

**SME Development Fund  
Final Report of Approved Project**

Project Title : RFID/EPC enabling tools for SME logistics service  
(Reference No.) providers and logistics technology solution providers  
(D08 003 010)

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Period covered : From 01/06/2009 to 31/08/2010  
(dd/mm/yy) (dd/mm/yy)

## 1. Project Details

Please mark with "\*" if any of the following project details is different from that in the project proposal appended to the project agreement.

### Project Reference and Title

RFID/EPC enabling tools for SME logistics service providers and logistics technology solution providers (D08 003 010)

### Project Summary (in not more than 150 words)

The project was divided into 3 stages. The first stage had developed the RFID enabling engine that enabled logistics technology services providers to start developing applications. The second stage had conducted 3 pilots based on the engine developed. The third stage focused on marketing and sharing of the results of the project.

### Project Objective(s) (in not more than 80 words)

Develop RFID enabling engine for logistics technology solution to enable tag printing, tag reading, EPCIS and EPC Network connectivity, and other supporting functions.

Provide tools to logistics technology solution providers to develop cargo tracking, proof of delivery and other logistics application.

Conduct pilots with logistics services providers and logistics technology solution providers to put the applications into real-life implementation.

### Recipient/Collaborating/Implementation Organisation

Recipient Organisation : The Chamber of Hong Kong Logistics Industry Limited

Collaborating Organisation(s) : \_\_\_\_\_

Implementation Agent(s) : GS1 Hong Kong

### Key Personnel

	<u>Name</u>	<u>Company/Organisation</u>	<u>Tel No. &amp; Fax No.</u>
Project Co-ordinator	<u>Elsa Tung</u>	<u>The Chamber of Hong Kong Logistics Industry Limited</u>	<u>3586 9278 (Tel) 3586 9279 (Fax)</u>
Deputy Project Co-ordinator	<u>Raymond Chin Yiu NG</u>	<u>GS1 Hong Kong</u>	<u>2861 2819 (Tel) 2861 2423 (Fax)</u>

### Project Period

	<u>Commencement Date</u> (day/month/year)	<u>Completion Date</u> (day/month/year)	<u>Project Duration</u> (No. of months)
As stated in project agreement	<u>1 Jun 2009</u>	<u>31 May 2010</u>	<u>12 months</u>
Revised (if applicable)	<u>1 Jun 2009</u>	<u>31 Aug 2010</u>	<u>15 months</u>

## **Methodology Employed**

### **Stage 1 – Development of RFID enabling engine**

(01/06/2009 – 30/11/2009)

6 months

- 1.0 Formation of project team, steering committee and kick-off the steering committee meeting
  - 1.1 Develop function specification and high level technical specification for RFID enabling engine
  - 1.2 Development of RFID enabling engine
    - Request for proposal (RFP) and select technology and system integration vendor
    - Detailed technical design & user interface design
    - Program development, testing and fine –tuning
    - User documentation
    - Acceptance test
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### **Stage 2 – Pilot implementation**

(01/09/2009 – 30/06/2010)

10 months

- 2.0 Pilot selection
  - 2.1 Gather pilot project requirements
  - 2.2 Logistics technology solution provider training
  - 2.3 Vendor solution development & implementation
  - 2.4 Prepare pilot report
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### **Stage 3 – Promotion and marketing**

(01/06/2010 – 31/08/2010)

3 months

- 3.0 Marketing agent appointment
  - 3.1 Publication – case booklet
  - 3.2 Publication – user manual
  - 3.3 Publication – CD-ROM
  - 3.4 Seminar – Conduct 2 half day seminar
  - 3.5 2 days' RFID Logistics Solution Day
  - 3.6 Project closure
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## 2. Summary of Project Results

### Project Deliverables

Please list out the targeted project deliverables as stated in the project proposal appended to the project agreement and provide details of actual result achieved, including beneficiaries, for each of them.

- Open-source RFID enabling engine for logistics technology solution providers.
  - The RFID enabling engine with source code is delivered in the form of CD-ROM and of free download from GS1 Hong Kong web site <http://www.gs1hk.org/RFIDEE/> through internet.
  - 2,000 copies of CD-ROM are prepared for distribution through 6 training sessions, 2 seminars, the Chamber of Hong Kong Logistics Industry Limited, and etc.
  - CD-ROM are distributed in 6 training sessions, 2 seminar sessions, 2 days' RFID Logistics Solution day, GS1HK events and members of the Chamber of Hong Kong Logistics Industry Limited

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- Technical specification and user manual of RFID enabling engine.
  - The technical specification and user manual in both Chinese and English language are included in the CD-ROM with the RFID enabling engine. The manuals can also be free download from GS1 Hong Kong web site <http://www.gs1hk.org/RFIDEE/> through internet. 2,000 CD-ROM are prepared for distribution.
  - The distribution channel is same as the CD-ROM.

