Orchestrating a brighter world

NEC

# WebOTX Technical Overview

November, 2015

NEC Corporation,
Cloud Platform Division,
WebOTX Group

# Orchestrating a brighter world

NEC brings together and integrates technology and expertise to create the ICT-enabled society of tomorrow.
We collaborate closely with partners and customers around the world, orchestrating each project to ensure all its parts are fine-tuned to local needs.

Every day, our innovative solutions for society contribute to greater safety, security, efficiency and equality, and enable people to live brighter lives.

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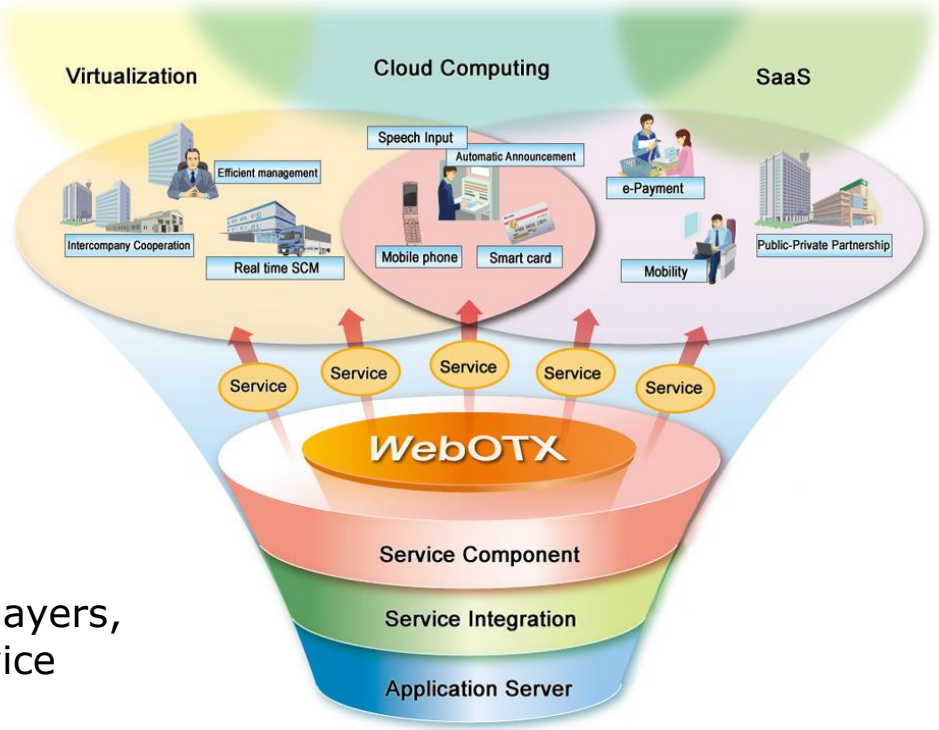
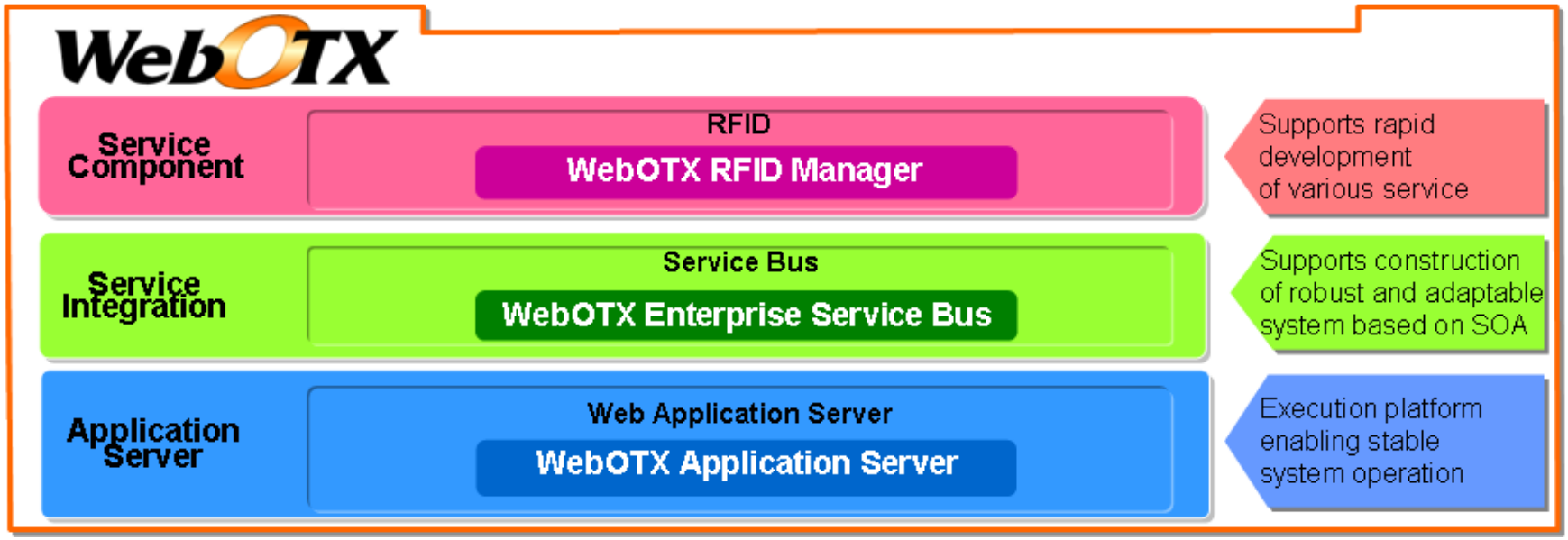
1. WebOTX Application Server
2. WebOTX Enterprise Service Bus
3. WebOTX RFID Manager

# WebOTX Overview

WebOTX is designed to handle the arrival of the cloud computing age, SaaS, and virtualization. WebOTX is based on leading-edge technologies and customer proven results to helps implement systems that are always available, adaptable to change, and utilize leading-edge technologies to achieve new business models and services.




WebOTX supports business and lives with three layers, Application server, Service Integration, and Service Component.

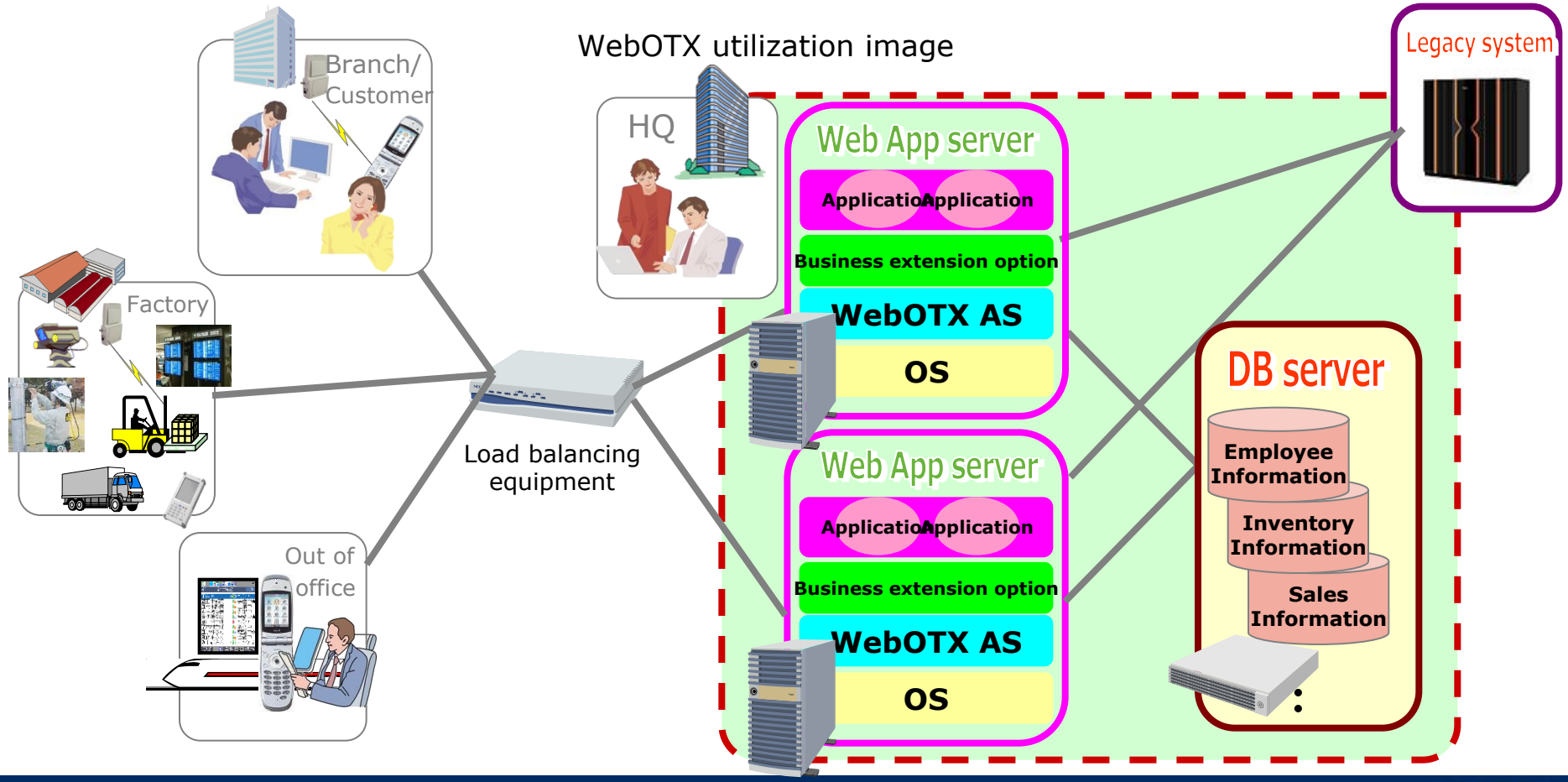


# 1. WebOTX Application Server

# What is WebOTX Application Server?

**Java EE5 compliant highly reliable application server enabling 24x7 nondisruptive operation**

"WebOTX Application Server" delivers the "Responsiveness", "Speed", and "Reliability" required for enterprise systems in the networked information society. WebOTX provides latest Java execution environment with mainframe-class reliability.

