

Singapore's RFID Journey

7 April 2005

Who's IDA?

Infocomm Development Authority of Singapore (IDA)

- > Telecoms regulation**
- > E-government implementation**
- > Industry development**

Singapore's Experience in RFID Deployment



Institute of Microelectronics, Institute of Infocomm Research and Defence Science & Technology Agency developed solutions to use RFID for SARS contact tracing in local hospitals in 2003.



Land Transport Authority has used RFID in Electronic Road Pricing (ERP) system in city areas and on expressways since 1998.



National Library Board has deployed RFID in library environment since 1998 to automate borrowing and returning of library books, and quick sorting to put books back onto shelves.

IDA RFID Development Strategy

IDA announced in May 2004 that we will invest S\$10 million seed fund to develop Singapore into RFID Hub in Asia

- **A**lign Frequency Spectrum
 - For global interoperability
- **B**uild Capabilities
- **C**atalyse Adoption

RFID
JOURNAL

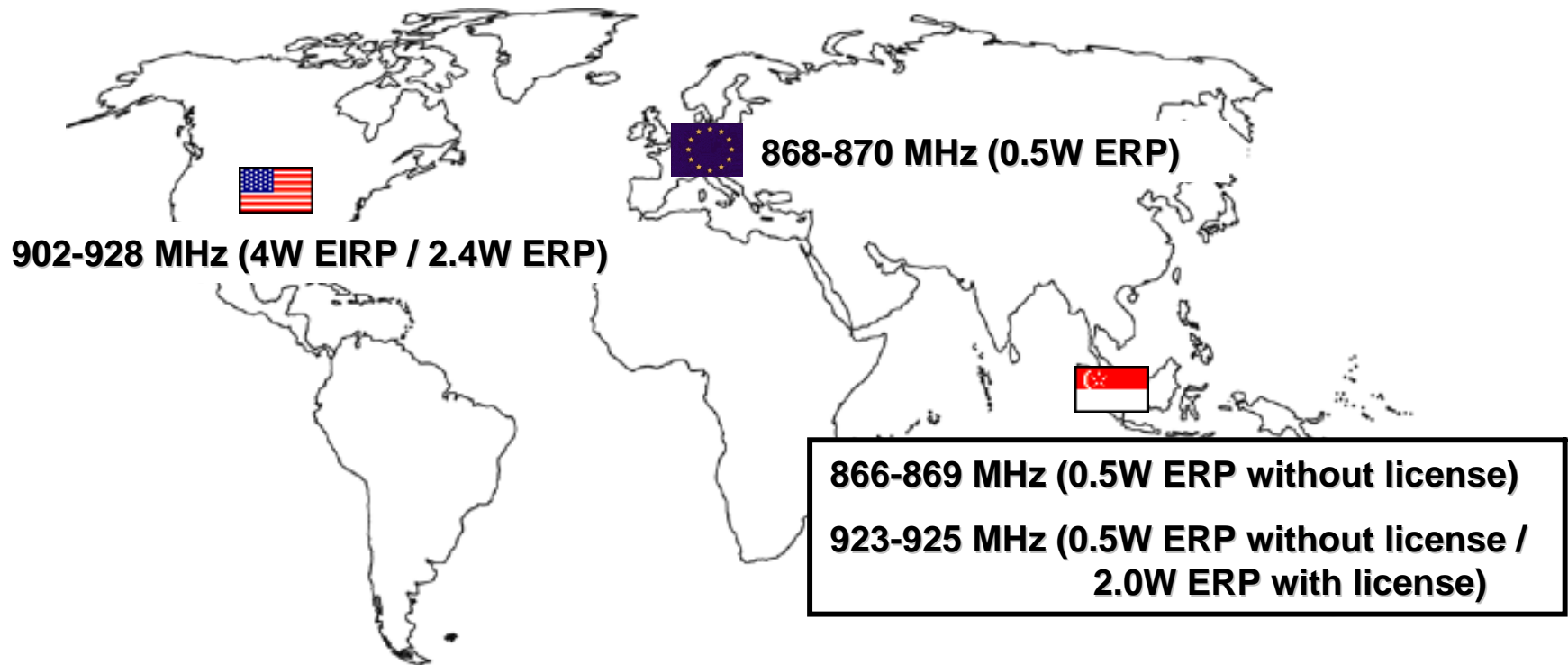
Singapore Seeks Leading RFID Role

With the goal of becoming Asia's foremost center for RFID technology, the island-republic will invest millions on research and training.

