

# Introduction to the FUJITSU Cloud Service K5 Sharing Business Platform Service

January 2018  
Fujitsu Limited



**GOOD DESIGN  
AWARD 2017**



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

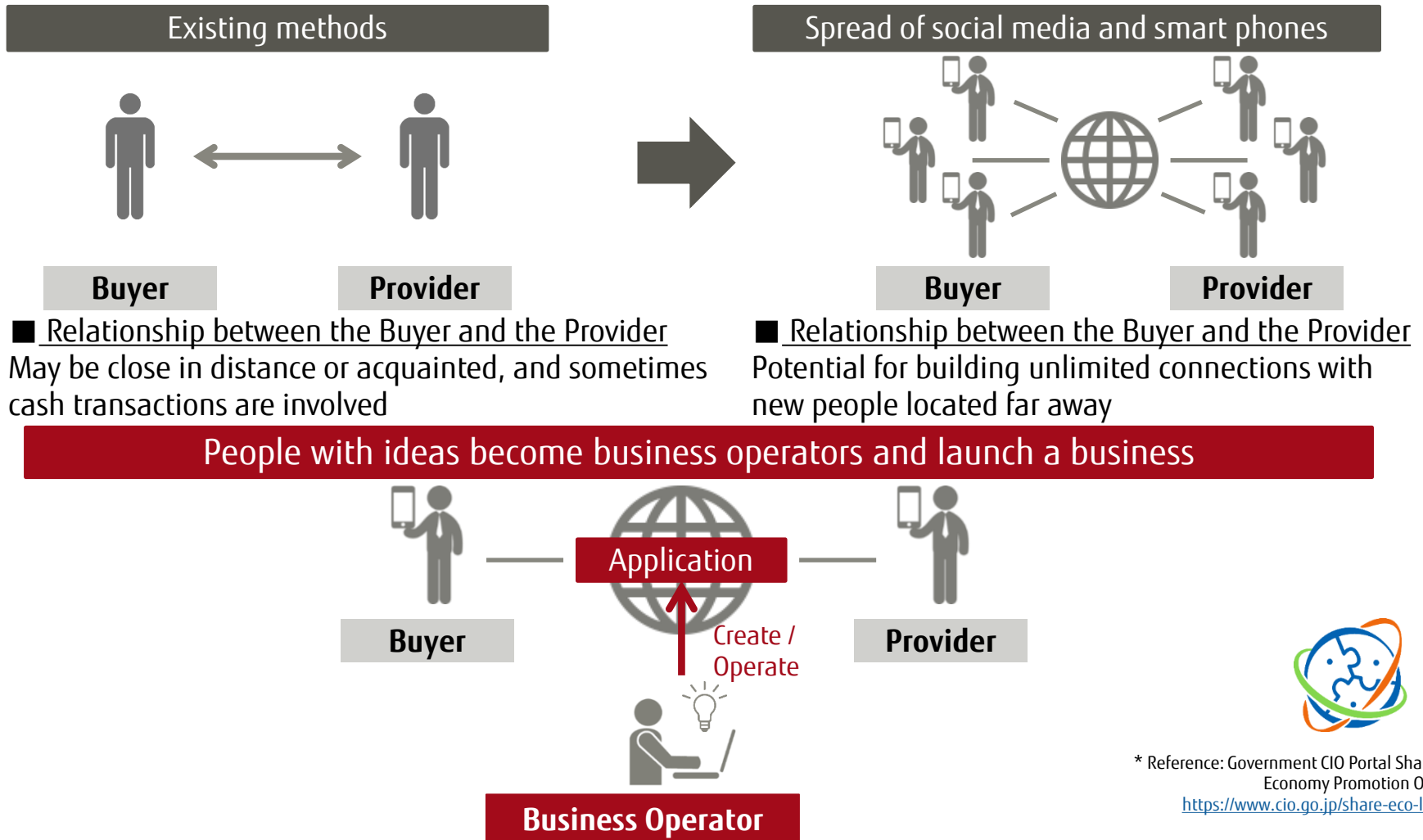
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Version 1.00

- About the Sharing Business Platform Service
- Overview of the Sharing Business Platform Service
- Service Features
- Function Overview
- Function Details
  - Reservation/Purchase Management
  - Categories of Sharing
  - Other (Ratings / Summary)
- APIs Provided
- Usage Examples
- Examples of Installation Models
- Billing System
- Examples of System Configuration
- Reference
- Restrictions and Cautions

# About the Sharing Business Platform Service

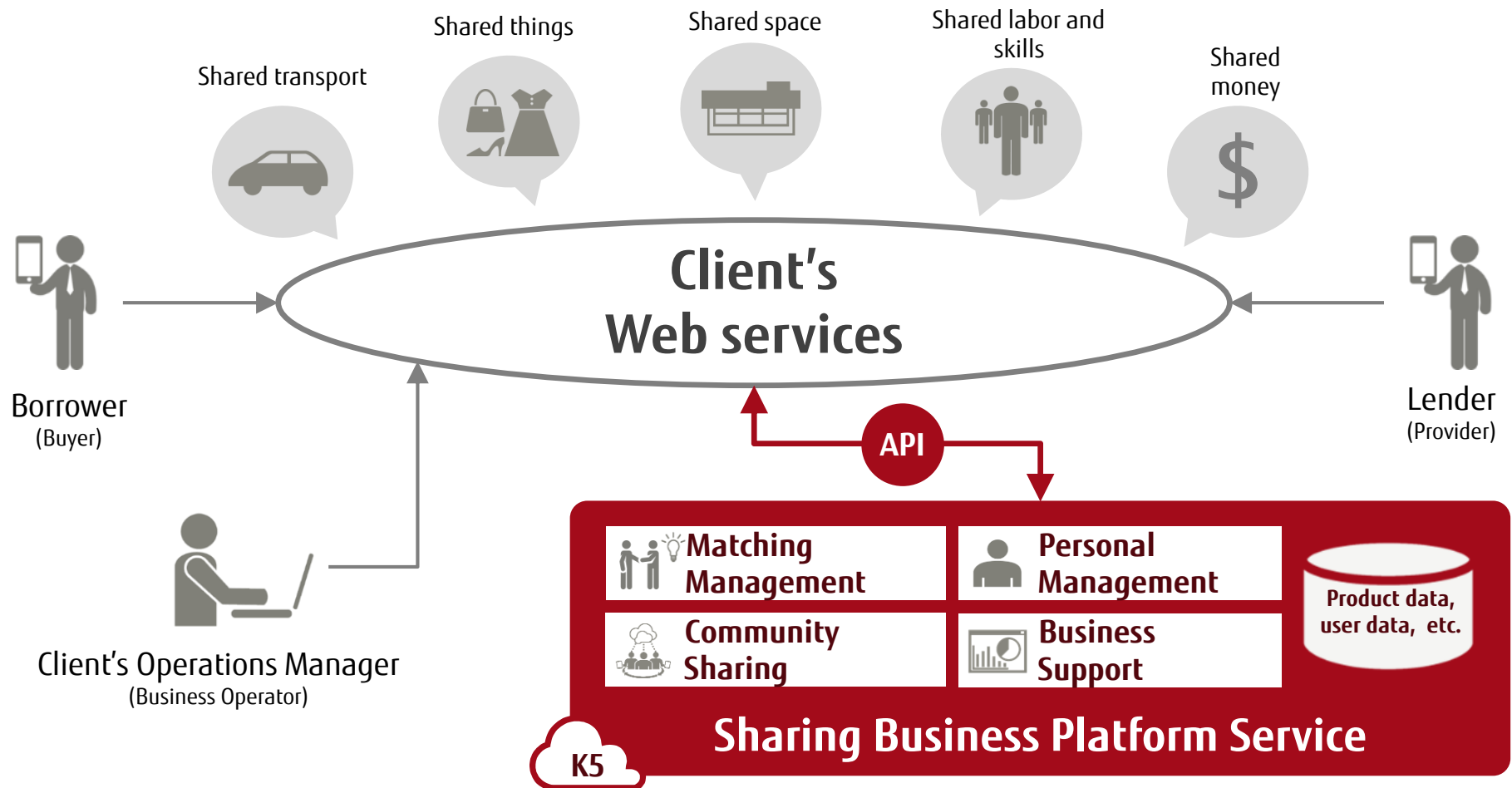
The "Sharing Business" uses an economic system where things or services are lent and borrowed between individuals or from companies via the internet (sharing economy)



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

# 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.



## Web application templates 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

share x things



### Shared logistics

share x movements



### Crowd funding

share x money



### Shared vacant houses

share x space



### Crowd sourcing

share x skills



### Operations management



Sharing Business Platform Service Web Application Templates

<https://k5-doc.jp-east-1.paas.cloud.global.fujitsu.com/doc/en/sbpf/document/template/top.html>

# Received the 2017 Good Design Award

The configuration of the actual Sharing Business Platform Service was judged to be a good design because it was built to facilitate business start-up at low cost.



## Judge's comments

The service categorizes the Sharing Business according to three types: Exclusive, Sharing, and Subscription. It provides common core functions via APIs. This configuration can be adapted to suit a wide range of businesses from car sharing through to crowd funding.

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.

<http://www.g-mark.org/award/describe/46006?locale=en>

# 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.

## Web application templates are provided to suit different types of products

Web application templates are provided to suit the different types of products being shared. Clients can customize the templates 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.

