HK RFID Awards

2009 Leaders in Business Excellence Creation

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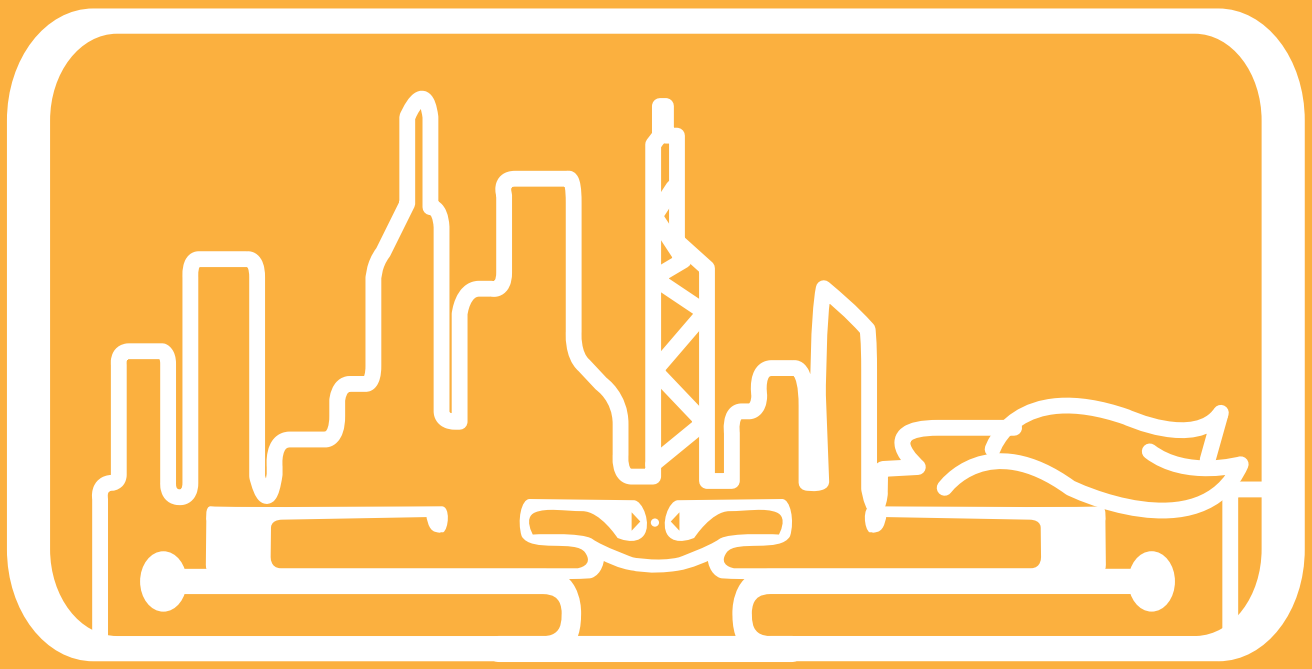


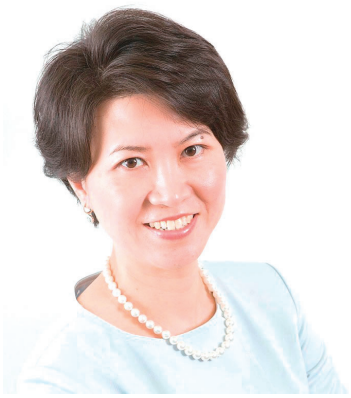
Organizer 主辦機構

GS1 Hong Kong

Hong Kong RFID Awards 2009

Presentation Ceremony at GS1 Hong Kong Supply Chain Management Excellence Summit, November 10, 2009

Welcome Message



I am delighted to write a few words for this commemorative casebook for the Hong Kong RFID Awards 2009. Among the key missions of GS1 Hong Kong is to promote and drive the adoption of global standards, technologies and practices that will create an agile, responsive and value-driven supply chain for the overall benefits of the business and public community. The Hong Kong RFID Awards is one of our significant, continuous efforts in achieving this goal.

Over the past decade, we have seen significant changes in the way business is done due to globalization and the ever-increasing demands of customers. Amid today's challenging business environment and the growing complexity of global supply chains, Hong Kong enterprises need to enhance their supply chain competencies and deliver better consumer value through innovative use of technology, specifically RFID technology.

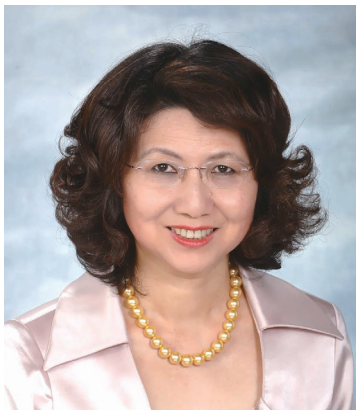
GS1 Hong Kong, as the local chapter of GS1, is dedicated to helping enterprises with trading relationships communicate better with each other through the development of the Electronic Product Code™ (EPC) standards for RFID technology. These standards are vital to the success of RFID technology as a business enabler for the global supply chain.

The Hong Kong RFID Awards scheme has been established to give recognition to local enterprises and individuals that have demonstrated excellence in harnessing the power of RFID technology to maximize efficiency of supply chains and logistics. This year, in addition to the Business categories, we have created the U-21 RFID Awards, a new award category for tertiary students. I am most grateful to all winners for sharing their knowledge and experience, and hope that the Awards will further encourage the local business community to push the technology forward and continue to innovate.

We are honoured to have received the support of the HKSAR Government and industry in organizing the Awards. On behalf of GS1 Hong Kong, I would like to thank the government, the panel of judges, the participating companies and the wider business community for their generous contributions in making the Awards a success.

Finally, I would like to convey my warmest congratulations to all Awards winners for their exceptional and innovative works, and hope that next year many more entrants will be ready and willing to follow their examples and help shape tomorrow's Hong Kong.

Ms. Anna Lin
Chief Executive
GS1 Hong Kong



This is the second year the GS1 Hong Kong organizes the Hong Kong RFID Awards, I am happy to see that it has successfully encouraged industry players to bring RFID technologies into their business operations.

The standard of the entries are indeed high, candidates could stretch the potentials of RFID technology and are full of creativity. Ranging from traffic control, asset tracking to enhanced hardware, all these advancements are proven to benefit the company in capturing new business opportunities and to help overcome ever rigorous challenges.

On the other hand, the introduction of the new U21 Awards, recognizing the outstanding achievements of young talents in the field is yet another highlight. Young talents are valuable assets of our society, the U21 Awards can enhance the community awareness of the importance of technology development, facilitate experience sharing and knowledge transfer, as well as encourage more innovation.

The HKSAR Government spares no effort in promoting the development of RFID technology, facilitating its adoption in local industries, as well as encouraging the general public to realize its importance. For instance, the establishment of the Hong Kong RFID Centre in Hong Kong Science Park in 2008, the continuous funding support for RFID research projects, and the special theme “RFID” for the Hong Kong Student Science Project Competition 2009 are some of the examples.

It is our goal to make Hong Kong a RFID centre and a RFID trendsetter in the Asia Pacific Region. I look forward to seeing Hong Kong RFID Awards to be held again next year, in order to further spearheading the RFID advancement.

Miss Janet Wong, JP
Commissioner for Innovation and Technology
HKSAR Government

The Organizer

GS1 Hong Kong is a not-for-profit industry-led organization established to promote global standards, best practices and enabling technologies in the field of global value and supply chain management. As the local chapter of GS1, we are the only organization in Hong Kong authorized to issue GS1 and EPC identification numbers.

