# Technology Transfer:

## commercial opportunities for defence technology

*As with every defence organisation, the MOD purchases a number of solutions from the commercial market. But with a wealth of scientific expertise within the Department, some technologies that develop in defence can also have commercial applications. MOD DCB finds out more.*

*P2i's technology dramatically lowers a product's surface energy, so that when liquids come into contact with it, they form beads and simply run off*

The Defence Science and Technology Laboratory (Dstl) is charged by Government with ensuring that its world-leading innovative ideas and technologies are translated into wealth-creating enterprises that benefit the economy and wider society, and bring useful income to the MOD.

To take care of its commercialisation interests and to ensure that Dstl can remain focused on serving its MOD customer, Dstl launched Ploughshare Innovations Ltd as its technology management company.

Ploughshare Innovations – a wholly owned company of Dstl – operates out of Porton Science Park. The company's task is to find commercial opportunities for selected Dstl Intellectual Property in non-MOD markets. Ploughshare will therefore aim to spin out technologies that have commercial potential, applying professional expertise to find the best investment partners and license deals.

'Technology Transfer' is an industry term for the transfer of technology from the originator of an idea or invention (Intellectual Property) to a secondary user, typically but not always, for commercial purposes. Technology Transfer is a key part of ensuring the country's investment in science generates the maximum benefits for the nation in the form of wider capability, jobs and prosperity. The benefits to industry include access to technology that has often undergone significant development and proof of concepts to reduce risk when going to market. Licensing allows a 'pay-as-you-earn' financial arrangement; the combined approach can deliver a shorter time to market for technologically enhanced products with strong intellectual property protection.

Ploughshare provides this service for Dstl in order to facilitate the development of the technology to a wider market, which is usually through licensing or setting up of a new 'spin-out' company. These spin-out companies then license the technology and take it into the commercial marketplace.

### Case study

One success story of a spin-out company from work that began within Dstl is P2i Ltd, a privately owned company that licenses the MOD's patented liquid repellent nano-coating technology to manufacturers of performance textile, consumer electronics and industrial products.

P2i's technology is based on PhD research carried out under Prof Badyal at Durham University by Dr Stephen Coulson. The company originated as a project within Dstl to make soldiers' protective clothing more effective against chemical attack while maintaining comfort. P2i Ltd was established as a stand-alone company in 2004, as the first Dstl technology spin-out managed by Ploughshare Innovations.

P2i's patented technology employs a special pulsed ionised gas (plasma), which is created within a vacuum chamber, to attach a nanometre-thin polymer layer over the entire surface of a product. This dramatically lowers the product's surface energy, so that when liquids come into contact with it, they form beads and simply run off.

The coating is molecularly bound to the product surface at a nanoscopic level, which means it becomes inseparable from it and is as durable as the material it protects. And because the coating is one thousand times thinner than a human hair, it is invisible to sight or touch. Plus, because the application process is solvent-free and uses only tiny quantities of protective monomer, there is minimal waste and no adverse impact on the environment.

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Tests show that P2i's patented nano-coating technology can deliver performance benefits for a wide range of materials, including polymers, metals, fabrics, leather, ceramics, glass and paper. Even complex 3D objects, incorporating several different materials, can be treated successfully with the P2i process.

P2i markets its technology under sector-specific trademarked brands. The ion-mask™ brand is used to indicate the presence of P2i's technology in footwear, outdoor clothing and accessories. Several international footwear companies are current licensees, including Nike, Adidas Golf, Hi-Tec, Magnum boots, ECCO, and Van Dal. Aridion™, launched in October 2009, is a new brand for consumer electronics, focusing initially on the hearing aid sector.

Industrial applications are marketed using the corporate P2i brand. According to P2i's website, these applications include electronics, lifestyle, life sciences, energy & filtration and military & institutional. P2i is currently in discussion with companies to deploy its technology in a wider range of consumer electronics products.

Ploughshare Innovations also have specialist expertise in several other key technologies including vaccine development; skin-care/cosmetic; diagnostic tools & infection prevention; detection/decontamination; satellite & RF communications; high-hardness materials and PC/electronic gaming.

### Further information

*For further information, please visit:*

*Web:* **www.ploughshareinnovations.com**
*Web:* **www.P2i.com**