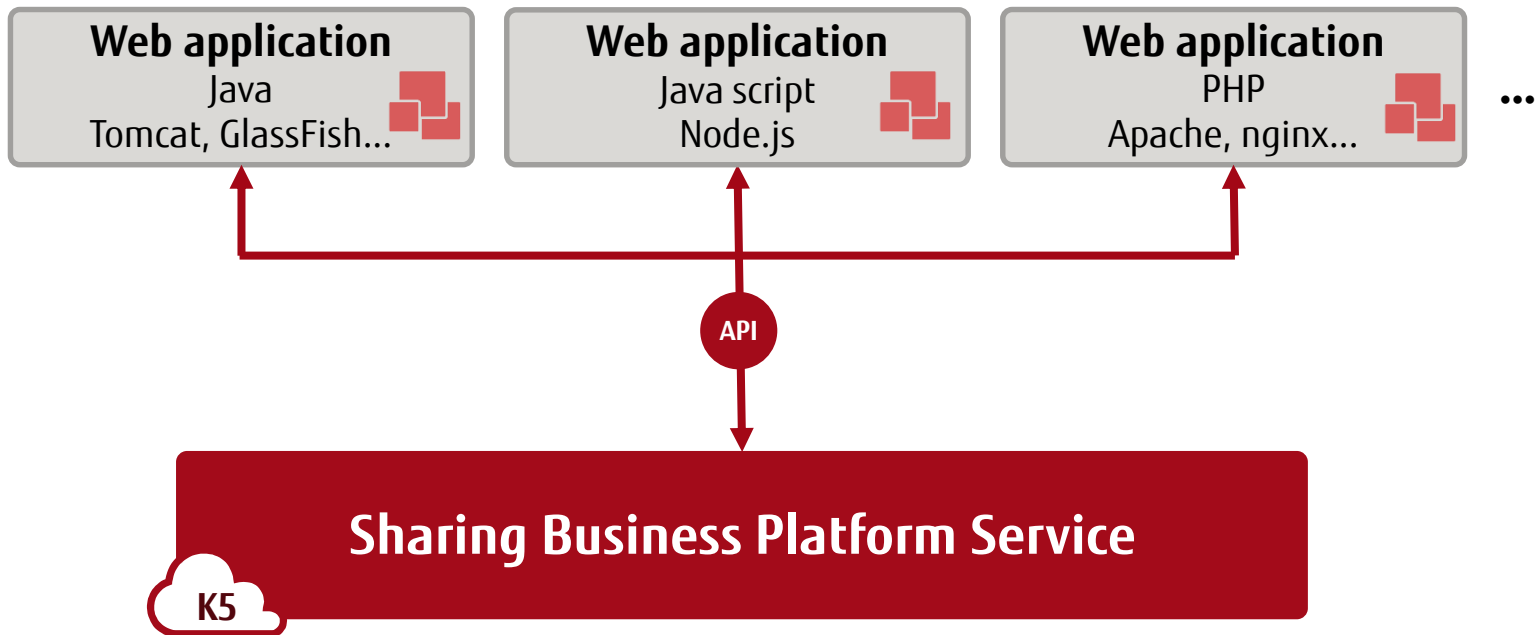
The service can provide a sharing framework by targeting a defined community

## 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.

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

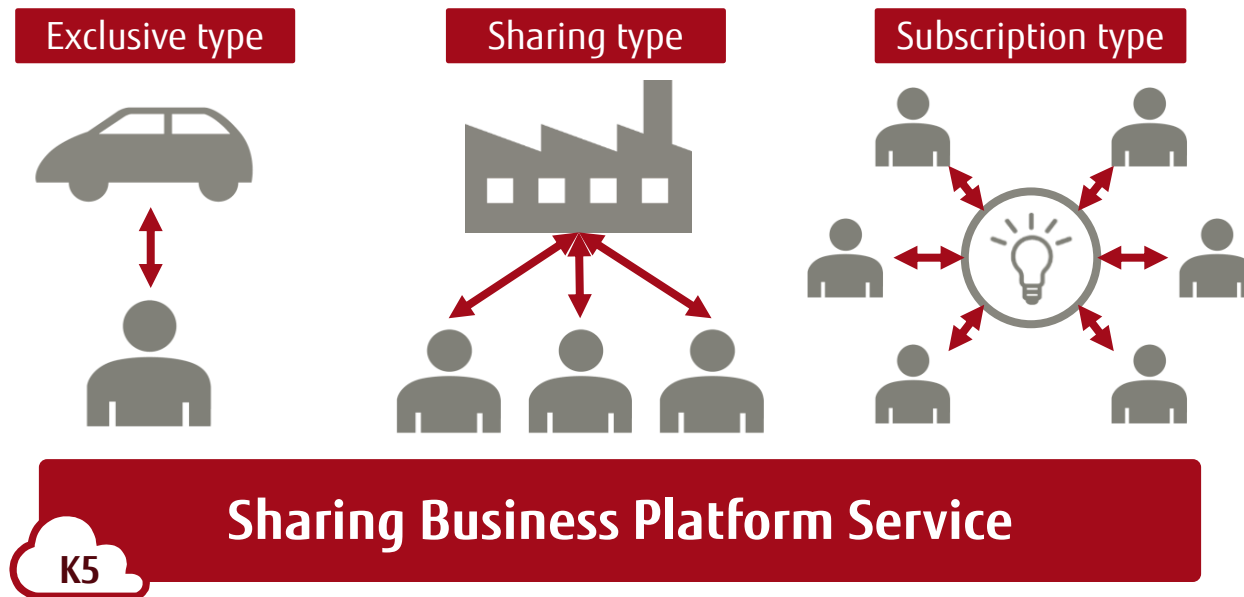
~ The service is **platform-free** and not dependent on a specific programming language or runtime environment ~



\*: Communication using HTTP must be enabled.

## Accommodates **all types** of Sharing Businesses

~ World **first** implementation, **patent pending** ~

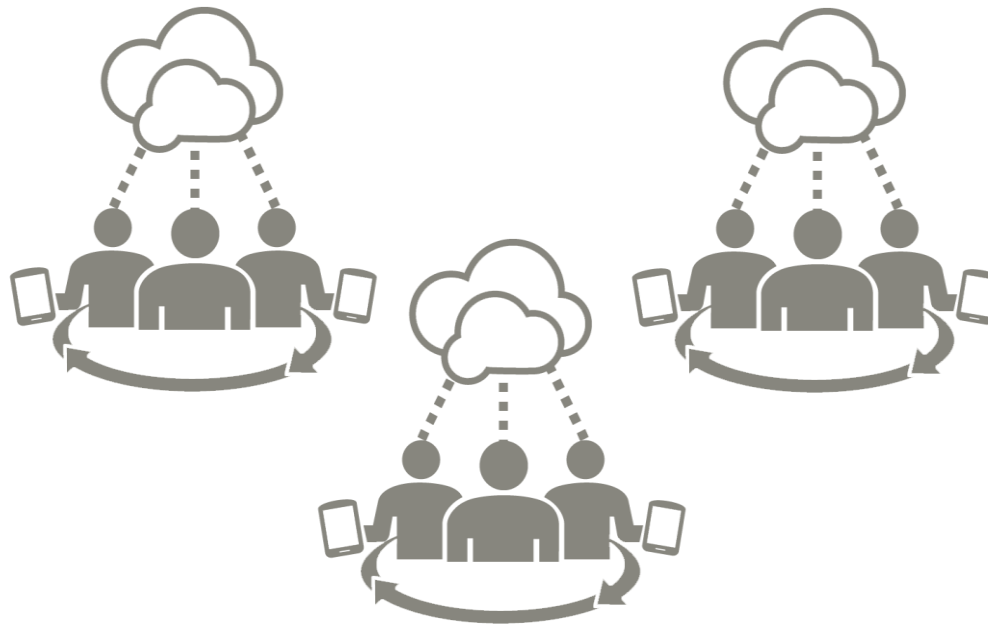


\*Services are categorized into the following types (Patent pending)

- 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.

# Service Features (3)

The Community Management function allows the  
**Sharing Service to target a defined area.**



# Service Features (4)

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

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:

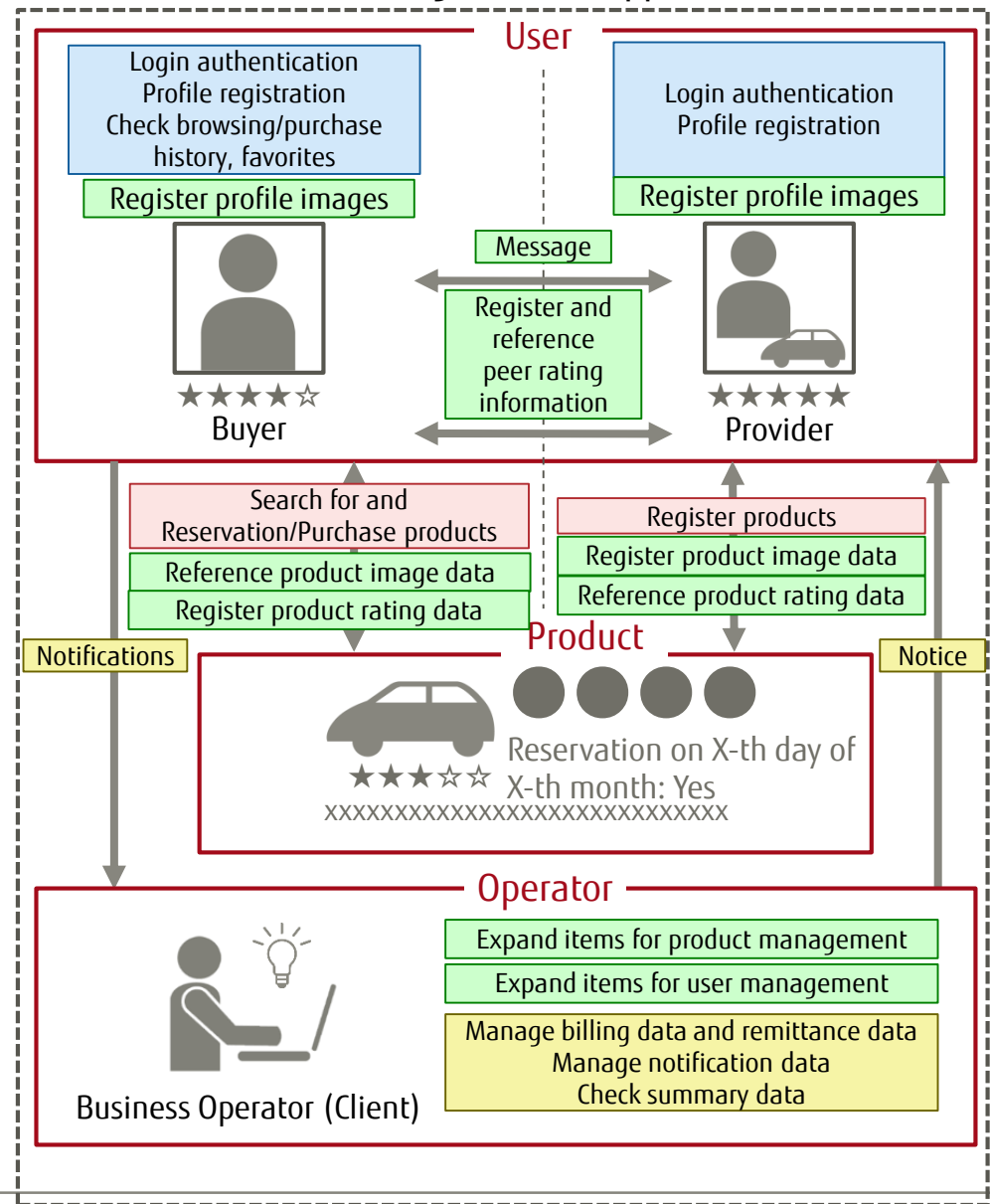
- **Ratings** (Manage product reviews, word-of-mouth information, user peer assessments)
- **Images** (register, reference, update or remove image data and files of products and users)
- **Categories of Sharing** (Expand management items for goods and users)
- **Messages** (Manage user peer messages)

