

## **PRESS RELEASE**

### **NATIONAL RFID CENTRE TO HELP COMPANIES & USERS EXPLOIT THE FULL POTENTIAL OF RFID TECHNOLOGY - Five MOUs signed with the industry**

**SINGAPORE, 29 September 2006** – A national Radio Frequency Identification (RFID) centre to help companies and users exploit the full potential of RFID technology was officially opened by Mr S Iswaran, Minister of State for Trade & Industry today, at the Singapore Institute of Manufacturing Technology (SIMTech). The National RFID Centre is an inter-agency collaboration among the Agency for Science, Technology and Research (A\*STAR), the Economic Development Board (EDB), the Infocomm Development Authority of Singapore (IDA) and the Standards, Productivity and Innovation Board (SPRING Singapore). The aim is to accelerate the pace of RFID adoption among businesses in Singapore.

As a national focal point for promoting the adoption of RFID, the Centre will provide a platform beyond the technical aspects for businesses to reap the financial benefits of implementing an RFID system. By pooling resources, the Centre aims to shorten the learning cycle for each deployment and address the critical returns-on-investment (ROI) issue that end users have to grapple with. The potential economic value creation through projects undertaken by the Centre with its industry partners is estimated to be \$300 million over the next 5 years.

With a focus on five key strategic industry verticals of Manufacturing, Logistics, Retail, Healthcare and Hospitality, the National RFID Centre's activities can be divided into five broad areas:

- Drive RFID adoption pilot projects in various industry verticals through providing adequate funding and resource support
- Create a large RFID focus interest group with linkages to a wide network of local and overseas RFID labs
- Conduct training for potential end users and solution companies
- Demonstrate novel RFID technologies and solutions from leading technology partners and solution providers as well as A\*STAR research institutes
- Create a knowledge base of RFID solution models that can be leveraged upon across industries to shorten learning curve and deployment time

The collaborative agencies will play complementary roles in this Centre. As the lead agency, A\*STAR, through Exploit Technologies Pte Ltd, its commercialization arm and SIMTech, one of its research institutes, will be overseeing the management of the Centre. With its strong portfolio of RFID technologies and patents, A\*STAR will lend its R&D strength and expertise to develop new, innovative technologies in RFID as well as provide suitable know-how and technologies to address some of the key challenges in each implementation.

Membership in the NRFID Centre is free to all Singapore-registered organisations. In addition to gaining early access to new RFID solution models, members will be able to submit proposals for adoption projects and apply for funding support. Members can also participate in knowledge transfer activities such as workshops, reference implementations site visits and conferences at subsidized rates. Members will also be kept up to date on the latest news in the RFID industry through regular seminars, networking events and a RFID web portal (at [www.exploit-rfid.com](http://www.exploit-rfid.com)) managed by the Centre.

The Centre will be housed for now at SIMTech, and will be relocated to Fusionopolis – the future Singapore hub for physical sciences and engineering – in early 2008. For a start, the Centre will use existing resources from the partner agencies and will expand according to the projects secured.

### **MOUs and Pipeline Project**

To kick start collaboration with the industry, five Memoranda-Of-Understanding were signed today:

- NRFID Centre & NEC@RP RFID Competency Centre
- NRFID Centre & DHL Exel Supply Chain
- NRFID Centre & RHyMES Centre @ Ngee Ann Polytechnic
- Institute of Microelectronics and SmartID
- SIMTech and BiG Megastore

In addition, the Centre and Institute for Infocomm Research (I<sup>2</sup>R) are currently working with the National Library Board to push out trials in real application environment in the near future. A license agreement was also signed between ST LogiTrack and Exploit Technologies Pte Ltd for the use of Smart Shelf technology developed by I<sup>2</sup>R. (Refer to [Annex A](#) for more details on the MOUs, license agreement and pipeline project.)

### **RFID Users' Conference**

To generate awareness and interests in the potential benefits of RFID technology, an inaugural Users' Conference was held today with technology experts and prominent practitioners sharing their experiences and case studies. The conference received overwhelming response and was well attended with more than 250 participants from about 150 organisations.

