

 5th
HK RFID
Awards
2012 香港無線射頻識別大獎
LEADERS IN BUSINESS EXCELLENCE CREATION

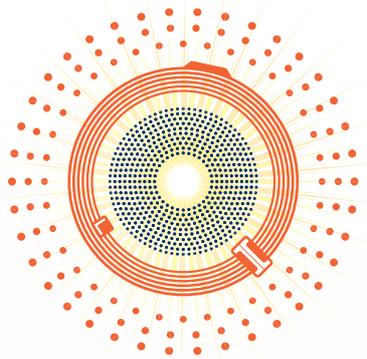


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Presentation Ceremony at GS1 Hong Kong Supply Chain Management Excellence Summit, 9 November, 2012

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Welcome Message



Entering its 5th Year Anniversary, the Hong Kong RFID Awards has received over 150 entries since its inception in 2008 and has been recognized as the HKSAR's premier RFID award. The Hong Kong RFID Awards were first established by GS1 Hong Kong to honor and recognize enterprises, which have successfully brought EPC/RFID technologies into their business operations as a pioneer to enhance business efficiency and cost reduction in Hong Kong and the Pearl River Delta region.



In the past few years, the Hong Kong RFID Awards were well received with nominations coming from manufacturers, healthcare professionals, logistics services providers, global retailers, public services and utilities, academic institutions as well as leading technology providers.

This year, the U-21 Industry Facilitation Program was newly launched to nurture the RFID young talents of HK U-21 RFID Awards and connect them with the industry experts. Mentors shared their experience, insights and advice with the students to develop their projects. Through the U-21 Mentorship program, the innovative and enthusiasm students were inspired to create new insights such as applications to assist visually impaired and disabled people in their daily lives.

The Hong Kong RFID Awards also collaborated with Guangdong RFID Awards 2012 as well as HK-TW EPC/RFID Academia Awards 2012 jointly organized by GS1 Hong Kong, Guangdong RFID Technology Service Centre and GS1 Taiwan respectively. Winners of Hong Kong RFID Awards 2012 were nominated to participate in the Guangdong-Hong Kong RFID Awards 2012 and Hong Kong-Taiwan EPC/RFID Academia Awards 2012. This collaboration enhances the cross-border interaction and cooperation on RFID application and development. In additional, creative young talent in Hong Kong and Taiwan were recognized to develop new EPC/RFID technology promises for enterprises and our daily lives.

I would like to convey my congratulations to all winners for their devotion and creativity to contribute in the RFID technology. We believe the winners will lead the new concepts to create business excellence in the near future.

Ms. Anna Lin, J.P.
Chief Executive
GS1 Hong Kong



Congratulatory Message



It is my great pleasure in extending my congratulations to the GS1 Hong Kong of its fifth Hong Kong RFID Awards. I am happy to see the event successfully fostering the development of new RFID products and services in our daily lives.

This year, the candidates of RFID Business Awards have shown their passion to make innovative use of the emerging RFID technology by displaying a high standard of entries, which would encourage the industries as a whole in capturing opportunities and surviving challenges.

I am also delighted to share our young talents' creativity and outstanding achievements in the U-21 RFID Awards. This platform has provided our hopefuls with opportunities to pursue their lifelong career in the field of innovation and technology in the future.

Being identified as one of the six growth industries in Hong Kong, innovation and technology plays a crucial role in our long-term development. The Government is committed to providing an environment conducive to the development of high value-added and high technology industries through a programme of infrastructural and funding support.

With our concerted efforts and continued support from industry, academia and research sector, we believe that Hong Kong can become a regional hub for innovation and technology.

Lastly, I would like to congratulate GS1 Hong Kong on organising such a successful event and I look forward to working closely with GS1 Hong Kong to enhance the community awareness of the importance of RFID development.

Ms. Janet Wong, J.P.
Commissioner for Innovation and Technology
HKSAR Government

Congratulatory Messages

發明日新月異
科技屢創先河



Mr. Simon K.Y. Wong
Chief Executive Officer,
Hong Kong R&D Centre for Logistics and
Supply Chain Management Enabling Technologies

薈萃業界精英 推動科研創新
耕耘五載不懈 見證非凡成就



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



It is my great honor to extend congratulations to all the winners of the 5th Hong Kong RFID Awards, and I speak not only for myself but also on behalf of the Communications Association of Hong Kong (CAHK), as the organization's chairman. Our industry is very proud of the achievements of every one of our participants, because it is through independent efforts that we will collectively move forward and ensure progress for Hong Kong's ICT environment.

The recognition of this year's winners is best considered within its proper context. By that I mean, it is very impressive that Hong Kong's ICT participants are making world-class breakthroughs, even within the scope of a fast-paced global industry where we see new developments almost on a weekly or even daily basis from all over the world.

Similarly, we must recollect that Hong Kong's ICT industry, and by extension its participants, remain foremost in the world, with our city being a leading light in ICT infrastructure, innovation and adoption. We are top in the world, when it comes to Internet speeds, connectivity penetration, and user bandwidth. For all these achievements, we should be very proud. Industry accolades, such as the Hong Kong RFID Awards, are crucial to encouraging our continued ICT progression and leadership. They inspire in all of us the motivation to pursue excellence, to reach high quality of ideas and execution.

As the world continues moving forward in the great technological transformation that we have been experiencing within at least the past three decades, I believe that we can also look forward to more examples of spirited breakthrough as has been demonstrated by this year's winners of the 5th Hong Kong RFID Awards.

Again, I congratulate the winners, for your success is ultimately Hong Kong's success.

Mr. Stephen Ho
Chairman
Communications Association of Hong Kong



Since its inception, GS1 Hong Kong has been dedicating its efforts to help companies in Hong Kong and its neighbouring region to improve their supply chain efficiency, and notably in recent years in promoting and recognising innovative applications involving RFID technology. In pursuit of this objective, among the various initiatives is the GS1 HK RFID Award which recognises the best and most innovative use of RFID technology in our business community as well as relevant tertiary students' projects. I am honoured and proud to be one of the judges in this premium Award, and I wish to extend my congratulations to GS1 on this occasion of the Award's 5th anniversary.

Mr. Stephen Lau J.P.
President
Hong Kong Computer Society (HKCS)

Congratulatory Messages



Established by GS1 Hong Kong since 2008, the Hong Kong RFID Awards Scheme has been highly regarded by industry. RFID as a technology is being developed and applied with a view to increasing efficiency in logistics and supply chain management. GS1 Hong Kong should be commended for its remarkable contribution in driving forward RFID development and application. The Awards Scheme has attracted a large number of well-established firms participating in the Scheme to compete for the awards.

As an organization supporting the Scheme, Hong Kong Logistics Association (HKLA) is glad to extend its congratulations to the winners that deserve the honour to be so awarded. It is indeed the fervent wish of HKLA that RFID would be widely applied to strengthen the competitiveness of the logistics industry in Hong Kong.

Mr. Stephen Cheng
President
Hong Kong Logistics Association



I would like to congratulate GS1 Hong Kong for organizing the fifth Hong Kong RFID Awards. It is commendable that the Awards have not only offered a platform for promoting RFID applications, but more importantly, an occasion to recognize the innovation demonstrated by our IT professionals in bridging RFID technology and business operations. For the awardees in particular, I would like to express my most sincere gratitude for your dedication and contribution in upholding Hong Kong as the regional hub for trade and information technology.

Ms. Caroline Mak
Chairman
Hong Kong Retail Management Association



It gives me great delight to congratulate GS1 Hong Kong for celebrating the 5th Anniversary of the Hong Kong RFID Awards. This premier event represents an important milestone for boosting the adoption of RFID technology in Hong Kong. For those local companies and individuals who have demonstrated innovation in harnessing the use of RFID technology, they are able to obtain third party assessment and industry recognition of their solutions through participating in this award competition. Thanks to the dedicated efforts of GS1 Hong Kong and its professional team. This event has offered a unique opportunity for the industry to recognize the best adoption practices and to allow the participants to share knowledge among themselves.

On this special occasion, I congratulate GS1 Hong Kong again on its accomplishments, and sincerely wish the Hong Kong RFID Awards continued success in the years to come.

Mr P.M. Lai
Chairman

Hong Kong Retail Technology Industry Association (RTIA)



I am pleased to extend my hearty congratulations to GS1 Hong Kong and the 5th Anniversary of the Hong Kong RFID Awards. Through the notable devotion of GS1 Hong Kong in the past five years, I am glad that the Hong Kong RFID Awards has been established as the premier and widely recognized award of the industry.

Hong Kong Wireless Technology Industry Association (WTIA) will continue to support the meaningful Awards which facilitates the development of the RFID technology by recognizing outstanding enterprises in the industry!

Mr. To Cheung
Chairman

Hong Kong Wireless Technology Industry Association (WTIA)

Congratulatory Messages



It gives me great pleasure to join the celebration of the 5th Anniversary of Hong Kong RFID Awards.

RFID has been evolving in many directions. It plays an important role in helping logistics service providers gain visibility into the global supply chain, increase efficiency by optimizing business processes and automating asset and inventory management.

With the hard work and dedication of GS1 Hong Kong, the Hong Kong RFID Awards has grown in its recognition over the past years. On its 5th Anniversary, I would like to warmly congratulate the Hong Kong RFID Awards on its contribution to the shipping public encouraging the adoption of RFID technology and fostering the development of new EPC/RFID products and services in Hong Kong.

Being a longstanding industry partner, HAFFA will continue to treasure our amicable relationship and join hands with GS1 Hong Kong to empower the core competences and competitiveness for Hong Kong's freight & logistics industry.

