Introduction to the FUJITSU Cloud Service K5 Sharing Business Platform Service

April 2018
Fujitsu Limited

GOOD DESIGN AWARD 2017

Sharing Economy Promotion Logo
National Strategy office of ICT, Cabinet Secretariat
Sharing Economy Promotion Office

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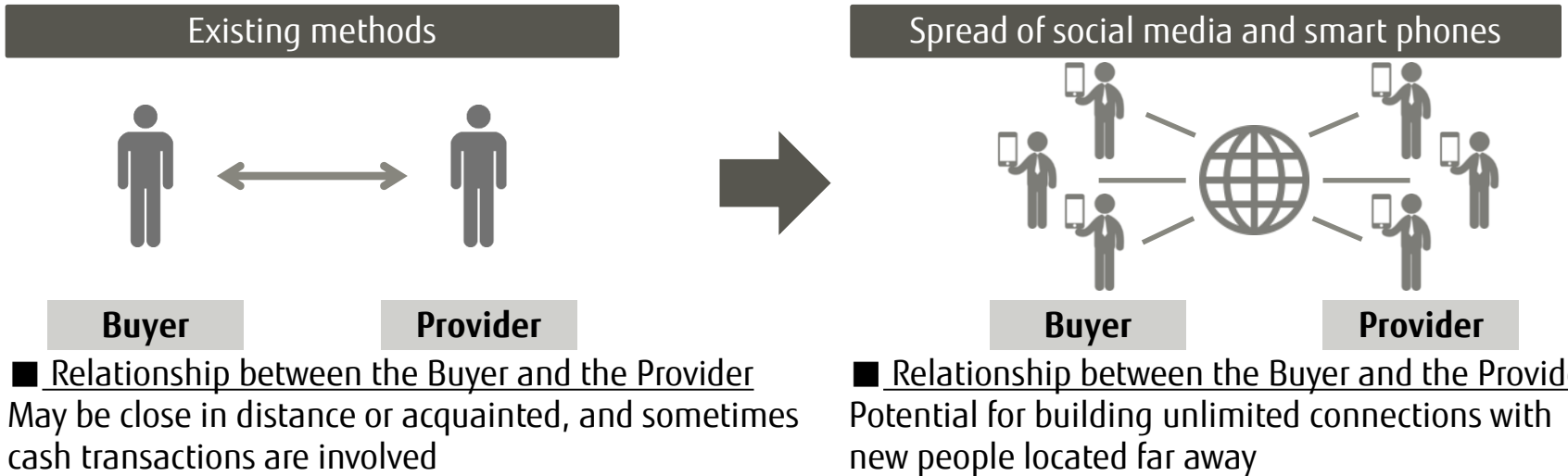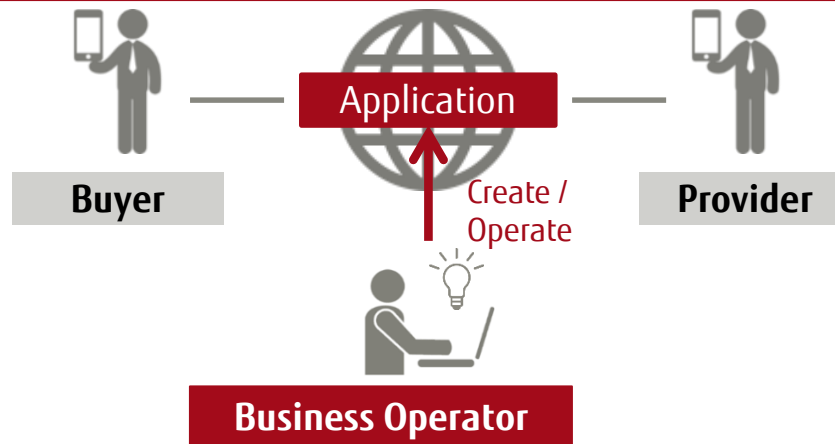・The information in this document is subject to change without notice.

Version 1.10

Contents

About the Sharing Business Platform Service

The "Sharing Business" uses an economic system where things or services are lent and borrowed between individuals or from companies via the internet (sharing economy)

Existing methods

Spread of social media and smart phones

Buyer ⟷ **Provider**

Buyer **Provider**

■ Relationship between the Buyer and the Provider
May be close in distance or acquainted, and sometimes cash transactions are involved

■ Relationship between the Buyer and the Provider
Potential for building unlimited connections with new people located far away

People with ideas become business operators and launch a business

Buyer — Application — **Provider**

Create / Operate

Business Operator

* Reference: Government CIO Portal Sharing Economy Promotion Office
https://www.cio.go.jp/share-eco-logo/

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Overview of the Sharing Business Platform Service

The Sharing Business Platform Service supports the creation and development of Sharing Business services. The management of products and customers necessary for the Sharing Business is implemented using APIs so that the Client can focus on function development and the UI design essential for their customer services.

Shared transport

Shared things

Shared space

Shared labor and skills

Shared money

Borrower
(Buyer)

Client's Web services

Lender
(Provider)

Client's Operations Manager
(Business Operator)

API

Matching Management

Personal Management

Community Sharing

Business Support

Product data, user data, etc.

K5

Sharing Business Platform Service

Sample Web Application
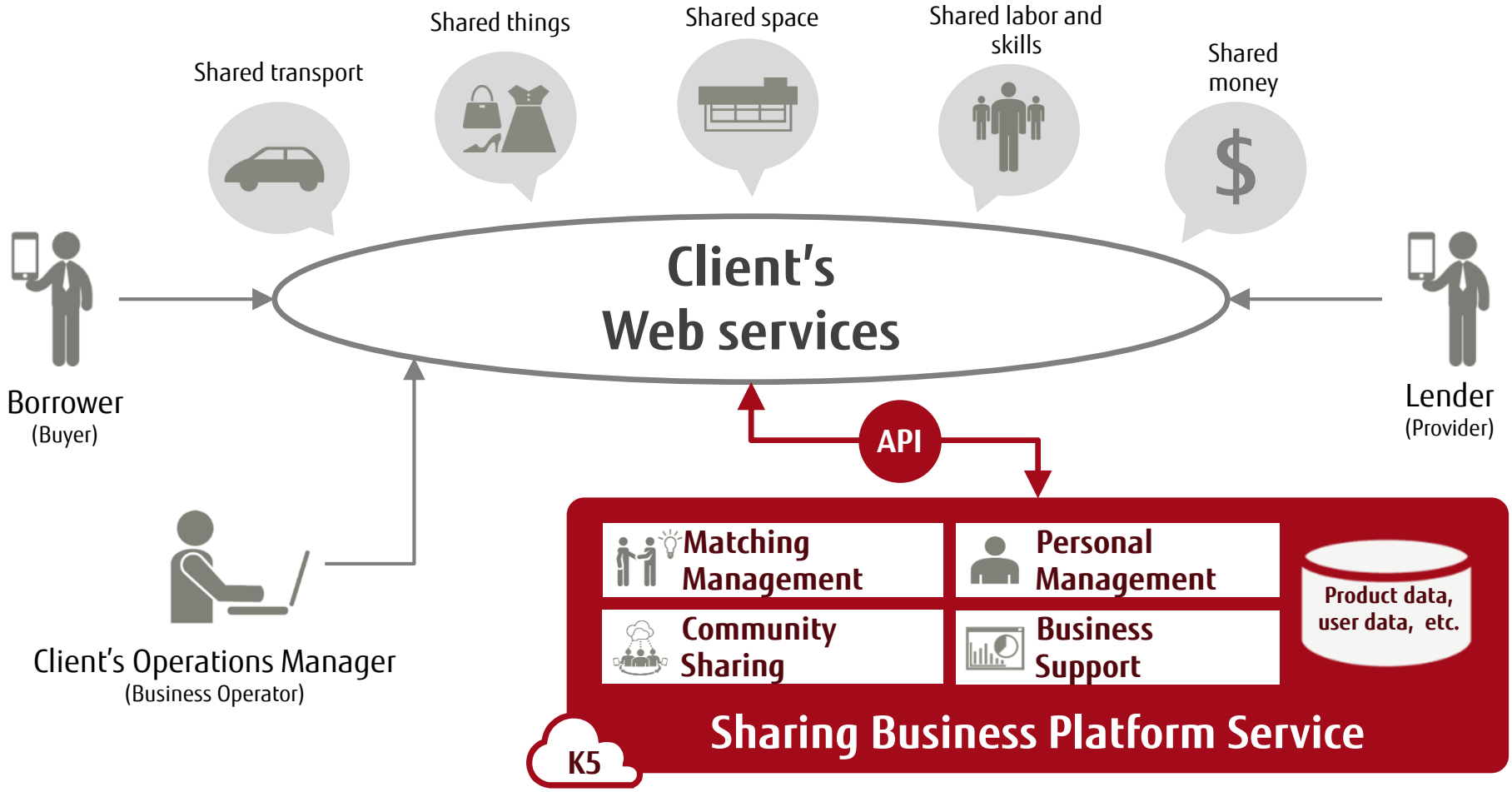
Sample Web Applications are provided free of charge (*) to match the variety of Sharing Business types

- Typical functions are built in to suit each business type.
- Subscribers are free to customize and incorporate new functions. This expedites the launch of their services.

Shared cars	Shared logistics	Crowd funding	Shared vacant houses	Crowd sourcing	Volunteer matching	Operations management
share x things	share x movements	share x money	share x space	share x skills	share x skills	

Newly introduced

*Volunteer matching Sample Web Application is only for customers who contracted 'Standard Plan'.
Other Sample Web Applications are available for all customers.

