GS1 **Japan**

The Global Language of Business

GS1 Japan Handbook
2019-2020

Message from the President

We are seeing Japan's economy recovering moderately but in a sustained manner. The turnaround of the economy has been contributing to the growth of employment opportunities.

However, many industries are facing serious labour shortages, reflecting the graying of society.

As part of the effort to tackle this issue, improving productivity by offering services or additional values with innovative information technologies, such as artificial intelligence (AI), the Internet of Things (IoT), robots, and Fintech are growing.

Also in the retail sector the trend for labour-saving and automation is gaining momentum to address the shortage of manpower. The use of RFID as well as conventional barcode systems has been spreading, not only in the fields of logistics, but also in the management of merchandise and sales in stores.

For example, in the apparel industry RFID has come into use for checkout, instead of in the past only being used for the control of logistics and inventory. Besides that, various pilots aiming to realise automated or unattended store management are underway in and outside Japan. Moreover, it is expected that RFID will be employed for traceability systems or marketing by sharing detailed data of individual items which are captured through RFID or other tools. We will be committed to promoting such developments more than ever.

In the meantime, along with the advancement and popularisation of IT and Internet, a considerable variety of products have been sold online, across countries and regions, and the importance of GTIN which is capable of uniquely identifying and managing products internationally is increasing than ever before.

To extend the capability of GS1 services, GS1 is proceeding with developing 'GS1 Registry Platform' to offer the function of globally unique management and lookup of GTIN and other GS1 identification keys as well as their corresponding information.

In line with the GS1 services, GS1 Japan has been offering domestic product manufacturers and other entities a new product information database namely 'GS1 Japan Data Bank (referred to as GJDB)' service which works linking with 'GS1 Registry Platform' since October 2019.

With using the GJDB service, GTIN allocation and its associated product information management have been made much easier and more accurate, and the information can easily be provided to both domestic and overseas users.

We will, continuously and in a phased manner, be developing and refining GJDB, incorporating function to make product information registration and usability easy and convenient for users.

Furthermore, in the future, GJDB will be populated with the additional data related to other GS1 identification keys including GLN so as to fulfill its function as the infrastructure of information lookup and exchange, supporting business activities based on GS1 standards.

We, as GS1 Japan, believe the continuous endeavour together with GO and other MO members will lead GS1 to the next much brighter stage.

We look forward to your continued support in the future.

Hirokazu HAYASHI

President GS1 Japan

Table of Contents

1. Sectors

1.1 Retail and CPG

1.1.1 Encouraging GTIN implementation for business products: Packaging materials, consumables, and slips used in stores and offices.

GS1 Japan is labouring on promoting GTIN source marking not only for general consumer goods but also for business products. In 2015, we created and published the GTIN Source Marking Guideline for food packaging, and consumables and raw materials used in retail stores. Following after its completion, we are making continuous efforts publicising and disseminating this to make GTIN to be well-known to the industries.

One of the excellent use cases was commenced out by AEON DELIGHT CO., LTD. (Hereinafter referred to as AEON DELIGHT) who procure, provide and manage consumables and materials used in business offices. Since 1996, although the guideline was not ready at that time, they are utilising GTIN for their materials and supplies in order to manage their master data and control the items. There were only 10 to 20% of items source-marked, when AEON DELIGHT started managing their items with GTIN, because awareness to GTIN and EAN/U.P.C. symbols was low in business product industry. Therefore, for products that were not source-marked, they by themselves applied barcode labels upon in-coming at the distribution centres. In parallel, they had been unremittingly requesting manufacturers to have EAN/U.P.C. symbols source-marked. Such steady efforts have come to fruition, and now about 99% of the products delivered to each distribution centre is GTIN source-marked.

Now, each AEON DELIGHT distribution centre is scanning EAN/U.P.C. symbols to identify items at both shipment inspection and inventory confirmation. Each workflow is described hereunder.

<Shipment inspection>

1. Scan the identification barcode of the shipping store on the picking list with a mobile scanner. Hereby, data of product to be shipped to the store is loaded with each quantity into the mobile scanner.

2. Go to the storage location where the target product is stored referring to the location number on the picking list.

3. Scan the EAN/U.P.C. symbol on the target product with the mobile scanner and enter the picked quantity.

Thereafter, repeat the above operations following the list.

* Immediately notified on the monitor, with an error message, if a product was scanned again or quantity input was wrong.

<Inventory>

The inventory inspection is carried out semiannually.

1. Enter the identification number on the product shelf into the scanner.

2. Scan the EAN/U.P.C. symbol of the product and enter the stock quantity.

3. Collate gathered inventory data against the book data after all the inspections are completed.

This barcode utilisation brought them following two fruitions.

1. Work levelisation and efficiency improvement

   As this barcode utilisation contributed for easy product confirmation even for less skilled staff, work within distribution centre was levelised and productivity per person was improved. Work in the centre became faster than before as the product

Figure 1.1.1-1 AEON DELIGHT Distribution Centre

confirmation process was made simple.

Regarding the inventory inspection work, they had been collating data manually against the book data using visually inspected inventory data on a spreadsheet. As a result, several days were needed for the completion of inventory work before, but with the current workflow, it was shortened to one day in total.

2. Significant inventory accuracy improvement

Barcode utilisation brought about massive inventory accuracy improvement.

A distribution centre could have diminished shipping errors down to nearly zero while handling about 2,000 shipping items per month.

Currently, at inventory inspection at this distribution centre, the discrepancy between real and on book counts is worth some thousand to 10 thousand Japanese Yen which is calculated that their loss rate is mere 0.00x%. Surprisingly, and in fact, it is true that the large portion of the losses is not caused by the shipping process error but by dirt and breakage during transportation.

1.1.2 EPC/RFID and EPCIS Pilot Projects in Japan (2016-2018)

EPC/RFID and EPCIS (EPC Information Services) are gaining further attention in Japan. METI (The Ministry of Economy, Trade and Industry) of Japan has been leading EPC/RFID and EPCIS adoption project in convenience store and drugstore supply chains since 2016.

1.1.2.1 Background

With the continuous decreasing birthrate and aging population, Japan has been facing labour shortages and rising labour costs. On the other hand, consumers with many different shopping behaviours have led to more personalised and conveniently delivered services than before. To deal with these issues, optimisation of end-to-end supply chain management is urgently needed. METI considers UHF RFID as one of the most up-and-coming IoT solutions.

2016

RFID Self-Checkout Pilot

In FY 2016, Lawson conducted an RFID self-checkout pilot test at one of their stores for two weeks with support from METI. Almost all of the items sold at the store (except for boxed lunches and in-store cooked meals) were tagged at the pilot test. At this checkout system, shoppers used specialised shopping baskets, and put shopping items into the baskets. When shoppers placed the basket in the RFID self-checkout

machine, the RFID reader inside read all the EPC (Electronic Product Code) encoded into the RFID tags on the items in one go. The display on the machine immediately showed the count of items and the total payment. One of the most notable findings at the pilot was that total checkout time was reduced on average.

Convenience Store Chains '100 Billion RFID Tags' Declaration

In April 2017, as the effectiveness of RFID introduction was confirmed by the pilot test, five major convenience store chains (7-Eleven, FamilyMart, Lawson, MINISTOP and NewDays) and METI released a joint statement that these five chains would start testing RFID to aim at a goal to tag all items to be sold at these convenience stores (estimated to be 100 billion items per year) by 2025.

✅ Declaration of Plan to Introduce 100 Billion Electronic Tags for Products in Convenience Stores Formulated

<http://www.meti.go.jp/english/press/2017/0418_003.html>

2017

EPCIS Data Sharing Pilot

In FY 2017, focusing on utilising a huge amount of data generated by reading EPC/RFID tags, a data sharing pilot using GS1 EPCIS was conducted. At this pilot, RFID tags were attached to the items sold at three stores: Family Mart, Lawson, and MINISTOP. These RFID tags were read at several points at distribution centres or convenience stores (e.g., when the items were shipped from the distribution centre, received and sold at the store). The visibility data was then stored in one centralised EPCIS repository and shared among the supply chain stakeholders.

Smart Drugstore Declaration

In March 2018, The Japan Association of Chain Drug Stores (JACDS) and METI jointly announced that JACDS would support the convenience stores declaration and would start conducting a research project on RFID application at drugstores, aiming at realising the concept of Smart Drugstore. JACDS and METI expects to reduce labour costs and to improve the customer service quality with RFID utilisation.

✅ METI and JACDS Formulate the Declaration of Initiatives for Making Drug Stores Smarter

<http://www.meti.go.jp/english/press/2018/0316_001.html>

2018

Connecting EPCIS Repositories

In FY 2018, the project participants shared visibility data among several EPCIS repositories. Each supply chain player keeps its data that it captures in its own EPCIS repository and sends a copy of EPCIS data set downstream or queries for another party's data when needed. Three drugstore chains (Welcia, cocokara fine and TSURUHA Drug) took part in this pilot as well as two convenience stores (Ministop and Lawson) this time.

In addition, the project team analysed how much RFID utilisation would contribute to optimising advertising effectiveness and decreasing food losses by conducting demonstration experiments of smart shelves using RFID at convenience stores and drugstores.

Furthermore, a hackathon, members mainly the students, was held to generate the best idea for the theme 'How RFID could be utilised at home?'

Based on the idea, a showroom where future RFID utilisation at home can be experienced was designed and exhibited

Getting cooperation from some families, the project team also investigated what sort of data can be collected through actual RFID utilisation at home.

Throughout these studies, it turned out that not a few people opt to reduce food losses, and learned many including how consumers are managing items in their daily lives taking advantage of RFID use at home.

Such in-home data, which had been considered difficult to obtain, induced attention from manufacturers and retailers expecting it as a new tool for marketing.

1.1.2.2 Next Steps

The main scope of the initiative has been extended to the coverage of data collection at consumers' households. To motivate manufacturers to tag their products at source, benefits of data visualisation for marketing or customer experience are necessary. The deployment of EPC/RFID and EPCIS will optimise business processes and data flows throughout supply chains of convenience stores and drugstores.

GS1 Japan will keep working to contribute to pilot projects and supporting stakeholders to use EPC/RFID and data sharing standards.

1.1.3 'mono-talk' : Online review sharing service

- Utilising JICFS/IFDB data for basic product information -

MEDIASEEK,inc. (hereinafter Mediaseek), which develops barcode reader applications, started their 'mono-talk' services under the full support from NAIGAI CO.,LTD. (hereinafter Naigai), which is a long-established apparel manufacturer with its main business of footwear and legwear-related products including socks and tights.

Mediaseek is one of the JDPs (JICFS Database Provider), which provide (re-sell) JICFS/IFDB data to Data Users. They are taking advantage of JICFS/IFDB product information (hereinafter JICFS data) to some part of 'mono-talk' services. JICFS/IFDB is operated by GS1 Japan. (Refer to 2.2 for its details.)

1.1.3.1 About JICFS/IFDB

JICFS/IFDB is the product information database, which is operated by GS1 Japan with the aim of improving business efficiencies over the entire distribution network. Thus its product information is registered by each product manufacturer and the data is shared among three tiers: manufacturer, distributors, and retailers. Actually, source data is acquired from product manufacturers, industry databases, and others, and then the contents are cleaned manually. And then, the data is provided to data users through JDPs.

1.1.3.2 History of 'mono-talk'

Legwear, Naigai's main business area, hardly gives the feeling of comfortability or perception to subtle

Figure 1.1.3-1 Ms.WASHIZU of Mediaseek (left) and Mr.SAKAI of Naigai (right)

differences against other products without actually trying them, which remained as an issue to be solved. Naigai came to a view that consumers' online review is worth utilising, through the studies of other review sharing services, and the experiences of their EC related subsidiaries. Then, Naigai was considering how to build a service to inform consumers of their superior points after attracting them to Naigai's product review pages.

On the other hand, and around the same time at Mediaseek, they had been planning to develop a service providing consumers' review making full use of their own barcode reader applications. To complement and pursue mutual possibilities, upon request from Naigai's to Mediaseek, these two parties started developing 'mono-talk' together.

At the first stage, Naigai had a plan to print QR code on their product packages and then lead customers to the product review site, as most of the consumers are well-familiar with QR code scan with their smartphone. However, it costs a lot to print QR code onto all the packages, as Naigai is shipping almost 27 million pieces of footwear products annually. In the meantime, Naigai noticed that already EAN symbols are printed on the product, and decided to utilise EAN symbols instead, which does not require the additional print cost.

1.1.3.3 Outline of 'mono-talk'

Utilising JICFS data for basic product information

'mono-talk' is the service to provide product information, images, reviews, SNS posts on a single page, and customers can post own impression to the products with # (hashtags).

To realise this service, Mediaseek uses its barcode reading app 'ICONIT', which has been 27 million times downloaded in total.

Scanning EAN symbols on the products, its product information (EAN code, product name, suggested retail price, and product description) is displayed on the smartphone. 'JICFS data' is utilised retrieving the appropriate product information. In addition to JICFS data, 'mono-talk' cites Naigai (product manufacturer) provided data and other companies' EC site data, and these data are mainly used for displaying product image and hashtag.

When the captured GTIN-13 data has no corresponding data in any of those cited data sources, a message 'Sorry, no data found.' is displayed.

The future of 'mono-talk'

Naigai noticed significant benefits of 'mono-talk', including obtained consumers' ratings, and knowledge mined through customers' reaction on 'mono-talk', and

now they are planning to expand its usage.

One of the challenges for the expansion is consumers' less familiarity with EAN symbol compared to QR code: QR code scan became usual in daily life but that is not yet true to EAN symbol. To challenge this, they are planning to promote 'mono-talk' use together with GS1 Japan, appealing one of its benefits that EAN symbol scan provides the users with beneficial information.

In addition, to the prospective target user segment, female high-school students who use smartphone longer than other segment consumers, Naigai and Mediaseek are going to run a campaign highlighting cosmetics affordable for the segment, collaborating with some cosmetic manufacturer.

Also, the product information coverage rate is important in expanding 'mono-talk' usage. The more product information is registered to JICFS/IFDB, the more information displayed with the 'mono-talk' service is obtained. Consequently, the service gets more valuable to consumers. JICFS/IFDB is playing a much more important role for the further expansion of 'mono-talk' usage.

Figure 1.1.3.3-1 Getting started with 'mono-talk'

(01) mono-talk

(02) 'mono-talk' , new feature of 'ICONITE(TM)' , Mediaseek's free QR code reader application!

(03) Get product information, capturing barcode!

(04) Capture product barcode with ICONITE(TM) for product information, reviews, and further information posted to SNSs under #hashtags at the bottom of the pages.

(05) How to use 'mono-talk'

(06) Download ICONITE(TM), first!

(07) Capture product barcode!

(08) Check product information and reviews, and SNS*1 posts clicking on #hashtags.

   *1: Click #hashtags to link Twitter or Instagram

(09) Have fun with 'mono-talk'

(10) Check product information!

   ● Price and information!

   ● Online reviews!

   ● SNS information under #hashtags!

(11) Product review made easy!

   ● Just capture a barcode and you are on the product page to post your review!

(12) Post, and get present!

   ● Post and participate in a campaign for a chance to get a prize!

1.2 Apparel

1.2.1 Onward Kashiyama EPC/RFID Rollout

1.2.1.1 Summary

ONWARD KASHIYAMA CO., LTD., (Onward Kashiyama) one of the largest apparel companies in Japan, has been using EPC/RFID to improve its distribution centre operations since 2016. They have already started attaching EPC/RFID tags carrying SGTIN (Serialised GTIN) to their products at source.

1.2.1.2 Outline of Onward Kashiyama

Onward Group comprises 108 companies (as of February 2018) in Japan and overseas. Their principal lines of business are designing, manufacturing, and marketing men's apparel, women's apparel, and other textile products.

☞ Reference: <https://www.onward-hd.co.jp/site/english/project/p_sub.html>

In Japan, Onward Kashiyama has four distribution centres:

1. Narashino - for items to be sold at department stores

2. Nagoya – for items to be sold at other types of stores

3. Shibaura – for returned items from stores in the eastern Japan

4. Osaka-Minato – for returned items from stores in the western Japan

This article explains how Onward Kashiyama utilises EPC/RFID for its operations at Narashino distribution centre.

1.2.1.3 EPC/RFID Operations at Narashino DC

At Narashino distribution centre, there are three types of RFID readers of two different RFID vendors.

1. Gate reader for clothes on hangers

2. Gate reader for boxed items on cage trolleys

3. Tunnel reader for boxed items

'1' and '2' above are products of EFTECT Co., Ltd., while '3' is Toshiba Tec Corporation's.

With the gate readers (1) and (2), a lot of items can go through in one go and the tags are read in no time. The tunnel gate (3), on the other hand, is focused on the reading accuracy. Only one box can go inside the tunnel at one time and the shielding fabric curtains come down to keep radio waves inside.

Figure 1.2.1.3-1 RFID Gate Readers of EFTECT Co., Ltd.

(1) For items on hangers   (2) For boxed items on trolleys

Figure 1.2.1.3-2 (3) RFID Tunnel Reader of Toshiba Tec Corporation

Basically, items on hangers are read by using the gate reader (1) and boxed items go through the tunnel reader (3). However, the operation of boxed items is different in receiving area, where items frequently come in large numbers at a time, as shown in Figure 1.2.1.3-3.

In receiving area, many boxes on a cage trolley go through the gate reader (2) first and the list of SGTINs actually captured are checked against the advanced shipping notice. If they do not match completely, the tunnel gate (3) is used to read each box one by one. Understanding each reader's strength, Onward Kashiyama makes the most of these different types of readers.

When there are a lot of tags to read, it may take time to make 100% reading rate depending on the degree of density inside the box, amount of metal contained in the product and other environmental conditions. By sending boxes that are easy to be read into the next operation area first, manual counting operation can be

Figure 1.2.1.3-3 Operation Flow of Boxed Items in Receiving Area

Many boxes on a cage trolley go through the gate reader (2)

↓

100% Matched with ASN?

Yes — No

No → Use the tunnel reader (3) to read each box one-by-one

↓

100% Matched with ASN?