Ir. Dr. Paul Tsui
Chairman

Hongkong Association of Freight Forwarding & Logistics (HAFFA)



Stepping into the 5th Anniversary of Hong Kong RFID Awards, this remarkable year lightened the impressive success of RFID technology development in Hong Kong. The award gives the companies the recognition of their innovative and excellence use of RFID technology. The efficient application of RFID in business has strengthened the competitiveness of Hong Kong companies with the world. We trust that the path for RFID development will continually be on a promising growth with innovative ideas and breakthroughs in the coming future.

Prof. Steve Lo Wong Fung, J.P.
Chairman

The Chamber of Hong Kong Logistics Industry Ltd.



RFID was invented half a century ago, and its fast development in the last 30 years has enabled companies to apply it in numerous flexible ways with excellent precision and efficiency. A few years ago, people usually thought of RFID only in the supply chain sense; but today, RFID is being used in many more ways we wouldn't have imagined. The initiative of the Hong Kong RFID Awards has been playing an important role in giving invaluable support and stimulation to industrial research and to accelerate creativity of the younger generation. The Chartered Institute of Logistics and Transport in Hong Kong is looking forward to the new deployment of the technology by the winners of this year's RFID Awards and U-21 RFID Awards.

Prof. Becky P. Y. Loo
President

The Chartered Institute of Logistics and Transport in Hong Kong



On behalf of the Hong Kong Institution of Engineers, it is my pleasure to offer my heartfelt congratulations to the Hong Kong RFID Awards 2012 and the awardees on the occasion of the Award Presentation Ceremony.

Since its launching in 2008, the Awards have promoted the recognition to enterprises which have successfully implemented EPC/RFID technology into their business operations. I am particularly delighted to see that the Awards provide the opportunities for the participants to demonstrate the innovative application of EPC/RFID technology to improve our quality of living.

May I wish the Award Presentation Ceremony a remarkable event for all participants who have made commendable achievement in the development and implementation of EPC/RFID technology.

Ir. Prof. Choi Kin Kuen
President

The Hong Kong Institution of Engineers



About the Hong Kong RFID Awards & U-21 RFID Awards

HONG KONG RFID AWARDS



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 Electronic Product Code (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 principal objectives of Hong Kong RFID Awards are to:

- 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.

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

The Objectives

- Foster collaboration between industry and academia to develop new EPC/RFID applications and technological products with market potential
- Nurture a new generation of technical professionals with creativity and business acumen
- Stimulate market demand for innovative EPC/RFID applications and products
- Inspire new insights in the industry with the innovativeness and enthusiasm of tertiary students

The Awards Categories

1. 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.

2. 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.

3. 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.

The Hong Kong U-21 RFID Awards Categories

1. Best EPC/RFID Concept

The winner of this award will demonstrate a high level of originality and creativity in adopting EPC/RFID technologies attempting to address a well-defined business issue or daily lives' problem, which has foreseeable market potentials.

2. Most Innovative EPC/RFID Application

The winner of this award will be an EPC/RFID application, integration or product, which is innovative, possesses distinctive features, complies with global RFID standards, and may also address market needs. Heavy weights will be allocated for projects developed through partnership between an enterprise and an academic institution.

HONG KONG U-21 RFID AWARDS





Hong Kong U-21 RFID Award Industry Facilitation Program

Hong Kong U-21 RFID Award Industry Facilitation Program

The Hong Kong U-21 RFID Award Industry Facilitation Program is introduced in 2012 with distinguished RFID technology experts, professionals and pioneers who share industry implementation experience and provide insights and advice to the Hong Kong U-21 RFID Awards participating teams that facilitate idea generation and innovative applications. Under this program, participating young talents are entitled to receive support and advice through U-21 RFID Award Mentorship Program, RFID Hardware Support and Ideas Bank.



Hong Kong U-21 RFID Award Meet the Bosses Program

Every year, upon completion of the Hong Kong U-21 RFID Award Program, young talents will be granted a unique opportunity to demonstrate their innovative ideas and success to the industry leaders and RFID solution organizations through the "Meet the Bosses Program".

Special thanks to the Industry Partners of the Hong Kong U-21 RFID Award Industry Facilitation Program





Remarkable Memories



Establishment of the Hong Kong U-21 RFID Awards



Establishment of the Hong Kong RFID Awards



Hong Kong RFID Awards branded under Hong Kong Smart City+ Awards Program of World Expo 2010 Shanghai

2008

2009

2010

2012 Event Review



Hong Kong U-21 winners participated in the InnoCarnival organized by the Innovation and Technology Commission (ITC) of HKSAR Government.



RFID Awards Industry Success Story & Innovative Young Talents Projects Sharing

Event Review



Introduction of Hong Kong U-21 RFID Award Industry Facilitation Program



Introduction of Guangdong-Hong Kong RFID Awards
粵港無線射頻識別大獎



Introduction of Hong Kong-Taiwan EPC / RFID Academia Awards
香港-台灣 大專學界EPC / RFID大獎

2011

2012



Judging panels & assessment days



5th Anniversary By Numbers

HONG KONG RFID AWARDS & HONG KONG U-21 RFID AWARDS

85

Business project
entries



46

Technologies
companies



36

Gold awards
granted



29

Silver awards
granted



47 Printed media
coverage



1,100,000
Readership

21

Bronze awards
granted



154

Project entries

24

Professional
judging panelists



40%+

Students came from
non-technology
related studies



118

Certificate of merit
granted



79

Organizations participated



12

Projects received cross-border recognitions



33

End-user companies



241

Students participated



69

U-21 project entries



31

Departments of tertiary institutes involved



78

Assessment hours spent



3,215

Participants attended award-related activities



Disneyland Resort
Feb. 2012



43

U-21 supervisors



6

U-21 mentors



11

Industry sectors involved



4,837 visits



120+ likes



Message from the Judging Panel



2012 sees RFID, this bubbling technology over a decade or more, reaching a boiling point soon. All the major players in the industry are calling for it and suddenly, people who are complaining RFID development having been too slow are now complaining they don't have enough time to make things happen.

The fifth Hong Kong RFID Awards were held at this exciting time. Without surprise GS1 HK has received a great collection of project entries from a diverse group of participants. The Panel of Judges was delighted at the quality and creativity of the projects which definitely bring forward in their own domain the RFID technology into significant industry applications. The Panel also noted that the emphasis was definitely shifted to commercial propositions of the technology deployment, which is always a strong asset of the Hong Kong business community.

In fact, it is now a wide consensus in the commercial and public sectors that RFID is going to become a transformation technology due to its broad and deep applications that could change supply chain decision making, enterprise operations, shopping behaviors, security measures in trade, healthcare, food consumption, and luxury products, and many more. To place Hong Kong into the middle of this big global wave, the RFID Award becomes especially meaningful as it encourages Hong Kong enterprises to creatively develop new applications that could establish unique, first-mover competitive advantages.

On behalf of the Panel, I'd like to congratulate the well deserved winners who have definitely demonstrated the leadership in this highly contested award in innovative RFID technology development and/or application, project implementation and most importantly, its impacts to the Hong Kong industries. These projects have raised the bar of the Award because they are not only outstanding in innovative use of the technology, but also equally excellent in technology implementation.

The Panel would also like to extend our thanks to the other Award applicants who would have easily won on their own merits. While GS1 should also be congratulated for successfully organized the RFID Award as usual, we have every reason to believe the Panel for the next Award will have a lot more difficult job ahead.

Mr. Tommy Lui
Executive Vice President, Supply Chain Solutions
LF Logistics



Hong Kong RFID Awards become one of significant awards recognized by the industry players who came from healthcare, logistics, manufacturers, retailers, and technology and utilities sectors. In the 5th year anniversary of Hong Kong RFID Awards, overwhelming nominations and feedback were received. It showed more business operations valued the importance of the RFID technology to improve its efficiency and enhance the RFID technology. This year, more new end-users applications were introduced and have already been applied in the daily operation to improve the efficiency of their inventory and security control.

Ms. Anna Lin, J.P.
Chief Executive
GS1 Hong Kong

We at HKSTPC take great pleasure in co-organising the Hong Kong RFID Awards for the fifth consecutive year. The main objective of the industry's signature event is to accelerate the development of the RFID technology in the region. Year after year, I am thrilled to have witnessed the exceptional creativity yet pragmatic solutions demonstrated by participating companies and practitioners. I am confident that with the steadfast passion and tireless efforts, the RFID industry will continue to advance and flourish, leading us to a better sustainable future.

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



I have been part of the Panel of Judges for the HK RFID Awards for several years now but as every year I am again very impressed to see so many highly professional cases from so many different sectors. It is really impressive to see the innovative spirit and dedication of all the contestants and certainly my special appreciation goes to this year's winners.

Congratulation! Today the use of RFID/EPC is more and more important in so many sectors. This technology is key for driving efficiencies and for creating added value for any kind of business. I am keen to see what the future holds for the use of EPC/RFID!

Dr. Gerd Wolfram
Managing Director
METRO SYSTEMS GmbH



It is my honour to be a member of the judging panel. I am pleased to share the participants' passion in making innovative use of the RFID technology in order to capture business opportunities. The synergy created among innovation and entrepreneurship has far-reaching benefits for developing Hong Kong towards a knowledge-based economy. May I extend my heartfelt congratulations to all the winners of the Awards.

Mr. Johann Wong
Deputy Commissioner for Innovation and Technology
HKSAR Government



Congratulations to all the winners of the Hong Kong RFID Awards 2012. As innovation and technology development is important to enhance Hong Kong's competitiveness and drive economic growth, we hope this award be a good platform to encourage more application and deployment of RFID technology in different industries, particularly the logistics and supply chain management industry, to benefit the economy as a whole and capture new business opportunities.