## ■ 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



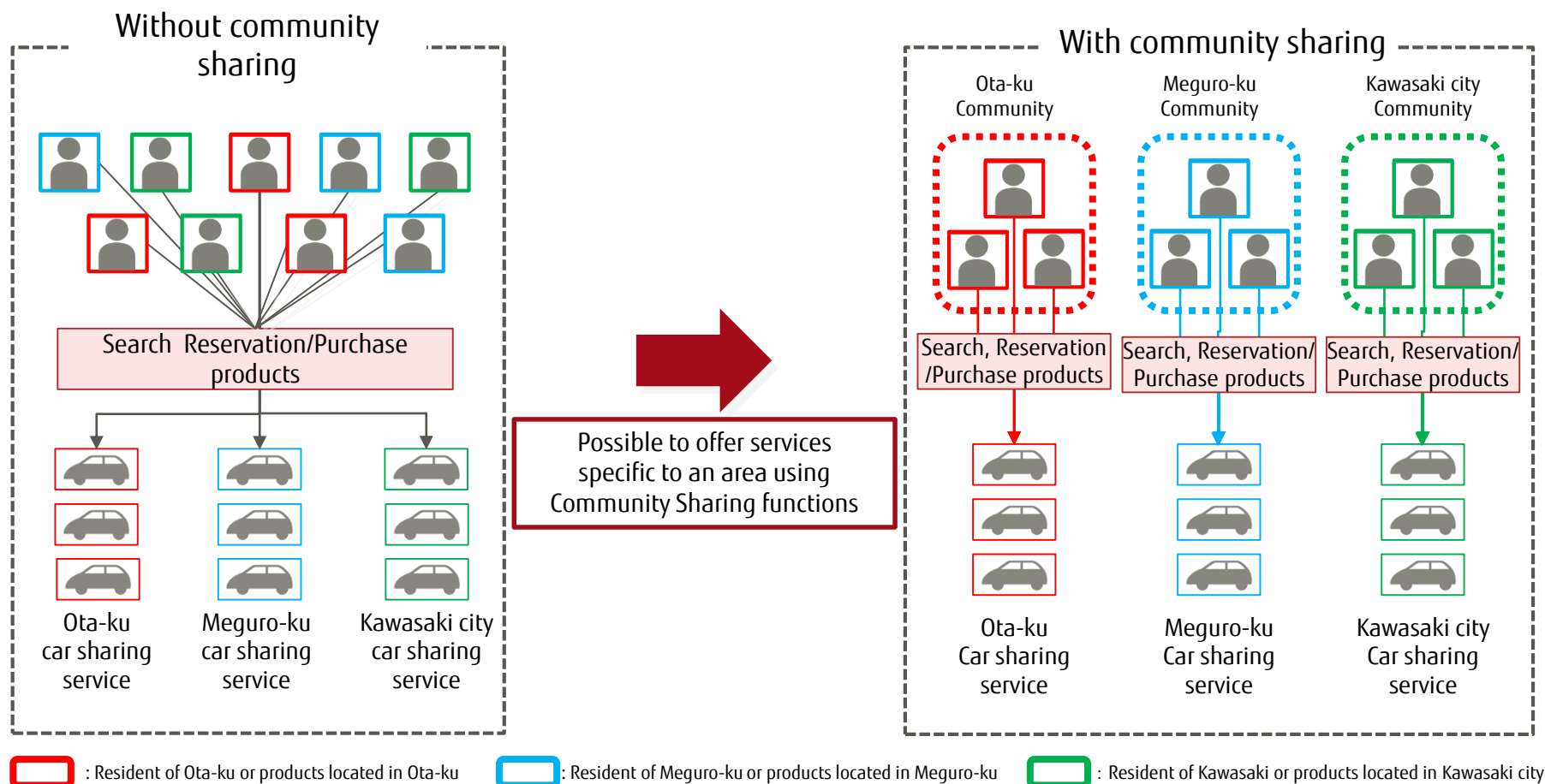


# Function Overview (2/2)

## Community-based sharing (Community Management function)

These functions provide sharing services by targeting a defined community:

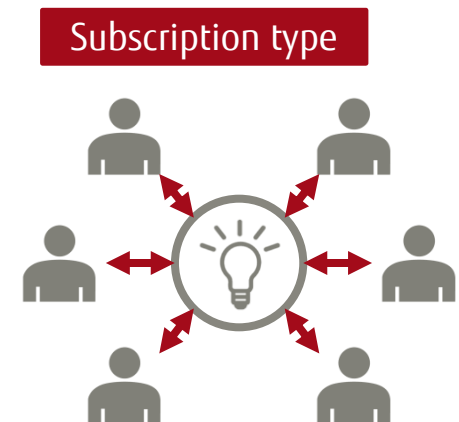
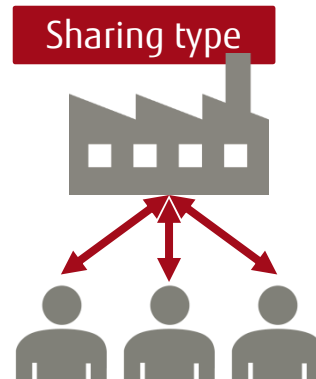
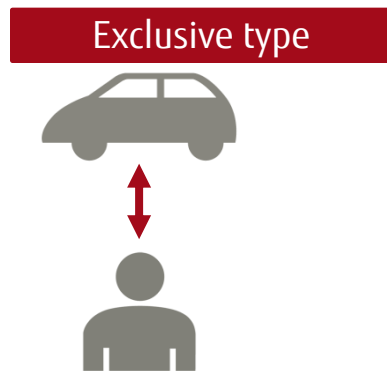
- **Community management** (register, fetch, update, remove, search, cancel community information)
- **Community account management** (set account data for community and main community, cancel community setting of account data, or search community account data)



**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)



# Function Details - Categories of Sharing

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
		:
	:	:

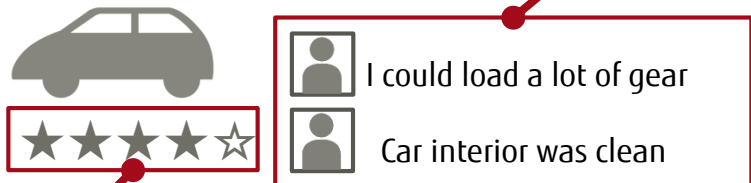
Product	Category	Item
People (Skills)	Gender	Male
		Female
	Skill	Translation
		Programming
		:
	Age group	10s
		20s
		30s
		:
	Features	N/A (optional)

## ■ Ratings

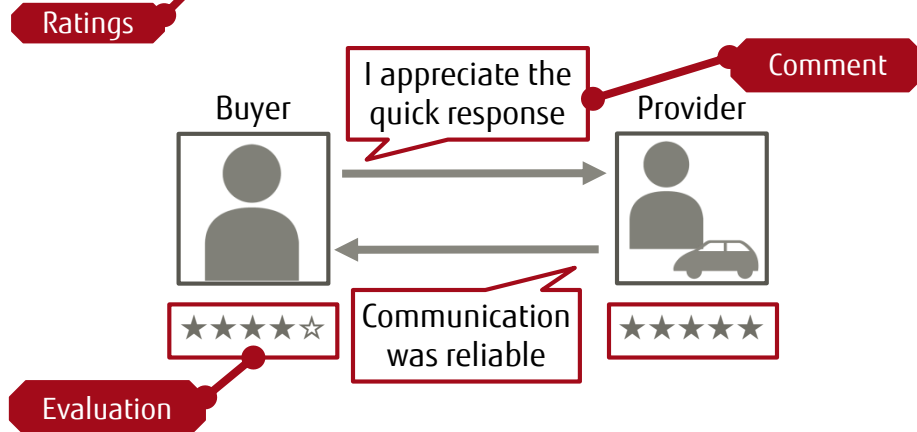
Functions common to Matching Management and Personal Management

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

- Product rating



- Peer reviewed by users

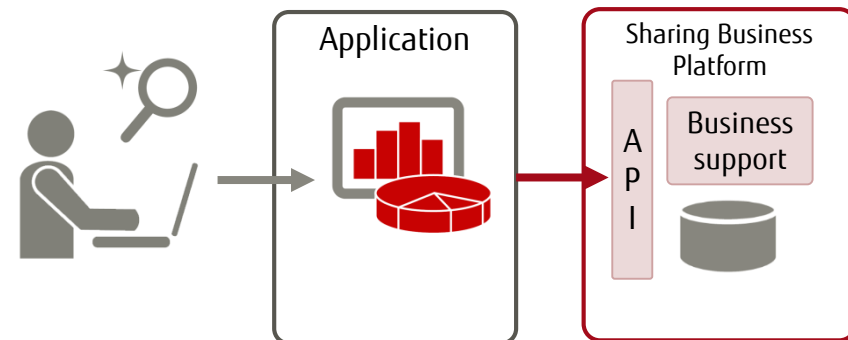


## ■ Summary

### 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



# APIs Provided

\*: Check the following for the list of APIs provided.