Sharing Business Platform Service   Sample Web Applications
https://k5-doc.jp-east-1.paas.cloud.global.fujitsu.com/doc/en/sbpf/document/template/top.html

Received the 2017 Good Design Award

Highly evaluated as a good design : the structure of business start-up at low cost

Fujitsu Sharing Business Platform

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Fujitsu Cloud Service K5 Sharing Business Platform

Things   Transfer   Place   Money   Skills

Judge's comments

The sharing economy is an area expected to grow rapidly in the near future. The availability of this type of platform will enable the public to create services with a low-cost initial investment and accelerate and vitalize the sharing economy further.

Service Features

Service Features (1/2)

A wide range of management functions needed for Sharing Business applications are provided. Product and user information can be set up flexibly by expanding categories as required. In this way the service can be applied to any Sharing Business.

Functions that manage Reservation/Purchase of products are provided

The products being provided are managed via the service, which includes tracking the status of product Reservation/Purchase made by customers. Management is provided for all three types of sharing businesses: Exclusive, Sharing or Subscription. **(Patent pending; first in the world)**

Flexible data management is enabled

Data can be organized in various ways by expanding the categories and this does not apply restrictions to the management of products being shared or to the users. Flexible data management is enabled to meet the needs of any Sharing Business.

Sample Web Applications are provided to suit different types of products

Sample Web Applications are provided to suit the different types of products being shared. Clients can customize Sample Web Applications to suit their needs.

Service Features (2/2)

The service provides various management functions via REST APIs

RESTful WebAPI provided

The service is provided as RESTful Web APIs.
The platform does not depend on any specific programming language or runtime environment. It only requires HTTP to be enabled.

Security measures

To use Web APIs, an access token obtained using the client ID assigned at the time of service application is required. Security is reinforced by authenticating individual Client IDs.
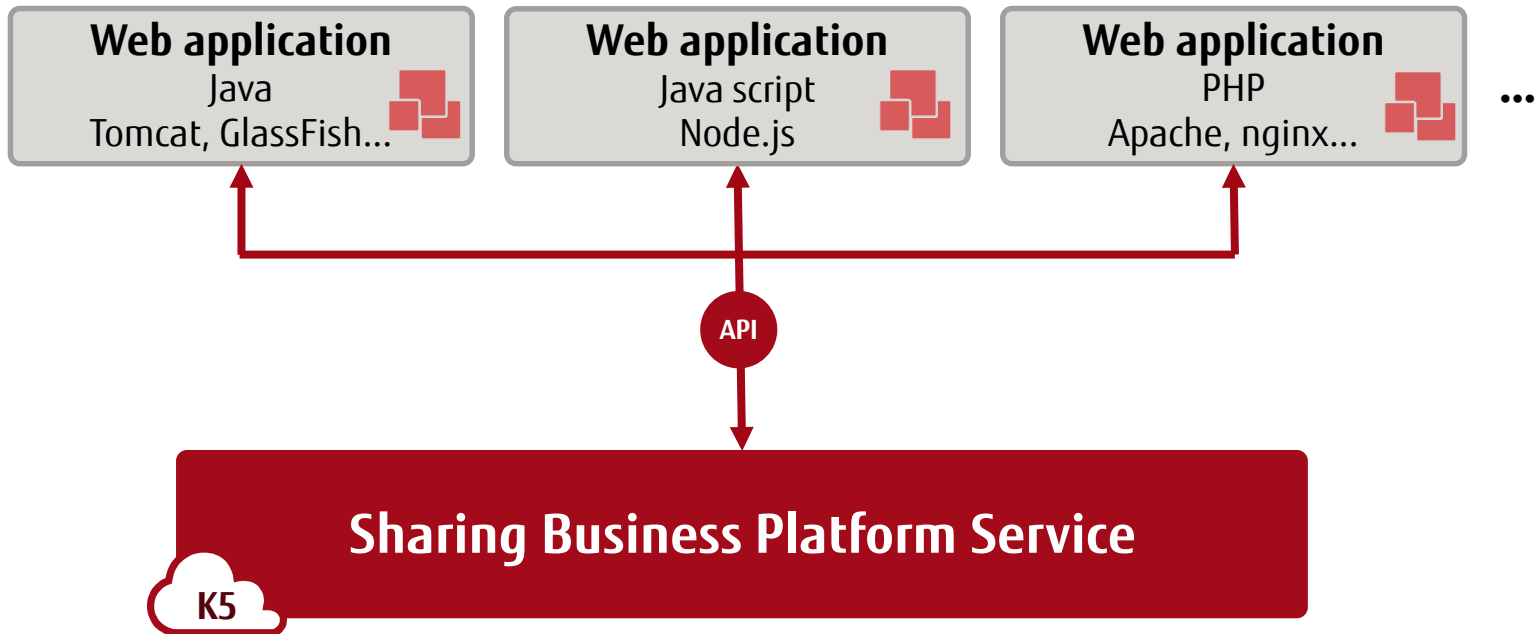
The service can provide a sharing framework by targeting a defined community

Community-based sharing

The service manages not only the users but also the communities that the users belong to. Matching control is flexible enough to, for example, replace products that can be browsed or purchased according to the community that the users are part of.

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# To make customization more flexible, functions based on REST APIs are provided

〜 The service is platform-free and not dependent on
a specific programming language or runtime environment 〜

Web application	Web application	Web application
Java	Java script	PHP
Tomcat, GlassFish...	Node.js	Apache, nginx...

...

API

Sharing Business Platform Service

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*: Communication using HTTP must be enabled.

Service Features (2)

Accommodates all types of Sharing Businesses

～ World first implementation, patent pending ～

| Exclusive type | Sharing type | Subscription type |

Sharing Business Platform Service
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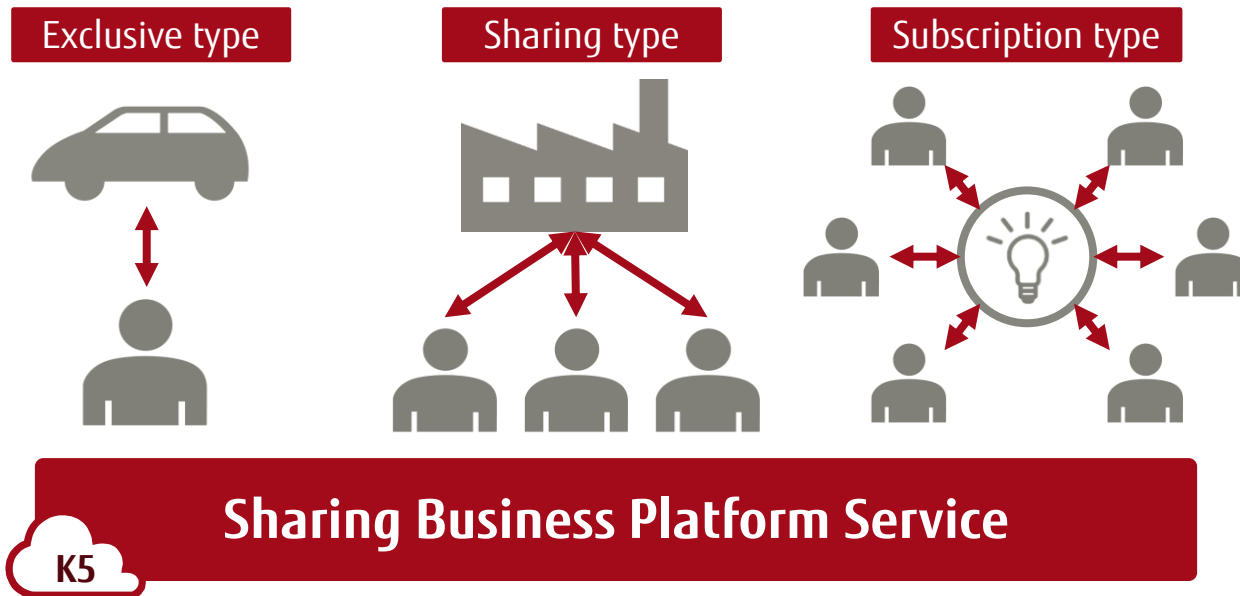
*Services are categorized into the following types (Patent pending)

- Exclusive type (1:1): Uses one product such as "transport", "space" or "thing" exclusively for a set period
- Sharing type (1:N): Allocates multiple users at the same time to a product that is in over supply or idle, for example, "an unused sewing line in a factory".
- Subscription type (crowd sourcing, crowd funding): Solicits the skills or money required to develop products or services, for example, from multiple users.

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The Community Management function allows the

Sharing Service to target a defined area.