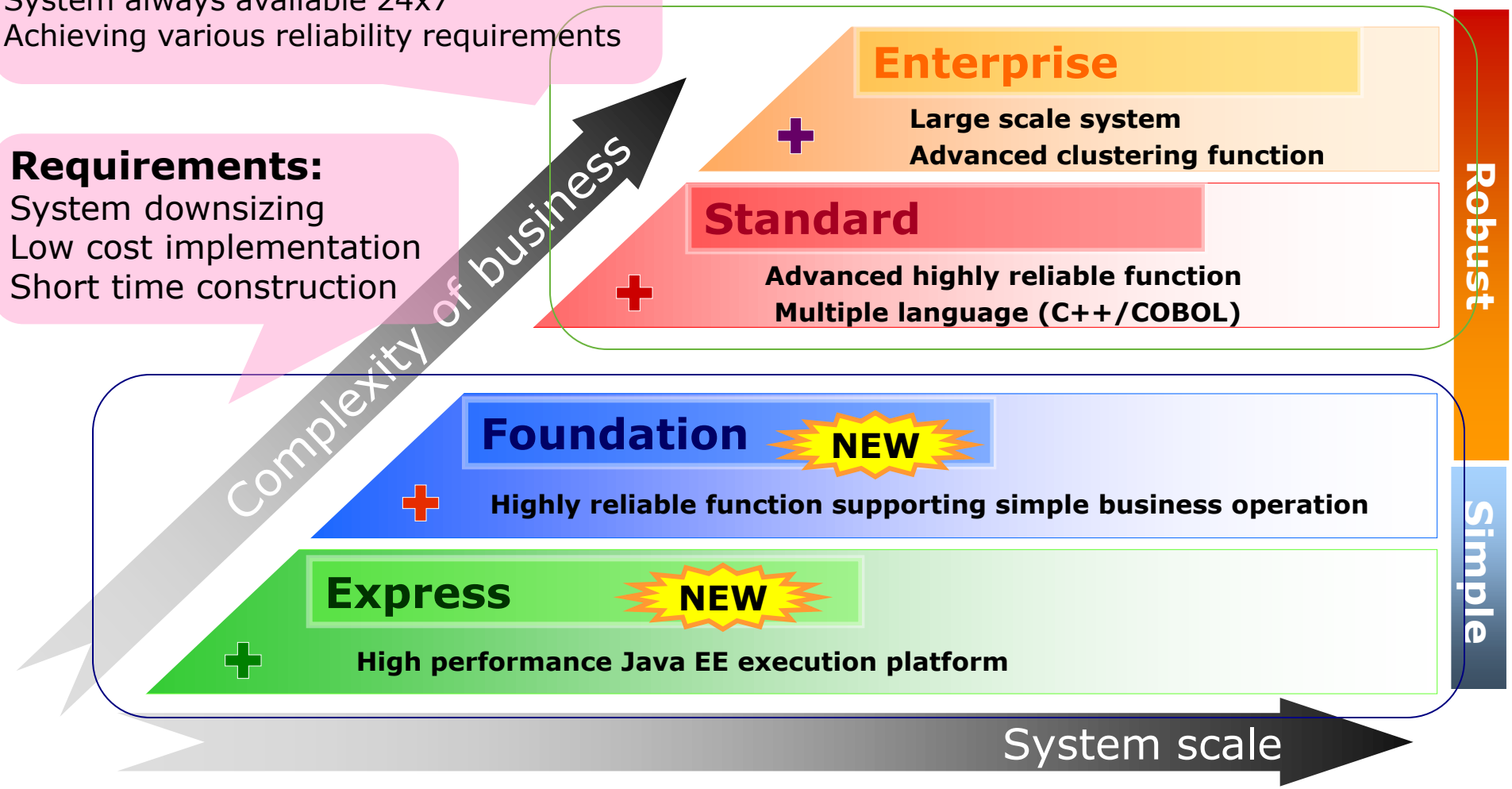


# Customers' Challenges

## Meet customers' requirements with 4 models of WebOTX AS

**Requirements:**
Large scale system construction
System always available 24x7
Achieving various reliability requirements

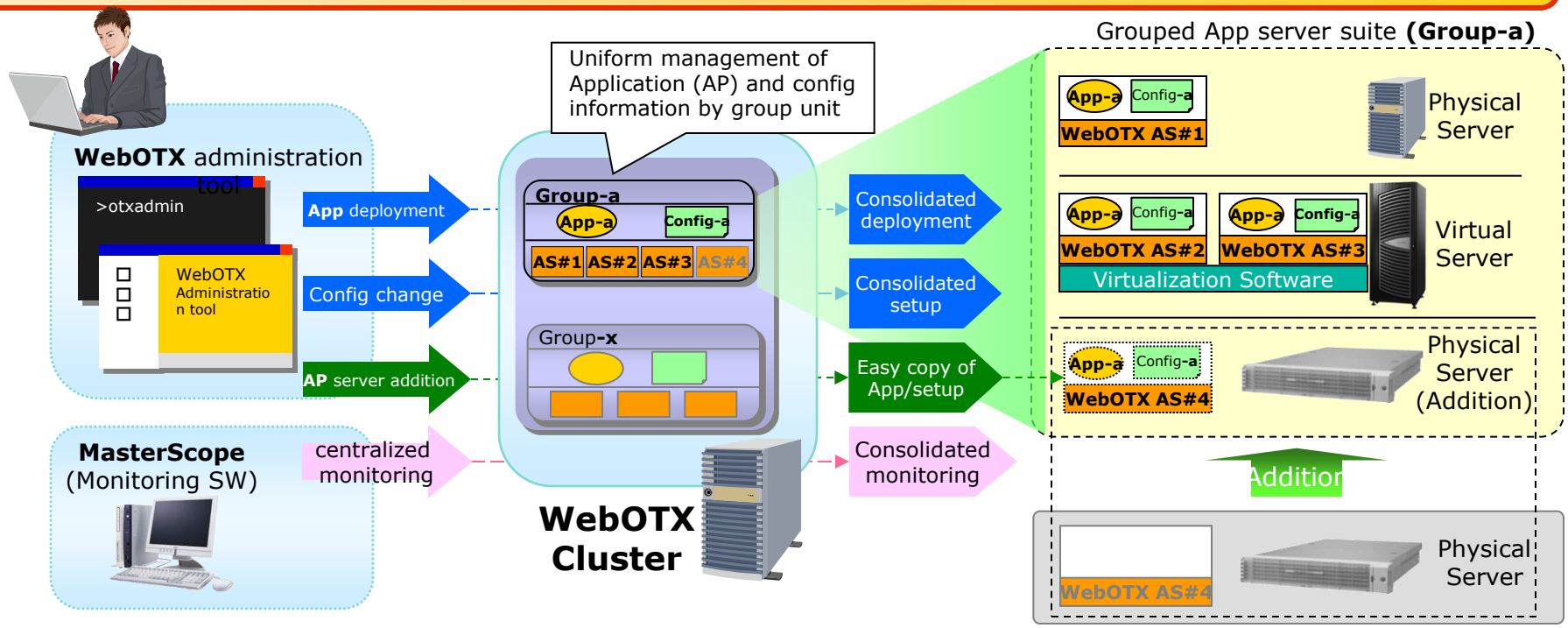
**Requirements:**
System downsizing
Low cost implementation
Short time construction



# Usability improvement in the cloud environment V8.3

## Manage distributed AP server suite as single virtualized App server

- Consolidated application deployment and configuration change to all App servers.
- Easy addition of App server for scale out systems.
- Uniform monitoring of App server operating status, and event notification that occurred in App server. Easy integration with monitoring software such as MasterScope products etc.



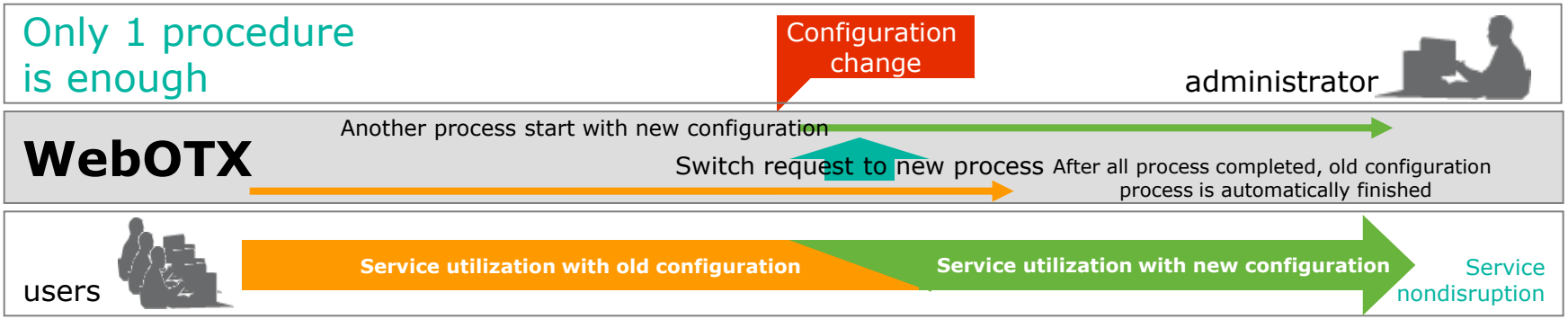

Significant cost reduction for construction/operation by uniform management of all servers

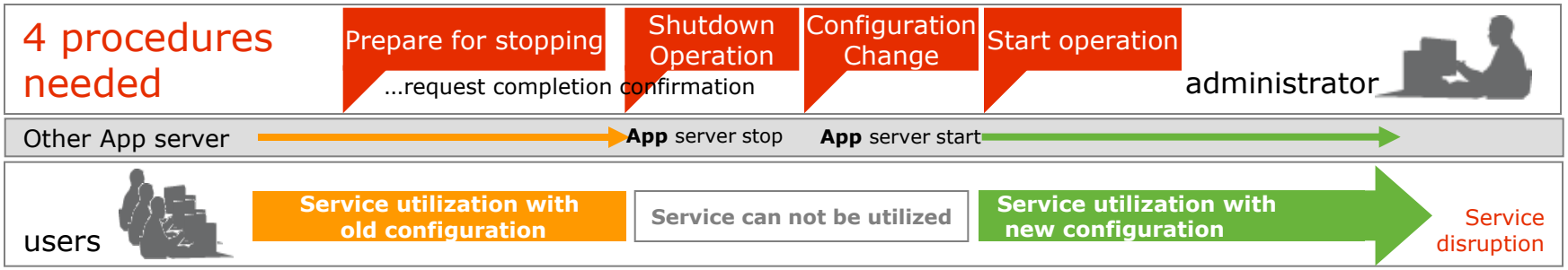
# Nondisruptive configuration change

V8.3

## Availability improvement utilizing parallel process coordination

- Change Java VM option (Java heap size, Java system property, etc) by highly reliable Transaction Processing (TP) monitoring function without shutdown of business operation.
- Administrator's work is reduced as complex administration operation (shutdown operation and executing transaction confirmation, etc) before configuration change is not required.