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- Three RFID/EPC implementation pilots with logistics providers and logistics technology solution providers.
  - 3 pilot cases were conducted, and the cases were shared in seminars.
  - Each implementation had its own focus to improve its operational efficiency and accuracy. But 2 implementations are more related to warehouse management and 1 implementation is related to cargo tracking.

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- Case 1 – Earnward Warehouse Limited (mattress)
  - EWL was previously managing their warehouse and inventory operations manually.
  - EWL requires exact mattress deliver to their customers.
  - High human error rate in fulfilling orders which resulted in high costs being incurred due to mis-ships, shipment delays or missing delivery schedules.
  - To improve the situation, EWL has to record the exact location of each mattress and locate the correct mattress during stock-out process.

### Achievement

- More than 2000 mattress are tagged with RFID.
- Stock-out accuracy achieves 100%.
- Stock-take process reduced from 2 days to half-day.
- “The use of standard-based RFID technology for warehouse management is proving to be most helpful to our warehouse operation by facilitating faster stock tracking and eliminating human errors. As a result of automating the process, we have successfully achieved 100 percent accuracy in shipments.”

- Case 2 – China Rise International (canned abalone)
  - Counterfeited products are usually low in quality and may even harm customers' health.
  - Low quality counterfeited products also damage the image of the brand owners, and hurt customer confidence
  - Companies are suffered from revenue loss due to counterfeited products
  - Brand owners are looking for new ways to provide additional product information as well as marketing & logistics/delivery information to customers

#### Achievement

- “Through the EPC/RFID-based Cargo Tracking System, we are able to effectively monitor goods movement along the supply chain from the stock-out at our warehouse to the stock-in at retailer’s warehouse. The system provides us with an item-level tracking capability, hence ensuring product visibility.”
- “As one of the pilot users in the project and a pioneer in adopting EPC/RFID-based Cargo Tracking System for ready-to-eat dried abalone in the market, we would like to demonstrate the best practice in product authentication along the supply chain using the EPC/RFID application to enhance customer satisfaction.”

- Case 3 – Sun Rise Management (plastic particles & backpack)
  - Sun Rise’s clients require the company to manage inventory by their manufacturer’s lot numbers.
  - All stock-in, stock-take and stock-out operations must not only be based on the product codes, but also the manufacturer’s lot numbers.
  - Some customers require Sun Rise to manage their inventory by both case and item levels.
  - A lot of manual operation will be involved; hence Sun Rise must effectively manage and avoid human error in managing stock-out process.

#### Achievement

- Achieve 100 percent accuracy of its stock-out process, which in turn will eventually help in reducing or eliminating the cost of returns.
- An accurate and on-time delivery will result in better customer loyalty and satisfaction.
- “With the use of EPC/RFID application, we have enhanced the flexibility and efficiency of our warehouse management process. More importantly, we now have an accurate and efficient delivery process that allows us to gain better customer satisfaction.”

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- Case booklets based on the 3 pilot cases.
    - 500 copies of the case booklet in both Chinese and English language are printed for distribution. Survey form is attached to each case booklet.
    - The RFID enabling engine casebook can also be free download from GS1 Hong Kong web site <http://www.gs1hk.org/RFIDEE/> through internet.
    - The case booklet is distributed through 2 seminar sessions, GS1HK events and members of Chamber of Hong Kong Logistics Industry Limited.
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- Six RFID/EPC implementation training sessions (half-day – 3 business training and 3 technical training), to logistics services providers and logistics technology solution providers.
  - Training 1 – Business training conducted on 8 July 2010 AM with 12 participants at GS1HK office
  - Training 2 – Technical training conducted on 8 July 2010 PM with 11 participants at GS1HK office
  - Training 3 – Business training conducted on 21 July 2010 AM with 36 participants at GS1HK office
  - Training 4 – Technical training conducted on 21 July 2010 PM with 28 participants at GS1HK office
  - Training 5 – Business training conducted on 28 July 2010 AM with 44 participants at GS1HK office
  - Training 6 – Technical training conducted on 28 July 2010 PM with 34 participants at GS1HK office
  - Total 165 participants attended the training sessions.
  - RFID enabling engine training slides, flyer, CD-ROM and survey form were distributed to the participants.