July 12, 2004

Align Frequency Spectrum

- UHF frequency spectrum and power output limit for RFID applications allocated in Nov 2004



Singapore is among the first Asian countries to have formally allocated UHF spectrum with suitable power limit for RFID applications

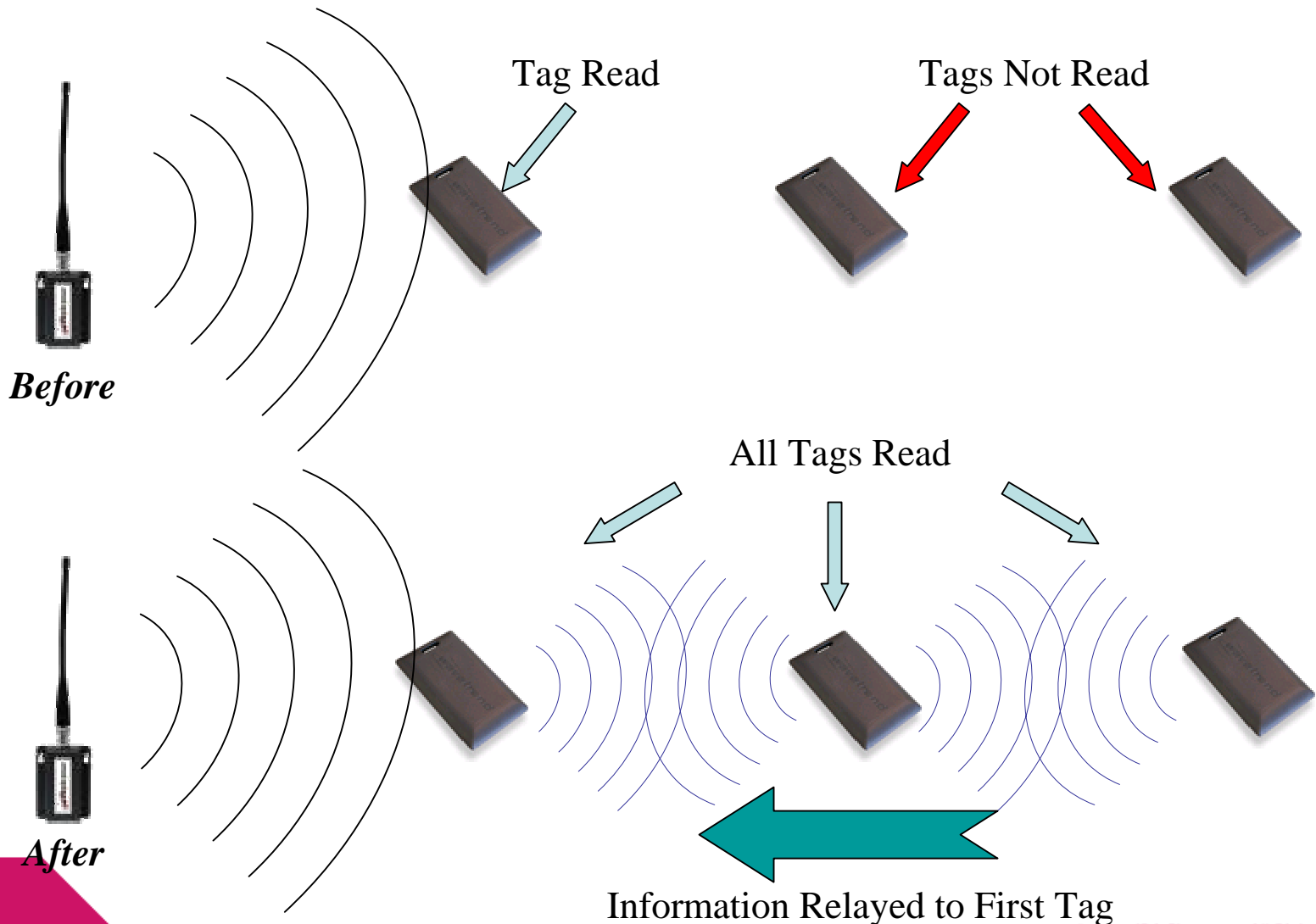
Building Capabilities - Technology

- Developing multi-frequency RFID tag
- Developing intelligent active RFID tags that can communicate with one another
- Developing EPCglobal Gen 2 reader