Yes — No

Finish Checking without Opening the Box

Open the Box to Count Manually
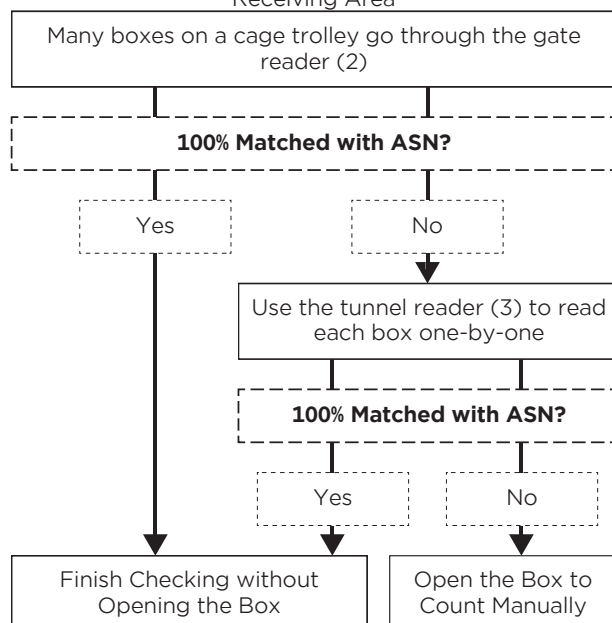
minimised and the operation in the receiving area flows smoothly.

1.2.1.4 Identification Key Used in the RFID System

Unlike barcodes, RFID tags need data to be encoded with serial numbers to identify each individual item, not SKU (Stock Keeping Unit). Onward Kashiyama uses SGTIN for its EPC/RFID system.

In order to utilise the SGTIN for the purpose of filtering ghost-read data, Onward Kashiyama holds serial numbers in its system for 10 days after reading. Since Narashino DC handles all items to ship to department stores all over Japan, the number of items amounts to 200,000 in three days. Filtering ghost-read data is extremely important in such a busy DC full of products with RFID tags.

1.2.1.5 Benefits

By implementing EPC/RFID system, the process where the most benefits are achieved is checking accuracy of picked items to be shipped. Before EPC/RFID rollout, the checking process was conducted by scanning each single barcode. After Onward Kashiyama started using EPC/RFID, the number of staffs to handle this checking process has been significantly reduced from ten down to two. Now the other eight staffs can start working on other tasks right after picking process.

1.2.1.6 Next Steps

Onward Kashiyama is now expanding its EPC/RFID system to DCs in other countries. Also, they expect utilising EPC/RFID system for inventory inside its stores

as well in the future, starting from independent stores and ones in shopping centres. By improving inventory accuracy of both online and offline (brick-and-mortar) shops, offering seamless omnichannel customer experience can be enabled.

1.3 Healthcare

1.3.1 GS1-128 utilisation at Miyagi Children's Hospital

1.3.1.1 Summary

Miyagi Children's Hospital, established in 2003, is the only paediatric acute care hospital in the Tohoku region of Japan.

Miyagi Children's Hospital handles medical supplies of various sizes and types in order to treat patients from newborns to adults (pregnants). In 2018, the hospital decided to start utilising GS1-128 in their ICU in order to ease the burden of recording medical supply usage. Their implementation efforts brought about fruitful changes that ICU staff now can record medical supply usage history to electronic health record (hereinafter called, EHR) with just scanning barcodes.

Figure 1.3.1.1-1 Miyagi Children's Hospital

Figure 1.3.1.1-2 ICU

In addition to that, this recording system, which makes the best use of scanned barcode data, could be realised without customising the ready-made EHR.

1.3.1.2 Before GS1-128 scanning system introduction

In Japan, medical supplies can be categorised into two types, from the insurance point of view: one is reimbursable and the other is not. Following after treatment, hospitals report to medical claim review organisations with corresponding medical codes (code used for medical expenses statement process) of used reimbursable medical supplies. When the assessment (review) result was successful, reimbursement will be made to hospitals.

Generically, paediatric hospitals need to treat a wide range of patients (from new born babies to pregnant women) comparing with general hospitals. Miyagi Children's Hospital, as a paediatric acute care hospital, accommodates patients even from outside Tohoku region every day. For this reason, the hospital needs to prepare medical supplies in a variety of sizes.

For insurance claim purposes, the hospital has to specify exactly which medical supplies were used with what quantity, but that was not so easy. In the past, for medical supplies cost JPY 1,000 and more, the hospital was outsourcing the work to attach their original labels onto the medical supply packages (Figure 1.3.1.2-1). When a medical supply was used, its label was peeled off by nurses and stuck on a cost billing form as a record (Figure 1.3.1.2-2).

But, there were some issues for this labelling approach.

First of all, usage record for medical supplies worth less than JPY 1,000 could not be done as they were lacking labels, and secondary, labelling approach was a kind of burden from the aspect of both labour and cost.

In the meantime, Mr.WATANABE, who is in charge of the medical information system at the medical records centre of the hospital, noticed that already almost all the medical supplies were labelled with GS1-128. Mr.WATANABE soon started to study how GS1 barcodes could be used for their medical supply usage record system together with the hospital management team members, where he himself is also one of the members.

☞ The hospital management team: It is the team to develop hospital strategies with its members composed of medical doctors, nurses, and members of the medical records centre and so on.

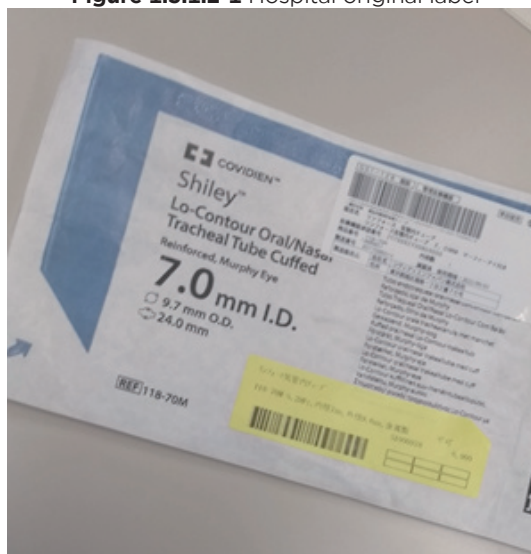**Figure 1.3.1.2-1** Hospital original label
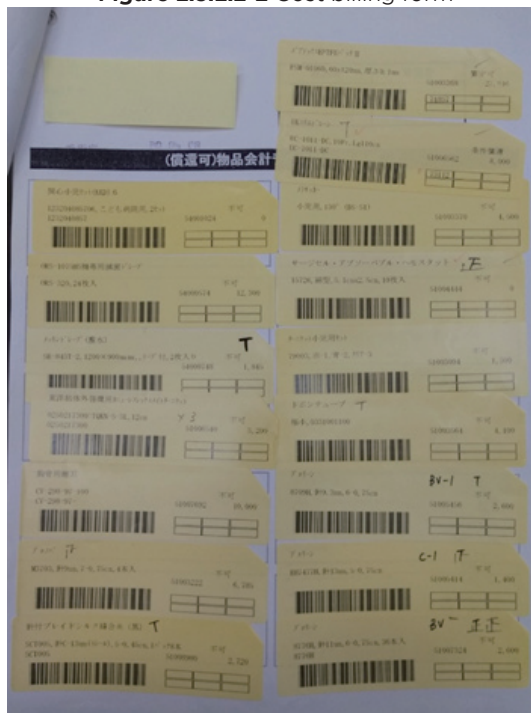

Figure 1.3.1.2-2 Cost billing form

Figure 1.3.1.2.3 Hospital Management Team

1.3.1.3 What was needed for GS1 barcode use

As a pilot, they commenced scanning GS1 barcodes in ICU.

Needless to mention, medical supply master data, which contain accurate GTIN information, is indispensable for GS1 barcode utilisation. It is unfortunate, but during the period when they used their original labels, they did not have GTIN information in their master data contained. One of the medical records centre staff, to obtain accurate GTIN information, photocopying every medical supply package in ICU stock, endeavoured to manually complete their medical supply master data with product information including GTIN-13. There were 300 items in total, of which 140 were the insurance claimable.

Figure 1.3.1.3-1 ICU stock

Along with updating the master data, the hospital needed to find the way to input barcode data into their EHR.

Their EHR could accept usage history input using barcode data but the maximum data length allowance was 13-digit. Barcodes on most of the medical supplies have not only GTIN data encoded but also expiration date and lot number data. It means their maximum 13-digit acceptable EHR system could not accommodate any of those data including expiration, lot number, and even the 14-digit format GTIN.

Then they decided to extract only the 14-digit format GTIN data and cut the first digit with changing barcode reader settings, and then send only that 13-digit GTIN data to their EHR.

As this barcode reader setting change can be done at the hospital side, they could avoid additional bill for the EHR modification, they could have adopted the barcode scanning technology at low cost. Getting strong supports from ICU nurse members, it took them

only just a month from a scratch to make the system go live.

Now, ICU staff just need to scan the GS1-128 for recording the medical supply usage history. The usage history data recorded into EHR is automatically transmitted to their medical accounting system, therefore, their medical affairs department which is responsible for medical claims can obtain the accurate usage history data.

1.3.1.4 Benefits of GS1 Barcodes

As mentioned above, before introducing this technology, ICU staff were obliged to stick their original labels onto claim forms and manually enter those data into the EHR referring to the labels. Realtime data entry could not be done as nurses are very busy with patient treatment thus the typing was done together at their spare time.

Again, nurses now can record the usage history data in real time with just scanning the barcodes. Futhermore, the hospital could abolish claim form usage because, as mentioned earlier, the input data are automatically transmitted to the accounting system of the medical affairs department which is responsible for medical claims.

To keep this system reliable, accurate GTIN information for each barcode data is indispensable and the medical supply master data should be kept maintained to good state at any time. Even though maintaining the master data is not easy, the hospital already had product information, except GTIN information, in their master data, and the maintenance system was up and running.

Besides, new product information entry into the master data is just about two per month at ICU, so the master maintenance was not a big issue to them.

1.3.1.5 What the hospital wants for patient safety

Insurance claim accuracy had significantly been improved after the GS1 barcode scan system was implemented. However, challenges remain.

In Japan, even on the primary package of insurance claimable medical supplies should have GS1 barcode displayed according to a regulatory notice. However, medical supplies which are not subject to claim are exempted from the requirement.

They consider recording usage history into EHR is very important from the patient safety point of view regardless if the object is claimable. Specifically at paediatric hospitals, they often practise special usage of medical supplies, so that, even if a non-claimable product is used, complete usage histories have significant meanings for traceability. Miyagi Children's

Hospital is wishing for all the primary package of medical supplies, which play important roles from the medical safety point of view, to have GS1 barcode displayed.

1.3.2 Dr. OCHIAI, the first Japanese winner of the 'Provider Recognition Award'

1.3.2.1 HPAC and the 'Provider Recognition Award'

GS1 Healthcare created a council called HPAC (The GS1 Healthcare Provider Advisory Council) in 2010. It consists of thought leaders and early adopters of GS1 Healthcare Standards from the global clinical provider environment. Its final goal is to improve patient safety, cost efficiency and staff productivity.

HPAC has introduced two awards for individuals or provider's organisations: the 'Provider Recognition Award' and 'Provider Implementation Best Case Study Award'. The 'Provider Recognition Award' is presented to individuals who has contributed to further GS1 Healthcare's work efforts over the years. 'Provider Implementation Best Case Study Award' focusses on the achievements of the organisation and given to the provider organisation or department which has implemented GS1 Standards for at least ONE business or clinical process in their hospital/clinic/care home/pharmacy/department with clear and demonstrable return on investment (ROI) and/or impact on patient safety.

1.3.2.2 Dr. OCHIAI received the 'Provider Recognition Award'

Last March, Dr. Chikayuki OCHIAI, who is the president of GS1 Healthcare Japan, received the GS1 Provider Recognition Award for his extensive and well recognised efforts to encourage the implementation of the GS1 standards in hospitals. He is the first Japanese winner of the award.

Dr. OCHIAI, a neurosurgeon by profession, is a recognised influencer on traceability in Japan. As the CEO of the NTT Medical Centre Tokyo, in 2012 he led the implementation of GS1 DataMatrix for the traceability of surgical instruments, sharing the results with other hospitals.

As national lecturer, Dr. OCHIAI shared the challenges and benefits of the GS1 standards in healthcare with many CEO's of Japanese hospitals, encouraging them to start on scanning barcodes for patient safety and efficiency of care. In 2018, Dr. OCHIAI chaired the Japanese National UDI-Conference and chairs the Japanese Medical Traceability Promotion Council, set up after the UDI-Conference. He is a great ambassador for the work in healthcare of GS1 Japan and in past years has presented his experiences at many conferences.

HPAC recognised Dr. OCHIAI as a great advocator of GS1 Standards as well as a powerful educator of healthcare providers in Japan.

1.3.2.3 Dr. OCHIAI's speech

The prize-awarding ceremony was held at GS1 Healthcare Conference in Amsterdam in March 2019. He gave a speech at the ceremony.

He shared his journey to seek for the way to improve patient safety as well as medical efficiency, emphasising the importance of making a start on scanning GS1 barcodes. His speech inspired the participants of the conference and garnered immense praise

Figure 1.3.2.3-1 Prize-awarding ceremony

1.4 Transport & Logistics

1.4.1 EPC/RFID implementation to rental materials by NIKKEN LEASE KOGYO CO., LTD.

NIKKEN LEASE KOGYO CO., LTD. (hereinafter referred to as Nikken Lease) is one of the leading companies in the leasing and rental business, which promotes a wide range of business developments including the rental business of those Returnable Transport Items (RTIs), makeshift materials, and nursing care products.

Nikken Lease is attaching RFID tags which hold GRAI (Global Returnable Asset Identifier), which is one of the GS1 standard keys, to their own rental foldable wire mesh containers for crops (ca. 90,000) and temperature sensor built GPS trackers (ca. 10,000) for better management.

Foldable wire mesh containers for agricultural crops

The foldable wire mesh container is a logistic container that may accommodate fresh agricultural products for processing and professional use, which employs built-in soft net mitigating possible damage to the products during transportation.

This type of containers can be folded and stacked over for space-saving purposes, and, once it is needed, instantly be set up for the primary role (Figures 1.4.1-1 and 1.4.1-2).

Nikken Lease is handling in total about 90,000 of this type of foldable wire mesh container at their 25 directly managed distribution centres.

Tagging to the containers has been completed to 60,000 as of April 2019, and they estimate within the following a couple of months the rest will be completed.

☞ Containers: Eight types of foldable wire mesh containers are prepared for agricultural use accordingly with vegetable type and size, and of which seven are the subject for RFID tagging.

One of the biggest motivations for them to go for RFID was that they needed to find the solution to prevent possible container loss. If any container is lost during the rental period, they need to bill the customer. But to trace back and find out at which point the container was lost is difficult (Figure 1.4.1-3) as the renting and returning locations are different, and which might cause unpleasing trouble that who to be billed for what.

RFID helps them to prevent losses and to issue the correct bill to a customer without causing trouble.

Every single container is individually traced down to an item level, and their current locations are visible instantly, which brought them a big change, where, in the past, only the total number of palettes was managed.

Figure 1.4.1-1 Mesh box palettes before set up

Figure 1.4.1-2 Mesh box palettes ready to use

Figure 1.4.1-3 Flow of foldable wire mesh container for rent

(02) JA temporarily rent out to producers

Producers

Food processing company (Cut vegetable etc.)

(03)

JA: Japan Agricultural Cooperatives

Producers

Producers

(04) Retrieve

(01) Rent out to JA

Nikken Lease

* Rented containers (solid lines) will be returned (dashed lines) to JA with products contained.
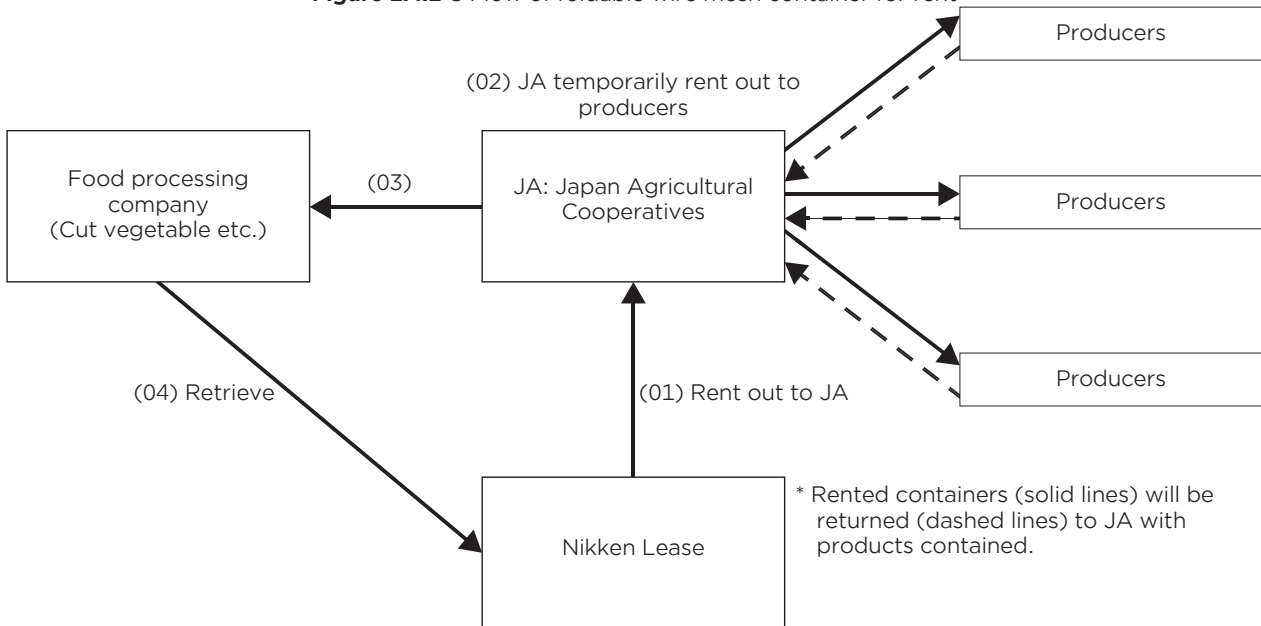
GPS Tracker

This GPS Tracker acquires its latitude and longitude position data and transmits them via portable telephone networks.

Its power source is a rechargeable battery which needs to be periodically replaced although the frequency is low.

As mentioned above, in this RFID project, they also attached GRAI-encoded RFID tags to GPS trackers.

It is now apparent for them that RFID makes item inventory management efficient, and every GPS Tracker can individually be managed down to an item level (Figure 1.4.1-4).

Next Steps

Nikken Lease is planning to attach RFID Tags to their own foldable plastic containers (Figure 1.4.1-5) which count up to about 100,000 as of April 2019.

This type of containers is used mainly for the

Figure 1.4.1-4 GPS Tracker

* On the label, the last eight digits of GRAI serial number are printed.

