



สวัสดีครับ

Pilot Project of Implementation of RFID and Actual Effect of Introduction



November 17, 2004

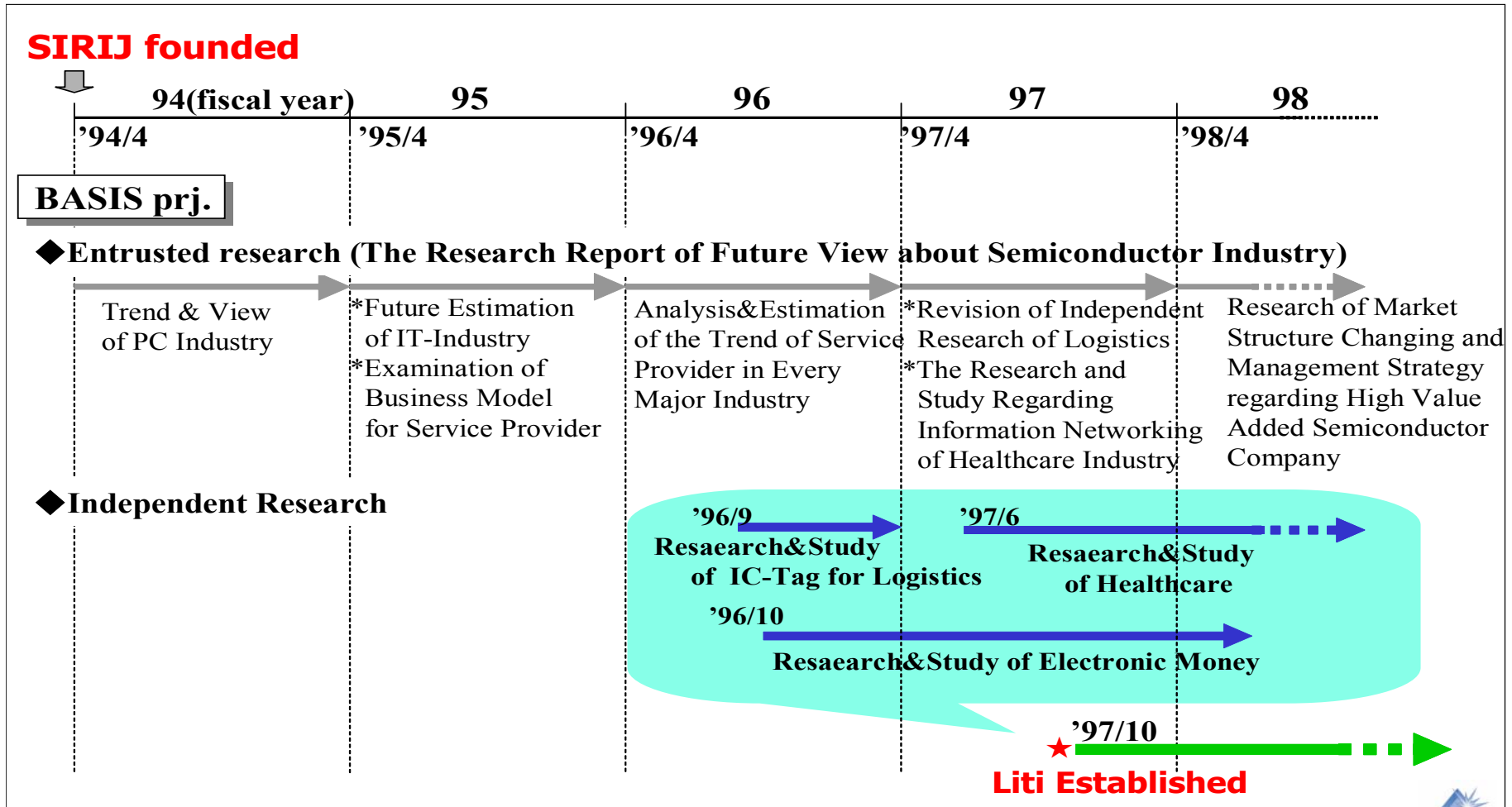
Leading **I**nformation **T**echnology **I**nstitute Inc. (Liti)