Building Capabilities - Technology

GT&T Active Tags



Building Capabilities - Technology

Gen 1 & 2 readers



Building Capabilities - Infrastructure

➤ RFID development centres:

- 1st RFID test centre in Southeast Asia



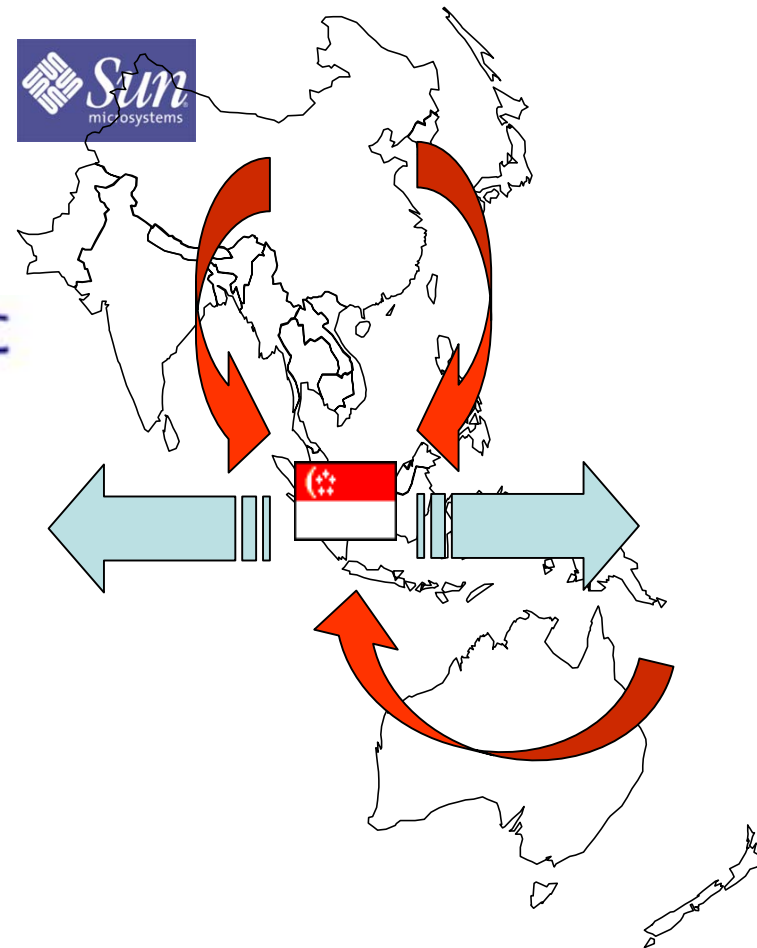
- NEC RFID centre that features the region's 1st EPC network



- IBM development centre



- HP Cooltown



Catalyse Adoption

> Aviation

- > 1st Airbus logistics centre outside Germany to implement RFID for tools tracking



> Retail

- > Largest supermarket in Singapore deploying RFID in their distribution centre for product tracking



> Logistics

- > Local logistics operator YCH using RFID to manage bonded warehouse operations
- > BaxGlobal to trial RFID and Rosettanet integration in VMI warehouse
- > Pallet leasing companies LHT and Loscam to monitor regional asset tracking system using RFID
- > Logistics service provider Translink Express to trial RFID cold chain management system



Building a Vibrant RFID Ecosystem

➤ Chips/tags



Smartag

➤ Readers



➤ Software/Middleware



CET Technologies Pte Ltd

ST LogoTrack

➤ System Integration



BIZIT
THE BUSINESS OF INFOCOMM TECHNOLOGY

THE BUSINESS TIMES Monday, March 7, 2005

BACK TO SIMPLICITY
Get simplicity back into mobility PG 29



STMicro making RFID chips in S'pore

It hopes to ride on demand generated by Wal-Mart mandate to its suppliers, reports AMIT ROY CHOUDHURY

EUROPEAN semicon giant STMicroelectronics is in the process of shifting its entire global production of radio-frequency identification (RFID) chips to Singapore.