Figure 1.4.1-5 Foldable plastic container

transportation of small and fragile crops like strawberries.

For such type of containers, costly metal compatible on-metal RFID tags are not required, so that the cost can be reduced.

Furthermore, Nikken Lease is anticipating that they, in the future, can utilise RFID more for the food origin fraud prevention, and for the manufacturing process management improvement for the purpose of obtaining GLOBAL G.A.P. Certification.

Anticipating its further utilisation scope expansion, they are looking forward to going for a large-scale solution design which should be capable of managing temperature in addition to the location management.

1.5 B2C

1.5.1 Business to Business to Consumer Service with GS1 QR Codes

Recently, the needs of providing multi-language product information to consumers have increased in the wake of a growing number of foreign visitors, spread of cross-border e-commerce and other circumstances.

On the other hand, consumers also have become more influential amid expansion of Social Networking Services (SNS), which makes manufacturers more focus on preparing for unexpected recalls as well as securing the product safety. The government is currently under consideration to revise the Food Sanitation Act for introducing a reporting system of food recall/retrieval information adding to enhancing their food safety effort.

To respond this trend, TDN International Ltd. (hereinafter called 'TDN') released free app scodt®.

This app leverages GS1 QR codes and enables manufactures to offer the product instructions, notices/recalls in multi-language. With the app, consumers can claim for recalls or repairs easily.

1.5.1.1 Overview of scodt®

TDN issues GS1 QR code for each product after registering the product information from the brand owners into its systems. GTIN (AI (01)) and URL (AI (8200)) are encoded into the GS1 QR code. The brand owners display those codes on their products. Consumers can access detail information, user's guides, and websites in multi-languages by scanning the GS1 QR codes on product.

In addition, safety information can be provided: for

example, the application notifies consumers of dates of required maintenance, the expiration date of proper use.

If a product is recalled, the system sends push notification to the consumers who ever accessed the information of the recalled product through scodt®, in response to the request from the brand owner.

Figure 1.5.1.1-1 scodt®

GS1 QR   Free download www.scodt.jp

1.5.1.2 Use cases

Hardware safety applications from Sanjyo-city and Tsubame-city (called Tsubame-Sanjyo) in Niigata

Entities in Tsubame-Sanjyo in Niigata-prefecture are introducing GS1 QR.

Recently, damages to crops and houses by wildlife have been considered a big problem and an increasing number of areas need measures to protect their crops.

As a measure against these issues, the installation of a trap can be considered, but sometimes users are troubled by how to assemble and use it. For this reason, this company displays the URL of the operation manual with GS1 QR code on products, so that the users can obtain product information and assembly procedures on the mobile devices.

One animal trap manufacturer is attaching tags with GS1 QR printed to their products in order for users to get easy access to the operation manual.

Another company in Sanjyo, who manufactures cooking hardware including pods and frying pans, also has started introducing the same kind of services.

This kind of system utilising GS1 standards is getting high expectations from exporting companies to make

Figure 1.5.1.2-1 Trap

sure that the users can get ubiquitous access to the manuals for their safe uses.

They are going to further improve their services for better customer safety including multilingualisation.

Another good point of this system is to check the recall information, which is another effective contribution to safety.

Cosmetics safety and instruction application

A cosmetic company is leading users, utilising GS1 QR codes, to their web page to present its safeness and superior use feelings as the products' selling points, and to advise users with proper usages.

They anticipate sales expansion to foreign markets as they have already multilingualised the pages for the inbound customers.

Figure 1.5.1.2-2 GS1 QR for Cosmetics

Agricultural machine operation application

There is a wide range of items for agricultural uses from larger sized machines such as tractors and tillers to smaller sized products including various tools and jigs. In the past, agricultural machines had mainly been sold to professional farmers through specialised distributors, but nowadays even smaller sized machines have been assorted at hardware shops.

So the entities involved in the industry are now considering scodt utilisation for improvement of user safety. They are propelling GS1 QR utilisation which enables users to read the proper operation manual capturing GS1 QR displayed on the labels.

1.5.1.3 Conclusion

To receive fair acclaim on a product from consumers, it has become more important to deliver them with the information about its correct usage.

Moreover, when a product is recalled, its manufacturer must provide the information to their customers immediately. Offering more detailed product information with GS1 QR codes will create new consumer experiences.

2. Services and Solutions

2.1 GS1 Japan Data Bank (GJDB)

GS1 announced a policy that it should urgently create and offer a centrally managed and referable system for information, which is interlinked to GS1 identification keys such as GTIN and GLN, while managing and operating GS1 Company Prefix allocation much more strictly. On the basis of this policy, GS1 is launching a new database service GS1 Registry Platform which stores thin information on GS1 Company Prefix and GS1 Identification Keys including GTIN and GLN and provide essential information necessary to identify products or locations. To register or access to GS1 Registry Platform, users need to be routed through local GS1 MO (GS1 Japan in Japan) service in principle, and GS1 Japan Data Bank (GJDB) service is the entrance for Japanese users.

GJDB has been up and running since October 2019, which is the system to offer easy registration and management of GTIN and its associated information, and to release the registered product data seamlessly to GS1 Registry Platform and domestic database systems.

With the GJDB initial release, brand owners can easily go through GTIN allocation, GTIN management, and barcode symbol image generation/download, and

further functional enhancements are planned for the following releases.

2.1.1 Challenges related to product information in Japan

In Japan, there are a lot of brand owners of small and medium-sized enterprises (SMEs), and they have been largely bothered by registration and management of product information.

On the other hand, wholesalers and retailers, which handle those products from the SMEs, are undergoing inefficient works on product data exchange.

2.1.1.1 Challenges related to product information registration and management

It is a big decision for SMEs to afford a product management system from the perspective of cost-effectiveness. Therefore, those who cannot acquire such system are mostly processing their product information with handwriting or entering data to a spreadsheet.

However, when GTIN is manually allocated without enough knowledge of GTIN structure (composed of three elements: GS1 Company Prefix, item reference, and check digit), the risk of wrong product information

Figure 2.1-1 GS1 Japan Data Bank service overview
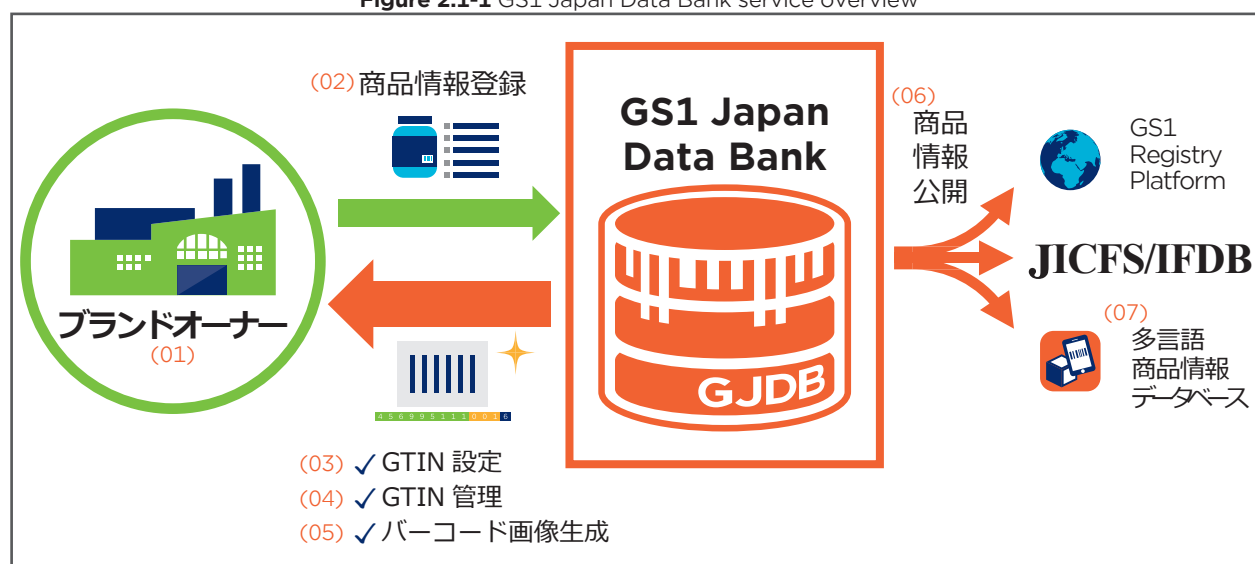
(01) Brand owner

(02) Product information registration

(03) GTIN allocation

(04) GTIN management

(05) Barcode symbol image generation

(06) Publish product information

(07) Mulpi (Multi-language product information) database

registration, which includes registering incorrect GTIN, allocate the same GTIN to different products (duplicate), and others, would be increased.

Wrong GTIN allocation brings trouble down to brand owner's trading partners including wholesalers and retailers, as GTIN is the key for information throughout the value chain.

2.1.1.2 Challenges related to product information exchange

At retailers and wholesalers sides, they need correct product information in a timely manner, but they have been struggling with collecting such product information. In Japan, there is no such database that centrally manages all the product information retailers need for their reference. As a result, wholesalers and retailers need to ask brand owners for the necessary product information each time as needed. The product information is transmitted from the brand owners in various ways which include entering the data into the retailer's Web system, sending retailer-prepared spreadsheet as an email attachment after filling it out with the required data.

These kinds of manual operations give brand owners undesirable burdens and cumbersome operations, which might be resulted in the wrong information entry even for the same product, or entry with different information, and any of them has a chance to alter the information.

Product information is vital for ordering, logistics, and sales operations, thus wrong information affects the entire business.

2.1.2 Functions GJDB offers

GJDB initial release is prepared mainly to reduce as much of issues on product information registration and management or product information exchange including GTIN allocation as possible, and the following functions are offered:

1. Easy allocation for GTIN
2. Easy management of GTIN
3. Easy generation of barcode symbol images for GTIN
4. Seamless interlinked operation with GS1 Registry Platform and domestic databases.

2.1.2.1 Easy allocation for GTIN

GTIN needs to be correctly allocated with setting item reference according to the rule and then calculating the check digit.

This process might be a kind of burdensome, especially for SMEs, but this GTIN allocation has been made easy with GJDB which requires only the following three steps:

\<Three steps of GTIN allocation\>

1. Select GS1 Company Prefix
2. Enter the basic product information
3. Press the 'Issue GTIN' button

Figure 2.1.2.1-1 GTIN allocation made easy (three steps)

(01) List of GS1 Company Prefix
(02) Select GS1 Company Prefix
(03) Enter the product basic information
(04) Issue GTIN
(05) Press the GTIN issue button
(06) GTIN allocation complete!

2.1.2.2 Easy management of GTIN allocation

The biggest reason to use GTIN is its global uniqueness. Reduplication of GTIN brings about confusions to stakeholders who handle the products, including wholesalers and retailers, and undermines supply chain efficiency. In order to avoid the confusions, each brand owner has to allocate GTIN correctly without reduplication.

Brand owners do not need to worry about the GTIN reduplication once they have registered all of their own products to GJDB, as the GTINs are correctly managed.

Furthermore, the status of GTIN allocation including counts of the allocated GTINs (also remaining unallocated GTIN count) per a GS1 Company Prefix is visualised with a coloured bar chart.

2.1.2.3 Easy generation of barcode symbol images for GTIN

Brand owners need to allocate GTIN for their product and then display the barcode. If the brand owner leaves those work to a printing company, the owner just needs to give the GTIN data. On the contrary, if the owner would like to carry out the process by themselves, they need to find a software for the symbol image generation, and then display it on the product.

There is no problem printing the barcode if they are familiar with the process, but the SMEs are not always familiar with that, and the symbol image generation for the allocated GTIN is not so easy.

Utilising GJDB function, brand owners can easily generate the necessary EAN/U.P.C. symbol images and download them in the electric format, after they published the product information to GJDB and its connected database.

2.1.2.4 Seamlessly interlinked operation with GS1 Registry Platform and domestic databases

Brand owners anticipate their products to be widely sold. For that purpose, they need to share the accurate product data among the stakeholders and make them to be well known to the parties concerned. However currently, to share the product information, brand owners need to provide it in many different ways,

Figure 2.1.2.2-1 Visualised GTIN allocation status with coloured bar charts
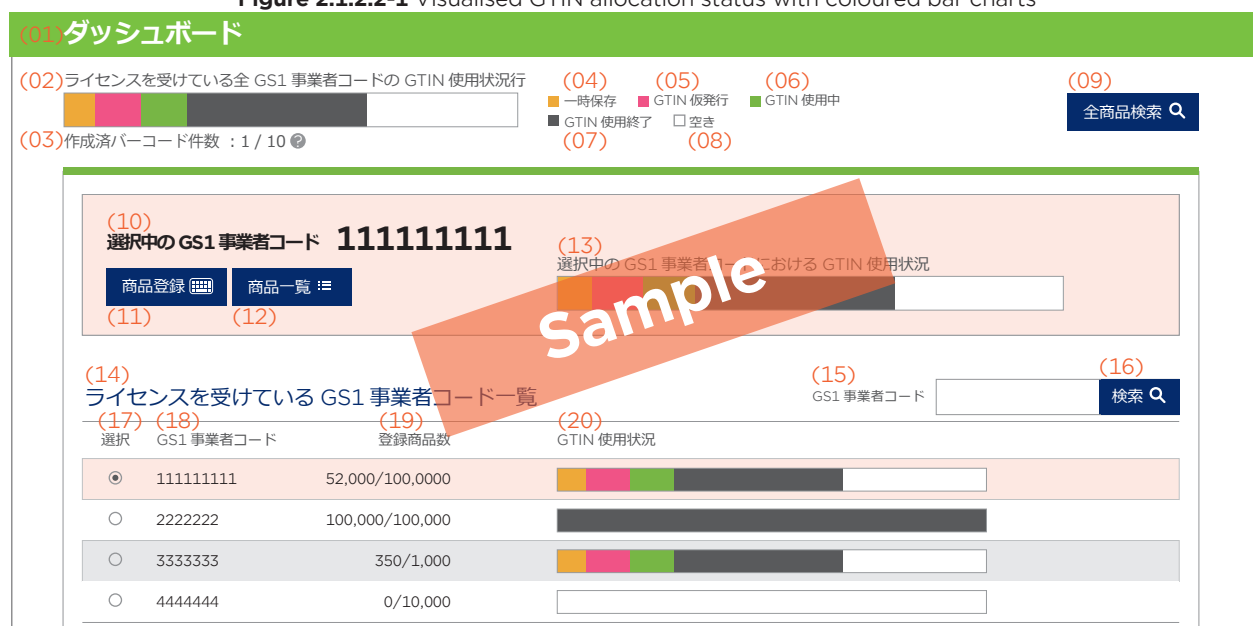
(01) Dashboard
(02) GTIN allocation statuses for all the licensed GS1 Company Prefixes
(03) Number of barcodes created: 1/10
(04) Temporarily saved
(05) GTIN provisionally issued
(06) GTIN in use
(07) Discontinued GTIN
(08) Not allocated
(09) Search All
(10) Selected GS1 Company Prefix

(11) Product Registration
(12) Product List
(13) GTIN allocation status for the selected GS1 Company Prefix
(14) List of the licensed GS1 Company Prefix
(15) GS1 Company Prefix
(16) Search
(17) Select
(18) GS1 Company Prefix
(19) Number of registered products
(20) GTIN allocation status

following each party's own format request, which gives them a burden.

GJDB allows users to publish their accurate product information globally as it has already been seamlessly interconnected with GS1 Registry Platform, **JICFS/IFDB** (2.2), and **Mulpi database** (2.7).

2.1.3 Future of GJDB

GJDB is going to widen its product information coverage, getting cooperation from the product information database of related industries, and then step-by-step strengthen its features to be able to solve various issues arisen from domestic product information exchange.

Furthermore, GJDB is going to be evolved not only for the service of product information registration by brand owners, but also for the service of efficiency improvement in product information exchange for wholesalers and retailers who receive the data.

2.2 JICFS/IFDB (JAN Item Code File Service/Integrated Flexible Data Base)

Since 1988, GS1 Japan has been operating JICFS/IFDB, database of product catalogues and collecting basic product attributes, e.g., GTIN, product names, product categories, weights, and quantities.

Product data are collected and arranged according to JICFS/IFDB standards and then supplied to retailers, wholesalers and other users via Data resellers (Figure 2.2-1).

Table 2.2-1 shows the number of the products registered in JICFS/IFDB.

Approximately 20,000 new products are registered to the database every month. Most of the data registered in the JICFS/IFDB were related to food or commodity, but in recent years the data count of products such as

Figure 2.2-1 JICFS/IFDB system flow
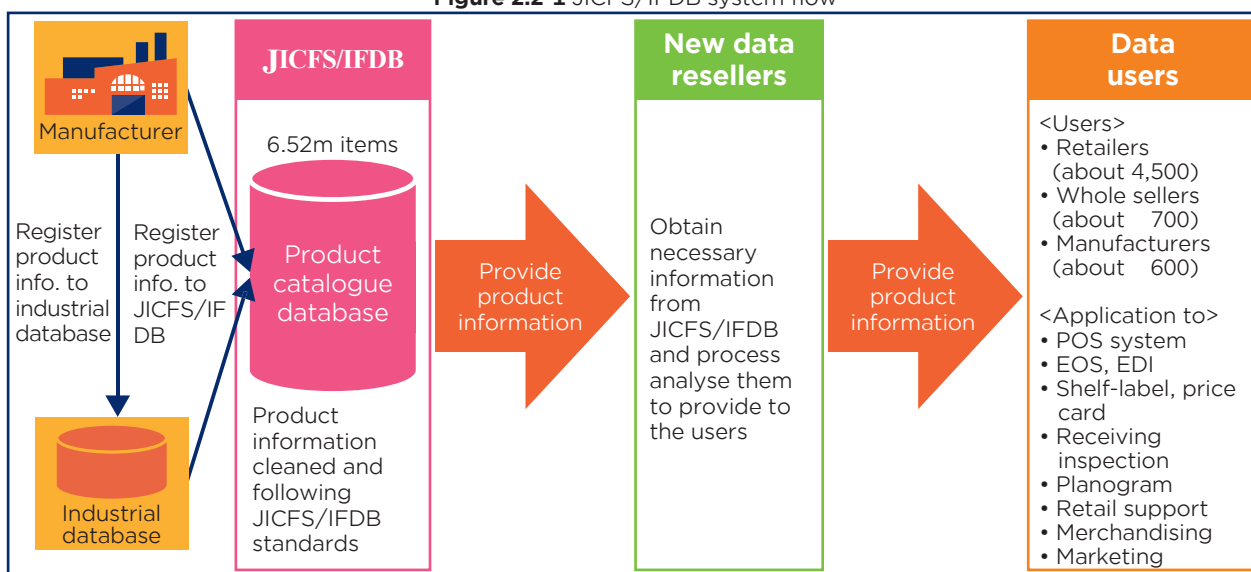
Table 2.2-1 Number of Registered Products

	2013	2014	2015	2016	2017	2018	2019
Food	1,209,636	1,291,008	1,371,489	1,465,218	1,544,912	1,628,262	1,688,487
Commodity	673,700	714,237	759,793	807,882	855,876	897,873	937,338
Recreation and Miscellaneous	417,922	453,135	492,503	532,678	575,471	616,509	653,634
Durable Goods	230,718	262,309	281,236	311,321	337,560	406,105	459,415
Apparel, Personal items and Sporting goods	222,660	245,395	270,240	301,951	331,360	367,305	397,709
Other	3,315	3,262	3,230	3,172	3,147	3,123	3,111
Active item Total	2,757,951	2,969,346	2,969,346	3,422,222	3,648,326	3,919,177	4,139,694
Inactive Data	3,104,154	3,104,154	3,104,154	3,104,154	3,104,154	3,104,154	3,104,154
Grand Total	**5,862,105**	**6,073,500**	**6,282,645**	**6,526,376**	**6,752,480**	**7,023,331**	**7,243,848**
Increase in number of items (year-on-year)	202,778	211,395	209,145	243,731	226,104	270,851	220,517
Rate of increase (year-on-year)	103.58%	103.61%	103.44%	103.88%	103.46%	104.01%	103.14%

Table 2.2-2 JICFS Classification Code System <Example: 110109: Salt>

Food	Processed Food	Seasonings	Table Salt
(Large Category)	(Middle Category)	(Small Category)	(Fine Category)
1	1	01	09

stationery, toys, durable consumer goods has been increasing, because the market demands for GS1 barcodes mark on them are raising.

