Ensigma Ltd – A Chepstow story

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December 2022

Genesis

It all really started with the establishment of Mitel in Caldicot. Terry Matthews, from Newbridge, had emigrated to Canada and co-founded Mitel Telecommunications in the early 1970's. The factory in Caldicot was part of a global expansion of Mitel's Private Telephone Exchange (PBX) business. The Canadian parent had recruited many ex-BT Research people who, like Terry, had gone to Canada, powering its phenomenal growth. As the company established itself in the UK, it was a similar story. Frustrated young engineers jumped at the opportunity to work in a fast growing, ambitious and 'can-do' company that was the antithesis of the stodgy and poorly managed scions of the telecommunications industry in the UK.

Terry wanted to do something for South Wales, and the local government provided support to this end, to help ease the economic and social transition from heavy industry. It seems likely that they anticipated Mitel being the kernel of an emerging cluster of electronics and telecom companies in the region. Mitel already had a sales office based at Slough, but a purpose-built factory, R&D facility and UK HQ was established in Caldicot/ Portskewett, starting in 1980. The new engineering and research group was housed in one of the lockups on the Portskewett industrial estate whilst the new building was underway. Mitel continued to expand at breakneck speed, and by then had reached a turnover of ca. Can$400 million in the ten years since its founding.

However, by 1985, the company had run into problems as the result of over expansion in manufacturing capacity and the rapid changes in the scale of electronic technology: think 'Moore's Law' – the same thing could be done a year or two later with much smaller electronics. The company was then taken over by BT, and there were calls for voluntary redundancy. This was the catalyst for several engineers to leave and set up business on their own, thanks to the inspiration provided by Terry and Mitel's very effective incubation.

Foundation

One of these companies was Ensigma, a digital design consultancy, founded by Mike Carey, Adrian Anderson and Simon Maddison. It quickly established itself as a leader in the research and development of digital signal processing (DSP) applications, particularly in digital speech and audio processing. This work was at the cutting edge of what has evolved into DAB digital radio (digital audio broadcasting) and the voice recognition of 'Alexa' and 'Google translate', and many other applications.

Figure 1 - The Ensigma team at the offices in Welsh Street ca. 1986. From back l-r: Dave Knox, Simon Maddison, Mike Carey, Elizabeth Carey, Adrian Anderson. Front row l-f: Barbara Maddison, Rob Harding. The box to the right is Ensigma's DEC VAX computer.

It was a high-risk venture, with the only seed capital being from some modest voluntary redundancy payments. This was all spent on two computers for development work, a DEC VAX - about the side of a desk drawer unit - for heavy duty computation (see Figure 1 above), and a twin floppy Apple Mac for everything else – think accounts, invoices, presentations and reports.

Mike had astutely negotiated some important projects that provided necessary cash flow right from the start, enabling survival in the first year. These included the design of a digital financial dealing system (dealer board) for Reuters and the speech compression algorithms for some of the very first digital mobile phones, as well as development work for another Terry Matthews company, Newbridge Networks. Terry would have liked Ensigma to be a part of his portfolio of companies, and there was a memorable meeting with him and the founders in the Castle Inn in Chepstow, where Terry arrived in his Rolls and parked right outside, but the company was adamant for its independence.

As can be seen from Figure 1 above, it was a business that drafted in family members almost from the start, with Mike's wife Elizabeth doing the accounts, and Simon's wife Barbara getting to grips with the Apple Mac and being a girl Friday.

Early Projects

Other early projects were DAB digital radio, which was developed and made a success by Adrian, and Mike's work on speech recognition, both of which became core development activities for the company under Mike's management.

Mike developed a single chip speech recogniser which was an early attempt at getting licensing revenue, but it had limited success. He also worked on topic spotting in speech, e.g. "they are talking about the weather".

Another early product was a NICAM decoder, an early form of lossy speech compression, which was adopted by broadcasters in the early 1980's for stereo TV sound.

The DAB work was initially supported by the DTI, and the company then worked with Hitachi to develop specialized chips, but this only made a limited impact. DAB receiver chips were eventually made a success by Imagination Technologies; they created a company called Frontier Silicon to sell the Ensigma designed chips, then PURE used them to make made radios and sold millions of units!

