



# Grids are built not bought

By Christoph Reichert

**S**o what is 'grid'? Grid has many guises and the term is used almost interchangeably with 'cluster computing', 'HPC' and 'distributed computing', and it can get more than a little confusing. For a clear and concise explanation of grid technology, I turn to CERN (the European Organisation for Nuclear Research): "The short answer is that, whereas the web is a service for sharing information over the internet, grid is a service for sharing computer power and data storage capacity over the internet. Grid goes well beyond simple communication between computers, and aims ultimately to turn the global network of computers into one vast computational resource."

To summarise, grid computing harnesses spare computing power, which means you can process calculations or simulations much faster. Such a technology has obvious potential for multi-site manufacturing operations.

### Competitive edge

Grid will enable you to become increasingly global and competitive. IT is linked so closely to the overall health of the business – think of the costly consequences of downtime. The strength of your IT determines how quickly you can adapt and respond to changes in the market. The better your IT, the faster you can develop your product and bring it to market.

In the past a 'quick response to market' would have been achieved by adding more and more hardware capacity to a siloed department. When this process is replicated across a company it results in a cumbersome and costly service. Given

that large amounts of processing power may only be needed at certain times, purchasing such hardware capacity is wasteful. It's like keeping the heating on during the summer – wasteful and costly. It is much better, in so many ways (environmentally, financially) if the capacity is available just when it is needed.

The way to achieve this is to implement a flexible system which offers access to increased capacity as and when it is needed, and this can be achieved by linking spare CPU capacity together to achieve a virtual super computer, which can be perceived as one system. Capacity can then be moved to appropriate areas, as and when it is needed. The technology can achieve the same SLA with less hardware and can process more jobs just using the capacity, which is there already.

An example of this in action is PSA Peugeot Citroen, where they have really taken advantage of grid technologies. Facing increasing demand, the company wanted to launch new car models at a faster rate. In such a collaborative environment, which included 17,000 designers, engineers and technicians across the world, high-performance multi-site computing was critical. By implementing a grid solution, the company achieved instant access to consistent automobile design and simulation tools, which resulted in higher productivity levels.

As the case study illustrates, if your goal is to get more products to market in the shortest amount of time possible, grid delivers. If your goal is to conduct more tests in the same given amount of time, grid also delivers. If you need to increase the



level of safety testing, grid will enable you to conduct more complex crash simulations in a virtual environment, at a much faster rate. Grid has so much potential for the manufacturing world and this is definitely set to grow. The increasing complexity and size of hardware environments means grid is the technology to tackle this issue.

Grid is a technology, which is useful for each and everyone who uses some type of production cycle. Grid is particularly useful for carrying out simulation jobs - for example crash testing or digital mock-ups. For manufacturing processes where there are numerous different groups working on different components, it is essential that these groups are working effectively in parallel together. Grid allows you to monitor this progress and you can run a programme to check that all groups are on track; it's like piecing together a live jigsaw at any given moment - checking that all the pieces are fitting well together. One of our customers, an Austrian automotive company, managed to cut down calculations that previously took 72 hours to just four.

Grid also presents very clear benefits for those with an environmental conscience, it takes the term 'waste not, want not' to a new level, by unlocking existing capacity, the company saves energy.

#### Getting the building blocks in place

If you are considering rolling out grid for your multi-site company, I would recommend the following steps:

**1.** Use your own department as your first building block. Link your department to one other first.

Once this small grid is running, you can start linking to more departments and then eventually to different sites. When you start linking different countries, it becomes very interesting. For example, if you are UK based and have an Australian office, you can make the most of the time difference and utilise the 'sleeping' computers to process calculations.

**2.** Make some rules. Grid isn't anarchy. Some people worry about having to surrender their control to the grid, but it is quite the opposite. You can define what data you want to share, how you share and who with. You can also prioritise jobs. For example, if 'Job A' produces 80 per cent of revenue then it will have priority above 'Job B' which generates five per cent.

#### How to develop a grid strategy

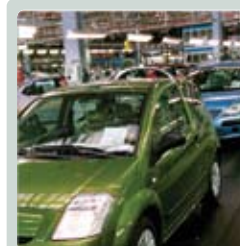
You cannot buy a grid. Grids have to be built. Before you start building the grid though, you have to overcome the siloed approach to architecture, which exists in many companies. If you take a look at one site, you'll find it has its own unique structure. For example, the IT infrastructure for the research operations will be quite a different set up to the department which looks after email and intranet. You will need to define a layer, which will link all the silos neatly together. You will need to ensure this process runs smoothly before you proceed to the next step.

From a technical perspective, it is really easy to implement a grid, but once you get into the politics, then that's where you will face resistance. People who own the different silos will sometimes be reluctant to open them up for fear of losing ownership. The key issue in the uptake of grid is certainly political, however this should not be seen as a significant obstacle, it is just likely to make things take a little bit longer. Everyone in manufacturing is using grid technologies at some level at least, we see the list growing month by month and it's even spreading to the SME industry; from automotive suppliers and airline manufacturers to small structural engineering companies.

The case for grid needs to be sold in to the C level in order to overcome the political resistance. If the strategy is adopted from C level down, there will be less of a battle to overcome in terms of implementing the technology.

The benefits that grid technology can bring a manufacturing firm are clear, in order to survive in an increasingly competitive environment, grid provides the fuel for success. **MT**

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