Similarly, more variations are seen in the usage cases of product data in JICFS/IFDB. In the past, these data were mostly used in the field of business to business (B2B), i.e. to support retailers in creating the master data to introduce a point-of-sale (POS) system or an electronic ordering system (EOS), to suggest shelf allocation, and to analyse POS data. Recently, however, usage for the field of business to consumers (B2C) is growing according to the increase of online shopping sites and consumer apps for Consumer Panel Survey.

Since many stores on online shopping malls register the products information using their own codes and product names, the products are sometimes multiply registered under different names and categories. To solve this problem, several companies operating online shopping malls use GTIN for product information control.

Data collection applications for Consumer Panel Survey use the product information of JICFS/IFDB as the data which assists each user (consumer) to input merchandise information that they purchased, into the application. One typical usage example is illustrated as follows; A user scans a barcode on a product they purchased with their smartphone camera. Then, the app automatically shows the user the product name

and product category if the product data is registered in JICFS/IFDB and collects the merchandise information at the same time.

The product information in JICFS/IFDB includes JICFS - classification codes (Table 2.2-2) that indicate product categories.

These codes are used as search keys for extracting the necessary product groups, and as aggregate keys for grouping similar products for data analysis.

The JICFS - classification is revised as necessary.

In March 2014, minor changes were made for OTC (Over the Counter) drugs.

2.3 GEPIR

GEPIR (Global Electronic Party Information Registry) is a unique, internet-based service that gives access to the basic contact information on GS1 Company Prefix licensees. Since 2003, GS1 Japan provides GEPIR service in Japanese and English on the GS1 Japan website.

In 2007, a GLN location search function was added to GEPIR by GS1 Japan, followed by GTIN information display services in 2013. In March 2017, the upgrade to GEPIR version 4.0 was completed.

With GEPIR version 4.0, GS1 member companies' basic information can be searched by party name, GTIN,

Figure 2.3-1 Example of GS1 Japan search result

GLN, and other GS1 identification keys.

Currently, GEPIR is used by many companies, with more than two million annual access.

2.4 GPC Translation and OECD product recall portal

Global Product Classification (GPC) is a product classification developed and managed by GS1. GPC is a required attribute when registering product information into data pools of Global Data Synchronisation Network (GDSN). As of December 2018, the development of 39 broad categories including Food/Beverage/Tobacco, Kitchenware and Tableware, Beauty/Personal Care/Hygiene, and Pet Care/Food have been completed and released on the GS1 website <http://www.gs1.org/gpc>.

Multilingualisation has been progressing, with translations into 25 languages, including Japanese, which are available on the GS1 website.

Recently, there have been needs raised to use GPC for other purposes than GDSN. The OECD-managed recall portal website has adopted GPC for its product categorisation.

The aim of this portal site is to facilitate efficient sharing of international product safety information in multiple languages, as a response to current trends in global trading. The portal site started operation in October 2012 in English and French with the participation of U.S., Australia, Canada, and EU countries. Japan also joined in January 2015, providing product recall information of Japanese products, as well as adding a link to the Japanese-language version on the top page of the site.

We expect the more recall-related information is supplied by OECD member to this site, the more GPC utilisation will be expanding.

2.5 Ryutsu BMS (Business Message Standards)

The use of EDI in the retail sector in Japan started with the Electric Ordering System (EOS) using the **JCA Protocol**, a standard data communication protocol drawn up in 1980 by the Japan Chain Stores Association (JCA). In the 1990s and thereafter, EDI also came to be adopted for business processes other than ordering.

Furthermore, in the 2000s, based on Efficient Consumer Response (ECR) and Quick Response (QR) procedures, **Ryutsu** Business Message Standards (known as Ryutsu BMS) were established for the purpose of achieving improved information sharing between retailers and suppliers.
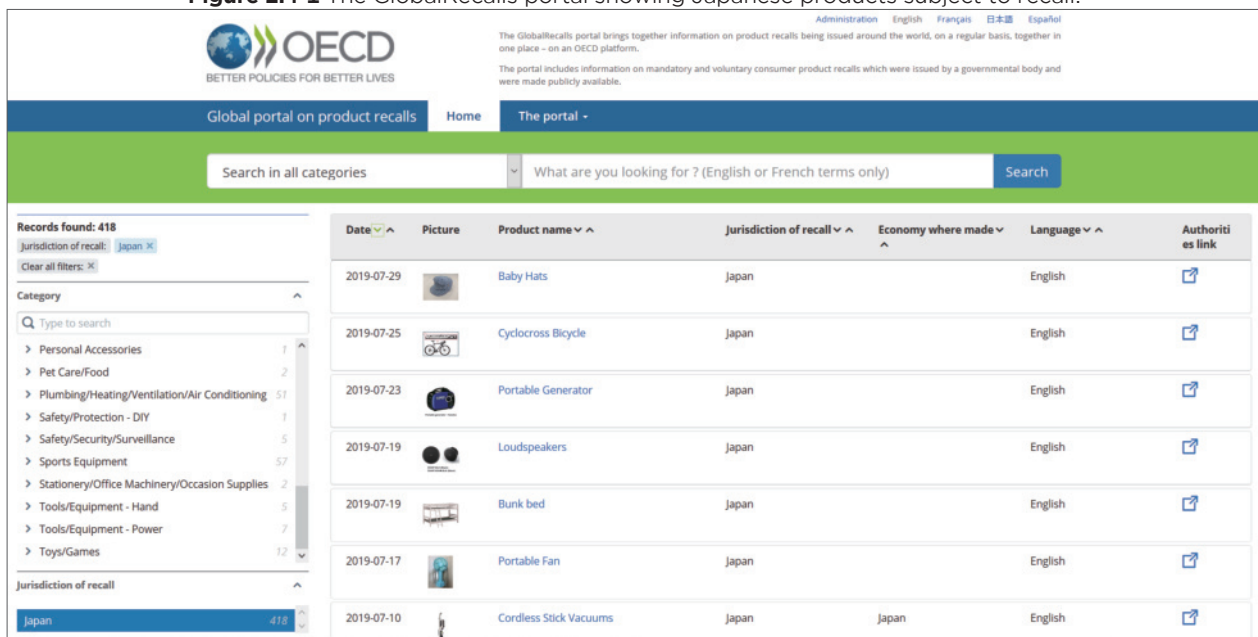
✅ **JCA Protocol**: The standard communications protocol for electronic ordering, established in 1980 by the Japan Chain Stores Association (JCA). The communication circuits available for the protocol are public circuits (2,400 bps) and DDX circuits (9,600 bps), and it cannot transmit Kanji and images. DDX circuits are packet-type communication services that use telephone circuits.

Figure 2.4-1 The GlobalRecalls portal showing Japanese products subject to recall.

Ryutsu: Ryutsu is a Japanese word that means the entire supply and demand chain, which typically consists of three groups of Manufacturers, Wholesalers, and Retailers.

2.5.1 Development of Ryutsu BMS

The JCA Protocol drawn up in 1980 became widespread as an EOS for retail businesses.

In 1990s, the business procedures covered by EDI expanded from the EOS to the shipping and receiving of goods, invoicing, and payments. However, from the late 1990s to the early 2000s, the following problems with the system were pointed out:

• Low speed

• Inability to deal with Kanji characters and images

• The necessary communication equipment was discontinued

• Difficulty in adding new data fields due to a fixed length data format

• Message formats that differed from retailer to retailer

Concerned about this situation, Japan's two supermarket organisations agreed to cooperate and started to develop a next-generation EDI in June 2005. With the support of METI (Ministry of Economy, Trade and Industry), Ryutsu BMS were created as the new EDI standard in April 2007. Ryutsu BMS is now being increasingly adopted throughout the Japanese retail industry.

2.5.2 Outline of Ryutsu BMS

Ryutsu BMS defines the followings:

Communication infrastructure

There are three standard communication protocols for exchanging Ryutsu BMS messages:

• Server-to-Server Protocols: ebMS and AS2

• Client-to-Server Protocol: **JX Protocol**

In addition, the guidelines for secure internet communications are prepared, and the use of certificate authority that meets the requirements of the guidelines is recommended.

Figure 2.5.2-1 Typical turnaround business processes and Ryutsu BMS Messages between retailers and suppliers

Retailers	Message Type	Suppliers
Accept Product Info	Product Info.	Send Product Info
Place Orders	Purchase Order	Accept Order
Receive Goods	Dispatch Advice	Delivery
	Receiving Advice	Confirm Delivery
Matching Invoice	Invoice	Invoicing
Payment	Payment	Reconcile
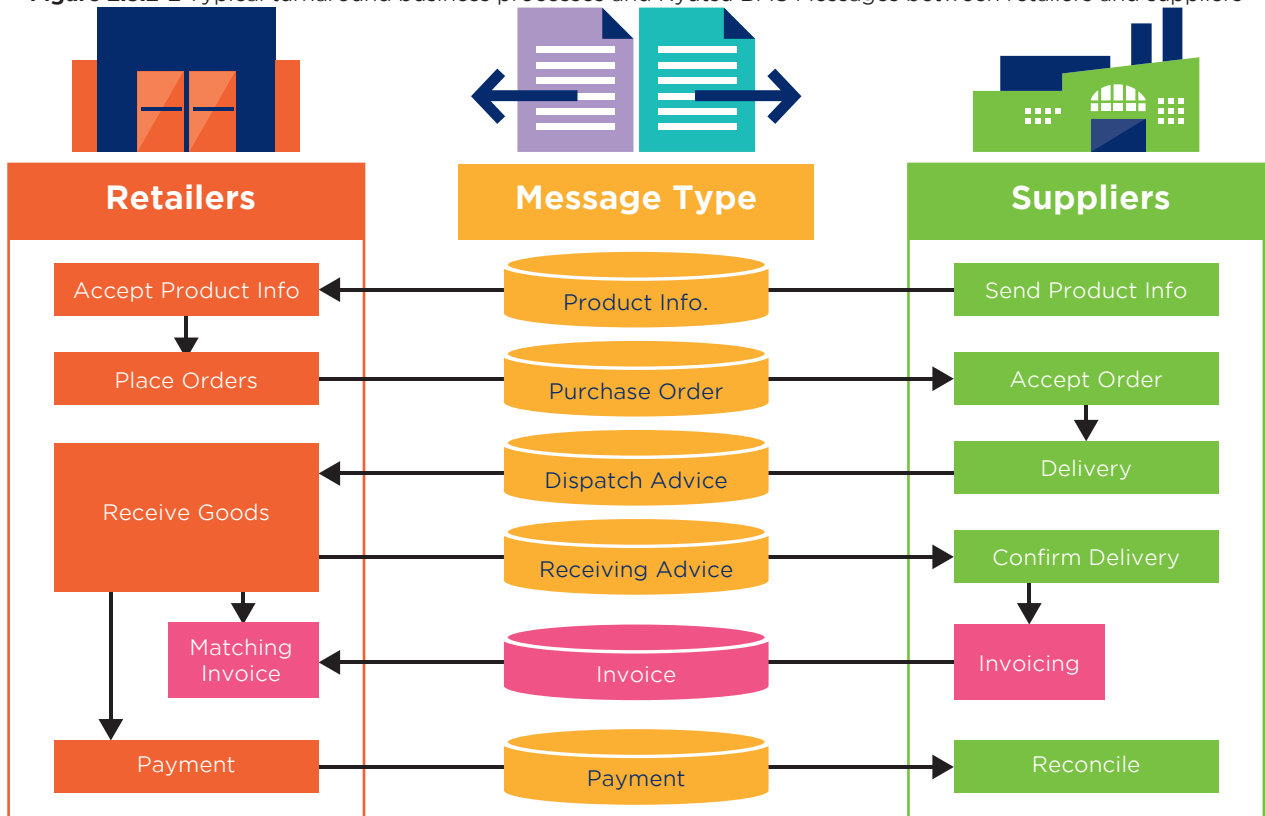
Invoicing may be omitted.
→ flow of information.

✅ **JX Protocol**: The communications protocol for transmitting messages from a client terminal to a corresponding server on a TCP/IP network. Using the international SOAP-RPC standard, the protocol realises functions that are equivalent to those of the J Protocol. The JX Protocol has become a standard communications protocol for exchanging EDI messages between clients and servers within Ryutsu BMS.

Standard Messages

There are 2 types of messages:

• Basic messages

Intended for use at supermarkets, drugstores, etc., the 27 basic messages were published based on the Order to Cash business model. In 2010, retailers and the apparel industry worked together to develop a system of peer-to-peer product information data messages.

• Department store messages

Japanese department stores have unique transaction models, which are different from those of other retailers. For example, they register a merchandise purchase when the merchandise has been actually sold; and also they need to manage the pre-ordering of seasonal gifts for the Japanese custom of giving gifts twice a year (in the summer and at the year's end).

Therefore, the department stores use 27 unique messages in their transactions.

2.5.3 Efforts to promote Ryutsu BMS

GS1 Japan, together with the Supply Chain Standards Management & Promotion Council (see 3.2), has been taking various efforts to encourage the wider use of Ryutsu BMS.

• Trainings and seminars:

GS1 Japan has been offering a wide range of training courses from introductory to advanced implementation courses. Some of these courses are available as e-learning. We also hold seminars to introduce the best practices to Ryutsu BMS users and solution providers.

• Promotional materials:

Flyers, brochures, and videos have been made available to anyone interested in Ryutsu BMS. We also have a Ryutsu BMS dedicated website, which is kept up-to-date.

2.5.4 Users' commitments to Ryutsu BMS

In 2019, 202 retailers and 227 wholesalers or manufacturers have already adopted or intend to adopt Ryutsu BMS. The details of this survey are described in Table 2.5.4-1.

Table 2.5.4-1 Number of companies with their names made public (As of Apr, 2019)

Retailers

Classification	Implemented	Planning to Implement	Subtotal
1. Supermarket	139	11	150
2. Department Store	9	2	11
3. Drug Store	25	1	26
4. Home Improvement Store	4	1	5
5. Co-operative Federation	4	0	4
6. Storage-type Membership Store	1	0	1
7. Voluntary Chain Headquarters	1	0	1
8. Discount Store	4	0	4
Total	**187**	**15**	**202**

Wholesalers/Manufacturers

Classification	Implemented	Planning to Implement	Subtotal
1. Food/Beverage Wholesaler	57	0	57
2. Confectionary Wholesaler	21	4	25
3. Daily Goods, Cosmetics Wholesaler/Manufacturer	27	0	27
4. Healthcare items Wholesaler/Manufacturer	6	2	8
5. Apparel/Footwear/Sports Goods Wholesaler/Manufacturer	29	8	37
6. Food Manufacturer	31	2	33
7. Household Goods Wholesaler/Manufacturer	10	1	11
8. Packaging Materials/Secondary Materials Wholesaler/Manufacturer	15	7	22
9. Toys/Hobby Goods Wholesaler/Manufacturer	3	0	3
10. Home Electric Appliances Wholesaler/Manufacturer	2	0	2
11. Other Wholesaler/Manufacturer	2	0	2
Total	**203**	**24**	**227**

2.6 Mobile app: GS1 Japan Scan

2.6.1 GS1 Japan Scan: Background of the development and its purpose

In Japan, the use of GS1 barcodes has been spreading to various industries including healthcare and food raw material sectors. Not only GTINs but also detailed product information such as an expiration date and batch/lot numbers are encoded in the barcodes, in these industries. This benefits consumers' safe use of the products, and enables secure traceability.

Using barcode symbols in accordance with GS1 standards is essential to share various information correctly among trading partners. However, there still are barcodes, software, and devices, which do not meet GS1 standards. This is because not only a lack of understanding of GS1 standards, but also the shortage of the tools which can check the created barcode symbols easily.

Therefore, GS1 Japan introduced a new smartphone application called 'GS1 Japan Scan' that allows users simply check their products' barcodes if they meet GS1 Standards' requirements.

2.6.2 Expected usage and advantages of GS1 Japan Scan

1. A person in charge of designing or printing of barcode labels can easily check the created barcodes.

2. A person in charge of receiving goods can promptly identify the cause of the problem that occurred during barcode scanning (e.g. an incorrectly encoded barcode symbol, a fault of a barcode reader or in the software of the receiving control system).

   ✅ This application does not assure the print quality of the scanned barcode because its function is limited to the checking of the data elements. The printing quality needs to be checked by a barcode verifier.

3. A person, who considers introduction of a system using GS1 barcodes, can easily demonstrate the advantages of using the GS1 system.