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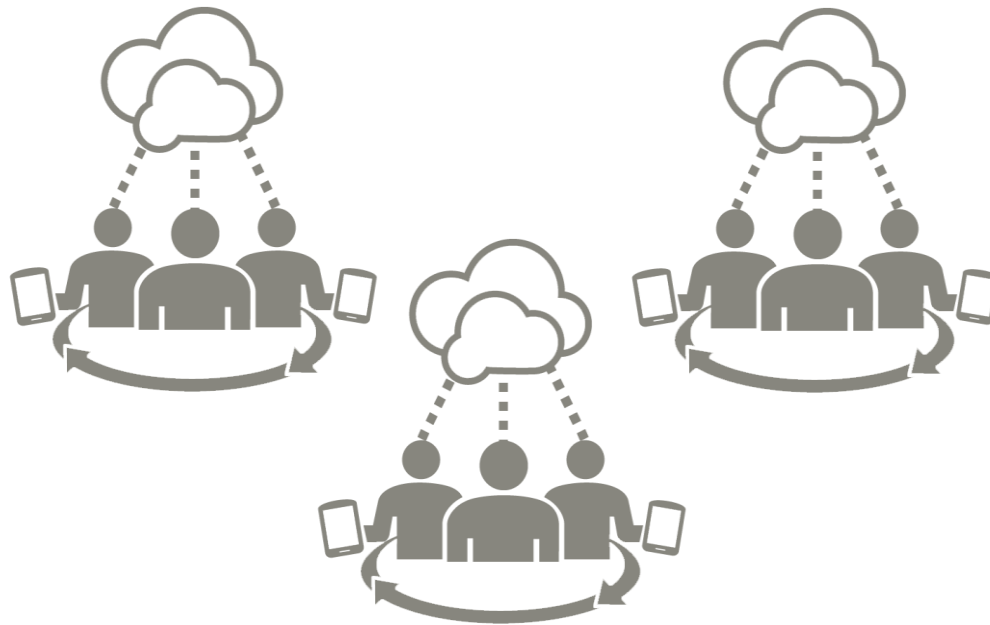
By flexibly expanding management items*, the needs of various types of businesses can be met

Example of a car sharing service

Product	Category	Item
Car	Area	Hokkaido
		Aomori
		:
	Model	Sedan
		4WD
		:
	:	:

Example of a room sharing service

Product	Category	Item
Room	Area	Hokkaido
		Aomori
		:
	Room Type	Studio
		House
		:
	:	:

Example of crowd sourcing

Product	Category	Item
People (Skills)	Gender	Male
		Female
	Skill	Translation
		Programming
		:
	Age group	20s
		:

*: Sharing category function

Service Features (5)

The auto-save function matches historical data

and uses it to

∼ streamline applications and apply it to AI ∼

Function Overview

Function Overview (1/2)

■ Matching Management function

These functions are provided to manage products:

- **Product management** (register, reference, replace, remove, or search products)
- **Reservation/Purchase management** (Reservation/Purchase products)

■ Personal Management function

These functions are provided to manage users:

- **Account** (Profile information management, login authentication)
- **User History** (Check goods browsing/purchase history)
- **Favorites** (Manage users or their favorites)

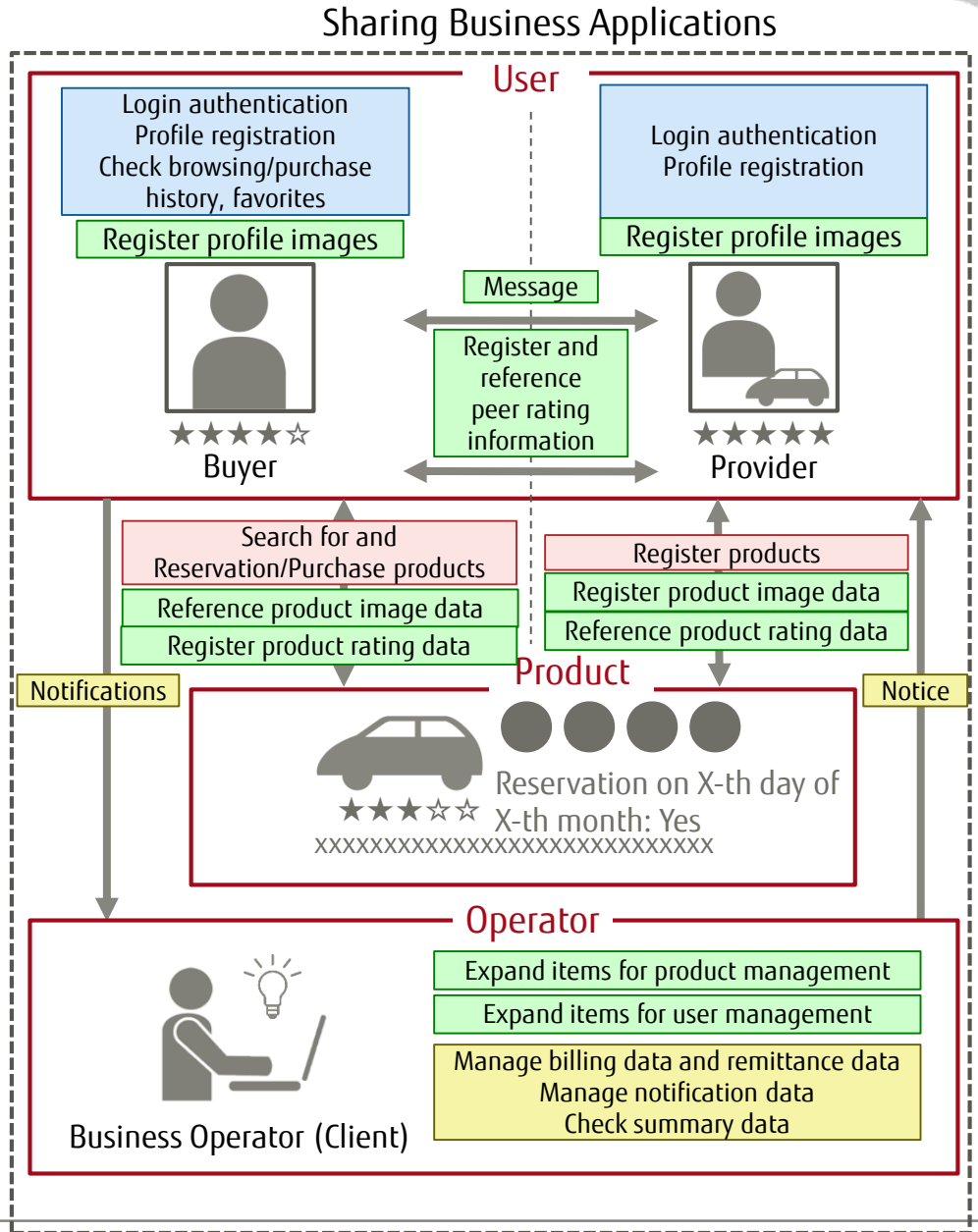## ■ Functions Common to Matching Management and Personal Management

These functions are used to manage both goods and users:

- **Ratings** (Manage product reviews, word-of-mouth information, user peer assessments)
- **Images** (register, reference, update or remove image data and files of products and users)
- **Categories of Sharing** (Expand management items for goods and users)
- **Messages** (Manage user peer messages)

■ Business Support function

These functions are provided to support Sharing Business operations:

- **Billing/ Payment** (Manage billing and remittance data)
- **Notification** (Manage notifications related to products and peer rating data)
- **Summary** (Check increases/decreases in the numbers of products and users, and check Sharing Business sales forecasts)
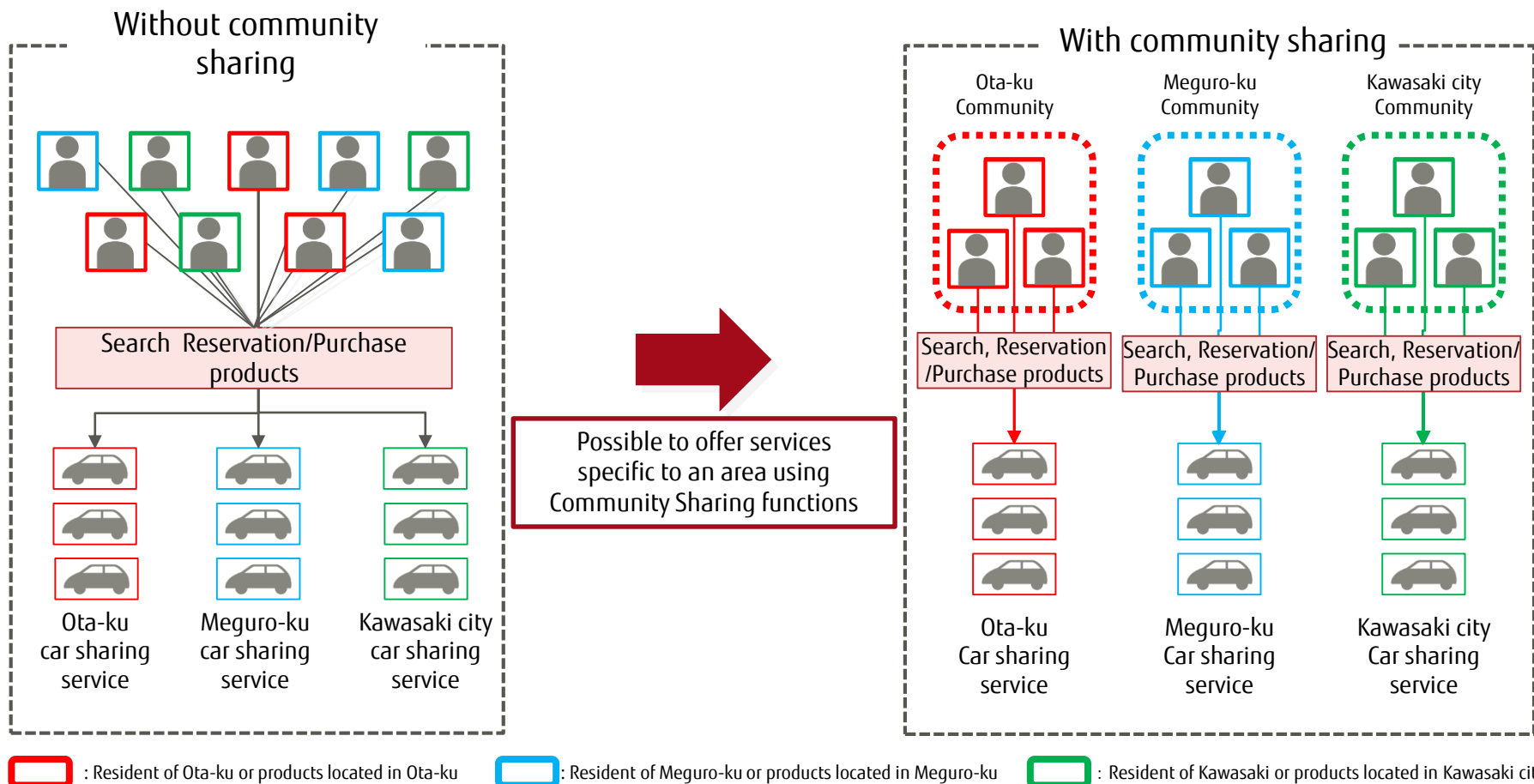- **Notice** (Manage notifications to users)

