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International Telecommunication Union

Visions and strategy in Japan

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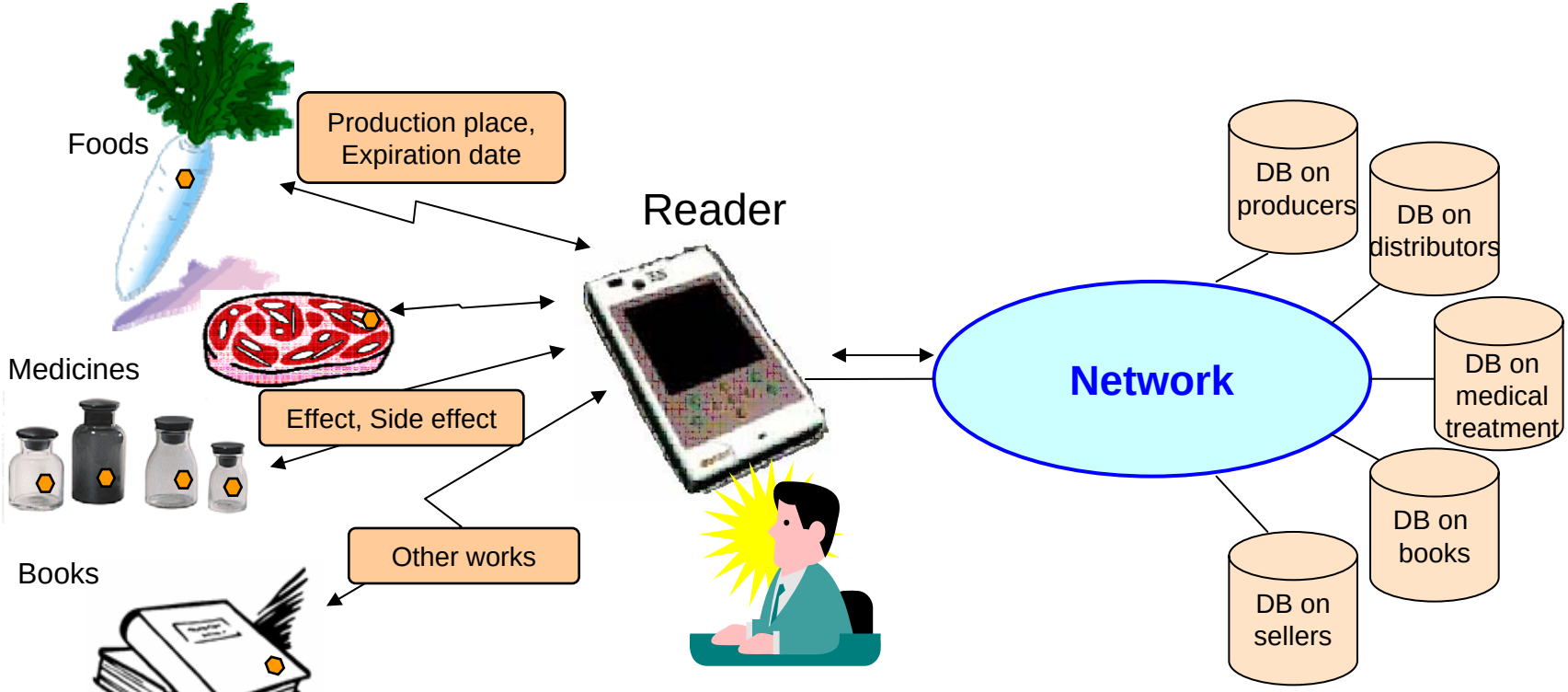
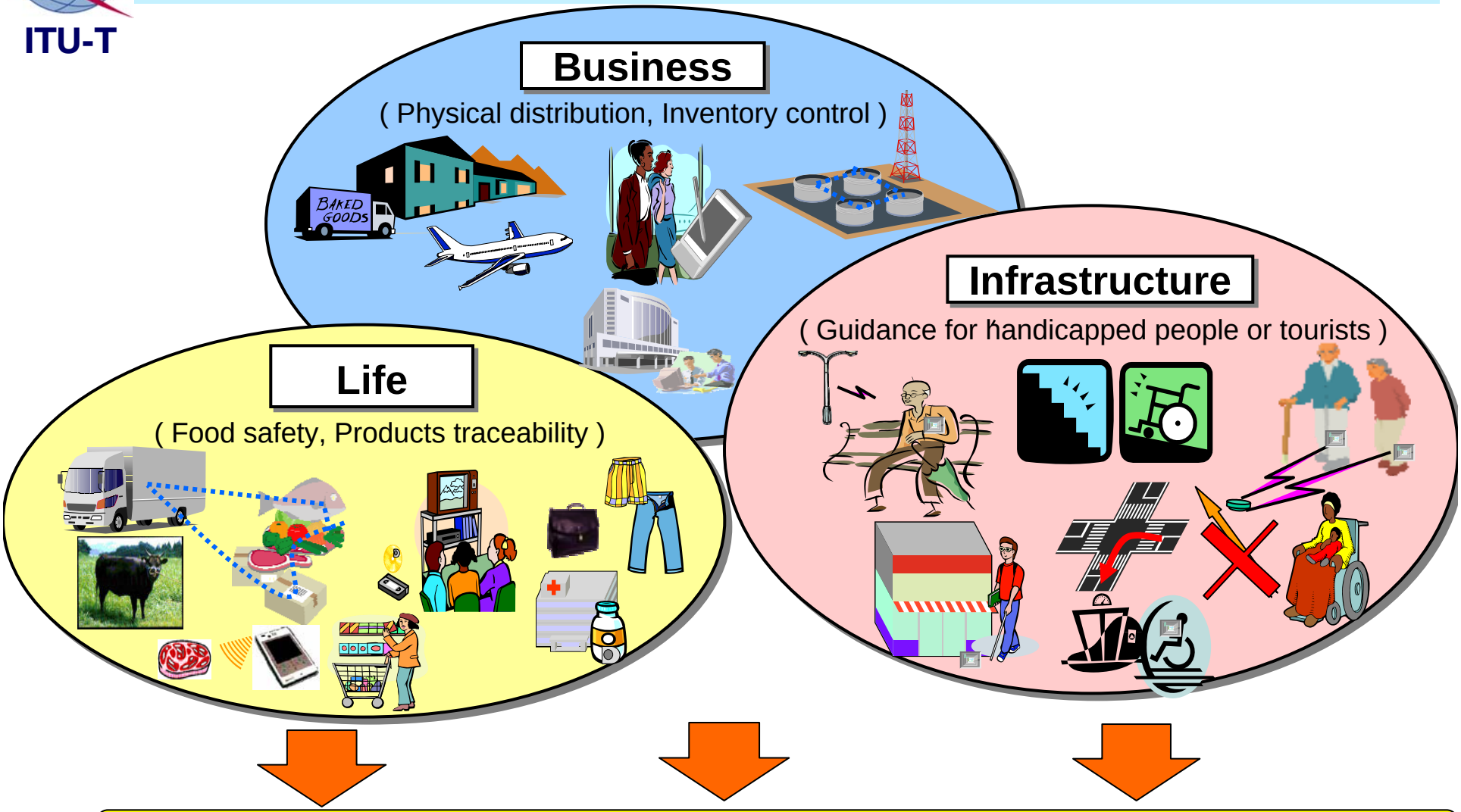
Utilization of Networked RFID