2.6.3 Basic function of GS1 Japan Scan

1. Scan a barcode symbol and confirm whether it is a GS1 barcode.

2. Confirm whether the scanned barcode symbol meets GS1 standards.

   GS1 Japan Scan can:

   2.1 check if GTIN's check digit is correct.

   2.2 check if parentheses in HRI are not encoded.

   2.3 check if GS1 AI element strings' number of digits is correct.

   2.4 check if the only characters that are allowed for use in GS1 AI element strings are used.

   2.5 check the characters such as FNC1 that are not able to be shown in HRI.

3. Confirm simply whether the barcode symbol conforms to the industry rules for medical devices, pharmaceuticals or food raw materials.

2.6.4 How to use GS1 Japan Scan

Figure 2.6.4-1 through Figure 2.6.4-5 illustrates how GS1 Japan Scan works.

Figure 2.6.4-1 is a screenshot captured after the application scanned non-GS1 standard barcode. If the scanned barcode is not a GS1 barcode, it displays a warning message.

Figure 2.6.4-1 Results Example 1

◆ Non-GS1 Standard Barcode (Non-GS1 DataMatrix)

Alert

This is not a GS1 standard barcode (DataMatrix)
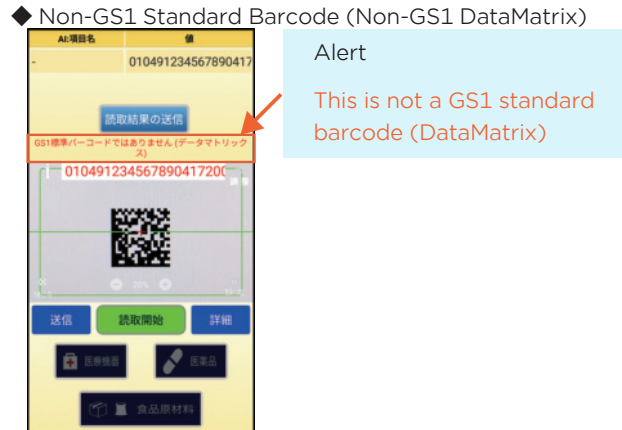
If the scanned barcode does not follow GS1 standards, the application displays a warning message (see Figure 2.6.4-2).

Figure 2.6.4-2 Results Example 2

◆ Barcode that does not follow GS1 standards

Alert

Encoded data have more digits than defined in GS1 standard.
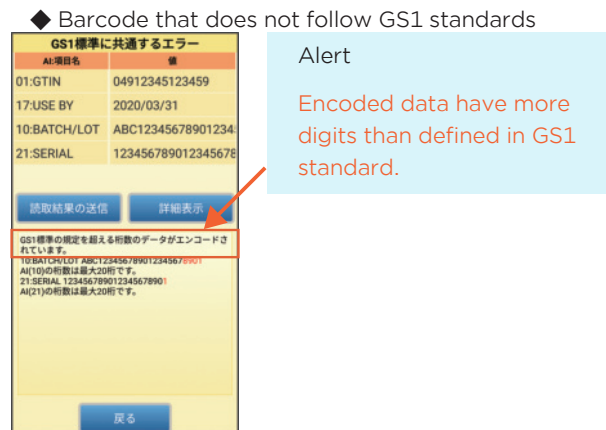
If the scanned barcode is a GS1 barcode, the application shows sets of AIs, data elements and the barcode image.

Also the check-by-industry buttons will be enabled.

Figure 2.6.4-3 Displaying scanned data elements

List of AIs and scanned data

Scanned barcode image

The check-by-industry buttons
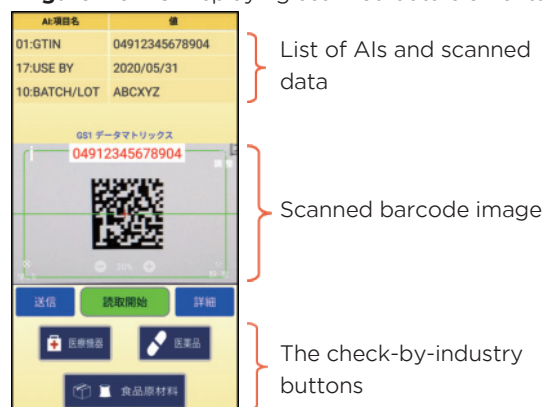
Tapping these buttons, users can check if the barcode conforms to the industry rules.

At the moment three buttons (medical devices, pharmaceuticals and food raw materials) are available.

Following screenshot (Figure 2.6.4-4) shows a result upon tapping the medical devices button. The application suggests 'All good' because all the necessary information is encoded in the checked barcode.

Figure 2.6.4-4 Check if a symbol meets the medical device rules

Items about medical device standards and data

Tap here for details

(01) 04912345678904
(17) 200531
(10) ABCXYZ

When the device conforms to the standards,

'All good.' will be displayed.
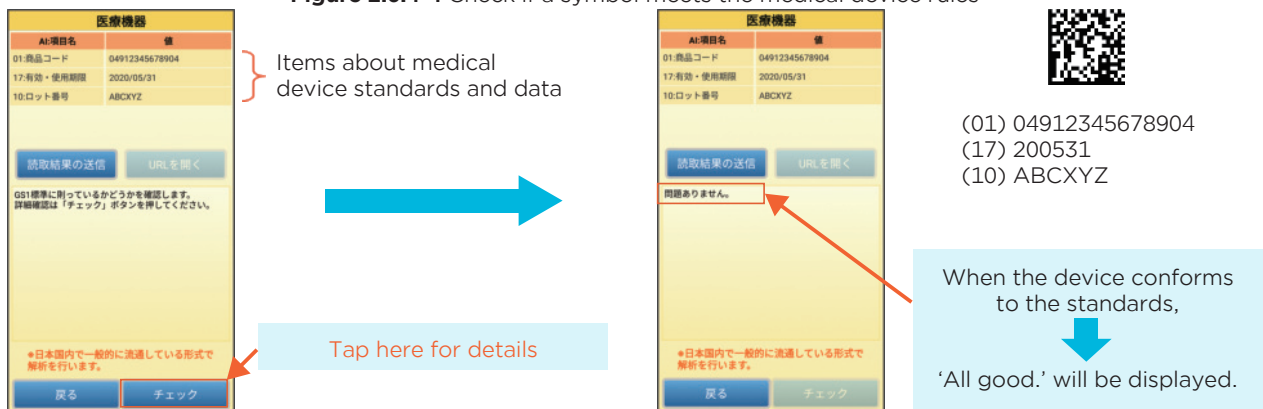
This application has a very useful function to share information, which assists the analysis of scanned data (see Figure 2.6.4-5).

Users can email the image of a checked barcode in addition to its AIs, data elements and simple check report. These are helpful for identifying the problem of the barcode.

Figure 2.6.4-5 Sharing captured and analysed data

Tap the Send button to send the information

The check results can be sent by email.

The scanned image can also be attached.

This information assists failure analysis
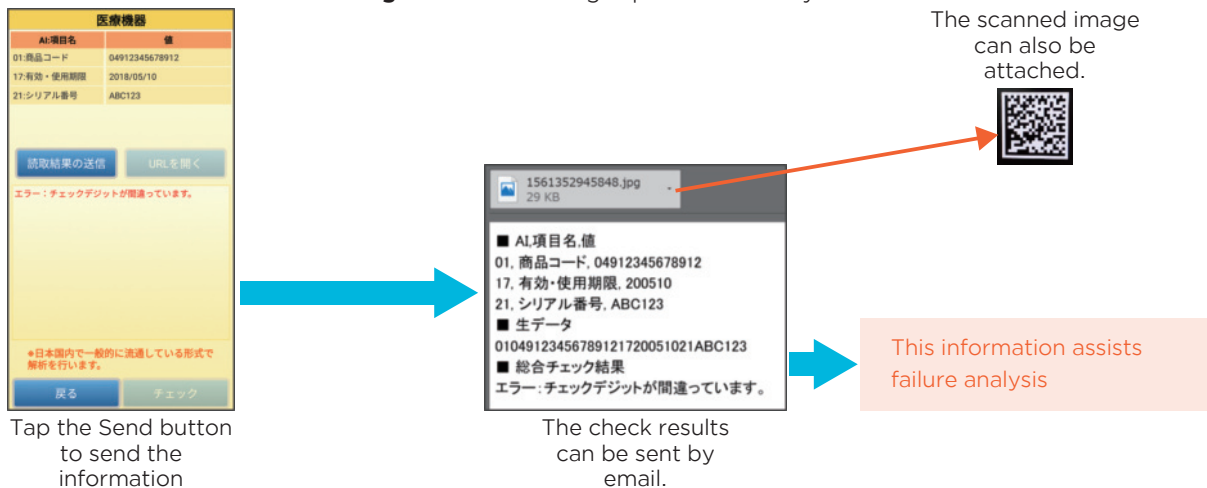
2.6.5 Conclusion

GS1 Japan will continue to improve the application by gathering users' feedback.

We are committed to expanding the usage of this application to promote the proper understanding of GS1 standards, and the widespread use of GS1 barcodes.

2.7 Multilingual product information service

As the secretary of **The Collaborative Council of Manufacturers, Wholesalers, and Retailers**, GS1 Japan has been working on a project to create a multilingual product information service for foreign visitors to Japan.

✅ **The Collaborative Council of Manufacturers, Wholesalers, and Retailers**: The council was established in collaboration with manufacturers, wholesalers, and retailers of consumer goods, aiming to foster significant innovation and improvement of the supply chain management, and to enhance the industry's competitiveness for contribution to better people's lives. As of December 2018, 22 manufacturers, 9 wholesalers, and 22 retailers have been acting as the active council members.

2.7.1 Background and objectives

The number of foreign visitors to Japan exceeded 30 million in 2018 and the Japanese government set a target to increase this to 40 million by 2020. However, there are a growing number of foreign visitors who feel dissatisfied or anxious when they shop in Japan since many products do not have any information in other languages than Japanese

To address this situation, in 2016 the council started a project to establish a system to offer foreign visitors accurate product information, which is provided by the brand owners in various languages such as English, simplified and traditional Chinese, and Korean through a smartphone application. Upon seeing the results of this project, GS1 Japan launched its multilingual product information service in 2018.

2.7.2 Service overview

With this service, when foreign visitors scan the EAN/U.P.C. symbol on a product using their smartphones, its product information (including GTIN) will be displayed on the screen in one of the multiple languages according to the language configuration of the phone. GS1 Japan is in charge of managing the multilingual product information data pool (DP) and the smartphone application called Mulpi (Multi-language product information).

The user experience of the multilingual product information service is as follows:

1. When a user scans the barcode on a product using a smartphone, its basic product information including GTIN, **product name**, image, and **category name** will be shown on the screen in a selected language. If there is a product website prepared by the brand owners, Mulpi automatically displays the webpage.

✅ **product name**: Product names are in Japanese.

✅ **category name**: Category names classified by JICFS (See 2.2 JICFS/IFDB).

2. As a communication infrastructure for accurate product information provided by each brand owners, the multilingual product information DP will be

Figure 2.7.2-1 Overview of the multilingual product information service
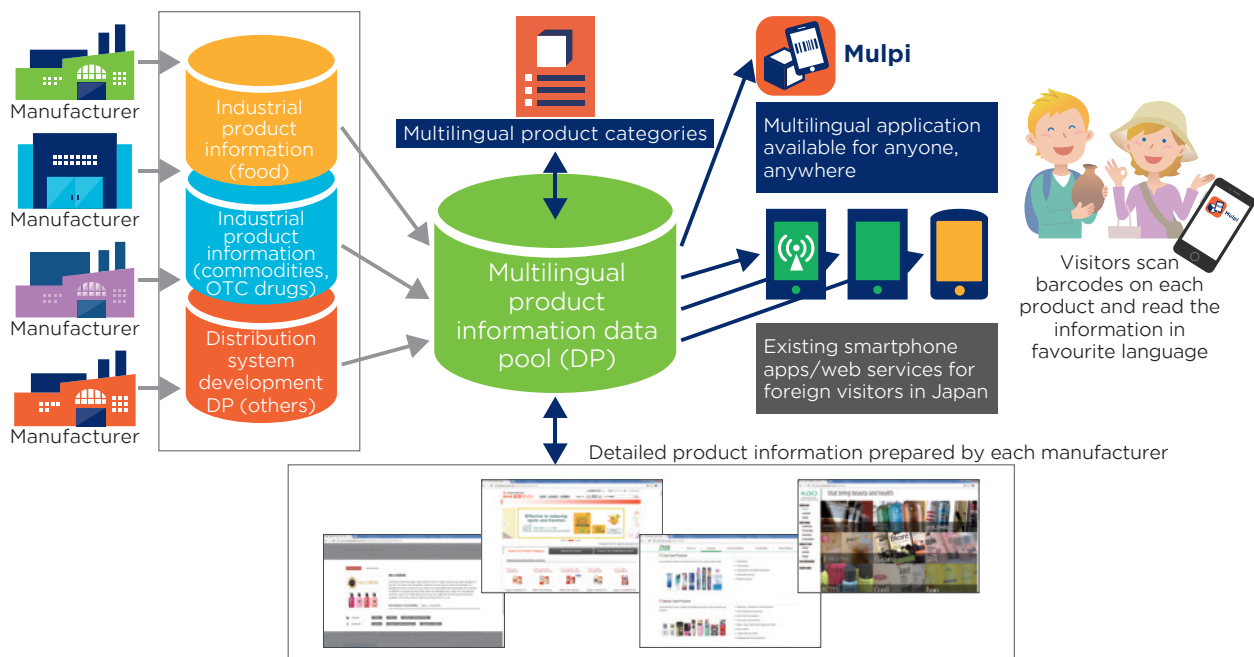
available for other applications provided by related service providers. GS1 Japan plan to provide support to participating companies to create multilingual product information web pages in cooperation with translation agencies.

2.7.3 Expected results

Expected results of this service are:

◇**Brand owners will:**

• provide accurate product information at lower cost.

• be able to promote sales of their products through the service.

• be able to present information such as the correct way of ingestion, intake, and usage through the service.

• no longer need to respond to individual customers' multilingualisation demand.

• be able to gather the access logs (reference) to their detailed product information to use them for their marketing activity.

◇ **Retailers will:**

• be able to support the shopping experiences of foreign visitors at a very low cost by using the shared infrastructure of the service.

• be able to promote instore sales to foreign visitors.

• no longer need to individually set up and manage systems for multilingualisation of product information of instore items.

◇ **Foreign visitors to Japan will be able to:**

• have a better understanding of Japanese products at shops, which will make it easier for them to purchase what they are interested in.

• easily obtain accurate product information provided by the brand owners in their preferred languages through the applications working with the service.

• check the information outside Japan.

2.7.4 Future plan

As a part of the effort to assist the shopping experience of foreign tourists visiting Japan during the 2020 Tokyo Olympics and Paralympics, GS1 Japan plan to increase the number of products registered on the service and accelerate wider use of the application.

Figure 2.7.2-2 The multilingual product information service

Multi Language Product Information (Mulpi)

Mulpi

Mulpi instantly tells you what the product is.
Mulpi supports Japanese, English, Chinese and Korean.

The biggest feature of Mulpi is that **it shows product information provided by the brand owners**.

Brand owner

Simply scan barcode with Mulpi and get product information in multiple languages!

3. Community Engagement and Standard Implement

3.1 GS1 Japan Partners

In April 2015, GS1 Japan launched the program 'GS1 Japan Partners', mainly for solution providers. This program aims to share information on the latest trends and cases of systematisation, while promoting the systematisation of information and efficiency in the overall distribution industry with use of GS1 standards.

The number of members in fiscal year 2018/2019 is 122, including many of the major solution providers in Japan. (Table 3.1-1)

Table 3.1-1 Membership Structure (as of May 2019) [Unit: JPY]

Sales	Number of Members
Less than 1b	52
1b – 10b	28
10b – 1t	39
1t and above	3
Total	**122**

Table 3.1-2 Events in Fiscal Year 2018/2019

When	Events	Main themes
Jun. 2018	EPC/RFID Seminar	• Trade items with more than one EPC/RFID tag: illustration taking the example of the shoe sector. • Data sharing with EPCIS – the most important cornerstones in a nutshell. • EPCIS-based Asset Management – How it works and which benefits it brings.
Oct. 2018	1st Regular Seminar	• GTIN utilisation on product management - Concurrent realisation of both answering to wholesalers' requests and improving in-house product management efficiencies - • JICFS/IFDB to be further utilised in 'B2C'. • Managing and tracing medical devices using RFID.
Nov. 2018	2nd Regular Seminar	• JICFS/IFDB to be further utilised in 'B2C'. • Trends of product information databases in the commodity, cosmetics, pet foods, and supplies industries. • Trends of product information databases in the food industry.
Feb. 2019	3rd Regular Seminar	• Chinese new retail market research survey. • Penetration to the Thai market, and supply chain IT.
Mar. 2019	4th Regular Seminar	• EDI utilisation scope expansion in the distribution industry - Collaboration with financial EDI - • Financial EDI utilisation to improve accounting related business efficiencies. • Introduction of **Zengin EDI** system. • Compatibilities of EBNext2DX, which bundles Ryutsu BMS standard format, with ZEDI. • About approach for ZEDI compatibilities.

✅ **Zengin EDI**: EDI system run by Zengin (Japanese Bankers Association).

3.2 Supply Chain Standards Management and Promotion Council

Supply Chain Standards Management and Promotion Council was founded in April 2009 by various industry groups and businesses to help promote efficient supply chain information system in Japans' retail sector.

The activities of the council include maintaining and promoting Ryutsu BMS (see 2.5), which was initially developed with the support of the Ministry of Economy, Trade and Industry. At present, GS1 Japan acts as the secretariat of the council.

The Council held its inaugural General Assembly in Tokyo in April 2009. The council consists of trade associations of manufacturers, distributors, and retailers in the consumer goods industry as full members. As of May 2019, the council is composed of 49 full member organisations. In 2019, the council is being operated with the following structure:

3.2.1 Organisational structure

1. General Assembly

The Council holds general assembly annually at which it shares and confirms activity results of the previous fiscal year, and approves the new agendas for the new fiscal year. The officers of the council are also appointed at the general assembly for two-year terms.

2. Executive Committee

The role of the executive committee includes making important decisions on the council's management, such as admitting new members, establishing and abolishing working groups, and appointing working group members. In 2017, the committee is composed of representatives from 15 full member organisations.

3. Working Groups (Task force)

The Council has three working groups as follows (See Figure 3.2.1-1).

3.1 Message Maintenance Working Group

This group maintains and manages Ryutsu BMS messages except product master data, and various guidelines.