Sharing Business Applications

User

Buyer:
- Login authentication
- Profile registration
- Check browsing/purchase history, favorites
- Register profile images
- ★★★★☆

Provider:
- Login authentication
- Profile registration
- Register profile images
- ★★★★★

Message

Register and reference peer rating information

Search for and Reservation/Purchase products
- Reference product image data
- Register product rating data

Register products
- Register product image data
- Reference product rating data

Notifications

Notice

Product

★★★☆☆
xxxxxxxxxxxxxxxxxxxxxxxxxxxx
Reservation on X-th day of X-th month: Yes

Operator

Business Operator (Client)

- Expand items for product management
- Expand items for user management
- Manage billing data and remittance data
- Manage notification data
- Check summary data

Function Overview (2/2)

■ Community-based sharing (Community Management function)

These functions provide sharing services by targeting a defined community:

- ■ **Community management** (register, fetch, update, remove, search, cancel community information)
- ■ **Community account management** (set account data for community and main community, cancel community setting of account data, or search community account data)

: Resident of Ota-ku or products located in Ota-ku

: Resident of Meguro-ku or products located in Meguro-ku

: Resident of Kawasaki or products located in Kawasaki city

Function Details – Reservation/Purchase Function

Reservation/Purchase status can be managed to suit the sharing business type of the products

■ Available Sharing Business types **(Patent pending)**

  ■ Exclusive type (1:1):
  Uses one product such as "transport", "space" or "thing" exclusively for a set period

  ■ Sharing type (1:N): Allocates multiple users (Buyers) at the same time to optimize the use of the product that is in over supply or idle, for example, "an unused sewing line in a factory" or "free space or delivery line in a distribution warehouse"

  ■ Subscription type (crowd sourcing, crowd funding):
  Solicits the skills or money required to develop products or services, for example, from multiple users (Buyers)

Exclusive type

Sharing type

Subscription type
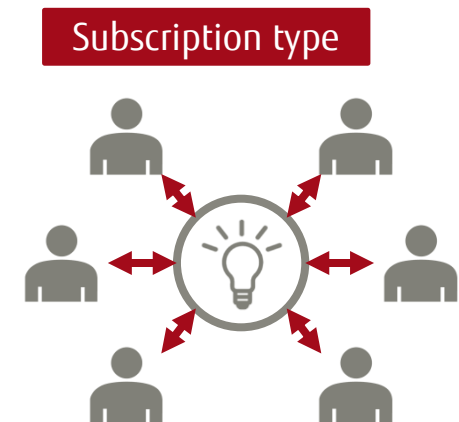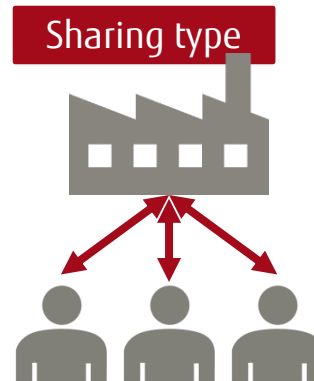
Function Details - Categories of Sharing

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Functions common to matching management and personal management

- As **categories and items can be expanded and managed flexibly** for each product, the service can be adapted to suit a wide range of business types in a sharing economy such as "transport", "space", "things", "people" and "money".
- Categories for personal management can also be expanded.

- Categories and items can be expanded flexibly to suit the products being marketed.
  - Basic items (fixed)
    - Product name, product description, price, period being offered
  - Examples of additional categories and items

Product	Category	Item
Transport (Car)	Area	Hokkaido
		Aomori
		:
	Model	Sedan
		4WD
		:
	Age group	1920
		2009
		:
	:	:

Product	Category	Item
Space (Room)	Area	Hokkaido
		Aomori
		:
	Room Type	Studio
		House
		:
	Utility	Heating/cooling
		Kitchen
		:
	:	:

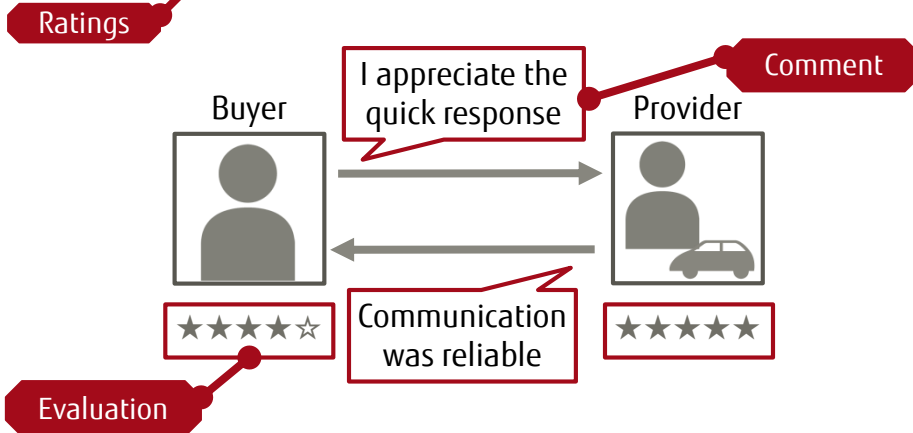| Product	Category	Item
People (Skills)	Gender	Male
		Female
	Skill	Translation
		Programming
		:
	Age group	10s
		20s
		30s
		:
	Features	N/A (optional)

Function Details – Other

■ Ratings

> Functions common to Matching Management and Personal Management

■ Products can be **rated** or **peer reviewed** by users.

- ■ Product rating

Reviews

I could load a lot of gear

Car interior was clean

- ■ Peer reviewed by users

Ratings

★★★★☆

Buyer

I appreciate the quick response

Comment

Provider

Communication was reliable

★★★★☆

Evaluation

★★★★★
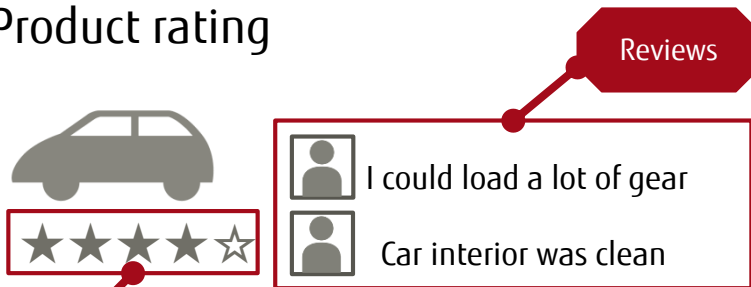
■ Summary

> Business Support function

It is possible to **visualize the business status** by using the Summary Data Checking function to review increases or decreases in product volume, users or sales forecasts.

- ■ Increases/decreases in the no. of products
  No. of products registered, removed, or in total

- ■ Increases/ decreases in the no. of users
  No. of users joined, unsubscribed, or in total

- ■ Sales forecast
  No. of sales, amount of sales, or profit margin
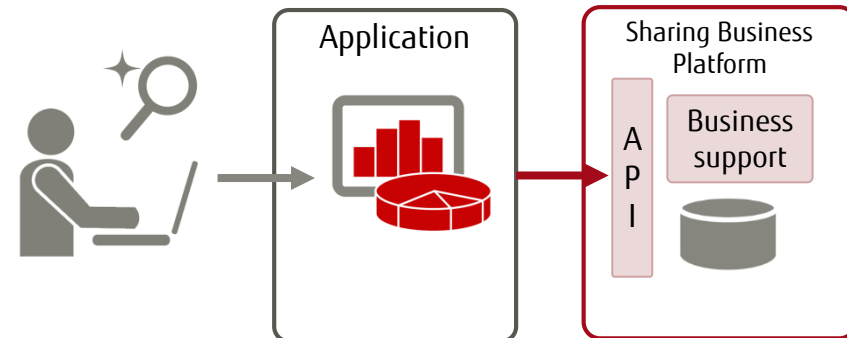
Application