“RFID technology is opening up exciting opportunities for businesses. Exploit Technologies’ S\$10 million RFID ‘Proof-of-Concept’ (POC) initiative, launched in Dec 2004, has since generated tremendous industry interest, and companies are finding new and creative ways of using RFID to deliver business benefits. We are encouraged to see that some of the POC projects are leading to potentially large-scale implementations, and companies are licensing the technologies to target new markets for business growth, beyond Singapore.

“Moving forward, A\*STAR will play an active role in the National RFID Centre, as we strongly believe that a consolidation of efforts - by bringing together the industry players and end users, with strong R&D, infrastructure and government support, is the way to accelerate adoption,” said Mr Boon Swan Foo, Managing Director, A\*STAR & Executive Chairman, Exploit Technologies Pte Ltd.

“Through the support schemes provided by the National RFID Centre, businesses here, especially small and medium enterprises, no longer need to fear that they will be side-lined because of constraints in resources. The National RFID Centre will bring about collaborations among top-notch vendors to provide companies here with the best and most effective solutions. In addition, the National RFID Centre will also help identify and develop new solutions, to tap on unexplored business opportunities made possible with RFID, such as the use of RFID to enhance tourist experiences in Singapore,” added Mr Boon, who is also the Second Deputy Chairman of A\*STAR’s Science and Engineering Research Council, which funds and oversees seven public research institutes in the physical sciences and engineering fields.

Mr Ko Kheng Hwa, EDB Managing Director said, “The EDB has been encouraging the use of RFID technology by companies in the manufacturing and services sectors as well as developing the RFID industry. The National RFID Centre will accelerate the adoption of RFID technology by companies to sharpen their competitiveness. There are many local and MNC RFID vendors in Singapore today and the Centre will help attract more investments in the RFID industry.”

“IDA supports the strategic use of RFID as an enabling technology to improve competitiveness and operational efficiency in key economic sectors. Over the last two years, since the launch of IDA’s \$10 million RFID initiative in May 2004, we have made good progress in catalysing RFID adoption in logistics, healthcare, retail sectors; including the development of related technical competency in ICT companies. To date, a total of 27 companies have committed to invest more than \$30 million in RFID projects, and 380 professionals have received RFID training under the initiative. With the set up of the National RFID Centre, IDA will continue to partner the ICT industry and R&D institutions in promoting the use of RFID both at the company and sectoral infrastructure levels, as part of our effort to realise the iN2015 vision and equip Singapore to be a world-class supply chain nerve centre,” commented Mr Chan Yeng Kit, Chief Executive Officer, IDA.

SPRING Singapore Chief Executive Mr Loh Khum Yean said, "Our retailers, wholesalers, suppliers, manufacturers and logistics providers can expect significantly improved productivity from the successful implementation of RFID standards in Singapore. Ultimately, this will result in cost savings for our local enterprises and higher levels of customer service and satisfaction. SPRING supports the National RFID Centre in the promotion of RFID standards and helping SMEs in Singapore to use RFID as a key enabler in improving the supply chain and productivity."

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### Notes to the Editor

Radio Frequency Identification, or RFID, is a technology that uses radio frequency communication to automatically identify, track and manage objects, people or animals. It works by using two or more devices - a reader and tag. The devices are paired and able to "recognise" each other through the transmission of radio waves.

RFID has been touted as the next big wave that will revolutionize how businesses are conducted today.

A\*STAR, through its commercialisation arm, Exploit Technologies Pte Ltd, has launched a S\$10 million RFID Proof-of-Concept (POC)<sup>1</sup> initiative last year, to help companies and potential end users develop RFID solutions and support users' experiments to identify possibilities with the technology. It is now timely for the Singapore industries to make the strategic move from pilot trials to full RFID.