The Objectives

The Hong Kong RFID Awards were first established in 2008. The awards program has been created to champion the use of EPC standards compliant RFID technology by enterprises. The mission of Hong Kong RFID Awards can be summed as follows:

- Bring recognition to pioneering enterprises that have successfully brought EPC / RFID technologies into their business operations.
- Encourage the adoption of EPC / RFID technologies by businesses in Hong Kong and the Pearl River Delta region.
- Foster the development of new EPC / RFID products and services.

The Awards Categories

The Hong Kong RFID Awards has three categories. These are:

Best EPC / RFID Implementation

These honors will be awarded to enterprises that have successfully adopted EPC / RFID technologies in their business operation to deliver business value and proven return on investment through cost savings, operational efficiency gains, improved production and supply chain management, and better customer service.

Most Innovative Use of EPC / RFID

These honors will be awarded to enterprises that have employed a high degree of innovation and creativity in their application of EPC / RFID technologies to solve operational issues and meet business challenges.

Most Innovative EPC / RFID Products

These honors will be awarded to enterprises that have created RFID products which are highly innovative, easy to deploy, cost effective, addresses market needs and complies with global RFID standards, in particular EPC standards.

Hong Kong RFID Awards U-21 RFID Awards 2009

In a bid to uplift the spirits of the Hong Kong RFID Awards, the first-ever Hong Kong RFID Awards U-21 RFID Awards 2009 was established which is open to both full-time and part-time undergraduate and postgraduate students of any local tertiary institutions.

The Objectives

- Promote wider adoption of EPC / RFID technology in business and daily lives.
- Encourage further original EPC / RFID application and technology development in the local academic institutions with creativity and enhanced designs.
- Bring recognition to creative Hong Kong young talents, who are committed to innovating and developing new EPC / RFID applications or technological products to realize the many benefits of EPC / RFID technology promises for enterprises and our daily lives.

Message from the Judging Panel

The second year of awards brought real surprises in both technology development and application innovation. In technology we saw some completely new approaches to successfully solving some historic problems that have defeated others for many years. In application we saw impressive implementations that very successfully merged new technology and standards into existing operations without any disruption. These demonstrated Hong Kong's ability to seamlessly improve what exists already with the tools of tomorrow.

Panel Chair
Mr. Ian ROBERTSON, MBCS, CITP
Director, Transport & Logistics and News Sectors
EPCglobal Inc.

I was pleased to see the many solutions and varied implementations presented. They were extremely impressive concerning the overall quality of the initiatives. I applaud all the participants in this competition; in either the development of solutions that are relevant to business end user needs, or in how RFID has been incorporated into business processes. I especially send my congratulations to the recipients of the awards. The diverse uses of the technology demonstrated really shows the power of RFID systems and shines a light on possibilities for future uses.

Mr. Simon D. LANGFORD
Director, EPC Strategies
Wal-Mart Stores Inc.

Innovative and effective deployment of technology is one of the most critical factors for business success in today's increasingly interconnected global business environment. The Hong Kong RFID Awards we launched last year was very well received by the industry, and competition is even keener in its second year. The number and quality of the entries show a significant improvement in the enthusiasm and readiness of the community in deploying RFID to enhance business and quality of life. This dovetails well with our aspiration to accelerate the innovation and implementation of RFID in both business and public communities.

Ms. Anna LIN
Chief Executive
GS1 Hong Kong

Once again, Hong Kong community has shown, through this RFID Awards competition, many outstanding innovations in product development and its adoption in exciting business cases. I am confident that the Hong Kong RFID Awards will continue to stimulate the innovation and adoption of RFID technologies amongst Hong Kong industries and enhance the competitiveness of the Hong Kong community for many years to come.

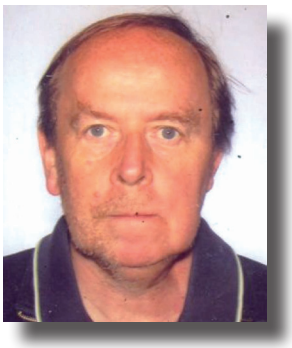
Prof. Chung Jen TAN
Chief Executive Officer
Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies

I wish to commend all the candidates running for this year's Hong Kong RFID awards for their high degree of creativity and exceptional standard demonstrated through the projects. Successful and inspiring applications of EPC/RFID technologies over a wide range of industries were presented. With active participation of leading industry players, I am confident that this annual event will help accelerate the development of and business commitment to EPC/RFID technologies in Hong Kong.

Mr. E. Anthony TAN
Chief Executive Officer
Hong Kong Science and Technology Parks Corporation

"RFID/EPC is currently employed in a variety of sectors. The technology supports "RFID-in-everyday-life" processes at local transports, in textile production, education and in the theme park industry, to name just a few. Especially with the various applications that were presented it shows that the technology will play an increasingly important role in business as well as in society as a whole. The variety of visionary and already well-established cases shows impressively: The future will speak RFID."

Dr. Gerd WOLFRAM
Head of CIO-Office
METRO AG



My congratulations to the winners of the Hong Kong RFID Awards 2009. The efficiencies and competitive advantages which the winners have achieved through their clever adaptive use of RFID can be used as examples by others in their own businesses, propelling them to further success. I look forward to seeing further innovative RFID uses and products.

Mr. Geoffrey Frank WOODHEAD
Assistant Commissioner (Infrastructure and Quality Services)
Innovation and Technology Commission, HKSAR Government

Best EPC / RFID Implementation

- **Gold Award:** The Kowloon Motor Bus Company (1933) Limited – Traffic Operations Management System
- **Silver Award:** Hong Kong Disneyland Resort – CostuMagic
- **Bronze Award:** Nuance-Watson (HK) Limited –"Mobile Discovery" RFID Display Station / RFID Intelligent Kiosk

Most Innovative Use of EPC / RFID

- **Gold Award:** Nuance-Watson (HK) Limited – "Mobile Discovery" RFID Display Station / RFID Intelligent Kiosk
- **Silver Award:** Hong Kong Disneyland Resort – CostuMagic
- **Bronze Award:** The Kowloon Motor Bus Company (1933) Limited – Traffic Operations Management System

Most Innovative EPC / RFID Products

- **Gold Award:** Megabyte Limited – Megascan-M1 RFID Reader
- **Silver Award:** PCCW Solutions Limited – "Mobile Discovery" RFID Display Station / RFID Intelligent Kiosk
- **Bronze Award:** Convergence Systems Limited – CS203 Integrated Reader

Certificate of Merits

1. Guangdong Entry/Exit Inspection and Guarantine Bureau of the P.R. China and RFID System & Supplies Limited – RFID Traceability Monitoring System for Export Roast Eel
2. Leo Paper Group (Hong Kong) Limited – RFID Pallet Tracking
3. Neonlite Electronic & Lighting (HK) Limited – W.A.R.E.
4. NLSI Lui Kwok Pat Fong College and Schmidt & Co., (Hong Kong) Ltd. – RFID Asset Tracking System (ATS) in School
5. Peking Union Medical College Hospital and Schmidt & Co., (Hong Kong) Ltd. – Drug Tracking and Safety System in Hospital
6. PCCW Solutions Limited – Sales Management System
7. Sew Access (Far East) Limited – RAKO NXP RFID Curtain
8. Strategic Systems Consultants Ltd. – Real Time Locating System Adds Face Recognition for Holistic Security and T&A Control
9. Tan Chong AutoClinic and Hong Kong Communications Co., Ltd. – RFID Car Inventory Management System
10. The University of Hong Kong Libraries and E-Business Solutions Limited – RFID Library System
11. Zymmetry Group – ZymFactory RFID Real Time Production Management System

Traffic Operations Management System

Best EPC / RFID Implementation : Gold Award
Most Innovative Use of EPC / RFID : Bronze Award

九巴服務 日日進步

Company Background

The Kowloon Motor Bus Company (1933) Limited (KMB) is the largest provider of bus services in Hong Kong. Established in 1933, every day KMB provides public transport for 2.7 million passengers. The company employs 8,000 bus captains and has a fleet of 3,933 buses servicing its network of around 400 routes in Kowloon, the New Territories and Hong Kong Island.

