

Sound solution

As the 2014 British Engineering Excellence Awards (BEEAs) programme launches, **Tim Fryer** visits a previous winner, John Richards of Oxford Digital, who has recently reorganised the company.

In 2006, John Richards co-founded Oxford Digital. The company was spun out of Sony, where Richards spent 13 years as general manager, leading the digital audio design group that produced solutions for many products across 23 of Sony's companies.

Oxford Digital continued working with Sony but, at the same time, built its customer base and IP portfolio. The company's success saw it win Electronic Product of the Year in 2011 for TinyCore and Small Company of the Year in 2013.

However, Oxford Digital has changed from being a small company in 2013 to almost a virtual company in 2014. Richards explained: "During my time as general manager at Sony – and afterwards when we spun out to form Oxford Digital – we were too busy with the day job to step back and take a close look at what we were doing. But I was inspired by small companies like JoeCo in Cambridge [the company that developed the BlackBox recorder for capturing live multi-channel audio]; it has a really good international reputation, but only a couple of employees. This coincided with several customers having cashflow problems and a customer base in a state of flux. It was a good time to reappraise where we were."

This reappraisal saw the company reduced to two employees – Richards and his wife, who is finance manager. The engineering skills are retained in the team of contractors, which is scalable from a core of eight engineers, most of whom have been working with or for Sony and then Oxford Digital for many years. "These engineers have different facilities and expertise," said Richards. "For example, one can do SMT assembly and so can build prototypes. However, most of the work we are doing is developing soft IP so we don't need much equipment in-house."

It is an arrangement that suits both contractors and customers. "Contractors are happy because they don't just work for us, so it gives them more opportunities. We made our customers fully aware of the changes as no-one likes to be taken by surprise. Nobody seems fazed; they are dealing with the same people with the same skills and with the same business potential."

The type of work Oxford Digital undertakes has evolved over the years. From initially being a contract design house with one customer, Oxford Digital now has a substantial international customer base for its design work, whilst development of its IP now represents half the work of the company. Richards explained: "We started developing our own IP in 2006 and had built enough cash reserves to let us carry on doing that by 2008, when contract work fell off a cliff – all companies at that time had directives to cut external spending. For a year, it was difficult to get any outsourced work."

However, the work returned. Richards now describes the nature of the work as: "Focusing on things that require our breadth of skills – we have

one current project that will probably require three or four members of our team, possibly others if the solution is expanded. Our edge, and the reason why we are able to innovate, is that as a small company we are more agile and, in our case, we get to see more of the process.

"Some semiconductor people are still stuck in a 1980s implementation model and work flow, making small incremental changes to what they already have. At Oxford Digital, we are not constrained in the same way so can tackle a new project end-to-end, including the core, the tools to program it and the algorithm development and implementation."

This skill set revolves around audio design and includes: processor architecture development; firmware and HDL for FPGAs and ASICs; DSP effects and algorithms; system level design; software (including real-time embedded); and core R&D.

These are skills that combine nicely when it comes to developing its own products, which, claims Richards, are having a positive and disruptive effect on the market. "For example, we won the 2011 BEEAs Electronic Product of the Year because of the radical effect TinyCore had on time to market for semiconductor manufacturers. It eliminated the implementation phase – which can take four months to a year."

TinyCore – a compact and efficient DSP core optimised for processing continuously streamed data, such as digital audio – is at the heart of some Wolfson audio chips. The WM8958 and WM8962, for example, feature in a number of mainstream consumer products, like the MS Surface and Kindle Fire HD. "This is an important part of our business," said Richards. "Our customers – Wolfson and others – have shipped more than 35million TinyCore powered chips over the last two years."

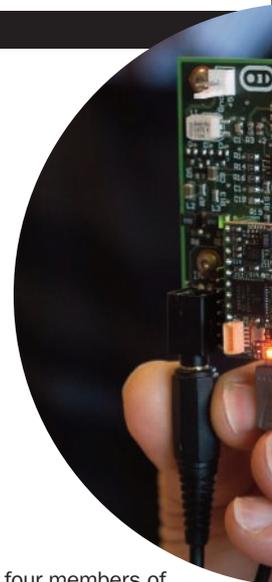
"You can never sit back, it is a commoditised industry," claimed Richards. "These chips sell for \$1 or less and everyone is always looking for 'technology renewal'."

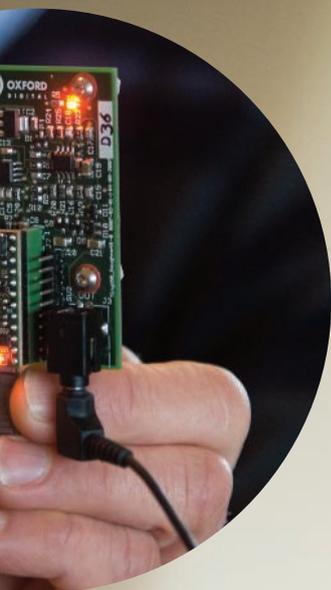
However, he believes success is about more than just the technology. "To get a competitive edge, we also have to make it easy for customers to do business with us. It is not just about the right technology, it is being able to mesh business models and we adapted our business model to do this with the semiconductor manufacturers. But small companies are driven by cashflow, and large companies driven by budget. This can cause difficulties and it can fall on us to be the flexible partner."

Richards has no doubts the move from multinational to SME has been a good experience. "As a small company, it is always exciting. If I look back over the last eight years, whilst there have been challenges, I wouldn't have changed any of it and I'm proud of what we've achieved."

And should other engineers with a good idea look to step out on their own? Richards advised: "It is always worth thinking about. What you need to do is assess your value add. If it is sufficiently good, then why not have a go?"

"Some semiconductor people are still stuck in a 1980s implementation model and work flow, making small incremental changes to what they already have."





John Richards

John Richards, chief executive of Oxford Digital, has a degree in Electronic Engineering from Leeds University and an MTech in Digital Signal Processing from Brunel University.

After 10 years at EMI's Central Research Labs, leading a variety of cutting edge projects, he joined Sony's R&D Group in Basingstoke, pioneering digital video technology in High Definition production equipment.

After heading the Video R&D Department, Richards returned to audio in 1993 as head of the new Sony Pro-Audio R&D Lab. He left Sony in June 2006, having effected a spin out of part of Sony's Pro-Audio Lab to form Oxford Digital.

Richards is a Fellow of the IET, a Chartered Engineer, a Senior Member of the IEEE and a Fellow of the Royal Television Society.