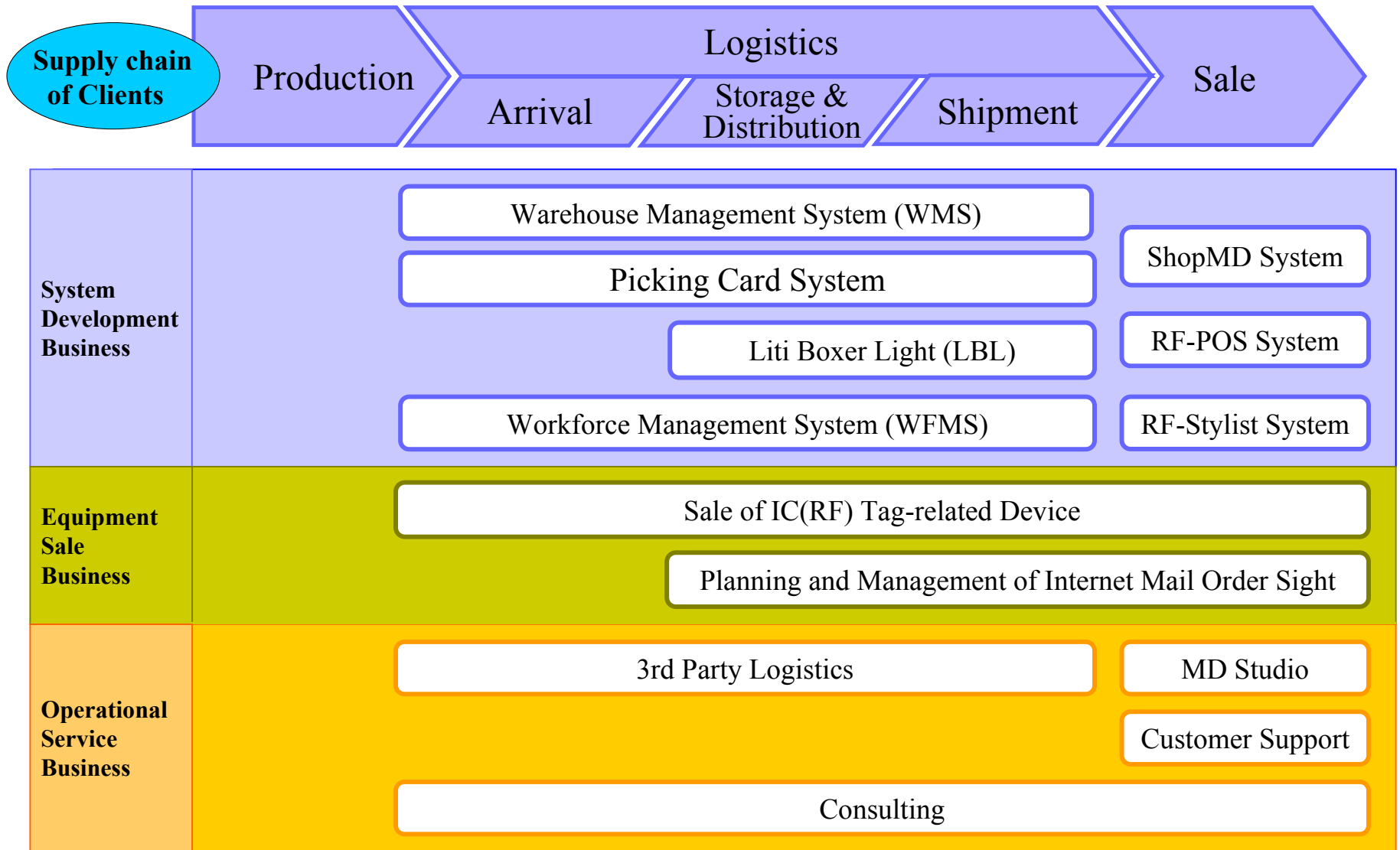
awamoto@liti.co.jp

<http://www.liti.co.jp>

◆The Uniqueness of Establishment of “Liti”

Established in 1997, based on the BASIS project team who had researched the Future View about Semiconductor Industry in SIRIJ (Semiconductor Industry Research Institute Japan).



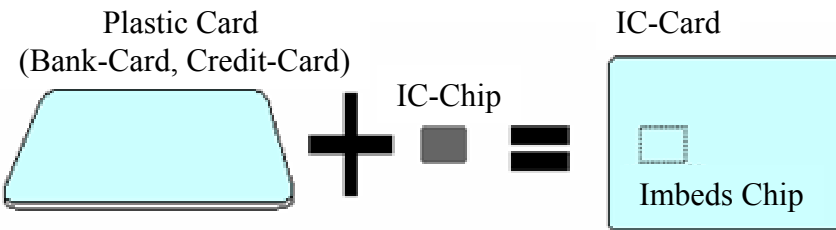


RFID = Radio Frequency IDentification

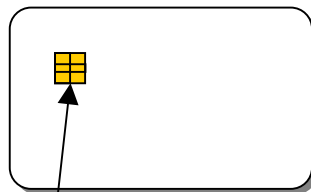
IC-Card

Smart Cards

Contactless cards, Contact-based cards, Combi-cards, Hybrid cards, etc.