People can obtain necessary information through a network by reading the RFID attached to various things



Realization of the environment where people can obtain the appropriate information from a variety of related DBs

Meaning of the Promotion of RFID



Potential of the revolution in people's lifestyle

Japan's ICT Strategy

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National policy goal:
world-leading ICT environment by 2005

e-Japan Strategy

<Four priority policy areas>

(1) Infrastructure
(2) e-commerce
(3) e-governments
(4) Human resources

e-Japan Strategy II

<Focus on use of ICT>

Seven priority fields:
(1) Medical
(2) Food
(3) Daily Life
(4) Small Business Finance
(5) Knowledge
(6) Labor and Employment
(7) Administrative Services

IT new revolution Strategy

<Pursuit of structural reform for IT>

MIC's u-Japan Policy

Ubiquitous network society

2001 2002 2003 2004 2005 2006 2010 (Year)

Ubiquitous Network Society

Ubiquitous

Everyone and Everything Connected to Networks

Universal

User-oriented

Unique

4U = For You

u-Japan Policy Package

Ubiquitous Network Society

u-Japan Policy

100% of the population can access broadband services

More than 80% of the population to appreciate the role of ICT in resolving major issues

More than 80% of the population can feel safe in using ICT

Development of ubiquitous networks

Enhancement of ICT applications

Improvement of environment for the use of ICT

International Cooperation

Promotion of ICT R&D (UNS Strategy)

The Japanese Government's Activities

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・Acceleration of the promotion of the Ubiquitous network by integrating the expertise of Ministries.

Promotion of Utilization

(Verification experiments for promoting RFID utilization in the field of which each Ministry is in change)

Ministry of Economy, Trade and Industry (METI)

- electric and electronics
- Robots
- Development of supply for Self-Defense Forces
- Future Store
- Japan-ASEAN Car
- CJK Copying machine

Ministry of Agriculture, Forestry and Fisheries (MAFF)

- Agricultural product /food product

Ministry of Health, Labor and Welfare (MHLW)

- Medical care

Ministry of Land, Infrastructure and Transport (MLIT)

- Project for autonomous mobility support
- Container management and transport

NETWORK

Ministry of Internal Affairs and Communications (MIC)

- **R&D on ubiquitous network technology**
- **R&D on technology for advanced utilization of RFID**
- **R&D on ubiquitous sensor network technology**
- **R&D on Asian Ubiquitous platform technology**

Manufacture/ Software

Ministry of Economy, Trade and Industry (METI)

Establishing basic technology for low cost RFID

Ministry of Education, Culture, Sports, Science and Technology (MEXT)

Development of next generation safe and high-value added RFID and embedded software

R&D Projects to Resolve Problems Regarding the Promotion of RFID

Issue Ⅰ: Promotion of cheap and small devices

【R&D on ubiquitous network technology】

R&D on the technology for connection control, authentication, network management for the real time control of the 10 billion of microscopic chips.

Budget for 2006 FY : 2.1 billion yen（Budget for 2005 FY : 2.6 billion yen）

Issue Ⅱ: Pursuit of convenience

【R&D on technology for advanced utilization of RFID】

R&D on the basic technology for information management, security, advanced DB access for the utilization of RFID in various fields, such as physical distribution, food, medical care, transportation, etc.

Budget for 2006 FY : 600 million yen（Budget for 2005 FY : 630 million yen）

Issue Ⅲ: Strengthen international cooperation

【R&D on Asian Ubiquitous platform technology】

R&D on the technology for high speed information distribution, international authentication, taking into account the deference of network environment or social environment.

