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Welcome to the first issue of Insight, ITI Techmedia's periodic newsletter.

At the beginning of a new financial year, and with over a year of R&D activity under our belts, we felt this was an excellent time to provide an update on our current portfolio of R&D programmes and provide an overview of some of the new areas of interest to us in the field of digital media and communications technology.

To date, ITI Techmedia has worked with its Members to identify and commission R&D programmes addressing six areas of emerging market opportunity:

- Games-based learning
- Machine-readable security tagging
- Ultra-wideband communications
- Online games development
- Biosensor technology
- Condition-based monitoring

Each of these programmes has the potential to propel companies based in Scotland to the forefront of its global market.

We have invested £34 million in these programmes, and are proud of our track record in involving the business and academic communities in our activities. To date, 40 organisations have been involved across the programmes.

In this issue of Insight, we put the spotlight on the Machine-readable Security Tagging programme. Like us, we believe you will be intrigued by some of the factors that are driving this growing market. This is an example of a truly collaborative programme involving multiple organisations with an interest in commercialising the technology.

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To date, 40 organisations have been involved in our six active programmes.”

Featured are some of the industry experts, R&D providers and Programme Participants who have been working together to contribute to the success of this programme.

As a Member-based organisation, we thrive on our Members' input. Over 250 organisations are currently part of our growing network and if your organisation would like the opportunity to benefit from access to world-class intellectual property, visit our website and join today.

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ITI Techmedia Staff and Programme Management Team

R&D Programme Update

To date, ITI Techmedia has initiated six R&D programmes across a broad spectrum of markets



Games-based Learning:

The first R&D programme to be announced by ITI Techmedia, this programme was launched in September 2004 and is investing £1.9 million to develop a toolset to facilitate the creation of games-based learning content. The initial system design work was completed at the end of 2005 and the programme is now in its development phase, with expected completion in Autumn 2006.

Condition-based Monitoring:

ITI Techmedia has just initiated a programme in condition-based monitoring, a sensors and networks platform which has potential applications across a range of markets. The programme's selected focus is on predictive intervention and monitoring of animal health conditions. £4.75 million of investment has been committed to this programme, which commenced in February 2006 and is expected to last for three years.



Machine-readable Security Tagging:

This programme was launched in March 2005 with an investment of £5.2 million. Working with more than a dozen R&D providers, ITI Techmedia is developing ground-breaking system concepts and solutions to create a technology platform for brand protection. For further information about this programme, please read our 'Spotlight' section.

Online Games Development:

This programme was launched in October 2005 with an investment of £5.35 million and the expertise of five R&D providers. The overall objective is the creation of an advanced game development platform with specific focus on new approaches in game design.




Ultra-wideband Communications:

This programme commenced in May 2005. £6.7m has been committed to research and develop cutting-edge solutions, to meet the emerging standards in Ultra-wideband and enable innovative and advanced applications. This radio frequency technology will enable devices to communicate wirelessly and will replace many of the cables connecting entertainment equipment in your home. To date, six R&D providers have been involved in the programme.

Biosensor Technology:

This programme was also launched in October 2005, with a £10.16 million investment. The programme aims to create a biosensing platform that will facilitate both the diagnosis and treatment of infectious and other diseases. Work on the initial research areas and the platform definition is well underway with six R&D providers.



Spotlight on Machine-readable Security Tagging Targeting the Curse of the Counterfeit

Counterfeiting is a multi-billion dollar global industry with highly destructive effects. The level of counterfeit trade is estimated to have reached US\$700 billion worldwide and shows no signs of decline.



Dr Scott Freeborn
R&D Programme
Manager, Machine-
readable Security
Tagging

Counterfeiting extends beyond products such as DVDs and software. Almost all physical goods are targets for counterfeiting, piracy, tampering, diversion, dilution or trade mark extensions.

Shoe polish, cigarettes, medicines, auto parts and even tea bags are subject to illegal production and supply. The sale of counterfeit goods affects every player along the supply chain – wholesalers, resellers, distributors, retailers and the final consumer.

What stimulates counterfeit activity? Profit is the key motivator: there is evidence, for example, that the illegal supply of pharmaceutical products generates a higher margin than cocaine. The attractive profit potential is enhanced by the ease of reproducing even sophisticated products and packaging, and also by the relatively weak penalties following successful prosecution.

ITI Techmedia researched and recognised a major market opportunity and has commissioned the machine-readable security tagging R&D programme to create a complete system solution for brand protection. The system will feature a range of machine-readable taggants, plus the readers, writers and trust management systems which provide the means of exchanging codes and information to establish a product's provenance.

The programme has carried out research into the key market dynamics and has captured requirements from a range of brand owners. This has been used to help develop the system concepts and solutions which define the technology platform.

Investing £5.2 million in the programme, ITI Techmedia has recruited more than a dozen R&D providers to work on this complex

multi-disciplinary programme. R&D providers include ITI Members Plexus, Ecebs, Scientific Generics, Tullis Russell and the Universities of Strathclyde, Heriot-Watt, Edinburgh, Glasgow and Robert Gordon. These R&D providers span a wide range of expertise including design and manufacturing, taggant specialists, market analysts and academic research units.