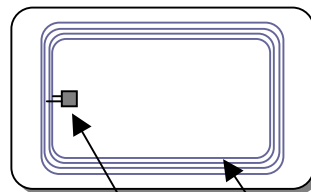


Contact Type



Contact Point

Contactless Type



IC-Chip

Antenna Coil

RFID

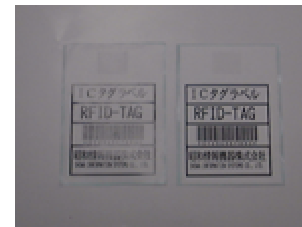
Contactless IC-Tag



Resin mold type

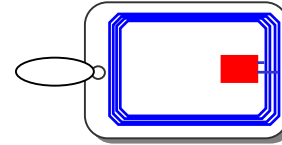


Key-holder Type



Label Type

Advancement of Information Technology

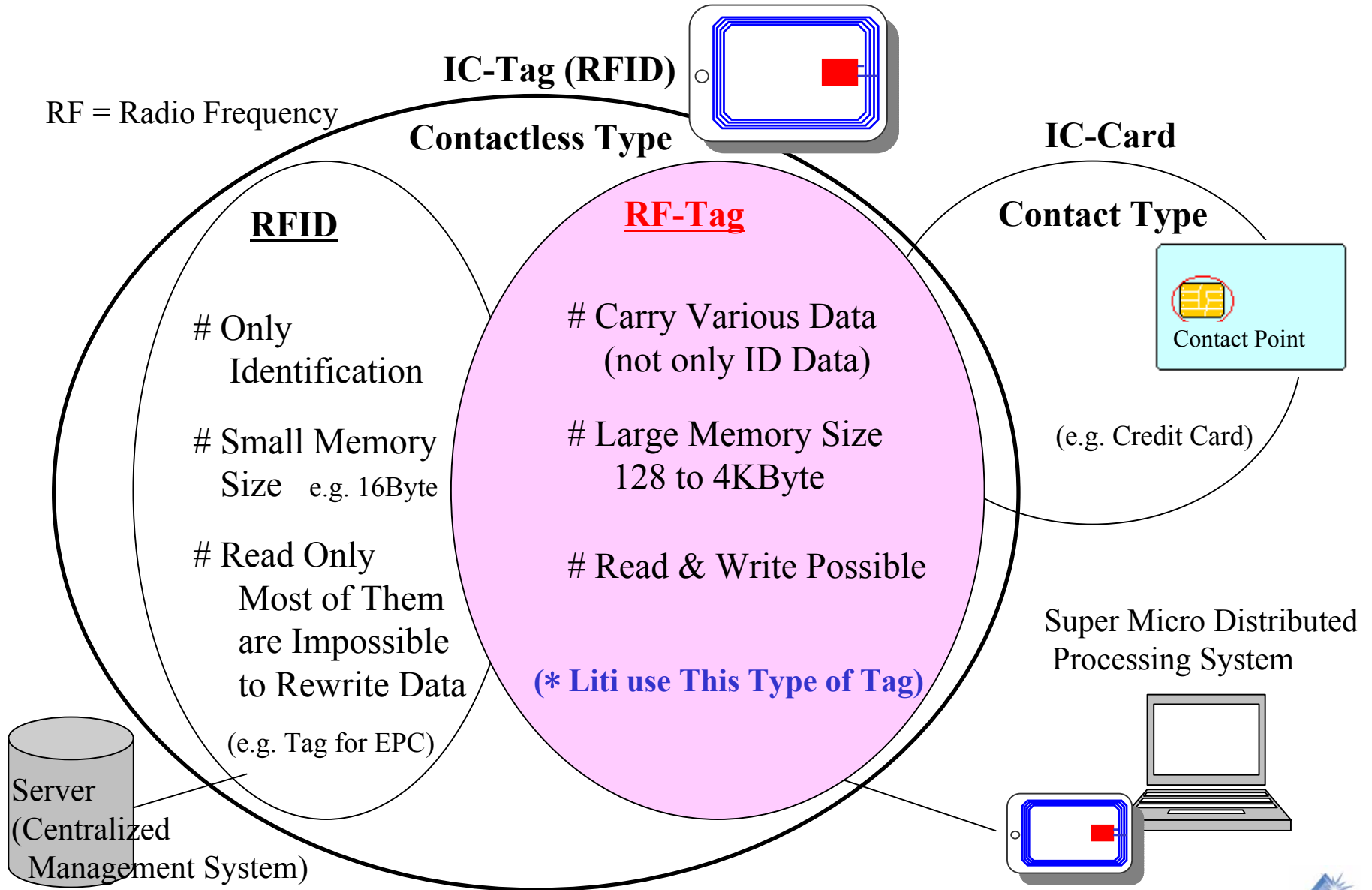


Feature of bar-code

- Printed Bar-Code
on a Paper
(Package, Price-Tag etc.)
↓
- Scanning Bar-Code
and Conversion it
to the Digital Data
↓
- Amount of Information
13 Letters (Number)

Feature of RFID

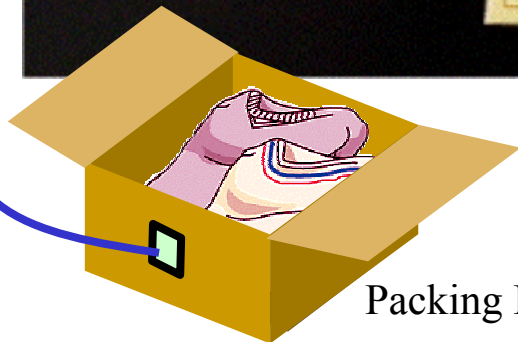
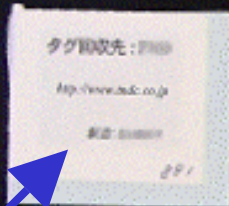
- Data Entry in the Chip
(Digital Data from Origin)
↓
- Read/Write
by Radio Frequency
(Digital to Digital)
↓
- Amount of Information
100 to 4,000 Letters
(Number, Letter, Picture(future))



1. **Large Quantity of Storage-able Data in the RF-Tag**
2. **Data Rewritable (almost Unlimited Number of Times)**
 - ➡ Barcode (1 & 2-dimensional) : Read Only
3. **Very High Security**
 - ➡ Protect the System with both **IC(Hardware) and Application(Software)**
 - Fake Prevention
4. **High Portability**
 - ➡ Further Evolution of Down-sizing
5. **Off-line System**
 - ➡ RF-Tag = Data-Carrier
 - Need not High-Speed Network Environment and Huge Database System
 - ➡ Introduction just of one Part is Possible
 - Need not to Change Headquarter System
6. **Multipurpose Utilization**

The RF-Tag Attached to the Box for Packing

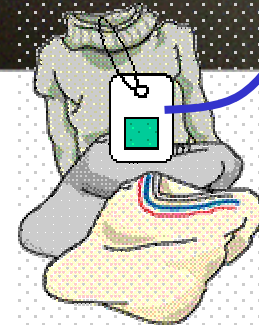
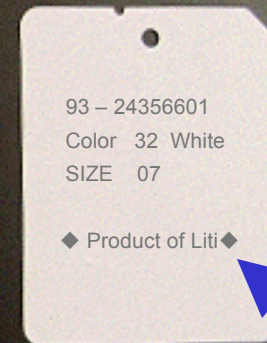
Size: 22 x 17mm

