

FPGA High Performance Computing Alliance

Video Transcript

Hello I am Mark Parsons. I lead the FPGA High Performance Computing Alliance - the FHPCA - and I am the Commercial Director of EPCC, the supercomputing centre at the University of Edinburgh.

Why are FPGAs important?

In the world of high performance computing, we see that micro processors are no longer increasing in speed on an annual basis. This means we are looking for new technology and FPGAs are a very exciting and interesting technology.

What is the FHPCA?

The FHPCA was established in 2004 to lead the use of FPGAs for high performance computing. It involves two leading Scottish SMEs, Alpha Data and Nallatech Ltd, who make accelerator cards for PCs using FPGAs. It involves Xilinx Corporation, the world's largest producers of FPGAs. It involves Algotronics Ltd, the company that originally invented the FPGA. It involves ISLI, the Institute for System Level Integration, at the Alba Centre.

How is the FHPCA funded?

The FHPCA is funded by Scottish Enterprise and each of the partners. The total value of the project is £3.6 million over two years.

Business demonstrator projects

One really important facet of the FHPCA is our belief that we want to apply FPGAs to real business codes. In order to prove that we could do that, we picked three demonstrator applications from industry and we have ported them to run on FPGAs. These demonstrator codes come from three areas: the oil and gas sector, the medical imaging sector and the financial sector.

Oil and gas prospecting

OHM Surveys is a small Aberdeen-based company, who specialise in finding oil using advanced electro magnetic techniques. We have taken one of their numerical applications and have ported it to the FPGA system in order to show how FPGAs can accelerate their applications.

Medical imagery

Dimensional Imaging, a small Scottish company based in Glasgow, has invented a novel technique for creating 3D models of people's faces. The technology is used in the medical sector for treatment planning and to help burns victims.

Financial Services

There has been a great deal of interest in the financial services sector in analysing and modelling risk more effectively. This takes huge amount of computing power and many of the investment banks have been looking at novel computing technologies to help them with this. For this reason we have picked a financial demonstrator, the Black-Scholes Model, to show the benefits FPGAs can bring to the sector.

What is the Maxwell FPGA system?

The system that we have just completed building, and are launching today, is a 64 Xilinx FPGA processor system housed in a 32-way IBM Blade Centre. It is one of the most powerful FPGA systems available in the world today.

Where will Maxwell be housed?

The system has been built and will be housed at EPCC's Advanced Computer Facility. It is available to Scottish business and Scottish academics to understand and learn how to programme FPGAs.

How will Maxwell be used?

We see Maxwell as a key resource for Scottish Business and Academia. It is a very interesting and exciting system and we want to encourage people to use the system and engage with EPCC and the other members of the FHPCA.

Maxwell and Scotland

Maxwell embodies Scotland's leadership in FPGAs. As I said earlier, Scotland invented the world's first FPGA and since then a number of companies have made use of them so Maxwell is a focus for reconfigurable computing in Scotland.

What next for FHPCA

We have learned an enormous amount over the past two years as we have been building Maxwell and porting the demonstrator applications. There are a whole host of technical advances that we need to make for FPGAs to be more programmable. So the next steps for us are to encourage usage of Maxwell and to build more projects around the issue of programme ability. It is a very exciting time.