Budget for 2006 FY : 320 million yen（Budget for 2005 FY : 330 million yen）

Example of R&D Projects (1)
R&D on Basic Ubiquitous Network Technologies

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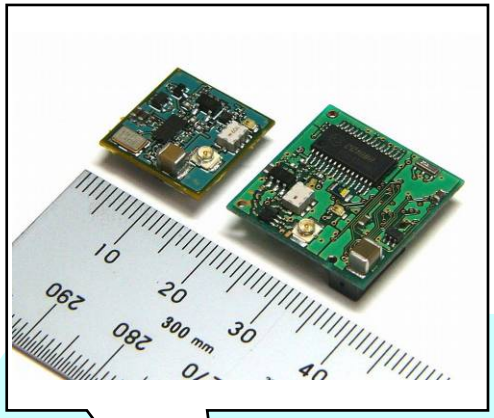
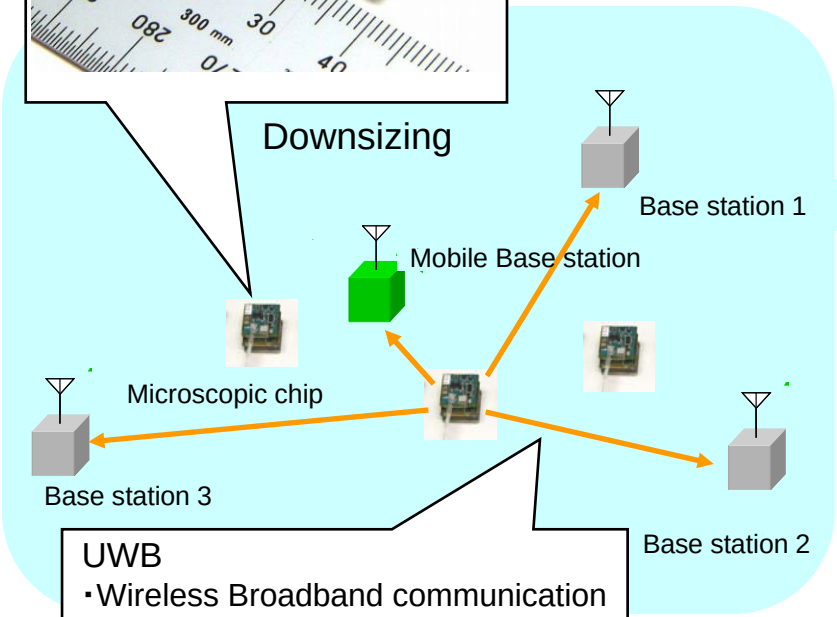
Construct a network that is freely made up of a variety of objects with microscopic chips

