



Outsourcing helps to make femtocells right by design.

By **Philip Ling**.

Software development is not only recognised by the electronics industry as being the biggest challenge it faces, but also by all those enabled by it.

At so many levels, software defines the world around us. It is hard to find any modern day phenomenon that isn't, in some way, characterised by bits and bytes.

But software is only an artefact; created by the widening use of microprocessors and microcontrollers instead of hardwired circuits. Ironically, replacing hardwired elements with software defined computers has only motivated the industry to create programmable devices with evermore transistors and hence greater propensity to be programmed.

There is a rapidly aging adage within the embedded world that goes something like 'transistors are cheap, software is expensive'. The essence of this dichotomy is undeniable and its impact far reaching.

But this explosion in software complexity is accompanied by a dearth of software engineering resource. For some, this presents an opportunity; to provide software design services.

To be a successful provider of design services, it would seem reasonable to specialise in an area seeing rapid and continued growth, such as telecommunications. This is exactly what Aricent offers to device and infrastructure manufacturers worldwide. With a customer list which includes Nokia, Samsung, Alcatel-Lucent, Infineon and Cisco, there are few companies in the communications business with whom it doesn't engage. In fact, all of the top ten handset and communications infrastructure manufacturers are Aricent customers.

Sanjay Dhawan, Aricent's executive vice president, explained the company's focus: "Aricent is a 'pure play' provider; we don't provide software for all verticals, just communications."



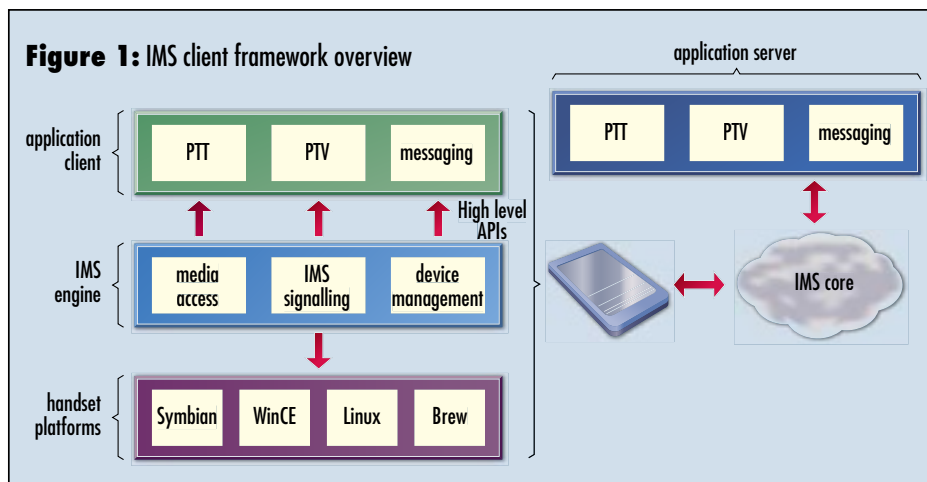
World your oyster?

This is apparent from the headline figures, such as: 95% of its business is in software; 90% of its approximately 7000 employees are in engineering (and it's looking to add another 4000 this year); 80% of revenue comes from software services (the remainder from licensing software products), with engineering teams spread across 13 countries.

You may be wondering why you haven't heard of such a large organisation before. Aricent was formed in 2004 from the consolidated resources of around seven other companies acquired in recent

years by Flextronics. This close affiliation with contract manufacturers also helps in providing total turnkey services, from design to manufacturer, claims Dhawan.

Despite its impressive and expansive engineering resources, Aricent still has to compete for business. The company's structure revolves around the services side of the business, complemented by the development of software products. Those products may also be licensed to competitors and likewise the services department may source software products from outside the company.



Although Dhawan believes there is no other company offering the same level of design services, he does see competition from design companies servicing a broader range of vertical markets, or from niche players providing specific technical experience.

According to Dhawan, the major challenges facing the telecommunications industry today can be summarised by one word; convergence. In several words, that represents the provision of voice, video and data, anywhere, anytime, over wired or wireless systems, seamlessly.

“For example,” said Dhawan, “I want to be able to continue a call on my cellular phone when I get home, but switch to my home wireless network because it’s more cost effective. That handover needs to be automatic and transparent.”

Within this utopian topology, the hot topics are WiMax, IP Multimedia Subsystems (IMS) and femtocells. Whilst WiMax can be thought of as a natural extension to WiFi, IMS and femtocells may not be so readily identifiable.

In reality, IMS is the new ‘backbone’ for delivering the seamless experience. Enabled by the now ubiquitous internet protocol (IP), it can deliver voice, video and data services over any access type – fixed or mobile – and creates one consistent user experience that is independent of the access device (see figure 1).

Femtocells, like the name may suggest, are localised extensions to an existing cellular network, in this case the 3G network. A leading UK based developer of pico and

femtocell technology, ip.access, recently announced its latest range of 3G femtocell, the Oyster 3G, and Aricent played an important role in its development.

According to ip.access, there is an elephant in the 3G room, in the form of power. Penetration of 3G signals within buildings is a real problem, both for the handset and the cell. As little as 2.5% of a signal’s strength may actually make it through a building’s walls and what little does get through is then scattered across multiple paths. The compounding effect is that more of the basestation’s resources are spent servicing the ‘hard to get to’ handsets, lowering the overall quality of the cell in question.

This is where the femtocell comes in, by providing localised wireless access to standard 3G enabled handsets, routed back through a wired connection.

Dr Nick Johnson, chief technology officer for ip.access, said Aricent was selected for its deep domain expertise in communications software.



“We’ve worked with Aricent for some time now, mostly as a customer for their software stacks,” said Johnson.

The funding for Oyster 3G was secured following an investment round, in March 2006. During 2005, ip.access was already looking for partners to help it with the project. Aricent was chosen partly because of the existing relationship, but also because due diligence showed it was the right partner.

Aricent provided stacks (ATM, 3G access network) as well as some ‘glue logic’ software, according to Dr Johnson. Aricent was also involved with the development of the radio resources management layer, a crucial element of the femtocell that determines which handsets get the lion’s share of available resources, without impacting the overall quality of service.

Dr Johnson believes outsourcing was necessary in this case. “We could have done the development in house, but our main issue was time to ramp up. The timescales made it unfeasible.”

Although there has been some knowledge transfer during this project, Dr Johnson believes there is a fine balance to be struck between outsourcing and in house development. “There is a danger that our internal resources could feel ‘left out’ if all the interesting software is sourced externally.”

Oyster 3G is about half way through its design lifecycle, according to Dr Johnson. Although capable of providing a packet service over which IMS could be deployed, ip.access is currently looking at attaching the Oyster 3G directly to an IMS, without using a 3G network.

The drive to deploy femtocells within domestic and commercial buildings clearly represents a huge opportunity for companies such as ip.access. Just as the so called ‘triple play’ created a battleground for set top box manufacturers, what is now being referred to as ‘quad play’ – adding IPTV and IMS – could rapidly usurp that campaign, seeing femtocells working with – or perhaps even displacing – STBs, and providing the fillip 3G seems to need. ☺

Author profile:

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