The work is done in response to requests from full members for changes or additions to the established standards.

The group examines such requests, decides on the steps to be taken, revises the relevant guidelines, and then publishes as a new standard.

In 2012, the group set the standard for product images (image size, resolution, filenames etc.) for online supermarket, and published a guideline.

3.2 Technical Specification Working Group

This group maintains and manages the guidelines for network technology and information processing technology used for exchanging the standard messages of Ryutsu BMS via communications circuits.

3.3 Promotion Working Group

This group examines and implements steps to encourage wider adoption of Ryutsu BMS among SMEs. The group also monitors 'off the standard usage' of Ryutsu BMS.

Figure 3.2.1-1 Organisational structure of the council
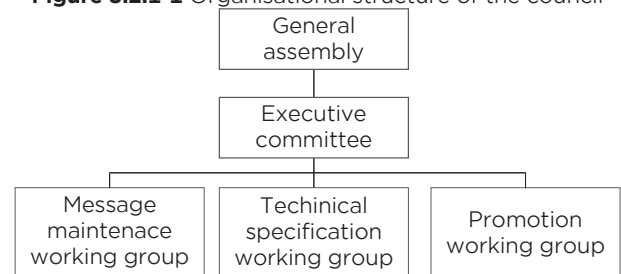
3.2.2 Activities for promotion and increasing adoption

GS1 Japan and the council take various efforts to encourage wider use of the Ryutsu BMS. For details see 2.5.

3.2.3 Registration of Ryutsu BMS trademark

GS1 Japan has registered Ryutsu BMS logo to be used for products and services that comply with Ryutsu BMS specifications. As of May 2019, there are 132 products accredited and permitted to use the logo.

Figure 3.2.3-1 Ryutsu BMS logo
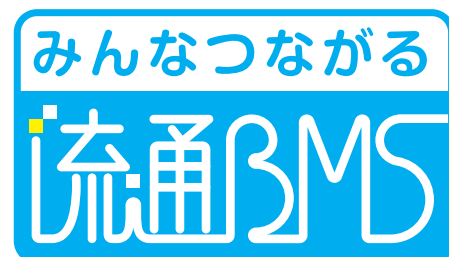
3.3 GS1 Healthcare Japan

GS1 Healthcare Japan is a voluntary group that is made up of domestic medical institutions, pharmaceutical and medical devices manufacturers, wholesalers and solution providers. The group works with GS1 Healthcare, the Ministry of Health, Labour and Welfare and other organisations to promote standardisation in order to ensure patient safety, secure traceability, and enhance the efficiency of distribution and medical management.

As of September 2019, GS1 Healthcare Japan consists of 110 members.

3.3.1 Activities

Within GS1 Healthcare Japan, members are actively engaged in the following three groups: the International Standards and Regulations Study Work Group, the Medical Solutions Study Work Group and the Planning and Public Relations Group.

3.3.2 Activity of Each Work Group

- **International Standards and Regulations Study Work Group**

  Research on the trends in international regulations and standardisation.

- **Medical Solutions Study Work Group**

  Promotion of measures to improve safety and the supply chain efficiency in the medical industry.

- **Planning and Public Relations Group**

  Promotion of GS1 standards to medical institutions.

3.3.3 Topics in 2018/19

GS1 Healthcare Japan holds its annual conference every spring to share GS1 barcode use cases at medical institutions and the latest regulatory information. This year, the conference was held on 12 March, with about 300 attendees.

Prior to the conference, in March, the Ministry of Health, Labour and Welfare (MHLW) in Japan submitted a draft amendment to the law on medical devices and pharmaceuticals, which includes the requirement to label barcodes on medical devices and pharmaceutical packages. For this reason, participants were very interested in GS1 barcodes.

At the conference, the MHLW explained the background of discussions on legal amendments and schemes to promote the use of barcodes in medical institutions. Following the MHLW presentation, medical doctors explained how they have been utilising GS1 barcodes and RFID at their facilities.

All the presentations were regarded with high esteem according to the results of the questionnaire for the participants.

Figure 3.3.3-1 GS1 Healthcare Japan Annual Conference

3.4 ICT-Oriented Wholesale Industry

In 1985, GS1 Japan set up a study group aimed at promoting the computerisation of the wholesale industry, with GS1 Japan as the secretariat of the group. In Japan's supply chain system, wholesalers play a major role, as most manufactured products are delivered to retailers through wholesalers.

The study group is operated primarily by wholesalers dealing in Fast Moving Consumer Goods (FMCG) in different industries (foods, household products, etc.), and the membership is 51 companies as of February 2019.

The group is further divided into several sub-working groups, according to themes related to the members' interests, and each sub-working group holds monthly meetings. Other activities of the study group include an Annual Forum, which is the biggest event, and 'future solution study tour', which is carried out a few times a year.

With its mission of 'Initiatives toward total optimisation

of Japanese distribution', the study group worked on the following five topics in FY2018.

- Promotion of the Ryutsu business message standards (BMS): improvement in recognising the **2020 problem**.

- Preparation for the upcoming reduced tax rate system.

- Approach for labour shortage by improving distribution efficiency.

- Improvement of 'order receiving process' adapting new IoT technologies.

- Utilisation of leading technologies to realise 'Work Style Reform'.

✅ **2020 problem**: It is planned to shift Japan's telecommunication lines from analogue lines to an IP network in 2021. Companies using analogue lines need to be prepared for the shift by 2020.

Figure 3.4-1 ICT-Oriented Wholesale Annual Forum

3.5 The Collaborative Council of Manufacturers, Wholesalers, and Retailers

The Collaborative Council of Manufacturers, Wholesalers, and Retailers was formally established in May 2011 for the purpose of improving the nation's industrial competitiveness, and of contributing to an affluent standard of living for the nation's citizens, through extensive innovations and improvements in supply chain management. The Council's Vision states the objectives of the activities of this collaboration by the retail supply chain stakeholders. Member companies can participate in the Council based on their endorsement and support of the Vision by their executive management, and an agreement to act while upholding the Vision.

GS1 Japan, and the Distribution Economics Institute of Japan, jointly serve as the Secretariat of the Council.

Under the auspices of both Institutes, 15 founding member companies have participated in the Council, and have continued to hold preparatory meetings since May 2010. They have discussed the adoption of the Vision and how to manage the full-scale activities of the Council with the active support of the Ministry of Economy, Trade and Industry (METI). They have also established working groups and continued discussions on three specific themes: 'Reducing Returns'; 'Optimising Deliveries'; and 'Promoting the Introduction of a new EDI standard known as Ryutsu BMS'. In May 2011, the founding companies announced the formal establishment of the Council in the 'Collaborative Forum of Manufacturers, Wholesalers, and Retailers'.

In FY2018, The council is committed to further discussions of the theme of 'Optimisation of Logistics', organising its past deliverables, and sorting out common challenges to be shared among manufacturers, wholesalers, and retailers.

Meanwhile, through the Product Information Multiple Languages project, which has been promoted since FY2015, the data pool and the application for mobile devices were developed for practical use based on the knowledge obtained through the past demonstration experiments. They have been released in March 2018. (For further information, refer to 2.7)

The Council reported its output at the 'General Meeting' and The Collaborative Council of Manufacturers, Wholesalers, and Retailers now has a four-tier structure consisting of a general meeting, strategic meeting, steering committee, and working groups.

'The Forum of the Collaborative Council of Manufacturers, Wholesalers, and Retailers' was held in July 2018. The executive management of each company has confirmed the responsibility for their activities, and will lead specific on-site improvements and innovations within the company.

Figure 3.5-1 General Meeting and Forum of The Collaborative Council of Manufacturers, Wholesalers, and Retailers

3.6 Study Group for Information Systems in Food, Beverage, and Alcohol Industry

It is important for members to cooperate with wholesalers, as they are positioned between retailers and product manufacturers.

This is a voluntary study group of liquor and processed food businesses established in 1983 with the aim of studying the most appropriate information systems for use between food producers and wholesalers.

The study group has about 60 corporate members that are Japan's leading companies in processed foods, marine products, and liquors businesses. GS1 Japan serves as the group's secretariat.

The study group conducts joint studies on new issues concerning standardisation of B2B data exchanges among companies in the supply chain. It holds regular quarterly meetings where best practices of members' information systemisation are introduced. It also organises seminars on the latest topics inviting outside lecturers and study tours to pioneering businesses.

Figure 3.6-1 Regular meeting

3.7 User support

For better understandings of GS1 standards, GS1 Japan offers users both various classroom style courses and distance e-learning courses. Followings are offered as scheduled courses:

1. Introduction to Barcodes
2. Introduction to EPC/RFID
3. Introduction and Implementation of Ryutsu BMS
4. Introduction to Barcode for Prescription Drugs and Medical Devices

3.7.1 Introduction to Barcodes

This scheduled program offers basic knowledge on GS1 barcodes accelerating GTIN usage and application.

Classroom locations are Tokyo and Osaka, and participants, mostly new members who want to learn about barcodes from the basic and to know how to display barcode to products, are expected to obtain general knowledge of barcodes. 'On-site training' is also available accordingly upon applicant's request at specified place and time.

In addition to the classroom courses above, e-learning program was introduced in 2016 enabling learners free from location and time constrain.

Figure 3.7.1-1 Classroom of 'Introduction to Barcodes'

3.7.2 Introduction to EPC/RFID

This program targets EPC/RFID beginners in order them to obtain deeper understandings of the approach of its utilisations. Classroom locations are Tokyo and Osaka, and participants are expected to learn about those characteristics of RFID, successful implementation case examples of EPC/RFID systems, GS1 EPC/RFID standards, and other related information. After the lecture sessions, a demonstration is carried out simulating shipping and receiving item check, conducting RFID batch reading. Participants can also get hands-on experience of the simulation.

E-learning is also available with the title of 'Guide to EPCIS System Construction', which is helpful for EPCIS system construction.

3.7.3 Introduction and Implementation of Ryutsu BMS

The program 'Introduction of Ryutsu BMS' is to explain EDI from basics through to Ryutsu BMS outline, consequence of implementation and more.

This program is intended for persons related to CPG supply chain, especially toward to persons assigned newly to information system department, or considering Ryutsu BMS introduction.

In addition, it is also useful for solution providers or consultants to support user companies.

Main classroom locations are Tokyo and Osaka, and its e-learning version was launched in May 2017.

Next step program is also prepared as e-learning explaining key points how effectively introduce Ryutsu BMS complying with the standard specifications under the title of 'Ryutsu BMS Implementation Course'.

3.7.4 Introduction to Barcode for Prescription Drugs and Medical Devices

This program provides practical knowledge about the guidelines released by the Ministry of Health, Labour and Welfare (MHLW), which specifies barcode marking rules for prescription drugs and medical devices. This program is designed for the people who are working at drug or medical device manufacturers, wholesalers, medical service providers and related solution providers, and the classroom is scheduled regularly in both Tokyo and Osaka.

3.7.5 Junior Intern

Another but not least unique activity from GS1 Japan is the 'Junior Intern' for middle and high school students. Throughout the several hours of lectures and trainings, the future GS1 users learn about barcodes and GS1 standards.

This program is supported by 'Specified Non-profit Corporation - School Support Center' as one of their school support activities.

Figure 3.7.5-1 Students learning and experiencing scanning barcodes/RFIDs

3.8 Publications

GS1 Japan has been delivering information regarding case studies utilising GS1 standards to retailers, wholesalers, products manufacturers, and solution providers. The information are published, and most of materials are also available on our website in order to promote GS1 standards. Followings are examples of our current printed publications:

Figure 3.8-1 Guide to Barcodes for Beginners

Figure 3.8-2 Barcode Guideline for UDI

Figure 3.8-3 Revised Version of GTIN Allocation Guidelines

Figure 3.8-4 Source Marking Guideline for Raw Materials

Addition to the above, we also issue two periodical publications that, in each issue, deliver information on the latest trends in distribution information systematisations, such as the GS1 Standards systems, barcodes, EDI, SCM, GS1 EPC/RFID, and databases, as well as trends of industry standardisations, policies, and international standardisations.

Moreover, GS1 Japan creates educational videos including 'Basics of JAN Code: JAN Code, Product

Table 3.7-1 GS1 Japan Seminar Statistics in 2018

Courses	# Courses	# Attendees
Introduction to Barcodes	23	730
Introduction to EPC/RFID	5	156
Introduction and Implementation of Ryutsu BMS	9	249
Introduction to Barcode for Prescription Drugs and Medical Devices	6	150

Code for Assembled Packages', 'GS1-128 Barcode GS1 DataBar: Barcodes Containing Various Information', 'GS1 EPC/RFID Standards', 'Simple Scan for healthcare', and 'Ryutsu BMS, the Foundations of Growth'.

Besides the above videos, we also created many other informative educational videos which are mostly used during classroom programs. All the videos are available either on our website or DVDs (free lending).

Addition to the above, GS1 Japan has also developed useful applications to promote the utilisation of the GS1 standards, which can be found on the 'Apps Corner' page.

At present, 'GS1 Japan Scan' (see 2.6) has been released. This app allows users to simply check their products' barcodes to provisionally find if they meet GS1 Standards and the industry rules for medical devices, pharmaceuticals, or food raw materials.

Figure 3.8-5 GS1 Japan Scan

3.9 Event

GS1 Japan organises and sponsors various events. Major events are explained here below.

3.9.1 GS1 Japan Annual Seminar

The FY 2018 annual meeting to exchange information was held on 7 December at Meiji Kinenkan, with nearly 350 participants from various organisations and firms. At the beginning of the meeting, Makoto KOYAMA, President & CEO of Alibaba.com Japan Co., Ltd. and Representative Executive Officer & CEO of Ant Financial Japan, gave a special presentation.

Following Alibaba group outline information, he stated passionately about Digitalisation Wave that:

- Digital players create new sales channels utilising Digital Wrapping giving the user conveniences higher priority, and, to achieve this, they make full use of big data and acquire real shops.

- There will be no place to avoid the wave of digitalisation.

- Ordinary businesses will be redefined as new services and businesses.

- Options are to move forward as a Disruptor or to be caught by Disruptors.

- Now is the era of innovation.

- I am happy if the Chinese examples give you some ideas for your tomorrow business.

3.9.2 GS1 B2C (Mobile) Seminar

This seminar shares trends of GS1 standardisation activities and excellent use cases of leading domestic and foreign companies, and is targeted to mobile marketing professionals in manufacturing and retail, and to system planners and developers of mobile devices including software services. The theme of GS1 B2C (Mobile) Seminar 2019 was 'Omni-channel environment business innovation utilising GS1 Standards - GS1 Standards implementation trends for brick and click', and number of participants was counted to about 60.

Figure 3.9.2-1 GS1 B2C (Mobile) Seminar

3.9.3 EPC RFID FORUM

GS1 Japan and the Auto-ID Laboratory Japan (Keio University) have jointly hosted this periodic forum, aiming to promote widespread use of EPC/RFID and to encourage the appropriate usage of it. In June 2018, the 14th forum titled 'Road of RFID and Its data utilisation -Progress of 100 billion RFID Tags Project by METI' (See 1.1.2) was held attracting some 300 participants. The forum gave presentations on METI-led RFID and data utilisation projects in retail industry. GS1 Japan invited Dr. Ralph TRÖGER (GS1 Germany) as a guest speaker, he gave a wonderful presentation about additional value creation with EPCIS with focusing on EPCIS based food traceability platform 'fTRACE'.

Figure 3.9.3-1 14th EPC RFID FORUM

3.9.4 RETAILTECH JAPAN 2018

GS1 Japan provided a special collaboration with 'RETAILTECH JAPAN' , a major exhibition which is held in March every year. RETAILTECH JAPAN, hosted by the Nikkei, is an exposition of distributional information systems, where 200 or more exhibitors attracted some 130,000 attendees, targeting distributers, retailers, and food service providers.

GS1 Japan, with cooperation from the Ryutsu (Distribution) Business Message Standards (BMS) council, set up a booth in this exposition and worked actively to promote the Ryutsu BMS and GS1 standards.

In addition to exhibition panels and video screenings, a distribution solution seminar was held at the corner set up in the distribution BMS zone to introduce details in an easy-to-understand manner. During the exposition period GS1 hosted a prepared seminar to report the latest trends of distribution systems using GS1 standards, and gathered more than 200 participants this time.

Figure 3.9.4-1 RETAILTECH JAPAN 2018 GS1 booth

4. Corporate Information

4.1 Overview

GS1 Japan was founded in 1972 mainly through the efforts of the then Ministry of International Trade and Industry (present Ministry of Economy, Trade and Industry or METI) as the Distribution System Research Institute (DSRI), a non-profit organisation for promoting the introduction of distribution systems, and have been striving for rationalising and increasing the efficiency of supply chains. As the first mission, we conducted studies on the standardisation of national product codes for apparel and grocery. We started to endeavour structuring the system of standard product codes and symbols for Japanese industries with studying and incorporating those systems already standardised in both Europe and the U.S. Then in 1978, we had been accepted as an EAN Association member as the first outside European member.

In the second half of the 1970s, GS1 Japan paved a way to adopt EAN system in Japan, starting with the introduction of EAN symbols into the Japanese Industrial Standards (JIS). Source marking feasibility had been tested obtaining cooperation from Kikkoman Corporation (a soy sauce manufacturer), Coca-Cola (Japan) Company, Limited, and Kai Corporation (a cutlery manufacturer), while retailers had begun to conduct storefront practical demonstration experiments of POS system. In the 1980s, Jusco Co., Ltd. (present AEON Co., Ltd.), Co-op supermarket stores and other retailers conducted pilots on the POS system. GS1 Japan held many seminars on EAN system and POS system throughout Japan and encouraged stakeholders to adopt source marking.

One of the most remarkable milestones for expanding the source marking usage was the fact that, in 1982, SEVEN-ELEVEN JAPAN CO.,LTD., a leading convenience store chain, had adopted POS system at all of its stores (1,650 stores, which increased to about 20,900 in 2019). Another remarkable contribution to POS system usage expansion was the consumption tax introduction in 1989. As the next step, GS1 Japan had set up study groups for selected industries in 1980s, for the purpose of studying business process improvement together with the industry members. Those processed foods, sporting goods, consumer electronics, and books and magazines industry members had positively participated in the study groups. One of the study groups, wholesalers' study group, was set up under the leadership of representatives from various industries. These study groups soon came to cooperate in the adoption of EAN standards.

Needless to mention, share is coming after identify and capture.