### More information about A\*STAR, Exploit Technologies, SIMTech & Fusionopolis

The **Agency for Science, Technology and Research (A\*STAR)** is Singapore's national agency for science and technology, supporting the development of industry clusters. Its mission is to foster world-class scientific research and talent for a vibrant knowledge-based Singapore. The Agency comprises the Biomedical Research Council, the Science and Engineering Research Council, A\*STAR Graduate Academy, Policy and Personnel, and Corporate Planning and Administration Divisions, and a commercialisation arm, Exploit Technologies Pte Ltd. The two research councils fund and oversee 12 public research institutes engaged in cutting edge research in the physical sciences, engineering and biomedical sciences. Our institutes build up intellectual capital and trains research talent to deepen Singapore's scientific capabilities.

(website: [www.a-star.edu.sg](http://www.a-star.edu.sg))

**Exploit Technologies Pte Ltd (ETPL)**, the commercialisation arm of A\*STAR, manages the intellectual property portfolio of A\*STAR's research institutes and centres. ETPL facilitates the efficient transfer of A\*STAR's technologies to industry,

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<sup>1</sup> Exploit Technologies' RFID Proof of Concept (POC) Proposal helps identify and create new applications for RFID technology through collaboration with companies and end users. It leverages on the competitive technologies generated by A\*STAR's research institutes and the expertise of the RFID researchers to create high-value Proof of Concept prototypes for trials and deployment in the shortest possible time.

ensuring that new intellectual property generated by our researchers is exploited to produce tangible products and services.

(website: [www.exploit-tech.com](http://www.exploit-tech.com))

The **Singapore Institute of Manufacturing Technology (SIMTech)** is a research institute of the Agency for Science, Technology and Research (A\*STAR). Established in 1993, its mission is to contribute to the competitiveness of the local manufacturing industry. SIMTech contributes to the competitiveness of the Singapore industry through the generation and application of advanced manufacturing technology and the development of human capital. It has collaborated with multinational and local companies in the electronics, semiconductor, precision engineering, aerospace, automotive, logistics, marine and other sectors.

(website: [www.SIMTech.a-star.edu.sg](http://www.SIMTech.a-star.edu.sg))

**Fusionopolis** is Singapore's physical sciences and engineering hub of the future. Slated for launch in 2008, Fusionopolis will be home to the research institutes under A\*STAR's Science and Engineering Research Council, bringing together complementary capabilities in infocomm, advanced materials, electronics, engineering and manufacturing research capabilities. These public research institutes will be co-located with the private sector R&D labs at the Fusionopolis complex. It will feature state-of-the-art facilities and technology test-bedding infrastructure built with the aim of fostering innovation, experimentation and collaboration between public sector research institutes and private sector labs.

(website: [www.a-star.edu.sg/astar/fusionopolis/index.do](http://www.a-star.edu.sg/astar/fusionopolis/index.do))

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**Memoranda of Understanding:**

1) MOU between NRFID Centre and NEC@RP RFID Competency Centre

The MOU is to focus on EPC information system and testing services for the logistics and manufacturing industries. NEC has invested S\$5 million to spearhead its RFID solutions and services business expansion in Southeast Asia, using Singapore as its regional base, with the establishment of its RFID competency centre known as "RFID@NEC" at Republic Polytechnic ("RP").

The centre is a one-stop facility offering solutions and applied tag performance testing services to NEC's regional customers and partners through its latest RFID technology know-how in applications and middleware. Due for full operations by October 2006 at RP's Woodlands new campus, the polytechnic's academic staff and students will also gain access to the centre and engage in applied RFID-related development within the context of an actual working environment.

To value-add to the centre's operations, NEC will install its latest development of a new gate system which enables collective scanning of multiple UHF RFID tags with a high degree of accuracy, outperforming the scanning error of 10 to 20% for existing UHF RFID gate systems. The new gate system sees potential application for inspection systems in manufacturing lines and inventory control systems in supply chain management. "

Mr. Tomohiro Yagi, CEO of NEC Solutions Asia Pacific, noted, "As a market leader in the RFID field, NEC is pleased to be part of the National RFID Centre initiative led by A\*STAR. By transferring our RFID competencies to commercial partners and customers as well as collaborating with academic professionals of Republic Polytechnic through our RFID@NEC facility, we share our part in contributing to the realisation of RFID application in Singapore."