Mr. Simon K.Y. Wong
Chief Executive Officer
Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies





List of Awardees

Best EPC/RFID Implementation

- Gold Award** **RFID Paper Roll Tracking & Inventory System (PRTIS)**
Singapore Press Holdings Limited & Hong Kong Communications Co., Ltd.
- Silver Award** **RFID-based Apparel Management Expert (RAME) System**
Affirm Heart Far East Ltd., B&S Equipment Development Ltd. & Institute of Textiles & Clothing, The Hong Kong Polytechnic University
- Bronze Award** **RFID Traffic Control System (TCS)**
Swire Coca-Cola HK & Changzhou Dilinx RFID Technologies Company Limited

Most Innovative Use of EPC/RFID

- Gold Award** **RFID-based Apparel Management Expert (RAME) System**
Affirm Heart Far East Ltd., B&S Equipment Development Ltd. & Institute of Textiles & Clothing, The Hong Kong Polytechnic University
- Silver Award** **RFID Paper Roll Tracking & Inventory System (PRTIS)**
Singapore Press Holdings Limited & Hong Kong Communications Co., Ltd.
- Bronze Award** **RFID Traffic Control System (TCS)**
Swire Coca-Cola HK & Changzhou DilinxRFID Technologies Company Limited

Most Innovative EPC/RFID Products

- Gold Award** **Xerafy Metal Skin Series**
Xerafy Ltd
- Silver Award** **Meta-RFID Tag**
NeoID Limited
- Bronze Award** **mTag**
Megabyte Limited

Certificate of Merits

- Emerging ITS Applications Using Passive ISO 18000 6C Technology for Automatic Vehicle Identification**
3M Hong Kong Limited
- RFID G-Formula Solution**
BMW Concessionaires (HK) Limited & SecurePro Group (RFID Division)
- Safely On-Site System (SOSS)**
CLP Power Hong Kong Limited
- CS8300 Series Temperature Sensing Tag**
Convergence Systems Limited
- Raw Material Tracking in Manufacturing Site**
Convergence Systems Limited & Digitnexus Inc.
- RFID for Staff Location Tracking**
Esquel Group & HKC Systems Limited
- Indoor Hybrid Mode Location Tracking System**
Hong Kong Applied Science and Technology Research Institute (ASTRI)
- Smart Shelves Solution in Retail Store**
ISA Boutique Limited & Alpha Solution Limited
- mTray**
Megabyte Limited
- ISO 15693 Handheld Antenna Reader**
RF Tech Limited
- Book Enrolment Station**
RF Tech Limited
- RFID@Mining Management System (RFID@MMS)**
SecurePro Group (RFID Division)
- RFID Digital Paper Solution**
T2 Media Solution (HK) Limited
- RFID@Forklift System (RFID@FLS)**
YH Global Logistic & SecurePro Group (RFID Division)
- RFID Distribution System for Yue Hwa Chinese Products ("hybrid")**
Yue Hwa Chinese Products Emporium Limited, ID-Tech (Hong Kong) Limited, Avery Dennison Hong Kong B.V. & Motorola Solutions Hong Kong



Winning Case Sharing



RFID Paper Roll Tracking & Inventory System (PRTIS)



Background

Singapore Press Holdings (SPH) is Southeast Asia's leading media organization. The company publishes 18 newspaper titles and more than 100 magazines titles.

Hong Kong Communications Ltd (HKC) is involved in the provision of home automation systems, office automation systems and information systems.

Business Challenge

SPH in their effort of continuous improvement and in the course of staying "green" embarked on the RFID project at their Media Center printing operations. The storage and inventory of the newsprint (printing paper) needed to be managed carefully, as this is one of the key components in the printing process. Accurate inventory management and timely deployment of newsprint rolls is critical to ensure product quality standards were maintained and minimised on wastage.

A wireless and real time tracking system to improve operational control and efficiency in newsprint usage was the selected solution to be applied with the ultimate aim of enhancing business performance and reducing costs.

RFID Solution

In collaboration with HKC, SPH adopted a hybrid solution of using the high performance active UHF RFID reader, industrial long-range active UHF RFID lot tags, active UHF RFID tags, an active RFID newsprint roll tracking, incorporating barcodes & passive tags and integrating an inventory management system.

The active RFID tags and readers conformed to Infocomm Development Authority of Singapore (IDA) approved limits in terms of power and frequency. They were chosen for their wide interoperability, low cost and reliability.

A RFID system server was used to host the inventory information database. Separately, a workstation ran an application for searching and checking inventory within the printing press hall. Handheld barcode/passive and active RFID readers were

connected to the server using Wi-fi.

SPH's existing warehouse technology systems were linked to the RFID system server, making it the central depository of information. Newsprint shipment information as received are transferred from the SPH system to the RFID system, and when the individual newsprint rolls are issued from the warehouse, each roll is being assigned with an active RFID roll tag (tracking identification).

Active RFID tagging was preferred to passive RFID tagging because it provides a greater communication range with a reading distance of 100 metres or more, and sufficient signal strength to penetrate the paper roll thickness. This means fewer RFID network readers are needed for complete coverage of the newsprint rolls thus reducing costs.



In the intermediate storage areas, roll tags assigned to the new and used newsprint rolls enable the system to track in real time the location of and information about individual newsprint rolls, in conjunction with the respective location/lot tags. The real time visibility of the inventory on the

system provides for better inventory management where older stocks could be used first.

In the printing press, location/lot tags are also assigned to every printing reel stand to identify respective newsprint rolls on respective arm of the reel stand. This allows the system to interact through I/O modules mounted on the printing press to track newsprint consumption.

Benefits

The stocks of newsprint within the press hall are available real time on the RFID system. There is now visibility of individual paper rolls and with this traceability, the time required to locate specific newsprint rolls had been significantly reduced.

As the accuracy of the inventory system improves, better management of paper usage is expected and subsequently increases productivity and operational efficiency.

By managing the paper usage better, the company demonstrates its commitment to the environment and enhancing its green corporate social responsibility credentials.

Winning Cases Sharing



RFID-based Apparel Management Expert (RAME) System



Background

The RFID-based Apparel Management Expert (RAME) system was jointly developed by the Institute of Textiles and Clothing of The Hong Kong Polytechnic University and B&S Equipment Development Limited, with the funding support of The Hong Kong Research Institute of Textiles and Apparel. The system was successfully implemented and recently adopted in four assembly lines by Affirm Heart Far East Ltd, an apparel manufacturer based in Dongguan, China. Affirm Heart produces and exports high-end fashion products to European countries.

Business Challenge

In recent years, the trend of fast fashion has given rise to smaller order sizes and more frequent fashion style changes, making it increasingly difficult for apparel manufacturers to manage production. Ineffective production planning and control can lead to lower production efficiency and productivity and delays in product delivery, which in turn increases overall operating costs to the apparel manufacturers.

While a number of RFID-based shop-floor data-capture systems have emerged in the market, these systems lack real-time diagnostic tools. As a result, production managers still face significant hurdles in making informed, timely and optimal decisions regarding production and allocation of resources on the shop-floor. Production managers thus continue to rely heavily on their knowledge, experience and intuition, which may lead to inconsistent, sub-optimal production management decisions and shop-floor resources.

RFID Solution

RAME was designed to overcome this challenge by not only capturing useful production data, but analyzing the data to enable optimal production planning and control decisions.

The system consists of two modules. The first module is a cloud computing-based production tracking and monitoring module utilizes RFID technology to capture production data on a real time basis. Because the system is cloud-based, it is able to collect and consolidate production data from different manufacturing plants located in different regions. In addition, this module includes

effective quality monitoring and control functions so that production management can track and monitor quality defects of each product. The module also provides in-depth analysis and diagnoses on production progress and identify potential production issues.

The second module is an artificial intelligence (AI)-based production decision-making module which can extract relevant data from the production database of the first module and transfers it to its own database for real-time decision-making. AI-based algorithms can predict individual worker efficiency using historical and real-time data, and then recommend how workers should be assigned to achieve production targets. The second module is also able to monitor whether assembly lines need to be re-balanced and how on a real-time basis.



Benefits

After RAME was implemented on four production lines, Affirm Heart was able to reduce labor costs by 8%, increase production efficiency by 25% and reduce production waste by 10%. Efficient and accurate production planning and control decisions can now be quickly made by shop-floor managers, who no

longer need to rely on subjective assessments and quick fixes. Better supply chain coordination can be achieved so as to provide customers with better services.

In addition, with a cloud-based system architecture, the company now has fewer computer servers to maintain and reduced IT-related manpower costs.

Affirm Heart is now deploying RAME across all its production lines, while The Hong Kong Polytechnic University and B&S Equipment Development Limited are exploring how the functionality of the system can be extended to solve more problems at the plant and supply chain levels.

(The development of the RAME system is partially funded by The Hong Kong Research Institute of Textiles and Apparel (HKRITA).)

Winning Cases Sharing



RFID Traffic Control System (TCS)



Background

Swire Coca-Cola HK is Hong Kong's leading soft drink manufacturer. The company operates 17 production lines and employs nearly 1,400 employees, producing more than 60 million unit cases annually. The company is also a supplier of syrups and carbon dioxide (CO₂) cylinders for post-mix soft-drink dispensing machines to major restaurant chains.

Business Challenge

Swire Coca-Cola HK wanted to explore how it could improve the efficiency of its distribution operations, optimizing the use of its existing vehicle fleet and loading facilities. The company identified truck queuing and loading procedures as one area of potentially substantial improvement. The procedures for truck queuing and loading had been in place for over a decade and were completely manual. When a delivery truck arrived back at the company's loading facilities, a security guard would pass a numbered card to the driver, indicating how many vehicles were in the queue.