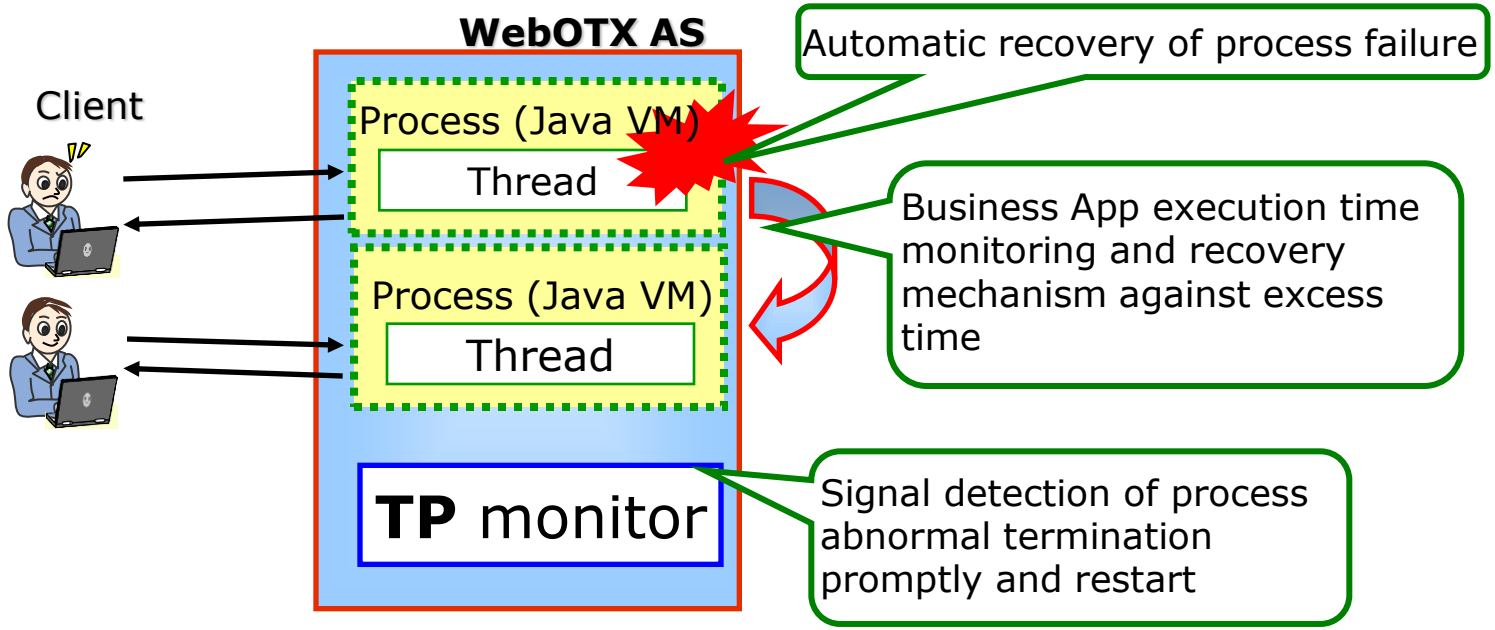




**Enables configuration tuning while continuing services**

# Real time monitoring by TP monitor

## Facilitate Application Failure Isolation to minimize affected Business App

- TP monitor process which is not existing in other vendor is implemented
  - System disruption time is minimized by real time monitoring/recovery of abnormal process

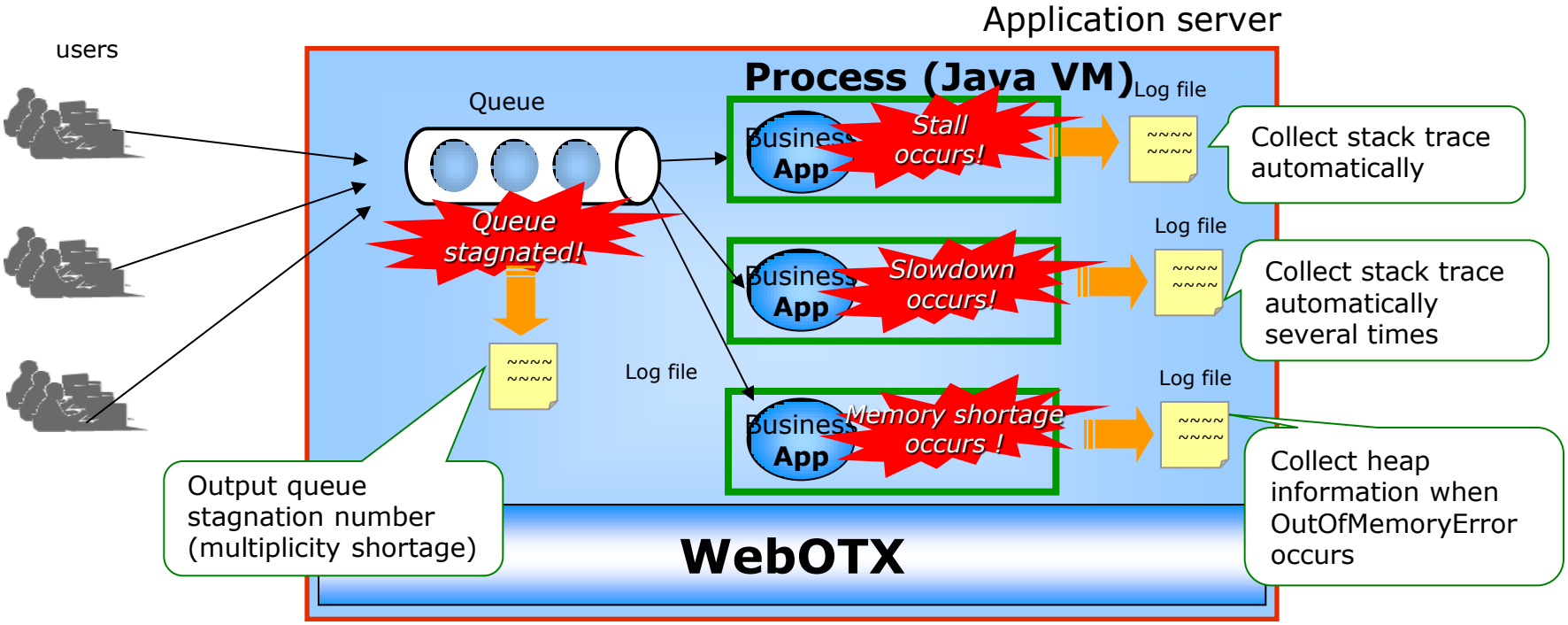



Stable operation by system disruption time minimization

# Failure analysis support (business App monitoring)

## Automatic information collecting function in case of failure is enhanced

- Collect failure information automatically
  - Collect information in case of abnormal process as well as stall and slowdown
  - Output queue stagnation number to log when queue stagnation occurs

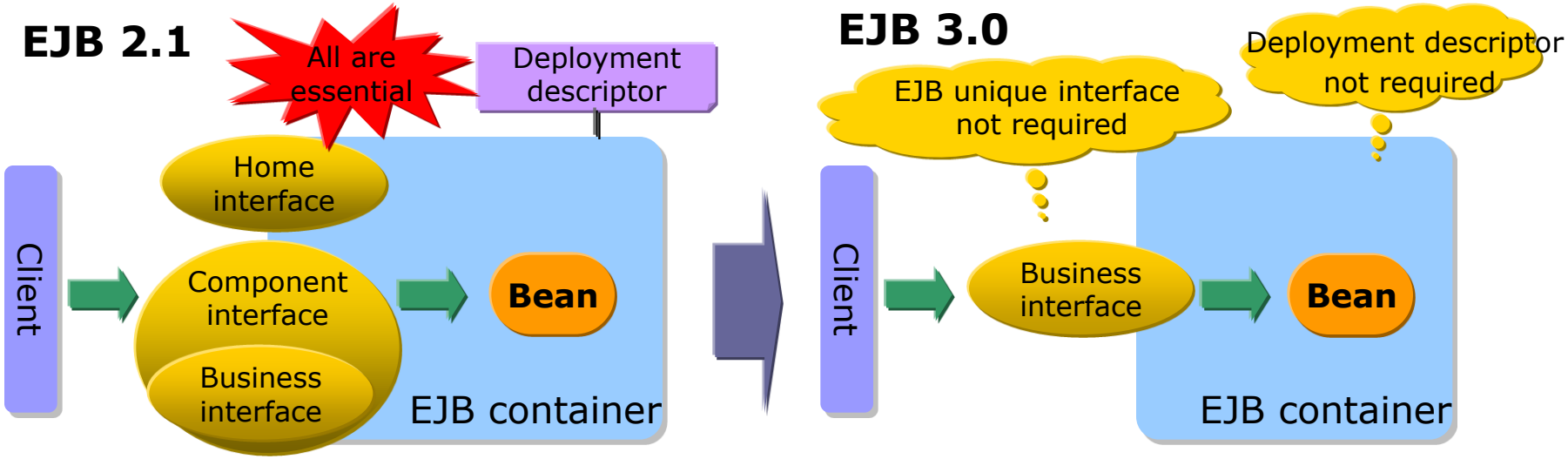



Minimize Need for Problem Replication to Collect Detail Data, and rapidly determine failure cause

# Productivity improvement with Java EE 5
## - enables easy EJB development -

### Simplified programming model without deployment descriptor

- EJB unique interface no longer have to be constructed. In business logic part, it is implemented as a plain old Java object (POJO).
- Complex deployment descriptor causing description mistakes is not required.
- Code (log output code, etc) which was traditionally required to be implanted in lots of business logic part can be injected without changing business logic.
- EJB container traditionally used for examining EJB is not required.




Only Java knowledge is required to implement EJB business logic

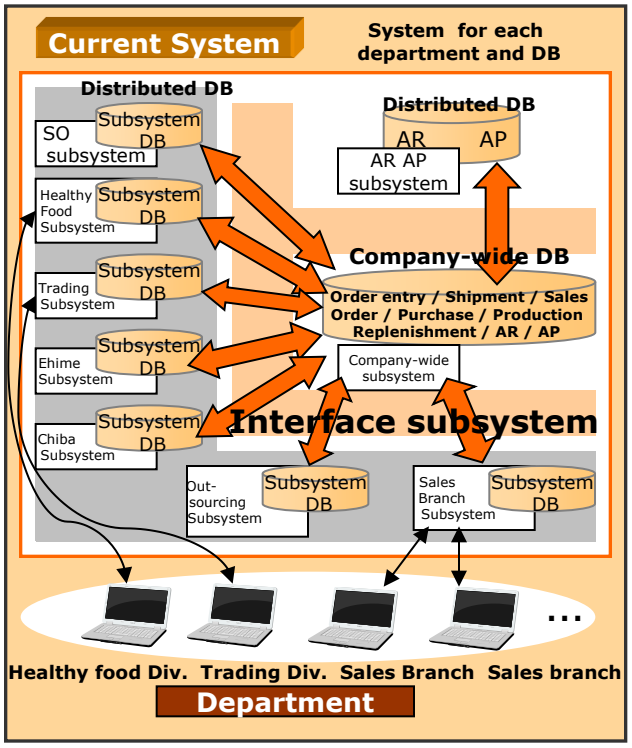
# Case studies Nihon Shokken Holdings Co.,Ltd.