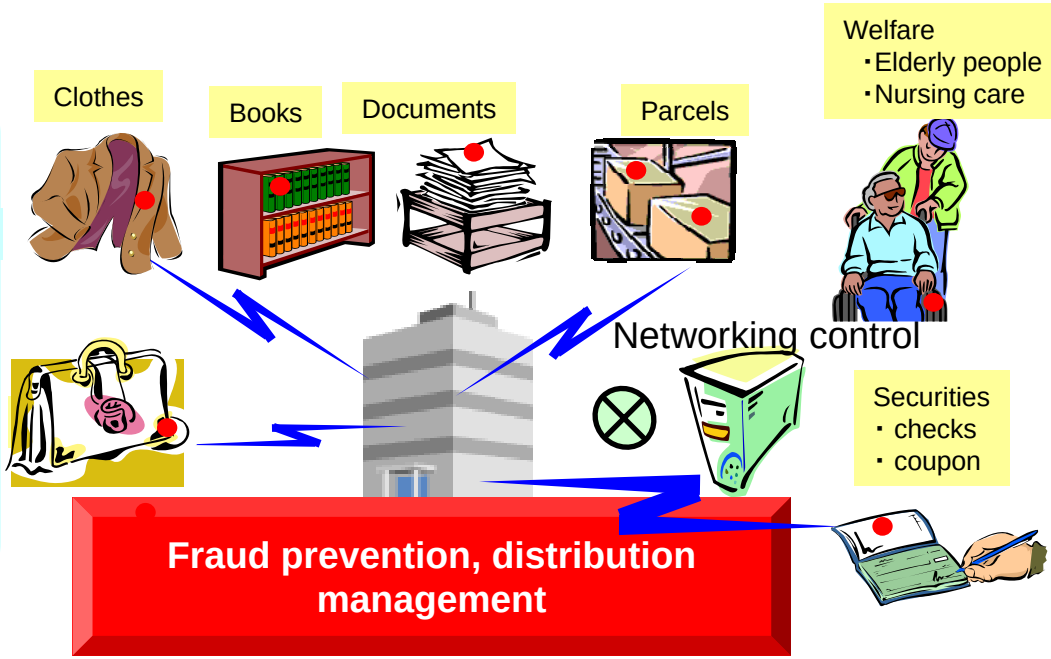


Downsizing



UWB
- Wireless Broadband communication
- Positioning

- Downsizing
- UWB for microscopic chips
- Networking control and management



Example of R&D Projects (2)
Animal Products Traceability

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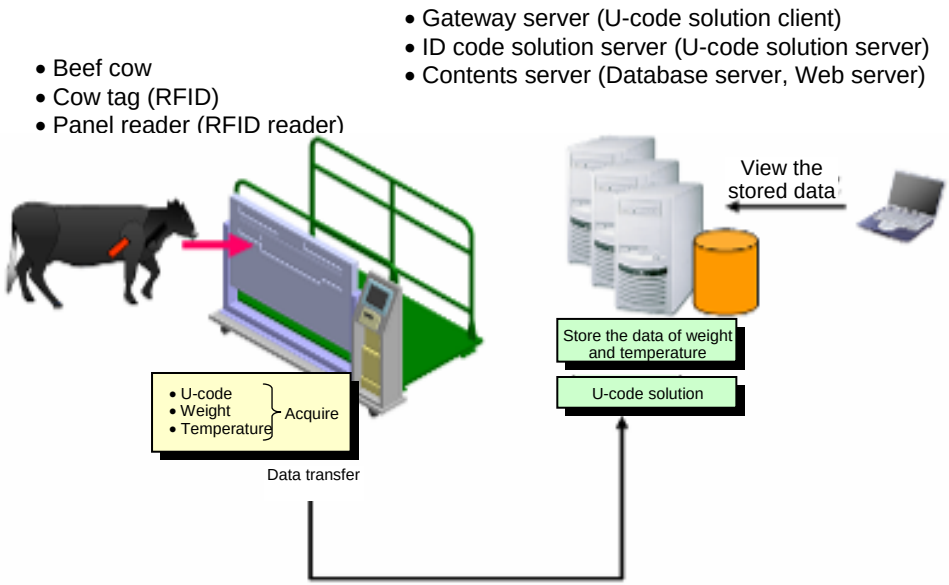
Overview

In order to contribute to the safety of meat consumption, an RFID tag with a temperature sensor is implanted in the body of a cow to carry out measurements in combination with a panel reader and weight scale. The results of implanting an RFID tag in the living body of a cow have verified the operation, function and effectiveness of the system.

- Test period: Feb – Mar, 2005
- Test site: Gifu Institution of the livestock
- Main body of execution: MIC (NEC Corp.)
- RFID: RFID with temperature sensor（134kHz）
  → Implant in the second stomach of a cow



Results

Observed possibilities to improve the efficiency of the service

- Achieved reduction of the time to measure weight and temperature (took only approx. 20 sec/cow); formerly, it took approx. 5 min. 20 sec./cow to do both. (approx. 95% reduction)

Confirmed adaptability to system circumstance

- Confirmed that the RFID tag implanted in the body of a cow (second stomach) remained in a stable condition.
- Confirmed that communication by the RFID implanted in the body of a cow was possible. Efficient communication in farm surroundings was also confirmed.

Confirmed effects to the living body

- The cow tested demonstrated no health problems upon visual, body inspection and blood testing.