As this was the only information drivers would be given, the drivers had to rely on their experience to estimate roughly how much time they had to wait in the queue and how much more time they had to wait for loading to be completed. At the same time, because the system was manually operated and truck assignment was only recorded on paper, there was no active monitoring of the system to allow management to track operational metrics. This meant that management lacked visibility and evidence to support any changes in operation to increase efficiency.

RFID Solution

To address this challenge, the company launched the Traffic Control System (TCS) project to automate truck queuing and improve monitoring of loading operations using RFID technology.

The TCS project team began by conducting thorough user requirement discussions as part of a process to identify the key requirements of the system and define the scope of work. From these discussions, the team identified the projects top requirements as allowing the free flow of incoming and outgoing

traffic at the entrance to minimize the disruption of the new system to the users. In addition, the tracking system must be EPC Global Gen 2 standard compliant, in line with the CO₂ canister management system established the year before. Because antennas must be mounted on ceiling, the team noted that the tracking system must have a long read range. Lastly, the tags associated with vehicles and drivers had to be placed inside the vehicle for security.

The team evaluated a range of solutions, including passive and battery assisted passive (BAP) systems. It concluded that only the EPC Global Gen 2 UHF BAP solution could meet all its key requirements.



After a successful pilot, installation of the system was extended to the entrance and other loading bays and software deployed to provide real-time tracking of trucks and loading times.

Benefits

The TCS system has had a positive business impact. Among the key operational metrics tracked by the

project, it was notable that the average number of trucks loaded per working day and loading bay utilization increased by 8-10%, while average loading time and queuing time decreased by 13-14%.

From a qualitative perspective, TCS made truck queuing and loading a more robust operation, eliminating human errors and allowing the security guards to focus on real security concerns. In addition, the system enabled the collection of real-time data, providing supervisors with immediate insight into operations so they could make informed decisions quickly. The scope of the project will now be expanded to more loading bays and vehicles.

Winning Cases Sharing



Xerafy Metal Skin Series

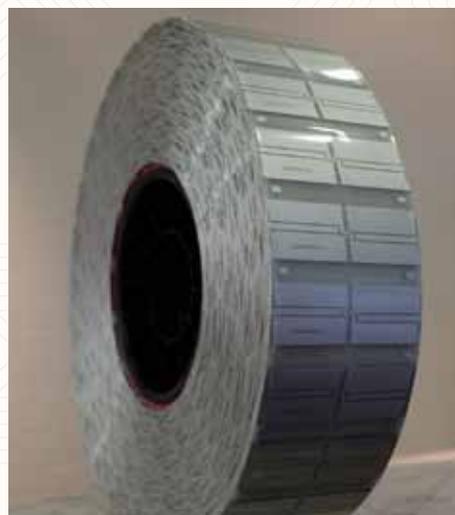
Background

Xerafy is a global provider of industrial durable passive RFID tag solutions. The company is the first RFID tag manufacturer to develop UHF RFID tags that can be embedded into metal and has a range of products that include some of the world's smallest EPC UHF RFID-on-metal tags, yet are capable of withstanding extreme conditions while still maintaining high performance.

Business Challenge

Metal products and UHF RFID technology have traditionally not mixed well. Because metal interferes with radio waves, products with high metal content or packaged in metal containers have posed a significant hurdle to the wider adoption of RFID technology in asset management as well as global logistics and supply chain management.

Xerafy designed the Metal Skin to overcome the challenges of metal asset tagging, with these key criteria in consideration: high performance, flexible label form factor and cost effectiveness. Xerafy's motivation and innovation have always been conceived and driven by real challenges experienced by its customers. Several customers need a low profile, low cost and flexible tag solution to tag curved metallic assets such as gas cylinders and pipes.



Prior to Xerafy's invention of Metal Skin, the metal tagging solutions available on the market were bulky, costly and inflexible, requiring laborious and time-consuming attachment methods.

RFID Solution

Xerafy's Metal Skin is the UHF RFID inlay uniquely designed for metal assets. The Metal Skin converts to a standard polyethylene terephthalate (PET) label that can go through existing printing processes to imprint any logo, bar code and human readable identification. The Metal Skin is low profile and flexible so it can fit curved surfaces – such as the contour of metallic cylinders and drums – yet it delivers a read range of up to 5 meters on metal and 4 meters off metal. It is compliant to the global frequency

standards and EPC UHF Class 1 Generation 2 and ISO 18000-6c for use around the world. The total process from concept to product release took about eight months with substantial time spent on field tests with customers to ensure the performance met their requirements.



As a product, the Metal Skin is between a peel-and-stick inlay and a metal substrate tag. This means the Metal Skin offers cost effective on/off-metal performance but can potentially also be used as a disposable tag for the mass market, which was previously unheard of. With relatively balanced read ranges on and off metal, the Metal Skin will work seamlessly in the majority of current applications without major variation in read range.

Benefits

The Metal Skin opens up a whole new market for metallic applications and allows label converters, to provide stickers, smart labels, tickets that can now be attached on metal. This is valuable for implementations, in product authentication, high value asset tracking and global supply chain. The metal label form factor is also more affordable and more efficient to be attached on metallic products.

Xerafy plans to develop an entire line of Metal Skin form factors for various applications including: healthcare unique device identifiers for surgical equipment and hospital assets, gas cylinder and drum tracking, asset tracking for IT equipment and laptops, industrial product identification for maintenance and inventory management and high value retail products.

Winning Cases Sharing



Meta-RFID Tag

Background

NeolD Limited designs and manufactures high performance RFID tagging solutions including innovative RFID tags and RFID tag testing and encoding.

Business Challenge

Metal products require specially designed high performance RFID tagging solutions because they can detune the antenna of a conventional standard passive UHF RFID tag, leading to a significant deterioration in reading distance.

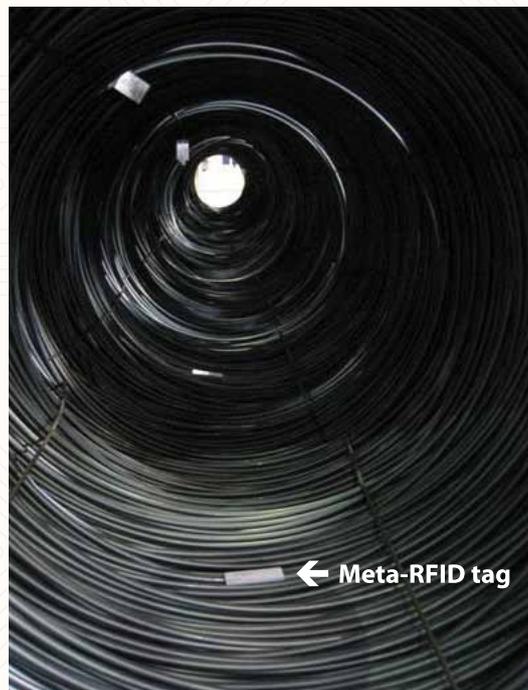
There are many companies providing RFID tagging solutions for tracking metal products, but compared with general-purpose RFID tags, these metal tagging solutions tend to be relatively bulky (around 1cm thick) and costly. NeolD Limited wanted to create a RFID tagging solution for metal products that would be smaller and more cost-effective than existing RFID tagging solutions for metal products on the market, but without compromising on the tag's performance.

RFID Solution

As a result, NeolD Limited developed an innovative RFID metal tagging solution using proprietary metamaterial technology. NeolD Limited's US-patented metamaterial antenna technology enables the company to design miniaturized, power-efficient antenna systems. Metamaterials are artificial composite materials. NeolD's patented metamaterials are used to make tiny antenna elements with significantly higher radiated power than antennas made from natural materials. One of the key properties of its metamaterial antenna technology is that it has a negative refraction index, which enables RF waves to be bent or focused across wider bandwidths without dispersion.

Using this technology, NeolD Limited developed RFID metal tags (10cm x 3cm x 0.5cm) with a read range of up to 30 meters. After developing its metamaterials-based RFID tagging solution, NeolD Limited then tested it in a pilot project with a leading steel manufacturer to track steel product shipments.

The NeolD Meta-RFID Tags were used to track for two main types of steel products, namely coils and slabs. The testing scenarios were as follows: firstly, inventory checking by a handheld computer, with the ability to read up to 13 steel coils at the same time at a distance of 20 meters; secondly, checking out through railway, reading four coils at the same time; thirdly, checking inventory of slabs at high temperatures of around 80 degrees Celsius.



NeolD Limited's Meta-RFID Tag, Model L, was also designed to function in tough conditions. The RFID tag was attached to the inner core of steel coil, which have a diameter of 1.5 meters and length of 1.5 meters. Previously, the steel manufacturer tested other products, but could not find one that met its requirements, including the ability to track 8-9 rolls at the same time. The long reading range of the Meta-RFID tag allowed NeolD Limited to meet the steel manufacturer's requirements.

Benefits

By deploying NeolD Limited's Meta-RFID Tag solution in their steel warehouse, the steel manufacturer significantly improved its operational efficiency.

The Meta-RFID Tag solution allowed the steel manufacturer to conduct real-time tracking of products and streamlined the whole process from inspection to packaging to shipping of the steel products. It significantly decreased the time needed for inventory taking and eliminated incidents of lost stock.

In addition, NeolD Limited's tagging solution improved worker safety and delivered double the performance at a cheaper cost than rival metal RFID tagging solutions. The solution enables steel warehousing staff to use a handheld RFID reader to count steel coils from as far away as 20 meters, which is the greatest reading distance of all metal RFID tagging solutions in the market.