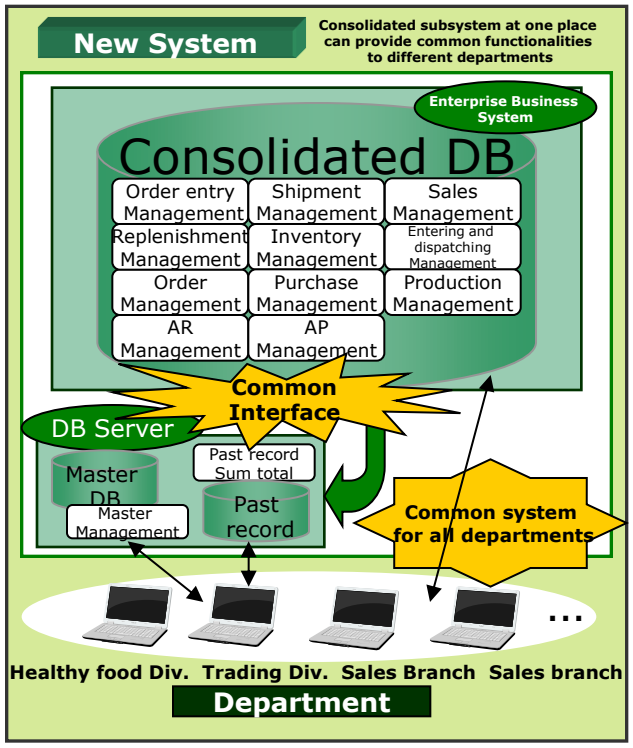
## Building infrastructure for future open system adoption while utilizing ACOS

### Challenges and benefits

In order to modernize ACOS, the decline of processing performance according to increasing data, and complicated data coordination, surrounding systems were arranged to infrastructure system renewal.

- Aging enterprise system renewal – ACOS renewal and open systems adoption.
- Effect of adoption – 27 % reduction of order input time, and more than 50 % reduction of night batch processing time in regular case.




### Voice of Customer

We predict data increase in the new enterprise business system for 10 years. We evaluate WebOTX in that infrastructure toward future full-open system has been constructed while maintaining reliability of **ACOS.**

# Case studies OBAYASHI CORPORATION

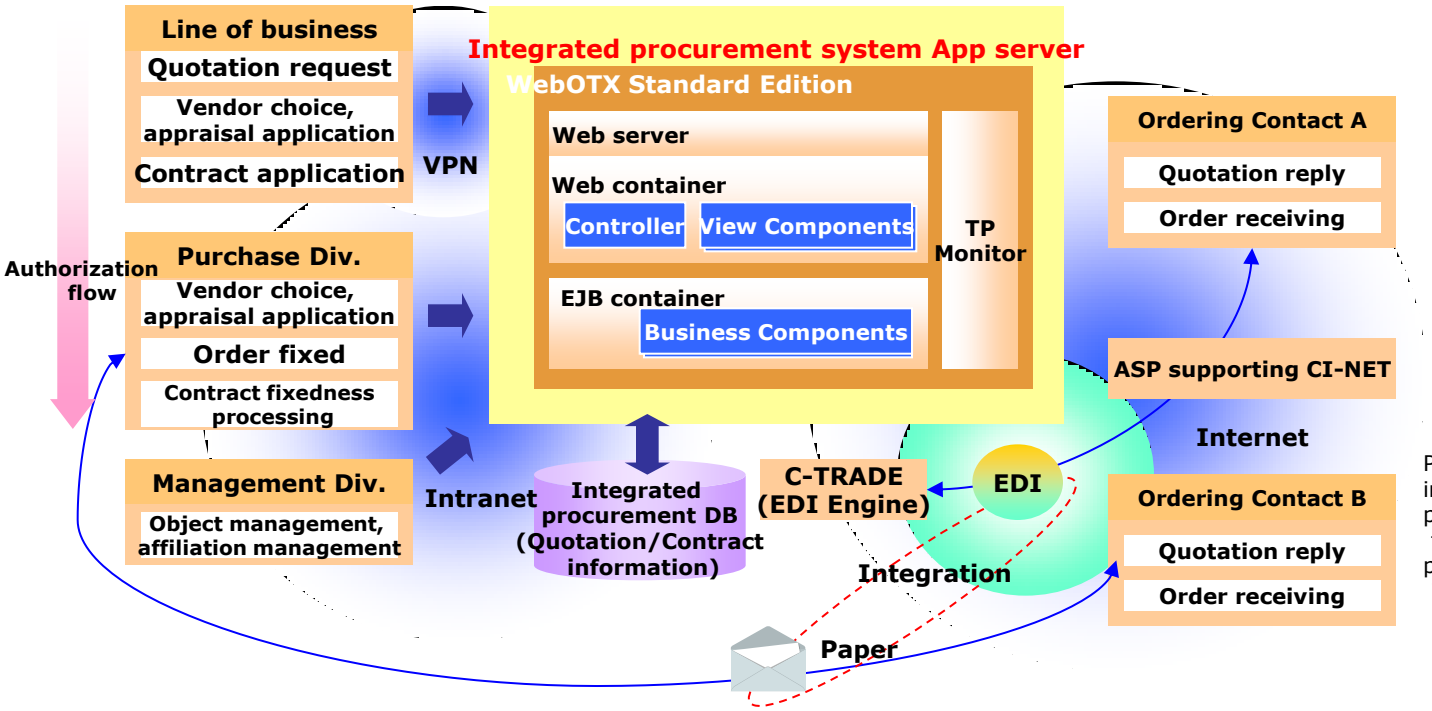
## Ensure non-stop operation

### Challenges and benefits

Renewal of 'integrated procurement system' in the review process of purchasing operation and more efficient construction.

- Total replacement was done for aging system. Working for the standardization of operating process.
- Stable operation of business is the must. The system achieved stable operation without any big troubles.

**Integrated procurement system overview**




### Voice of Customer

The system was not down even in case of transaction stasis trouble rooted in the application trouble.

Procurement workflow is fully automated including quote requests and final purchase order from line of business through final vendor. In this system, paper documents can be processed in the same process as electronic data.

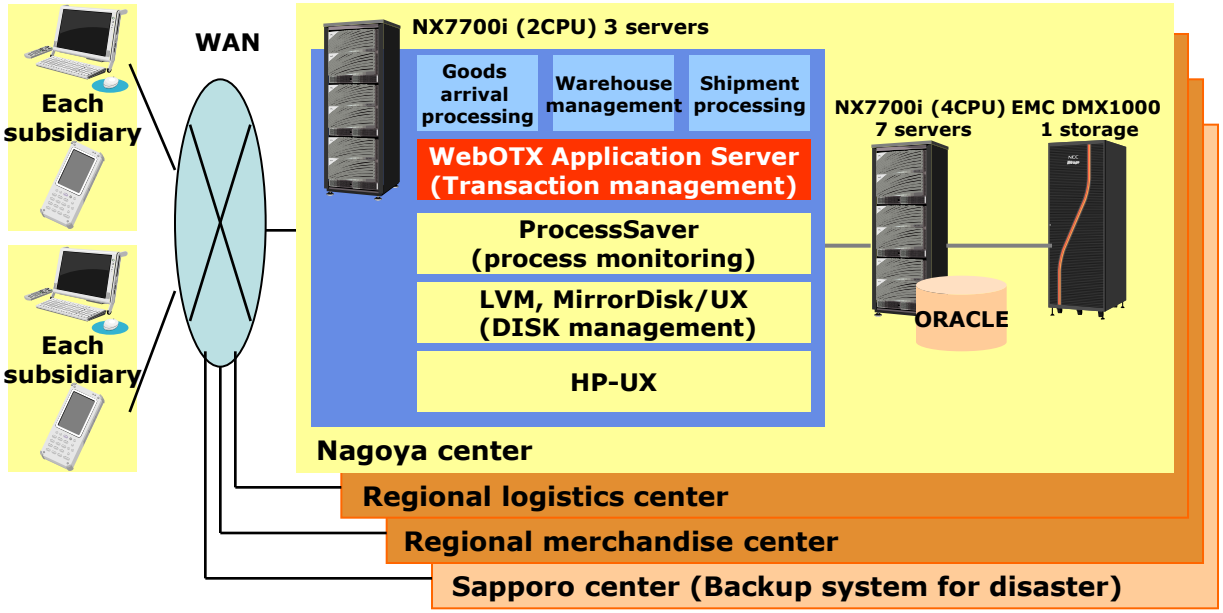
# Case studies SUZUKEN CO.,LTD.

## Business process innovation for inventory modernization and quality control

### Challenges and benefits

Migration to new warehouse logistics system with high reliability, performance, and operability for accurate and efficient pharmaceutical products control.

- Resolving excessive inventory, and shortening logistics lead time
- Utilizing advantage of open system such as GUI adoption in data input screen
- Realizing response under 2 seconds in spite of dramatic increase of managing data
- Declining workload of administrator with rich client automatic update utilizing downloader function




### Voice of Customer

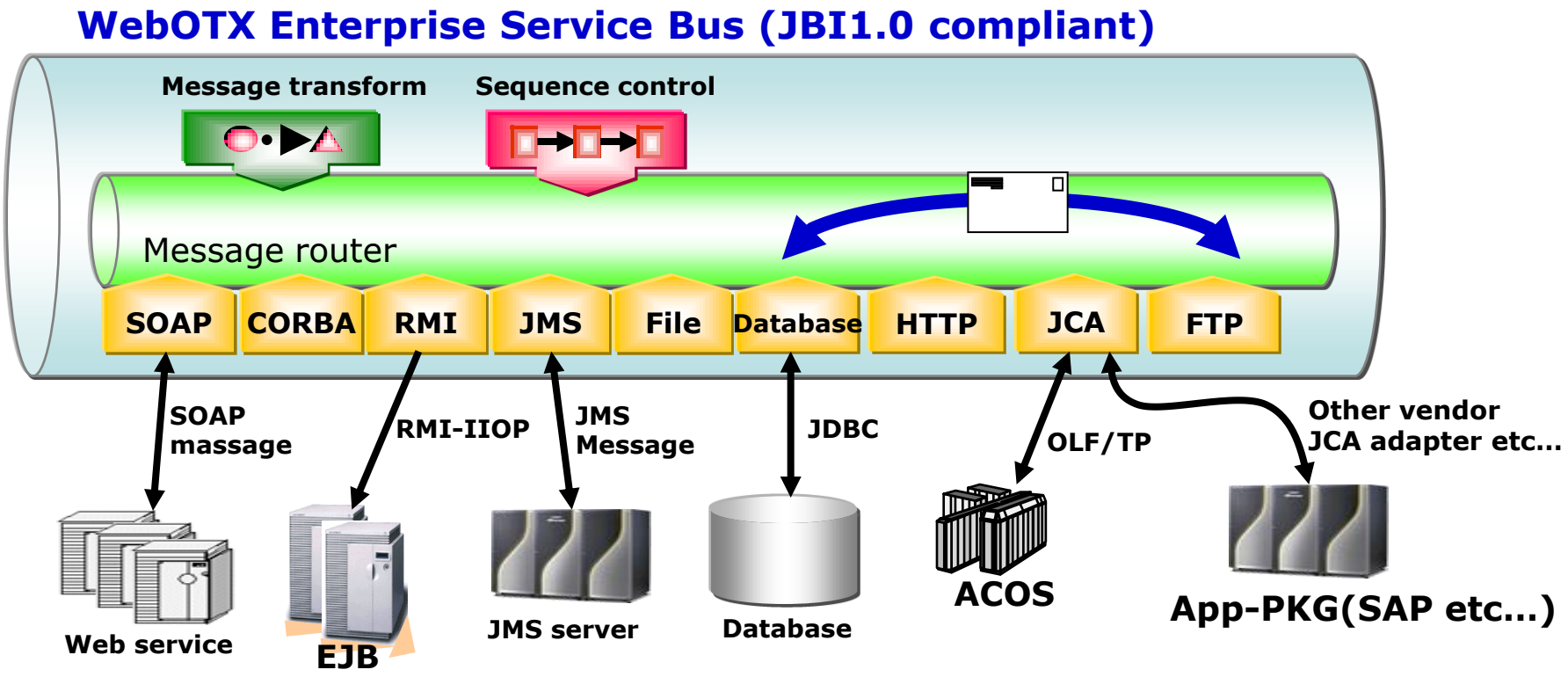
The important point was to realize high performance utilizing WebOTX without losing system operability. However, in warehouse logistics system, we ensure 'response under 2 seconds' which is consuetude of the company from mainframe period, while maintaining advantage of open system such as data input screen GUI.