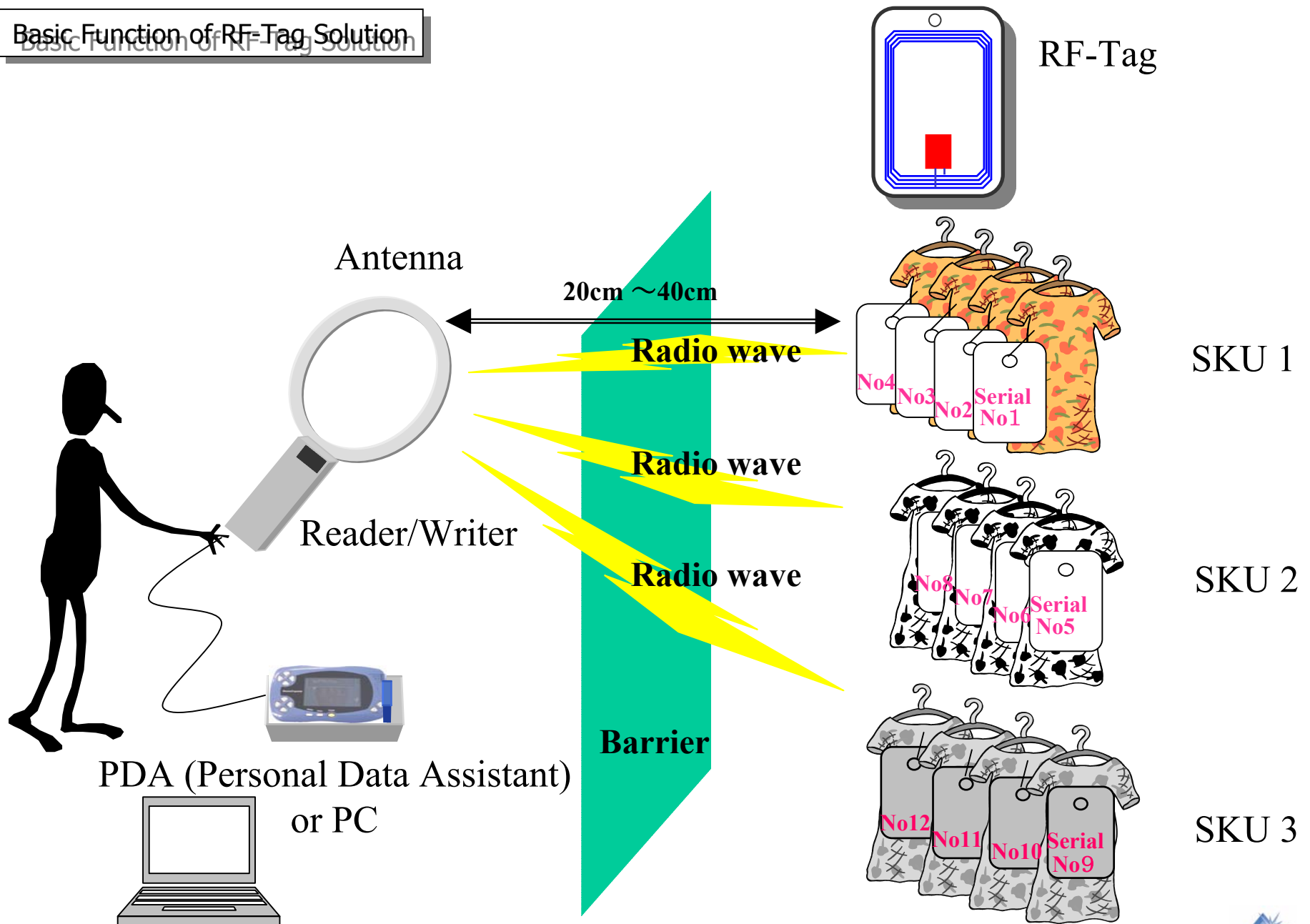


Packing Box

The RF-Tag Attached to the Product

Size: 42 x 54mm





Field	Group	Experimentation	Period	Frequency Zone	Main Participation Enterprise
Apparel	Japan Apparel Industry	-Control distribution trace of cloths (from factory to store) -Manage items at a store	2004. JAN-FEB	13.56MHz 950MHz	ISETAN, Utsushikawa Sewing, ONWARD KASHIYAMA, SANYOU SHOUKAI, MITSUKOSHI, YASUDA Sewing etc.
Electric Home Appliances	Association for Electric Home Appliances	-Improvement of efficiency of distribution of electric home appliances products -Manage items at a volume seller -Make trial to recycle digital camera using IC tag	2004. FEB- MAR	950MHz	SANYO Electric Co, Sony Supply Chain Solutions, DEODEO, Mizuho Information & Research Institute, BEST DENKI Co, Matsushita Logistics Co, etc.
Aviation	Advanced Airport Systems Technology Research Consortium	-Make trial whether it is possible to send baggage using IC tag from home to destination	2004. APR	13.56MHz 950MHz	Sagawa Express Co, NARITA INTERNATIONAL AIRPORT CORPORATUON, ANA, JAL, FUKUYAMA Transporting Co, etc.
Publishing	Japan Publishing Organization for Information Infrastructure Development	-Check the shoplifting and the illegal distribution -Improvement of efficiency of distribution	2004. FEB-APR	13.56MHz 950MHz	Kodansya, Sanseidou Book Store Co, SHUEISHA, Syougakukan, SHOWA TOSYO, Chiyoda Books Co, etc.
Agriculture	Cooperative Society Union The Metropolitan area co-op enterprise Union	-Control distribution and production trace of frozen chickens and green vegetables using IC tag -Consumers refer to the trace over Internet	2004. FEB	2.45GHz	ICHIREI Co, Japan Farm Information Technology Facilitating Association, Farmer's club AKATONBO, Fukushima A & A Broiler, u-ki Corporation, YONRZAWAGOU Farm, etc.
	Society for study of greengrocery distribution	-Control distribution and production trace of greengroceries using IC tag -Consumers refer to the trace over Internet	2004. FEB	13.56MHz	OKUWA, SUNRISE, JA Makubetsu, WISE System Corp, Wakayama Daidou Seika, etc.
	Japan Industrial Food Service Association	-Make consumers refer to distribution and production trace of green vegetables provided at restaurant	2004. FEB	13.56MHz	UCHIDA YOKO Co, KIKUCHI trading Co, Green House Group, Hokusou Agriculture Center, etc.

Source: Nikkei Business Publications, Inc

The actual operational case with Liti

= The Product for Warehouse in Logistics =

Distribution Type Classification Operation Support System

Liti Boxer Light (LBL)

LBL (Liti Boxer Light)

The conventional classification operation

Inefficient work by a hand

Inefficient work by handwriting

Re-input by manual

Mistake reading, Mistake hearing

The character which cannot be read

Mistake typing

Mortgage work of extensive information and extensive goods

Hard work which are pressed for time

System outline

Operation guide with characters and sound

Increase in efficiency by automatic conveyance

Simple control structure

Distribution directions

Tag information

For Shop A

op B

op C

List issue

Detailed issue for every packing

Loading and shipment

Realize non-stop Logistics

Product classification and information classification are parallel-processing simultaneously.

