# Innovation on Survey System for Retail Price Survey and CPI (Summary)

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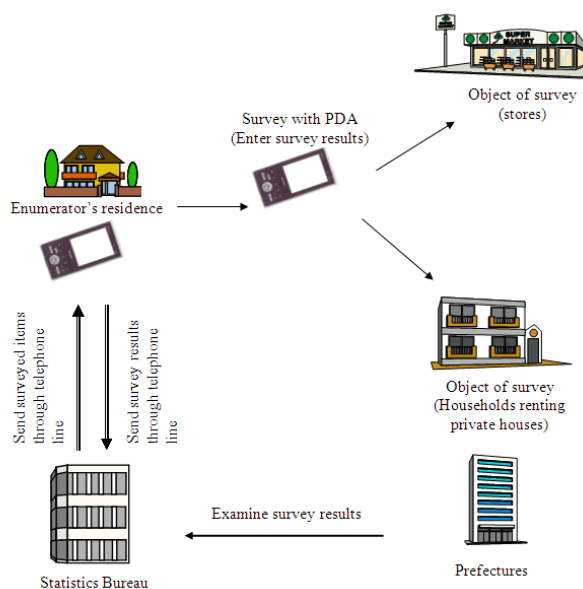
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## 1. Background

Statistics Bureau of Japan (SBJ) has introduced an electric data collection system to the Retail Price Survey and CPI since October 2003. In the electric system, retail prices are collected using mobile devices called PDA (Personal Digital Assistant) instead of traditional questionnaire sheets, and data are transmitted among the Statistics Bureau and price collectors through a telecommunication network.
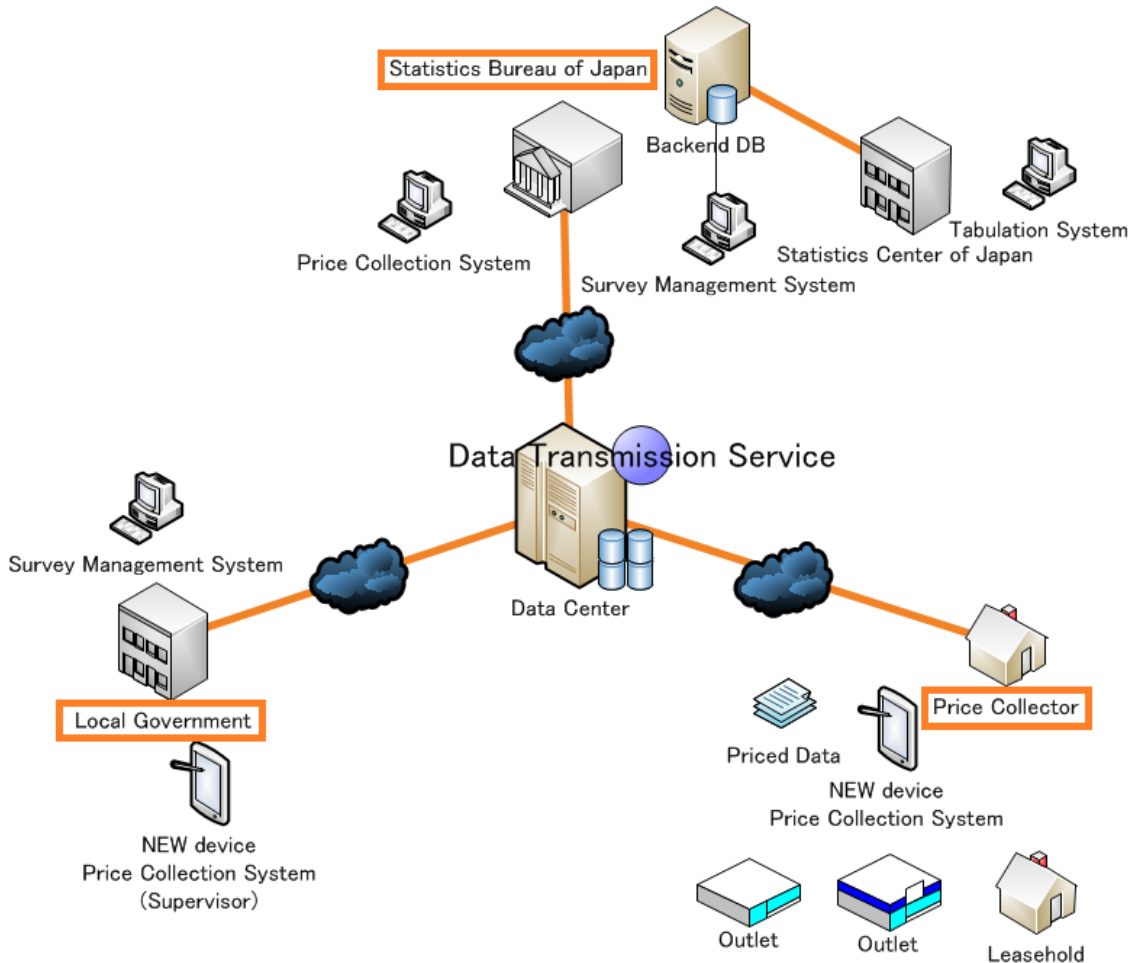
Actually Statistics Bureau is going to release new survey system in October 2012. In this upgrade project, we innovate whole the system; 1) Architecture upgrade, 2) System concept upgrade and 3) Gadgets upgrade. Upgrading gadgets from PDA to slate PC, replacing network from telecommunication to mobile closed secure network and including local government who supervise price collectors into data flow. To achieve this innovation, we are going to replace whole system in coming October. New survey system offers advanced management, better accuracy and speed in pricing on the field.

