IET Knowledge Network

If you ask me

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E&T looks at how intellectual property protection has choked new developments in microfluidics and we herald the arrival of "dot com two point zero".

Slow progress

Other than inkjet printing, there have been few commercial successes from microfluidics technology. New companies entering the lab-on-chip (LOC) or point-of-care diagnostics (POC-Dx) space must have patent coverage in place for the core microfluidics technology, for which licensing is rarely seen as a viable strategy. Consequently, intellectual property navigation drives development, and the timescale for establishing secure IP drives the time to market. Uptake of microfluidic platforms is slow, and as yet no winners are coming forward as standards.

There are three ways for new companies to compete in LOC or POC-Dx: navigate IP and patent, license, or ignore IP and buy good lawyers. But each of these means that adoption is slow. The process of navigating through an IP minefield, as well as spending significant amounts of money on securing IP, often patenting incremental methods and trivial inventions, all takes considerable time.

Companies have to build a 'wall of IP', providing protection against litigation through the sheer volume of patents they have, rather than their validity. Small companies can't compete against large companies who have enough finances to afford litigation and the production of vast IP portfolios. Designs that get to market aren't necessarily the fittest in terms of design, but they do tend to be those that best get around IP barriers. Similar to inkjet printers, solutions become more and more radical so companies can secure patent protection. The fear of litigation is real – Caliper Life Sciences is currently suing Shimadzu claiming infringement of 11 microfluidics patents for instruments using electrophoretic separation.

There are over 2,000 results for worldwide patents with 'microfluid' and 'channel' occurring in the title or abstract. One example is a patent application with a leading claim lacking novelty and applicability, as was determined by the International Search Report: a microfluidic channel having a roughness greater than a similar channel that is smooth, as measured by a Reynolds number for flow under otherwise identical conditions, which is at least 50 per cent greater than a Reynolds number for said smooth channel. Despite the feebleness, its mere presence would cause fear for a company doing something similar.

The stifling of uptake of new technology due to IP is surely occurring in other fields. It can be seen in microfluidics because of the immaturity of the technology, similar to where MEMS technology was in the mid-90s. MEMS technology has benefited from killer applications such as airbag sensors in cars. The Nintendo Wii is based on patents for an accelerometer in a video game console, whereas Analog Devices, who make the chip, have patented and built accelerometers for over 15 years. The uptake of MEMS technology to consumer applications has been more successful than the original adoption into airbag sensors in 1995.

It is likely that microfluidics technology will have a slow and steady shaking out of players as they fight about IP, with winners emerging in the next five to seven years. The first killer application will be an unimpressive use of microfluidics technology, using technology that has been known for 15-20 years.

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Breaking the rules

One of the best dramas currently on the box has to be 'Mad Men', the story of the Madison Avenue advertising industry's influence on popular culture in the early 1960s while they drank whisky, smoked cigarettes and decorated their plush offices with eye-candy secretaries. Thanks heavens the world has changed... or has it?

While many economic pundits have been commentating on the collapse of the credit bubble, another bubble has been steadily on the rise – dependent on revenue from the advertising industry. Welcome to dot com two point zero, where a myriad of new Web 2.0 companies are on the ascendancy to challenge the scathed remainder of the previous tech boom.

New companies like Twitter are snapping at the heels of Facebook and Google. Spotify, an advertising and subscription-supported music service, is proving to be a formidable competitor to iTunes.

In Internet years, Facebook and Myspace look positively middle-aged compared to the Web 2.0 start-ups whose mantra does not seem that dissimilar to the tech startups that appeared on the dot com horizon ten years ago: “If you build it, they will come”. These companies only have to prove that they can attract millions of unique visitors to their sites.

But, as soon as they construct the pay wall (charge a subscription) or complicate their smooth looking websites with crass pop-up adverts, visitors soon leave because there are plenty of other start-ups who have completed a fresh funding round and are willing to offer the same services on their sites.

This breaks all the conventional rules of the corporate business plan where you may typically plan to make a profit within five years. Instead, as soon as the CEO is about to announce to investors that the company is in the black and the original investors can plan their exit strategy, the new younger company is already enticing visitors away from their site.

It could be argued that Twitter is one example of a company pursuing this path. Here is a company that has built up a loyal following of users who used to update their status on Facebook. As the technology editor of The *Guardian* recently Tweeted: “Ah, let’s say it again. Facebook = old friends. Twitter = new friends. This is why Twitter reigns.”

Twitter founder and CEO Biz Stone has yet to reveal how the company plans to generate revenue, although he says the plans will be revealed later this year. Some still reckon Twitter is the biggest threat to Google.

They may be right in the sense that driving traffic away from the search engine behemoths may undermine these company’s advertising-led business models. But will it benefit from the old guard’s potential demise?

The success of Google has been to generate revenue from a conventional source – the modern day mad men. They may have given up the hard drinking, smoking and philandering, but not the influence over the social and economic fabric of the developed world.

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Comments