K5 Portal > Document > Manual > Sharing Business Platform > Sharing Business Platform Service API Reference



The Sharing Business Platform Service provides the following functions via REST APIs:

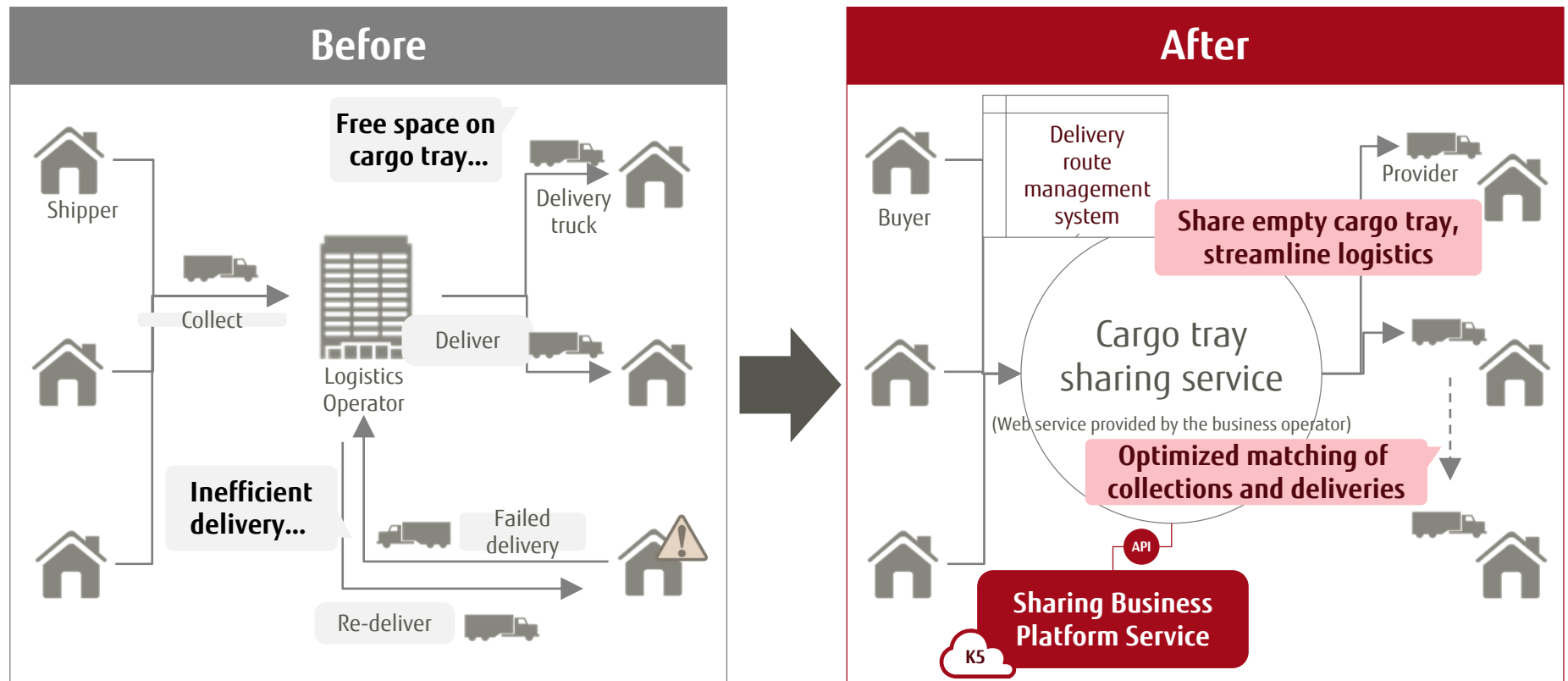
Function name		Function descriptions
Matching Management function	Goods management	Manages registration, acquisition, and update of product information for the Sharing Business
	Reservation/Purchase management	Manages reservation and purchase information of products
Personal Management function	Account	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

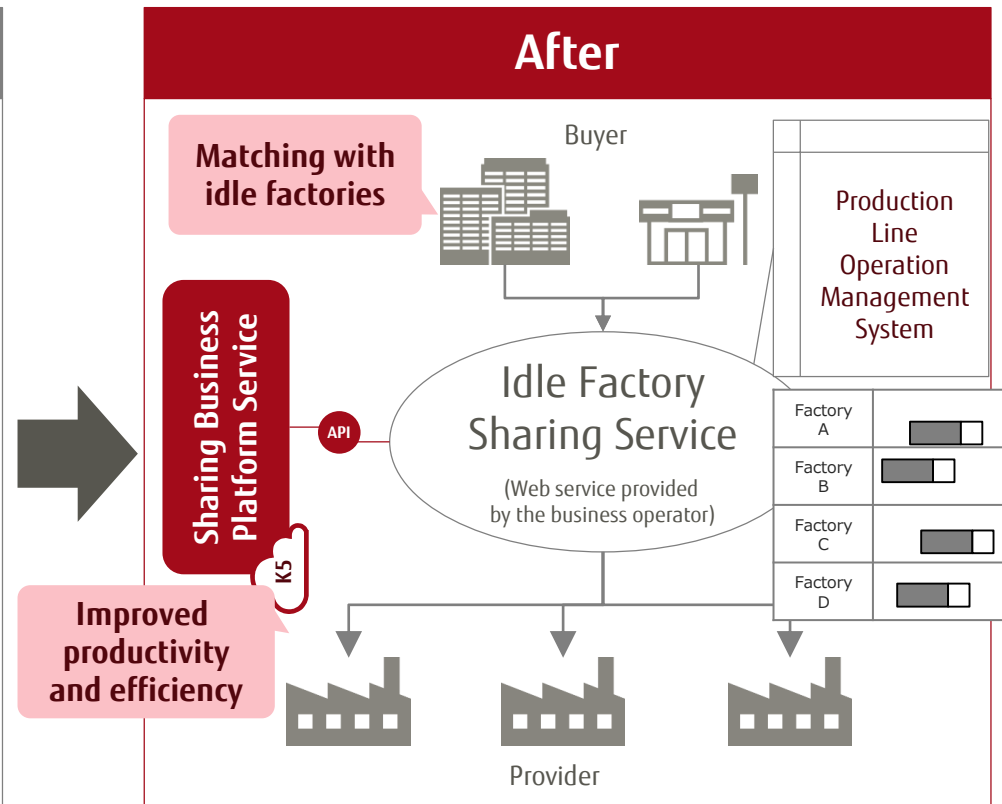
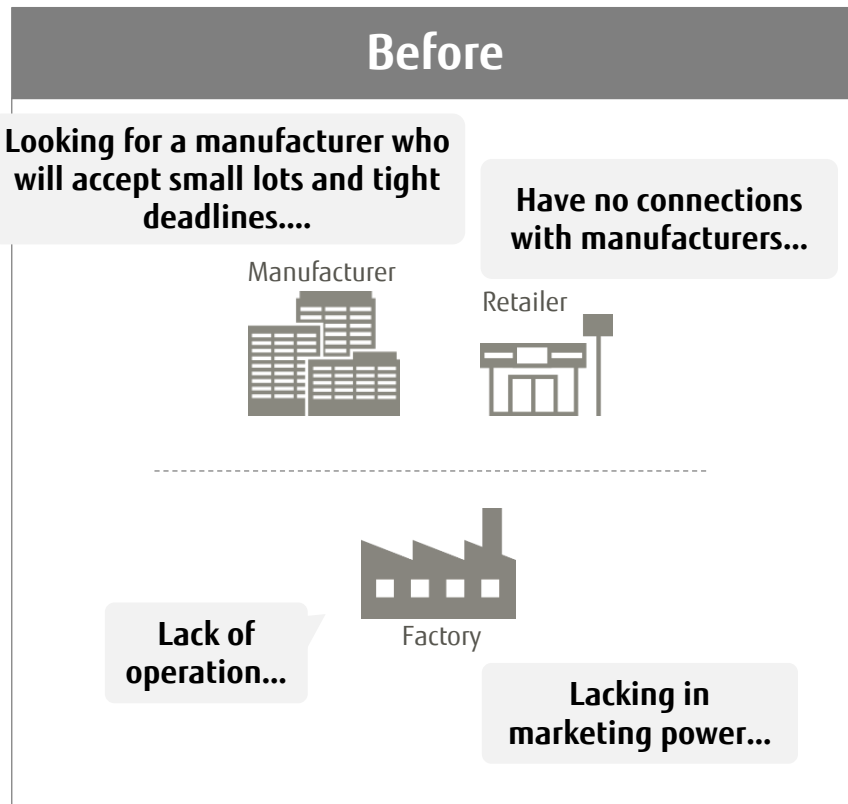
- Streamlines the transportation process and reduces time and costs
- Potential to launch the service to new shippers or sub-contractors in need of transportation