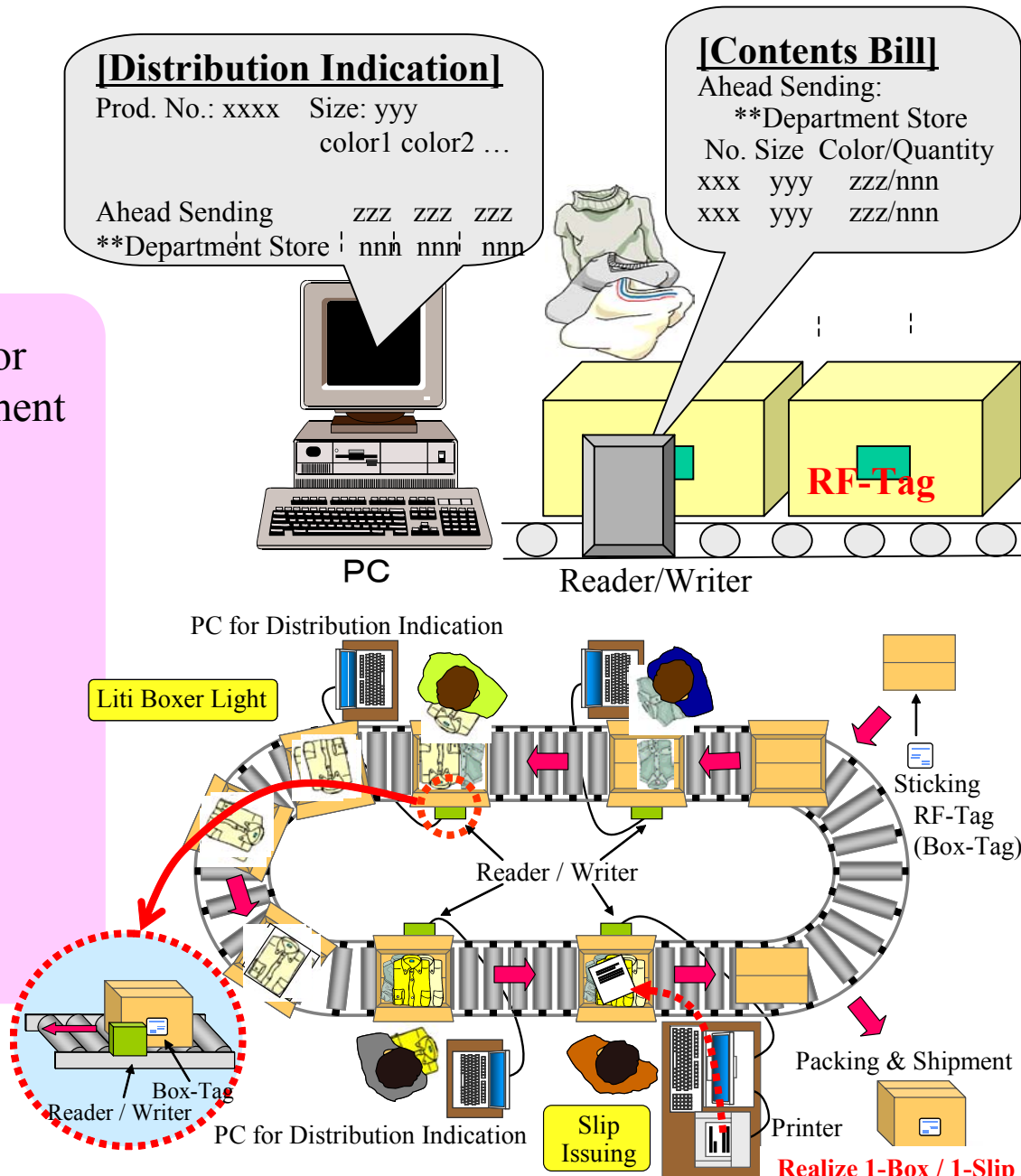
Classification operation

Shop name

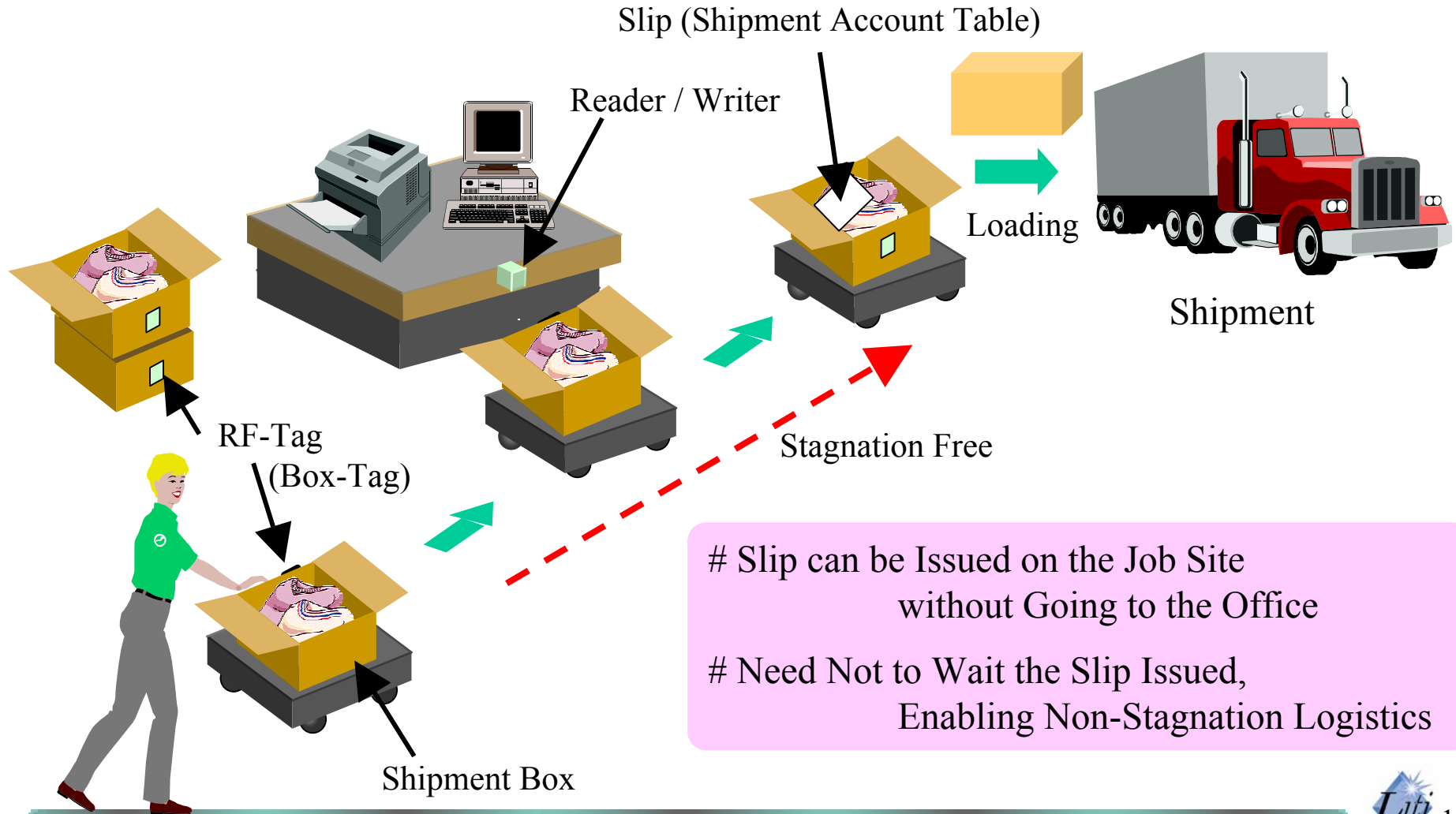
	01	02	03
A	1	1	2
B	2	1	2
C	1	3	1

Actualizing the Accurate & the Quick Distribution in Warehouse

- # Locking the Position of the Operator
→ Removing the Wasteful Movement
- # The Distribution Result of the
Product is Totaled Automatically
- # Lightening Job Stress with Sound
and Picture Guide Function
on the PC
- # Processing when Fully Loading
and Issuing Slip Simultaneously,
Actualizing the Non-Stagnation
Logistics



Issuing the Slip (Shipment Accounting Table) to the Store at the Packing Box Unit, Enabling Product Shipment with Non-Stagnation



Please Watch the Movie of Liti Boxer Light (LBL) System, and Slip Issuing System.

Movie 1



仕向先略称	31	70
ルースー台場店	2	2
ルースー渋谷路面	1	1
金座デパート	2	2
中丸百貨店	1	1
小丸百貨店	2	2
低島屋百貨店	1	1
南武百貨店	2	2

箱タグをセットして下さい

- Liti's Kashiwa Center
(Warehouse in Logistics)
- Liti Boxer Light (LBL) System
- Slip Issuing System





Utilizing the Roller Conveyor for Cardboard Conveyance

