GS1 Japan

The Global Language of Business

GS1 Japan Handbook 2025-2026

Message from the President

GS1 Japan was established in 1972 as a specialised organisation dedicated to improving the efficiency of distribution systems, and it became the first organisation outside of Europe to join the EAN Association in 1978. We take great pride in the fact that this event marked the beginning of GS1's advancement into the global organisation it is today, with a membership of 120 countries. Since then, we have promoted the adoption of GTINs and barcodes by using the introduction of POS systems as a catalyst and have continued to advance the systemisation and efficiency of supply chains through the promotion of various GS1 standards. Currently, there are 140,000 GS1 Company Prefixes (GCPs) in Japan, and the cumulative total of GCPs since our establishment has reached 350,000.

Last year marked the 50th anniversary of when GS1 barcodes were first used commercially. We are committed to transforming tomorrow as we progress over the next 50 years. This year, GS1 established Vision 2030, a growth strategy with 'Powering trust in data for everyone, everywhere' as our new guiding star. In line with today's industry needs, we aim to support a circular economy by expanding our activities in both upstream and downstream sectors of the value chain, while meeting the expectations of the core segments of retail, marketplaces, and healthcare. To this end, we will continue to expand GS1 registries and 2D barcodes, focused on standardisation through our strength in trusted identification. GS1 Japan will also implement effective and robust measures in line with Vision 2030, taking into account the needs of local industries.

In Japan, digital transformation (DX) has become imperative in resolving challenges such as structural labour shortages, rising prices and costs, and the transition to a circular society. GS1 standards, which serve as a 'The Global Language of Business' connecting the real and digital domains, will play a crucial role in this context. GS1 Japan will continue to efficiently manage GCP registration/renewal operations, which serves as the foundation for trusted identification. In March 2026, we plan to launch a new product information platform, which we believe will significantly reduce the inefficiencies and workload related to product information in the Japanese supply chain, while promoting the adoption of 2D barcodes to enhance sustainability and traceability. This handbook introduces these initiatives.

GS1 Japan is committed to continuing its efforts as a member of 'One GS1', contributing to both global and local prosperity and well-being in collaboration with the GS1 community.

TOYONAGA Atsushi
President
GS1 Japan

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1. Sectors (Case Studies)

1.1 Retail and CPG

1.1.1 Dynamic pricing implemented using GS1 DataMatrix

-First pilot test of 2D at POS in Japan-

In February 2023, a pilot test was conducted in Japan to implement efficient dynamic pricing. The test was the first ever performed in Japan to scan GS1 2D symbols (GS1 DataMatrix) at POS cash registers.

1.1.1.1 Pilot test overview

The pilot test was conducted as part of the 'FY 2022 Infrastructure development project for improving efficiency of and creating added value in distribution and logistics (to create case studies on improving supply chain efficiency and reducing food loss using IoT technologies)', which was commissioned by the Ministry of Economy, Trade and Industry.

The purpose of the pilot test was to verify the effect that inventory management using products' expiration date and dynamic pricing have on supply chain efficiency improvement and food loss reduction.

- **Pilot venue**: Maizuru Carrot Hamatama Store (Karatsu City, Saga Prefecture)
- **Pilot dates**: 24 January to 26 February 2023 (34 days in total)
- **Target product**: Bread 25 SKU
- **Companies participating in pilot**: Imamura Corporation, SATO Holdings Corporation, Nishinihon Ishida Co., Ltd., Maizuru Department Store Co., Ltd., The Japan Research Institute, Limited

Figure 1.1.1.1-1 Maizuru Carrot Hamatama Store

1.1.1.2 Expected benefits in this pilot test

- More efficient retail operations, solving labour shortages

  Automatic price discounting of products was implemented by using a dynamic pricing system and electronic shelf labels. Verified what degree it was possible to reduce the large workload involved in replacing price tags and attaching discount labels.

- Reduction of food loss and increasing sales

  The achievement of food loss reduction has so far operated manually, detailed discounting operations. It was verified whether automatic discounting could keep the food loss rate as low as it had been in the past. It was also investigated whether the implementation of detailed price discounting in accordance with consumer behaviour had the effect of increasing sales.

- More advanced production estimates at food manufacturers

  Verified whether a higher level of production forecasting could be implemented by utilising sales data by expiration dates and discount rate.

1.1.1.3 How dynamic pricing is implemented

1. GS1 DataMatrix labels and group labels are placed on products

Once the products that are the subjects of the pilot test have been delivered in the store, GS1 DataMatrix label and **group**(*1) label are attached on the products.

Figure 1.1.1.3-1 GS1 DataMatrix label and group label on the products
(A target bread product has a group label on its package front and a GS1 Data Matrix label on its package back.)

- (*1) **group**: 'group' indicates which products have the same expiration date.

Figure 1.1.1.3-2 GS1 Data Matrix with the GTIN and the expiration dates

2. The system(*2) automatically reduces prices

(1) The prices of the products are set by the POS system based on their expiration dates.

(2) The price of each group of products is displayed on the electronic shelf label.

(3) And the shelf label is changed automatically in accordance with the POS system at pre-determined times (before store opening, and at 1 p.m. and 4 p.m.).

(4) At the POS cash registers, the price of each group of products is also changed automatically at pre-determined times.

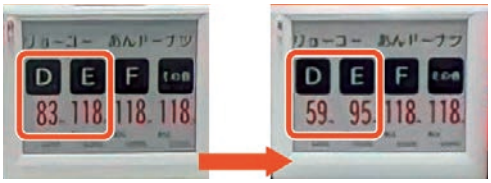

Figure 1.1.1.3-3 The prices are changed automatically at 1 p.m.

(*2) The pilot test used the SATO Dynamic Pricing Solution (SDPS).

3. Products are selected

(1) Consumers choose products according to their own needs. (e.g., a discounted product with a short expiration date if it is to be eaten soon, or a regular-priced product with a long expiration date if it is to be eaten at a later date).

(2) This allows precise price changes that are not possible with traditional price reduction labels, and is advantageous for both the store and the consumer.

Figure 1.1.1.3-4 Products with the electronic shelf labels

4. Payment made at a POS cash register

(1) GS1 DataMatrix labels are scanned at a cash register as well as EAN symbols.

(2) The prices of products with GS1 DataMatrix labels are automatically calculated based on their expiration dates.

Figure 1.1.1.3-5 GS1 DataMatrix compatible POS cash register

1.1.1.4 Result of this pilot

- Reading GS1 DataMatrix at POS cash register and cashier handling

  Since this was the first time in Japan that a POS cash register could read the GS1 DataMatrix, the POS system needed to be modified before this pilot test. It was challenging for the system, which had previously identified products only by GTIN, to identify products by GTIN + expiration date and change prices according to this information.

  Fortunately, however, the POS cash register scanners were capable of reading 2D symbols, so there was no need to replace the scanners. Smooth reading was achieved by modifying the scanner system based on the GS1 element string syntax.

  Immediately after the start of the pilot, the cashier staffs seemed to have some difficulty with the readable distance and angle of view to read 2D symbols, but they got used to it quickly, and neither took longer to read nor was more difficult to read than the EAN symbol.

- Improved operational efficiency and reduced labour costs

  - Pilot Test Result

    A total of 1,682 products were sold at a discounted price during the pilot period. The average number of discounts for these 1,682 items was 1.375 times. If the traditional discounting process is calculated as 10 seconds per discount for one product, this means that 6.42 hours were saved in total.

- Preliminary Calculation (for all bread)

  The pilot test covered 10% of the bread sold in this store. This means that automating the discounting of all bread using this method would save 57 hours per month (6.42 hours x 100% / 10% x 30 days / 34 days). In case the wage is USD 15 per hour, a cost saving of USD 855 per month can be achieved.

Figure 1.1.1.4-1 Adding POPs and videos

Figure 1.1.1.4-2 Setting up a lowest-priced products section

As discussed above, it was the first experiment in Japan in dynamic pricing at supermarkets that does not use reduction labels. Therefore, it is necessary to devise ways to make consumers aware of this new style of discounting. Trial and error will continue to be necessary with regard to this point.

1.1.1.5 Considerations and our next action

Of course, as the number of 2D symbols read at POS registers increases, the importance of correctly using the GS1 standard will also be heightened (e.g., data format and symbol size).

Furthermore, the importance of product identification with GTIN (migration RCN to GTIN) will increase in Japan, where DX, Digital Twin, data management in the cloud, and collaboration among companies are being actively explored as a response to logistics issues and labour shortages.