Winning Cases Sharing



mTag

Background

Established in 2008, Megabyte Limited develops UHF RFID devices and middleware software, including RFID readers, handheld devices and antennas. The company specializes in state-of-art RFID solutions for the retail, fashion, pharmaceuticals and security industries, as well as archive management systems.

Business Challenge

With the rapid growth of demand for luxury goods in Hong Kong and mainland China, jewelry companies face the daunting task of maintaining and accounting for tens of thousands of product items throughout their supply chain, from the warehouse to the retail stores. Existing barcode technology based systems are unable to provide full automatic tracking and sales data capturing, and requires a significant amount of manual labor to operate.

RFID technology provides jewelry companies with a golden opportunity to address these issues. The multi-scan capability of RFID solutions eliminates the need for jewelers to manually account for each item of jewelry individually, enabling automated tracking and authenticating of assets, and managing the distribution, sales and flow of items.

The challenge, however, is that the price tags for jewelry items are normally very small, making it difficult to implement an RFID inlay with good stack-up readability and reasonable read-range in a metallic environment. None of the existing RFID inlays designs on the market for retail and logistics applications could meet the needs of the jewelry industry for a compact design with an adequate level of reading sensitivity.

RFID Solution

Megabyte consulted with a number of local jewelry companies to understand their expectations and needs and designed a series of RFID inlays in different dimensions to enable them to adopt and benefit from RFID technology. The mTag One-Fold, Two-Folds and Three-Folds can be printed and encodes using a RFID printer. The inlays have only a 3mm separation and enable handheld based stock taking with a high read rate.

In addition, the tagging solution conforms to both ISO/IEC 18000-6C, EPCglobal Class 1 Gen 2. The tagging solution has an optimized frequency range of 860-960MHz, with 496 bits EPC and 512 bits of user memory. The smallest of the three models of tags has dimensions of just 26 mm by 11 mm.

Benefits

mTag is small in size with compact design. It enables real-time inventory and demand visibility so businesses can respond to fulfill demand on time and in an efficient manner. Megabyte's mTag solution automates data-capture during inventory checking, stock reconciliation, stock furnishing and replenishment. It enables discreet tracking of customer buying behavior and preferred items. The marketing data that are collected can provide invaluable, timely marketing intelligence.

With enhanced product visibility providing an interactive shopping experience automated inventory tracking, the mTag solution can also identify and instantly display information about each piece of jewelry being viewed, and provide recommendations of similar or complementary products, thus improving the customer's in-store experience and help to driving cross-selling and up-selling opportunities. And with RFID-enabled point-of-sale terminals, jewelry retailers will also be able to enable faster and more efficient customer checkout processes, shorten wait times and initiate auto-replenishment activities. In this way, it improves the customer's in-store experience and helps generate efficiency gains.



Certificate of Merits



Emerging ITS Applications Using Passive ISO 18000 6C Technology for Automatic Vehicle Identification

Traffic congestion at toll plazas is common sight, as vehicles need to stop at the toll collection points. These delays negatively impact the operational efficiency of roadway networks, causing inconvenience to vehicle owners and road operators, and exacerbating the environmental impact of vehicle usage in terms of increased air pollution. Conventional manually operated toll collection systems are also prone to human errors, which may lead loss of revenue. The company wanted to create an RFID toll collection system for toll road operators that was scalable, reliable and interoperable.

The company designed an electronic toll collection system using passive RFID for automatic vehicle identification for Far Eastern Electronic Toll Collection Company (FETC). After months of trials and testing under a wide variety of scenarios and weather conditions in Taiwan, a larger scale pilot test was conducted with more than 20,000 voluntary drivers. Following the successful completion of this pilot test, FETC launched full deployment of the eTag system island-wide in Taiwan. The benefits of the system include its cost-effectiveness, which has allowed the operator to distribute tags to drivers for free. Because the tags passive, the technology is also maintenance free. FETC will be moving to a complete open Road tolling system in the new future using the eTag.

Certificate of Merits



SecurePro Group

RFID The Thing RFID The Future
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RFID G-Formula Solution for Automatic Vehicle Identification

BMW Concessionaires (HK) Limited collaborated with SecurePro Group (RFID Division) to create a RFID based solution system for tracking inventory in vehicle storage facilities. BMW Concessionaires (HK)'s existing system was inefficient for maintaining records of new stock and where that stock was located, with cars sometimes being misplaced in the car parks. In designing a new inventory tracking system, SecurePro Technology Security System first made various site visits to decide what, where, how and when to deploy the required equipment, including the location of cabling and wires, choice of portable and fixed readers and tags.

The SecurePro G-formula Solution deployed at the car park included several components: fixed and handheld active RFID readers, active RFID tags installed on windshields and cameras, along with a vehicle license plate recognition system and RFID server to support the systems. After SecurePro G-formula Solution was installed and tested with the involvement of users to gain user acceptance, BMW Concessionaires (HK) was able to perform vehicle location checking and eliminate the possibility of unauthorized checking in or checking out of vehicles at its warehouses and services centers. The system also increased the efficiency of vehicle storage from 50% to 95% and generated manpower savings when checking in and out vehicles and stock taking.

Certificate of Merits



Safely On-Site System (SOSS)

CLP Power Hong Kong Limited, a subsidiary of CLP Group, supplies electricity and related services to around 5.7 million customers in Hong Kong. More than 2,000 technicians, maintenance workers, office staff, outside contractors and other people enter and leave the company's power stations every day through multiple access points and by a variety of means, including company buses, private cars and on foot. Additionally, staff at the power stations must pass safety competency qualifications, some of which need to be re-certified after a specific time. CLP Power Hong Kong developed the Safely On-Site System (SOSS) to establish a centralized means of tracking how many people were on-site at any point in time and who they were. In addition, the system could verify in real-time whether or not people present on-site met mandatory safety competency requirements. The system was established using existing employee cards and guest passes to avoid big change in the Company. These cards are based on passive tags embedded in ISO Prox II proximity access cards. The system delivers its functions by integrating the RFID, GPS and GPRS technologies in the solution.

The project significantly reduces the administrative effort needed to monitor personnel safety and also enhances the accuracy of records on employee safety competency certification. Moreover, the system enables security staff to detect when workers or visitors stayed on-site for an abnormal length of time and thus check on their safety. In this way, the system has improved the on-site security and safety.

Certificate of Merits



CS8300 Series Temperature Sensing Tag

Convergence Systems Limited (CSL) is a RFID equipment maker, which designs and manufactures a broad range of RFID products, including passive and active RFID readers and tags. The company also provides support to system integrators involved in logistics and supply chain management, manufacturing, security management, transportation, and retailing. The company saw an opportunity to create a cost-effective high performance RFID tagging solution for use in cold chain management. The read performance of conventional UHF passive tag tends to be degraded significantly when used in cold chain management, due the low ambient temperature of the operating environment and the high water content of the goods being transported, which can interfere with radio waves. In addition, conventional UHF passive tags do not have temperature sensors to monitor ambient temperature and ensure the goods are being stored properly. However, regular active tagging solution can be costly.

CSL created the CS8300 active RFID tagging solution with the design goals of low power consumption and reliable operation even in the harsh environment of the cold chain. The EPC Gen 2 Class 3 compliant tagging solution has a temperature sensor built in, which can measure and record temperatures at defined intervals. Using CS8300, the storage conditions of frozen and perishable food can be closely monitored in transit in real-time, enabling product quality and safety standards to be maintained and improving supply chain efficiency. Looking ahead, CSL plans to add GPS features to the solution.

Certificate of Merits



Raw Material Tracking in Manufacturing Site

Convergence Systems Limited (CSL) is a RFID equipment maker, which designs and manufactures RFID equipment, including passive and active RFID readers and tags. Digitnexus Inc. is a global provider of intelligent real-time visibility solutions for large organizations. The two companies collaborated to design a raw material tracking system for China State Construction, a Chinese enterprise that produces steel structures for large building projects at a massive 24,300 square meter manufacturing site.

Raw material inventory tracking and management at the site was inefficient, with staff needing to spend a lot of time locating the right raw materials to use. To solve these issues, Digitnexus designed an item-level, real-time metal product tracking system suitable for use outdoors in the storage yard, using cost-effective yet durable passive tagging and CS101 handheld readers, along with a real-time locating system built by CSL. With the system in place, workers now need only 15 days to sort raw materials for projects, and human error has been eliminated from the process. This represents substantial time and human resources savings, as workers previously had to spend two months sorting components before they could begin assembling a structure. Additionally, management can now make accurate estimates of project costs due to higher inventory visibility and can track the work-in-process and gain real-time information to avoid out-of-stock. Real-time information can also be shared among departments.

Certificate of Merits



RFID for Staff Location Tracking

Esquel Group is a services and solutions provider in the textiles and apparel industry. The company manufactures 100 million shirts a year for leading global fashion brands and retailers, with annual revenue of US\$1.2 billion and a workforce of 56,000. Esquel Group's offices are located on different floors of the same building. As a result, it can be difficult to locate staff when they are not at their desks. Working together with HKC Systems Limited, a local company that specializes in systems integration and RFID-based asset management systems, Esquel designed a staff location tracking system to enhance operational efficiency.

To solve this problem, Esquel and HKC collaborated in designing an employee location tracking system using ultra high frequency (UHF) RFID technology. Under the proposed system, employees are issued with 2-in-1 staff cards which combine a standard 13.56Hz RFID tag for access control and a separate UHF RFID tag, which has a longer reading range, for location tracking. RFID antennas were installed at pre-defined checkpoints. When staff card carriers passed through a checkpoint, the system would capture the staff card information and send instant updates to the web-based location tracking application. The system is a cost-effective way to enable real-time staff location tracking and has the flexibility to be scaled up as needed.

