

Business Life

HP finds creative applications for patched up patents

An unusual licensing deal shows how technology groups are keen to exploit their inventions, writes **John Murray Brown**

When John O'Dea went to see Hewlett-Packard last year to discuss whether there might be any patents he could license, he came away with an agreement to use the core technologies behind one of the US company's best known products – its thermal inkjet printer.

At first sight, the collaboration between HP and Crospon, a small medical devices company in the west of Ireland, is not unusual. All big technology companies are combing their patent portfolios to see whether they can license inventions and recover some of the vast investments they make in research and development.

What was eye-catching in this case though was that an idea developed for one industry is being exploited in another quite unrelated one. HP's printer technology will be applied as part of a transdermal skin patch for drug delivery, which its promoters claim might one day replace the hypodermic syringe.

The story shows that large technology companies are far from precious about their inventions. HP has a portfolio of nearly 30,000 patents, some registered long ago but never generating

a commercial return. At HP Labs, the company's central research facility, it has an active programme to identify new uses for these old technologies. HP does not disclose how much it makes in annual royalties and fees from such arrangements, but it is believed to be about \$500m (£272m)

In the jargon this is referred to as "repurposing". Charlie Chapman, director in the intellectual property (IP) licensing office in its Palo Alto headquarters, says HP scientists have also looked at using the printer technology for a fuel injection system for cars.

The idea of a skin patch, he says, was first developed by HP Labs several years ago but was dropped because of the perceived regulatory hurdles of bringing such a product to market. Instead, it decided to look for outside partners.

It was Enterprise Ireland, an Irish government agency charged with fostering innovation and technology links between multinationals and indigenous Irish companies, that brought the two together.

"HP had a programme to license out their IP. But they wouldn't have thought of Ireland if we hadn't approached them," says Michael Moriarty, head of innovation and global partnering at EI, which has an office in Palo Alto.

"When we visited, HP had come up with a list of seven or eight of these things, and this one was floating out there as a ninth thing. But they weren't really talking about it because they were thinking they might do a

spin-out themselves," Mr O'Dea recalls of the first meeting.

Crospon is now developing the product for general drug use, but at the time it was working on an insulin delivery system for use in hospitals for diabetes sufferers. "I was looking for an intravenous technology, but I came away with a transdermal one," says Mr O'Dea.

One of the first things that struck him about the printer technology was that it offered the possibility of administering more than one drug. This was critical for diabetes patients, as the weakness of traditional delivery systems such as pumps is they often overdose or underdose a patient. With a patch that could deliver more than one drug, a patient could receive both insulin and glycogen, which counteracts insulin's effects.

Until now, transdermal patches such as those used for nicotine programmes or hormone supplements have relied on the substance being absorbed through the skin, rather than introduced directly into the bloodstream. The HP patch, which is controlled by a microprocessor, uses micro needles, which just penetrate the skin's surface. The tiny syringes feel more like the lick of a cat than a traditional hypodermic.

The prototype Mr O'Dea shows visitors is a one-inch square device containing nine tiny reservoirs, each capable of holding a different drug. A special polymer material is heated up when a dose is scheduled for delivery. This causes the polymer to expand. Like the plunger in a syringe it pushes against a

membrane holding the drug. This ruptures, creating the momentum to release the liquid into the skin.

He says there are about four other companies like Crospon engaged in development, some using electric current to open pores in the skin, others deploying ultrasonics. But he believes the HP technology has several key advantages. Just as the inkjet printer can use different colours, HP's smart patch can administer a cocktail of drugs to order – in individual dosages, predetermined by a doctor, at prescribed times.

Mr O'Dea is in discussions with pharmaceuticals companies about what the optimum size for the prototype is. He envisages it will be possible to put as many as 400 separate reservoirs on a single patch. "But that's the sort of knowledge the pharma companies have."

The agreement with HP involves three separate patents and the transfer of various technical knowhow. HP will earn a royalty on production. It will also benefit if Crospon were eventually to sell on the business or be taken over.

"It's a risk sharing. We both benefit if it meets its objectives. If it doesn't, we'll both have put in costs," says Mr O'Dea.

He thinks there are about three or four years of laboratory work still to do before the patch becomes commercially available, adding: "The link-up has done nothing but good in terms of our profile. You only have to Google us. But at the end of the day you are only as good as the products you deliver."