We will listen to the voices of such industries, attend to their current problems, and propose to companies various ways to utilise GS1 2D symbols. (For more information, refer to the 2.1 GS1 Japan's Industry Engagement for the Use of 2D Barcodes.)

1.2 Healthcare

1.2.1 Making Dialysis Treatment Safer Using GS1 Barcodes

1.2.1.1 Overview

At Shinseikai Daiichi Hospital located in Aichi prefecture, the usage of GS1 barcodes for the drugs and medical devices in dialysis treatment has enhanced medical safety and improved operational efficiency. Accidents and incidents have been reduced by more than 90% by using GS1 barcodes on drugs and medical devices. Also, workloads have been significantly reduced. All staff being able to check the status of medication has enabled efficient collaborative working and ensured operational reliability through accurate record keeping.

1.2.1.2 Challenges in dialysis treatment

Dialysis therapy is a treatment that artificially replaces the function of the kidneys. Blood is removed from the body and purified through dialysis equipment called a dialyser. Patients need to come to hospital two to three times a week and each treatment session takes about four hours. Hospitals administer drugs and other treatments immediately after dialysis is completed. Usually, as many patients are treated simultaneously in a dialysis unit, identifying patients as well as the drugs and medical devices used is always labour-intensive, and identification errors can sometimes cause serious accidents.

Shinseikai Daiichi Hospital has approximately 1,400 dialysis patients in total, around 500 patients on average per day. Not only did the hospital wish to prevent the misidentification of dialyzers and drugs, but it also wished to achieve efficient operation.

1.2.1.3 Dialyser barcode checking system

Currently, most of the dialysers display the GTIN, expiry date and lot number using the GS1-128 symbol. To prevent dialysers from being misidentified, the hospital checks the barcode at the patient's bedside (Figure 1.2.1.3-1).

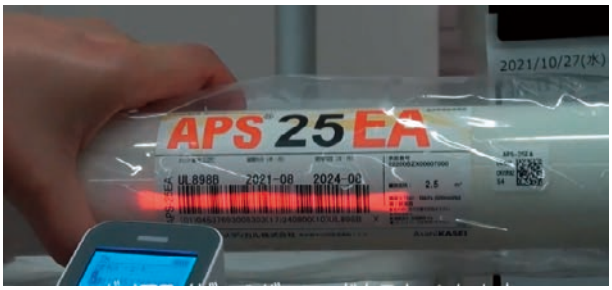

Figure 1.2.1.3-1 Scanning of GS1-128 symbol on a dialyser

1.2.1.4 Drug checking systems

In addition to dialyser scanning, the hospital implemented 'drug distribution system' in which GS1 barcodes are scanned when drugs are distributed to designated patients (for each dialysis bed) and 'medication confirmation system' that performs three-point verification at the patient's bedside: the patient ID, the GS1 barcode of the distributed drugs and the ID of the nurse in charge.

- Drug distribution system
  Using the list for each dialysis patient, the required drugs are prepared and distributed to the patient's bedside, at which point the staff ID and GS1 barcodes of the drugs are scanned and confirmed (Figure 1.2.1.4-1).

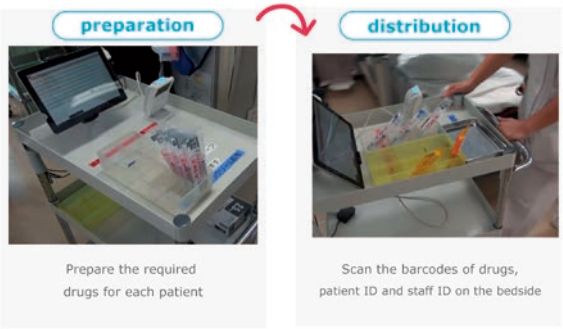

Figure 1.2.1.4-1 Barcode checking on the distribution of drugs to each patient bed

- Medication confirmation system
  The drug is administered at the end of dialysis at bedside, where the patient ID, the GS1 barcode of the drugs, and the ID of the nurse in charge are scanned. The scanned information automatically becomes a drug administration record that can be checked by all floor staff (Figure 1.2.1.4-2).

1.2.1.5 Improved safety through system implementation

Figure 1.2.1.5-1 shows the results for each of the three months the system was operated. The drug distribution system alone was not able to sufficiently reduce accidents or incidents, although it was able to reduce them by about 30%. However, by combining it with the medication confirmation system, it was possible to significantly reduce accidents and incidents.

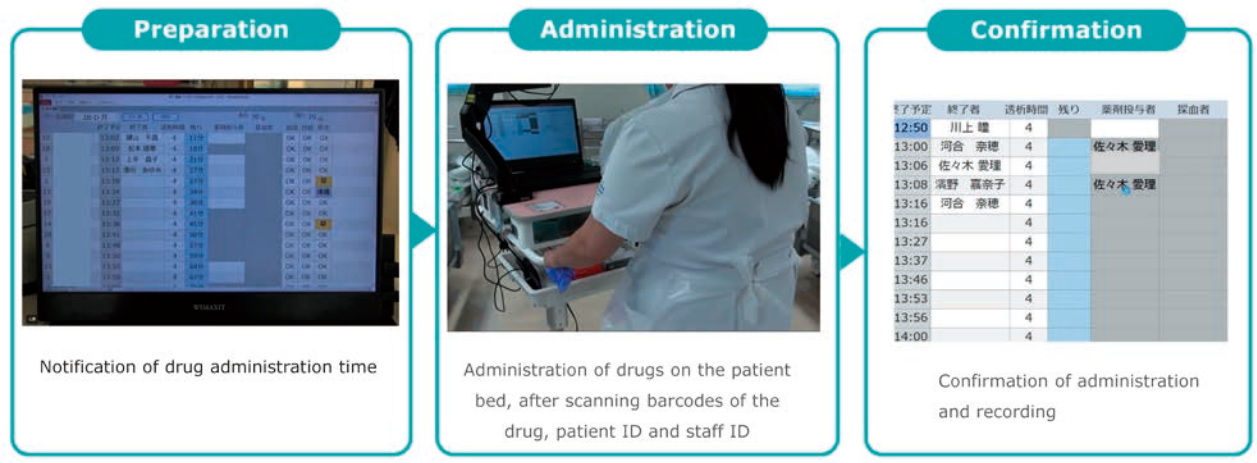

Figure 1.2.1.4-2 Barcode checking for the administration of drugs on each patient bed

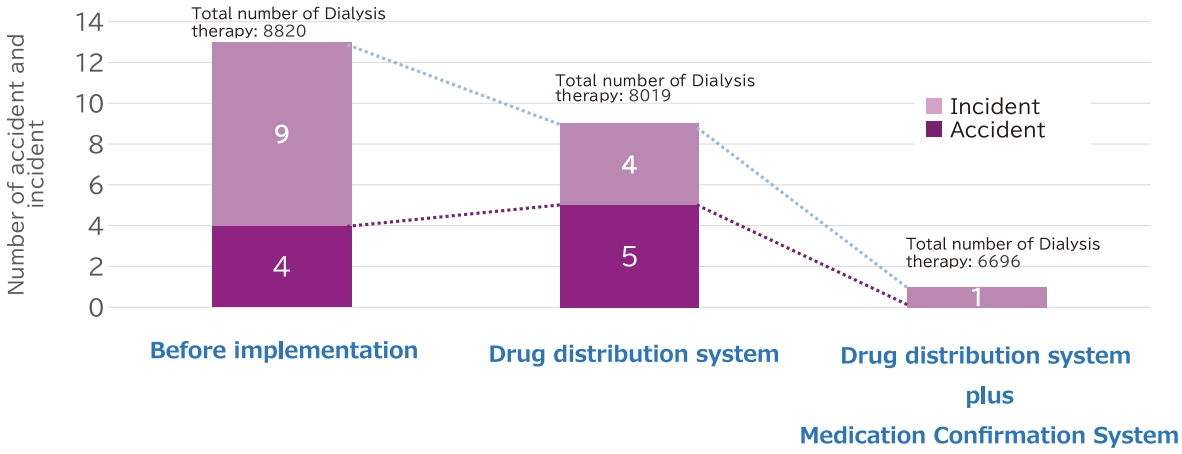

Figure 1.2.1.5-1 The effect of barcode checking

1.2.1.6 In pursuit of greater safety

Implementation of the drug checking systems in addition to the dialyser scanning has enabled each product to be administrated unmistakably and the administration state to be confirmed by all floor staff. This not only eliminates administration errors but also raises staff awareness of safety. The use of GS1 barcodes can offer a variety of benefits beyond improving patient safety and efficiency.