Business Challenges

KMB operates 24-hours a day, with most buses in service from 5:30am until 1am. Allocating appropriately trained drivers to the right bus for each of its routes and various services in the very limited time available is one of the biggest challenges that KMB faces every day. The previous system required staff to manually locate, identify and record which buses were available and where each bus was parked. This information was then copied by hand onto more sheets of paper for different departments to use for operations and administration.

At the start of each shift, bus captains would queue up to sign in by hand, then search for their handwritten duty sheet by leafing through thick piles of paper. Any new messages, advice or special instructions had to be communicated verbally by field staff to the bus captains.

As well as reducing human errors in paper work, KMB also wanted to monitor and better utilize buses and human resources, and to be able to respond quickly to market needs with the most accurate and reliable information available.

RFID Solution

KMB's IT department developed a Traffic Operations Management System (TOM) with three main objectives: to improve depot productivity, optimize resource utilization, and improve transparency and fairness in duty allocation.

The TOM system comprises two RFID solutions. Firstly, each bus has a vehicle registration number smart card and each parking location has an identity card. Staff record the bus numbers and parking locations using handheld short-range RFID readers. This information is then uploaded to the TOM system via PCs.

Secondly, RFID readers that identify staff have been installed at the depots and termini. Bus captains sign-in at the depot with RFID Octopus cards, which were already used to activate the payment system on buses. Up-to-date duty sheets providing information on bus locations plus any important messages are printed immediately. Similarly, at the bus termini, bus captains receive updated information and view the next departure time for their bus by tapping their Octopus card.

Results

The introduction of RFID technology met all of TOM's original objectives and brought a wide range of benefits to KMB. Workflow has been streamlined, time consuming paperwork has been drastically reduced and duplication eliminated, resulting in considerable time savings. The time taken for a bus captain to sign-in and receive their duty sheet has been reduced from two minutes to eight seconds. Training time for field staff has been reduced from a year to a few weeks and the manpower required at depots has been reduced by 33% due to improved productivity. Termini operational costs have also come down.

Currently over 650 staff use TOM and all 8,000 bus captains access the system to report duty. The RFID system provides real-time information about buses and crew so staff are able to manage and monitor the provision of bus services more efficiently. KMB is able to respond more swiftly to staff absences, market needs and government requests. Customer service hotline staff can also provide passengers with accurate bus service information.

Looking to the future, KMB will explore the feasibility of using high frequency RFID handhelds to enable field staff to read multiple buses at once and to upload parking data immediately via wi-fi. The company is also considering installing long-distance pole mounted readers at bus termini for automated detection of arriving and departing buses.

CostuMagic

Best EPC / RFID Implementation : Silver Award
Most Innovative Use of EPC / RFID : Silver Award

Company Background

Hong Kong Disneyland Resort offers a unique family entertainment experience inspired by Disney's first theme park in California. Costumed Cast Members play an integral part in creating the Disney magic. Costumes are designed to fit with different themes within the park and hotels. With approximately 200,000 garments in 600 different styles, Hong Kong Disneyland Operations Costuming is open 16 hours a day, 365 days a year.

Business Challenges

On a typical day at Hong Kong Disneyland Resort, 6,000 costumes are distributed to more than 2,500 Cast Members. Another 6,000 costumes are sent to an external laundry vendor and a further 6,000 clean costumes are returned.

In the past, each garment was tagged with a barcode and garments were manually scanned before being issued to Cast Members. This meant that during busy periods Cast Members sometimes spent a relatively long time simply collecting their costumes. Garments were also scanned before and after being laundered, but this did not enable Hong Kong Disneyland Operations Costuming to trace the quantity and status of garments in the laundry at any time. When garments were missing they were hard to find and the accuracy of the stock take of costumes was questionable.

Hong Kong Disneyland Resort wanted to streamline the costuming process to create a hassle-free experience for Cast Members while enhancing operational efficiency.

RFID Solution

Hong Kong Disneyland Resort was chosen by Walt Disney Parks and Resorts to be the pilot location for a worldwide costuming RFID project. After considering the various requirements, work began on developing a solution in January 2009.

The Resort worked with external vendors to develop a self-service kiosk, which features a Cast Member identification card reader, a touch-screen display and an RFID reader. The Disney US IT team designed customized touch screens for the kiosks and modified existing software to make it compatible with EPC readers.

All barcodes on garments were replaced with carefully chosen EPC Gen2 RFID tags that were both discrete and durable. Over the course of six months a dedicated team of five seamstresses and one co-ordinator tagged 110,000 garments.

With this new RFID system, Cast Members simply need to scan their Cast Member identification card, then place all the costumes in the kiosk's C-shaped sensor and confirm the garments selected via the touch-screen display.

Results

Hong Kong Disneyland Resort's RFID project was an immediate success and Cast Members' experience has considerably improved. The self-service kiosks speeded up the process of issuing costumes by 30 to 40% and reduced maximum queue time by 50%.

Now that reading garment tags is faster and more accurate, productivity in costume tracking operations and inventory management has also been enhanced. Stock taking is quicker and more accurate using the new RFID system and Hong Kong Disneyland Resort is able to conduct stock takes more often.

Looking to the future, Hong Kong Disneyland Resort plans to extend the RFID system to its entertainment costuming operations. The Resort is also exploring the potential applications of RFID for other parts of its business such as merchandise.

As a result of the achievements of the Hong Kong pilot RFID project, Walt Disney Parks and Resorts plans to roll out the RFID project at other locations worldwide, starting with Walt Disney World in the US.

"Mobile Discovery" RFID Display Station / RFID Intelligent Kiosk

Most Innovative Use of EPC / RFID : Gold Award
Most Innovative EPC / RFID Products : Silver Award
Best EPC / RFID Implementation : Bronze Award

Nuance-Watson (HK)
WORLD CLASS DUTY FREE

PCCW Solutions®

Company Background

Nuance-Watson (HK) Limited is the largest retail operator at Hong Kong International Airport (HKIA). With some 40 outlets in two terminals, Nuance-Watson (HK)'s stores offer a range of products from fine jewellery, designer sunglasses, watches, clothing and bags to perfumes and cosmetics, premium foods and souvenirs. Its Sound & Vision Enriching Life stores sell high-tech audio-visual and electronics products, mobile phones and accessories.

PCCW Solutions Limited, was appointed by Nuance-Watson (HK) to develop its Mobile Discovery RFID Display Stations. As the IT and business process outsourcing flagship of the PCCW/HKT Group, the premier telecommunications service provider in Hong Kong, PCCW Solutions' services include IT consulting, implementation, maintenance and management.

Business Challenges

Nuance-Watson (HK) has built its brand upon its values of constant innovation and customer focus and is committed to providing an exciting and unique shopping experience. The company wanted to introduce more interactivity into its electronics stores at HKIA to align with Sound & Vision Enriching Life's name and goals.

The Sound & Vision Enriching Life stores are located in the restricted area of HKIA; therefore most potential customers are rushing to catch a flight and are also a particularly discerning group of electronics consumers, given their exposure to overseas travel and opportunities to shop outside of Hong Kong.

With a limited time available to convert these time-conscious world travelers from browsers into buyers as they head for their flights, the challenge for an electronics retailer is to create an engaging environment and provide the best customer service.

Hence, Nuance-Watson (HK) undertook the development of an innovative tool that could quickly provide more information about the features of electronics products, such as mobile phones, in an interesting, novel and interactive way.

The location also provided extra technological challenges for PCCW Solutions, as high levels of radio and electrical "noise" at the airport, as well as the presence of metallic equipment within the electronics shops, can affect system performance. During development, particular attention was paid to details such as the tag used (many commonly used RFID tags were too large to use with mobile phones), the power emitted by the antenna, the different shielding measures as well as the optimal tagging positions.