## 2. Electric Data Collection System (Old One)

Old system uses PDAs (Personal Digital Assistant) and telecommunication network. But these technologies are obsolete. Also old system is connected with only Statistics Bureau and price collectors excluding local governments (prefectures). This causes disadvantage; in principle, priced data should be checked by local governments who controls price collectors in the fields. However old system didn't support access from local government.

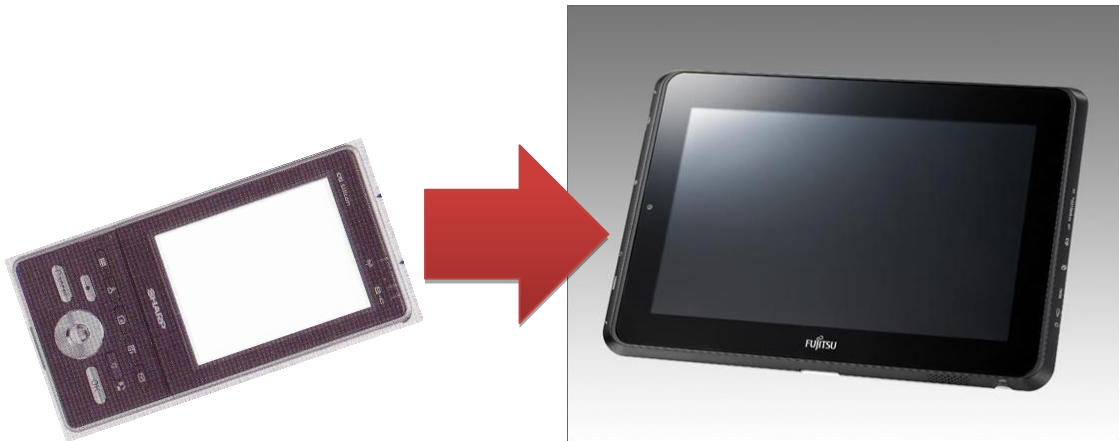## 3. New Survey System



1) Architecture upgrade

We upgrade whole the architecture; the client architecture, the server architecture and the network architecture.

- Windows based system
- Web application with SOA technology
- Cloud data center
- Mobile closed secure network

2) System concept upgrade

We upgrade the system concept; Using cloud data center, all actors can access to real time data while they are online. This online access method regains the radical steps of the data check. Local governments can check original priced data and revise them directory with web based system.

3) Gadgets upgrade



Old PDA is confined to use specific version of Linux OS. It had a very limited capacity of migration. Other hand, new system uses slate PC with electric pen. We chose Windows based slate PC for new platform. It allows various options for migration. Also we can use same system on gadgets in fields and existing PC on desktop.

## 4. Price Collection System (PCS)

Price Collection System is client application mainly used by price collectors in the fields. It also is used for the supervisory activity of local government and Statistics Bureau. PCS is designed as Microsoft .NET based application. So slate PC for price collectors and desktop PC for government can run same system. It is advantage for managing survey.