1.3 Apparel

1.3.1 Case Study of EPC/RFID Application at DAIDOH LIMITED

1.3.1.1 Overview

Price tags enclosing RFID chips are attached to garments

Small items are attached adhesive RFID tags

Figure 1.3.1.1-1 RFID Tags Attached to Items

DAIDOH LIMITED (hereinafter, 'Daidoh') is a clothing manufacturer and retailer that was established in 1879. The Company utilises RFID technology in all of its directly managed stores and outlets for its main brand, 'NEWYORKER', enhancing operational efficiency. Garments are attached with price tags containing RFID chips, and small items are tagged with adhesive RFID tags. The RFID tags are encoded with SGTIN (serialised GTIN) codes.

1.3.1.2 Background to the Introduction of RFID

Daidoh had been hesitant to introduce RFID technology due to cost-related concerns, but in 2018, an RFID implementation project was initiated due to the cost of RFID technology itself falling and because it was necessary to reduce the workload of shop-floor employees. Daidoh also took cost reduction measures, such as

consolidating various tags into a single one through scanning tests and the selection of appropriate tags, and choosing a type of RFID tag that is generally in wide use.

The process of attaching RFID tags to all three years' worth of inventory in the distribution warehouse took a month.

The on-site staff also participated in the in-store pilot study and during it they confirmed the operations involved in the implementation of RFID tags. Subsequently, the system was first introduced at the outlet store that had the highest number of customer visits, and then was gradually expanded to all directly managed stores.

Since FY2019, RFID has been put to use in Daidoh's actual operations. As of FY2023, the system has been introduced in all of its 18 outlet stores and 80 directly managed stores. At the time of the writing of this report, RFID tags have been attached to approximately 480,000 of the approximately 550,000 items in total, excluding some pattern-order items and the like.

As mentioned above, the RFID tags contain SGTIN. This is because Daidoh plans to utilise RFID technology throughout its entire supply chain in the future.

1.3.1.3 Use in Stores

In retail operations, RFID tags are being effectively utilized in the following operations, yielding significant benefits.

Figure 1.3.1.3-1 Exterior of the NEWYORKER Outlet Store in Mitsui Outlet Park, Makuhari

- Register Operations
  Instead of using a barcode scanner, the cashier scans the RFID tag to complete the transaction. This saves the time it takes to find the price tag on the product, and the cashier can now handle the work regarding payment by themselves, which was originally done by a team of two. In case the RFID tag is damaged, the cashier can also fall back to the barcode system.
- Item Search
  When a member of staff is looking for a product, he or she uses an app that displays the direction and distance to it. The system has minimised the time required to locate any particular item.
- Inspection at Time of Receipt of Merchandise
  The barcode scanning during the inspection process was replaced by RFID scanning. A task that used to take an entire day is now completed in 30 to 40 minutes.
- Stock-taking
  Previously, it took seven to eight members of staff a whole day to do a stock-taking of the 4,000 to 8,000 items that each store has, but thanks to do the introduction of RFID, this work can now be completed in about an hour by two to three people. Before, the stock-taking had to be conducted during business hours, but now it can be completed before the store opens.

As described above, the system has lowered the staff's workload and them to focus on providing more attentive customer service.

1.3.1.4 Future Issues and Prospects

In the future, Daidoh is aiming to expand the application of RFID technology, such as in logistics and on e-commerce sites, and for product management on a serial basis.

In order to achieve this, various adjustments will be necessary, such as coordination with subcontractors and system implementation, but as the range of application expands, the cost-effectiveness of a single RFID tag will also increase, making it possible to acquire data with finer granularity.


Payment Processing


Item Search


Inspection at Receipt and Stock-taking

Figure 1.3.1.3-2 Use of RFID at Stores

1.3.2 Examples of EPC/RFID Application at Goldwin Inc.

1.3.2.1 Overview

Goldwin Inc. (hereinafter, Goldwin) is a sports apparel manufacturer established in 1950 which also operates its own stores. In addition to its own original brand, Goldwin is involved in everything from product planning to sales in Japan for global brands, such as The North Face, Helly Hansen, and Speedo, and has a wide customer base ranging from athletes to sports fans.

In 2019, Goldwin made the decision to introduce RFID as part of its efforts to promote digital transformation (DX). First, the company introduced the technology at the stores of its group company, nanamica inc., and is now attaching UHF RFID tags encoded with SGTIN to all the brands it handles at the manufacturing stage(*), and using them within stores and for logistics in order to drive operational efficiency.

(*Note) For some of the products sourced from external parties (such as sundries and foodstuff), tags are attached in-store.

1.3.2.2 Use of RFID in Stores

In stores, RFID is used for inventory counting and product searches. The benefits of introducing RFID for each of these operations are as follows.

- Inventory Counting
  Prior to the introduction of RFID, inventory counting is carried out twice a year. The operation used to take more than four hours after the stores closed at night. After the introduction of the technology, the time required is now less than half, i.e., around two hours, allowing this work to be carried out during the day. In addition, this saving of labour has made it possible to carry out a provisional inventory count once a month.

- Product Search
  Store managers of both The North Face Kids Harajuku (Figure 1.3.2.2-1) and Helly Hansen Harajuku (Figure 1.3.2.2-2) comment that product searches have become much easier, and they find it the most beneficial. In Harajuku, where several of the company's stores are concentrated, it has a central depot where products for multiple stores are stored together. Even at such joint storage locations, RFID enables the desired products to be located quickly.

Figure 1.3.2.2-1 The North Face Kids Harajuku

Figure 1.3.2.2-2 Helly Hansen Harajuku

1.3.2.3 Utilisation of RFID in Logistics

At distribution centres, RFID is used to sort products by shipping destination and check them. When Goldwin first introduced RFID, the main aim was to improve the efficiency of store operations, but the company also wanted to make use of the tags for logistics, so in January 2020, it started using the technology at its outsourced warehouses. The following is a summary of the RFID application at the Toyama and Kanto warehouses.

- Toyama Warehouse
  This facility has been using RFID since 2023 for shipping to stores. The workflow is as described in Figure 1.3.2.3-1.
  - Sorting with "PAS" (automated sorter) (Figure 1.3.2.3-2): The RFID tags are read, and the products are sorted by delivery destination.

    The system has a processing capacity of 2,500 to 3,000 items per hour. When the warehouse relied on a sorter that scanned barcodes, the EAN/UPC symbols had to be placed face up in the scanning position each time, but this is now no longer necessary, and so the efficiency of the process of putting items in the sorter has improved dramatically.
  - Verification before shipping (Figure 1.3.2.3-3): Tags for all of the products inside the cardboard boxes are read all at once, and the items to be shipped are checked by comparing this information with the scheduled shipping data.

    When reading the data, the target box alone is shielded off, so that no other tags are read. The system has the capacity to inspect 300 boxes per hour.

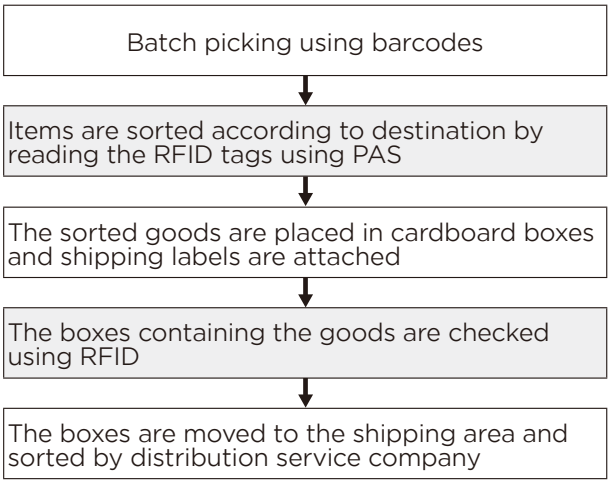

Figure 1.3.2.3-1 Process Flow of Shipments for Stores at Toyama Warehouse

Figure 1.3.2.3-2 "PAS"

Figure 1.3.2.3-3 Verification before shipping

- Kanto Warehouse
  This facility has used RFID since 2023 for processing shipments to stores and e-commerce. The workflow is as described in Figure 1.3.2.3-4.
  - Sorting with "Omni Sorter" (Figure 1.3.2.3-5): In addition to RFID, this also reads EAN/UPC symbols for double-verification, and sorts by delivery destination.
  - Sorting with "t-Sort" (Figure 1.3.2.3-6): When a product is placed on the automatic conveyor robot, the RFID reader installed above the entry port reads the tag on the item and sends instructions to the robot, which then travels to the plastic sorting box and places the item into the box corresponding to its destination.