# 2. WebOTX Enterprise Service Bus

# What is WebOTX Enterprise Service Bus?

## Virtualized service enables flexible integration among services

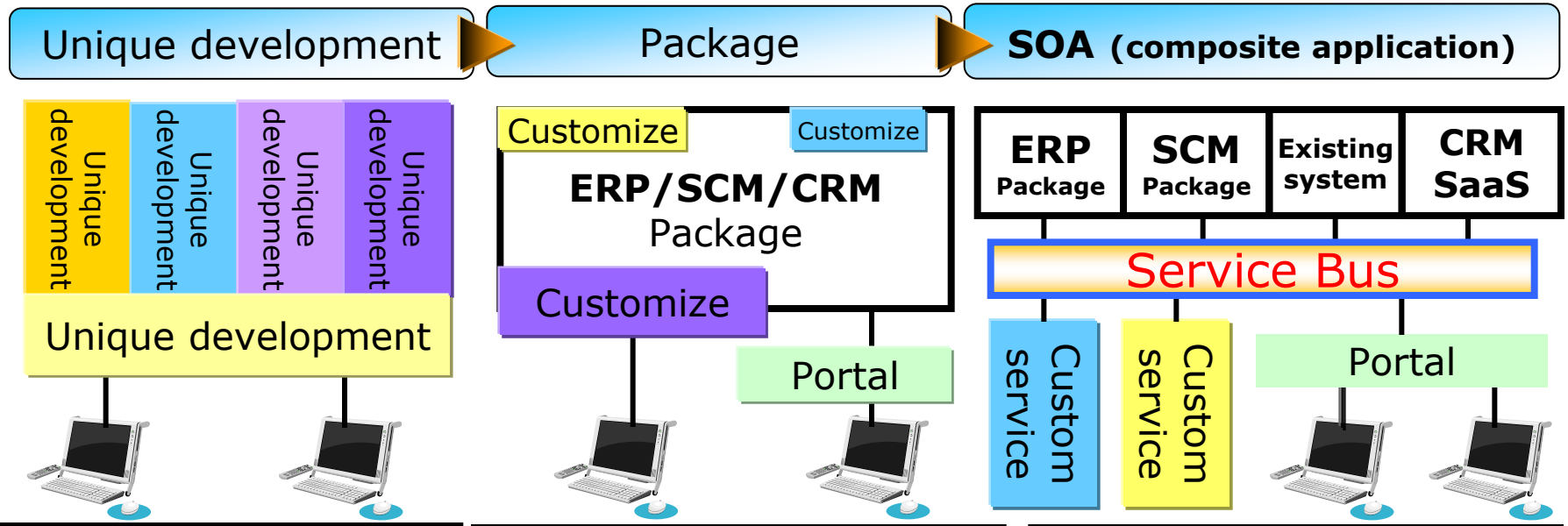
- Virtualized location makes service more independent and minimizes influence scope of system change.
- Provides mediate function such as various standard interface, message routing and massage transform, etc…



# Customers' Challenges – fully custom development

## From fully custom SI to service integration-centric system construction

▼ System construction method evolved from scratch development to SOA composite application for shortening development time and cost optimization.




- **Long development time and high cost**
- **Development risk is comparatively high such as appropriate architecture setup**
- **Effective in systems that generate enterprise unique added value**

- **Difficulty in ver. up after customizing**
- **High cost for unneeded function included in package**
- **Effective for avoiding long implementation time and development risk according to fit level of package**

- **Freer than package**
- **Easy integration with existing systems**
- **Development risk reduction by services mixing development**

# Integration Benefits of service bus

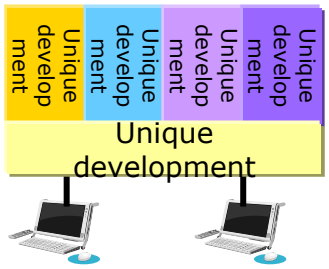
## Highly scalable service bus enabling utilization of existing systems

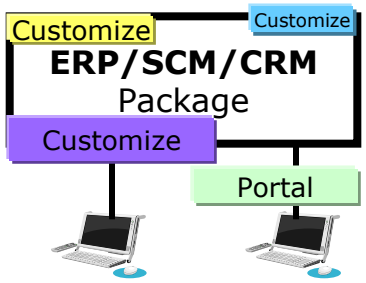
### Challenge in system integration

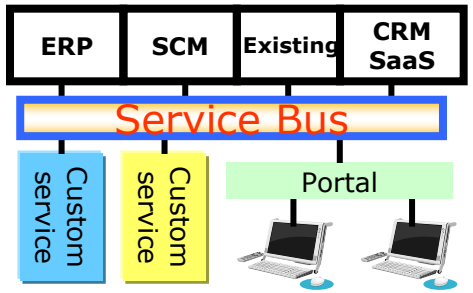
1. Aiming at integration of silo type systems, but integration is difficult for each subsystem interface difference.
2. Difficult in switching mainframe to open systems in one time. Aiming at switching it to new system Incrementally.
3. Scratch system and package are mixed. Aiming at efficient business operation by flexible system integration.

### Benefits of service bus

1. Absorb difficulty in inter-system protocols and data format. Easy connecting highly scalable system can be constructed.
2. Existing business on mainframe can be integrated with open systems by adapter suite and can migrate easily.
3. Service bus implementation enables easy system integration in case that existing scratch system and package are only files or database interface.



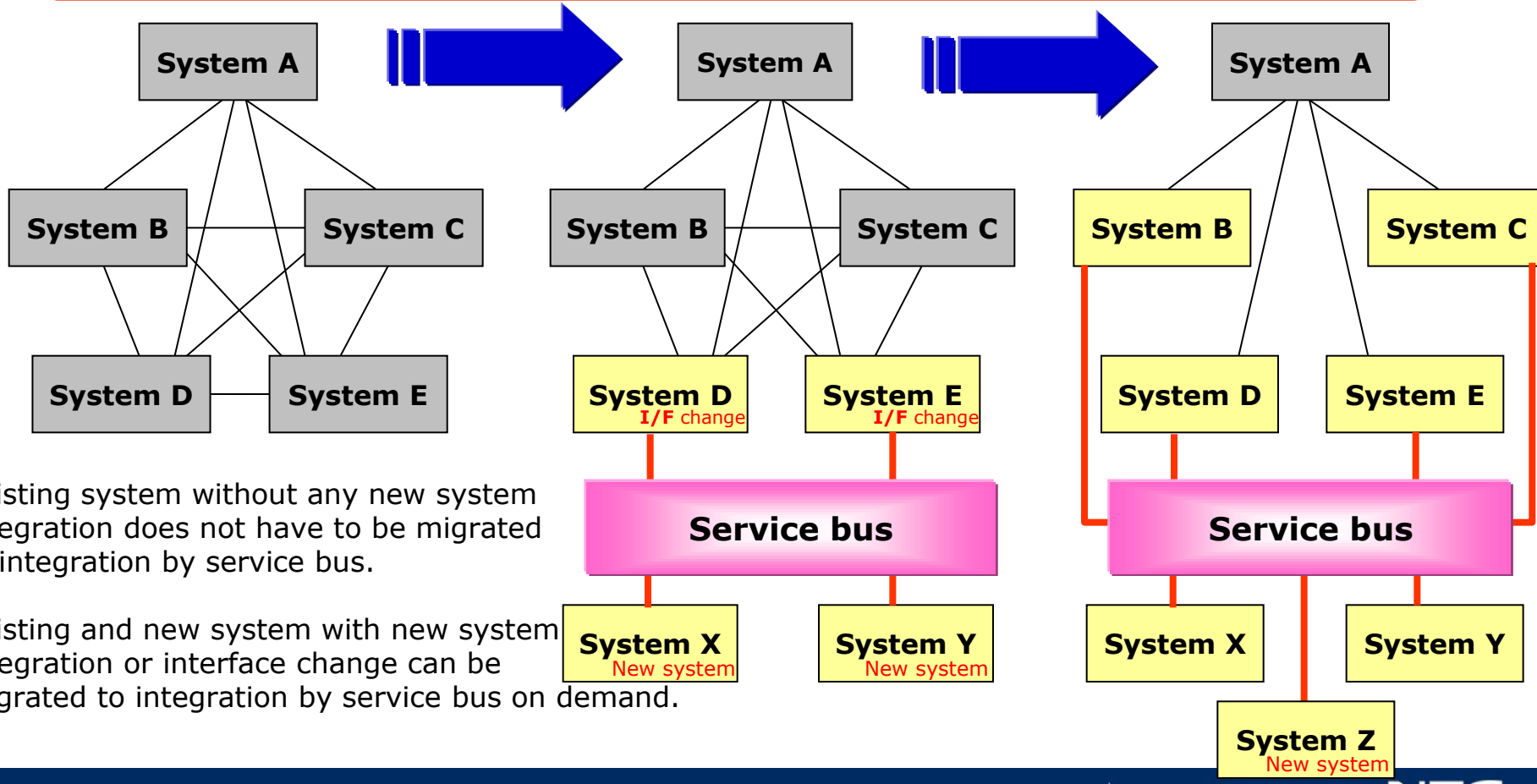



# Incremental system integration with service bus

## Strategic investment can be done on demand utilizing existing IT assets

▼ "Mesh type" can migrate to "system integration with service bus" Incrementally in case of new system integration, etc.