Example of R&D Projects (3)
Pharmaceutical Products Traceability

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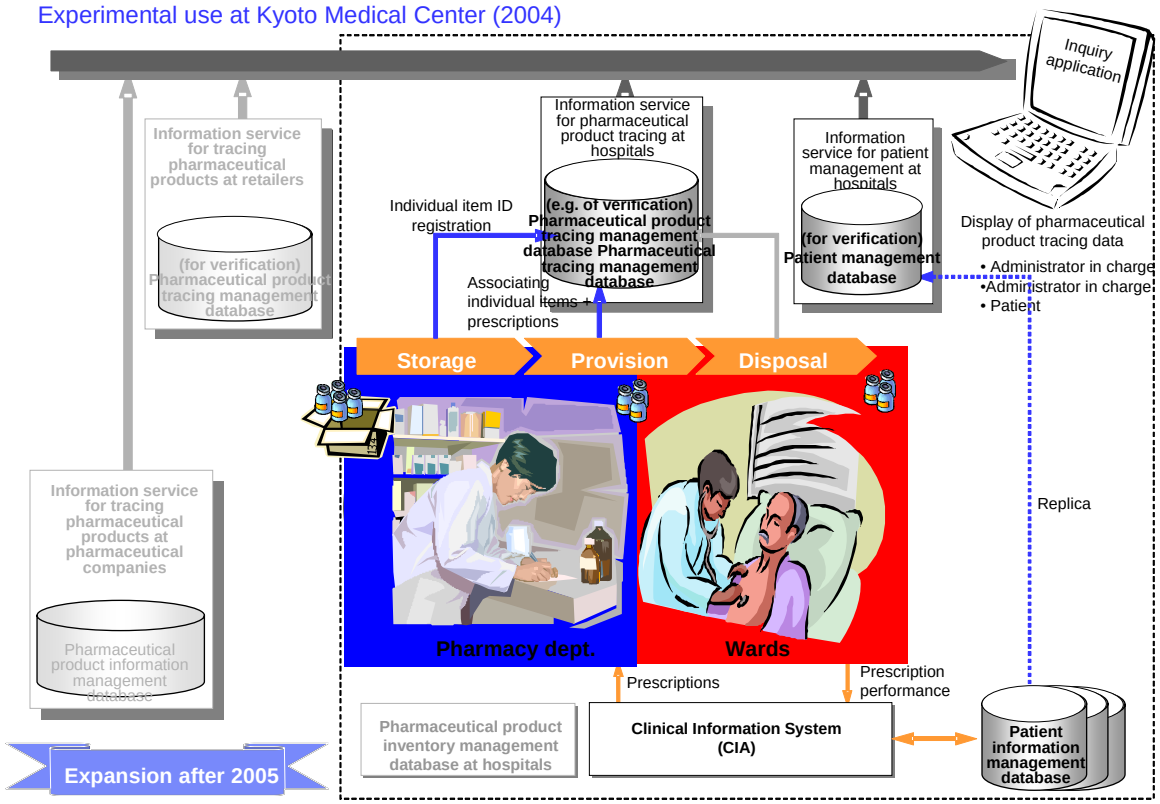
Outline

An RFID based pharmaceutical product tracing system was developed to ensure safety and security in handling such products. Verification tests were carried out simulating an occurrence of trouble related to pharmaceutical products.
RFID tags were attached to certain blood plasma fractional and pseudo products. The storage of these products in the hospital pharmacy as well as their provision according to prescriptions were logged. A study was made on their traceability.

- Duration: February 2005 – March 2005
- Test sites: Kyoto Medical Center of National Hospital Organization (Kyoto City)
- Main body of execution: MIC (Japan IBM)
- RFID: 13.56 MHz band RFID
  →Attachment to pharmaceutical products

Experimental use at Kyoto Medical Center (2004)



Result

Confirmation on the traceability functions by federated platforms

・Verification of basic traceability functions carried out for RFID information by federated platforms at an actual level.

Confirmation on the effectiveness in the linkage between the RFID system and existing systems (electronic patient files)

Confirmation on the effectiveness of active RFID use at clinical sites

・A study was made on the series of processes assuming a system for logging the storage of tagged pharmaceutical products in the hospital pharmacy and their provision according to prescriptions.

Verification of privacy protection technology based on access control technology

・Access control technology based on user roles was developed and verified with the prototype.

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Expectation for ITU

Globalization in the field of manufacturing or physical distribution results in worldwide distributed placement of related DBs.

→ International standardization is essential for promoting the further utilization of electronic tags.

＜Recent activities＞

◆Standardization of communication method between RFIDs and readers is being developed.

＜Future issues＞

◆Standardization of communication method of obtaining necessary information through networks by reading RFID attached to various things.

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Ministry of Internal Affairs and Communications (MIC)

Thank you very much.