    Once sorting is complete, the cardboard boxes containing the products are placed one by one in an electromagnetic shielding container (Figure 1.3.2.3-7), and product verification is performed by holding a hand-

held terminal (HHT) in the container and reading the product tags inside.

Although RFID is used for only a small part of the logistics operations, it has still increased productivity by approximately 20% overall, and reduced the number of incorrect shipments.

Figure 1.3.2.3-5 Omni Sorter

Figure 1.3.2.3-6 t-Sort

Figure 1.3.2.3-7 RFID Shielding Container for Inspections

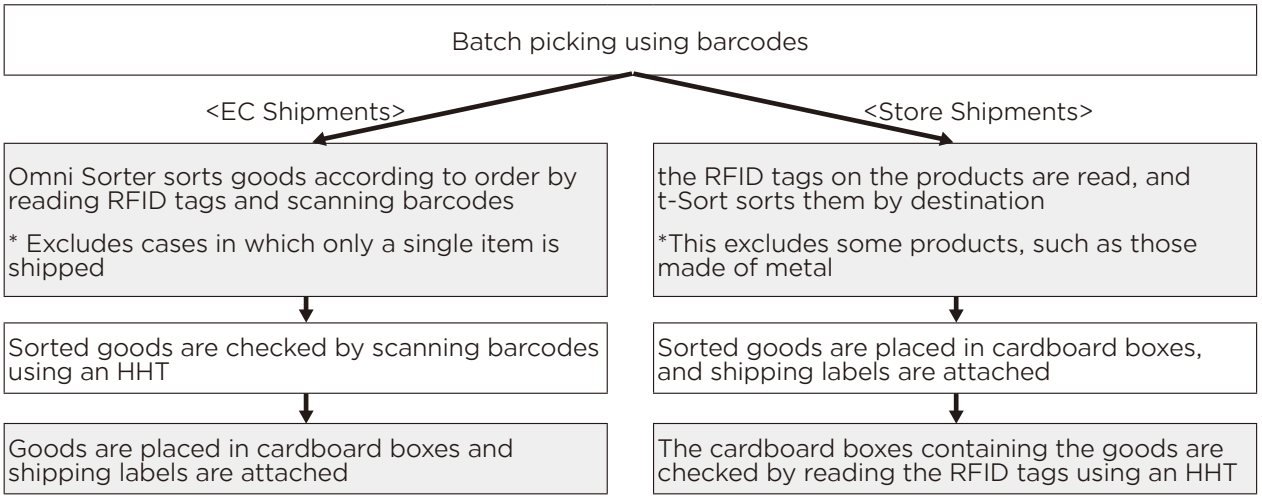

Figure 1.3.2.3-4 Process Flow for Outgoing Shipments at Kanto Warehouse

1.3.2.4 Challenges and Prospects for the Future

Extremely large improvements in efficiency can be expected through the implementation of inventory counting using RFID at sites with large amounts of stock, such as depots and warehouses where the stock for multiple stores is stored together. However, since RFID can read all tags within the range of its radio waves, location management becomes a challenge. In addition, Goldwin also carries some products that are made of metal. For such items that are difficult to read, the company is considering methods to improve scan accuracy, such as introducing on-metal tags.

As Goldwin stores SGTIN in its RFID tags, it is also possible to read and use RFID tags at delivery destination stores operated by other companies. This raises expectations for a future in which items are source-tagged and the tags are used effectively by all stakeholders in the supply chain, and RFID can be used to achieve traceability.

1.4 Transport & Logistics

1.4.1 Pilot Study to Improve Efficiency of Logistics Operations Through Utilisation of Visualisation System Based on EPCIS

Here, we will describe an initiative to improve the efficiency of processed food logistics that is being promoted jointly by Ajinomoto Co., Inc., Nissin Food Products Co., Ltd., F-Line Co., Ltd., and several solution providers. The key point of this initiative is that it enables 'visualisation' of logistics by precisely digitising the movement of goods based on GS1 standards, and then feeds this information back into logistics operations.

In addition to GS1 identification keys centred around the GTIN, SSCC, GSIN and GLN, and GS1 data carriers that store them, this initiative also uses EPCIS and CBV standards (hereinafter collectively referred to as 'EPCIS standards'). EPCIS standards consider the various tasks carried out on an object as 'events', and thereby define the standards necessary for common use of event data across multiple parties. One easily understandable use of this data is traceability, which is visualisation of the history of an item from its time of manufacture to the present. At the same time, this is also raw data that captures and visualises the movement and history of an item in the real world. From this perspective, EPCIS event data can be used not only for traceability, but also for a variety of applications based on the real-world movement of objects. One such use is the streamlining of logistics operations.

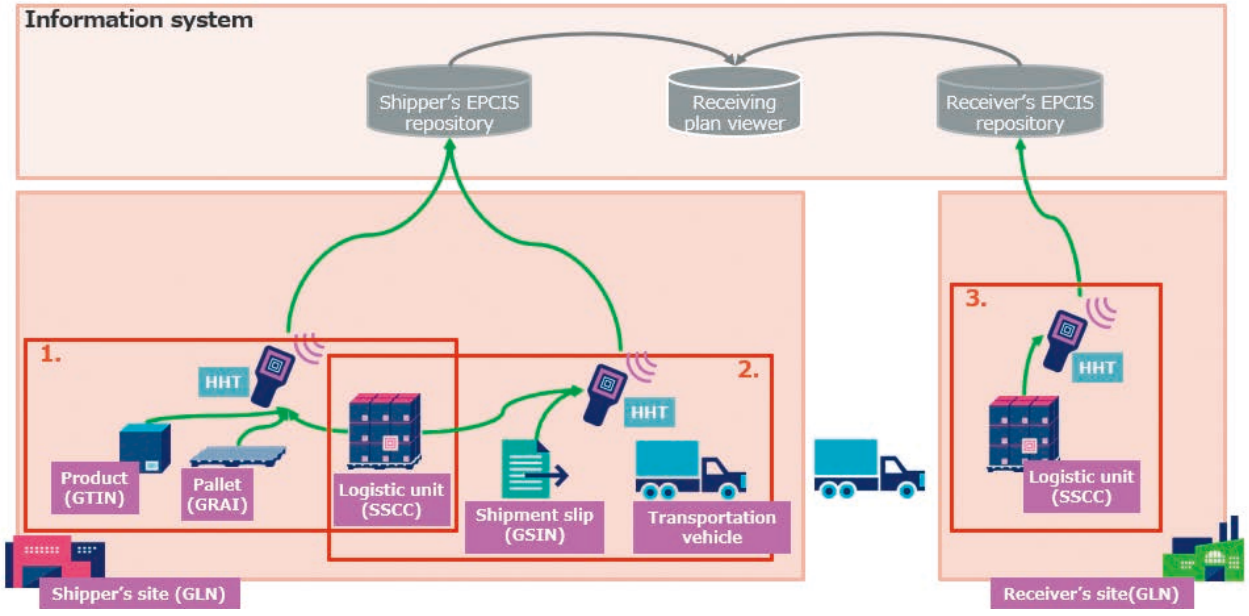

Figure 1.4.1.1-1 indicates the flow of work assumed in the pilot study. The details are as follows.

1.4.1.1 First Pilot Study: Improving the Efficiency of the Shipment Receiving Process Through Visualisation of Logistics Using EPCIS Standards

Among various logistics operations, the first pilot study, carried out in January 2024, focused on reducing labour associated with the shipment receiving process. It is currently common at logistical sites not to know what or how goods will arrive until their actual arrival. Using EPCIS event data, this invisible information is made visible. The current absence of this visualisation is one of the reasons why the shipment receiving process consumes so much of a truck driver's time.

This pilot study is based on the procurement and distribution of raw material supplied to Nissin Foods by Ajinomoto. Specifically, it refers to a scenario in which the relevant goods are shipped from F-Line's distribution centre—to which Ajinomoto outsources its logistics operations—to Nissin Foods' distribution centre. These goods are packed in cardboard boxes and are B2B only products. At F-Line's distribution centre, they are loaded onto pallets to form logistic units, which are then transported to Nissin Foods' distribution centre. The program assumes the use of a mixed pallet, which is a single logistic unit that contains multiple types of products. For domestic distribution in Japan, where transport of a wide variety of small lots is often required, assumption of a mixed pallet is extremely realistic.