Certificate of Merits



Indoor Hybrid Mode Location Tracking System

The Hong Kong Applied Science and Technology Research Institute (ASTRI) designed the proposed Indoor Hybrid Mode Location Tracking System to provide low cost, flexible and accurate location tracking of personnel indoors. Location tracking systems usually relies on radio frequency (RF) beacons. The Hybrid Mode Location Tracking System, by contrast, uses LED luminaries to activate the RFID Tag worn by a user, which then sends a location identity (ID) and tag ID back to the central system through the wireless network. The hybrid mode means using visible light communication in downlink and RF the communication in uplink in order to allow the system locate the RFID tag.

Since the system involves only the replacement of LED luminaries, it allows organizations to avoid the expensive installation of numerous RFID readers for location tracking. In addition, the hybrid system has a more accurate performance because light signals are not affected by nearby metallic objects like RF signals. In addition, the hybrid technology enables the RFID Tag to achieve 80% greater power efficiency and 30-50% savings on electricity costs versus normal lighting.

Certificate of Merits



Smart Shelves Solution in Retail Store

Retail businesses are always looking to grow their store revenues while reducing costs. Amid a challenging business environment, the pressure to cut costs has been even greater and retailers have responded by adjusting workdays, reducing staff numbers and making inventories leaner. However, in order to survive and thrive, retail businesses must also continue to accurately track inventory, replenishing low stocks to ensure items are available when a shopper wants them, and dealing with over-stocking to reduce expenses.

ISA Boutique and Alpha Solutions collaborated to develop the Smart Shelves system for retail outlets to address this challenge. Items are tagged in order to allow the Smart Shelves to track when items are removed from shelves. In addition, the Smart Shelves are integrated with point of sales. The system uses a mobile dashboard app, which can be installed on all popular mobile devices, to enable staff to perform stock taking. After ISA Boutique installed the Smart Shelves, manpower required for stock taking was significantly reduced and accuracy of stocktaking improved. In addition, as the system could be used with all popular smart mobile devices, it proved cost-effective to implement.

Certificate of Merits



mTray

Megabyte Limited develops RFID solutions for the retail, fashion, pharmaceuticals and security industries, as well as archive management systems. The company designed the Megabyte mTray to provide jewelers with robust item-level RFID-based inventory tracking solution, with a strong group tag reading capability over a short range and in an environment in which there is a lot of metal, which can lead to low reading accuracy and incorrect readings.

mTray features USB, LAN and Wi-Fi connectivity. The USB connection enables it to be used with legacy barcode-based systems, while the network interface ports make it possible for the solution to be used as part of a cloud-based inventory tracking system. The solution complies with various open standards and protocols for interoperability and integration purpose, including EPC Global Class 1 Gen 2 and ISO 18000-6C. By allowing item-level tagging, mTray provides a level of visibility that helps eliminate shortages, disputes and costly write-downs. Each tagged item can be easily tracked through every stage of the supply chain from the manufacturing facilities to the distribution center through to the retail outlet, providing accurate, near-real-time intelligence into inventory records, to identify where items are in a facility in real time.

Certificate of Merits



ISO 15693 Handheld Antenna Reader

RF Tech Limited, a provider of integrated RFID solutions, designed the ISO 15693 Handheld Antenna Reader to help libraries cut down on time-consuming manual book sorting and re-shelving processes. The ISO 15693 Handheld Antenna Reader leverages widely available Android smartphones to run a controller program.

Designing the antenna was critical part of the project. The antenna had to cope with collision between tags and be tuned for the optimal detection range. The item-sorting algorithm was another key part of project, with to create a step-by-step process for efficiently re-shelving items. RF Tech Limited also enabled book cover images to be imported from the Book Enrolment Station to the controller application on the Android device to aid item identification.

Pilot runs at the libraries of local academic institutions are proved successful, with the ISO15693 Handheld Antenna Reader demonstrating that it could enhance efficiency of library stock taking and re-shelving, with the ability to use the handheld reader to identify multiple items at the same time. In addition, with the controller program operated separately on an Android device, the reader could be lighter, lower power consumption and more competitive in pricing.

Certificate of Merits



Book Enrolment Station

The traditional book enrolment process is very time-consuming, with librarians required to take photos, edit photos, modify database and write RFID tags. RF Tech Limited, a provider of integrated RFID solutions, designed the Book Enrolment Station to help libraries automate such processes.

The system combines software and hardware. By making use of a built-in digital camera, barcode scanner, weight measuring device and low power solid-state electronic illumination, the system enables the librarian to automatically retrieve the particulars of a book from an international standard book number (ISBN) database by reading its barcode, take an image of the front cover and spine of the book, and read/write information to a RFID tag – all in one step.

The system has been implemented for The Chinese University of Hong Kong (CUHK) and Institute for Tourism Studies (IFT) in Macau. Extensive literature survey and patent search have been conducted to confirm that no product or mechanism or similar to Book Enrolment Station exists in the market or is being developed. Patent application has been filed. The automatic book enrolment system can greatly increase library efficiency, freeing up a librarian's time to perform other high value roles and duties for better patron oriented services.

Certificate of Merits



RFID@Mining Management System (RFID@MMS)

SecurePro Group (RFID Division)'s RFID for Mining Management (RFID@MMS) solution helps professionals in the mining industry to track staff and improve safety on-site. Among the primary functions of the system is the ability to accurately track staff using active RFID technology that can continue to function even during accidents, allowing supervisors to be informed of the precise location of personnel during emergencies. The system would also have an access control function with closed-circuit television (CCTV) to ensure mining sites are secure. Thirdly, the system would enable on-site vehicles to avoid blind areas and reduce risk of collisions. Lastly, the active RFID technology would be integrated with an advanced weighing system to accurately weigh materials before they are transferred to other warehouses.

The system would make improvements in three key areas including to enhance worker safety by allowing closer monitoring of staff working in extreme conditions. It may also improve productivity, as vehicles and personnel can be more easily identified to avoid downtime. Lastly, the system would improve security by allowing the tracking and tracing of materials before they leave the sites or when they are loaded onto trucks to protect important assets.

Certificate of Merits



RFID Digital Paper Solution

Traditional product certification and verification solutions for printed products, such as laser labels and hologram tickers, are vulnerable to counterfeiting and can be expensive. T2 Media Solution (HK) Ltd wanted to create a printed product identification solution that overcame these challenges, providing the printing and publishing industry with a cost-effective, secure solution for applications such as professional certificates, warranty cards, legal documentation, ticketing, staff cards and cash coupon management.

The Digital Paper Solution (DPS) is a radical printed product identification solution based on the EPC Global Gen 2 standard. DPS allows users to produce their own low cost, high performance RFID UHF paper products in just four easy steps. DPS uses silver-based conductive ink to print an antenna on normal paper and a proprietary technology to bond the EPC Gen 2 compliant chip. The solution allows customization – including paper size, die-cut to antenna shape and color design – to fit each individual user's needs. The benefits of the solution include cost-effectiveness, easy of use, flexibility and security. Going forward, T2 Media Solutions aims to collaborate with RFID equipment makers to design DPS reader solutions, including RFID enabled paper trays.

Certificate of Merits

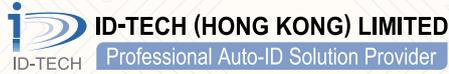


RFID@Forklift System (RFID@FLS)

SecurePro Group (RFID Division)'s RFID@Forklift System (RFID@FLS) helped YH Global Logistics Co., Ltd to make improvements to warehouse operational visibility and efficiency. The forklift warehouse management system uses fixed UHF RFID readers and antennas on forklift truck to help staff to quickly find pallets to transport. The UHF location tags are installed on shelves and at checkpoints to enable confirmation during put-away and stock-out processes. In addition, the system uses middleware to bind together the various components of the system and provide seamless integration with the company's existing enterprise resource planning (ERP) System with real-time data synchronization.

The RFID@FLS allowed YH Global Logistics, a logistics services provider, to speed up operational processes and eliminate human error at its warehouse, while improving the accuracy of collected information. Warehouse staff were able to save a lot of time in the task of locating stock and checking inventory, as stocks could be scanned in one group simultaneously rather than individually using a barcode system. The system was also designed to be user-friendly and straightforward for warehouse staff to operate, thus increasing user acceptance. Through the RFID warehouse management system, YH Global Logistics was also able to increase its competitiveness, as the solution allowed it to offer a faster, more reliable service.

Certificate of Merits



RFID Distribution System for Yue Hwa Chinese Products ("hybrID")

Yue Hwa Chinese Products Emporium Limited collaborated with ID-Tech (Hong Kong) Limited, Avery Dennison Hong Kong B.V. and Motorola Solutions Hong Kong to develop a RFID based solution to enhance the efficiency of distribution processes. One of the core goals of the project was to achieve efficiency gains with minimal change or disruption to existing operations. In particular, the company did not want frontline staff to be burdened with the extra work of carrying out item level tagging.

After two weeks of on-site study and various discussions with management, a hybrid distribution system, as implied by the project name "hybrID", using both Yue Hwa's existing barcode technology and new RFID technology was created. When the system receives a replenishment order, it sends a pick-up order to packing staff on the warehouse floor via individual handheld terminals. All barcodes picked goods are scanned before they are packed into the containers and sealed. The packing staff then capture the container identity (ID) by scanning the RFID label pre-tagged on each container, enabling the list of picked goods to now be associated with the container ID. All captured container IDs are then recorded in the enterprise resource planning (ERP) system. The system provides real-time visibility of distributed products through the whole logistics chain, enabling management to allocate resources more accurately. It also reduced manpower needs and human error.