Production is expected to start from the third quarter of this year, and by next year, it will have the potential of manufacturing billions of such chips per month here, Francis Dell'ova, RFID memory products business unit manager of STMicro's memory products group, told BIZIT.

Mr Dell'ova said STMicro anticipates a surge in demand for RFID chips following the decision by the world's biggest retailer, Wal-Mart, to mandate the use of RFID tags on products from its top 100 suppliers. He said Wal-Mart had stipulated that its suppliers would need to adopt a particular set of specifications for encoding the tags, different from that endorsed by the International Standards Organisation — and STMicro is currently the only chipmaker with RFID chips following that standard.

There's more good news. Following Wal-Mart's lead, other major retailers like Metro, Tesco and Carrefour are also pushing for the use of RFID technology by their suppliers.

"They are also planning to use the same ISO standard and this is expected to generate additional demand for us."

The EPC electronic product code standard was developed by EPCglobal, a not-for-profit joint venture between two major standards bodies, EAN International and the Uniform Code Council (UCC). And STMicro is the only company which is at the moment making RFID chips based on Class 1, Gen 1, 96 bit (specifications)

BT exclusive

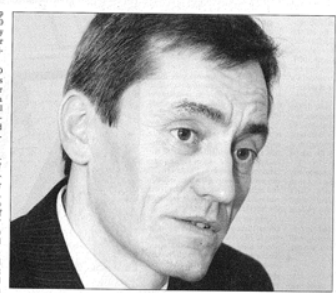
of EPCglobal which are included in the Wal-Mart specifications", Mr Dell'ova said.

In June 2004, STMicro announced the availability of a UHF (ultra-high frequency) RFID memory chip for supply chain and logistics applications that complies with the version 1.0 EPCglobal standards.

The new full-featured low-cost chip, named XN200, is designed for use in RFID tags operating in the UHF frequency bands, which are increasingly being used for object tracking in areas such as consumer retailing and baggage handling.

The tag is categorised as an extended range device, detectable up to 10 metres from an RFID reader. The UHF technology of the XN200 is suitable for both the 902-928 mega hertz band of the US market and the 864-868 mega hertz band of the European market, STMicro says.

Mr Dell'ova observed that there are efforts ongoing to introduce uniform UHF frequency bands for RFID chips worldwide so that such chips can work in any country. He expects a consensus on the UHF bands within a year or two.



Mr Francis Dell'ova (left) says STMicro hopes to see prices of RFID tags drop to around 5 US cents within the next few years.

But this cost should fall quickly. While the chips now cost around 5-7 US cents each, by 2008 this is expected to come down to 2 US cents for volumes of one billion units or more.

"We expect the same 30 per cent rate to remain and hence expect prices of the tags to come down dramatically," he added. He said STMicro hopes to see prices of RFID tags drop to around 3 US cents within the next few years.

Preparations have already started for the manufacture of the chips at STMicro's Singapore facility, and will be completed by June, Mr Dell'ova said. "At full capacity we will be able to make billions of chips per month," he said, although "production would depend on demand".

RFID — the bar code of the future

RADIO frequency identification (RFID) tags are set to eventually replace bar code strips, once prices come down. These RFID tags come in two forms, passive and active. While both use radio frequency energy to communicate between a tag and a reader, the method of powering the tags is different.

Active RFID uses a battery situated within the tag to power its radio frequency communication circuitry. Passive tags rely on radio frequency energy

transferred from the reader to the tag for power. As a result, passive tags usually have a range of only a few metres while an active RFID tag could have a range of over 100 metres.

Passive tags are useful for collecting real time inventory information within a warehouse, and this explains why Wal-Mart is interested in replacing traditional bar code technology with RFID tags. Both active and passive RFID tags can potentially store data. However, because of power limitations, passive tags typically only provides a small amount of read/write data storage, in the order of 1,000 bits (characters) or less, with no search capability or other data manipulation features.

Active RFID tags, on the other hand, have the ability to store much more amounts of data as they have their own source of power, the battery. Some tags can store up to one million bits of dynamically searchable read/write data.

Thank You



Contact Us

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