1. The work assumed in this pilot study starts from the originating site being ready to prepare the logistic units for transportation by truck. The relevant goods are identified by GTINs, and accompanying attribute information, such as lot numbers, production dates and expiration dates, are also attached. In addition, in the pilot study, individual items can be uniquely identified using SGTINs, which are combination of GTINs and serial numbers. Workers prepare the logistic units by loading the goods indicated by the GTINs shown on the shipping slip onto pallets. Labels displaying SSCCs, which enable individual identification, are attached to each of the assembled logistic units. At the same time, an EPCIS event is created to indicate that the logistic unit identified by that SSCC has been assembled from goods identified by SGTINs, and this event is registered in the EPCIS repository on the originating site. Note that there may be more than one logistic unit for a single shipping slip, in which case an EPCIS event is registered for each individual logistic unit.

2. The logistic units created for each shipping slip are logically grouped, and this group is identified by GSIN. GSIN is a GS1 identification key that identifies a logical grouping of one or sereval logistic units each identified by SSCC. In the pilot study, the GSIN is printed on the shipping slip in advance. The linkage between GSIN and SSCCs, and the dispatch of these SSCCs to the destination, i.e., the corresponding EPCIS events, are registered in the EPCIS repository on the originating site.

3. At the receiving site, the system is set up in advance so that it receives notification when an EPCIS event indicating a dispatch to the receiving site is registered in the EPCIS repository of the originating site. The receiving site is identified by a GLN, and the EPCIS event generated and registered in step (2) contains this GLN as the destination. This allows the receiving site to obtain information about the shipment scheduled to arrive there, flagged by the GSIN, together with the specific logistics units, i.e., SSCCs, contained in that shipment. Furthermore, the EPCIS event registered in the process in (1) for the relevant SSCC can also be searched and retrieved from the EPCIS repository of the originating site, so that information on the individual goods contained in each logistic unit, i.e., SGTINs and attribute information, can also be obtained. Obtaining this information before the actual arrival of the goods allows the receiving site to prepare for receipt. Furthermore, at the time of actual arrival, the receiving process can be carried out whilst knowing what goods are included in each logistic unit, without having to inspect the contents of each logistic unit individually. In addition, by retrieving the SSCC of the logistic unit and referencing it against the list of SSCCs linked to the GSIN of the relevant shipment, it can be verified whether all the logistic units that should be received in that shipment are present.

In the pilot study, GS1 QR codes were used as data carriers to display the SGTINs and attribute information on the goods, SSCCs on the logistic units, and GSINs on the shipping slips. However, GS1 QR codes are not essential to achieving the concept embodied in the study, and other printable symbology could be used instead, or utilisation of EPC/RFID could also be considered

for the goods and logistic unit.

At the site where the pilot study was conducted, it was confirmed that the above concept and information system to implement it functioned without any issues; at the same time, the change in the working time expended receiving goods before and after application of this concept was recorded. Before implementation of the concept, upon arrival of the shipment, workers had to check the outer appearance of the logistic units for possible damage and, when necessary, break the logistic unit open to count the types and quantities of the goods individually. In contrast, once the concept had been implemented, information on the goods contained could be obtained from the SSCC indicated on the label attached to the logistic unit, and so it was only necessary to scan the SSCC of the logistic unit and check outer appearance for damage.

Figure 1.4.1.1-2 Scanning SSCC during shipment receipt in the pilot study

Consequently, the amount of time required for the shipment receipt process was significantly reduced. Figure 1.4.1.1-2 shows an SSCC being scanned during shipment receipt.

Conversely, from the viewpoint of the originating site, creating information for each logistic unit at the time of dispatch, i.e., linking the SSCC of the relevant logistic unit to the GS1 identification key of the contents, purely increased the workload. In particular, in the current study, the GS1 identification key for each of the goods contained was at the SGTIN level and the data carrier was a GS1 QR code, so the GS1 QR codes displayed on the goods had to be scanned individually and then linked to the SSCC. Figure 1.4.1.1-3 shows this being performed. This is a very labour-intensive task compared to current operation, so, in order to actually implement the concept set out in the pilot study, the burden imposed by this process must be reduced. It is necessary to consider automatic identification techniques and work procedures that are more suited to on-site implementation.

Figure 1.4.1.1-3 Linking SSCC and SGTIN during dispatch in the pilot study

1.4.1.2 Future Prospects

This initial pilot study was conducted as a one-off trial to firstly confirm that the concept is actually effective. In addition to reducing the workload involved in shipping operations, as mentioned above, there are still various other issues that remain to be considered, which we plan to continue investigating. Some examples are given below.

- Expansion of the pilot study concept: In this pilot study, the focus was on the workflow from shipping to receiving that exists between two parties, but when considering overall optimisation of logistics, the greater the number of parties that participate in the concept, the greater the optimising effect will be. EPCIS standards should be applicable not only to the flow of shipping and receiving between two parties, but also other operations among multiple parties.

- Creation of new added value in logistics: Furthermore, without being constrained to the concept of this pilot study, which was to utilise event data in order to improve the efficiency of logistics operations, it is also possible to consider adding other types of value to logistics. For example, traceability, which was mentioned earlier as a straightforward use of event data, does not directly lead to the streamlining of logistics operations, but can be considered as providing added value to logistics services.

- Scope of event data disclosure and sharing: EPCIS standards do not define what event data should be disclosed and shared among the parties involved. The standard only covers the

arrangements that need to be made to ensure seamless sharing of event data when the necessity arises. It is the users of EPCIS standards that must decide which data to be disclosed and to whom. In logistics involving multiple parties, event data may include sensitive information belonging to each party, i.e., data involving areas of competition. In such a situation, it is necessary for the parties involved, and ultimately the industry as a whole, to consider what can be done to achieve overall optimisation of logistics, and where to draw the line between collaboration and competition for each party.

- Linkage with information other than EPCIS event data: In addition to EPCIS event data, there are various other types of data related to logistics, e.g.: logistics-related EDI messages, such as orders and advance shipment notifications; shipping slips or shipping slip data exchanged between parties when moving goods; and data related to the operation of transport vehicles, etc. Although some of these are similar in content, they have different characteristics and roles. It is believed that linking them together will enable use of a wider range of data, and it is necessary to consider system architecture that enables this objective.

GS1 Japan will continue to participate in programs like this initiative in order to advance studies regarding the use of GS1 standards in logistics.

1.5 B2C

1.5.1 B2B2C service with GS1 QR code

1.5.1.1 GTIN for product recall

SDG initiatives have been getting popular even in elementary schools, thus it has become increasingly important to communicate accurate product safety information not only to buyers, but also to users and others as part of the 'consumer right to know'.

The Consumer Affairs Agency in Japan alerts consumers to recalled products on their website and Twitter.

Reporting recalls to the Agency became mandatory, and this information, including GTIN and lot data, should now be registered to the Security Net (operated by METI) under the appropriate company gBiz ID (operated by the Digital Agency).

Information of Lot number is indispensable in identifying the actual target, and if it is missing, finding the product is a heavy burden and give great pressure on the environment.

This information is shared worldwide through OECD's recall portal website.

Nowadays, GTIN is increasingly used to identify recall information as some other MOs do.

1.5.1.2 Sharing recall information with consumers using GS1 QR code

While, currently, some foodstuffs are labelled with a one-dimensional barcode symbol if they contain allergenic ingredients, the level of accuracy required for safety information is even higher, and many changes have been made to the related regulations, besides, confirmation of possible changes to registration details after shipment is also becoming increasingly important.

In notifying users of product recall information, telephone calls, TV commercials, and emails are used, but even so, it is difficult to reach all target groups, so the government has announced that it will use some new technology to notify them.

One such service is beginning to be used to check product safety via cloud systems by scanning GS1 QRs.

In order to help the users, scodt®, a smartphone app using GS1 QR code, was developed.

This app is based on a system for the communication of risk.

It ensures that information is conveyed to the target user of a product in the event of a recall, and that the user can easily take the necessary action. (http://pl-taisaku.org)

The system is based on the patented 'Safety Check On-demand Technology (scodt®)', developed and filed by Yoshiaki WATANABE, and promoted by The Association for Product Liability (APL).

Figure 1.5.1.2-1 Applications of scodt®

1.5.1.3 Service Overview

The system works as follows:

After installing the app on their mobile device, users scan the GS1 QR code printed on the product label or product itself.