Sharing Business Platform

A P I

Business support

APIs Provided

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The Sharing Business Platform Service provides the following functions via REST APIs:
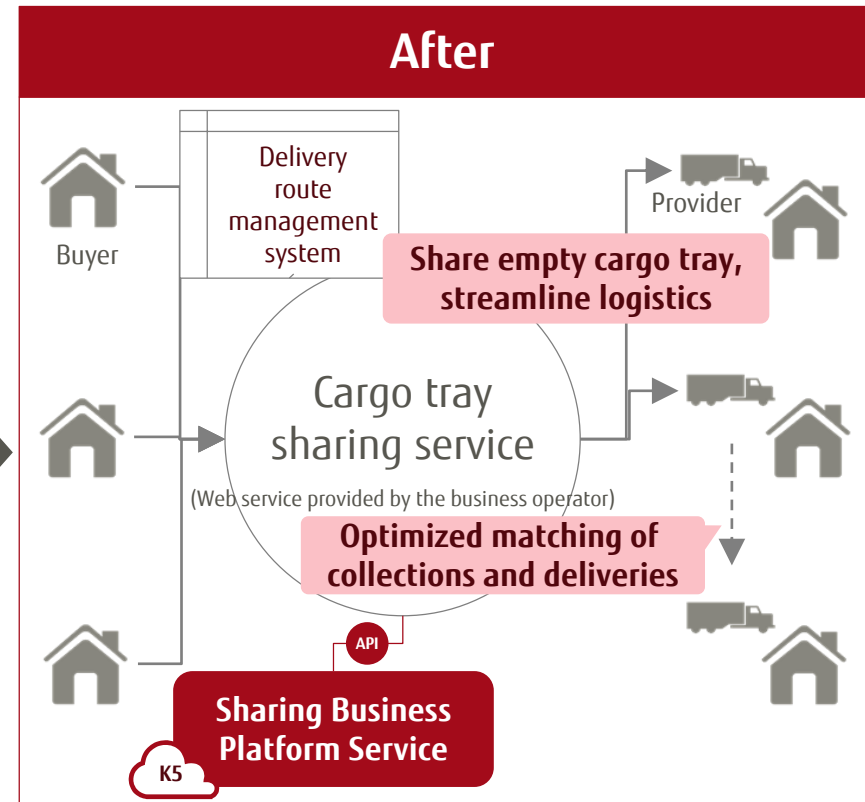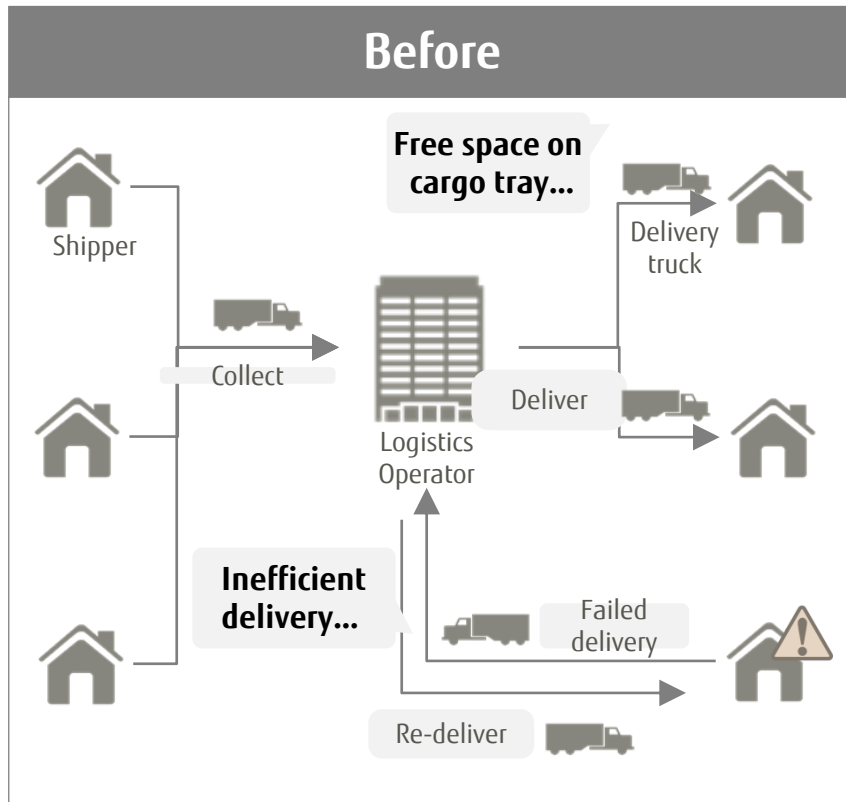
Function name		Function descriptions
Matching Management function	Goods management	Manages registration, acquisition, and update of product information for the Sharing Business
	Reservation/Purchase management	Manages reservation and purchase information of products
Personal Management function	Account	Manages registration, acquisition, and updates of user account information for the Sharing Business
	User history	Acquires user login histories, user browsing histories, etc. for the Sharing Business
	Favorites	Manages registration, acquisition, and updates of user's Favorite group information and Favorite information for the Sharing Business
Functions common to Matching Management and Personal Management	Ratings	Manages registration, acquisition, and update of user rating information and review information for the Sharing Business of goods
	Images	Manages registration, acquisition, and update of image information and image files for the products and users of the Sharing Business
	Categories of Sharing	Manages registration, acquisition, and update of sharing category information of products and users for the Sharing Business
	Messages	Manages registration, acquisition, and update of user peer message information for the Sharing Business
Business Support function	Billing/Payment	Manages registration, acquisition, and update of information such as time and date, item, purchase price, billing and remittance
	Notifications	Manages registration, acquisition, and update of notification information related to inappropriate information on users of the Sharing Business
	Summary	Acquires summary information such as numbers of products and users, and sales forecasts for the Sharing Business
	Notice	Manages registration, acquisition, and update of notice information issued to the users from the business operator of the Sharing Business
Community Sharing (Community Management function)	Community	Manages registration, acquisition, and update of community information on users of the Sharing Business
	Account	Manages settings of the Community/ Main Community and Community cancellation of account information on users of the Sharing Business

Usage Examples

Usage Examples (1)

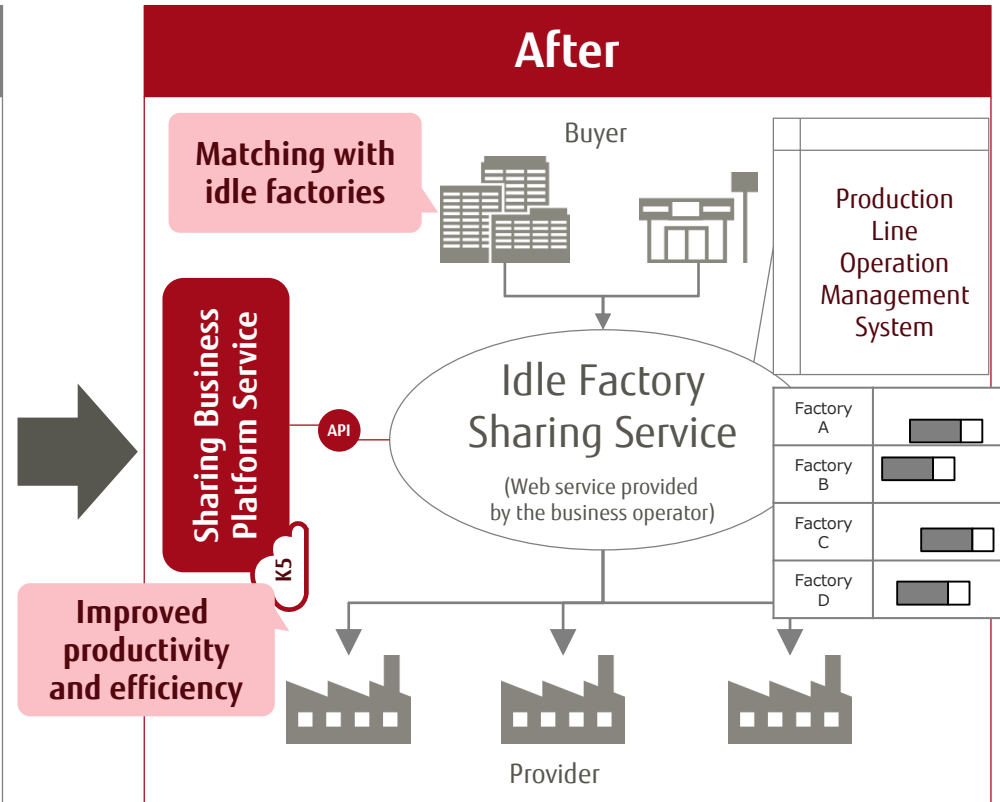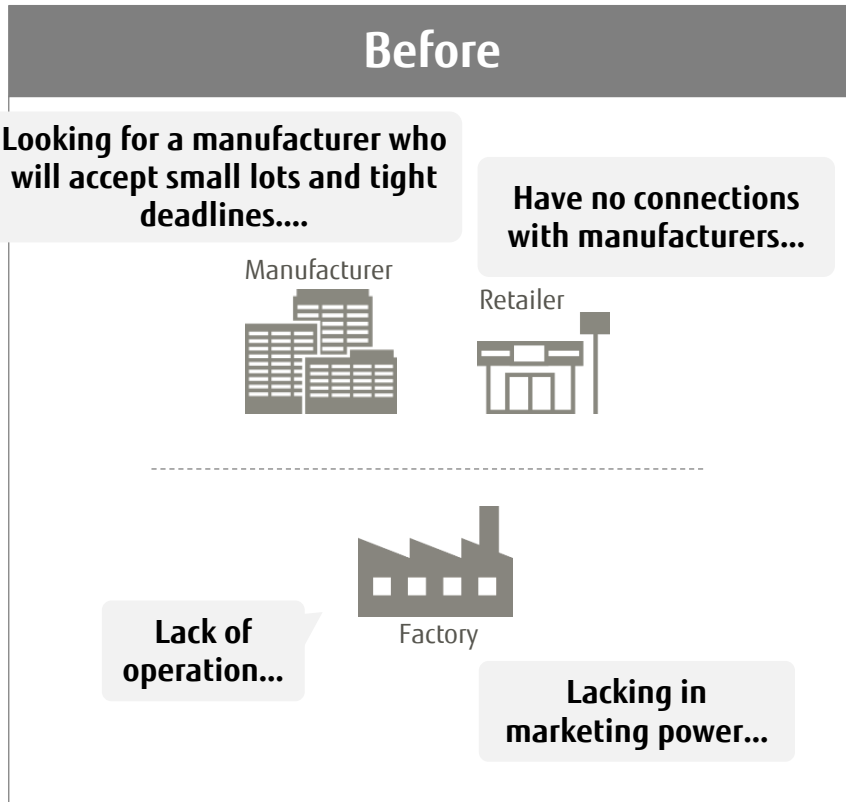| Business Operator	Provider	Item Being Shared	Buyer
Logistics Operator	Logistics Operator	Delivery trucks (cargo tray)	Shipper, sub-contractor