RFID Solution

Having surmounted these challenges, Nuance-Watson (HK) and PCCW Solutions deployed Mobile Discovery RFID Display Stations at Sound & Vision Enriching Life stores. This interactive platform enhances customer experience, through its ability to co-ordinate and cross-reference between different products when customers place RFID-tagged mobile phones on the Mobile Discovery RFID Display Station. It enables customers to instantly view complete product details with promotion information, product trailers, and recommendations on matching mobile phone accessories. Customers can also compare up to three different models at a time. This access to information enables staff to make product recommendations and assist customers in making purchase decisions and smart choices when selecting accessories.

The Display Station also serves as a platform through which data about product popularity and trends can be collected for follow-up analysis. With PCCW SENSE middleware, the system currently collects performance data, which represents different mobile phone comparisons made by customers at the Display Station, by reading, filtering and grouping data from tags.

Results

Soft launched in June 2009, the Mobile Discovery RFID Display Station was an immediate success for the Sound & Vision Enriching Life stores, with both outlets reporting a measurable increase in visitors. According to Nuance-Watson (HK), customers said they were attracted by the dynamic graphics, found the kiosk was easy to use and enjoyed being able to compare mobile phone models. Among those surveyed, 94% said the accessories recommendations was the most helpful feature.

The RFID Display Station has provided Nuance-Watson (HK) staff with a new “soft sell” way to induce more customer interactions, enrich customers’ shopping experience and in turn, increase sales. The display is proving especially useful as an extra “selling hand” to capture the attention of time-conscious customers during peak business hours. Sound & Vision Enriching Life stores’ customer satisfaction levels are higher than ever. The station also makes it easy to update product list data off-site, which minimizes disruption to sales.

These encouraging results have motivated Nuance-Watson (HK) to study the feasibility of expanding the RFID Display Station to all its retail outlets at HKIA.

In addition, more features and modules are being considered for the existing stations which may involve the data collected for comparison of point-of-sales and staff-customer interactions to determine the factors that affect purchase patterns and support promotions.

Gold Award

Megascan-M1 RFID Reader

megabyte

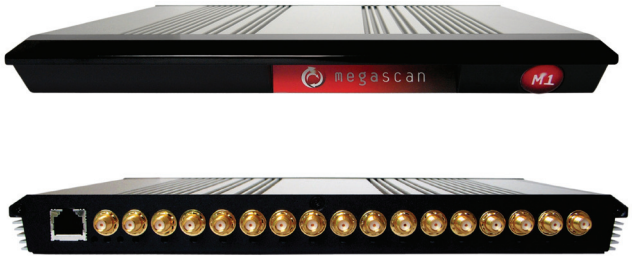
Company Background

Located at the Hong Kong Science Park, Megabyte Limited specializes in developing UHF RFID devices and middleware software including RFID readers, handheld devices and antenna. The company offers RFID technology-based devices to support applications in the retail, healthcare and security industries. Megabyte also acts as a consulting party providing professional services relating to RFID technology to various industries covering a wide range of applications.

Business Challenges

Megabyte has identified a potential market for an effective, compact and affordable RFID reader that has high connectivity and expandability.

The company recognized that some specific RFID applications i.e. “smart shelves” and “smart cabinets” need to connect to multiple antennas. However, the RFID readers available in the market were not suitable for such applications due to a restricted number of ports. The lack of connection ports on a reader requires users to connect multiple RFID readers with different RF multiplexers. This cumbersome process becomes very expensive, restricts the use of RFID applications and makes it impossible to embed such devices inside smart shelves or cabinets.



RFID Solution

Megabyte overcame these challenges by developing a new device integrating both the RFID reader and RF multiplexer. The Megascan-M1 is a slim 16-port RFID reader that has the capacity to be expanded to 32 ports. The Megascan-M1 requires no external power and can operate in POE (Power-Over-Ethernet) mode, offering unlimited connections via local area networks in real time, without sacrificing the integrity and speed of the data.

Furthermore, the Megascan-M1 complies with various open standards and protocols. It is supplied with comprehensive middleware software and a set of API tools allowing software developers to maximize the performance of the reader when developing their own applications.

Results

The slim and compact Megascan-M1 can be used in a wide range of applications such as smart shelves applications in libraries and bookstores and for document control. The reader acts as a central data collection point to provide reliable and real-time information about the location of an item or a piece of merchandise, capturing overall inventory movements and supply chain visibility. Businesses will benefit from improved security, more accurate stock control and improved customer service.

In the retail industry, the Megascan-M1 has the ability to track all merchandise on smart shelves and “smart hangers” within a store. Retailers can then identify customer buying behavior, enhance security, improve store operations and secure inventory control. Data captured by the readers allow retailers to monitor their businesses in real time, reducing the risk of out-of-stock or over stock items. The reader can also be used in the healthcare industry to improve the management, storage, handling, monitoring and control of drugs.

Megabyte has also developed different types of UHF RFID antenna, to work with the Megascan-M1 readers, that can adapt to different environments and operate under diverse conditions, enabling optimal performance for specific industries.

Bronze Award

CS203 Integrated Reader

CONVERGENCE SYSTEMS LIMITED

Company Background

Convergence Systems Limited (CSL) designs and manufactures RFID equipment and components. Founded in 2000, the company produces a broad range of RFID products including RFID readers, antennas, accessories and customized tags which are sold to more than 30 countries worldwide.

Business Challenges

While the benefits of UHF RFID are widely known, CSL identified a number of factors that were preventing wider deployment of this technology. The company observed that most of the reliable, high performance UHF RFID solutions in the market were often considered too expensive for small-scale applications and SMEs. These solutions utilized stationary readers with multiple ports and external antennas. In addition, many potential projects that could benefit from RFID have limited space that cannot accommodate the amount of cabling required, while other projects are in locations where cabling is not practical. CSL also recognized that any new reader should be easy to use and able to withstand harsh environments.

RFID Solution

CSL saw the opportunity to develop a reader to overcome these limitations and therefore expand the market for RFID solutions. The result was the CS203 EPC Class 1 Gen 2 Integrated Reader

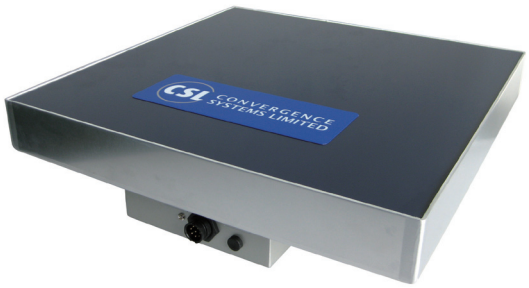
The CS203 has global frequency coverage and can read ranges of up to nine to 13 metres with a read rate of 300 tags per second or 150 tags per second in dense reader mode, when a number of RFID readers are operating in close proximity. Designed to withstand unfavourable environments, the CS203 is waterproof and dustproof (IP68 enclosure) and has military-standard shock and vibration protection (MIL-STD-810). It can also withstand extremes of temperature from -20 to 60 degrees Celsius and 98 per cent non-condensing humidity.

Addressing the need for simple “plug and play” solutions for SMEs, the CS203 is easy to install and configure, with connectors and drivers to popular middleware. It can be powered by either power-over-ethernet (PoE) or an AC/DC adaptor.

Results

The “all weather” CS203 integrated reader will enable more SMEs to consider UHF RFID solutions and broaden the range of projects utilizing RFID. Since CSL launched the CS203 reader in April 2009, they have already been deployed on a number of projects and are undergoing testing on others.

A Japanese bookstore, for example, was able to integrate CS203 readers into its system in less than three weeks. Also in Japan, the CS203 has been installed in a medical company’s library, enabling it to manage its inventory and keep track of books borrowed by employees by placing readers on the library’s exit doors. Future projects to deploy this RFID solution include car park management, and security access/control for office and factory personnel.