The majority of Mike's speech processing work was done for GCHQ, so the rest of us never knew too much about the problems they were working on. They created systems for spotting particular words (like "bomb", probably) and for recognising a particular speaker. We understand they made a very strong contribution to the technology used up in Cheltenham.

This early work was very crude and simple compared to the speech recognition technology in Alexa, for example, but it was cutting-edge in its day.

After DAB the company did a lot of development work on TV – first the NTSC/PAL/SECAM analogue systems and then helping the move to digital TV. Digital wireless applications such as WiFi and Bluetooth later became the dominant focus of development.

Mike was a strong believer in education and in the importance of the links between industry and universities. This was demonstrated by collaborations with the universities of Bristol, Swansea, East Anglia, Manchester and Liverpool (amongst others) on projects, student and staff placements and joint publications. Mike's work casts a long shadow; he authored numerous patents and international papers in the field of speech recognition and speaker verification that are still being referenced today.

Ensigma and Chepstow

Ensigma started up in a single room on the top floor of Ned Heywood's Workshop Gallery, then in Lower Church Street, Chepstow (Figure 2). At this time the company consisted of 3 people with one computer and one phone line, it was pre-Internet and pre-mobile phones! This soon became too constraining, and the company moved to a first floor office above Kwik-Save in Welsh Street, now Wilko (Figure 3). With successful growth, new purpose-built premises were constructed within a few years on Station Road (Figure 4). This was shared with Interconnect Communications, another Mitel spinout founded by Alan Horne. By 2000 the company comprised 31 people, the vast majority of whom were graduate engineers.

Ensigma employed engineers who in turn brought their families, many of whom settled in the area and remain today. The company left a worldwide legacy, being passionate about employing the

right people for the job wherever they were based. Some graduates came from abroad for a stint, before moving back to their own countries with the expertise acquired at Ensigma and continuing to maintain a collaborative ethos. This included New Zealand, Hong Kong, Poland, Taiwan, France and Spain as well as other European countries.

The company remained in Chepstow where it had originally been established and grew to employing some 50 specialised engineering development staff.

After being diagnosed with Parkinson's disease Mike retired in the early 2000's and remained in the area but continued to work as a visiting professor at Birmingham University where he carried on his research and supervised a number of PhD students.

Expansion, mergers and the move away from Chepstow

Licensing was always targeted as an important revenue source, but as a small independent company Ensigma didn't have sufficient resources to develop big licensable items. So, in 2000, Mike negotiated a takeover by Imagination Technologies, a company that had comparable expertise in video and graphics technologies. This resulted in commercial success with licensing, as it provided the company with the resources to successfully complete big developments such as the DAB digital radio chip.

After merging with Imagination Technologies, the company continued to thrive and expand, and moved into a new dedicated building just off Station Road up the hill behind the Telephone Exchange (Figure 5).

In 2017, Apple moved their video and graphics design in house. This was a severe blow as Apple constituted a large part of Imagination's business and pushed the company into financial difficulties. The company was soon acquired by Canyon Bridge, and American venture capital fund.

The Ensigma division, now mainly focused on low energy digital wireless, remained profitable. It was split off and acquired by Nordic Semiconductor in 2020. Sadly, this resulted in a move to Swindon that saw the end of Ensigma's presence in Chepstow.

This all started nearly 40 years ago now, and we are in another century. Technology develops fast, and the world is a different place. In contrast to those early days, there is now shared office space in the area such as at Thornwell, as well as the old building on Station Road. This provides flexible facilities that are suitable for small companies trying to establish themselves. I notice a small group of medical technology companies in Thornwell. Perhaps this is the new wave for the 21st Century? Amongst other things the Ensigma story shows that Chepstow was an attractive place to establish and grow a new technology company. In our view it still is.

Figure 2 - What used to be the Workshop Gallery in Lower Church Street, where Ensigma started in the top floor room with a single phone line.

Figure 3 - Ensigma later moved to a first floor office of the then Kwik-Save building on Welsh Street, now the Wilko building

Figure 4 - The purpose-built building on Station Road, which was shared between Ensigma and Interconnect Communications

Figure 5 - The Imagination Technologies building, just up the hill behind Station Road. Over 50 highly skilled engineers used to work here. This is now being let out for a variety of other purposes.