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- Two seminars for logistics services providers and logistics technology solution providers on the RFID enabling engine and the application developed by logistics technology solution providers.
  - Seminar 1 – Seminar conducted on 12 Aug 2010 with 63 participants at seminar room of Science Park
  - Seminar 2 – Seminar 2 conducted on 13 Aug 2010 with 69 participants at seminar room of Science Park
  - Total 132 participants attended the seminar sessions.
  - 3 pilot cases were shared in seminars
  - RFID enabling engine seminar rundown, flyer, CD-ROM and survey form were included in the welcome kit
  - RFID enabling engine casebook with survey form was sent to the participants in early September.

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- A 2 days' logistics solution day to disseminate information on RFID enabling engine with demonstrations on RFID applications for the logistics industry.
  - 6 companies/organizations participated in a 2 days' logistics solution day – Power Logistics (PCCW), Convergence Systems Limited (CSL), ViziLog Solutions, Zebra Technologies, GS1 Hong Kong (GS1HK) and The Chamber of Hong Kong Logistics Industry (CHKLI)
  - A 2 days' logistics solution day conducted on 12 & 13 Aug 2010 with 132 participants at RFID Centre.

#### **Actual Benefits to SMEs**

Please indicate *in clear, specific, tangible and quantifiable terms* the benefits of the project and its contribution to enhancing the competitiveness of Hong Kong's SMEs in general or SMEs in specific sectors, in not more than 400 words.

Today, an increasing number of multinational companies (MNCs), such as Wal-Mart, Metro, are requesting their suppliers, in which a majority of suppliers are Small-to-Medium Enterprises (SMEs), to provide RFID/EPC tag on the products and on pallet/case level. By doing this, it will help facilitate supply chain visibility and traceability in achieving cargo management, enhancing delivery accuracy, guaranteeing the product quality and accelerating the processing speed.

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The RFID enabling engine project is organized by the Chamber of Hong Kong Logistics Industry Limited, co-organized by GS1 Hong Kong and funded by the SME Development Fund of the Trade and Industry Department, HKSAR Government. The project developed an open-source RFID enabling engine that will help in equipping logistics technology solution providers to facilitating RFID tag printing, RFID tag reading and also establishing connection with EPCIS system. The RFID enabling engine was designed to have a simple application program interface (API) so that the logistics technology solution providers are able to utilize those Wal-Mart RFID interface with minimal effort

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Through the enhancement or further development of RFID enabling engine, the local logistics technology solution providers can reduce the learning curve of using RFID technology, and thus focus on developing or modifying the business application while the communication to EPCIS or RFID middleware will be handled by the RFID enabling engine through the API interfaces. There will be more RFID enabled solutions to serve the industry.

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Three RFID/ EPC pilot project implementations were conducted with each implementation had its own focus to improve its operational efficiency and accuracy. In fact, 2 implementations are more related to warehouse management and other is related to cargo tracking

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Through the 6 training sessions, the events attracted and trained 165 participants with the RFID knowledge. 78% of SMEs attended the training sessions will consider implement RFID using the RFID enabling engine.

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Two seminars for logistics services providers and logistics technology solution providers on the RFID enabling engine and the application developed by logistics technology solution providers attracted 132 participants to join the seminars.

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A 2 days' logistics solution day to disseminate information on RFID enabling engine with demonstrations on RFID applications for the logistics industry was joined by 6 companies and it also attracted 132 participants for the events.

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The majority of participants thought that the "RFID enabling engine seminar and solution day" enabled them to have a better understanding on the business values and benefits of RFID technology and related solutions from the real life scenario demonstration.

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Many participants opined that the visit to Hong Kong RFID Centre was impressive where they could experience how the emerging RFID technology can be beneficial to all supply chain stakeholders.

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Being one of the four key industries, Hong Kong will be benefited by strengthening its position of global logistics hub and providing a competitive advantage for the local logistics industry players in the coming future.

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## Milestones (in chronological order)

# Please indicate if the milestone is completed (C), deferred (D) or not achieved (N). If it is deferred, please indicate the revised completion date. For those milestones which are deferred or not achieved, please also provide the reasons under item 2.4.