The programme moves into the development phase in Spring 2006, when the focus is on the implementation and test of the programme's critical enabling technologies.

For further information about the programme, please contact Dr Scott Freeborn, R&D Programme Manager, ITI Techmedia – scott.freeborn@ititechmedia.com

Ecebs: The Role of the R&D Provider

Ecebs is an independently owned Software Development company specialising in security IT, notably in the use of smart card technology.

Founded in 2000, Ecebs employs 20 people, mostly based at the company's HQ in East Kilbride.

Barry Hochfield, Ecebs Technical Director, first became aware of ITI Techmedia through mutual business contacts. He responded to the programme invitation to tender early in 2005 and Ecebs was contracted as one of the core R&D providers to the programme. Barry explains, "Our contribution has been very much on a technology



We have been constantly challenged to devise innovative solutions



level, on defining and then designing an IT systems architecture that should bring unique business benefits to the market. This has involved close interaction with a core team of R&D providers with complementary skill sets - from physics and chemistry, to computer hardware design to strategic marketing and business process analysis."

"We have been constantly challenged to devise innovative solutions which would bring sustainable differentiation to the programme. In doing so, we have grown our own expertise within this potentially massive emerging marketplace."

Ecebs plans to capitalise on the market opportunity for machine-readable security tagging by commercialising elements of the programme IP as a Programme Participant and is currently in discussions with the ITI regarding its commercial aspirations.

Barry comments, "The atmosphere and methodologies within the programme make for efficient and productive work practices and it's been a valuable exercise working with a very talented team of companies. It has been a very positive experience being part of an ITI Techmedia programme."

Declaring War on Counterfeit Crime

by Raglan Tribe, Managing Director, Mindsheet Ltd

Counterfeiters want to make a killing from your intellectual property and when it comes to faking drugs, they often do. Criminals can make more money from illegally trading pharmaceuticals than narcotics and the penalties are much lower.

It's not just drugs, but all goods from aeronautical parts to the ubiquitous CDs and DVDs. Widespread availability of sophisticated low-cost duplicating technologies make it easy to produce professional-looking copies.

It is generally reported that 7% of world trade is in counterfeits. This figure can only get worse as economies shift from manufacturing to creativity and innovation. Intellectual property becomes the principal source of value and criminals have been quick to exploit this 21st-century crime.

Many brand owners are now beginning to wrestle with the issues. But where do you begin? There is no shortage of technologies - but it is important to thoroughly understand the problem or you run the risk of adopting the wrong technology.

Lessons can be learnt from the banknote industry where they have successfully grappled with the problem for the last 300 years. Essentially, they take a systems approach with an extensive infrastructure for managing the cash cycle. There are comprehensive accounting systems with appropriate automation for quickly spotting irregularities. Banknotes are serialised with multiple security features and layers.

What is needed is the equivalent system and management tools for managing the integrity of goods across supply chains. Such a system will not only address counterfeiting, diversion and theft but will bring many operational benefits too.



Raglan Tribe
Managing Director,
Mindsheet Ltd



It is generally reported that 7% of world trade is in counterfeits



Raglan Tribe is Managing Director of Mindsheet Limited, which he started early in 2003 to market his extensive expertise in strategy, technical and R&D management.

Before Mindsheet, Raglan was the Group Research and Development Director of De La Rue plc, an international business specialising in the production of banknotes and cash handling machines. At De La Rue he implemented their development programme for supporting the introduction of the Euro. The developments included the production of Euro Banknotes, new ATMs and cash handling equipment.

Previously, Raglan had 12 years of automotive experience as the Chassis Systems Director of TRW Automotive, the R&D Director for Lucas Varsity Automotive and Head of Advanced Product Development for Lucas Industries. He has a Bachelor of Science degree in Computer Systems and upon graduation, gained five years' Systems Engineering experience at British Aerospace.

Gavin Watson Ltd: The Role of the Programme Participant

Gavin Watson Ltd is a long-established company in the security papers and label printing business. Headquartered in Glasgow, the company employs 65 people and has been trading successfully as a private, family-owned business for over 140 years.

Gavin Watson Ltd became the first Programme Participant in the Machine-readable Security Tagging programme. In Spring 2005, Drew Samuel, MD of Gavin Watson, read a press article on ITI Techmedia's investment in the programme and wrote to David Creed to express an interest in becoming involved. One exploratory meeting later, there was a mutual understanding of the potential synergy between Gavin Watson's business aspirations and the aims of the programme.



By accessing new and innovative IP, we believe we will be in a strong position to build new market opportunities



From the company's standpoint, programme participation offers the potential to access new Intellectual Property in the area of brand protection, to add to its existing portfolio and create the potential to increase market share and open up new market opportunities for the business. Equally, as the only Scottish company with a track record in labels and security print, Gavin Watson's ability to input significant marketplace knowledge and strategic insight was recognised as a positive contribution to the programme.

