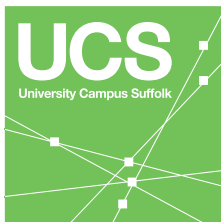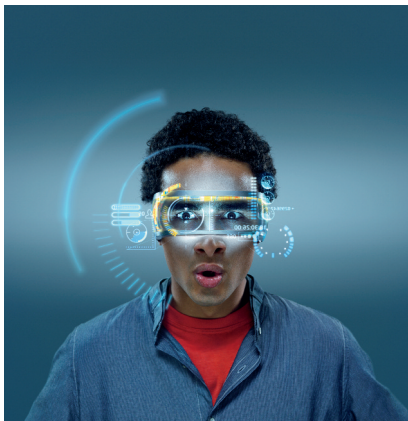# Intel and Fujitsu empower the UK's next generation of games designers

Intel® Xeon® processor E5-1620 v2 product family and Fujitsu CELSIUS* M730 workstations bring professional-standard hardware to the Computer Games Design degree course at University Campus Suffolk

The Computer Games Design degree course at University Campus Suffolk (UCS) is growing in popularity. It offers a combination of hands-on experience, internships and guest lecturers to help students prepare for a career in the gaming industry and other related design-driven occupations. With IT playing a crucial role in the success of the course, UCS decided to replace its high-end desktop PCs with power workstations from Fujitsu, powered by Intel® Xeon® processors, to meet student demands and introduce them to hardware they would encounter in their professional lives.

Challenges

- **Run complex applications.** Technology plays a crucial role in the degree course and UCS needed to eliminate downtime while ensuring seamless availability of complex gaming applications
- **Experience industry standards.** UCS wanted to provide students with professional-level hardware for developing and designing 2D and 3D games
- **Create a comfortable workspace.** In game development labs full of computer hardware, UCS wanted to establish a comfortable working environment for undergraduates and staff

Solutions

- **Fujitsu workstations.** The IT team at UCS replaced high-end desktop PCs with 47 Fujitsu CELSIUS* M730 workstations based on the Intel® Xeon® processor E5-1620 v2 product family

Technology Results

- **Improved performance.** Students and lecturers benefit from improved performance, throughput and speed which enhance the running of multiple, complex applications
- **Powerful lab conditions.** The Intel Xeon processors enable several virtual machines, operating systems and applications to run simultaneously for improved development and testing
- **Reduced heat and noise.** The games development labs at UCS offer a more attractive working environment thanks to reduced heat output and minimum noise levels

Business Value

- **Improved educational experience.** State-of-the-art development labs increase the appeal of the course to technologically-aware students and encourage engagement with lecturers
- **Enhanced career prospects.** UCS can recreate a professional working environment to improve students' experience and better prepare them for a career in the gaming industry
- **Competitive differentiation.** The use of Fujitsu workstations with Intel Xeon processors helps further differentiate the course at UCS from competing training courses

"The workstations have certainly had an impact. Every day they smoothly integrate multiple applications and game engines into a seamless experience for our students. They can handle the pressure, perform well under high loads and are almost completely silent, even when rendering very high-quality 3D scenes. Put bluntly, we're impressed."

Chris Janes,
Lecturer in Computer Games Design,
University Campus Suffolk

Creating a professional development environment for UCS's undergraduates

In two 20-seat digital game development labs at UCS, students are planning an attack on the underwater city of Atlantis. Others are working out how to navigate through the jungle or loot diamonds from fortified dungeons or devising escape strategies from beasts that lurk in the shadows. They are among the 80 undergraduates studying for a degree in computer games design, making 2D and 3D games and gaining the practical experience of studio-based development techniques in preparation for a career in the gaming industry.

With games design a growth area for UCS, the degree course is increasingly popular. Its alumni now work at some of the leading names in the gaming industry, putting their training in the mechanics, dynamics and aesthetics of gameplay into professional practice.

Matching technology to student ambition

Studying computer games design at UCS is all about hands-on experience and preparing for employment. Students work with software packages commonly deployed throughout the industry, gaining direct experience of programming Adobe Flash*, scripting in ActionScript 3* and the Unity* game engine, 3D modeling with 3D Studio Max*, and exploring level design using Unreal Development Kit*.