- Streamlines the transportation process and reduces time and costs
- Potential to launch the service to new shippers or sub-contractors in need of transportation

Before

Shipper

Collect

Free space on cargo tray…

Delivery truck

Logistics Operator

Deliver

Inefficient delivery…

Failed delivery

Re-deliver

After

Buyer

Delivery route management system

Provider

Share empty cargo tray, streamline logistics

Cargo tray sharing service

(Web service provided by the business operator)

Optimized matching of collections and deliveries

API

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Usage Examples (2)

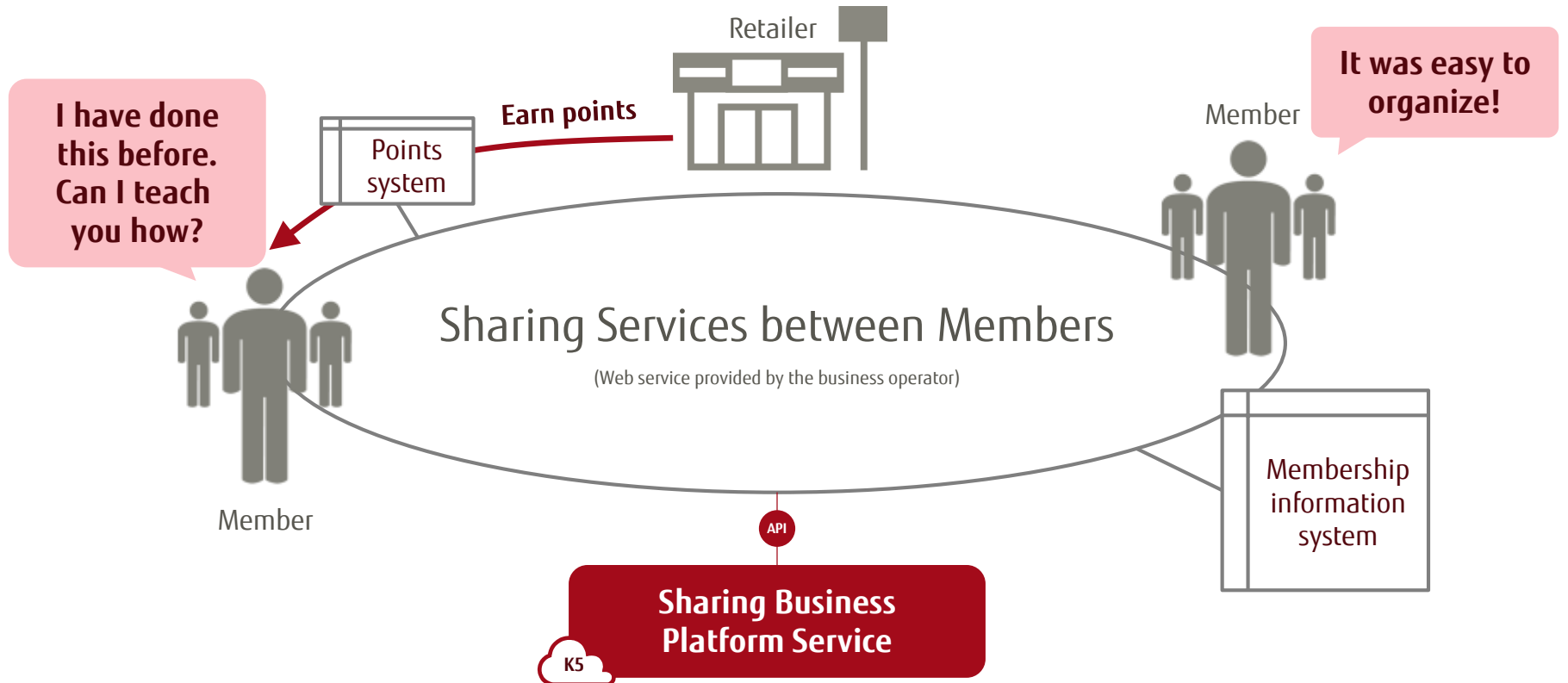| Business Operator	Provider	Item Being Shared	Buyer
Manufacturer	Factory	Production line	Manufacturer / retailer

■ Optimizes the operational status of inefficient production lines.

■ The marketing effort and structure required to receive orders for manufacturing operations can be by-passed.

Before

Looking for a manufacturer who will accept small lots and tight deadlines....

Have no connections with manufacturers...

Manufacturer

Retailer

Lack of operation...

Factory

Lacking in marketing power...

After

Matching with idle factories

Buyer

Production Line Operation Management System

Sharing Business Platform Service

API

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Idle Factory Sharing Service

(Web service provided by the business operator)

| Factory A |
| Factory B |
| Factory C |
| Factory D |

Improved productivity and efficiency

Provider

Usage Examples (3)

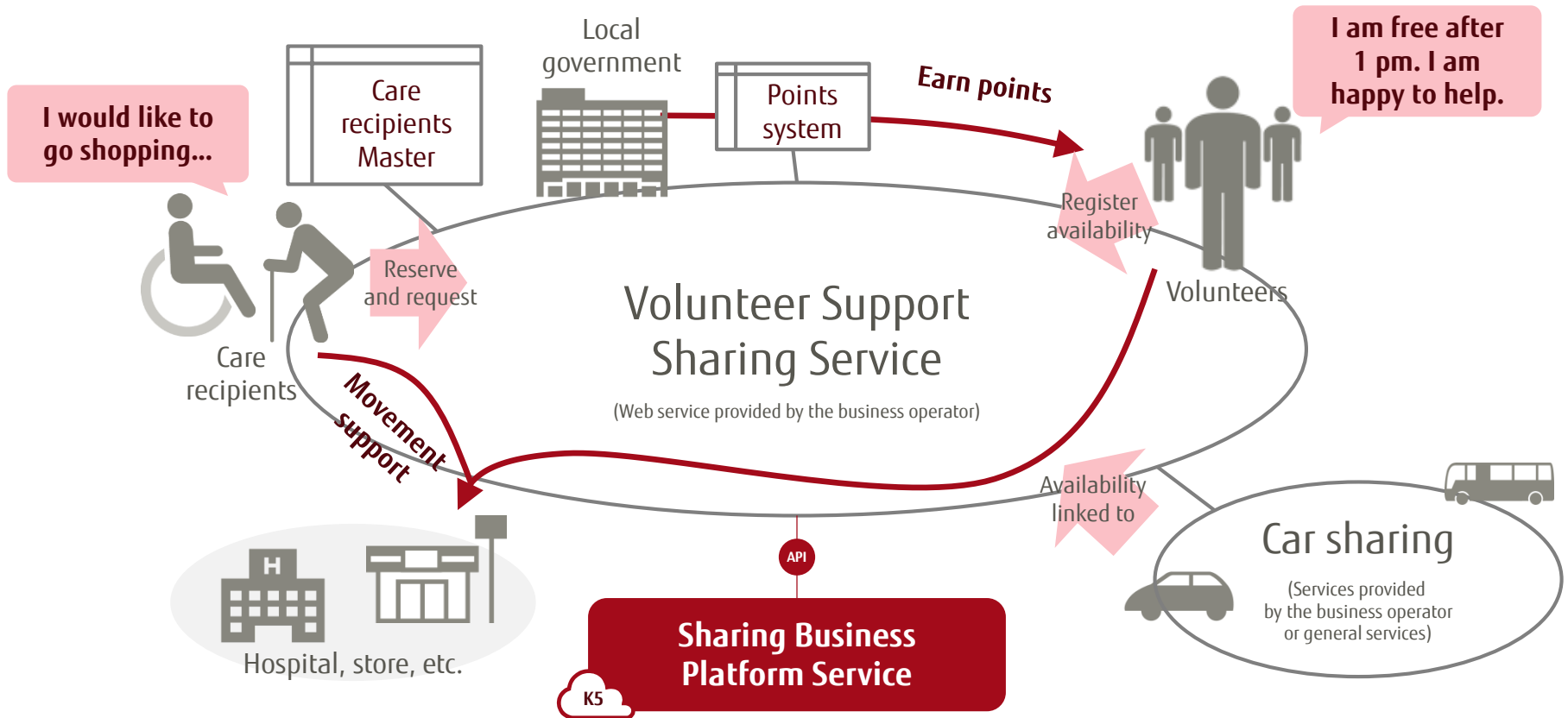| Business Operator	Provider	Item Being Shared	Buyer
Retailer	Member	Labor, skills	Member

- Effective use of dormant membership information.
- By connecting members, create new value and enhance customer satisfaction.

Usage Examples (4)

| Business Operator	Provider	Item Being Shared	Buyer
Local government	Volunteers	Labor, skills	Care recipients

- Support people in need of assistance with activities for daily living (shopping, leisure, hospital visit)
- Overcome carer shortages by matching the supply and demand of volunteers

Local government

Care recipients Master

Points system

Earn points

I am free after 1 pm. I am happy to help.

Register availability

Volunteers

I would like to go shopping...