GS1 Japan had started the Japan Item Code File Service (JICFS) service in the middle of 1980s, which contains cleaned and proofed product data, and which is worthwhile utilising for POS data collection and provision.

During the 1990s, GS1 Japan studied product codes, EDI messages and other subjects in cooperation with the apparel industry under METI-funded study of quick response (QR) system. Retailers used to assign their proprietary code to apparel products. We, together with apparel industry members, studied the way of realising EAN source marking to apparel products, and which brought about the successful result. It was also a notable accomplishment that the GS1-128 was employed for the labelling of wooden crates, containing various products, delivered to department stores. JEDICOS (Japan EDI for Commerce Systems), one of the Japanese EDI message standards, development was accomplished, which had been developed on the basis of EANCOM to meet with Japanese business practices.

In the 2000s a new business model was established in Japan in which convenience stores acted as agencies for receiving public utility payments from customers. As the tool for realising this service, the GS1-128 was adopted on the bills for the public utility charges. And the meat industry decided to adopt the GS1- 128 for its standard labels for traceability. The identification needs are not only for the physical objects but also for non-physical products.

In the second half of the 2000s, GTIN had been employed to identify non-physical music streaming services, and online and mail-order companies started using GTIN for those identifications and management.

4.1.1 EPC/RFID

In the period between 2003 and 2009, we had been supporting METI's RFID pilot projects for the purpose of finding and solving issues in conducting introduction of RFIDs into various industries (apparel, footwear, books, home appliances, international logistics, etc.), and then these efforts took us to have built the foundation for the promotion of RFID utilisation.

In 2004, we established EPCglobal Japan and actively worked for developing industries' awareness of EPC/RFID.

Since then, we have been committed to promote GS1 EPC/RFID standards in Japan.

4.1.2 Healthcare

In 2009, GS1 Healthcare Japan was established as a voluntary group for promoting GS1 Standards in healthcare sector. We are confident that all the continuous efforts including issuing guidelines which illustrate how GS1 systems can be applied to medical device management, and all other pioneering efforts, which had been conducted together with the healthcare industry stakeholders since the late 1990s, had led us to set up the GS1 Healthcare Japan.

4.1.3 New developments

In the area of EDI, GS1 Japan created an XMLformat EDI standard (Ryutsu BMS) for supporting domestic business practices and has worked to spread the standard together with 49 trade organisations. There have been new developments in several recent years. As public interest in food safety has increased, GS1 Japan started a joint study with Japanese supermarkets and supply chain stakeholders on the use of GS1 DataBar including pilot testing of the symbol with discounted price or sell- by-hour information at retail stores.

In 2015, GS1 Japan launched the program 'GS1 Japan Partners', aiming to share information and best practices among solution providers.

In 2017, GS1 Japan hosted GS1 Asia Pacific Regional Forum in Tokyo where more than 80 people attended from GS1 GO and 18 AP MOs.

4.2 GS1 JAPAN

We joined GS1 in 1978 and obtained the GS1 prefix '490 - 499'. We subsequently applied for an additional prefix in 1992, obtaining the prefix '450 - 459'.

Initially, GS1 Japan was allocating seven-digit GS1 Company Prefixes, but since January 2001, we have started to allocate nine-digit GS1 Company Prefixes, given the rise in the number of registered companies and a recommendation from GS1.

Currently, in principle, GS1 Japan allocates nine-digit GS1 Company Prefixes to new applicants.

When a company continues to use the GS1 Company Prefix, it needs to renew the registration every three years. In the fiscal year 2018, we had 11,448 new registrations.

As of the end of March 2019, the number of registrations for GS1 Company Prefixes reached 136,233.

Recently, sole proprietorships are leading the number of registrations, accounting for around 36% of the new registrations in the first half of fiscal year 2018. That number compares to about 21% eight years ago, recording a significant increase. Another trend to highlight is the increase in applications to sell products on online shopping sites.

The top product categories for newly registered companies during the second half of fiscal year 2018 were: (1) daily goods (19%); (2) processed food (18%); (3) perishable food (7%); (4) clothing (6%); and (5) health food (6%). Compared to past figures, it is notable that 'clothing', which is traded actively through online shopping sites, marked a large increase. It is also notable that many companies listed online-shopping business operators, such as Amazon, as their main clients.

The other trend to highlight is the increase in registrations by producers of agricultural products, marine processed foods, and other local specialties aiming to expand their sales channels.

By source-marking their products, producers can distribute products through new sales channels such as Roadside Stations and outlets of agricultural products. GS1 Japan offers seminars on a regular basis to promote the correct understanding of the GS1 standard, in addition to onsite seminars held across the nation when there is a request. Recently, the number of onsite seminars requested by the producers of agricultural products, marine processed food, and local specialties have increased, supporting the trend seen in the registration data.

We expect the registration for GS1 Company Prefixes will continue to increase, given the expansion of online sales channels as well as the spread of source-marking in areas such as clothing and professional goods, where the source-marking ratio used to be low.

Figure 4.2-1 GS1 Company Prefix allocation

Accumulated number of registered companies
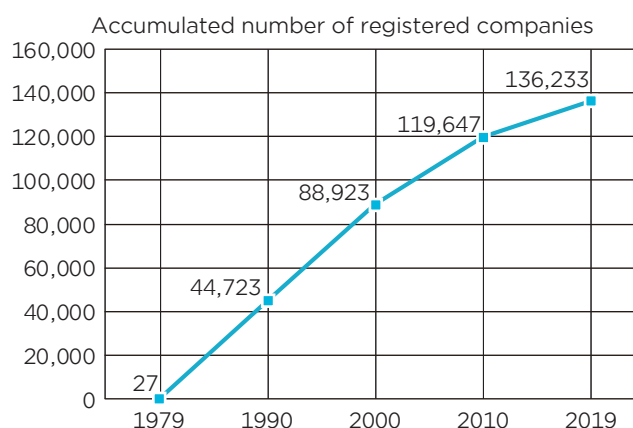
4.3 History

Year	Events
1972	DSRI (Distribution Systems Research Institute) is established. (Shinagawa-ward)
1973	'Supply Chain Information Network Models' is developed.
1974	'Standardised Transaction Code' study is conducted by industry type.
	'Distribution & System' (quarterly journal) first issue is published.
1975	'Distribution System Design Engineer Course' and 'Distribution System Management Course' are started.
1977	'Distribution Information System Study Committee' is started.
	'Distribution Code Centre' is opened. (predecessor of GS1 Japan)
	Allocation of 'Common Supplier Codes' is started.
1978	Joins 'EAN International' and GS1 Prefix '49x' is allocated.
	EAN/U.P.C. symbol is defined as a JIS standard (JIS B 9550).
	Allocation of 'GS1 Company Prefix' starts.
1979	First POS pilot is conducted at a supermarket in Tokyo (Tatsumi Chain, Tokyu Store).
1980	'JCA (Japan Chain Stores Association) Protocol' for Retail industry is defined.
	Second POS pilot is conducted at some selected supermarkets (AEON, Co-op Supermarket, etc.)
1981	Third POS pilot is conducted at some selected retailers (Kasmi Convenience Store (now called: United Supermarkets Holdings Inc.), Kishi Shopping Center (now called: Watahan & Co., Ltd.), etc.).
1982	DCC Japan Newsletter (now called: RYUKAI Centre News (Bi-monthly)) is first published.
	SEVEN-ELEVEN JAPAN (Convenience Store) has introduced POS.
	Moves office to another location in Shinagawa-ward.
1983	'Low-interest financing for POS introduction' is provided to SME retailers by the government (Small and Medium Enterprise Agency).
	'Study Group for Information System in Food, Beverage, and Alcohol Industry (called F-KEN)' is started.
1985	'Study Group for ICT-Oriented Wholesale Industry (called OROSHI-KEN)' is started.
	Ryutsu POS Database Service (RDS) Project is started.
	JICFS (Jan Item Code File Service) Project is started.
	Ito-Yokado (GMS) has introduced POS.
1987	Sporting Goods Information System Study Group has started.
	'Common Magazine Code' registration has started.
	ITF symbol is defined as a JIS standard (JIS X 0502).
	Utility bills collection service system using multiple EAN-13 symbols has started.
1988	Practical application experiment of JICFS (JAN Item Code File Service) is started.
	Standard EOS (Electronic Ordering System) using GTIN-13 is developed.
	EAN International General Assembly is held in Tokyo.
	U.P.C. Company Prefix application service is started.
1989	'Consumption Tax' is introduced.
	Research and pilots of POS are conducted for small retailers located in the shopping street.
1990	Barcoding in Book Industry.
1991	Multi-functional card for regional shopping streets is developed.
	Daiei (GMS) has employed EAN codes for all the products.
1993	Heiwado (supermarket in Western Japan) has first employed ITF as a retailer.
1995	Acquires additional GS1 Prefix '45x' and started allocating '45x' GS1 Company prefix.
1996	Study for computerisation of trade for perishables is started.
	Moves office to Minato-ward. (Current location)
	Open Business Network (OBN) system is developed.
	Code-128 is defined as a JIS standard (JIS X 0504).
1997	Heiwado (Supermarket) has begun CRP (continuous replenishment program) with several manufacturers.
	JEDICOS, Japanese version of EANCOM, has been developed.
1999	GLN utilisation study and verification test are started to realise efficient and effective distribution system for the supply chain.
2001	Nine-digit GS1 Company Prefix has been introduced.
2002	EAN International's Asia Pacific Regional Meeting is held in Tokyo.
2003	GEPIR operation has started.
	EPCglobal subscription is started.
	GS1 Application Identifier is defined as a Japanese Industrial Standard (JIS X 0531).
2004	'EPCglobal Japan' is set up.
2005	MHLW (Ministry of Health, Labour & Welfare) issues a guideline 'Implementation Guideline for Bar Code Labelling of Prescription Drugs,' which uses GS1 barcodes.
	Promotion of GTIN is started.
	'DCC Japan' changed name to 'GS1 Japan.'
2006	GTIN is employed for online sales of music products.
	EPCglobal Board Meeting is held in Tokyo.

Year	Events
2007	Ryutsu BMS (Japanese XML-EDI Message Standards) is published.
	GS1 Mobile Conference held in Tokyo.
	'GS1 DataBar Study Group' is set up.
2008	'GS1 Healthcare conference' is held in Tokyo.
	Several Online Shopping companies have started to use JICFS/IFDB.
2009	'Supply Chain Standards Management and Promotion Council' is set up.
	'GS1 Healthcare Japan' is set up.
2010	Verification test of GS1 DataBar utilisation is conducted at some supermarkets.
	Mobile Day Seminar is held in Tokyo.
2011	Mobile Day event is held in Tokyo.
	'The Collaborative Council of Manufacturers, Wholesalers, and Retailers' is started.
2012	'GS1 Advisory Council Meeting' is held in Tokyo.
	Changes corporate form to 'General Incorporated Foundation.'
2013	GS1 B2C mobile and omnichannel Seminar are held in Tokyo.
2014	'GS1 Healthcare Japan UDI and Prescription Drug Traceability Seminar' is held in Tokyo.
2015	'GS1 Japan Partners' membership has started.
	'GS1 Company Prefix' application on the web has started.
2017	'Source Marking Guideline for Raw Materials' is published.
	Hosts 'GS1 Asia Pacific Regional Forum' in Tokyo.

5. References

5.1 Statistics on Japanese Retail Industry

Table 5.1-1 Number of establishments, number of employees, annual sales of goods and sales floor space. (2016)

	# Stores		Annual sales (JPYm)		# Employees (*1)	Store space (k sq m)
		Ratio (%)		Ratio (%)		
Department stores and general merchandise supermarkets	1,590	0.16%	12,634,774	8.71%	330,992	17,936,735
Miscellaneous retail trade, general merchandise (with less than 50 employees)	1,536	0.16%	244,574	0.17%	11,663	376,657
Dry goods and cloth stores, Bedding stores	14,711	1.49%	483,722	0.33%	51,131	936,835
Men's clothing	17,419	1.76%	1,531,789	1.06%	83,324	2,960,425
Women's and children's clothing	64,013	6.46%	4,961,255	3.42%	322,551	8,860,879
Footwear	10,523	1.06%	750,596	0.52%	48,953	943,847
Other miscellaneous woven fabrics, apparel, apparel accessories and notions stores	32,709	3.30%	2,259,523	1.56%	170,047	5,061,745
Grocery	27,442	2.77%	20,552,114	14.16%	1,025,225	22,364,400
Vegetable and fruit	18,397	1.86%	970,860	0.67%	84,882	808,690
Meat and poultry	11,058	1.12%	728,575	0.50%	58,530	322,363
Fresh fish	13,705	1.38%	728,352	0.50%	56,326	334,111
Liquor	32,233	3.26%	1,564,253	1.08%	95,169	1,118,052
Confectioneries and bakeries	61,922	6.25%	2,392,327	1.65%	369,508	1,655,102
Other miscellaneous food and beverage stores	132,479	13.38%	14,631,846	10.08%	1,280,037	9,250,911
Motor vehicles	83,887	8.47%	17,366,166	11.97%	565,227	2,982,778
Bicycles	11,207	1.13%	240,079	0.17%	27,204	667,430
Machinery and equipment (except motor vehicles and bicycles)	46,272	4.67%	9,507,282	6.55%	271,385	9,241,211
Furniture, fixture and "tatami" mat	20,138	2.03%	1,550,041	1.07%	91,251	5,107,010
Household utensil stores	15,225	1.54%	450,699	0.31%	46,310	742,967
Medicine and toiletry stores	89,453	9.03%	12,654,688	8.72%	605,676	10,363,924
Farming supply	11,938	1.21%	1,626,018	1.12%	59,051	1,567,625
Fuel	48,240	4.87%	12,123,560	8.36%	305,230	539,003
Books and stationery	34,847	3.52%	3,157,908	2.18%	438,421	3,773,623
Sporting goods, toy, amusement goods and musical instrument	22,347	2.26%	2,247,270	1.55%	137,588	4,506,737
Camera, watch and spectacles stores	20,175	2.04%	1,133,785	0.78%	77,848	1,136,958
Stores, n.e.c. (not elsewhere classified)	102,095	10.31%	8,340,300	5.75%	562,834	21,783,675
Total	**990,246**	**100.00%**	**145,103,822**	**100.00%**	**7,654,443**	**135,343,693**

✅ (*1): The number of Employees is the total of 'sole proprietors', 'unpaid family employees', 'paid executives', and 'regular employees', thus 'temporary employees' are not included.

✅ (*2): Total and breakdown may not match as the figures include establishments that could not methodically be classified.

The source: Ministry of Economy, Trade and Industry of Japan

<https://www.stat.go.jp/english/data/e-census/2012/index.html>

Table 5.1-2 Top 30 Wholesalers in Japan (2018)

2018	2017	Companies	Head office	Annual sales (JPYm)	Growth (%)	Industries
1	1	MEDIPAL HOLDINGS CORPORATION	Tokyo	3,181,928	1.1%	Pharmaceutical
2	2	Alfresa Holdings Corporation	Tokyo	2,640,511	1.4%	Pharmaceutical
3	3	Mitsubishi Shokuhin Co., Ltd.	Tokyo	2,620,316	4.3%	Food
4	5	SUZUKEN CO., LTD.	Aichi	2,132,362	0.4%	Pharmaceutical
5	4	NIPPON ACCESS,INC.	Tokyo	2,131,993	(0.3%)	Food
6	6	KOKUBU GROUP CORP.	Tokyo	1,885,767	0.3%	Food
7	7	TOHO HOLDINGS CO., LTD.	Tokyo	1,222,199	0.7%	Pharmaceutical
8	8	KATO SANGYO CO., LTD.	Hyogo	1,009,095	3.6%	Food
9	9	MITSUI FOODS CO.,LTD.	Tokyo	819,900	0.4%	Food
10	10	ARATA CORPORATION	Tokyo	754,447	2.9%	Household items, Medical supplies
11	11	TOMOSHIA HOLDINGS CO.,LTD.	Tokyo	718,213	1.8%	Food
12	12	ITOCHU-SHOKUHIN Co.,Ltd.	Osaka	667,128	0.9%	Food
13	14	VITAL KSK HOLDINGS, INC.	Tokyo	559,712	(1.0%)	Pharmaceutical
14	15	NIPPON SHUPPAN HANBAI INC.	Tokyo	550,134	(0.6%)	Food
15	13	NIHONSHURUIHANBAI CO., LTD.	Tokyo	545,761	(5.8%)	Books, Music, Video, Instruments
16	18	YAMAE HISANO Co., Ltd.	Fukuoka	488,704	14.1%	Food
17	16	Forest Holdings inc.	Oita	455,302	(0.3%)	Pharmaceutical
18	17	TOHAN CORPORATION	Tokyo	416,640	(6.1%)	Books, Music, Video, Instruments
19	20	CHORI CO.,LTD.	Osaka	356,537	14.4%	Textile
20	19	Starzen Co., Ltd.	Tokyo	351,212	3.3%	Food
21	21	YAMABOSHIYA Co., Ltd.	Osaka	264,466	1.9%	Food
22	22	SHINMEI Co., LTD.	Hyogo	264,156	7.1%	Food
23	24	OHKI HEALTHCARE HOLDINGS CO., LTD.	Tokyo	256,055	8.0%	Pharmaceutical
24	23	ONWARD HOLDINGS CO., LTD.	Tokyo	240,652	(1.0%)	Textile
25	32	HAPPINET CORPORATION	Tokyo	240,398	21.7%	Toy
26	25	HOKUYAKU TAKEYAMA Holdings,Inc.	Hokkaido	235,153	3.2%	Pharmaceutical
27	26	MARUICHI CO.,LTD.	Nagano	225,639	3.0%	Food
28	30	TOHO Co.,Ltd	Hyogo	217,666	4.8%	Food
29	29	FUJIMOTO HOLDINGS CO., LTD.	Tokyo	212,200	1.7%	Household items, Medical supplies
30	27	Izmic Corporation.	Aichi	209,024	(3.9%)	Food

The source: The Nikkei Marketing Journal, 31 July 2019

Table 5.1-3 Top 25 Retailers in Japan (2018)

