

Radio Frequency Identification in China

Summary

Radio Frequency Identification (RFID) systems will play a crucial role in international commerce and will become a new and important technology development trend in China's Information Technology fields in the next several years.¹ China understands the power of RFID for improving the efficiency of manufacturing, supply chain operations, and data collection. As a leader in global manufacturing, China plans to move ahead with the development of RFID standards, whether they are national standards, international standards, or a combination of both. As China is poised to become the largest RFID application market in the world, the importance of RFID standards in enabling interoperability of RFID systems is paramount. China is not only one of the world's important manufacturing and assembling bases, but, as the third largest trading country, is also a key consumer market as well.

In 2005, the development and application of RFID is regarded as the key project of the China Golden Card project². This could provide more opportunities to U. S. exporters, as China will require more equipment and technology related to this field. Furthermore, the development of RFID standards in China is at a critical phase, as fragmented standards will severely impact a burgeoning technology expected to have a potential market value of over seven billion dollars by 2008.

Market Overview

According to a recent survey by the Ministry of Commerce, over the next three years (2005-2007), China will invest \$124.4 billion to build and improve enterprise informatization (a term used in China to describe the development and promotion of IT tools). These investment also apply to the RFID related technology and products.

China is becoming a hub for outsourced manufacturing. China is producing more consumer products for export than ever before. For example, more than 65% of non-food products sold by Wal-Mart are manufactured in China.³ In addition to the focus on manufacturing, China is interested in anti-counterfeit solutions using RFID for the liquor and tobacco industry. For the logistics market, RFID will focus on the following sectors: trade processing, international procurement, spare parts of automobile, IT products, airplane, medical, food, and shipping containers.

China has many OEM and brand name manufactures producing goods such as garments, consumer electronic, electronic home appliances, medicine, automobile and automobile parts, and light industry products, etc. Most of these products are exported to foreign

¹ Source: Remarks by Zhang Qi, Director General of the Ministry of Information Industry's Department of Electronics and IT Products in a speech at the 2005 China RFID forum.

² The Chinese "Golden Card Project" was proposed by then Chinese President, Jiang Ziming. The Ministry of Information Industry and The People's Bank of China established a leading group on this project in 1993. Golden Card project is a key Government project to use IT to promote China's e-payment and business development.

³ Source: Smart Card & RFID Magazine, publication date 2005.04; Information Week, June 21, 2004.

countries where RFID technology is in demand. As such, China is at the forefront of implementing FRID applications, especially with regards to supply chain management.

Moreover, China is very aggressively implementing RFID technology in both contact and non-contact smart cards, which are used in a variety of applications from Chinese citizen ID cards to IC ticketing cards for the Beijing subway system.

Market Trends

In 2004, GDP growth in China was 9.5%. Total import-export volume reached \$1.15 trillion, an increase of 35.7% over the previous year. The logistics industry experienced an overall leap to \$102 billion, an increase of 8.4% over the previous year, which accounted for 21% of the total GDP.

Presently, China has allocated 13.56 MHz frequency for public transportation cards, Second Generation identification cards, and some special projects used in the China tobacco industry and the Beijing postage management system. By 2008, China will issue 900 million Identification Cards (Shen Fen Zheng), and about 44 billion non-contact cards in various sectors.

Hong Kong Goods Coding Association along with EPCglobal Hong Kong plans to jointly work with officials from the Zhu Jiang delta in Guangdong province to build a trial project on the electronic product code network for supply chain. The purpose of this project is to build a cross border logistics platform.⁴

According to Mr. Ma, the Secretary General of China Association for Standardization, China's RFID market is still in its initial development phase. China is trying to promote RFID technology as an application while learning from the ongoing projects to lay a foundation for future development. In the short term, the application of RFID in China is focused on local and internal systems within a company or an industry.

Import Market

China is looking forward to cooperating with international companies in the RFID field⁵. Every year China imports a great deal of software, hardware, chips, and IT-related equipment. China currently lacks the technological innovation to produce quality radio frequency products. Most local companies would like to import RF modules and design their own products according to the industry's application. China's primary need is to import high quality core-chips and the design of antennas. China also lacks packaging equipment and assembling foundries for the RFID tag. Therefore, China needs to import these types of products. Due to the unique characteristics of the China market, products in demand are low cost hardware that requires low power consumption. In addition, software applications will also be required.

⁴ Source: Ms. Anna Lin, Chief Executive of Hong Kong EAN and EPCglobal (Hong Kong).

⁵ Comments made by Zhang Qi, Director General of MII, May 2005.

Competition

Multinational RFID players include Sun Microsystems, Philips, Alien Technology, Texas Instruments, SAP, Oracle, etc., all of who have announced RFID initiatives in China. For example, Cisco is working with many retailers trying to help them use RFID to customize their strategy.