Care recipients

Reserve and request

Volunteer Support Sharing Service

(Web service provided by the business operator)

Movement support

Availability linked to

API

Hospital, store, etc.

Sharing Business Platform Service

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Car sharing

(Services provided by the business operator or general services)

Usage Examples (5)

Business Operator	Provider	Item Being Shared	Buyer
Education service operator	People willing to teach	Labor, skills	People willing to study

- A new form of education service that does not require dedicated teachers.
- Improve the level of customer satisfaction by matching the demand and supply of tutors' skills and availability.
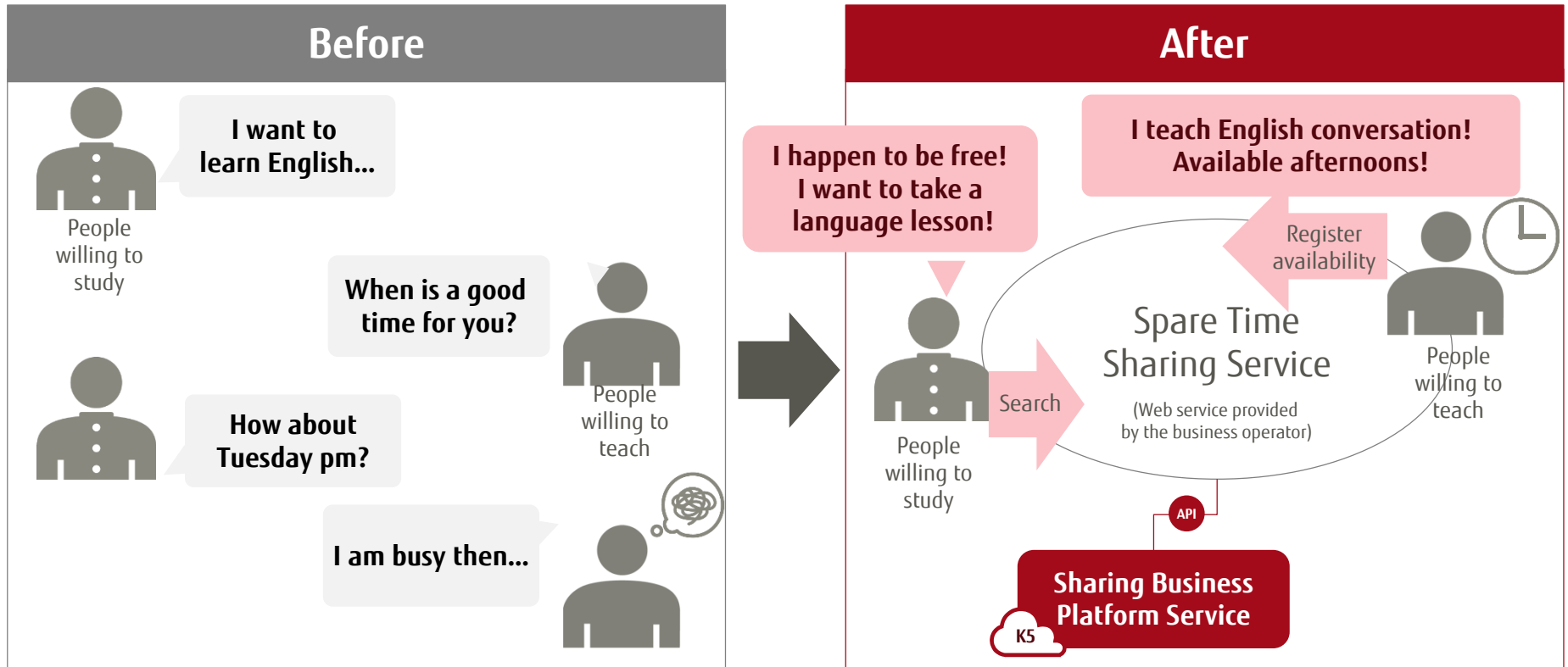
Reference: Benefits of the Sharing Business Platform Service

■ Without the Sharing Business Platform Service
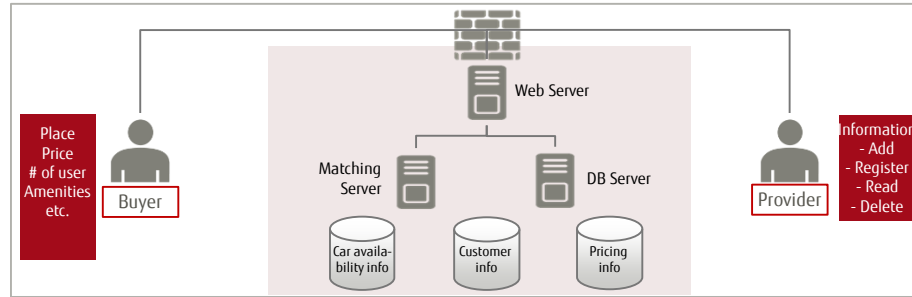
Business Operator

- Securing infrastructure:
  Service provision environment (arrange a DB server, etc.)
  Ensure data security
- Data storage environment:
  Design, create, and build an environment for the database to store car availability information, customer information, etc.
  Build an interface for the Provider to store information
- Creating a mechanism for matching:
  A mechanism for matching information corresponding to the Buyer's filter selections is required
- Operation:
  Monitor normal operation of the system, backup

■ With the Sharing Business Platform Service
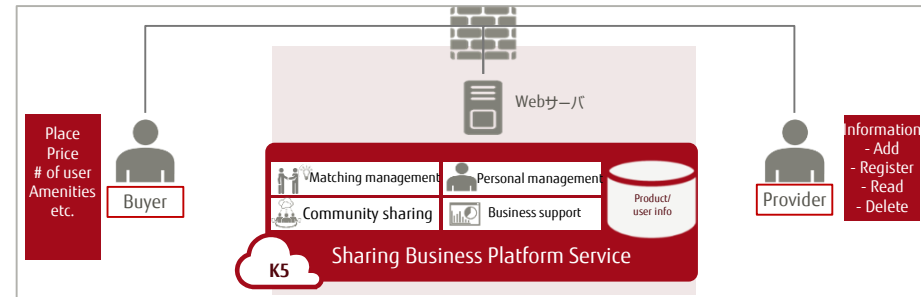
Big reduction in building/operation worksteps

Business Operator

- Securing infrastructure:
  Only the Web server needs to be built to start providing the service
- Data storage environment:
  No need to build. The required functions are all provided via APIs.
- Creating a mechanism for matching:
  No need to create. Realized by simply calling the matching API from the Sharing Business Platform Service
- Operation:
  No need to be concerned about the Sharing Business Platform Service component.
  Significant time and effort saving of the resources usually spent on operations.

Billing System

Billing System (1/2)

■ Billing system

Service fee **=** **Basic charge** **+** **Disk usage** **+** **Successes of matching**

(Fixed monthly)　　　　　　(Pay as you go)　　　　　　(Pay as you go)

> A case is deemed to be matched when the product is reserved and committed to between the Provider and the Buyer.
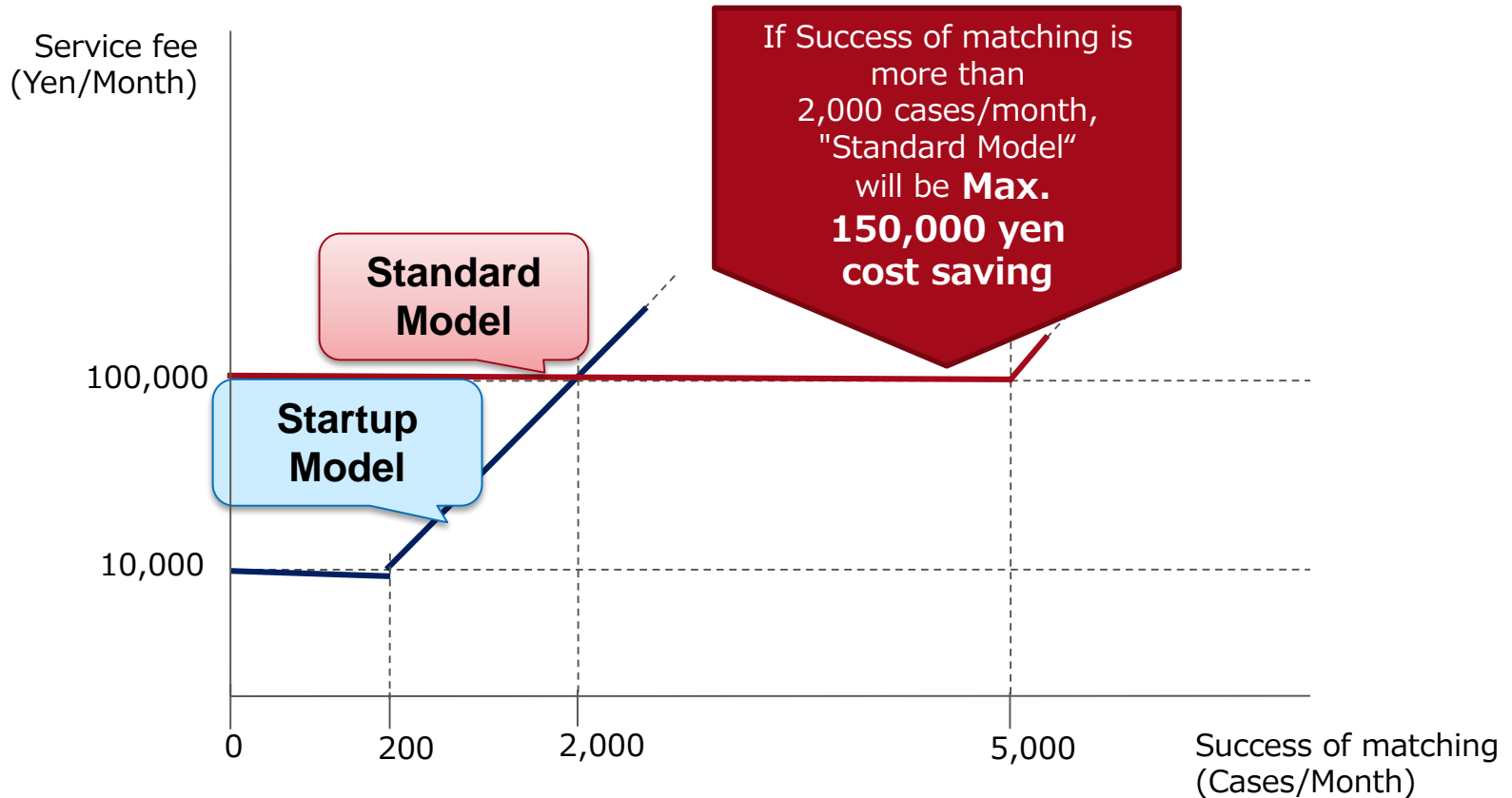
■ Charging plan