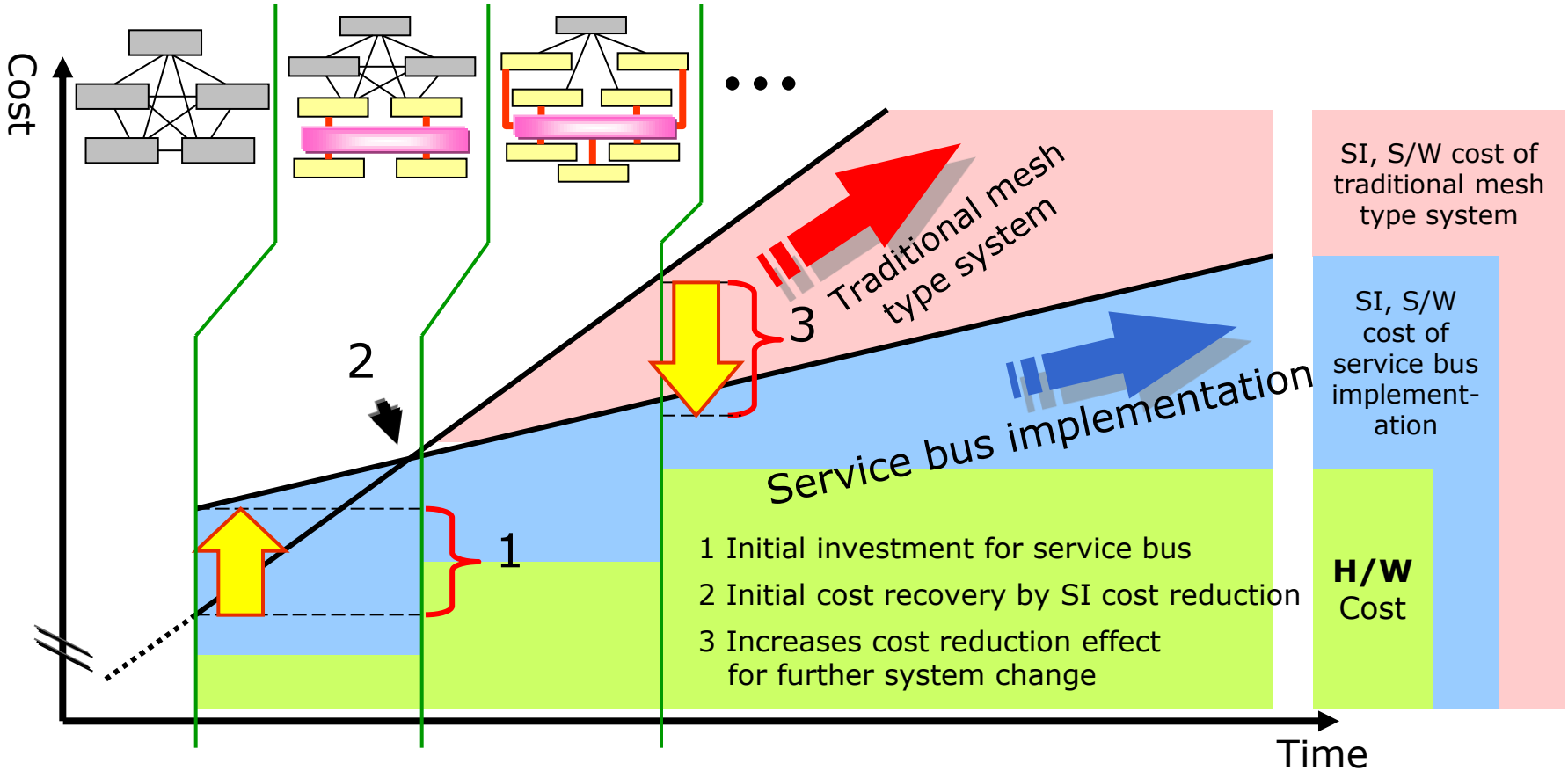

Existing system without any new system integration does not have to be migrated to integration by service bus.

Existing and new system with new system integration or interface change can be migrated to integration by service bus on demand.

# Cost benefits of service bus

## Reduction of mid-term cost against system change

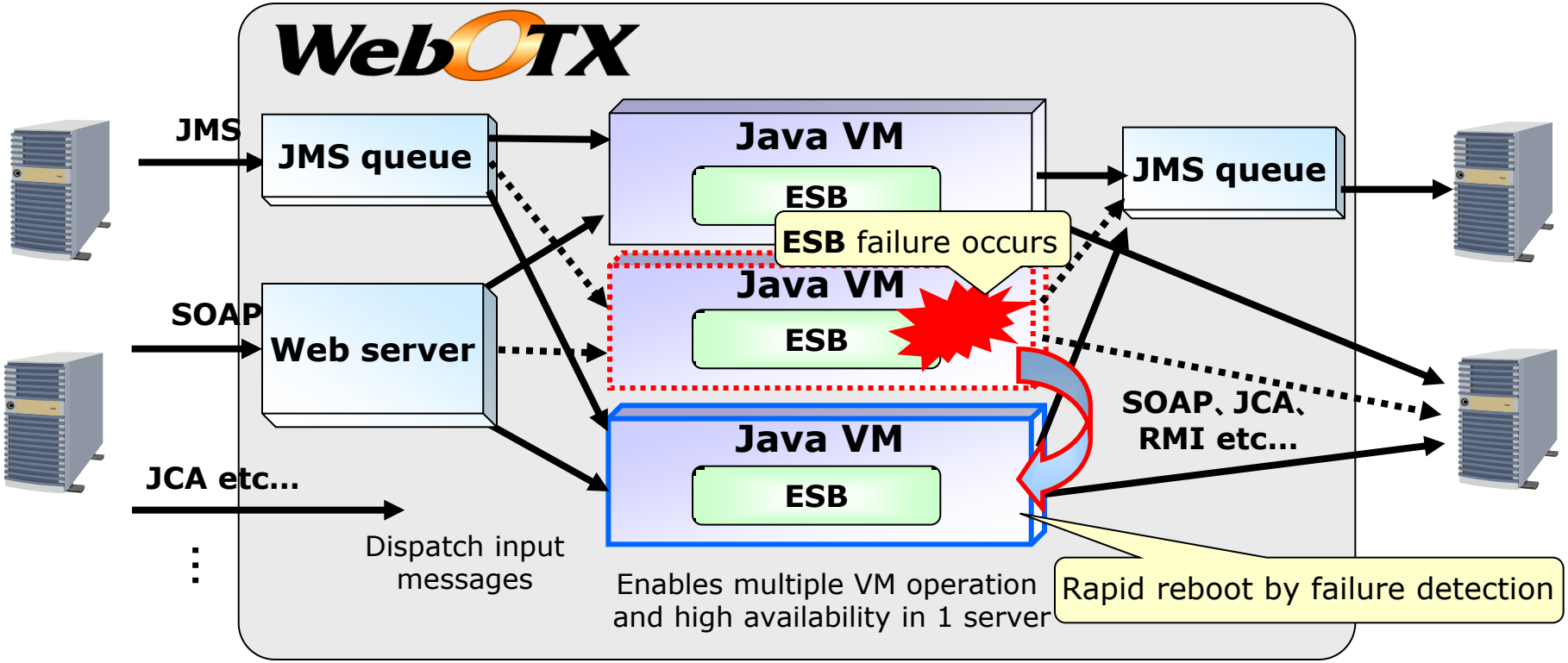
▼ Mesh type without service bus cost in proportion to system number increase.
- Cost reduction for future system change by system integration with service bus.



# Availability by multiple Java VM

## Minimize system disruption through ESB failure containment to subsystem

- ESB works in multiple processes (using WebOTX highly reliable platform)
  - WebOTX detects failure in integration operation and automatically recover rapidly.
  - During failure recovery, failure process shutdowns, distribute and operate in other VM, and realizes nondisruptive operation.




* This function can be realized in case WebOTX AS Foundation or over is used

# WebOTX ESB advantages

## Make systems more independent and realize prompt integration

Withdraw from proprietary EAI tool (JBI1.0 compliant).
By JBI specification compliant, long-term utilization of setup assets in system integration.
Enable to use JBI component from third party.

Achieve high development productivity and usability in large-scale configuration that requires multiple bus configuration.
Developed same as single bus configuration. Consolidate operation of multiple bus.

Realize highly reliable inter-system integration.
Failure localization by multiple VM and service multiplexing by path control improve availability.
(* Can be realized in case WebOTX AS Foundation or over is used)

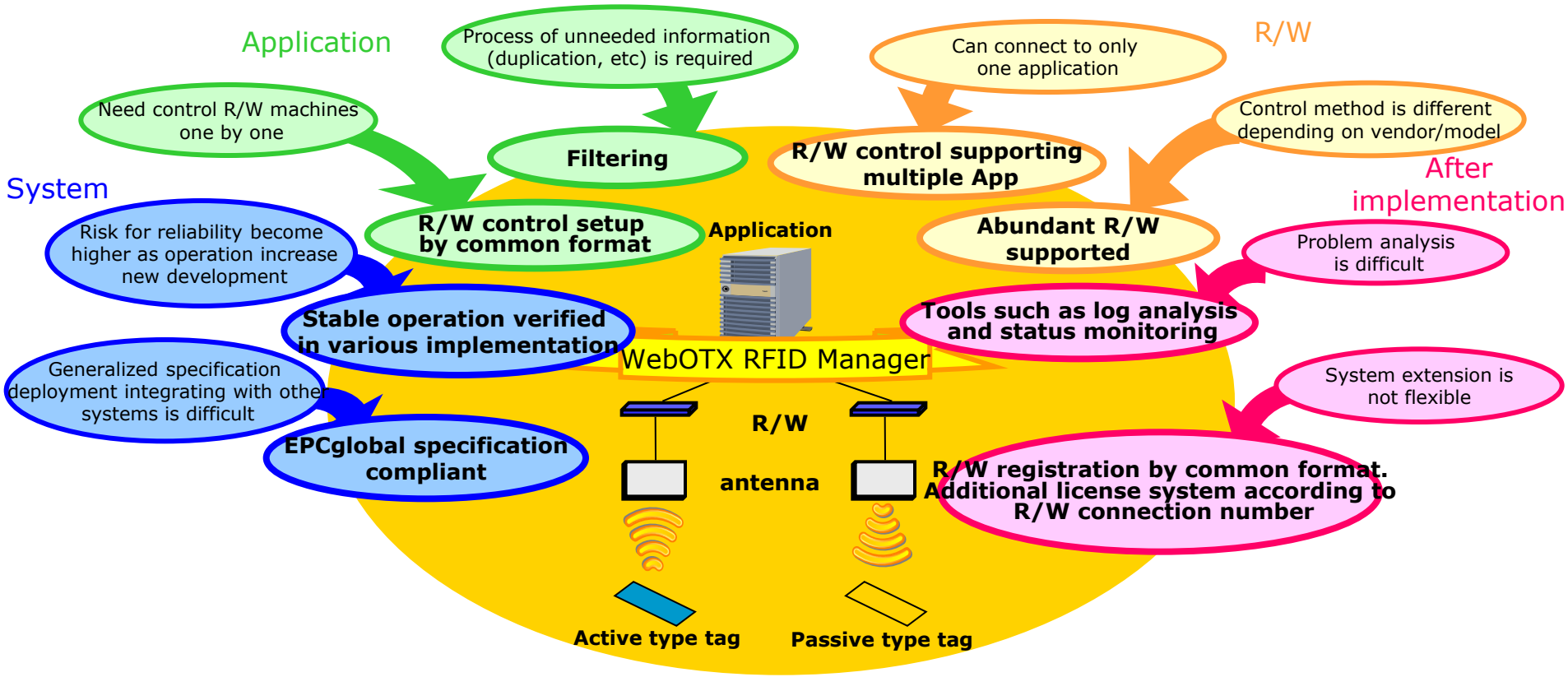
Prompt system construction (Eclipse based development environment).
Integrate SOA supporting tools such as WSDL, XML editor, etc.
Revision management and team development by CVS integration.