Hong Kong U-21 RFID Awards Message from the Judging Panel



I am very pleased to see a progressive improvement in the quality our students in Hong Kong to the U-21 RFID Awards over the years. It is an indication of the increased awareness and interest of our students in the application of the RFID technology. Amidst the submissions there is no lack of originality and innovation. Indeed many of the ideas and concepts presented by the students could readily be realized in actual applications. I congratulate GS1 Hong Kong for the success in hosting the HK RFID U-21 Awards and thank all the sponsoring and supporting organizations.

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



I am honoured to be a Judge for the U-21 RFID Awards again. Each year I saw many innovative and creative solutions and they were very impressed me. I congratulate all the recipients of the awards and wish to see more solutions will be used to improve the quality life through RFID in the future.

Dr. Hubert C.Y. Chan, J.P.
Chairman
GS1 Hong Kong EPC Partners Advisory Board



Congratulation to all the winners. Their projects are impressive and highly innovative. I encourage them to further develop and refine them. Successful implementation of the projects will bring tremendous benefit to the community.

Mr. Terence S.S. Chan
Assistant Commissioner (Infrastructure and Quality Services)
Innovation and Technology Commission, HKSAR Government

Hong Kong U-21 RFID Awards

Messages from the Judging Panel

I am honored to be a Judge for the HK U-21 RFID Awards 2012 and am impressed throughout the entire judging process with the quality, knowledge and enthusiasm of the participating students from our tertiary education sector.

Not only does this Award encourage the overall and effective adoption of RFID technology and international standards in our community, it also provides a platform upon which our enlightened students in demonstrating their creativity, innovative application of IT and teamwork. I congratulate GS1 Hong Kong for this forward looking Award scheme and all the participating entries.

Ir. Stephen K. M. Lau, J.P.
President
Hong Kong Computer Society



Like every year of the U-21 RFID Awards, I am so impressed by the ideas and efforts from the young talents.

The creativity thoughts from the young generation show their passion in the innovation of technology. This year, many winning projects addressed minority problem, and aimed to improve better quality life. I really appreciate their attention to the social responsibility, and look forward to see the successful implementation in the real daily lives.

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



I am really proud of our Hong Kong young people in the sense of their innovation and commitment to the development of technology in this knowledge-based international city. I and my panel judges are deeply impressed with the quality and the uniqueness of the proposed projects using RFID technology and other ICT applications. Some of the projects even serve the purpose of great virtue which can practically help the disabled people in their daily lives.

I must express my heartfelt thanks to GS1 HK for organizing such meaningful event each year and thank all those students and project supervisors for their tremendous contributions.

Lastly, I have to congratulate all the Award Winners and look forward to their continued support next year.

Ir. Paul W.K. Wu
Senior Manager, Special Systems
Airport Authority Hong Kong





Hong Kong U-21 RFID Awards

List of Awardees

Best EPC/RFID Concept

Gold Award

RF-eye

Students

Chan Yuk Chin, Cheng Chin Tung, Hui Yuk Yi, Leung Yiu Man, Liu Lai Shan, So Freedom

Supervisors

Dr. Andrew W.H. Ip & Dr. K.K. Tseng (*School of Computer Science & Technology, Harbin Institute of Technology Shenzhen Graduate School*)

*Department of Industrial and Systems Engineering
The Hong Kong Polytechnic University*

Silver Award

SmartHotel LINK - All in one hotel system

Students

Pong Dik Yin, Pong Kai Sze

Supervisor

Mr. William Leung Kwok Way
*Associate in Business (Hospitality Management)
Hong Kong Community College*

ePlatform for Collective Memory Acquisition and Preservation - Sustain our Unique Legacy Easy (eCAPSULE)

Students

Cheng Mei Na, Kwong Kuk Hung, Leung Po Ling, Ng Chun Kit

Supervisors

Dr. Andrew W.H. Ip & Prof. Benny C.F. Cheung
*Department of Industrial and Systems Engineering
The Hong Kong Polytechnic University*

Bronze Award

RFID-based Railway System - S ticket

Students

Chan Kwok Yan, Chan Ming Hon, Choi Ka Wing, Leung Lam Hing, Mok Ling Fong, Tsui Yuen Lung

Supervisor

Mr. Yiu Cheuk Man Alvin
*Department of Business Administration,
Hong Kong Institute of Vocational Education (Kwai Chung)*

Most Innovative Application of EPC/RFID

Gold Award

RFID-assisted Learning and Computer Interface System for Disabled People

Students

Lau Shiu Fung, Lo Ka Yee

Supervisor

Dr. Henry C.B. Chan
*Department of Computing
The Hong Kong Polytechnic University*

Silver Award

RFID-Enabled Airport Asset Management System

Students

Cui Yang, Li Yingxiong, Liao Jing

Supervisor

Dr. Henry C.B. Chan
*Department of Computing
The Hong Kong Polytechnic University*

Hong Kong U-21 RFID Awards

List of Awardees

Certificate of Merits

Electronic Data Card Using RFID

Student Char Lik Hang
 Supervisor Dr. Tsoi Yau-Chat
*Division of Applied Science and Technology
 Community College of City University*

Examination Management System

Student Chan Johnny Chung Yau
 Supervisor Dr. Tsoi Yau-Chat
*Division of Applied Science and Technology
 Community College of City University*

Indoor Navigation System for Visually Impaired People

Students Chan Chi Hang, Chan Yu Pang,
 Lam Yuen Ying, Mak Sze Wing,
 Wong Pui Shan, Wong Wai Yan
 Supervisor Ms. Fong Cheuk Wai Rose
*Division of Applied Science and Technology
 Community College of City University*

Automatic & Intelligent - New Generation Buses

Students Lam Chi Hou, Leung Chung Sze,
 Li Christopher Wai
 Supervisors Dr. Lee Choi Hung &
 Mr. Chan Pui Yuk
*Division of Business
 Community College of City University*

Development of Hong Kong Tourism - The RFID Smartphone System

Students Chan Wai Chun, Leung Chun Ho,
 Wong Kin Hung, Wu Mang Ting
 Supervisors Dr. Lee Choi Hung &
 Mr. Chan Pui Yuk
*Division of Business
 Community College of City University*

Pioneer - Education Revolution

Students Chan Janice Yuen Yee,
 Cheung Siu Tao, Lai Nga Sum,
 Lau Kei Kwan, Sze Fong Man,
 Tsui Wai Tung
 Supervisor Mr. William Leung Kwok Way
*Associate in Business (Account & Finance)
 Hong Kong Community College*

Crowd Visibility and Ride Management in Theme Parks

Students Chan Kwan Yip, Chan Wing Sze,
 Cheng Hiu Lam, Lee Ka Wai,
 Shum Kam Pang
 Supervisor Dr. Loretta Chan
*Department of Business Administration
 Hong Kong Institute of Vocational Education (Lee Wai Lee)*

RFID Adoption in Business Strategic Partnership

Students Ma Kei Man, Ng Sze Nga,
 Ng Wing Nam, Pong Wing Shan,
 Wong Wai Yan
 Supervisor Dr. Loretta Chan
*Department of Business Administration
 Hong Kong Institute of Vocational Education (Lee Wai Lee)*

Smart Safety Belt

Student Lai Tsz Kin, Leung Chung Kau,
 Ng Kin Yan, Wong Yu Hang,
 Wu King Yum, Yiu Siu Tong
 Supervisor Mr. Fung Kim Wan Eric
*Department of Engineering
 Hong Kong Institute of Vocational Education (Tsing Yi)*

Tree Protection System

Students Chui Wing Ho, Chun Man Lung,
 Leung Yu Ho, Li Chong Faat,
 Lui Man Ho, Tsang Yu Chiu
 Supervisor Mr. Fung Kim Wan Eric
*Department of Engineering
 Hong Kong Institute of Vocational Education (Tsing Yi)*

RFID Enabled School Management System

Students Cheung Ching Kong,
 Leung Wai Hang, Lun Siu Sum,
 Wong Yuk Cheung
 Supervisor Mr. Woo Hok Luen
*Department of Information and Communications Technology
 Hong Kong Institute of Vocational Education (Tuen Mun)*

Car Identity - 3Pass

Students Chan Sin Chi Cinvia,
 Chen Chepperine, Ho Ching Ping,
 Lau Sheung Tak, Ng Chi Cheung,
 Ng Chi Shing
 Supervisor Dr. Ho To Sum
*Department of Industrial and Systems Engineering
 The Hong Kong Polytechnic University*

Shopping in the exhibition center: How smart phones with RFID readers will contribute to convention industries in the future

Students Chang Yidi, Kang Yunyi
 Supervisor Dr. Andrew W.H. Ip
*Department of Logistics and Maritime Studies &
 Department of Industrial System and Engineering
 The Hong Kong Polytechnic University*

A RFID Interactive Facility Guiding System for Persons with Visual Impairment and Persons with Physical Disability

Student Lau Wai Kin
 Supervisors Dr. Lu Wei Sheng &
 Dr. Ho Daniel Chi Wing
 Department of Real Estate and Construction
 The University of Hong Kong

DIM DOU DUCK - System in tradition Chinese restaurants

Students Chan Man Huen, Chung Man Shueng,
 Li Tsz Yan, Tsang Ho Yin,
 Yu Kun Chung
 Supervisor Dr. Lu Wei Sheng
*Department of Real Estate and Construction
 The University of Hong Kong*



Winning Case Sharing



THE HONG KONG POLYTECHNIC UNIVERSITY
DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING

RF-eye

There are around 122,000 visually disabled people in Hong Kong. These people with visual impairments have trouble leading normal, productive lives, because it is difficult for them to find their way around the city without clear sight. Even with tactile guiding paths, people who are visually disabled often need assistance from others to travel from A to B, as there is no signage for them.