Mr. Fong Yew Chan, Director of School of Engineering, Republic Polytechnic also viewed this as another good opportunity for its staff and students to embark on real-life RFID projects. "This collaboration complements well with Republic Polytechnic's quest to achieve pinnacles of excellence in applying RFID for logistics, retail and manufacturing sectors. Through partnership with National RFID Centre, we will be able to achieve better RFID system customization to suit different applications for our industrial partners. Our staff and students will also benefit tremendously from this collaboration."

## 2) MOU between NRFID Centre and DHL Exel Supply Chain

DHL, the global market leader in the logistics industry, will work in partnership with the National RFID Centre to deliver innovative solutions with the use of RFID technology in Singapore's biomedical sector. With extensive experience in all areas of logistics, RFID and the biomedical fields, DHL Exel supply Chain will help foster an environment that is conducive to the adoption of RFID applications for pharmaceutical companies and healthcare providers in Singapore and across the Asia Pacific region.

"DHL Exel Supply Chain's Singapore-based Asia Healthcare Hub – already providing best-in-class, industry-specific supply chain solutions – is ready and eager to support RFID enablement," remarked Humberto Florez, CEO – Asia Pacific, DHL Exel Supply Chain. "Further, by using the Asia Healthcare Hub as the source of RFID tagging for distribution to end consumers, DHL Exel Supply Chain will be able to offer new service offerings including a shift from item-level labeling to item-level tagging, and RFID visibility on clinical trials and cold chain management, supported by RFID-enabled anti-counterfeiting measures," added Mr. Florez.

These moves will help further bond the product vendors, technology providers, research and academic organizations, government ministries and pharmaceutical companies with healthcare providers. In so doing, the increased collaboration and cooperation of the many companies and organizations from these diverse fields of research, academia and commerce will help position Singapore as the leading location in Asia Pacific for the realization of the limitless applications, and enhancements afforded by RFID technology.

Two projects that have already been identified and started include:

- (a) RFID tagging at item level for destinations in Asia Pacific
- (b) Utilizing RFID technology to support the traceability and visibility for clinical trials

## 3) MOU between NRFID Centre and RHyMeS Centre

This MOU is to collaborate on developing innovative R&D solutions in enhancing tourist experience (eg. Digital Concierge) and improving process workflow (eg. Linen Inventory Management) in Singapore's tourism and hospitality industry. Following the signing of the MOU, the National RFID Centre will work closely with RHyMeS Centre to identify adoption projects for the hospitality industry. The parties are currently exploring an implementation in one of the hotels managed by Millennium & Copthorne International Limited, working closely with RHyMeS and with

support from the National RFID Centre, to deploy an auto check-in / check out system.

"Ngee Ann Polytechnic (NP) is happy to be part of this national RFID framework. It gives us a larger platform to tap a wide pool of research and industry players, to fully exploit the capabilities of RFID. With this, the RHyMes Centre at Ngee Ann will be well positioned to develop better applications to enhance customer experience in the tourism and hospitality industry", said Mr Chia Mia Chiang, Principal of Ngee Ann Polytechnic.

Said Dr Yeoh Teng Kwong, Vice-President, Global Product and Service Development, Millennium & Copthorne International, "The launch of the National RFID Centre and its close collaboration with RHyMeS Centre will see more of new RFID applications being translated into direct benefits for hotel customers. Millennium & Copthorne guests will be amongst the first to benefit from any such R&D breakthrough in the near future."

"Sun is a leader in RFID technology. Companies from around the world have used the Sun RFID Test Center in Dallas, Texas to simulate thousands of RFID and sensor deployments to verify that multi-vendor solutions are interoperable and meet industry technical standards and mandates," says Mr Wong Heng Chew, Managing Director, Singapore, Sun Microsystems. "Sun sees RFID as a disruptive technology and actively engages partners to share thoughts, experiences and expertise in RFID to enable growth and participation. Sun's role in the RHyMeS Centre is a clear example of our commitment to support Singapore's development as a leader in RFID technology for the region."