2018	2017	Companies	Business	Annual sales (JPYm)	Growth (%)
1	1	AEON CO., LTD.	Holding Company	8,518,215	1.5%
2	2	Seven & i Holdings Co., Ltd.	Holding Company	6,791,215	12.5%
	-	AEON RETAIL Co.,Ltd.	Supermarket	2,185,400	(0.6%)
3	3	FAST RETAILING CO., LTD.	Holding Company	2,130,060	14.4%
4	4	YAMADA DENKI CO., LTD.	Specialty Shop	1,600,583	1.7%
5	5	Amazon Japan G.K. (*2)	Mail-order	1,526,583	14.3%
	-	Ito-Yokado Co., Ltd.	Supermarket	1,236,180	(0.6%)
6	6	Isetan Mitsukoshi Holdings Ltd.	Holding Company	1,196,803	(4.7%)
7	9	Pan Pacific International Holdings Corporation (Former Name: Don Quijote Holdings Co., Ltd.)	Holding Company	941,508	13.6%
8	7	H2O RETAILING CORPORATION	Holding Company	926,872	0.5%
9	8	Takashimaya Co., Ltd.	Departmental Store	912,848	0.6%
	-	SEVEN-ELEVEN JAPAN CO.,LTD.	Convenience Store	873,555	2.8%
	-	UNIQLO CO., LTD.	Specialty Shop	864,778	6.7%
10	10	BICCAMERA INC.	Specialty Shop	844,029	6.8%
	-	WELCIA HOLDINGS CO.,LTD.	Holding Company	779,148	12.1%
11	11	Izumi Co., Ltd.	Supermarket	732,136	0.3%
	-	WELCIA YAKKYOKU CO.,LTD.	Specialty Shop	724,725	8.8%
12	12	EDION Corporation	Specialty Shop	718,638	4.7%
	-	UNY Co.,Ltd.	Supermarket	702,453	-
13	16	Lawson, Inc.	Convenience Store	700,647	6.6%
14	15	LIFE CORPORATION	Supermarket	698,693	3.1%
	-	United Super Markets Holdings Inc.	Holding Company	694,323	0.3%
15	13	Yodobashi Camera Co.,Ltd.	Specialty Shop	693,157	1.9%
16	14	K'S HOLDINGS CORPORATION	Specialty Shop	689,125	1.5%
17	18	TSURUHA HOLDINGS INC.	Holding Company	673,238	16.7%
	-	Don Quijote Co., Ltd.	Specialty Shop	666,052	11.7%
	-	Isetan Mitsukoshi Ltd.	Departmental Store	634,280	(2.2%)
18	17	FamilyMart UNY Holdings Co., Ltd.	Holding Company	617,174	(3.1%)
	-	Sogo & Seibu Co., Ltd.	Departmental Store	615,256	(10.3%)
19	19	Nitori Holdings Co., Ltd.	Holding Company	608,131	6.3%
20	21	Sundrug Co.,Ltd.	Specialty Shop	588,069	4.2%
21	22	Matsumotokiyoshi Holdings	Specialty Shop	575,991	3.1%
22	23	Valor Holdings Co., Ltd.	Holding Company	565,930	4.0%
23	25	COSMOS Pharmaceutical Corporation	Specialty Shop	557,999	11.0%
24	20	SHIMAMURA Co.,Ltd.	Specialty Shop	546,944	(3.4%)
25	26	Nojima Corporation	Specialty Shop	513,057	2.2%

✅ (*1): Companies with a hyphen (-) in the rank column are consolidated subsidiaries whose parent companies are listed on the top 500 list.

✅ (*2): The total annual sales is calculated using the annual average exchange rate.

The source: The Nikkei Marketing Journal, 29 June 2019

Table 5.1-4 Top 10 Convenience Store Chains in Japan (2018)

2018	2017	Shop Names	Companies	Groups	Annual sales (JPYm)	# Shop
1	1	7-Eleven	SEVEN-ELEVEN JAPAN CO.,LTD.	Seven & i Holdings Co., Ltd.	4,898,872	20,876
2	2	FamilyMart	FamilyMart Co.,Ltd.(*1)	FamilyMart UNY Holdings Co., Ltd.	2,982,852	15,513
3	3	LAWSON	Lawson, Inc. (*1)	Mitsubishi Corporation	2,738,944	14,659
4	4	MINI STOP	MINISTOP Co., Ltd.	AEON CO., LTD.	333,740	2,197
5	6	Seicomart	Secoma Company Limited	Independent	180,838	1,202
6	5	Daily YAMAZAKI	YAMAZAKI BAKING CO.,LTD.(*1)	Independent	179,299	1,460
7	7	NewDays	JR East Retail Net Co.,Ltd.	East Japan Railway Company	102,371	492
8	8	POPLAR, SEIKATSU SAIKA, Kurashi House, Three Eight	POPLAR. CO., LTD	Independent	47,837	475
9	9	Hamanasu Club	seicofreshfoods, Ltd.	Independent	3,012	37
10	10	Hasegawa Store Company, Ltd.	Hasegawa Store Company, Ltd.	Secoma Company Limited	1,911	14

The source: The Nikkei Marketing Journal, 24 July 2019

✅ The survey was conducted with chain convenience stores whose business hours are 14 hours and more, and floor spaces are less than 250 square meter.

✅ Ranking is based on the sales excluding area-franchise-chain-stores. Overseas stores are excluded.

✅ (*1) Data for companies operating area-franchise-chain-stores include neither those stores' Annual sales nor the number of Stores. LAWSON figures include data of its area-franchise-chain-stores.

The source: The Nikkei Marketing Journal, 31 July 2019

Table 5.1-5 Sales by Type of Merchandise in Department Stores (2018)

	2017	2018	Growth (%)	Ratio (%)
Apparel	**1,839,799**	**1,772,568**	**(3.1%)**	**30.1%**
Men's	399,246	385,936	(2.8%)	6.6%
Women's	1,170,342	1,131,839	(2.8%)	19.2%
Children's	141,145	135,506	(3.9%)	2.3%
Others	129,065	119,287	(6.5%)	2.0%
Personal items	**775,792**	**785,950**	**1.6%**	**13.4%**
Accessories	**1,080,132**	**1,134,465**	**5.0%**	**19.3%**
Cosmetics	512,278	560,444	9.5%	9.5%
Jewelleries	347,410	357,557	3.3%	6.1%
Others	220,444	216,464	(2.7%)	3.7%
Household Items	**254,555**	**238,552**	**(5.7%)**	**4.1%**
Furniture	62,473	61,430	(0.8%)	1.0%
Home electrical appliances	14,530	12,511	(13.8%)	0.2%
Others	177,553	164,611	(6.8%)	2.8%
Foods	**1,656,007**	**1,622,922**	**(1.9%)**	**27.6%**
Fresh foods	322,393	310,865	(3.4%)	5.3%
Confectioneries	464,026	455,936	(1.7%)	7.7%
Delicatessen	364,393	359,631	(1.5%)	6.1%
Others	505,195	496,490	(1.2%)	8.4%
Restaurant	**158,572**	**152,612**	**(3.3%)**	**2.6%**
Services	**61,632**	**59,358**	**(2.9%)**	**1.0%**
Others	**126,768**	**120,575**	**(4.2%)**	**2.0%**
Grand total	**5,953,256**	**5,887,003**	**(0.8%)**	**100.0%**
Gift Vouchers	**154,511**	**143,529**	**(5.9%)**	**2.4%**

✅ The sales of Gift Vouchers are excluded from the total sales.

The source: Japan Department Stores Association <https://www.depart.or.jp/store_sale/>

Table 5.1-6 Sales by Type of Merchandise in Chain Stores (2018)

	2017 (JPYm)	2018 (JPYm)	Growth (%)	Ratio (%)
Foods	8,459,949	8,573,902	100.4%	66.0%
Apparel	1,072,097	1,009,400	94.7%	7.8%
Household items	1,019,308	993,239	97.5%	7.6%
Healthcare & cosmetics	369,354	372,163	101.0%	2.9%
Furniture & interior accessories	666,984	699,429	101.7%	5.4%
Home electrical appliances	122,509	115,136	93.6%	0.9%
Services & others	1,207,332	1,225,037	-	9.4%
Total	**12,917,532**	**12,988,305**	**99.8%**	**100.0%**

The source: Japan Chain Stores Association (58 member companies and 10,519 stores)
<https://www.jcsa.gr.jp/public/statistics.html >

Table 5.1-7 BtoC EC market size in Japan (2018)

		2017 (JPYb)	(%) (*1)	2018 (JPYb)	EC Ratio (%)	Growth (%)
Retail	Foods, beverages, liquors	1,558	2.41%	1,692	2.64%	8.60%
	Home electrical appliances, audio & visual equipment, PC & peripherals	1,533	30.18%	1,647	32.28%	7.40%
	Books, video & music software	1,114	26.35%	1,207	30.80%	8.39%
	Cosmetics, healthcare	567	5.27%	614	5.80%	8.21%
	Household items, furniture, interior accessories	1,482	20.40%	1,608	22.51%	8.55%
	Apparels & accessories	1,645	11.54%	1,773	12.96%	7.74%
	Motor vehicles, motorbike, parts etc.	219	3.02%	235	2.76%	7.16%
	Office supplies, stationeries	205	37.38%	220	40.79%	7.57%
	Others	278	0.80%	304	0.85%	9.31%
	Total	**8,601**	**5.79%**	**9,299**	**6.22%**	**8.12%**
Services	Travel	3372		3,719		10.27%
	Food & drinks	450		638		41.61%
	Tickets	460		489		6.34%
	Financing	607		603		(0.79%)
	Beauty & barber	419		493		17.67%
	Others (Healthcare, insurances, homes, educations)	649		707		9.00%
	Total	**5957**		**6,647**		**11.59%**
Digital Contents	e-publication (Books & magazines)	259		278		7.57%
	Charged music distribution	57		65		12.51%
	Charged movie distribution	132		148		12.00%
	On-line games	1,407		1,449		3.00%
	Others	93		98		6.00%
	Total	**1,948**		**2,038**		**4.64%**
Grand total		**16,506**		**17,984**		**8.95%**

✅ The 'EC ratio' means the ratio of EC market size to the amount of business transaction (Market size) including telephone, e-mail, and face-to-face based sales.

The source: METI (Ministry of Economy, Trade and Industry) 'Research on Infrastructure Development in Japan's Information-based Economy Society (E-Commerce Market Survey)'
<http://www.meti.go.jp/policy/it_policy/statistics/outlook/ie_outlook.html>

Table 5.1-8 Top 20 E-Commerce (B2C) Players in Japan (2017)

Rank	Companies (Main website)	Sales (JPYm)	Growth (%)	EC Ratio (%)	Main Products
1	Amazon Japan G.K.(amazon.co.jp) (*1)	1,336,000	13.5%	100.0%	General
2	Yodobashi Camera Co.,Ltd(yodobashi.com)	111,000	2.8%	100.0%	Home electrical appliances
3	ZOZO, Inc.(zozo.jp)	98,432	28.8%	100.0%	Apparel
4	Rakuten Direct, Inc.(kenko.com)	74,000	-	100.0%	Household items
5	Senshukai CO.,LTD.(bellemaison.jp)	65,600	(11.1%)	65.0%	General
6	Dinos Cecile Co., Ltd.(dinos.co.jp)	(*10)59,667	2.4%	56.0%	General
7	AEON CO., LTD.(aeonnetshop.com) (*2)	(*11)59,000	-	100.0%	Foods
8	Joshin Denki Co.,Ltd.(joshinweb.jp)	(*11)57,000	-	100.0%	Home electrical appliances
9	Japanet Takata Co.,Ltd. (www.japanet.co.jp/shopping)	(*11)53,800	7.9%	28.0%	Home electrical appliances
10	Interman Corporation(asq.jp) (*3)	50,714	30.0%	100.0%	Household items
11	UNIQLO CO., LTD.(uniqlo.com)	48,753	15.6%	100.0%	Apparel
12	Ito-Yokado Co., Ltd.(iy-net.jp) (*4)	48,734	2.8%	100.0%	Foods
13	Dell Japan Inc.(dell.com)	(*11)47,000	-	100.0%	PC
14	KITAMURA Co., Ltd.(kitamura.jp) (*5)	42,681	5.4%	100.0%	Cameras
15	Jupiter Shop Channel Co.,Ltd.(shopch.jp)	(*11)40,774	-	25.0%	General
16	BICCAMERA INC.(biccamera.com)	39,000	11.4%	100.0%	Home electrical appliances
17	MouseComputer Co.,Ltd.(mouse-jp.co.jp) (*6)	36,665	12.4%	100.0%	PC
18	MOA Co.,Ltd.(premoa.co.jp) (*7)	32,328	11.7%	100.0%	Home electrical appliances
19	QVC Japan, Inc.(qvc.jp)	(*11)31,410	-	30.0%	General
20	NITORI Co., Ltd.(nitori-net.jp/store)	30,500	35.0%	100.0%	Furniture, household items
21	Belluna Co., Ltd.(belluna.jp) (*8)	29,399	16.0%	24.0%	General
22	Seven-Meal Service Co., Ltd. (7-11net.omni7.jp)	26,548	(0.5%)	100.0%	Foods
23	Nissen Co., Ltd.(nissen.co.jp)	(*11)25,000	-	65.0%	Apparel
	ORBIS Inc.(orbis.co.jp)	(*11)25,000	(2.4%)	47.0%	Cosmetics, healthy foods
	Purecreate Inc.(arch-holesale.co.jp) (*9)	(*11)25,000	-	100.0%	Home electrical appliances

✅ (*1): Amazon Japan: Only the service charges and ad revenues from their marketplace tenants thus it is not the entire transactions on the web.

✅ (*2): AEON: Estimation of their digital business group sales mainly the online supermarket business.

✅ (*3): Interman: Sum of LOHACO and charm sales.

✅ (*4): Ito-Yokado: Mainly their online supermarket sales.

✅ (*5): KITAMURA: EC related sales including home delivery and in-store-pick-up sales.

✅ (*6): MouseComputer: Includes store sales etc.

✅ (*7): MOA: Includes wholesale business.

✅ (*8): Belluna: Sum of both general and specialised mail-order business.

✅ (*9): Purecreate: Estimation including their wholesale business.

✅ (*10): Calculated from their order intake statistics.

✅ (*11): Estimation

The source: Koubunsuppan Corporation <https://netshop.impress.co.jp/node/4751>

Table 5.1-9 Number of Vending Machines and Annual sales in Japan (2018)

Type	Product examples	Sales (JPYk)	#in operation			Growth (%)
		2016	2016	2017	2018	
Beverages	Soft drinks	1,740,528,000	2,133,000	2,130,000	2,120,000	99.5%
	Milk drinks	120,620,000	148,000	133,500	126,900	95.1%
	Coffee, cocoa (Cup)	137,904,000	169,000	156,400	154,000	98.5%
	Alcoholic drinks	30,750,000	24,600	23,900	22,900	95.8%
Total (Beverages)		**2,029,802,000**	**2,474,600**	**2,443,800**	**2,423,800**	**99.2%**
Foods	**Instant noodles, frozen foods, ice creams, confectioneries, etc.**	**54,132,000**	**69,400**	**71,900**	**72,000**	**100.1%**
Cigarettes	**Cigarettes**	**209,356,000**	**193,300**	**171,300**	**153,300**	**89.5%**
Thickets	Passenger tickets	1,415,842,000	14,800	14,700	15,200	103.4%
	Meals, admissions, etc.	410,972,800	35,400	40,500	43,200	106.7%
Total (Tickets)		**1,826,814,800**	**50,200**	**55,200**	**58,400**	**105.8%**
Household items	Prepaid cards, sanitary goods, newspapers, toys, etc.	417,967,500	722,300	238,600	230,300	96.5%
	Others (Newspapers, sanitary goods, toys, etc.)	52,762,400	138,800	-	-	-
Total (Household items)		**470,729,900**	**861,100**	**238,600**	**230,300**	**96.5%**
Total (Vending machines)		**4,590,834,700**	**3,648,600**	**2,980,800**	**2,937,800**	**98.6%**
Automated self-service machines	Money changer	-	61,000	64,600	66,900	103.6%
	Automatic fare adjustment machine (Parking, Hotels, Hospitals, etc.)	-	21,800	156,000	157,400	100.9%
	Others (Automatic lockers, Lending machines, etc.)	145,200,000	1,210,000	1,070,000	1,073,000	100.3%
Total (Automated self-service machines)		**145,200,000**	**1,292,800**	**1,290,600**	**1,297,300**	**100.5%**
Grand total		**4,736,034,700**	**4,941,400**	**4,271,400**	**4,235,100**	**99.2%**

Changes in 2017 data:

• Sales data are deleted as calculation became difficult due to diversification of Household item prices and payment means.

• Unified 'Household items' data excluding public phone prepaid cards.

• Automatic fare adjustment machine for Hospitals and others are merged.

• Growth rates could not be calculated due to changes in both data items and the acquisition methods, etc.

Reference: Japan Vending Machine Manufacturers Association
<https://www.jvma.or.jp/information/information_3.html>

GS1 Japan

Place Canada 3rd Floor, 7-3-37 Akasaka, Minato-ku Tokyo
107-0052, JAPAN
T +81-(0)3-5414-8500
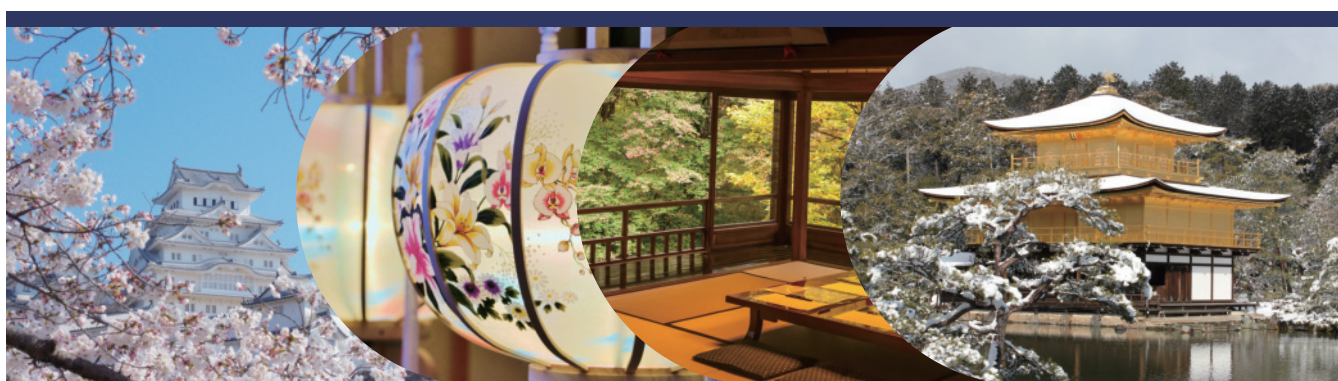**F** +81-(0)3-5414-8529

www.gs1jp.org