- 50 case at One Rotation Cycle
- Processing approximately 30,000 pcs/day

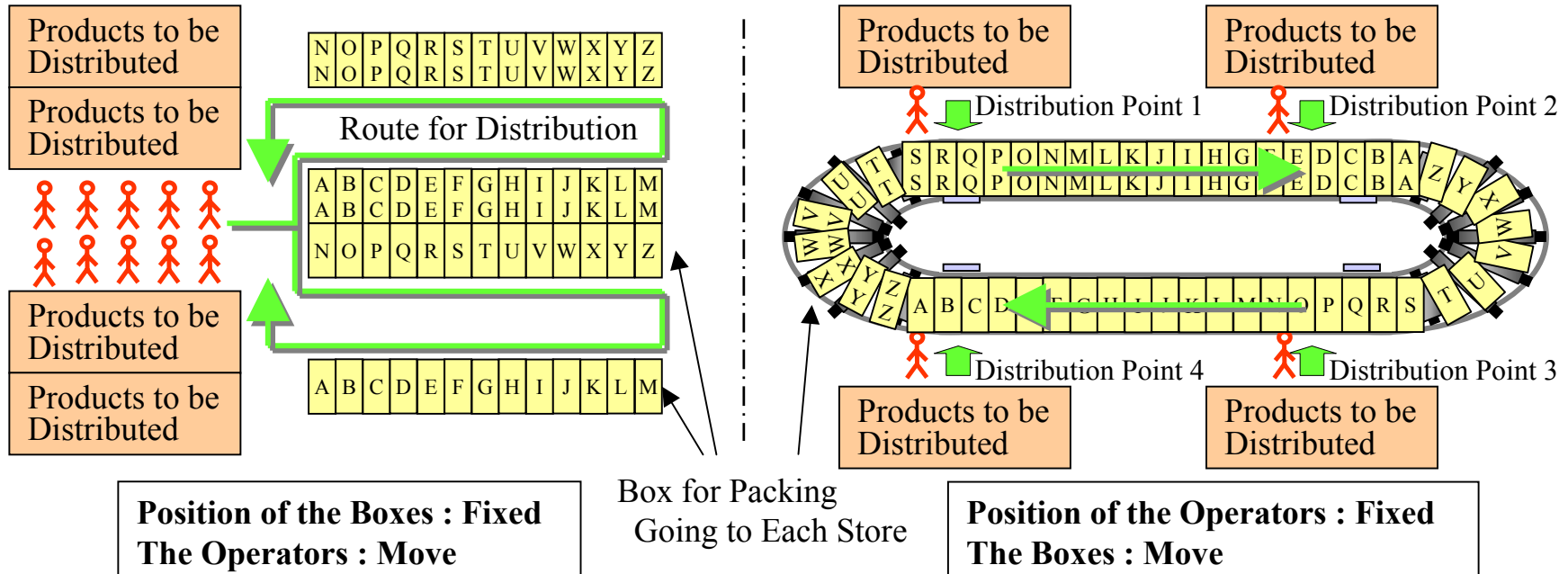
e.g.

Introduction Cost of Automatic Sorter (equipped 20 chutes) is Approximately 5times as expensive as Roller Conveyor System.

- Processing approximately 50,000 pcs/day



1) Distribution by only using Human Resources 2) Distribution using Liti Boxer Light



- **Job Stress** ⇒ **Lightened** Substantially, **Shipment Precision** ⇒ **Improved**.
- **Effect to Reduce the Number of Operator**

e.g. Certain Enterprise (Introduced One Standard LBL System)

- **Before Introduction** ⇒ **Total Number of Operator for Distribution : 42 persons**
- **After Introduction** ⇒ **Total Number of Operator for Distribution : 27 persons**

Workforce Reduction Effect by Introducing LBL System : - 35.7%

The Actual Operational Case with Liti

= Shop System Product =

Apparel shop operation support system

Shop merchandising support system

Shop merchandising cooperation product

RF-Tag-point of Sales System etc.