Said Paul Chen, Director, Asia Pacific, Symbol Technologies, "The integration of Symbol's technology for Asia Pacific's first research and development centre focused on RFID solutions for the hospitality industry is a significant milestone for the region. We believe the benefits of enterprise mobility technology will be showcased and help transform the hospitality industry - as well as other service-oriented businesses - by helping to reduce operational costs, provide real-time resource allocation and enhance the customer experience. We look forward to seeing the innovative solutions that are developed through collaboration efforts at the RHyMes Centre."

#### 4) MOU between IME and SmartID

The Institute of Microelectronics (IME) and SmartID, a spin-off RFID company from A\*STAR, are embarking on a project to jointly develop a low-cost EPC Gen 2 / ISO 18000-6B RFID reader, leveraging on IME's reader UHF IC chip.

IME is one of the first companies in the world to develop a UHF reader IC solution that is programmable from 860-960 MHz band, which allows coverage in Asia, Europe and the United States. In addition, IME's UHF reader IC will miniaturise the RFID reader modules, as well as reduce end-cost of the solution, thus enabling widespread deployment. Worldwide demand for such handheld RFID readers is expected to grow to 200,000 – 500,000 units by 2008.

IME has been doing research in the RFID area for several years and has successfully developed passive RFID tags with industry partners. It has developed the world's first RFID chip with on-chip antenna that has both RF-read and -write capabilities. Other focus areas include long range active and passive RFID solutions for specific applications.

SmartID is a leading player in providing UHF RFID reader solutions with deployments in logistics supply chain management and intelligent access control.

Commented Mr Dan Lee, Business Development Director of Smart ID, "We are pleased to partner A\*STAR in the development of a commercial UHF reader silicon chip. With the adoption of an ISO standard in UHF RFID in June this year, the market is poised for an accelerated growth. It is timely to introduce a silicon reader chip and establish a leading market position. The RFID market is expected to grow at CAGR of 26% for the next 10 years and this silicon reader chip solution will ensure a competitive cost structure going forward."

##### 5) MOU between SIMTech and BiG Megastore

BiG Megastore, in co-operation with Samlo Interior Design and with support from the National RFID Centre and A\*STAR will be launching a modern lifestyle showflat design concept at Harbourfront Centre, an 80,000 square feet integrated electronics & lifestyle store, to showcase the application of RFID technologies in a smart living environment.

The purpose is to create a secure, fun and convenient living experience with RFID at home and to create a new shopping experience with RFID in store. According to BiG Megastore MD, Mr Robert Young, 'The objective is to create an iconic retail store in Singapore for integrated lifestyle products with cutting edge technologies. The partnership with National RFID Centre and A\*STAR is synergistic, as we have identified RFID as a key enabling technology for modern lifestyle applications'.

### **Collaboration Project between I<sup>2</sup>R and National Library Board:**

Under Exploit Technologies' 'RFID Proof-of-Concept' programme, the Institute for Infocomm Research (I<sup>2</sup>R) developed a prototype system of a 'RFID Smart Shelf', which will identify and track every items placed on the shelf, for example, library books. The technology will find applications in inventory management and item tracking.

NLB hopes to leverage more on the RFID technology to develop an effective shelf tracking system and overcome the existing challenges. Both I<sup>2</sup>R and NLB are entering a collaboration to test the Smart Shelf Prototype System. The Smart Shelf Prototype System will be deployed and tested at the Sengkang Community Library.

"NLB has adopted RFID technology several years ago which leads to the transformation of our library system in Singapore. With this latest innovation of a smart shelf system, we are able to provide more effective access to library materials; our users, in the future, will be able to locate books quickly. Another plus point is that we are able to track the usage of our materials within the library premises. This is in line with our Library 2010 plan to bring information and knowledge more readily accessible to our communities." said Dr N Varaprasad, Chief Executive, National Library Board.

### **License Agreement between Exploit Technologies and ST LogiTrack:**

A non-exclusive license agreement was signed between ST LogiTrack and Exploit Technologies, for the use of the Smart Shelf technology developed by Institute for Infocomm Research.