# 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.

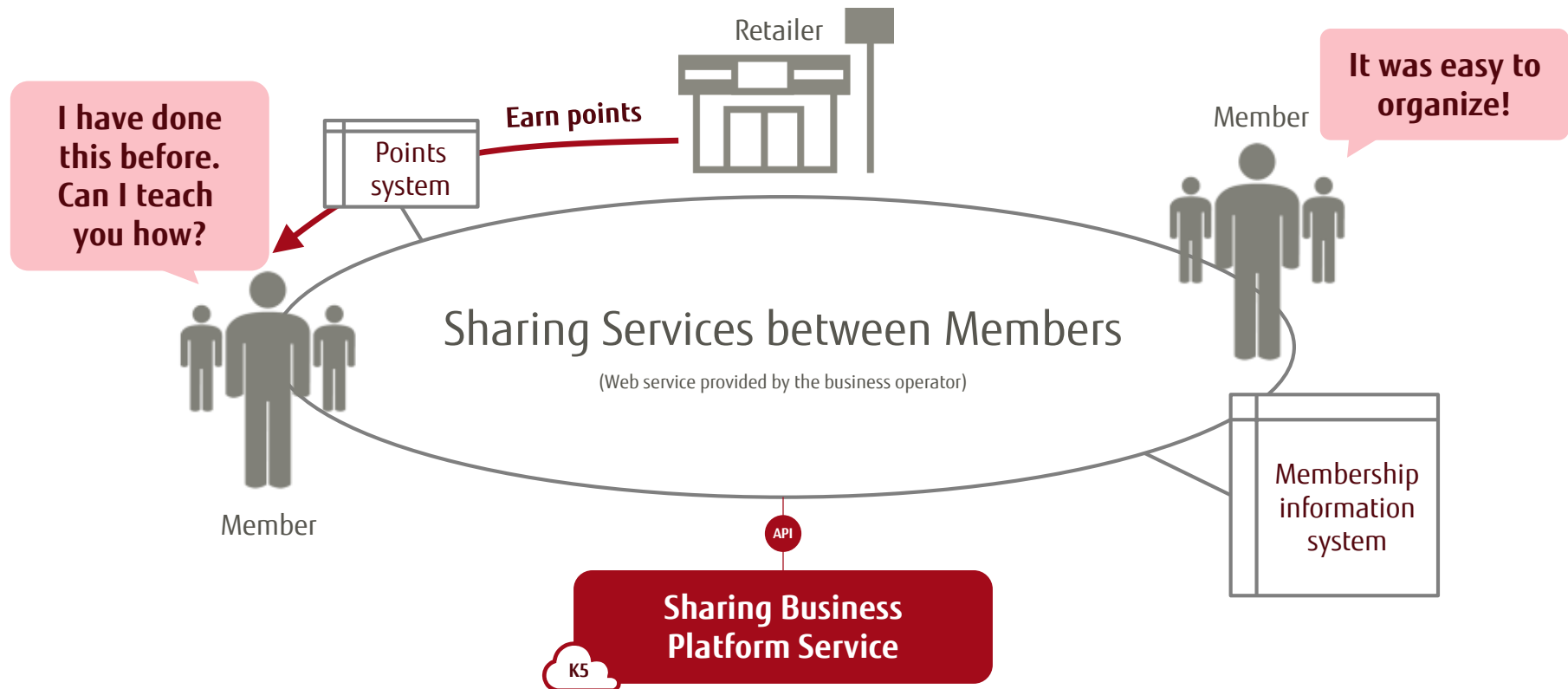




# Usage Examples (3)

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

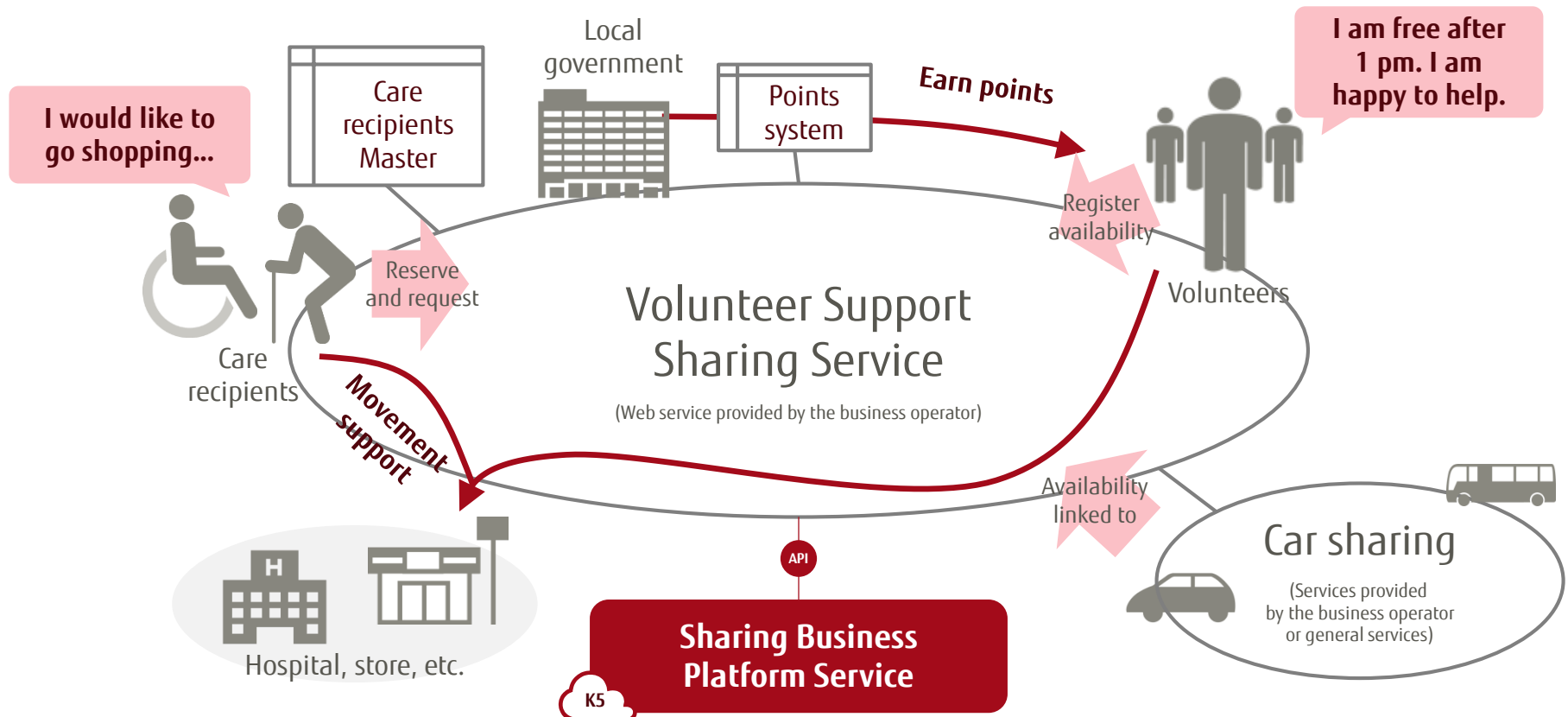
- Effective use of dormant membership information.
- By connecting members, create new value and enhance customer satisfaction.



# Usage Examples (4)

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

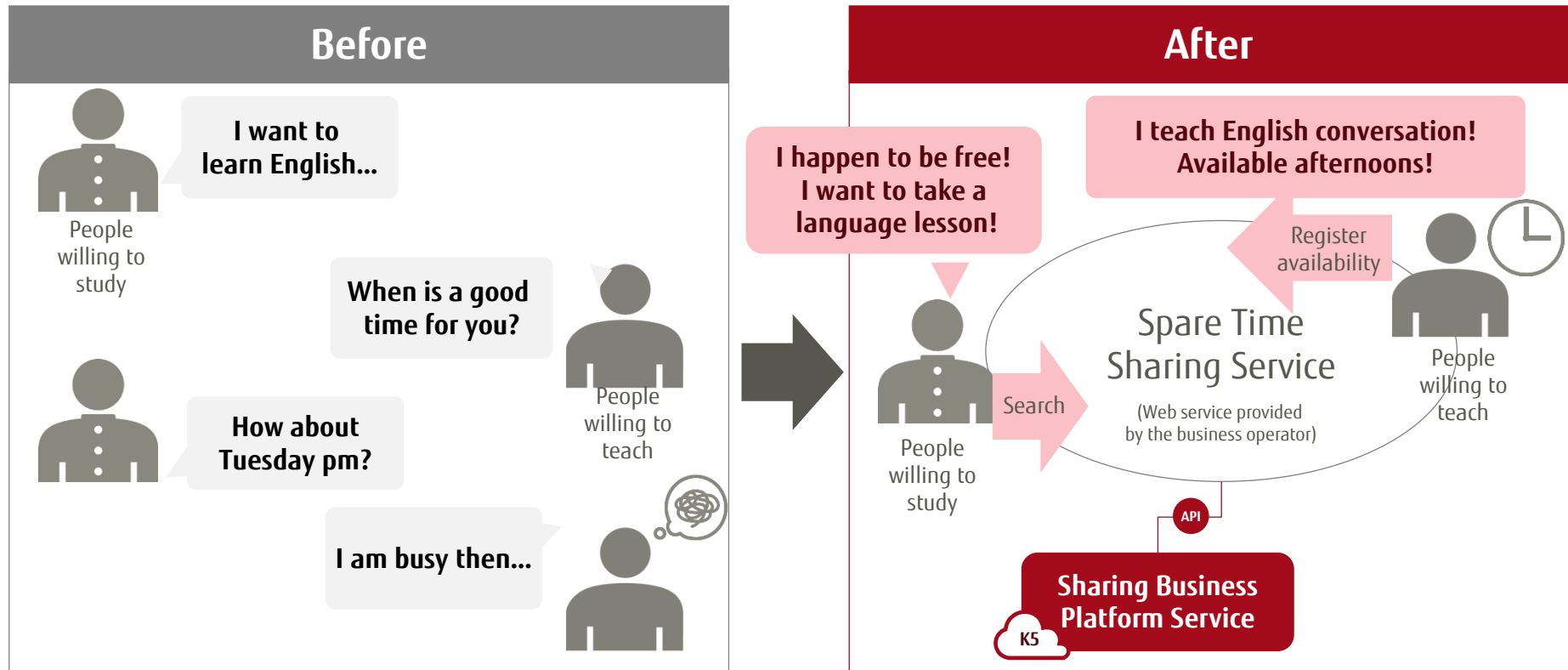
- Support people in need of assistance with activities for daily living (shopping, leisure, hospital visit)
- Overcome carer shortages by matching the supply and demand of volunteers