Host, EIS can be connected easily (JCA adapter).
Support legacy systems such as ACOS, TPBASE, etc.
Integrate with SAP, Siebel, IBM host, Oracle, etc with iWay adapter.

# 3. WebOTX RFID Manager

# What is WebOTX RFID Manager?

## Middleware for RFID system, fast and reliable RFID application design, development and operation




EPCglobal is nonprofit organization that promotes international standardization of electronic tag (RFID). EPCglobal suggests EPCglobal network as framework to utilize RFID, collect and organize main function to construct systems for enabling intercompany data sharing.

# Customers' Challenges

## Suitable Business Operations

- Many items to manage
  - Parts items: From a few hundreds to few thousands
- Must be managed frequently
  - Inventory, etc.
- Items to manage scattered
  - Many locations of warehouses
- Time-consuming management
  - Frequent inbound/outbound warehousing
- Expensive items to manage
  - Tag price (Return on investment)
- Must keep records
  - Rental operations

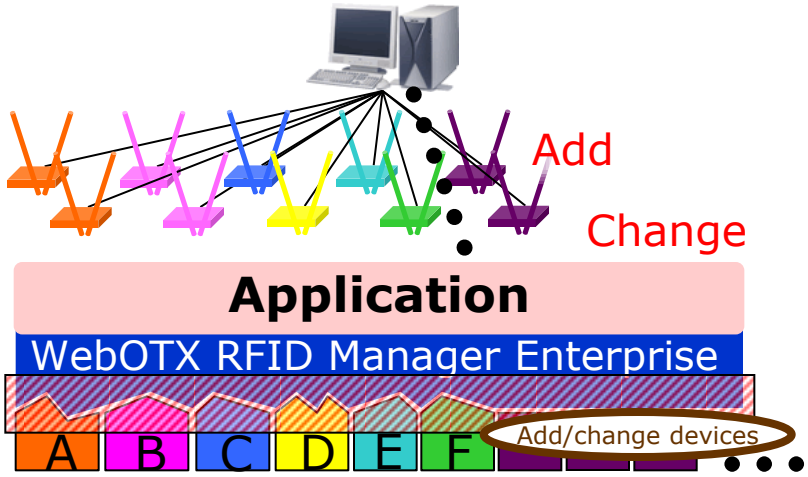
# Advantages of Using WebOTX RFID Manager

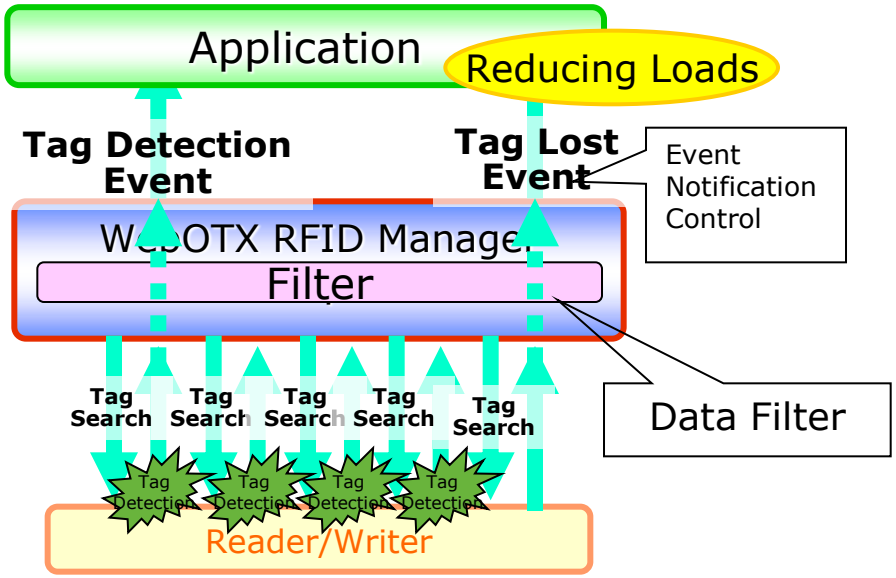
- Efficient development/operation/maintenance is possible
  - ✓ RFID-specific extended functions such as reader/writer control and data filter
  - ✓ Extended tools designed for operations and maintenance
- Lead to gaining core system business
  - ✓ RFID system is front end system which may lead to winning back end system business

# RFID System Specific Extended Functions

Reducing costs enables a reliable constructing and operating systems.

- Absorb difference of R/W
  - Absorb specification difference depending on vendors or frequency band, and common API is provided for application side.
    → Reduce R/W specification investigation man- hour
    Easy to control even when R/W coexists, added or changed.



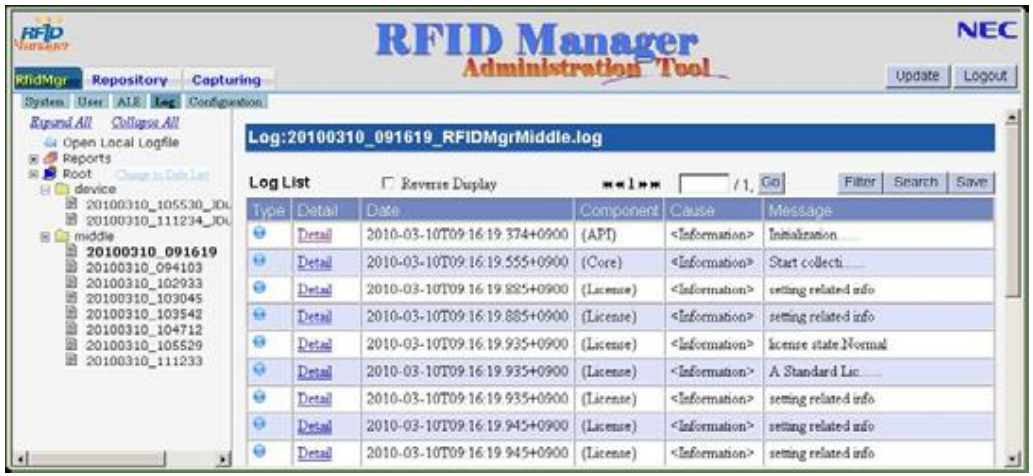




- Data control
  –Various filters are available, and detailed settings according to R/W roles are possible.
  → Better performance

# Extended Tools Designed for Operations and Maintenance

## Maintenance cost reduction possible

- RW Status Monitoring
  - Continuous R/W status monitoring, notification to application side when problem occurs.
    → Prompt failure detection
  - Supports R/W live-insertion/removal. No need to stop the system for physical R/W replacement, and automatically go back to normal operation. Continuous operation is possible.
- Operations Status Report (Log) Capture
  - Captures according to device, internal middleware and application.
    → Easy to isolate the problem locations
  - Simple causal determination of problem location by changing log capture level and error messages.
  - Easily analyze performance and make causal determinations using retrieved log filtering function.

# RFID Information Sharing System Supporting Global Standards

"WebOTX RFID Manager Information Service" is ideal for the following requests.

POINT 1

## Share RFID Event Information

Need to share information on multiple sites within a group or between partners.

POINT 2

## Link with Global SCM Network

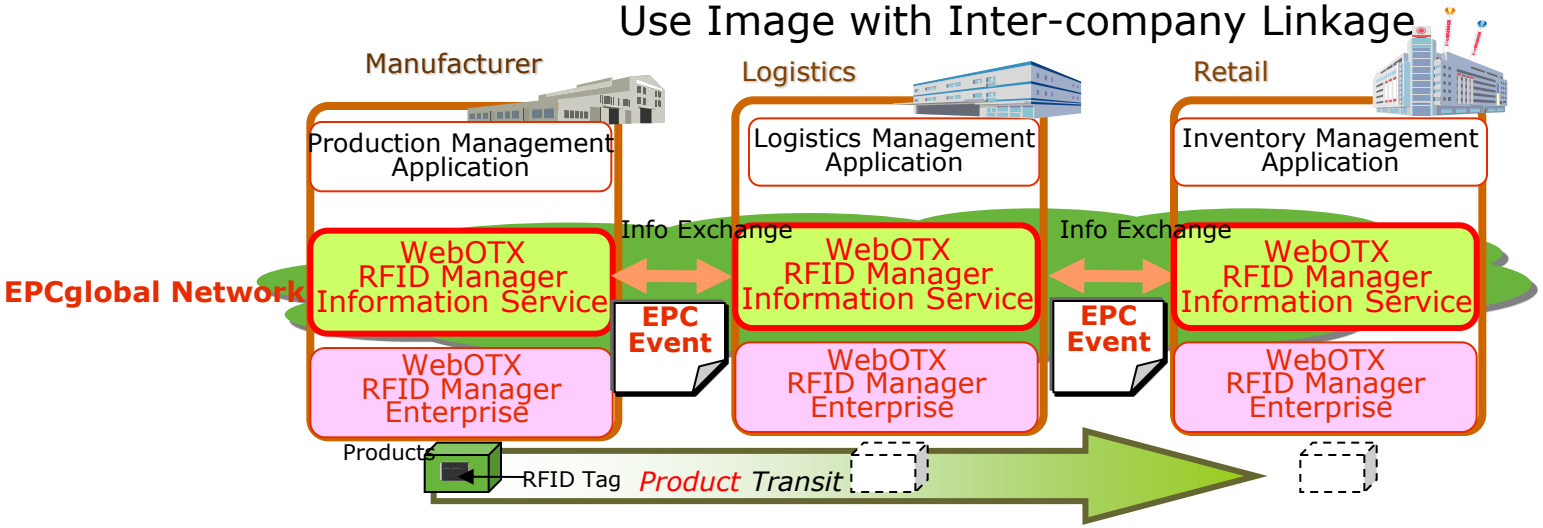
Need to construct a system conforming with EPCglobal standards.

POINT 3

## Construct with expandability

Initially in-house system, but must expand for inter-company linkage in the future.

Use Image with Inter-company Linkage



# Gain Core System using RFID as Trigger

You can approach green-field customers using RFID system as a trigger.