This GS1 QR code provides three types of information: the GTIN, lot number and product URL. Users can then check the following information on their mobile device;

- Product status (e.g., whether the product has reached end of life or not and whether it has been recalled or not)
- Basic product information
- Product instruction manual
- Certificate of product quality testing, etc.
- Product expiry warning
- Directing users to other related information.
- The responsibility of the retail distribution operator is increased to prevent recalled products from being put on the market, and are required to detect and sort recalled products before they are sold.

Furthermore, it can be assumed that when target products are recycled, their management will be strengthened, and for that purpose, the utilisation of GS1 QR for individual products, e.g. sundries, hardware, and machinery, will be effective.

For further information on their services, please visit APL's website.

https://pl-taisaku.org/?page_id=2823 (only in Japanese)

Figure 1.5.1.3-1 Free GS1 QR Code (scodt®)

1.5.1.4 GS1 QR code case studies

- Trap products: Sakae industry
  Sakae Industry manufactures traps to catch all kind of animals from rats, marten and raccoons to bears.

  Sakae Industry was looking for a more effective tool to inform people about the correct installation of the traps (on site) because the traps need to be properly installed and used, otherwise there might be a risk for people nearby caused by escaping animals.

  The company has devised a metal label with a GS1 QR code printed on it, which is attached to the body of the trap.

  This system frees users from needing paper instruction manuals at trap installation sites and ensures that the product information can be retrieved through a mobile device whenever and wherever required.

  Animals are increasingly likely to invade human society as the population in Japan, especially in rural areas, decreases, and therefore services using GS1 QR code will continue to grow.

Figure 1.5.1.4-1 GS1 QR code attached vermin control trap

- Koji cosmetics: Sakura Koji Lab
  Sakura Koji Lab is a manufacturer that sells cosmetic products made from rice 'koji'.

  Because the ingredients in Sakura Koji Lab's products differ from those of common cosmetics, adequate information on their usage and features need to be provided to customers.

  As Sakura Koji Lab exports its products internationally, it needs to provide detailed product information to its international consumers.

  A GS1 QR code is displayed on each product's packaging, enabling users to check how to use the products via scodt®.

Figure 1.5.1.4-2 GS1 QR for Cosmetics

- Processed foods: Joan International
  Joan International (Joan) is an importer and distributor of olive oil.

  Recently, both sellers and consumers are becoming increasingly concerned about food safety and security with the introduction of the mandatory notification of voluntary recalls in Japan.

The Italian olive farmer contracted by Joan grows their olives organically, and Joan prints the GS1 QR onto their product labels to convey this information to buyers and others.

The GS1 QR printed on the product also directs customers to the company's EC site, making it easier to inform customers of the product safety and increase their trust in the company, which has reportedly resulted in an increase in repeat purchases.

Consumers can also scan the GS1 QR codes on the product packaging to obtain detailed information about the products' characteristics.

Figure 1.5.1.4-3 GS1 QR for olive oil products

1.5.1.5 Responsibility for product safety

In the field of industrial products and cosmetics, it is expected that consumers knowing how to correctly use products will have a significant effect in preventing undesirable accidents due to mistakes or misuse.

Imports of food products have increased rapidly in recent years, but many of these products contain ingredients that are not authorised in Japan, and consequently recalls relating to the labelling obligations of imported food products have increased rapidly.

The Consumer Affairs Agency is strengthening regulations on proper labelling, and food recalls seem to be a major issue in the future.

The PL Research Society will be conducting research on issues related to food recalls and labelling from 2022 and will deepen its cooperation with the government.

Furthermore, in 2022, 'Act for the Protection of Consumers who use Digital Platforms' came into force, imposing on digital platform operators the obligation to stop advertising such as labelling violations and to report offending operators.

This means that existing internet operators will likewise have to 'not sell the offending product', increasing the risk of recalls at DIY stores and others, and furthermore product traceability in the disposal process after recalls, which has been neglected, will also be required.

This will require more and more identifying brand owners and product lots for single products.

Much is expected of solutions using GS1 QR codes as a tool for users to use products correctly and safely.(within facilities or areas such as factories and warehouses).

2. Services and Solutions

2.1 GS1 Japan's Industry Engagement for the Use of GS1 2D Barcodes

2.1.1 Overview of 2D Activities

GS1 Japan's 2D symbol initiative aims to help companies promote Digital Transformation and supply chain optimisation using GS1 2D symbols. We have been engaging in this initiative for over five years, not only for scanning products at POS, but also for raw materials and case units. Our first task in 2017 was to put together guidelines for the GS1 QR code labelling of raw materials.

Since 2022, we have been actively promoting the use of GS1 2D symbols at POS, and our first pilot was realised in February 2023 (see section 1.1.1). In addition, GS1 QR codes have already been displayed on CPG raw materials and trade item groupings at several companies, and GS1 2D symbols are increasingly being actively introduced in three areas (raw materials, trade item groupings, and POS).

2.1.2 2D in Retail

For 2D in Retail, we are actively engaging with the industry to conduct demonstrations and actual implementations, starting with a pilot in 2023. As several of our member firms have been inquiring about the latest case studies and ask technical questions, we provide a wide range of user support.

In 2024-2025, we plan to verify the technology for printing 2D symbols using various printing methods/materials and reading them at POS cash registers with our solution partners. We are steadily preparing for implementation by manufacturers and retailers.

2.1.3 Raw Material and Carton Cases

In response to the growing interest in logistics visibility and traceability, GS1 Japan has published guidelines for the use of 2D symbols on raw materials and the trade item grouping.

Raw Materials:
https://www.gs1jp.org/assets/img/pdf/SourceMarkingGuidelineforRawMaterials.pdf

Carton Cases (in Japanese only):
https://www.gs1jp.org/assets/img/pdf/carton_guide.pdf

For example, in the trade item grouping sector, Rokko Butter, a manufacturer of processed food products (mainly cheese products), leverages GS1 QR codes for their traceability system and has printed GS1 QR codes on more than 70 product SKUs as of February 2024. They are also exploring the option of printing QR codes with Digital Link on consumer trade items.

Ajinomoto and Nissin Foods, which are major manufacturers in Japan, are conducting a logistics visibility pilot using the GS1 standard. In this pilot, they are printing GS1 QR codes on raw materials delivered from Ajinomoto to Nissin Foods to verify the effectiveness of logistics visibility. (For more information, see 1.4.1.)

A manufacturer of raw materials received requests from suppliers to print QR codes with non-GS1 standard formats. As it was deemed difficult to respond to the needs of each supplier individually, the company decided to use GS1 QR codes. They use label printing or direct printing depending on what the symbol will be printed on.

Web Page

2D in Retail Overview
https://www.gs1jp.org/standard/industry/2d-in-retail/

Search for your use cases
https://www.gs1jp.org/standard/industry/2d-in-retail/casestudies.html

YouTube

One scan, Infinite Possibilities
https://youtu.be/q2qEBKdwFgQ?si=pRtLpqhluxVnBEp4

QR code or QR code powered by GS1?
https://youtu.be/8_IURTaftsk?si=ploW8RhAHZolfdkZ

Document

GS1 element string syntax and GS1 Digital Link URI syntax
https://www.gs1jp.org/standard/industry/2d-in-retail/syntax.pdf

What is Scanner mode 1/2/3?
https://www.gs1jp.org/standard/industry/2d-in-retail/scannermode.pdf

Figure 2.1.2-1 2D in Retail

2.1.4 Project to Verify Direct Printing of GS1 Data Matrix on Cardboard Cases

Food ingredients and the trade item grouping are often traded in cardboard boxes, and it is expected that many manufacturers will adopt direct printing, which has lower running costs, for printing GS1 2D symbols on them.

Figure 2.1.4-1 GS1 Data Matrix directly printed on cardboard cases

However, as most cardboard cases are brown, direct printing tends to make it difficult to ensure sufficient contrast and may cause problems such as the symbols being hard to read or unreadable.

Therefore, we conducted a project in 2023 to verify whether it is possible to print GS1 Data Matrix directly on corrugated cardboard.

Because the project was a collaboration with several printer manufacturers, scanner manufacturers, and the Japan Automatic Identification System Association (JAISA), one of the outcomes was that knowledge was gained on the printing and reading of GS1 2D symbols.