# Usage Examples (5)

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

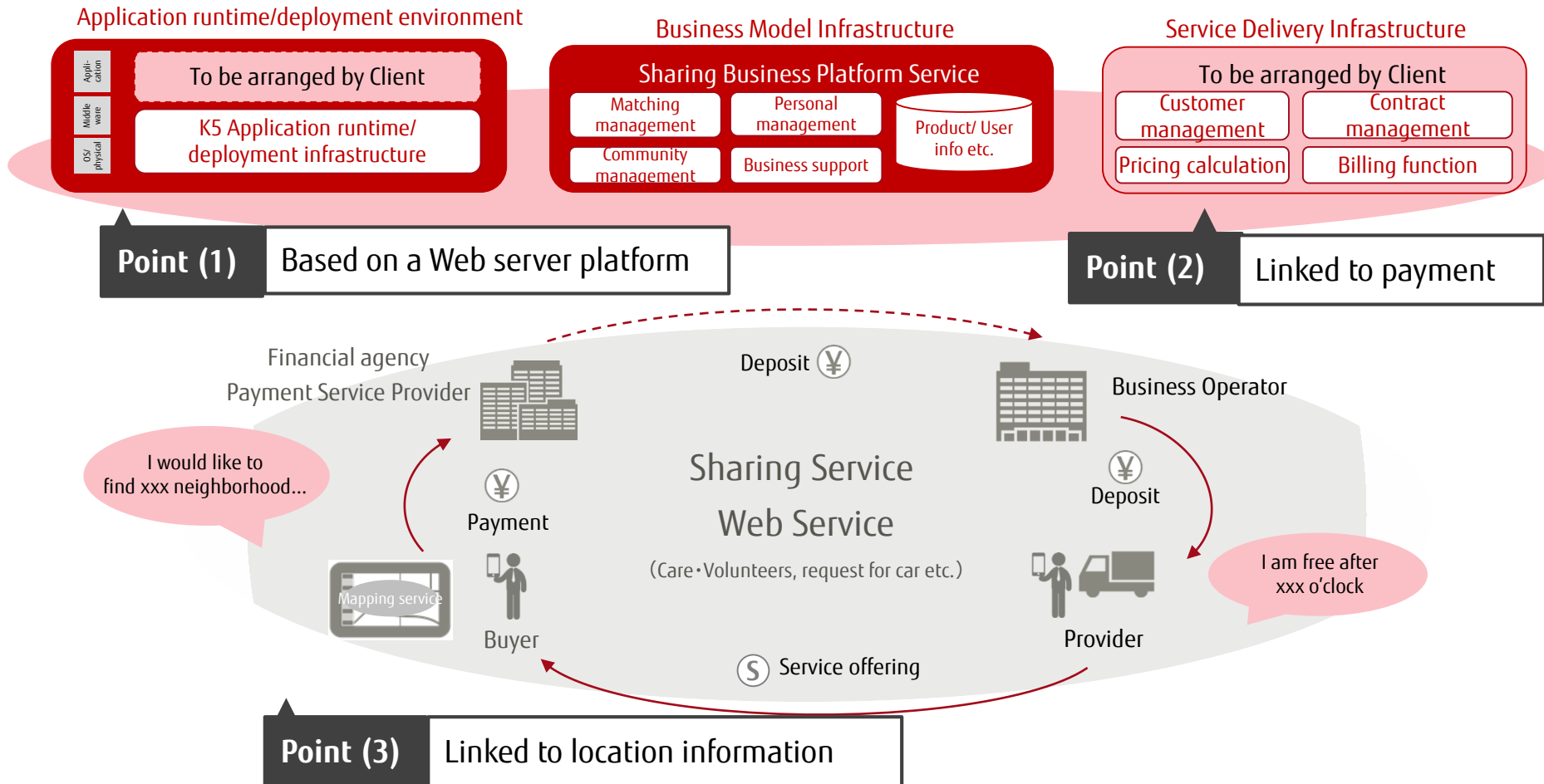
- A new form of education service that does not require dedicated teachers.
- Improve the level of customer satisfaction by matching the demand and supply of tutors' skills and availability.



# Examples of Installation Models

# Examples of Installation Models

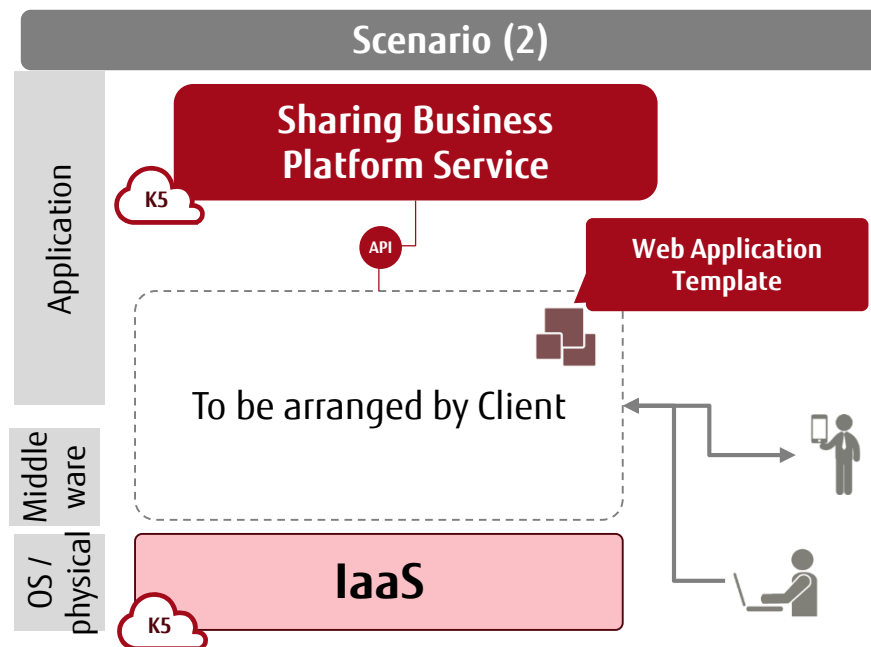
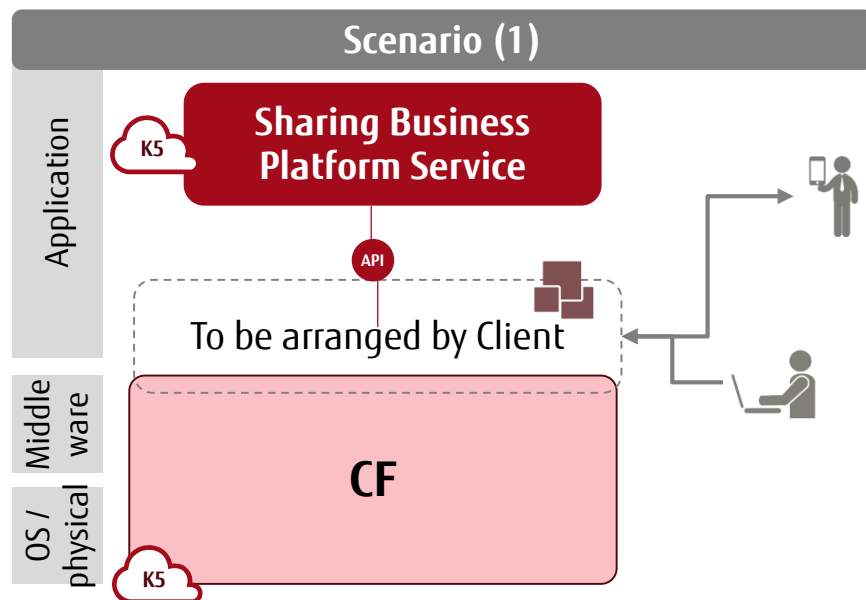
Setting up a Sharing Business specific to a defined community or area can be fast-tracked using three essential base functions that include matching management, a payment facility, and a mapping service.