<u>Milestone</u> (as set out in the project proposal appended to the project agreement)	<u>Original target completion date</u>	<u>Revised target completion date</u> (if applicable)	<u>Status</u> (C/D/N) #
<b>Stage 1 – Development of RFID enabling engine [6 months]</b>	30/11/2009		C
Formation of project team, steering committee and kick-off the steering committee meeting			
(a) Develop function specification and high level technical specification for RFID enabling engine	30/11/2009		C
(b) Development of RFID enabling engine	30/11/2009		C
<b>Stage 2 –Pilot implementation [10 months]</b>	28/02/2010	31/05/2010	C
(d) Pilot selection	28/02/2010	31/05/2010	C
(e) Gather pilot project requirements	28/02/2010	31/05/2010	C
(f) Logistics technology solution provider training	28/02/2010	31/05/2010	C
(g) Vendor solution development & implementation	28/02/2010	31/05/2010	C
(h) Prepare pilot report	28/02/2010	31/05/2010	C
<b>Stage 3 –Promotion and marketing [3 months]</b>	31/05/2010	31/08/2010	C
(i) Marketing agent appointment			
(j) Publication – case booklet	31/05/2010	31/08/2010	C
(k) Publication – user manual	31/05/2010	31/08/2010	C
(l) Publication – CD-ROM	31/05/2010	31/08/2010	C
(m) Seminar – Conduct 2 half day seminar	31/05/2010	31/08/2010	C
(n) 2 days' RFID logistics solution day	31/05/2010	31/08/2010	C
(o) Project closure	31/05/2010	31/08/2010	C



### Marketing/Dissemination Activities (in chronological order)

Please provide details of all completed and on-going promotional and/or dissemination activities for each of the project deliverables. Such activities may include advertisements, seminars, workshops, etc.

<u>Date/ Period</u>	<u>Description</u>	<u>No. of beneficiaries</u> (Please specify whether they are SMEs or not)
28 June 2010	Publish Earnward's article in SupplyChainPlus	1,000
30 June 2010	Post Training Sessions Registration Website Banner & Event Calendar at GS1 Hong Kong Website	
7 July 2010	RFID enabling engine binary, source code and documentation are available for download at GS1 Hong Kong website ( <a href="http://www.gs1hk.org/RFIDEE/">http://www.gs1hk.org/RFIDEE/</a> )	
8 July 2010	Business Training on EPC/RFID	12
8 July 2010	Technical Training on RFID enabling engine	11
21 July 2010	Business Training on EPC/RFID	36
21 July 2010	Technical Training on RFID enabling engine	28
22 July 2010	Seminar & Solution Day Registration Website Banner & Event Calendar at GS1 Hong Kong website	
28 July 2010	Business Training on EPC/RFID	44
28 July 2010	Technical Training on RFID enabling engine	34
10 Aug 2010	Publish China Rise and Sun Rise's articles in GS1HK eNewsletter to GS1 Hong Kong's members and non-members	10,500
12 Aug 2010	Seminar 1 at Science Park	63
13 Aug 2010	Seminar 2 at Science Park	69
12 & 13 Aug 2010	Solution day at RFID Centre	132
27 Aug 2010	RFID enabling engine case booklet is also available for download at GS1 Hong Kong website ( <a href="http://www.gs1hk.org/RFIDEE/">http://www.gs1hk.org/RFIDEE/</a> )	
Total no. of beneficiaries - no. of SMEs		: 11,929
no. of companies which are <u>not</u> SMEs		:

### Future Plan for Promoting the Project Deliverables

A thematic section on the open-source RFID enabling engine project was developed at the corporate website of the GS1HK (<http://www.gs1hk.org/RFIDEE/>) to sustain the awareness promotion of the project to the industries, and allow the free download of the code and documentation for the public.

This project provided a showcase to the CHKLI and GS1HK as a reference for the SMEs. Over 132 participants from these industries were invited to the seminars and solution days hosted by the CHKLI and GS1HK. Some 24 participants indeed indicated their interest to learn more about the different RFID solutions. All these 24 cases were seriously followed up by the GS1HK with sales visits led by experienced consultants. GS1HK was satisfied with the encouraging achievement reached at present, given there had only been a short period of time elapsed since the release of open-source RFID enabling engine.

VTC showed interested in the RFID enabling engine and will consider to hold an interest group to further develop application using the RFID enabling engine

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In order to promote and market the RFID enabling engine, the GS1HK will continuously to seek the opportunity to co-operate with different logistics association (CHKLI, HKLA, HAFFA) or IT associations (IProA, ISLA, HKITF) to conduct seminars to its members to ensure RFID enabling engine can reach its potential users.

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The RFID equipment used in the pilot will not be disposed but will be reused in testing and pilot of other users or for demonstration of the business application developed by the logistics technology solutions providers to other potential users.

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In the view of the business potential concerned, the GS1HK will continuously work with system integrator, RFID solution providers, as well as RFID label printers and suppliers to further lower the implementation cost for SMEs. The GS1HK will outreach to the potential logistics service providers to promote their upstanding on the solution and benefits to be involved.

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