The results of the project are summarised in a report (below, in Japanese only), which provides guidelines on three points for printing an easy-to-read GS1 Data Matrix.

https://www.gs1jp.org/standard/industry/carton/directprinting/gs1dm_report.pdf

- Adhere to the GS1 standard size specifications.
- Use ink recommended by the printer manufacturer and observe the correct density setting.
- It is strongly recommended to print on the actual corrugated board material to be used and check the quality before printing.

2.2 GS1 Japan Data Bank (GJDB) -Product-

GS1 has announced a policy that is aimed at urgently creating and offering a centrally managed referable system for information that is interlinked with GS1 identification keys, such as GTIN and GLN, while also managing and operating GS1 Company Prefix allocations much more strictly.

Based on this policy, GS1 launched a new database service called the 'GS1 Registry Platform', which stores thin information on GS1 Company Prefixes and GS1 Identification Keys, including GTIN and GLN, and provides essential information for identifying products and/or locations.

In principle, users need to be routed through the local GS1 MO (GS1 Japan in Japan) service to register for the GS1 Registry Platform, and the GS1 Japan Data Bank (GJDB) -Product- service provides the entry point for Japanese users.

Up and running since October 2019, GJDB -Product- employs a system that offers easy registration and management of GTINs and their associated information and allows the seamless release of the registered product data to the GS1 Registry Platform and domestic database systems.

Following GJDB -Product- initial release, brand owners can easily navigate the GTIN allocation, GTIN management, and barcode symbol generation/download processes.

2.2.1 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 are struggling significantly with the registration and management of product information. In contrast, the wholesalers and retailers that handle

the products produced by these SMEs are suffering from inefficiencies in product data exchanges.

- Challenges related to product information registration and management

  Determining whether they can afford a product management system from the perspective of cost-effectiveness is a big decision for SMEs.

  Therefore, companies who cannot acquire such systems mostly process their product information by keeping handwritten records or entering data in a spreadsheet.

  However, if GTINs are allocated manually without sufficient knowledge of the GTIN structure (composed of three elements: a GS1 Company Prefix, an item reference, and a check digit), there is an increased risk of incorrect product information registration, which includes registering incorrect GTINs and allocating the same GTIN to different products (duplicate).

  Incorrect GTIN allocation also causes problems for the brand owner's trading partners, including their wholesalers and retailers, as GTINs are the key to information throughout the value chain.

- Challenges related to product information exchanges

  Retailers and wholesalers need to receive the correct product information in a timely manner, but they have been struggling to acquire this information.

  In Japan, a database that centrally manages all the product information that retailers need for reference has yet to be developed.

  As a result, wholesalers and retailers have to ask the brand owners for the necessary product information.

  The product information is transmitted from the brand owners in various ways, such as entering the data into the retailer's Web system or sending retailer-specific spreadsheets with the required data as email attachments.

  Manual operations such as these impose a burden on the brand owners and involve cumbersome operations, which may result in entries containing erroneous information even for the same product or entries containing inconsistent information.

  Product information is vital for order placement, logistics, and sales operations, so incorrect information affects the entire business.

2.2.2 Functions offered by GJDB -Product-

GJDB -Product- initial release has been prepared mainly to mitigate issues concerning product information registration and management or product information exchanges, including GTIN allocation. The following functions are currently available.

- Easy allocation of GTINs
- Easy management of GTINs.
- Easy generation of barcode symbols for GTINs
- Seamlessly interlinked operations with domestic databases.

2.2.2.1 Easy allocation of GTINs

GTINs must be allocated correctly by setting item references according to the rules and then calculating the check digit.

This process can be a burden, especially for

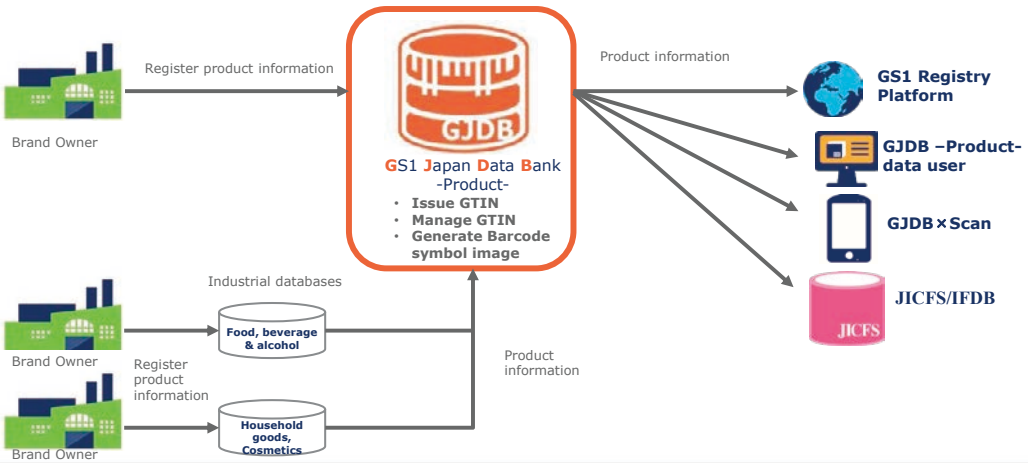

Figure 2.2-1 Overview of the GS1 Japan Data Bank -Product-

SMEs, but GTIN allocation has been made easy by the release of GJDB -Product- service, which requires only the following three steps.

Three steps of GTIN allocation:

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

2.2.2.2 Easy management of GTINs

The main reason for using GTINs is their global uniqueness.

Any reduplication of GTINs causes confusion for the stakeholders who handle the products, including wholesalers and retailers, and undermines the supply chain efficiency.

To avoid such confusion, each brand owner must make sure to allocate GTINs correctly without reduplication.

Brand owners do not need to worry about GTIN reduplication once they have registered all their products to GJDB -Product- because doing so will ensure that the GTINs are correctly managed.

Furthermore, the GTIN allocation status, including counts for the allocated GTINs (and the remaining unallocated GTIN count), for each GS1 Company Prefix is visualised using a coloured bar chart.

2.2.2.3 Easy generation of barcode symbol images for GTINs

Brand owners need to allocate GTINs for their products and then display their barcodes.

If the brand owner leaves this work to a printing company, they just need to provide the GTIN data. However, if the brand owner decides to carry out this process by themselves, they need to find suitable software to generate the symbol and then display it on the product.

SMEs that are familiar with the process should have no problem printing the barcode, but those that are not familiar with may find generating the symbol for the allocated GTIN difficult.

By utilising GJDB -Product- functions, brand owners can easily generate the necessary EAN/UPC symbols and download them in an electronic format after publishing the product information to GJDB -Product- and its connected database.

2.2.2.4 Seamlessly interlinked operations with the GS1 Registry Platform and domestic databases

Brand owners expect their products to be widely sold. Given this, they need to share accurate product data among their stakeholders and make sure that the data is well known to the parties concerned.

Currently, however, brand owners need to share product information in many different ways according to the relevant party's requested format, which can be a burden.

GJDB -Product- allows users to publish accurate product information globally as it has already been seamlessly linked with the GS1 Registry Platform, JICFS/IFDB (2.4), and GJDB x scan (2.3).

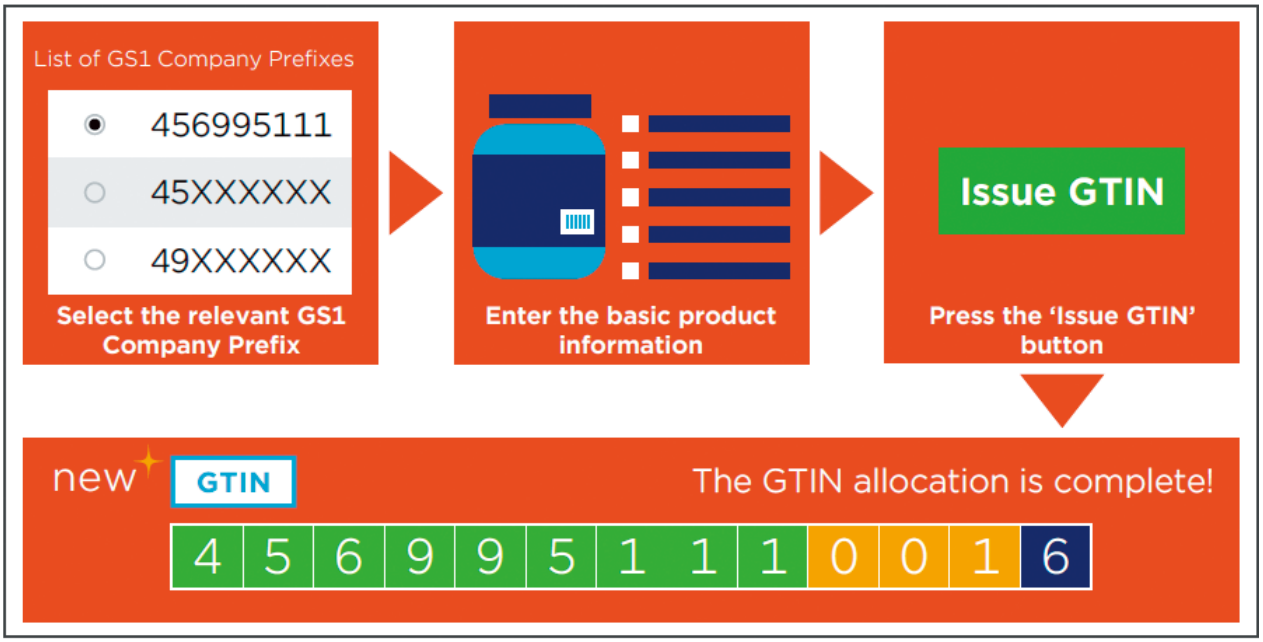

Figure 2.2.2.1-1 GTIN allocation made easy (three steps)