Hewlett Packard and Hasboro have operations in China, which have investigated the process of source tagging. Hewlett Packard has even licensed a temporary frequency band for RFID implementation from the Chinese government.⁶

TAGSYS designs complete RFID systems (chips, tags, readers, antennas), and can tailor complete RFID solutions to meet customer-specific applications in a wide range of packaging. The company has offices in the U.S., Europe, and Hong Kong.

Tagistics Corporation can provide a total RFID solution for the Ultra High Frequency (UHF) field.

The Muhlbauer Corporation, which has smart label assembly technology, can supply complete turnkey solutions –from chip bonding over date capturing and personalization to verification. It can also provide the high-tech machines for security-based applications in the Smart ID industry (Chip Cards, Smart Labels, Passport, border crossing) as well as machine technologies for niche applications in the semiconductor industry. The company has a representative office in China.

Infineon Technologies (China) Company Ltd. can provide non-contact storage products in China.

Inside (a French company) provides the non-contact ISO standard chips in RFID fields. The company also has a representative office in China.

On April 2005, the Korean Association of RFID/USN led a delegation of 11 Korean companies to exhibit their RFID products in Beijing. Their products included readers, chips, tags, antenna, sensor nodes and sockets, metal RFID solutions, IC communication cards, etc.

While RFID has yet to be widely used in China, some projects have been started. Fudan University in Shanghai hosts the Auto-ID Lab in China, one of six universities around the world that are responsible for fundamental RFID research. EPCglobal-China in Beijing was founded in April 2004 to investigate the industrialization and commercialization of RFID/EPC technology. The group was formed under the request of China Association of Standardization, an advisory committee of the Standardization Administration of China (SAC).

⁶ Smart Card & RFID magazine, published 2005.04

End Users

China's consumer electronics manufactures are actively interested in RFID technology; they believe that RFID cannot only track product and increase efficiency, but can also reduce logistics costs.

In June 2004 Beijing Postage Bureau staged a trail project using RFID to identify and track each package mailed from a sample of 50 post offices. The trial is scheduled to conclude within 18 months of its initiation. The second phase, to begin upon completion and evaluation of the first phase, will involve about 400 post offices and is scheduled to be finished within one year of initiation.

Starting from July 2005, the Beijing Subway Company will invest \$5.3 billion to re-build the system's vehicle, signal, telecommunication, power supply, machine and equipment and automated ticketing system. Of the \$5.3 billion, about \$73 million will be allocated for an automated ticketing system. By 2007, the whole Beijing subway system will use IC cards for the ticketing system.

Jiangsu province has initiated its "1282" trial project for the Petrol and Chemical gasoline station IC card project. The project relates to equipment such as: industry control machines, linkage equipment for card and machinery, PC servers, POS machines, readers, operating systems such as AIX LINUX, SYBASE, and different kinds of middle-ware, etc.

China Railway began its automatic identification system (ATIS) management project in 1999. Presently, 30,000 locomotives and 600,000 carriages have installed RFID tags. The whole project is completely operational, complete with a control room. The equipment supplier is Haerbin Weike Keji Corporation (HWKC). The electronic tag, microwave components, and reader are imported from the U.S. HWKC integrated these products to develop new applications in the Railway project.

Shenzhen Baisha (Tobacco) company began using RFID within the production process to track the movement of goods. Since RFID technology was introduced, production efficiency increased 100%.⁷

Market Access

There are three standards-related issues: 1) product coding, 2) radio frequency allocation, and 3) the interface between reader and the RFID tag that all need to be worked out in accordance with the global market.

Tag, reader, and interface: For issues related to RFID tag, the reader, and the interface between the two, the primary players in China appear to be Fudan University's Auto-ID

⁷ China Information World magazine, April 25, 2005.

Laboratory and the Chinese Electronics Standardization Institute (CESI), a government agency under to direction of the Ministry of Information Industries (MII).⁸

Frequency: Allocation of RFID frequencies is a key issue for the China RFID market with the big question being the interoperability with the international supply chain. Between the High Frequency (HF) 13.56 MHz and the Ultra High Frequency (UHF) 860-960MHz, China is presently using HF in its ID card applications, while the railway systems project is using UHF. We understand that in the United States, the supply chain frequency band is 919MHz. The use of the UHF band, the radio band over which RFID signal in China is carried, is facing challenges. Presently, the UHF band frequency is heavily occupied by GSM and CDMA telecommunications systems.⁹ China's radio frequency management authority is working actively on testing a number of frequencies and will make the final decision on which one to open. No time schedule has been given. For now, the Chinese government is offering temporary licenses in the UHF band. The State Radio Regulatory Commission (SRRT) appears to be in charge of frequency allocation. SRRT is also under the direction of MII.