ST LogiTrack is an incumbent in the RFID industry. With this license, ST LogiTrack will be able to develop Smart Shelf systems and solutions, to target new business and potential markets in applications like libraries, retail and warehouses.

According to Ms Tang Kwai Leng, General Manager of ST LogiTrack, "This collaboration will help to propel and spur ST LogiTrack to the next level of technical competency to enable us to offer a more diversified range of RFID products. In particular, we see this technology as being very suitable for inventory-based applications, and we look forward to working hand in hand with A\*Star to develop this solution as well as other RFID competencies."

## **RFID Expertise @ A\*STAR's Research Institutes**

### Institute for Infocomm Research

The Institute for Infocomm Research (I<sup>2</sup>R) has built up expertise in RFID since 1995, by designing and prototyping many systems targeted at different frequencies, ranges and applications. System architecture, small and efficient antenna design for the tag, highly efficient RF to DC power conversion and anti-collision algorithms for multiple tag access are some of the areas of expertise. I<sup>2</sup>R has a number of patents to its credit and has successfully commercialised many of them. The current research and development is focused at UHF Readers and antennas for tags targeted at customer requirements. I<sup>2</sup>R has a range of test and measurement facilities and provides antenna measurement services with anechoic chamber.

I<sup>2</sup>R is a member of GS1 Singapore (previously SANC, the Singapore Article Numbering Council) since 2001 and is currently a member of EPC Global.

### Institute of Microelectronics

The Institute of Microelectronics (IME) is a leading player in the RFIC development in general and RFID research field in particular. Its research consists of three components. The lead component is integrated circuit design to enable RFID chip solutions such as tag and Reader IC. This is supported by research activities in packaging area to devise low cost packaging methods for RFID assembly and antenna design. Its process technology research component is directed towards adding unique capabilities such as fabrication of high quality on-chip antenna on RFID chip with good reliability.

IME's research work on RFID is to pave the way for industries to incorporate the technology into their products. The challenge is to find solutions for low cost integration and small size RFID tags and reader solutions, focusing on RFIC design, packaging and process. On-chip antenna solution is an enabler for low cost RFID solution. IME's current research initiatives are targeted towards developing higher functionality tags such as adding sensing and locating capability in addition to RF identification.

### Singapore Institute of Manufacturing Technology

SIMTech offers a wide spectrum of technologies for RFID in Product Innovation, Process Innovation, and Business Model Innovation.

SIMTech's R&D in manufacturing process technologies such as polymer processing, micro-patterning, printed electronics and multi-functional coating

can assist companies in developing innovative RFID products such as aesthetically molded RFID smart shelves, encapsulated RFID tags for harsh environment, screen or inkjet printed RFID antennas, printed circuits on plastic, RFID-labels with anti-moisture coatings, etc. The Product Innovation & Development (PID) programme provides a convenient single point-of-contact from idea generation to product realization.

SIMTech's R&D in manufacturing execution & control as well as planning & operations management technologies can assist companies in business process re-engineering, scalable RFID network design & optimization, and the mining of RFID data to provide visibility, efficient planning, real-time execution and control of their operations. Application examples include tracking of air cargo containers for security and dynamic material handling routing, tracking of pallets and forklifts for dynamic gate assignments for large-scale cross-docking operations, tracking of work-in-progress for garment manufacturing for load balancing and visibility, etc.

SIMTech's Product Life Cycle Management (PLM) programme together with all our partners aim to develop innovative business models for RFID implementation in five initial industrial verticals: manufacturing, logistics, retail, biomedical and hospitality together with return-on-investment (ROI) calculators to help companies evaluate and jump start their RFID deployments.

In 1998, SIMTech successfully implemented one of the world's first RFID-based air cargo tracking systems for an air cargo terminal at the Changi Airport. SIMTech is keen to apply results from its research in rapid RFID system development to Singapore industries, especially in areas of RFID middleware optimisation, system design, robust fault detection and networked RFID emulators.