# Point (1): Based on a Web Server Platform

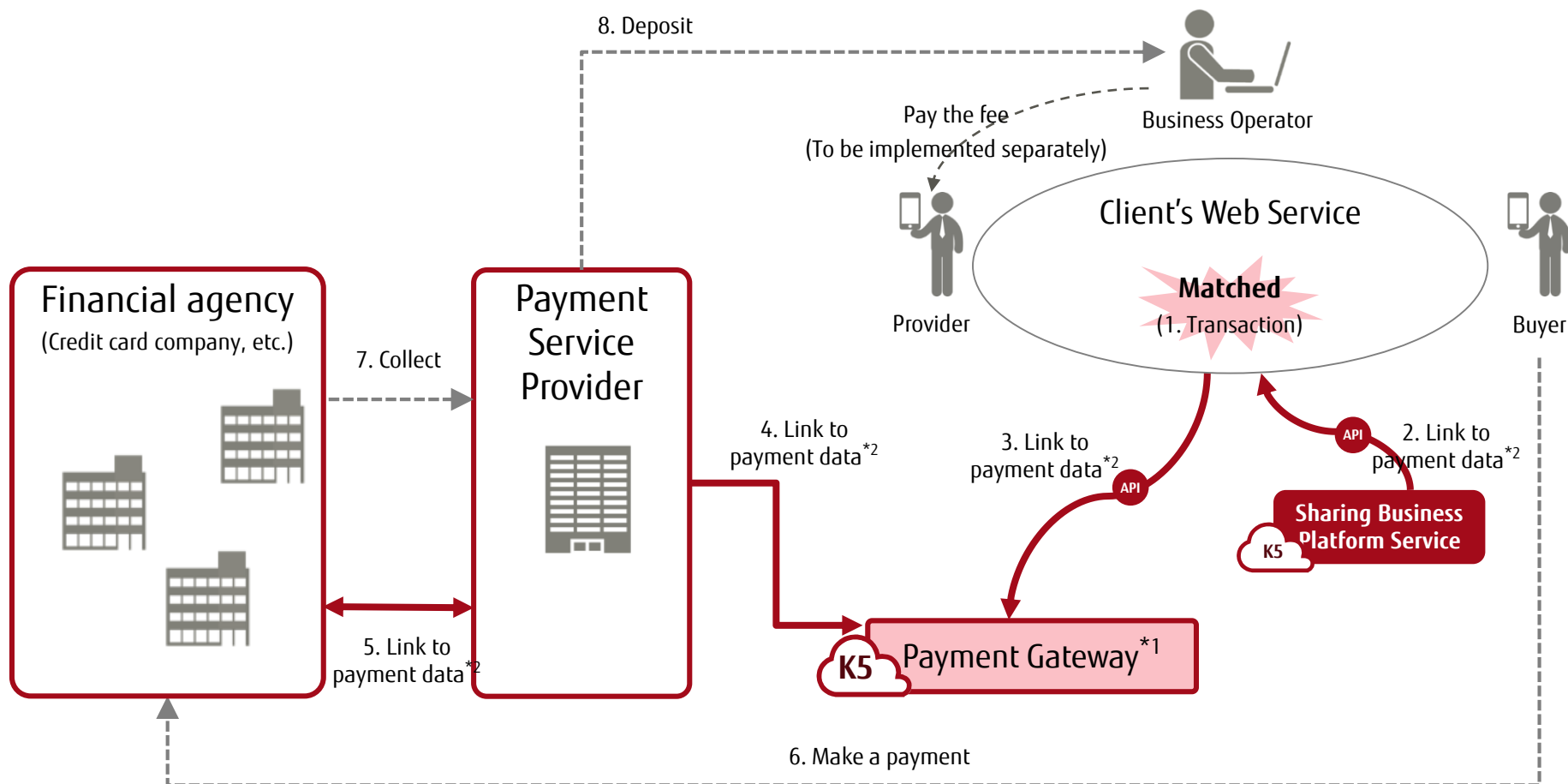
Using the FUJITSU Cloud Service K5 Infrastructure Base for its adaptability to customer's needs (IaaS) and the application runtime environment service (CF), stable services can be launched at a lower cost and in a shorter timeframe.

- CF: The only thing needed is to deploy the developed applications. There is no need to be concerned with infrastructure maintenance.
- IaaS: Possible to build the middle layer without any restrictions (system configuration of the Web and application servers)
- Using the Web application templates, services can commence with minimal application development effort.



# Point (2): Linked to Payment

By linking to the payment service provider's system, the service can be developed to include the processing of financial transactions generated between sharing service users.



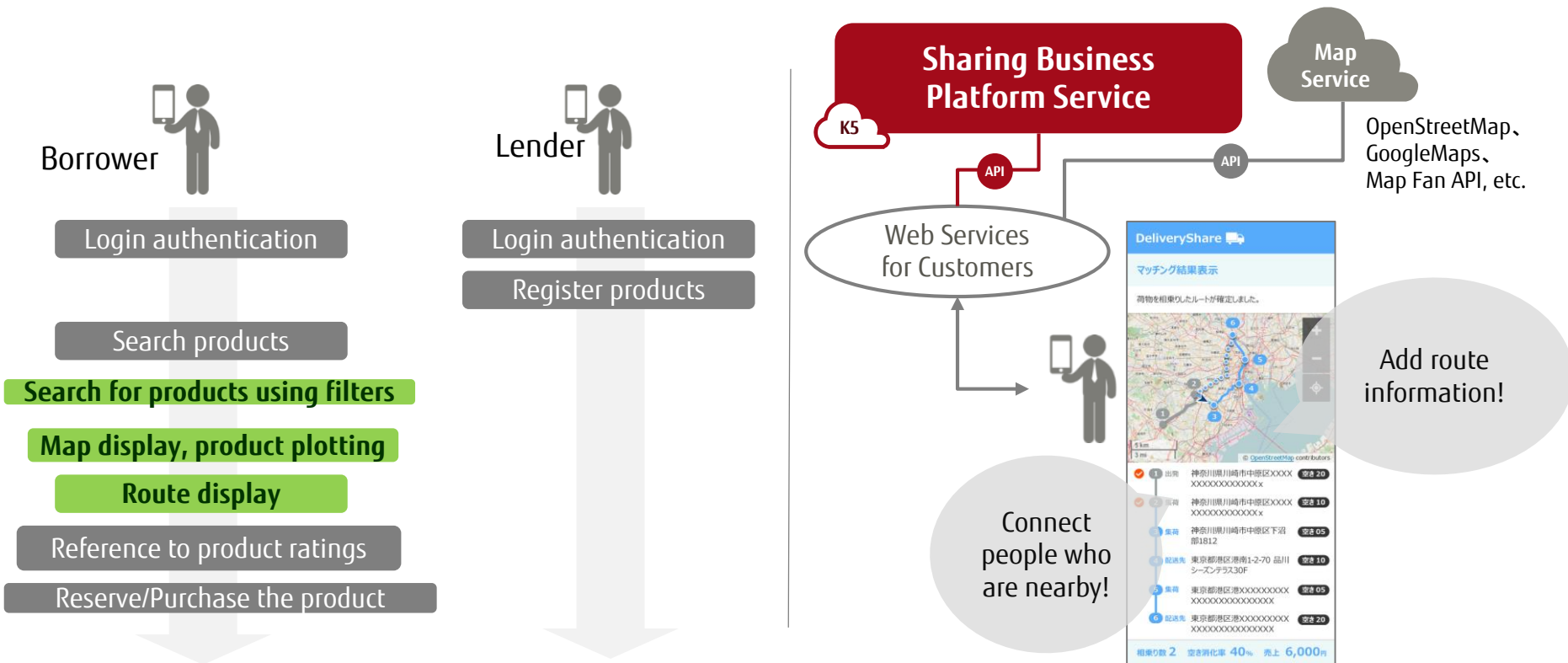
\*1: When a Payment Gateway is used, assessment by a billing system company is required as the Payment Service Provider.

\*2: The first transaction also includes card registration.

# Point 3: Linked to Location Information

User interfaces and user experiences based on location information are useful for a Sharing Business that is to be established in a defined community or area. A model linked to location information, including a map function, will enable the safe and rapid launch of services.

- Matching of ratings and supply of additional information for decision-making is improved by linking products with the location information of people and a map.
- Ideal for selecting the best route from route options or for matching a ride or a shared delivery.



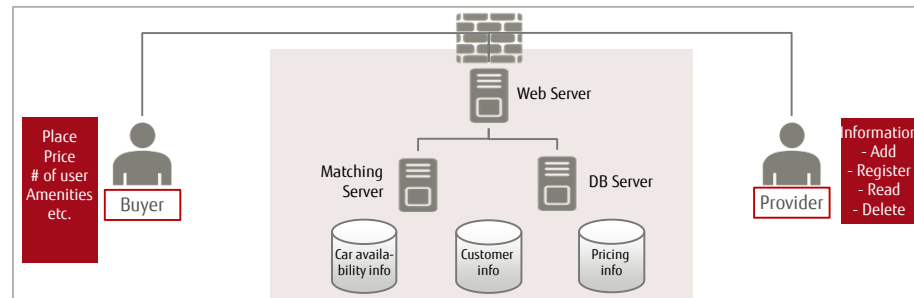


- CF : FUJITSU Cloud Service K5 CF

<http://www.fujitsu.com/global/Images/k5-paas-cf-functional-overview.pdf>

# Reference: Benefits of the Sharing Business Platform Service **FUJITSU**

## ■ Without the Sharing Business Platform Service

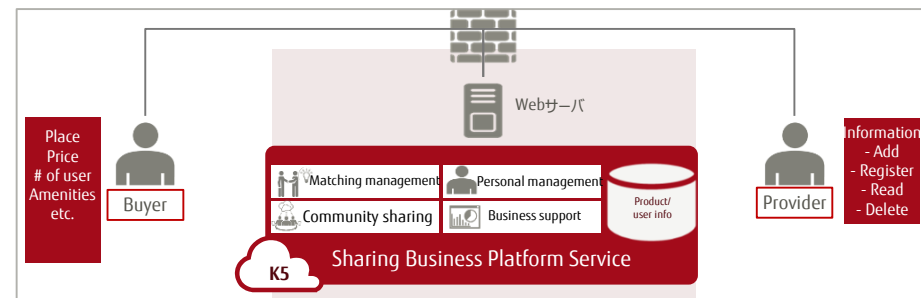


Build/ operate applications

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



Build/ operate applications

Business Operator

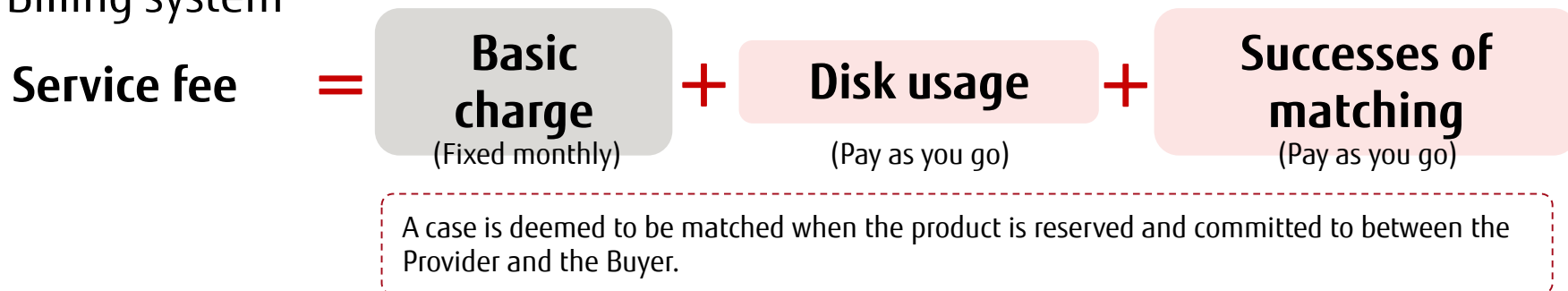
- Securing infrastructure:  
**Only the Web server needs to be built** to start providing the service
- Data storage environment:  
**No need to build.** The required functions are all provided via APIs.
- Creating a mechanism for matching:  
No need to create. Realized by simply **calling the matching 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.**

