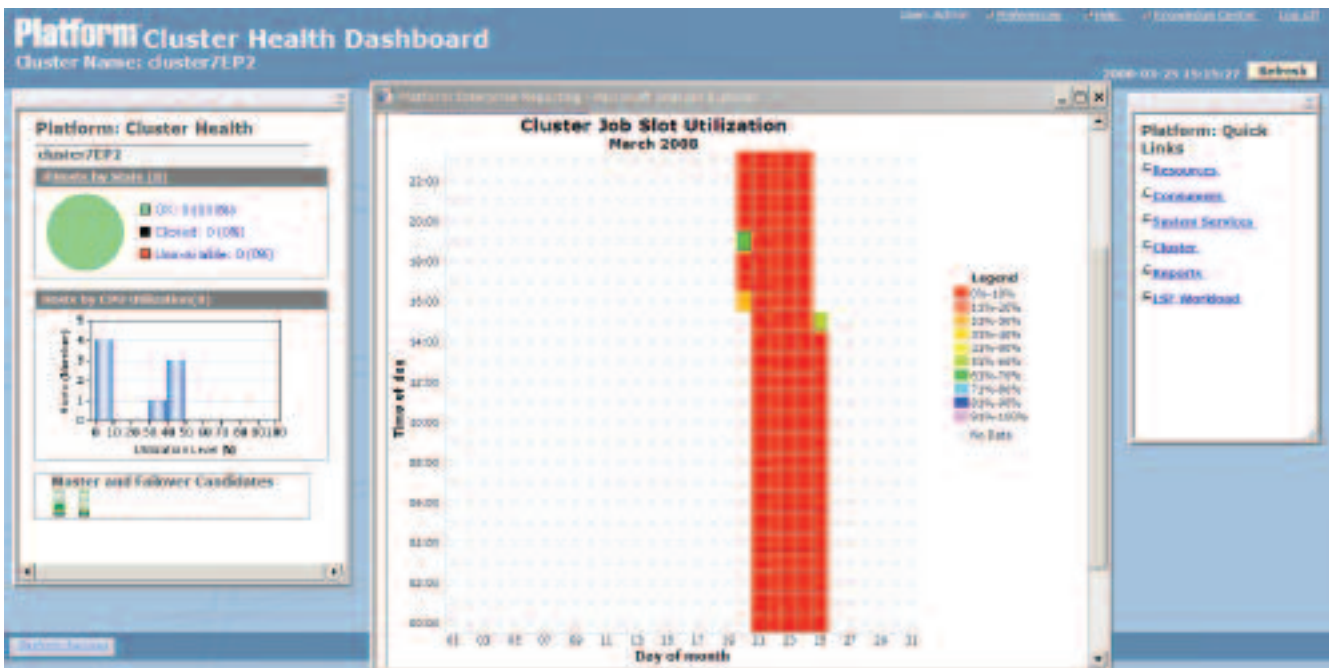
Teamcenter handles document management and collaboration. An IBM cluster is dedicated to CFD analysis of aerodynamics, supplemented by wind tunnel testing of prototypes. Until the arrival of Adrian Newey and his famous drawing board, it used to be the team's proud boast that it was completely digital and paperless in its approach to designing a new car.

Making around 80% of car components in-house with the metal parts machined directly from CAD models, the machine shop has recently tripled in size and relocated to another part of the building in the process. There are currently 12 milling and turning machines with another four due to be installed in the next few months, three Breton 5-axis cutting machines and three 3D Systems SLA 5000s for rapid prototyping. Located in another part of the building are two autoclave ovens.

All parts made are subject to rigorous inspection and quality checks with a variety of test rigs including two DEA global CMMs (coordinate measurement system) it acquired from Hexagon Metrology last summer while there is also a portable CMM from Leica Geosystems to provide the design team with quicker access to wind tunnel test results. Another two portable CMMs are also located in the company's Bicester and Bedford wind tunnels.

The company is also in the process of acquiring a full-car simulator that will be located in the old machine shop and in a move to a water-based paint process USI Italia will be installing a spray booth in the coming months. **RT**

**BELOW** Under control: the Platform cluster dashboard at work



**BELOW** Red Bull's commitment to advanced simulation was illustrated by its announcement that it has commissioned a full 'driver-in-the-loop' simulator to help evaluate vehicle dynamics

“ The demand simulation was making on processing power was overwhelming ”

## RESULTS BUSINESS

PLATFORM was founded in 1992, specialising in what has become to be known over the last three or four years as grid computing. Employing 500 people worldwide, with 50 in Europe, it has built up a customer base of more than 2,000 names.

“All of what we are doing is project based and problem solving because we have to work with both the hardware and software to speed things up in order to provide a real solution for our customers,” says Christophe Reichert, vice president HPS sales, EMEA, Platform Computing.

Its customers include Airbus, Chrysler, Daimler, General Motors, JPMorganChase, Land Rover/Jaguar, Peugeot, Shell Oil and the US Dept of Defence.

“We are partnering in the projects with many different software application vendors as well so our solutions enable our customers to get quicker results in less time almost out of the box, meaning that they are able to get more results in the same time.”

What this means for Red Bull Technology is that development on the car is non-stop with simulation playing an ever more important role.

“It's the same principle as used in other industries where the demand is to do more in the same period of time or, alternatively, do the same with less resource.

“Platform LSF provides Red Bull Technology with a highly effective IT infrastructure to manage compute-intensive simulations with ease.”

and didn't have the experience in-house,” says Nathan Sykes, CFD team leader at Red Bull Technology. “One of Platform's strengths is its support team which you don't necessarily get with those from other companies who either don't necessarily have direct access to the source code or you are dependent on just a few people who know it. We can turn to Platform for help when something doesn't work and they are very responsive, no matter the time of the day.

### FASTER ANALYSIS

“It means that we've been able to optimise the AMD/IBM cluster implemented last year by using the additional processing power in the network so that the team has been able to significantly speed up analysis time, achieving a 20 per cent increase in the number of tasks it can complete.

“The Platform LSF environment has allowed us to increase the number of virtual engineering simulations needed to build the fastest and most aerodynamically efficient

car possible. Its robust and scalable solution enables us to leverage fully our growing investments in engineering IT infrastructure. Platform LSF helps us optimise designs that maximise the downforce and reduce the drag the cars create on the track. With Platform's technology behind us, we are confident that we can continue our rise up the rankings over the next few seasons.

“We would like to be modelling fluid transient simulations, watching the car bounce over corners, modelling a whole lap then you can maximise every car for every lap but we're slowed down by hardware technology. Rather than the 1,500 cores we currently have, we would need millions of them to be able to achieve something like that and the interconnect required in order to do that needs to be several generations down the line.”

In the short-term, though, the plans are to develop grid technology further with Red Bull Technology looking to incorporate both finite element analysis and vehicle dynamics analysis onto the LSF system. **RT**