Extended Product in field / function

Shoes Selling Support System

Apparel shop operation support system

Shop merchandising support system

The conventional shop operation

**Comprehensive stock management
(no distinction of a back yard and a shop front)**



Barcode reader or
handmade operation
inspection



**Arrival-of-goods
inspection delay**

**Isolated domain
of headquarters**

**Not appearing
immobility stock**

**New-arrival goods
cannot be displayed**

Increase of opportunity loss

The error by handwriting



**Management accuracy is
dependent on each shop**

Reception time is shorter

Reception quality is down

System configuration

**Stocktaking
increase in efficiency**



**Box unit package registration
(Saving time and operation)**

Balance with shipment accuracy

Arrival-of-goods registration
by the box detailed tag

**A back yard and shop front
inventory classification**

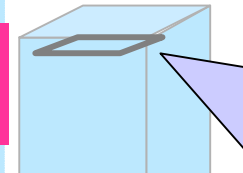
**Stock and sales
information is digital data**

**Renewal of the information in business hours
(a minimum of 5 minutes)**

**Real-time information provide
to headquarters and every shop**

Sales automatic registration

The antenna of
counter desk



Please Watch the Movie
of Apparel Shop Operation Support System.
= RFID-Point of Sales System
Introduced to the Two Apparel Clients

Movie 2

Movie 3



Lightning the Logistics-Related Job at the Store

e.g. (Certain Apparel Enterprise)

Before Introducing Our System \Rightarrow 90 min. or more for Inventory at Shop-Front

After Introducing Our System \Rightarrow **13 minutes !!** (approximately 350 Clothing Items)

Consequently, **Total Overtime Work Pay : 20% Reduced ***

(* including Efficiency Improvement of Sale, Arrival and Shipment Process etc.)

Total Effect of Introducing RF-Tag System

- Reduction of Work Overtime Pay

Store Manager : Equal to 45min./day Cut of Work Overtime Pay (Conversion Number)

Fashion Advisor : Equal to 90min./day

Logistics Staff : Equal to 150min./day

- Lightning the Logistics-Related Job at the Store

Reduction of over 10% of Logistics-Related Job by Utilizing RF-Tag System

- Possible to Realize Essential Merchandizing Job using Store-axis Data

which is obtained from Our Shop Operation Support System

Profit Enlargement
is More Important
than Prime Cost Decrease

= Shop System Product =

Apparel shop operation support system

Shop merchandising support system

Shop merchandising cooperation product

RFID-point of sales system etc.

Extended product in field / function

Shoes selling support system

The conventional shoes selling

No change for the past several decades

WellSize does not suit me...

A lot of stock

Shop front \times 14 times
(shop front 5,000 pairs of shoes :
back yard 70,000 pairs of shoes)

Location management by human memory

Delay of a run out goods supplement (Size piece)
Stocking dependent on a delivery contractor

Loss of an opportunity to sell

Increase in reception time
20 minutes / customer

Reception quality is down

Shoes selling support system

Providing information to a customer

Introduction reading
environmental to shop front

Shop front
terminal

Floor antenna

Expanding selection of
tag and equipment

Card
antenna

Linkage of a shop front
and a back yard

merchandising

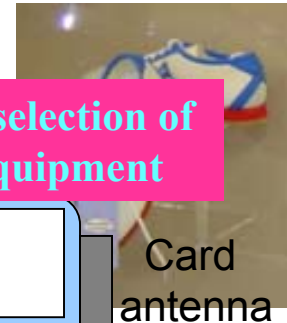
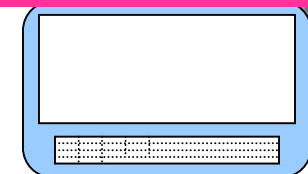
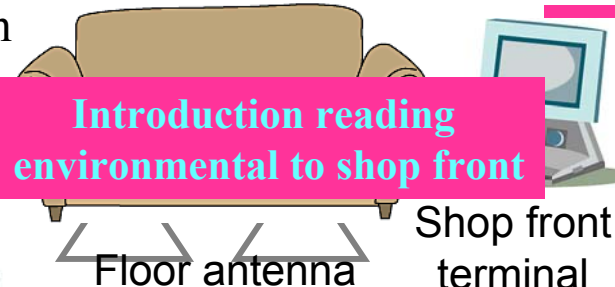
Providing information
for FA terminal
(Sales independence
of person's skill)

FA terminal

FA terminal



Goods tag



Please choose the color and size which you want.



Sneaker selection



アトモス
CLキャノン
¥15,000

Order

Cancellation

「取り消し」ボタンを押しますと全てのご希望商品が取り消されます。

Please push the button of the color&size which you want.

カラー	22.5	23.0	23.5	24.0	24.5	25.0
12	You can try on.	You can try on.	You can try on.	You can try on.	You can try on.	You can try on.
22	You can try on.	Take an order	Please ask.	You can try on.	You can try on.	You can try on.
24	Please ask.	Please ask.	An order is possible.	An order is possible.	You can try on.	Please ask.
34	You can try on.	You can try on.	An order is possible.	You can try on.	Please ask.	Please ask.

Goods which received the order

スワッガー ジャズデニム
カラー=20 サイズ=23.0
スワッガー ジャズデニム
カラー=30 サイズ=24.0
アトモス CLキャノン
カラー=22 サイズ=23.0

Other recommended goods

Please push a photograph



ディアドラ
アルフレッドパニス
¥12,000



キーナンダフテイ
KD CLロケット

Please Watch the Movie of Shoes Selling Support System

Movie 4

Field Trial at Typical Department Store in Osaka JAPAN

Period of Trial : from April to June in 2004

- Original System Concept Construction : Liti
- System Development (Software) : Liti
- Total Management & System Arrangement : Toshiba TEC



Lightning the Logistics-Related Job at the Shoes Store

e.g. Inventory at the Backyard of the Store (Approximately 2,000 shoes)

Before Introducing Our System \Rightarrow 120 min. or more for Inventory at Backyard

After Introducing Our System \Rightarrow **25 min. !!** (for RF-Tag Scanning Process)

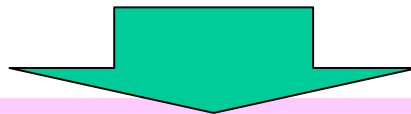
40 min. (including Post Process)

The Time Required for Inventory : **One Third**

(compared to the Original Method)

* It means Every Morning Inventory before Opening is Possible.