Looking to the future CSL plans to offer an optional heater/shroud for extending the operating temperature down to -40 degrees. The company is also working on developing a WiFi interface module for wireless connectivity and options for integrating CS203 with a facial recognition system.

Guangdong Entry/Exit Inspection and Guarantine Bureau of the P.R. China

RFID Traceability Monitoring System for Export Roast Eel

Growing concerns about food safety across the world led the Guangdong Entry/Exit Inspection and Quarantine Bureau of the PRC (GDCIQ) to initiate a two-year pilot project to enhance the monitoring process of the roast eel export industry in 2007. By developing a RFID Traceability Monitoring System (TMS), the bureau aimed to ensure that the source of roast eels is fully traceable in the market, especially when roast eels are exported overseas.

GDCIQ formed a project team that included hardware and equipment provider RFID System & Supplies Ltd (RSS), plus an application system integrator and a software provider. The team developed an RFID system that utilized a hybrid HF and UHF RFID technology at different parts in the supply chain from breeding farm to roast eel processing plants as well as various inspection and control points. Relevant information is relayed to GDCIQ at every step of the way using this Traceability Monitoring System. This visibility allows authorized parties in the supply chain to retrieve real-time information about breeding, inspections and quarantine, as well as logistics and transport information in order to act and make critical business decisions to address market needs.

LEO PAPER GROUP

RFID Pallet Tracking

Leo Paper Group (Hong Kong) Limited is a global printing company with factories in China and sales offices in Europe and the United States. In 2007, the company began deploying an RFID solution at its production site in Heshan, as part of its strategy to increase automation and efficiency, while meeting changing customer needs for smaller, and often more complex orders. Leo Paper Group implemented the RFID total solution across its production, inspection, inventory, cargo loading and invoicing systems, providing the company with a comprehensive real-time mobile management and nearly paperless operations.

The RFID system increased the factory's handling capacity and efficiency, enabling Leo Paper Group to reduce labor costs by 10 to 15%. With real-time information on the location of all products in production and within the warehouse, it is now easy to accurately fulfill even the most complicated customer orders, comprising a large variety of products within one order. This has increased the efficiency of cargo loading – the time taken to load a 40-foot container has been cut from three hours to one hour – with high accuracy and zero errors.

MEGAMAN®
Neonlite Electronic & Lighting (HK) Ltd.

W.A.R.E.

Neonlite Electronic & Lighting (HK) Ltd. manufactures energy-saving lighting products. Driven by its goal to maximize efficiency and minimize waste throughout its operations, Neonlite developed a hybrid RFID and barcode solution called W.A.R.E., which uses simple and low-cost technologies.

W.A.R.E. integrates Neonlite's Warehouse Management System (WMS), Automatic Storage/ Retrieve System (AS/RS), RFID and Enterprises Resources Planning (ERP) into one solution. During the development of W.A.R.E., Neonlite invented durable low-cost RFID tags with extra protection (PE lamination) that are able to withstand the tough environment in its factories.

Deploying RFID into production facilities at its Xiamen, Fujian, China factory, has provided real-time production control, resulting in significant improvements in efficiency as well as increased production capacity and error detection. Neonlite says that it expects to increase revenue by up to 15% and to enjoy a return on investment on the project within two years. While W.A.R.E. focuses on inbound logistics and product control, in future the company hopes to extend RFID applications to outbound logistics tracking from the production floor to the distribution network.

NLSI L K P F C

SCHMIDT®
MAKES LIFE SIMPLE

RFID Asset Tracking System (ATS) in School

Located in Kwun Tong, NLSI Lui Kwok Pat Fong College is a co-educational secondary school, with 1,100 students and 100 teaching and non-teaching staff. Valuable equipment such as notebook computers and laboratory equipment are in high demand and constantly moving around different locations within the school. Using paper-based records for inventory control was proving ineffective; hence the school invited Schmidt & Co., (Hong Kong) Ltd. to provide a more accurate and efficient way to better manage its assets in the long term.

Schmidt developed a simple and flexible RFID Asset Tracking System that utilized EPC Gen2 passive tags for the assets, two handheld UHF RFID readers and a mobile tracking software. Following the deployment of the RFID system, the school administrator reported a sharp decline of 20% in the amount of administration time and manpower spent on inventory control. The RFID system consolidates information that was previously held on loose sheets of paper into one computer database so teachers and support staff are able to find the right tool or equipment whenever it is needed. Furthermore, the school reports that assets are now fully utilized and more likely to be regularly maintained.

Peking Union Medical College Hospital and Schmidt & Co., (Hong Kong) Ltd.

Drug Tracking and Safety System in Hospital

Peking University Medical College Hospital (PUMCH) in Beijing employs almost 4,000 staff and in 2008 handled over 1.85 million outpatient and 48,000 inpatient cases.

PUMCH commissioned Schmidt & Co., (Hong Kong) Ltd. to enhance its drug delivery, administration and inventory control of the controlled/special drugs. In response, Schmidt developed a web-based, EPC compliant RFID system which was rolled out in two phases. The system consists of three main components, an RFID kiosk with a built-in RFID reader, RFID handheld devices and an alert system.

The first phase of the implementation complied with the national mandate by the State Food and Drug Administration. PUMCH described the results of this phase, with pallet or case level RFID tagging, as encouraging. The security of the drug dispensing process has been improved at all stages. Controlled and special drugs are clearly and accurately identified as well as reconciled when pallets or cases of drugs pass through the RFID-enabled dock doors or are scanned by mobile RFID handhelds. The alert system will trigger an alarm (or an email or SMS) when the time taken to deliver medication has exceeded a predefined lead time. This alarm also hints at potential risks of drugs being misplaced, mishandled or stolen.

In phase two, PUMCH will extend the use of RFID to item level tagging on high-value, high risk or special medication for inventory control and drug administration.

PCCW Solutions®

Sales Management System

The Lighting Division of "Philips Electronics Hong Kong Limited" (Philips Lighting) selected PCCW Solutions Limited, the IT and business process outsourcing flagship of PCCW/HKT to develop and implement an RFID-enabled Sales Management System (SMS) for its 1,300 plus authorized retailers in Hong Kong. Prior to the system implementation, Philips Lighting's sales staff had to carry around promotional materials and take orders and record field information manually, which resulted in frequent errors. Meanwhile, Philips Lighting also wanted to gain more sales information such as the relationship between shop visits by sales staff versus sales revenues, and to reduce the lead-time for measuring the effectiveness of marketing campaigns.

The new SMS equipped all sales staff with wireless ultra-mini PCs (UMPCs) and an RFID reader, while RFID identifying tags were installed at all Philips Lighting's authorized retailer shops. After registering their arrival at the store with the RFID reader, sales staff carry out sales activities using the UMPC. Information about the retailer's sales history, past offers, stock levels, segmented promotions and checklists on the UMPC are synchronized with the servers in a centralized back office. Sales staff are now able to present the correct information to retailers, as well as placing orders and checking inventory online.

From Philips Lighting's management's viewpoint, this system can reduce costly errors and provide instant access to valuable real-time sales and marketing information, such as the patterns of high-performing sales staff and customer response to marketing campaigns.

RAKO NXP RFID Curtain

Sew Access (Far East) Ltd specializes in customized EAS, RFID and software development. The company developed an anti-theft RFID system for the growing number of retail clients today who are seeking a cost-effective means to reduce losses, especially in stores with open sides and wide entrances.