**Big reduction in building/operation worksteps**

Menu	Unit	Comments
Start-up model		
Basic charge	Month	Fixed fee inclusive of 10GB of disk usage and 200 of successes of matching
Disk usage	GB per 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 per 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

■ Billing system

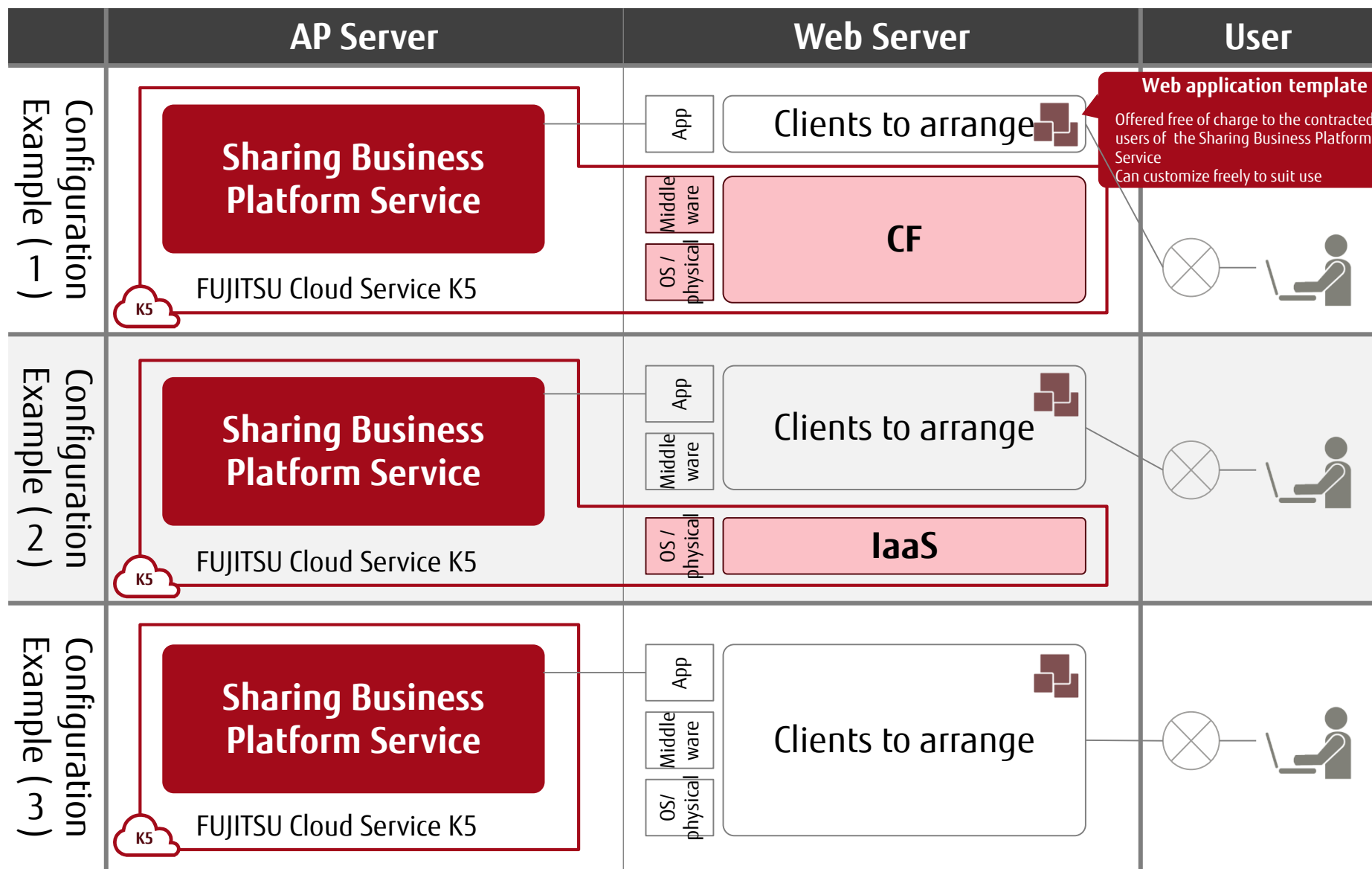
\*: Refer to the price list published on the K5 home page for the latest fee information.  
<http://www.fujitsu.com/global/services/hybrid-cloud/k5/pricing-terms/index.html#section6>



Example: When the amount of disk space used is 100GB and the number of successes of matching is 300

basic-charge + [90GB × amount-of-disk-usage] + [100 × successes-of-matching]

# Example of System Configuration



# Example of System Configuration - Examples of K5 Pricing (JPY)

## ■ Configuration Example (1)

\*: This price is based on 2016/2017 pricing information.

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>

Menu		Usage amount	Use fee (before tax)
AP server	Sharing Business Platform Service: Start-up 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: Start-up 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 Service
- Sharing Business Platform Service Service Description
- K5 Terms of Use, etc.

## K5 Introduction Site

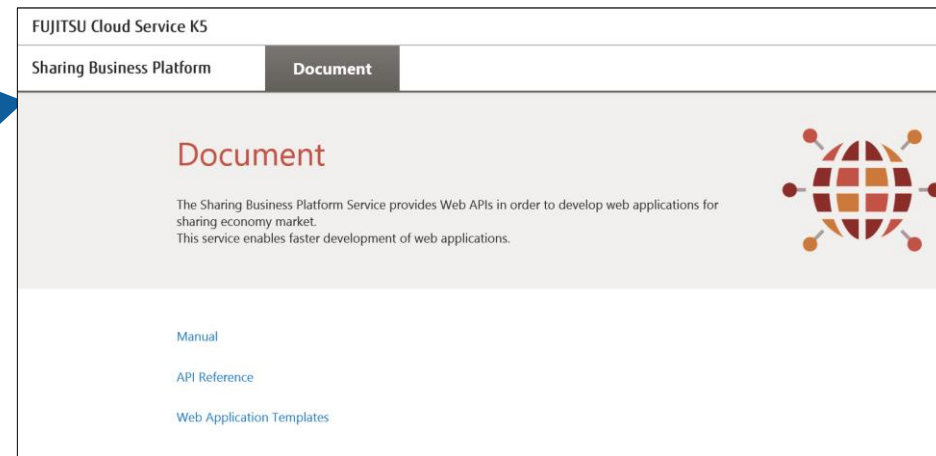
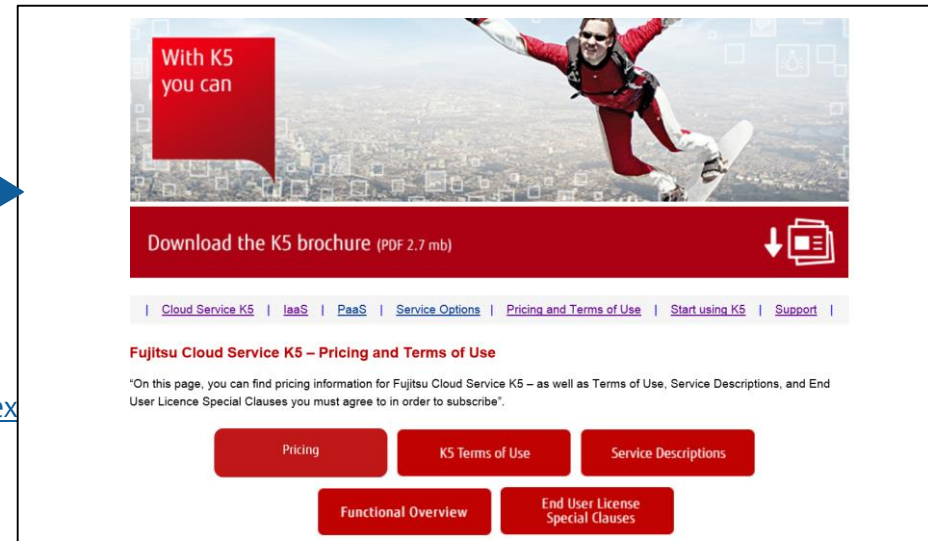
### > Documents

<http://www.fujitsu.com/global/services/hybrid-cloud/k5/pricing-terms/index>

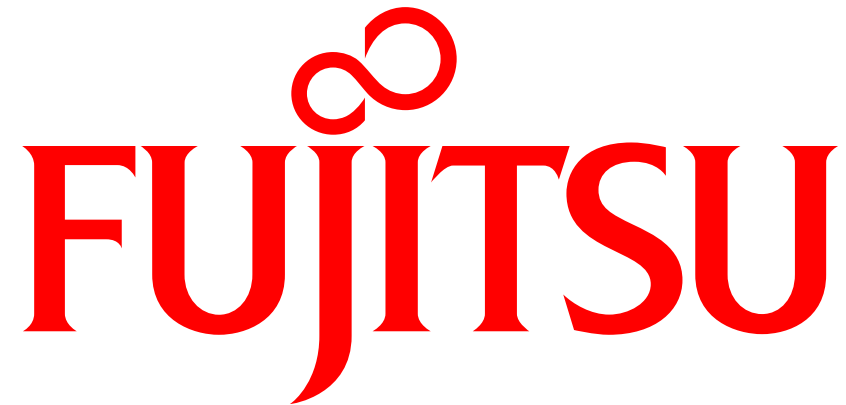
Documents on APIs, templates, tutorials, etc. for developers are also available.

## 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>



- 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



shaping tomorrow with you