\Rightarrow Stock Precision Improvement



Shortening the Meeting Time with Customer (usual average: 18min./person)

\Rightarrow Approximately Half,

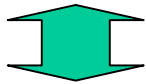
Similar Product Search Function Expands the Variety of Proposition

\Rightarrow **Sale Chance Increase** (Profit Enlargement!)

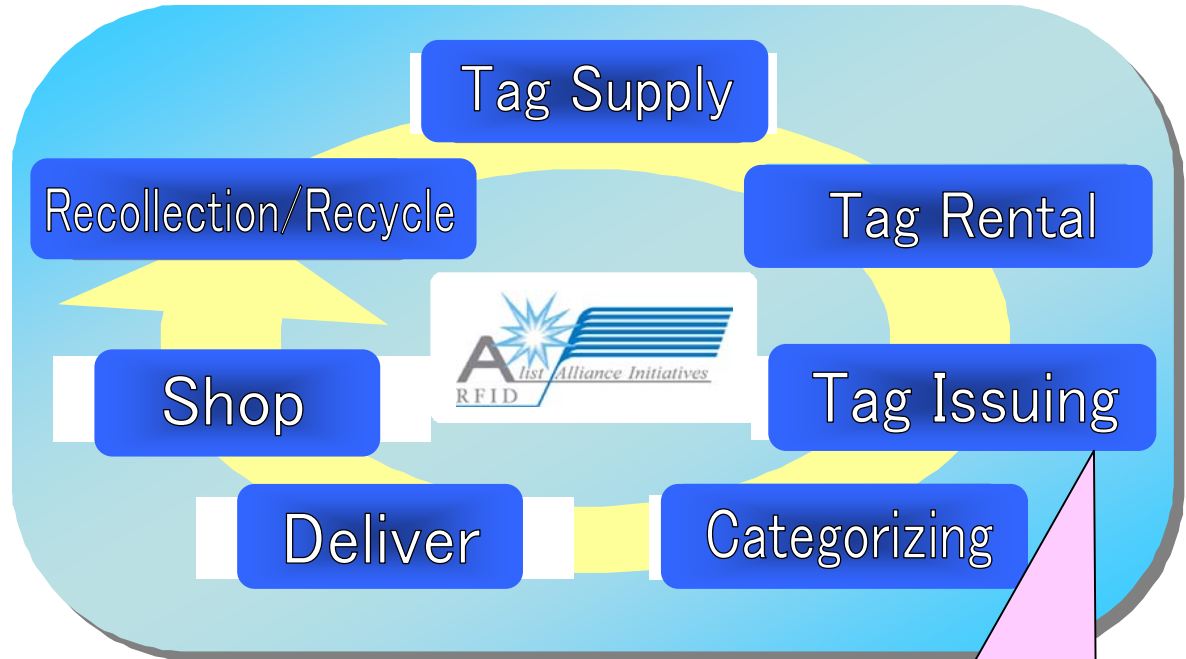
Point: **RF-Tag** Business Need to **Construct Use-Environmental**.

Bar-code is Printed
to the Package Already.

In addition,
In Case of the Read-Only
ID Tag,
It is Just Simply Consumed.



RF-Tag Business :
All Scheme of Business
shown in this Figure is Needed



NAXIS Co., Ltd. JAPAN
(Group: Thai NAXIS Co., Ltd.)
<http://www.naxis.net>



We are Managing the Alliance Group named “Alist”
to Construct the Usage-Environment
and to Realize the World where RF-Tag (RFID) is Used Conveniently

APPROVING COMPANIES

SYSTEMS NAKASHIMA Co. ,Ltd.

Fujii Co. ,Ltd.

FRAMEWORX, Inc

MITANI CORPORATION

NEC Nexsolution Co. ,Ltd.

OLYMPUS Systems Co. ,Ltd

EXE Technologies Co. ,Ltd.

Ryosan Co. ,Ltd.

HOKUSYO Co. ,Ltd.

SYSTEM WAVE Co. ,Ltd.

Cryptonics Co. ,Ltd.

Smart wireless corporation

EL SYSTEM Co. ,Ltd.

MITSUBISHI MATERIALS CORPORATION

RHOENIX Co. ,Ltd.

MARUYASU KIKAI Co. ,Ltd.

Syswave Co. ,Ltd.

Mediarium Corporation

KYODOU PRINTING Co. ,Ltd.

Hitachi Chemical Co. ,Ltd.

Hars, Llc.

U.S. Announce, Llc.

RICOH Co. ,Ltd.

SHIMIZU AYNTec Co. ,Ltd.

Japan Mecya Tec Co. ,Ltd.

TOSHIBA TEC CORPORATION

MAGI, Inc.

Oracle Corporation Japan

LSM Co. ,Ltd.

Digital Foundations Co. ,Ltd.

BUSINET SYSTEM Co., Ltd.

RFID Expansion Technologies Co., Ltd.

RF Rental Technology Co., Ltd.

DENTSU TEC Co., Ltd.

Mizuho Information & Research Institute, Inc.

Japan apt Corporation

FUJITSU Co., Ltd.

Cisco Systems, Inc.

MITSUBISHI ELECTRIC BUSINESS SYSTEM Co., Ltd.

NEC TOKIN Corporation

ASTEC CORPORATION Co., Ltd.

NAXIS Co., Ltd.

Dacom Corporation

SOHGO SECURITY SERVICES Co., Ltd.

Japan RF Solutions Co., Ltd.

AMANO Co., Ltd.

ADJUST Co., Ltd.

(50 companies, Oct. 5, 2004)

ขอบคุณครับ

สวัสดีครับ

Fin

ご静聴ありがとうございました。

Liti