Based on technology from RAKO and NXP, Sew Access's RAKO NXP RFID curtain is a UHF antenna combining EAS and RFID functions in one system. It creates an invisible curtain of UHF radio frequency field around a shop's perimeter. All goods in the shop are tagged with RFID labels, which are only deactivated when goods are paid for. If an activated tag passes through the curtain, an alarm will sound and pinpoint the location of the tagged item. Staff can then easily identify exactly which item has not been paid for or deactivated. The solution has already been installed at stores in Germany, Austria and Dubai.

Strategic Systems Consultants Ltd.

Real Time Locating System Adds Face Recognition for Holistic Security and T&A Control

Philips Electronics HK Transport & Storage (Philips T&S) appointed Strategic Systems Consultants Limited (SSC), a specialist systems integrator, to commission a technology improvement pilot project to test whether leading Automatic Data Capture (ADC) technologies of Real Time Locating System (RTLS) and Facial Recognition (FR) could improve efficiency, visibility and security at a Philips distribution and packaging centre, where the shared warehouse facilities and workforce are outsourced to a third party logistics service provider (3PL).

Following the RTLS deployment, authorized 3PL warehouse employees wear active RFID tags inside the restricted Philips zones. The RTLS records their presence and deduces their absence so the system provides security access control, time and attendance records and all individuals' movement histories. If any person enters the restricted zones without a tag, the dual RLTS and FR system picks up their faces, which are compared against an authorization database. SSC also developed an escalation function to send images and messages to the patrol guards' wireless PDAs for further action.

The dual-technology pilot achieved 100% accuracy, which has reinforced Philips' decision to use ADC technologies to improve 3PL outsourcing management, by reducing labor costs, providing operational visibility, and aligning better with the increasing compliance requirements of international supply chain security standards.

HKC 香港通訊 TAN CHONG INTERNATIONAL

RFID Car Inventory Management System

Tan Chong AutoClinic (Tan Chong), a car storage warehouse in Singapore, wanted to leverage RFID technology to automate and improve the traceability of cars at its car storage warehouse. Hong Kong Communications Co., Ltd. was appointed to develop a hybrid RFID system for Tan Chong that features a hybrid dual band RFID tag (Active and Passive UHF) to track and trace the cars within its warehouse efficiently and cost effectively.

Each car and every parking lot in the Tan Chong warehouse are now tagged and traceable since active RFID technology enables tag-to-tag communications to provide lot level accuracy for all the cars in the warehouse. The time taken to record incoming cars or to find an available parking lot has been reduced by up to 90%, resulting in additional savings in petrol consumption and reduced exhaust emissions. Staff are freed from inventory checking and stock takes, so they are able to focus on improving customer service quality. Tan Chong reports that it now delivers more cars each day and that customers benefit from shorter waiting times when collecting their cars. Looking ahead, the company plans to roll out the RFID system at its car storage warehouses throughout the region.

RFID Library System

The University of Hong Kong Libraries (HKUL) installed an RFID system in the Main Library to provide more user-friendly service and improve faculty and student access to information resources. HKUL was also keen to reduce the time-consuming and repetitive aspects of library staff's work in order to allow more time to provide skilled assistance to academics and students. HKUL also hoped the RFID solution could improve inventory control and reduce the number of missing or mis-shelved books.

HKUL worked with E-Business Solutions Limited (formerly known as ETI Consulting Limited) to develop an HF RFID system. This is, by far, the largest RFID installation at university library, with 1.3 million items tagged. Starting from September 2008, staff stations, self-check stations, handheld shelf management systems have been deployed at the library.

According to HKUL, students and university staff have responded well to the RFID system and 24% of lending activities were done through the self-check machines, just three months after implementation. The number of books borrowed has increased by around 7%. Library staff at the circulation counter is able to process multiple books at once, reducing queuing time for patrons. The self-check stations enabled HKUL to open the Main Library up to 24 hours daily during exam time without requiring skilled staff to work additional hours.

ZymFactory RFID Real Time Production Management System

Zymmetry Group provides sourcing and manufacturing solutions that aim to improve efficiency, increase control and enable flexible analysis throughout the apparel supply chain. Zymmetry identified that apparel brands and retailers typically gathered data from suppliers across the supply chain in multiple formats, which were difficult to consolidate and could not provide accurate and up-to-date order status information to enable key decisions to be made on time.

Responding to these challenges, Zymmetry developed ZymFactory, an RFID-based factory floor tracking and monitoring system that helps manufacturers improve the efficiency of the entire production process while enabling the real-time data captured to be fed to the brands and retailers automatically. Using low frequency RFID technology and low-cost reusable RFID cards, ZymFactory captures critical data throughout the production process in real time. Small RFID readers on each work station machine track work-in-progress constantly and also provide information about workers' performance.

ZymFactory enables managers to identify and resolve production bottlenecks in real-time. It also cuts the time spent inputting data and reduces the volume of communications between merchandisers and factories. According to Zymmetry, manufacturers using ZymFactory have experienced productivity improvements, payroll savings, wastage reduction and shorter production cycle times.

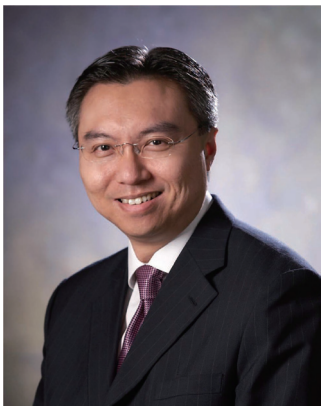
I would like to congratulate GS1 in organising this meaningful event I am very pleased to see so many high quality and innovative project ideas from our students in Hong Kong. I wish to see more of this in future and encourage our students to participate in this competition next year.

Panel Chair
Mr. Anthony S. K. WONG, S.B.S., J.P.
President, China and South East Asia
One Laptop Per Child (OLPC) Asia Pacific

RFID is an innovative technology with many interesting and useful applications. This competition is important because it allows students to explore both the technology and applications of RFID. The students' works and presentations are impressive. Indeed, some projects show much potential for further development.

Dr. Henry CHAN
Chair
IEEE Hong Kong Section Computer Chapter

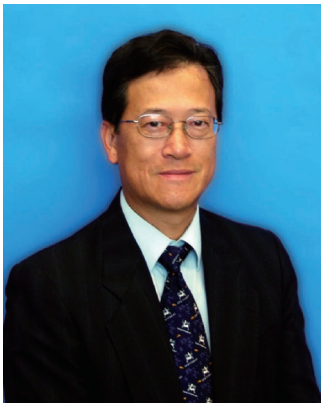
I am pleased to have the opportunity to witness first hand those excellent projects at the U21 RFID Awards final judging. The students have thoroughly demonstrated their innovativeness, hard work and passion in ICT. I have high confidence that many of these projects will be developed into RFID applications or products that generate significant value to business and lifestyle. Congratulations, winners and contestants, for your great accomplishments!



Mr. Sunny W. K. LEE
President
Hong Kong Computer Society

It has been a challenging and immensely enjoyable experience to be one of the judges of the U-21 RFID Awards. I am really excited to see so many original and creative works from students of local universities though selecting the winners from these high-quality submissions is not an easy task. Youth is the pillar of the future and their passion for innovation is the driving force for creating a better future for society. I am confident that the Awards will continue to help nurture more young talent for the future development of RFID.

Mr. K. K. SUEN
Chief Architect and Principal Consultant
GS1 Hong Kong



I found it a big challenge to decide the winners of the U-21 RFID Awards as all entries were presented with high standard in terms of technical and business excellence. I am fully confident Hong Kong will be a leader in the development and application of the cutting-edge RFID technology with the dedicated contributions from these University students and the industry as a whole.

Mr. Paul WU
Senior Manager, Electrical, Mechanical & Electronic
Airport Authority Hong Kong

Congratulations to all the students who have submitted their projects to the U-21 RFID Awards. These projects demonstrated the innovations and technological expertise of the Hong Kong students. The students have formulated designs to enhance business productivity, ensure product safety and improve the quality of everyday life. They have also developed sophisticated hardware and software prototypes to demonstrate the concepts. Best wishes to all of them in their future careers.

