

# Architects and engineers bridge the grid chasm

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(PhysOrg.com) -- In the technology adoption cycle, a chasm separates powerful new technologies from the SMEs that could most benefit from them. Now, thanks to European researchers, architects and engineers are building a bridge to cross that chasm.

Powerful new IT paradigms like grids and cloud computing could provide enormous benefits to Europe's SMEs, the lifeblood of the continent's economy. Grids and cloud computing can provide more technology resources at less cost and some business models are not even possible without them.

However, a chasm exists between these technologies and the hundreds of thousands of European SMEs that could benefit from them. The grid computing paradigm is still largely applied in science labs and academia, where the concepts were first developed.

The upshot is slow adoption in the broader economy, particularly among SMEs. There is little awareness and, often, SMEs have little idea how grid and cloud computing could help their business. If they do, they have no idea how to proceed.

It will not be a problem for much longer, thanks to the BEinGRID project. BEinGRID is helping architects and engineers, among many others, to build a bridge to across the chasm.

## Cloud of grids

It is an essential task for Europe. Grids are a type of [infrastructure](#) that ties the computing resources from many different platforms together, resources like processing power, storage, applications and networking. It does not matter if the platforms are the same or a mix, whether they are in the same room or on opposite sides of the world.

It is a phenomenally powerful infrastructure. For example, by tying together desktops together in a grid, it is possible to get supercomputing processing power at PC costs.

In recent years, grids and the internet have combined to give rise to the cloud, where resources like software, processing power, infrastructure and services exist on-demand. The cloud delivers a competitive edge to businesses, offering more power and flexibility at less cost. So, grids are the infrastructure and cloud computing is a service.

## **Architecture, engineering and manufacturing... oh my**

BEinGRID sought to take the cloud technology out of the lab and into the real world, to deal with real-world business problems. It launched 25 Business Experiments, or tailored services that respond to real needs in specific fields.

BEinGRID stimulated interest in cloud services among SMEs, and developed best practices and essential implementation expertise, fostering faster uptake of a powerful technology.

Take architects. They need very high-powered rendering services to supply 3D simulations of their design for contract tenders. They only need the service periodically, and the rest of the time the majority of

that [processing power](#) remains idle. For many smaller firms of architects, these systems are too expensive.

The BEinGRID project created a Business Experiment called GridforArchitects, an online, on-demand rendering service that creates 3D mock-ups from blueprints. It is a virtual reality platform for architects, one that can create still image mock-ups and 3D models.

“Rendering is one of the final jobs before tender, when there are often last-minute changes to the specifications, so the work needs to be done in very short timeframes,” explains Damien Hubaux, Business Experiments Leader in the BEinGRID project and R&D Department Manager for CETIC.

## **Robust promise**

GridforArchitects is delivered via a web portal, where architects supply the job using a simple browser interface. The service then finds the required resources in the cloud. The portal offers Service Level Agreements (SLAs) and Quality of Service (QoS) guarantees, providing a robust promise to execute jobs.

“It offers all the necessary computing power, so customers do not need to invest in expensive equipment they only need part of the time,” notes Hubaux. It means architects can develop more ambitious designs, and render them faster and cheaper, because architects only pay for this computing power when they need it; they do not need to maintain expensive systems.

The Business Experiment was so successful that CETIC, the BEinGRID partner and project coordinator behind the service, plans a commercial rollout. Two offers are planned, a premium service where all computing services come from the cloud, and a mutualised service where businesses

share their resources when they are idle. Sharing allows architects to maximise the value of IT investments, while ensuring extra power is available when required.

That is just the beginning, however. The cloud services developed within BEinGRID mean that even relatively modest businesses can access the High Power Computing (HPC) required for 3D rendering at a low cost. It will almost certainly mean, in the long-term, that high-end visualisation is available for the majority of businesses.

## **Engineering clouds**

Architecture was just one sector tackled by BEinGRID. The project also developed cloud-based tools for advanced manufacturing and engineering, like Computational Fluid Dynamics (CFD).

CFD is the fastest growing segment in Computer Aided Engineering (CAE) simulation. It provides the millions of calculations necessary to analyse fluid flows, essential to automotive and aeronautic industries, among others. The GridCAE experiment shortened the timeframes to develop simulations, helping companies reduce costs by tying services to a specific project.

ICON, a CAE consultancy and the BEinGRID partner behind the GridCAE project, extended and enhanced its client offering using a grid to provide cloud services from remote resources. The experiment demonstrated how cloud computing offers competitive advantage both to end-users and the companies that supply them.

Other Business Experiments focused on virtual prototyping to help SMEs compete in the automotive supply industry. In the chemical sector, BEinGRID developed services for new product and process development, an insanely complex task. For shipbuilders, the project

came up with an integrated grid-enabled simulation environment, while for Web 2.0 developers industrial-strength scheduling workflow tools were generated.

## The really big ‘bigger picture’

However, all these implementations are just the beginning. In fact, BEinGRID is probably the world’s largest, best-funded effort to mainstream [cloud computing](#) for SMEs.

There were over 95 partners working on 25 Business Experiments covering sectors like finance, healthcare, telecoms, retail, media and even tourism, as well as architecture and engineering. BEinGRID had a budget of almost €24 million, with €15.7 million provided by the European Commission.

The BEinGRID project developed compelling services and proved the business benefits of the cloud. It helped to stir up excitement and interest among SMEs, and created key software components to speed up cloud deployments. Finally, BEinGRID bridged the chasm that divides the economic mainstream for technological innovation.

**More information:** BEinGRID project - [www.beingrid.eu/](http://www.beingrid.eu/)

Provided by ICT Results

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