Standard: At the RFID World conference in Dallas, Texas in March 2003, Qiang Bai, CTO at uniView Technologies and a member of the Chinese delegation stated that China will use EPCglobal and ISO standards, but with some modifications to satisfy special needs in China. China plans to participate in creating a global standard but will use its own intellectual property to build a royalty-free standard.¹⁰

SAC is responsible for all standards in China. SAC can provide the general information and the development trend of China's standards.

The Article Numbering Center of China (ANCC) is a member of China Association for Standardization (CAS), who is responsible for the bar code and EPC code segment.

One of the biggest issues facing RFID in China is that there does not seem to be clear direction within the Chinese government as to who has responsibility over RFID in general. There are several competing interests at play, which makes the situation complicated for foreign companies (and governments) to fully understand.

Tariffs: China agreed to sign on to the Information Technology Agreement (ITA) upon WTO accession, thereby committing to eliminate tariffs on all products covered by the ITA. Tariff reductions from its previous applied average of 13% were initiated upon accession. Tariffs on two-thirds of the ITA products were eliminated by January 1, 2003, and tariffs on all the remaining ITA products were eliminated by January 1, 2005.

Market Entry

⁸ RFID Journal, September 15, 2004.

⁹ Information Week's RFID Insights. March 3, 2005.

¹⁰ Information Week's RFID Insights. March 3, 2005.

As stated above, in general, SAC is in charge of the standards of electronic product code and RFID. There are more than 20 experts from the MII, Ministry of Commerce, Ministry of Science and Technology, China Electronics Standardization Institute, China Association for Standardization, and EPCglobal China (established in April 2004) who are all working on China's RFID standards.

The U.S. Commercial Service provides a wide range of services to facilitate the opportunities for U.S. small and medium sized companies entering into the China market. The International Buyer Program helps U.S. firm identify and establish contacts with potential Chinese distributors and buyers of their products when Chinese delegations visit major shows in the U.S. The U.S. Commercial Service also provides assistance through our "Gold Key Services", "International Partner Search" and "Platinum Key Service" to help U.S. firms enter the China market. We also have "International Company Profile Service" to help American companies do due diligence in China.

Opportunities for Profile Building

Recently China has held several RFID Forums, such as the 3rd International EPC, RFID Summit Forum, The 7th China International Smart Label (RFID) Conference, RFID China Forum and Exhibition, Senior Seminar on RFID and EPC and Electronic Supply Chain, and the 8th China International Smart Card Expo. All these forums can help companies and industries to understand the China RFID market.

Key Contacts

US & FCS Contacts:

Merry (Shujuan) Cao
Commercial Specialist
US & Foreign Commercial Service, Beijing
31st Floor, North Tower, Beijing Kerry Center , China 100020
Email:Shujuan.Cao@mail.doc.gov
www.usembassy-china.org.cn
www.buyusa.gov/china/en
Tel: (8610) 85296655-861
Fax:(8610) 85296559/8

Industry Contact:

Department of New and High-tech
Standardization Administration of China.
Tel: 8610-62369420;
8610-62022288-3813
Fax: 8610-62369420

Frequency Planning Division
Radio Regulatory Department
Ministry of Information Industry
Tel: 8610-88385038
Fax: 8610-68366494

Shanghai RFID Demonstrate Center
Shanghai Modern Logistic Information Industry Park
Number 2889, Qilianshan Nanlu,
Tel:8621-52845159;
Fax 8621-52845160

The Article Numbering Center of China (ANCC)
Tel: 8610-62017188
Fax: 8610-62354644
www.ancc.org.cn

www.rfidchina.org
Tel: 8610-65069666
Fax: 8610-65057158
Email:liuxp@spajuce.com.cn
rfidchina@spakice.com.cn

AIT Media Advertising Co., Ltd
Tel: 8610-65581930
Fax: 8610-65581931
Email cts@ait-event.com
<http://www.scfc.org.cn>

Upcoming Trade Shows/Events

The 7th Smart Card +Smart Label (RFID) Expo.
Date: April 19, 20, 21, 2005
Venue: China Beijing Exhibition Center, Beijing China
Tel: 8610-6558 1933
Fax: 8610-65581931
www.ait-events.com

The 8th International Fair of Smart Cards, China 2005 (SCC 2005)
Date: May 25-27, 2005
Venue: China World Trade Center. Beijing
Tel: 8610-68451873, 68453393
Fax: 8610-68455499
www.ccidexpo.com

RFID China Forum & Exhibition Autumn 2005

www.rfidchina.org

Tel: 8610-65069666

Fax: 8610-65057158

Email: liuxp@spajuce.com.cn

rfidchina@spakice.com.cn

The 3rd International ECP, RFID Summit Forum

Date: June 22, 2005

Venue: China International Conference Center

Contact: Zheng Yu

Tel: 8610-68993878-29

Fax: 8610-68311390

Email: Zhengy@autoid-China.com.cn