Prof. OnChing YUE
Science Advisor
Innovation and Technology Commission, HKSAR Government

Postgraduate Stream

★ Gold Award

A Single-Chip UHF RFID Reader in 0.18um CMOS Process
Students: Huang Huang, Wang Peng Chong, Zheng Shi Yuan
Project Supervisor: Dr. Howard Cam Luong
Department of Electronic and Computer Engineering,
The Hong Kong University of Science and Technology

★ Silver Award

Smart Gateway for RFID-enabled Smart Objects
Students: Ho Kin Wing, Qu Ting
Project Supervisor: Prof. George Q. Huang
Department of Industrial and Manufacturing Systems Engineering,
The University of Hong Kong

Undergraduate Stream

★ Gold Award

A Smart RFID System for Logistics Application
Students: Hung Wing Hung, Lam Ho
Project Supervisor: Prof Wu Ke-Li
Department of Electronic Engineering,
The Chinese University of Hong Kong

RFID/SMS-based Flight Information and Advertisements System
Student: Lau Hiu Fung
Project Supervisor: Dr. Henry Chan
Department of Computing,
The Hong Kong Polytechnic University

★ Silver Award

An RFID-based Drug Management System for Medical Organizations
Students:Cheung Wai Lan, Leung Ka Man, Ng Suk Yee, Wong Chi Kit
Project Supervisor: Prof. Kwok Siu Keung & Mr. Ting Siu Lun
Department of Industrial and Systems Engineering,
The Hong Kong Polytechnic University

Certificate of Merits

1. **Intelligent Fridge with RFID**
   Student: Chan Ching Man
   Project Supervisor: Prof. Lee Chan Hee
   Department of Computer Science,
   City University of Hong Kong

2. **Development of the RFID-based Event Management System**
   Students: Chan Hon Lun, Lau Chun Wing, Leung Ho Yee
   Project Supervisor: Mr. Chan Pui Yuk
   Division of Commerce,
   Community College of City University

3. **School Attendance System**
   Students: Chan Wai Lung, Heung Kwai Hing, Leung Yue Man, Ng Ting Fai, Yiu Kar Ying
   Project Supervisor: Mr. Dennis Liu Yan Wang
   College of Life Sciences & Technology,
   HKU SPACE Community College

4. **Application of RFID Enabling Technology in Supply Chain Management**
   Students: Kwan Ping Yuen, Lau Chi Hung, So Tsz Fai, Tang Sai Kui
   Project Supervisor: Prof. Wilson Cho Wai Shing
   Department of Information & Communications Technology,
   Hong Kong Institute of Vocational Education (Tsing Yi)

5. **Intelligent Information Provider**
   Students: Cheung Tsz Hung, Chiu Chi Hang, Chu Hau Shing, Lam Pak Chuen Burton, Zhao Chu
   Project Supervisor: Dr. Henry Chan
   Department of Computing,
   The Hong Kong Polytechnic University

6. **Airport Passenger Tracking System Using RFID and SMS**
   Students: Choi Hin Kwong, Liu Yudi, Wong Cho Tak, Yang Fan
   Project Supervisor: Dr. Henry Chan
   Department of Computing,
   The Hong Kong Polytechnic University

7. **All Time Guard: A Promising New RFID Application**
   Students: Dai Wang Yuan, Ho Sin Man Silvia, Ren Bo Yuan, Shang Guang Zhi, Shi Yun Fei, Wu Di
   Project Supervisor: Dr. Anthony Pang King Wah
   Department of Industrial and Systems Engineering & Department of Logistics and Maritime Studies,
   The Hong Kong Polytechnic University

8. **A System-On-Chip Passive EPC Class-1, Generation-2 UHF RFID Tag with Embedded Temperature Sensor**
   Students: Law Man Kay, Lee Man Chiu, Ling Yun Xiao, Ng Kwok Ping, Yi, Jun, Yin Jun
   Project Supervisor: Dr. Howard Cam Luong
   Department of Electronic and Computer Engineering,
   The Hong Kong University of Science and Technology

9. **RFID and Toys Traceability**
   Students: Chan Yan Kit, Wong Calvin Ka Wan, Wong Shing Yin, Yau Tak Ming
   Project Supervisor: Prof. Mitchell M. Tseng
   Department of Industrial Engineering and Logistics Management,
   The Hong Kong University of Science and Technology

10. **RFID-enabled Wireless Product Assembly Line**
    Students: Ho Kin Wing, Qin Wei, Qu Ting, Lu Haili, Luo Hao
    Project Supervisor: Prof. George Q. Huang
    Department of Industrial and Manufacturing Systems Engineering,
    The University of Hong Kong

Postgraduate Stream

★ Gold Award

香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

Department of Electronic & Computer Engineering
電子及計算機工程學系

A Single-Chip UHF RFID Reader in 0.18um CMOS Process
Students: Huang Huang, Wang Peng Chong, Zheng Shi Yuan
Project Supervisor: Dr. Howard Cam Luong
Department of Electronic and Computer Engineering,
The Hong Kong University of Science and Technology

A research team from the Department of Electronic and Computer Engineering at the Hong Kong University of Science and Technology has successfully designed a Single-Chip UHF RFID Reader in 0.18um CMOS Process.

The objective of the project was to develop and demonstrate an integrated UHF RFID reader for passive RFID systems that would offer users high performance for a lower cost and use less power than similar readers in the market. The team also wanted the reader needed to be highly reconfigurable for Bluetooth & WLAN interface capability and power optimization for multiple RFID protocols (EPC, C1G2, ISO-18000, Chinese RFID standard).

Two main challenges were identified by the team. Firstly, there is self-interference caused by the RFID reader simultaneously transmitting and receiving at the same carrier frequency. Secondly, unlike ordinary communications systems, the uplink and downlink in a multi-protocol RFID reader system is asymmetrical in terms of data encoding rate and modulation scheme. Both the uplink and downlink features a variable data rate and the signal bandwidth would be varied as a result of this.

The team successfully overcame these challenges and achieved their objective, to create the Single-Chip UHF RFID Reader in 0.18um CMOS Process. This reader integrates all the building blocks including RF transceiver, analog and digital baseband for low cost and low power, and offers a high level of integration. These features make the reader very suitable for mobile handheld UHF RFID reader applications.

★ Silver Award

Smart Gateway for RFID-enabled Smart Objects
Students: Ho Kin Wing, Qu Ting
Project Supervisor: Prof. George Q. Huang
Department of Industrial and Manufacturing Systems Engineering,
The University of Hong Kong

A research team from The University of Hong Kong's (HKU) Department of Industrial and Manufacturing Systems Engineering noted that while manufacturers are keen to implement RFID technology, in practice enterprises found it difficult to integrate two or more types of RFID and Auto-ID devices into existing processes to collect real-time information. In addition, many enterprises are not able to process various types of real-time information easily and therefore cannot use this information for decision-making on the shop floor operations.

Having identified requirements, the team set itself the following objectives: to develop an easy-to-deploy and simple-to-use "smart gateway" to capture different kinds of real-time information; to develop a uniform software model to wrap the different types of Auto-ID devices as plug-and-play smart objects; and to develop a set of service tools to define and configure the involved Auto-ID devices to capture real-time information according to the specific work process.

These objectives were met by the Smart Gateway for RFID-enabled Smart Objects –a flexible, reconfigurable, interoperable and scalable platform capable of managing heterogeneous devices within a variety of manufacturing enterprises.

The web-based Smart Gateway enables enterprises to access information through an easy-to-use graphical user interface via browsers. The Smart Gateway can be deployed anywhere and Auto-ID devices can be added or removed as required at anytime. By improving the flow of real-time data collection, shop floor visibility is increased and production bottlenecks are reduced.