In Drew Samuel's view, "We identified a sound business proposition in becoming a Programme Participant. Our company is open to exploiting opportunities in any aspect of brand protection and security, not just those directly related to print. We know that one solution alone will not bring brand owners flocking to our door, so it is in our business's interest to address those needs by building and extending our portfolio of solutions in brand protection. By accessing new and innovative IP, and potentially being a conduit for trials and demos, we believe we will be in a strong position to build new market opportunities."

Through the Looking Glass

The process of market foresighting is extremely important to ITI Techmedia. With such a breadth of technology and range of market applications in the digital media and communications space, this very specific form of market research is key to identifying new opportunities for R&D.

In-depth research and investigation of a specific market area typically takes three to four months. It involves primary research, such as focus groups with industry experts, which is combined with secondary research that references some of the critical sources of work in each area. These inputs help to form a picture of the entire market and the opportunities for technology development. The output is a complete report of the market including its size, the competitive landscape and the opportunities for research and development activity that could be supported by the ITI.

These Market Intelligence Reports offer extremely valuable market insight and are published to our Members.

ITI Techmedia is currently carrying out market foresighting activity in the areas of Remote Health and Nanotechnology: Remote Health refers to the provision of health services outside of the clinical environment, often without the direct presence of a health practitioner. Thus technology plays a significant part in the



Nanotechnology has the potential to create valuable applications across a broad range of industries



delivery of such services. Nanotechnology is the science of manipulating atoms or molecules to create structures, devices and systems that have novel properties. Nanotechnology has the potential to create valuable applications across a broad range of industries and ITI Techmedia is currently researching those that may present R&D programme opportunities.

Reports on both of these areas of research are due to be published by the end of March.

Intellectual Asset Management

Intellectual Property (IP) is at the heart of what ITI Techmedia does. It is often a core input into our activities, and is essentially our only tangible output.

The goal of ITI Techmedia and the other ITIs is to create economic benefit for Scotland via the development of a portfolio of IP that can be commercialised by organisations for the benefit of Scotland. The intellectual property associated with an ITI R&D programme most commonly fits into two distinct categories: Background IP and Foreground IP.

Background IP is that IP which exists prior to, and is often brought to the table by R&D Programme Participants. Many organisations have latent, or unused, IP which is not being utilised in their core business but, with the addition of research and development resource provided by the ITI, this latent IP could form part of a new technology solution to a global market need. In order to maximise resources available for research and development, ITI Techmedia uses appropriate Background IP wherever possible. ITI Techmedia invests in R&D programmes in order to develop Foreground IP. This IP is owned and managed by ITI Techmedia, and it is this Foreground IP, together with appropriate Background IP, that forms the technology platforms which ITI Programme Participants seek to commercialise. The process of foreground IP creation and generation in ITI Techmedia can be split into four stages:

- 1 Identification - identifying the IP which is created in a programme
- 2 Encapsulation - recording IP in a readily-identifiable and secure manner
- 3 Categorisation - identifying the type of IP to be secured (patent, copyright, trade mark, trade secret etc)
- 4 Protection - applying for registrable protection (e.g patents and trade marks)

The first stage in the process is to identify what IP has been created

from R&D activities. Each R&D Provider reveals any Foreground IP which is created by making an innovation disclosure. ITI Techmedia works with its patent lawyers to determine how the innovation should be protected. Patenting isn't the only option. Sometimes copyright, trademarking or even retaining the invention as a trade secret is more appropriate. Whichever mechanism is chosen, protecting our IP is vital as this affects its market value and therefore its value to Programme Participants who will commercialise the technology.

In line with our economic development remit to bring greatest possible benefit to Scotland, ITI Techmedia seeks to protect the IP in such a way that it can be disseminated to the market in as many ways as possible. Rather than protecting our output as one large block of IP, smaller IP 'bundles' are protected individually to allow it to be licensed in a modular fashion to multiple Programme Participants, each of whom may seek to 'productise' the technology in different markets or for different applications.

Dr Barry Sturman-Mole, Director of Intellectual Asset Management at ITI Techmedia summarises the value of the ITI's unique approach "ITI aims to give our Programme Participants a base upon which to generate their own technology. We want to grow self-sustaining companies whose success will come from the competitive advantage derived from our IP. Over time, as they develop their own IP, the ITI IP will become less significant to their particular business needs but IP really is the foundation of long-term sustainable growth in Scotland."



Dr Barry Sturman-Mole
Director of Intellectual
Asset Management at
ITI Techmedia

“
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How to submit a proposal to ITI Techmedia

ITI Techmedia encourages the business community to make us aware of potential programme opportunities. If you have an idea for an R&D programme that you would like the ITI to consider, ITI Techmedia has produced guidelines for submitting an outline of the opportunity.

Proposals should include brief descriptions and bulleted summaries under the following headings.

- Introductory Description
- Market Assessment
- Technology Assessment
- Intellectual Property
- Project Outline

To view the guidelines in detail, please visit our website:

www.ititechmedia.com/activityupdate

Proposals in the first instance should be sent to terry.hurley@ititechmedia.com

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