IT therefore plays a central role in undergraduates' studies and the success of the degree course. "It's absolutely critical," says Chris Janes, lecturer in games design. "It is essential that students can do what they want, when they want, in the labs. We often have very enthusiastic and ambitious students who push their own abilities and test the hardware they work on. We don't want to clip their wings with slow and

Preparing students for industry with state-of-the-art teaching facilities

sluggish machines. It is important that they learn from their mistakes, and not be discouraged by them."

However, with 80 undergraduates throwing their best ideas at the games labs' hardware, Janes and his fellow lecturers found the number of system crashes was increasing, resulting in unacceptable levels of downtime.

As Janes explains, one of the biggest problems was that students would stay away from campus and work at home where they had more powerful and reliable gaming machines. "Given the nature of the course, we tend to attract technologically-aware students who have already invested heavily in their own equipment. When theirs is better than ours, they work at home. We pride ourselves on the level of contact students have with lecturers, so inadequate IT undermines one of the key benefits of coming to UCS."

From desktop PC to professional workstation

Recognizing it was time to upgrade their hardware, faculty members and the UCS IT department started looking around to see what was possible. Initially focusing on traditional high-end desktop PCs, they eventually chose to deploy 47 Fujitsu CELSIUS M730 workstations based on the Intel Xeon processor E5-1620 v2 product family.

John Herd, head of IT at UCS, explains the change of heart: "It's a slightly unorthodox choice, but the right one for us. Representatives from Fujitsu were very engaged in the project and were prepared to step in and demonstrate the units. The Fujitsu CELSIUS M730 is designed for single-processor applications like computer-aided engineering, architecture, post-processing and financial analysis. But the Intel Xeon processor also suits the needs of games development – especially in a full, 20-seat lab."

Professionalism, power and performance

Having installed the Fujitsu machines, Janes and his students immediately noticed the reduction in sound and temperature. "The machines are dead silent," he points out. "And the heat output is much lower. It makes for a much more pleasant and productive working environment."

But it is their performance that really makes the new Fujitsu workstations stand out. The power of the Intel Xeon processor has sped up the workflow as well as making it more predictable. Herd says, "The consumer games machines created bottlenecks. They could rarely handle what the Intel Xeon processor-powered workstations can handle. That ability to maximize throughput between system RAM and the graphics card has translated into a significantly improved experience in the game development lab."

In addition, the virtualization capabilities of the Intel Xeon processor enable several virtual machines and multiple operating systems to run simultaneously. As a result, students and lecturers can flip between complex applications – like 3D rendering, video editing and other simulations – with ease. It makes game development, bug tracking and play testing much faster and far less frustrating.

Janes sums up the difference: "The workstations have certainly had an impact. Every day, they smoothly integrate multiple applications and games engines into a seamless experience for our students. They can handle the pressure, perform well under high loads and are almost completely silent, even when rendering very high-quality 3D scenes. Put bluntly, we're impressed."

The next generation

Janes and his team have also noticed a significant increase in the number of students coming into the labs to work on their projects instead
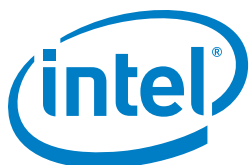
of using their gaming machines at home. The improved performance of the machines has not only enhanced their experience of developing games, it is giving them experience on the machines they are likely to encounter in their professional lives.

"Having this level of professional hardware in an education environment is rare," he says. "With students paying significant sums for their education, it's incredibly important that they get value for money in terms of better career prospects. It's also key for UCS, because it helps distinguish our course from the competitors and makes us more attractive. We are already getting positive feedback from recent graduates in their first positions, as well as from their employers."

The new hardware at UCS was tested when the Computer Games Design lab hosted the annual Global Games Jam, a 48-hour development marathon and competition. Previous editions of the Game Jam had experienced multiple hardware-related issues. But with the new workstations in place, there were no bottlenecks, crashes or unexpected downtime.

Janes and his fellow lecturers are looking forward to the future powered by Intel Xeon processors. "With 16 gigabytes of RAM, there's a highly expandable chassis there," says Janes. "It's a platform to build on. There's also the possibility of taking advantage of the Intel® Hyper-Threading Technology (Intel® HT Technology), particularly for the more advanced software and video applications. Deploying the machines has really taken the department to the next level."

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