Also PCS improves user experience refreshing its interface. It provides simple and intuitive form and touchable interface users can just touch where they would like to input or change. Following are sample image of PCS. First one is top menu form. Price collectors can do every task of this survey from this form. Next one is pricing form. This sample shows input form for "salted salmon". It provides graphical interface to input salmon's price, piece(s) and quantity. Price collectors also can report outlet information and brand information of pricing salmon. When price collectors finish the survey, they send all information into data center with mobile network.

For more information about our survey structure, please refer the paper in the bottom of this summary.
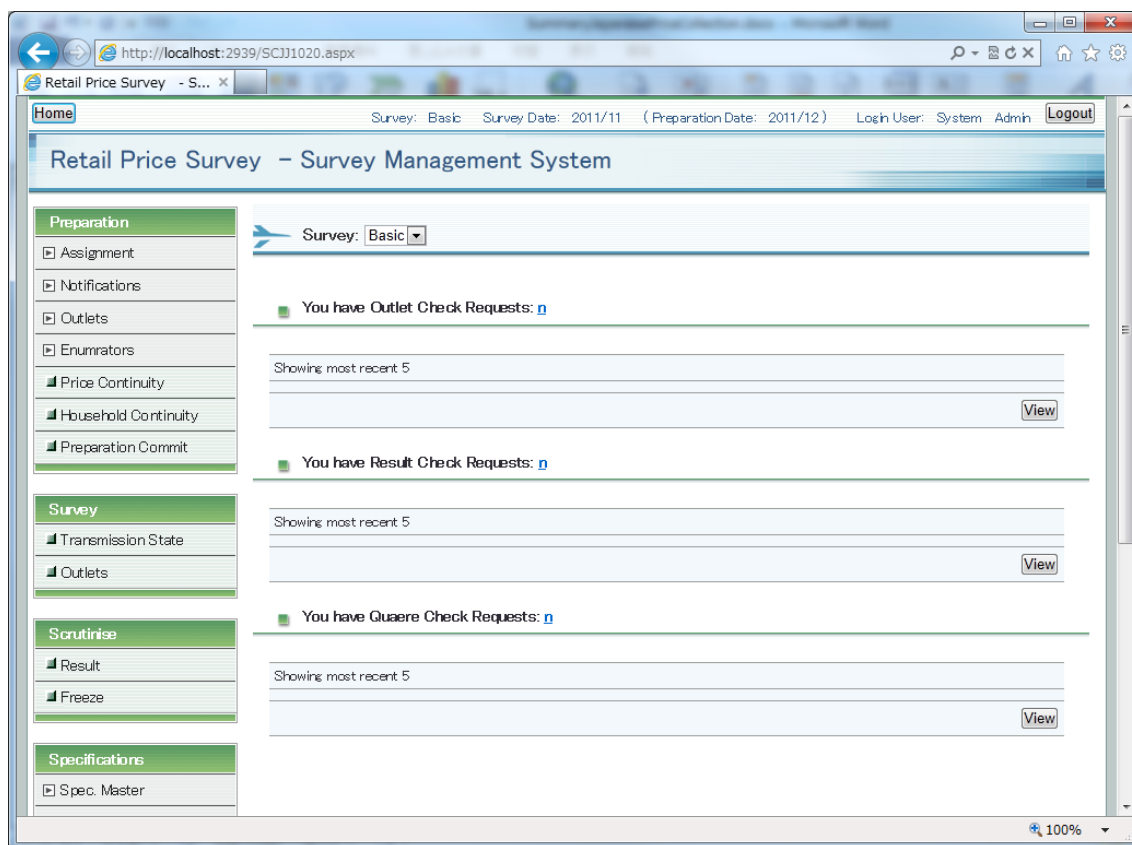


Sample Window of PCS



Sample Window of PCS

## 5. Survey Management System (SMS)

Survey Management System is web-based application and database for Statistics Bureau and local governments. All information of the survey is centralized into SMS in real time after reporting finished by price collectors. Statistics Bureau and local governments examine and analyze whole data with SMS. If there is erroneous report, we can edit centralized data in the database. Once data is edited, all actors in the survey can view new information including price collectors. It allows us to keep consistency through the continuing survey per almost ten-day. Following is sample image of SMS. It has various menus from master database management to survey data editing. This sample shows dashboard form noticing requested tasks for login user.

For more information about our survey structure, please refer the paper in the bottom of this summary.