- Accumulate, integrate, and manage ID information associated with persons and things

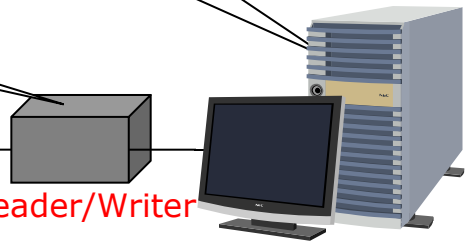
Back-end System

- Conduct operations directly related to RFID
- Send recognized IDs to network

View

IP Network

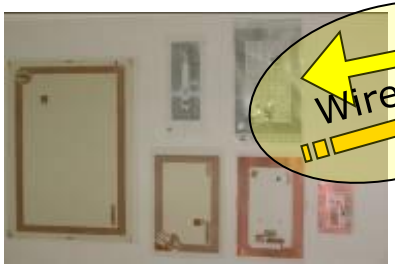
- Recognize IDs of persons and things (Read/write information)



- Can remotely read/write using wireless
- Can automatically recognize multiple IDs simultaneously

Reader/Writer

RFID Tag




Antenna

Front-end

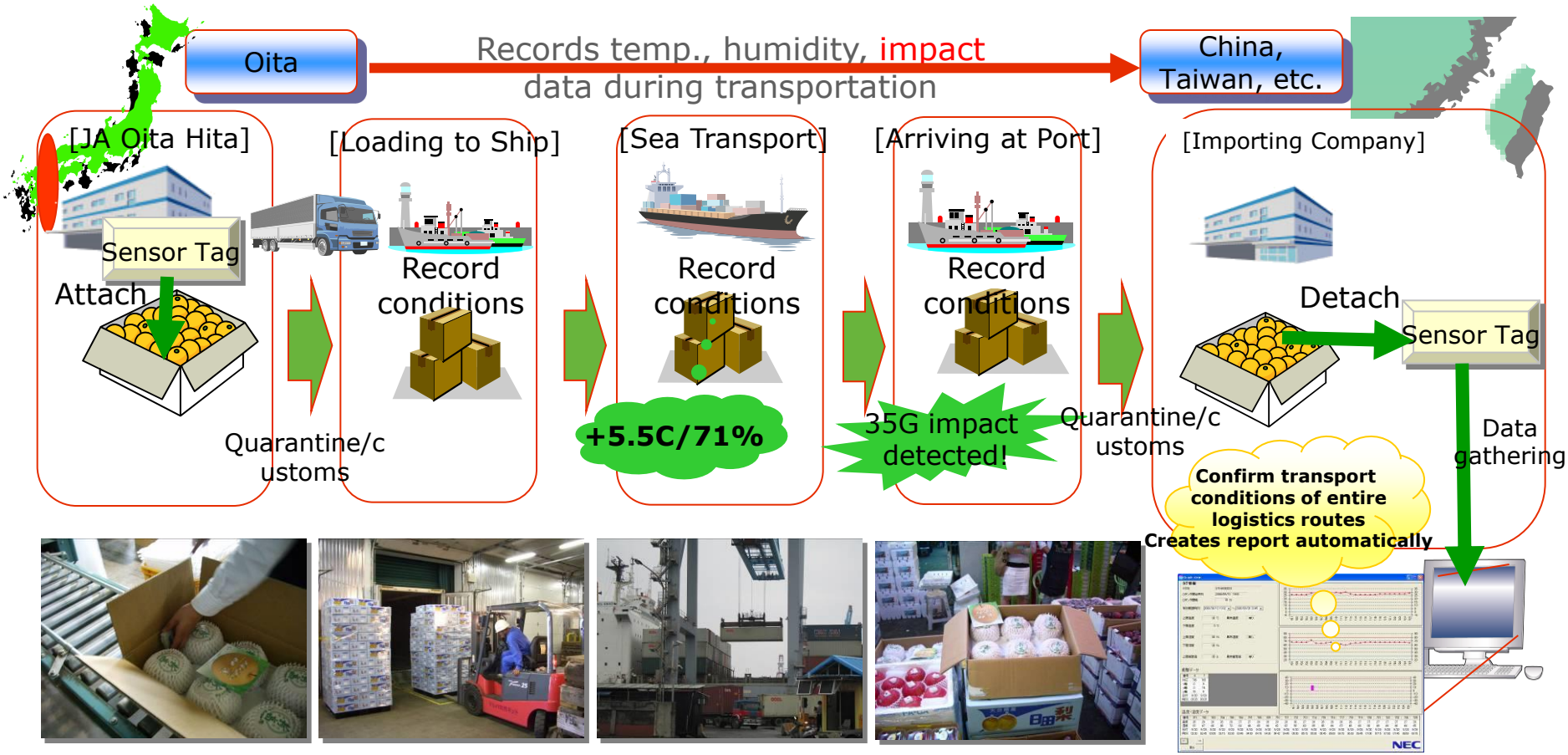
Job Applications

WebOTX RFID Manager

# Case studies

## JA Oita Hita/JA Zenno Oita (Quality Control for Pears)
## "Brand Oita International Trade Promotion Business for FY2006"

Use tags with sensors for temperature, humidity and impact, to control quality during transportation, and contribute to promoting high-quality agricultural product exports.

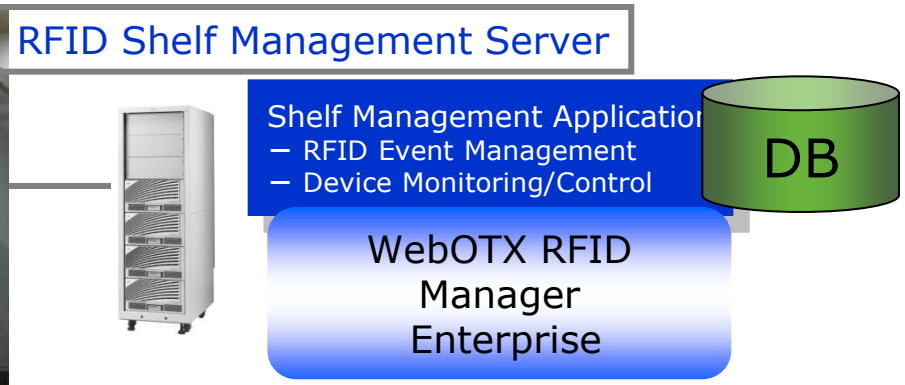


# Case studies

## "Reserved Book In/Out System Using RFID" for Fuchu City Library

Operation efficiency improvement and new services are realized.

**First in Japan**




e-Shelf = Book shelf with RFID reading antenna and book location indication LED installed.

☆ Automated recognition of book shelf location

When a book is placed on e-Shelf, RFID automatically recognizes the location, and users can find the book they are looking for with LED indicating the location.

☆ Automated book borrow/return operations

With RFID, users can complete check-out processes only by placing a book on Kiosk terminal.

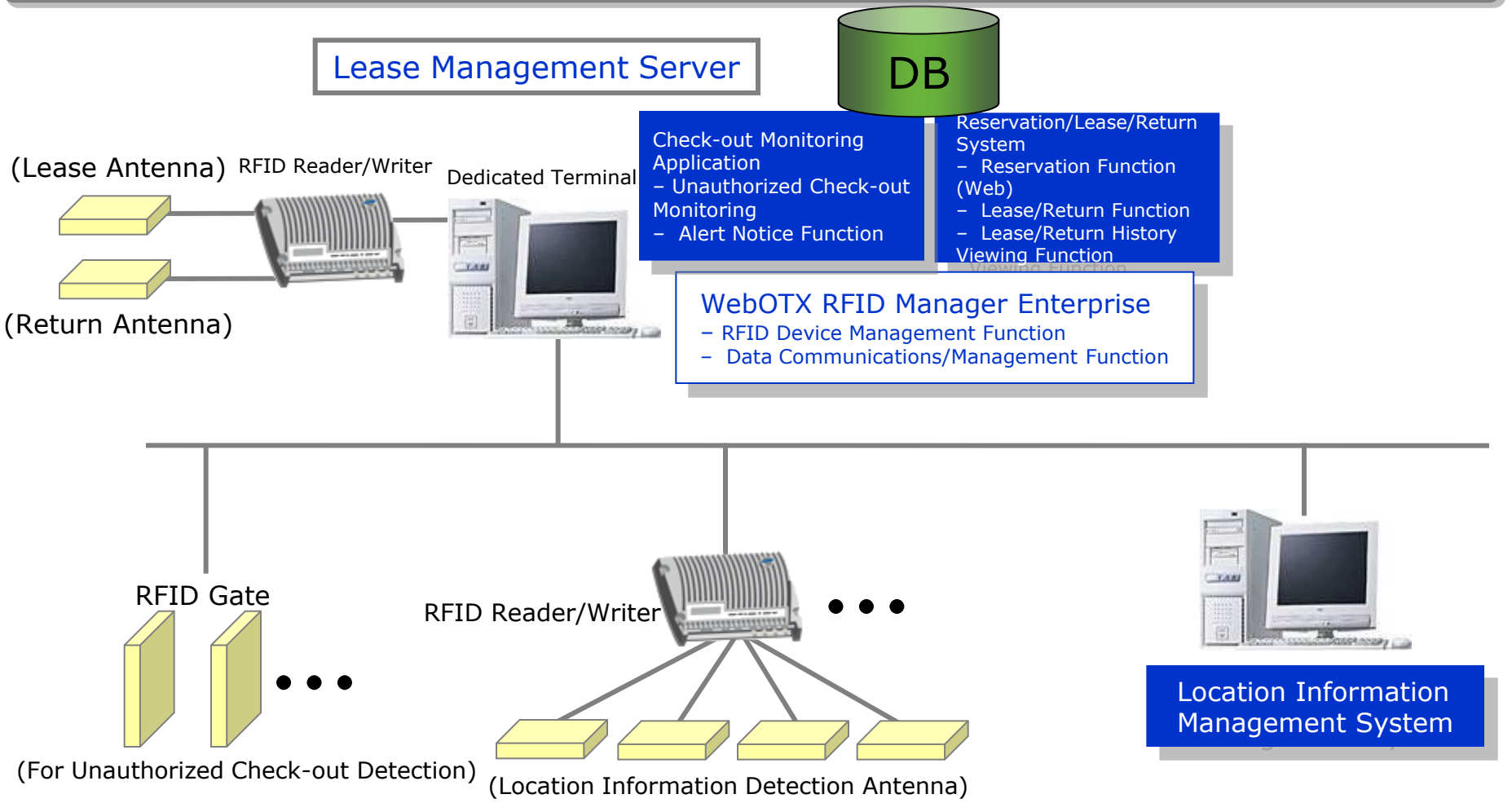
☆ Automated monitoring for unauthorized check-out

RFID gate allows unauthorized book check-out to be prevented.

# Case studies

## PC/Book Check-out Management System - Asset Management -

By attaching RFID to the assets, automated asset lease management, lease record data collection, unauthorized check-out prevention, asset location information management, management man-hour reduction, and automated history information collection effective for asset maintenance can be achieved.



# Thank You


Application Service Platform for the age of cloud-computing

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