According to the HKU team, the Smart Gateway has lowered the technological threshold for implementing RFID and several leading companies are using the Smart Gateway as a core enabling technology in real-time manufacturing execution systems.

Undergraduate Stream

★ Gold Award

香 港 中 文 大 學
THE CHINESE UNIVERSITY OF HONG KONG

A Smart RFID System for Logistics Application
Students: Hung Wing Hung, Lam Ho
Project Supervisor: Prof Wu Ke-Li
Department of Electronic Engineering,
The Chinese University of Hong Kong

Two students from the Department of Electronic Engineering at The Chinese University of Hong Kong have designed an RFID system that could help logistics providers improve the quality of their service and provide greater assurance to customers.

During transportation, goods in containers are not easily accessed and checking the contents of containers is time consuming and labour intensive. However, goods are occasionally damaged or stolen, or simply deteriorate because of undetected changes in temperature and humidity. To reduce these risks, the students designed an RFID system that monitors the condition of goods in containers, by detecting any changes of environment without the need to unpack the goods.

The active RFID system operates at 2.4 GHz and comprises a reader controller, multiple readers and multiple sensor-enabled tags. Three sensors monitoring temperature, humidity and vibration are integrated into the tags that are affixed to goods and cargo. Information about the immediate environment of the tagged cargo is transmitted from the sensors to a wireless reader up to 80 metres away. The vibration sensor provides extra assurance when shipping fragile goods, and it can also be used to detect any unauthorized attempts to access cargo. All containers within a shipment can be checked quickly, easily and continuously throughout the journey.

In addition, the Chinese University team's RFID system features a new anti-collision algorithm, which is 15% more efficient than DFSA (Dynamic Frame Slot Aloha) because it reduces both the transaction time when dealing with a large number of tags and the power consumption. The new power saving protocol introduced by the team can significantly prolong the life of a tag and reduce maintenance costs.

★ Gold Award

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學
DEPARTMENT OF COMPUTING
電子計算學系

RFID/SMS-based Flight Information and Advertisements System
Student: Lau Hiu Fung
Project Supervisor: Dr. Henry Chan
Department of Computing,
The Hong Kong Polytechnic University

Lau Hiu Fung of The Hong Kong Polytechnic University's Department of Computing has designed an RFID/SMS-based Flight Information and Advertisements System to provide customized information to passengers at an airport. Having reviewed the existing information available for passengers at airports, Lau identified an opportunity to enhance airport services with greater interactivity, while leveraging off existing uses of RFID and other technology, for the benefit of both passengers, airport operators and airport retailers.

The objectives of Lau's RFID project were: to provide customized flight information to passengers; guide passengers to their boarding gates; to remind passengers of their boarding time; and to provide dynamic advertisements tailored to the interests of passengers.

To provide this large amount of information, Lau designed five systems: an RFID Encoding System; an RFID Identification and Decoding System; an RFID-based Flight Information Query System; and an RFID-based Shop Advertisement and Suggestion System. The fifth system, the SMS-based Flight Information Query and Notification System, does not involve RFID.

In Lau's design, each hand carry luggage is tagged with an RFID tag at check-in, containing basic information about their flights, age, gender and interests. His core system featuring an RFID reader and antenna, reads these tags and displays passenger-specific flight information on a screen whenever a passenger is within range of the system. At the same time, the screen shows advertisements targeted towards the passenger's interests based on the information stored in the RFID tag. When there is a group of passengers, advertisements can be selected (e.g., using genetic algorithms) with the aim of satisfying the overall interests. A separate system will notify passengers by SMS about changes in flight schedules or boarding gates and will issue reminders about boarding times.

★ Silver Award

The Hong Kong Polytechnic University 香港理工大學

Department of Industrial and Systems Engineering 工業及系統工程學系

An RFID-based Drug Management System for Medical Organizations

Students: Cheung Wai Lan, Leung Ka Man, Ng Suk Yee, Wong Chi Kit
Project Supervisor: Prof. Kwok Siu Keung & Mr. Ting Siu Lun
Department of Industrial and Systems Engineering,
The Hong Kong Polytechnic University

A team of students from the Department of Industrial and Systems Engineering at The Hong Kong Polytechnic University aims to improve drug safety and patient safety in hospitals and clinics with their RFID-based Drug Management System (DMS) for Medical Organizations.

After studying a number of recent cases involving medication errors, The Hong Kong Polytechnic University team observed that most mistakes occurred during the drug management processes. The researchers identified three common issues in current drug management practices: many drugs look alike and are easily confused; expiry dates of drugs are sometimes overlooked; and information about possibly dangerous drug interactions and contraindications is not always accessible to medical professionals.

The team devised an RFID-based DMS that modifies clinic operations by tracking drugs throughout the replenishing and dispensing processes. Drugs are tagged and checked when they arrive at the clinic and from then on they are automatically identified by RFID technology rather than by eye, and tracked every time they are transferred from one container to another.

The DMS also detects whether the drugs are put in the correct container, supplies users with real-time drug information and issues alerts about drug expiry dates. Special features such as images of drugs plus information on contraindications and interaction alerts raise users' awareness of individual drug's characteristics and potential problems.

Furthermore, this RFID-based DMS applies an international standard and a global unique serial number (i.e. Electronic Product Code) to identify drugs at item level. In addition to improving drug safety and patient safety, the team believes that the drug movement within the medical organizations could be facilitated.

Acknowledgement

Co-organizers:

LSCM Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies 香港物流及供應鏈管理應用技術研發中心

HONG KONG RFID CENTRE (SCIC)

Hong Kong 香港科技園 Science & Technology Parks

Supporting Organizations:

CMA Testing and Certification Laboratories 廠商會檢定中心

香港工業總會 FHKI Federation of Hong Kong Industries

HONG KONG COMPUTER SOCIETY

HONG KONG FOOD COUNCIL 香港食品委員會

HKGCC Hong Kong General Chamber of Commerce 香港總商會 1861

ITJC 香港資訊科技聯會

HONG KONG LOGISTICS ASSOCIATION 香港物流協會

Hong Kong Productivity Council 香港生產力促進局

HONG KONG RETAIL MANAGEMENT ASSOCIATION 香港零售管理協會

RTIA 香港零售科技商會

WTIA 香港無線科技商會

HAFFA Hong Kong Association of Freight Forwarding & Logistics Limited 香港貨運物流業協會

ISIA 資訊及軟件業商會 Information and Software Industry Association

創新科技署 Innovation and Technology Commission

iProA Internet Professional Association 互聯網專業協會

austcham hong kong & macau 香港及澳門澳洲商會

The Canadian Chamber of Commerce in Hong Kong

CHKLI 香港物流商會

香港運輸物流學會 The Chartered Institute of Logistics & Transport Hong Kong

香港中華總商會 The Chinese General Chamber of Commerce

香港中華廠商聯合會 The Chinese Manufacturers' Association of Hong Kong

THE HONG KONG EXPORTERS' ASSOCIATION 香港出口商會

香港付貨人委員會 THE HONG KONG SHIPPERS' COUNCIL

New Zealand Chamber of Commerce in Hong Kong

Special Thanks to the Hong Kong RFID Awards 2009 Steering Committee

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Hong Kong Science & Technology Parks Corporation
Megasoft Limited
PCCW Solutions Limited
Schmidt & Co., (Hong Kong) Limited

2009

HK RFID Awards

GS1 Hong Kong

香港貨品編碼協會
22/F, OTB Building, 160 Gloucester Road, Wanchai, Hong Kong
香港灣仔告士打道160號海外信託銀行大廈22樓
Tel 電話 : (852) 2861 2819
Fax 傳真 : (852) 2861 2423
Email 電郵 : info@gs1hk.org

4 891668 100388