Sample Window of SMS

## [Electric Data Collection System of the Retail Price Survey](Old One)

Statistics Bureau of Japan has introduced an electric data collection system to the Retail Price Survey and CPI since October 2003. In the electric system, retail prices are collected using mobile devices called PDA (Personal Digital Assistant) instead of traditional questionnaire sheets, and data are transmitted among the Statistics Bureau, prefectural governments and price collectors through a telecommunication network.

**1. Procedures**

(1) Retrieval of information necessary for price collection

Price collectors receive data necessary for price collection at home from the server of the Statistics Bureau by connecting PDA to a telecommunication network. The data received in this stage include prices for the previous month, item specifications and brand names, etc.

(2) Price data collection

Price collectors collect prices at shops and rents at households, and input prices and associated brand names, rents, etc. into PDA.

(3) Transmission of collected data

Price collectors send collected data at home to the Statistics Bureau/Statistics Center using PDA via a telecommunication network.

(4) Examination of data

Officials in charge of the Survey at prefectural governments examine the data which have been transmitted by price collectors using PDA.

**2. Databases Prepared for the Electric Data Collection System**

The electric data collection system is equipped with several databases which store various management information regarding survey shops, survey items, etc.

(1) Ledger of Survey Shops

In the Survey, those shops are selected as survey shops for each survey item which have larger amounts of sales of the item in each of the designated survey areas. This

ledger controls these survey shops.

(2) Ledger of Survey Households

In the Survey, all the households living in rented houses or rooms located in each of the designated rent survey areas are investigated. This ledger controls these rent survey households.

(3) Ledger of Basic Specifications

This ledger keeps basic specifications which are designated for each of survey items. Basic specifications are modified or replaced whenever necessary to keep up with the change in the appearance of commodities on the market.

(4) Ledger of Brand Names

For items like electric appliances, brand names are used to describe basic specifications to collect prices. This ledger keeps the most up-to-date brand names to enable price collectors to price the most relevant commodities.

(5) Control Panel of Survey Operations

This panel grasps and monitors at what shops and on what items each price collector is working. As survey shops as well as survey items and specifications are replaced frequently, this panel is updated frequently.

3. **Merits of the Electric System**

(1) When prices are key-entered into the PDA, their validity can be examined by comparing with prices for the previous month.

(2) Automatic calculation for the consumption tax, volume adjustment, etc.

(3) The most up-to-date brand names can be displayed, confirmed and selected in the inventories provided by the PDA.

(4) The electric system provides a board of notifications and instructions to the price collectors. The revision of basic specifications and the revision and abolition of special specifications for each survey municipality can be confirmed at all times.

(5) A great amount of troublesome manual work of organization of more than 100 kinds of

questionnaires required in the traditional system can be automatically controlled in the electric system.

**4. Toward the Nationwide Implementation**

The nationwide implementation of the electric system is planned in fiscal 2003. Preparatory work for this operation is scheduled in the following three phases from October 2002 in the remaining 46 prefectures (except Tokyo):

(1)  Familiarization with handling of the device through key entering of part of price and rent data

(2)  Full scale data entry at price collectors' home

(3)  Data collection and entry at shops and households

# [Outline of the Retail Price Survey]

**1. Objective**

The Retail Price Survey is conducted on a nation-wide basis to obtain data on the prices of commodities and services, which are important in consumer expenditure.   The data collected in this survey are used to compute the Consumer Price Index (CPI) and in various analyses of consumer prices.

The survey was started in 1950.   Until 1961, the survey covered only urban areas, but since 1962, the coverage has been expanded to include rural areas as well.   The survey has been expanding the number of items covered also.

**2. Survey Date**

For the price survey, the prices collected refer to Wednesday, Thursday or Friday of the week including the $12^{th}$ of the month.   For fresh foods and cut flowers, prices are collected three times a month, on Wednesday, Thursday or Friday of the weeks including the $5^{th}$, $12^{th}$ and $22^{nd}$ of the month.

**3. Coverage**

The Retail Price Survey consists of the following three parts:

(a) Price survey

Retail prices of 805 commodities and services are surveyed at about 30,000 outlets in 167 municipalities – i.e., cities, towns and villages.

(b) Housing rent survey

Rent per month and total floor space of about 22,000 rental houses in which households reside are surveyed in 167 municipalities.

(c) Hotel charge survey

Charge for accommodation per night including two meals are surveyed at about 540 hotels and inns in 98 municipalities.

The prices collected are normal retail prices.   Temporarily reduced prices, due to such events as clearance sales, are excluded.