Menu	Unit	Comments
Startup Model		
Basic charge	Month	Fixed fee inclusive of 10GB of disk usage and 200 of Successes of matching
Disk usage	GB / Month	Charges additional fee at a rate of 1GB in excess of the amount of disk usage allowed in the basic charge
Successes of matching	Number / Month	Charges additional fee at a rate for number of Successes of matching in excess of the number of successes of matching allowed in the basic charge
Standard Model		
Basic charge	Month	Fixed fee inclusive of 10GB of disk usage and 5000 of Successes of matching Volunteer Matching Sample Web Application is available
Disk usage	GB / Month	Charges additional fee at a rate of 1GB in excess of the amount of disk usage allowed in the basic charge
Successes of matching	Number / Month	Charges additional fee at a rate for number of Successes of matching in excess of the number of Successes of matching allowed in the basic charge

※Disk usage fee is an estimate for using within the basic charge.
※You can not change to other plan after starting to use.

For the latest fee information, refer to the price list published on the K5 home page.
http://www.fujitsu.com/global/services/hybrid-cloud/k5/pricing-terms/index.html#section6

Billing System (2/2)

■ Charging plan (reference)

Service fee
(Yen/Month)

If Success of matching is
more than
2,000 cases/month,
"Standard Model"
will be **Max.
150,000 yen
cost saving**

Standard
Model

100,000

Startup
Model

10,000

0   200   2,000   5,000   Success of matching
(Cases/Month)

For the latest fee information, refer to the price list published on the K5 home page.
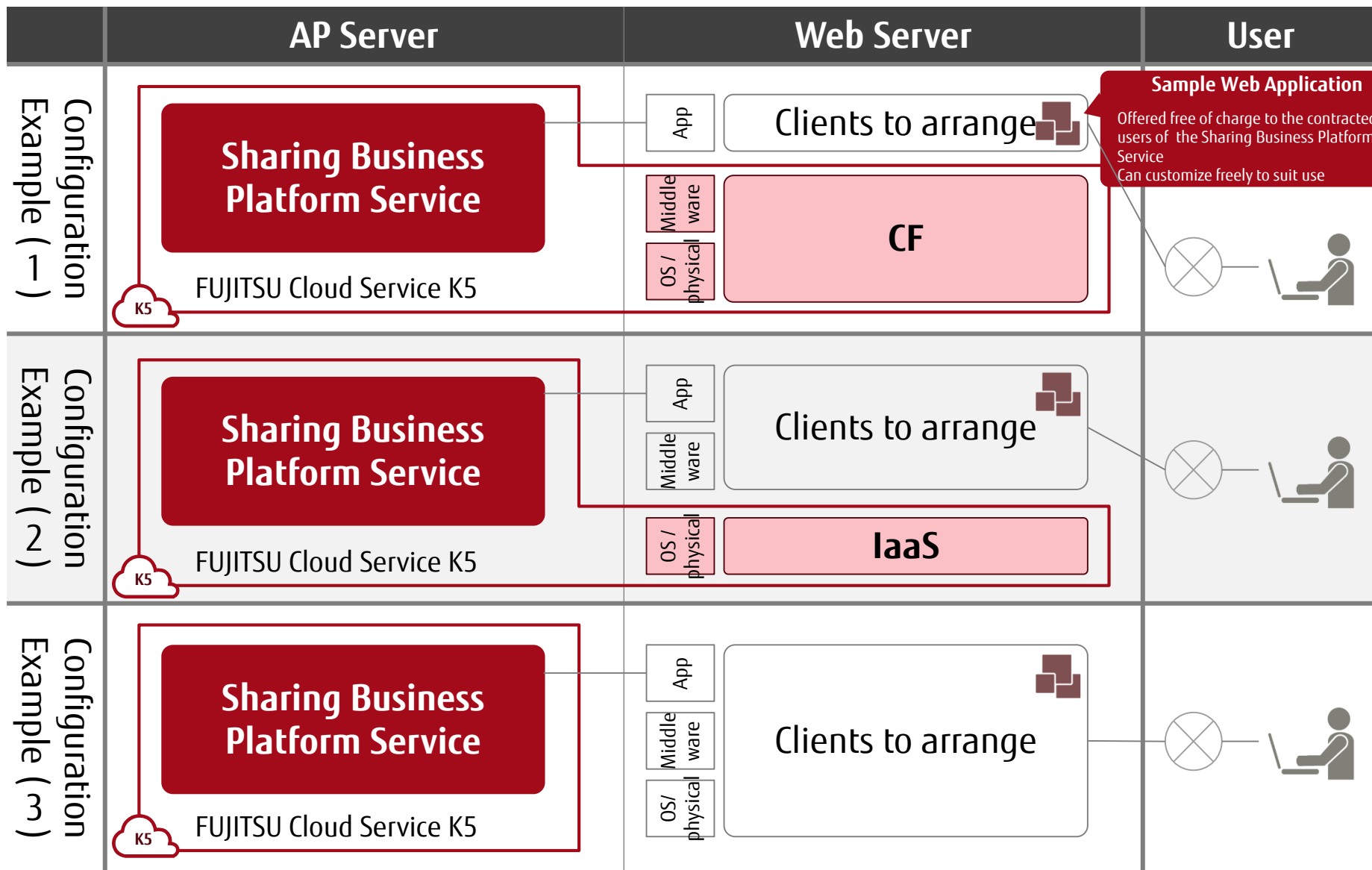http://www.fujitsu.com/global/services/hybrid-cloud/k5/pricing-terms/index.html#section6

Example of System Configuration

	AP Server	Web Server	User
Configuration Example (1)	**Sharing Business Platform Service** — FUJITSU Cloud Service K5	App / Clients to arrange / Middleware / OS / physical / **CF**	**Sample Web Application** — Offered free of charge to the contracted users of the Sharing Business Platform Service / Can customize freely to suit use
Configuration Example (2)	**Sharing Business Platform Service** — FUJITSU Cloud Service K5	App / Clients to arrange / Middleware / OS / physical / **IaaS**	
Configuration Example (3)	**Sharing Business Platform Service** — FUJITSU Cloud Service K5	App / Middleware / OS/ physical / Clients to arrange	

K5

Example of System Configuration – Examples of K5 Pricing (JPY)

■ Configuration Example (1)

Menu		Usage amount	Use fee (before tax)
AP server	Sharing Business Platform Service: Startup Model basic charge	10GB / 200 Successes of matching	10,000
Web server	CF: Build pack (memory: 1GB)	24 hours x 30 days	5,040
(support)	Help Desk Service Lite	-	6,000
		Total:	21,040

■ Configuration Example (2)

Menu		Usage amount	Use fee (before tax)
AP server	Sharing Business Platform Service: Startup Model basic charge	10GB / 200 Successes of matching	10,000
Web server	Virtual server: S-1 (Virtual CPU: 1, Memory: 4GB)	1 unit x 24 hours x 30 days	7,467
	OS provision service (no support) Cent OS 7.x 64 bits English version	1 license	(included)
	System storage	30GB x 24 hours x 30 days	475
(Network)	Global IP address provision service	1 x 24 hours x 30 days	432
	Firewall	1 unit	(included)
	Virtual router	1 unit	(included)
	Internet connection service: Data transfer to internet (Out)	100GB	(included)
(support)	Help Desk Service Lite	-	6,000
		Total:	24,374

Reference: Documents and Other Materials

> - Materials related to an introduction to the Sharing Business Platform
> - Sharing Business Platform Service Description
> - K5 Terms of Use, etc.

K5 Introduction Site
> Documents

http://www.fujitsu.com/global/services/hybrid-cloud/k5/pricing-terms/index.html#section2

> Documents on APIs, Sample Web Applications, tutorials, etc. for developers are also available.

K5 Portal > Documents > Manuals > Service Manuals > Sharing Business Platform

https://k5-doc.jp-east-1.paas.cloud.global.fujitsu.com/doc/en/sbpf/document/index.html

Restrictions and Cautions

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- It is the Client's responsibility to arrange for the access to a development and runtime environment for the applications to be used in their Sharing Business.

- It is the Client's responsibility to manage personal information and the data that they themselves registered for use in the service.

- Refer to the Service Specifications Manual and PaaS Restrictions and Cautions published on the K5 home page for the regions where the service is available.

- Service commencement:
  - Approx. 7 days after applying for the subscription from the Service Use Setting Application Screen of the K5 Portal