RF-eye is an RFID navigation and location-based information system that aims to address this issue, providing the visually disabled with a barrier-free environment. The system uses RFID tags embedded at locations or way points on guidance routes to provide users with geographical coordinates regarding their current location. To read these location tags and provide the user with information about the location he or she is in, the system supports three other components: a walking cane equipped with a lightweight RFID reader, a smartphone-based application and Bluetooth headset. When the user passes a tagged location point, the reader in the walking cane will detect a location tag and send the tag ID to the smartphone application, which in turn passes the associated location information to the user via the Bluetooth headset. Compared with similar GPS based systems, RF-eye has much greater accuracy and does not require a high-speed mobile network signal in order to function properly, which makes it more robust. In addition, the solution can be used to collect valuable data from users anonymously to enable the government to learn more about the types and locations of facilities that the visually impaired require, thus allowing it to improve facilities and services for the visually impaired.



GOLD Best EPC / RFID
Concept

**Department of Industrial and Systems Engineering,
The Hong Kong Polytechnic University**

Students

Chan Yuk Chin
Cheng Chin Tung
Hui Yuk Yi
Leung Yiu Man
Liu Lai Shan
So Freedom

Supervisors

Dr. Andrew W.H. Ip &
Dr. K.K. Tseng (*School of Computer Science & Technology, Harbin Institute of Technology Shenzhen Graduate School*)



THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學



HONG KONG POLYTECHNIC UNIVERSITY
COMMUNITY COLLEGE
香港理工大學

SmartHotel LINK - All in one hotel system

The SmartHotel Link concept project by the Hong Kong Polytechnic University Community College's Department of Business in Hospitality Management was created to show how the tourism and hospitality industry could create a secure, convenient, integrated solution for distributing location-based tourism information, controlling access to facilities, such as hotel rooms, and facilitating retail transactions.

The SmartHotel Link concept is based on the smartphone, which has become a globally ubiquitous mobile communications device. The smartphone is embedded with an RFID tag, which acts as a unique identifier, allowing the user to access his or her guest room, guest elevators, lockers in changing rooms and other hotel facilities. Using RFID technology, the system is contactless. This means the user simply needs to place his or her smartphone next to an access point sensor and the sensor will detect the unique ID and transmit it to a host server for verification of the user's details. Upon the guest's departure, the hotel key role of the smartphone is automatically invalidated and the next guests can access the room using their smartphones. In this way, the hotel can manage and provide access to rooms without the need for guest key cards to be distributed at the hotel front desk. The system can also be integrated with hotel's booking and reservations system to eliminate the need for manual booking, in addition to enabling automatic settlement of payment for products and services enjoyed at the hotel. Most importantly, the system enhances the guests' experience of the hotel by providing the added convenience of not having to use key cards and improving the efficiency of services.



SILVER Best EPC/RFID
Concept

**Associate in Business (Hospitality Management),
Hong Kong Community College**

Students

Pong Dik Yin
Pong Kai Sze

Supervisor

Mr. William Leung Kwok Way

Winning Cases Sharing



ePlatform for Collective Memory Acquisition and Preservation - Sustain our Unique Legacy Easy (eCAPSULE)

As a tourism destination, Hong Kong has long been regarded as a shopping and gourmet paradise. Yet the city has much more to offer than just luxury goods and fine dining with a rich cultural heritage that blends Eastern and Western cultural influences. This heritage has been largely overlooked despite the potential it offers in helping to broaden the appeal of the city as a tourism destination. Indeed it is only in recent years that Hong Kong's cultural heritage has come under more scrutiny, with the demolition of Queen's Pier in 2008 in particular sparking intense public debate over the need for more cultural conservation.

By leveraging RFID technology, cloud-based computing, Augmented Reality and geo-social networking technologies, the ePlatform for Collective Memory Acquisition and Preservation – Sustain our Unique Legacy Easy (eCAPSULE) concept project aims to help Hong Kong better promote local cultural heritage and conservation. Designed by the Hong Kong Polytechnic University's Department of Industrial and Systems Engineering, this project enables visitors and locals to discover Hong Kong's cultural heritage using smartphones to read RFID location tags installed at places of interest. The user simply uses his or her smartphone to scan RFID location tags to access information about a location on a cloud-based database from a pre-installed application. The application provides integration with popular online multimedia and social networking services such YouTube, flickr, WordPress and FaceBook. In this way, the eCAPSULE not only serves as a convenient tourism guide to augment visitor's experience of Hong Kong, but also be used to build a collective memory of Hong Kong for local cultural conservation and sustainability and promote the city's cultural heritage.



Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University

Students

Cheng Mei Na
Kwong Kuk Hung
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Supervisors

Dr. Andrew W.H. Ip &
Prof. Benny C.F. Cheung



RFID-based Railway System - S ticket

China's rail network handles around three hundred million passengers every year during the Chinese New Year holiday. Strong demand for rail tickets during this period has led to a flourishing black market for ticket scalping both in stations and on the Internet, and industry corruption. To clamp down on the illegal reselling of tickets, the Ministry of Railways implemented a real-name railway ticket system, under which no passenger could purchase more than one ticket per journey. While this new ticketing system proved successful in reducing scalping, it also created two major operational challenges. Firstly workloads for authorized station personnel increased, because they now had the responsibility of conducting manual passenger identification. Secondly, the extra steps required to check a ticket purchases identity lead to longer processing times for ticket purchases.

The RFID-based ticketing system was proposed by the Hong Kong Institute of Vocational Education's Department of Business Administration to address these issues. The system consists of a RFID-based real name ticketing system and a RFID-based locker system. The RFID-based real name ticketing system is responsible for verifying a passenger's identity by comparing data stored in the passenger's Resident Identity card with data stored in the RFID railway ticketing system database, and issues an RFID-enabled ticket with information about the passenger encoded. Additionally, the RFID-based locker enables passengers to use their tickets as keys to gain access to a personal locker. In doing so, the system helps increase operational efficiency and enhances the passengers' experience of purchasing tickets and using station facilities.



Department of Business Administration, Hong Kong Institute of Vocational Education (Kwai Chung)

Students

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Chan Ming Hon
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Leung Lam Hing
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Mr. Yiu Cheuk Man Alvin

Winning Cases Sharing



DEPARTMENT OF COMPUTING
電子計算學系



**Most Innovative
Application of
EPC/RFID**

RFID-assisted Learning and Computer Interface System for Disabled People

People with disabilities in Hong Kong have largely unmet needs and inadequate support when pursuing academic learning. Although many educational institutions provide facilities and services for disabled students, many of these facilities are not completely suitable for people with severe disability. The ECLearn concept project was designed to address this challenge. It is an RFID-assisted learning and computer interface system for disabled people designed by The Hong Kong Polytechnic University to provide disabled people with upper limb physical handicaps and visual impairments with a barrier-free learning environment so that they can keep pace with their peers in academia.

ECLearn leverages RFID technology to enable disabled students to easily log into computer systems and determine what special accessibility requirements these students may have. It also has human computer interface devices customized for people with disabilities and support for teachers who are working with disabled students. The system uses RFID-enabled smart ID cards to identify students with disabilities and what their special requirements are, along with the Flexible RFID Encoder and Decoder (FRED) tool developed by the university for tagging information. When students with disabilities approach a learning terminal, they will automatically be recognized and logged in by ECLearn so they can begin studying. In addition, the system will read from the student's smart ID what special requirements they have and adjust the system appropriately. For instance, if a student has weak eyesight, the system will automatically display a larger font size. All people have the right to learn and providing disabled students with barrier-free learning ensures this right is upheld in Hong Kong.

**Department of Computing,
The Hong Kong
Polytechnic University**

Students

Lau Shiu Fung
Lo Ka Yee

Supervisor

Dr. Henry C.B. Chan



DEPARTMENT OF COMPUTING
電子計算學系



**Most Innovative
Application of
EPC/RFID**

RFID-Enabled Airport Asset Management System

As a key component of Hong Kong's transport infrastructure, the Hong Kong International Airport (HKIA) is critical to the functioning of the local economy, and enables the city to serve as a regional transportation hub and major destination for tourism. The Hong Kong Polytechnic University, Department of Computing identified an opportunity for the airport to further improve its efficiency using an RFID-based processing system for managing assets in the baggage handling area. The pilot project of RFID-Enabled Asset Management System collaborate with HKIA demonstrated the concept is applicable in assets management for a system of tens-of-thousands of items.

Working in collaboration with the Airport Authority Hong Kong, which provided information on operational processes and an environment for testing, the team from The Hong Kong Polytechnic University designed a system that enabled assets to be tracked with inexpensive 128-bit RFID UHF tags, which are the same type of tags already used in large quantities for passenger baggage processing. Tagged assets are handled by processing stations with fixed RFID reader set up at the warehouse entrance. When an item arrives, the processing station, which is connected to the system database, will process the information encoded on the tags. The information will be displayed on screen for human confirmation, further editing, querying and reporting. Handheld RFID readers can also be used for tag processing and checking anywhere. The system provides efficient, automated warehouse management for one of the busiest airport in the world, with a flexible on-tag-data encoding scheme for both on-site and off-site access. In addition, the system supports tag rewriting and updating for complete flexibility.

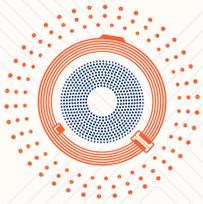
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Students

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Acknowledgements

Co-organizers



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 香港科技園
Science & Technology Parks

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LEADERS IN BUSINESS EXCELLENCE CREATION



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