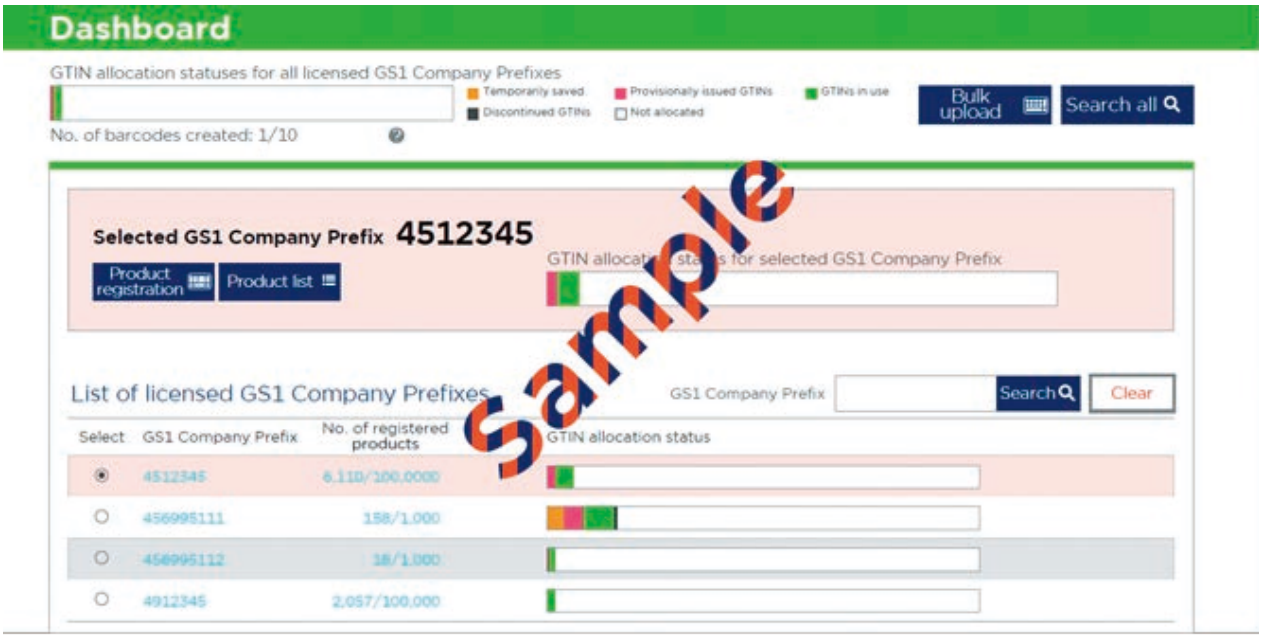

Figure 2.2.2.3-1 Visualized GTIN allocation status using coloured bar charts

2.2.3 Number of items registered in GJDB -Product-

As of June 2025, about 4,780,000 items have been registered in GJDB -Product- by approximately 46,000 brand owners. During the service launch period, we asked companies with newly allocated GS1 Company Prefixes to register their product information, but we are now expanding this to customers that had already been licenced GS1 Company Prefixes before the launch. Therefore, the number of items and brand owners is expected to increase further.

Table 2.2.3-1 Item counts by category

Category	Item count
Food	948,626
Healthcare supplies	88,151
General merchandise, household items, and durable consumer goods	370,621
Cultural goods	1,778,549
Apparel and personal items	948,203
Other	9,034
Total	**4,780,118**

2.2.4 GJDB -Product- update history information

Since the release of GJDB -Product- in October 2019, we have made several updates to make product information registration easier and improve usability.

We will continue to update GJDB -Product- in order to incorporate features that meet the requirements of local users and the direction of the GS1 data services.

Table 2.2.4-1 below shows the update history for GJDB -Product-

2.2.5 Future of GJDB -Product-

We are working to enhance the features for those who use product data by seeking the cooperation of product information databases in related industries and then gradually strengthen its features to facilitate the resolution of various issues associated with domestic product information exchanges.

Through these efforts, it is our sincere desire that GJDB -Product- will be a service that is the benefit of not only brand owners but also wholesalers and retailers who utilise product information in GJDB -Product-.

Table 2.2.4-1 GJDB -Product- update history

Date	Contents
Q1 2020	■ Enhancement of functions for those who register product information ■ Bulk upload/download, bulk update, and assistance for classification selection ■ Launch of functions for those who browse product information ■ Product information search and browse functions
Q3 2020	■ Enhancement of function for those who register product information ■ Barcode symbol form patterns added ■ Support for migration of JICFS/IFDB data to GJDB -Product-
Q1 2021	■ Launch of daily uploads of GTIN data to GRP
Q1 2022	■ Launch of receiving product information from two industrial databases* * One is Food, beverage and alcohol industry, and the other is household goods, cosmetics industry
Q2 2022	■ Launch of a dashboard that shows product information data quality report for those who register product information

2.3 GJDB x scan

2.3.1 Overview

In January 2021, we launched a smartphone app called 'GJDB × scan', which allows users to display product information by scanning the barcode on the product package. It can be downloaded for free on iOS or Android devices.

GJDB × scan displays product information registered in GJDB -Product- (refer to 2.2) when a user scans the EAN symbol on the product package. It also confirms whether the GTIN is based on avalid GS1 Company Prefix that is licensed by GS1 Japan.

Users can also use this app to send feedback on the displayed product information and request the registration of product information.

These inputs are shared with the brand owners.

2.3.2 Features

GJDB × scan shows different results, depending on whether the GTIN is registered in GJDB -Product- or not as follows.

Figure 2.3.2-1 Product information (example)

Figure 2.3.2-2 Sending Feedback

Figure 2.3.2-3 Requesting product information registration

- GTINs that are registered in GJDB -Product-

  If the GTIN is registered in GJDB -Product-, the app displays the product information shown below.

  - Brand owner
  - GTIN
  - Product name
  - Brand name
  - Net content
  - Product comments
  - Last update date
  - Product image
  - Product website

The product information includes useful information such as a link to the product page on the brand owner's website, so users can access additional information that is not provided on the product packaging.

In addition, if a user finds that the registered product information is incorrect, they can after selecting the business category send a message to the brand owner via the app so that it can correct its product information.

- GTINs that are not registered in GJDB -Product-

  If the GTIN is not registered in GJDB -Product-, the app displays only the GTIN and the brand owner's name.

  In this case, just tap the Request product registration button to send a request to the brand owner after selecting the business category.

  This will prompt the brand owner to register the product information.

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

Since 1988, GS1 Japan has been operating JICFS/IFDB, a product catalogue database, and has been collecting basic product attributes, such as GTIN, product names, product categories, weights, and quantities.

Product data are not only registered directly by product manufacturers but also are collected from product information databases of various industries including alcoholic beverages and processed foods, household goods and cosmetics, consumer electronics, and OTC drugs. These data are then entered into the database after manually conducted maintenance according to the JICFS/IFDB standard and are made available to retailers, wholesalers, and other users via JICFS Database Providers (JDPs) (Figure2.4-1).

Table 2.4-1 shows the number of the products registered in JICFS/IFDB as of March 2025. Approximately 20,000 new products are registered in the database every month.

Similarly, more variations are seen in case studies on the use of product data in JICFS/IFDB.

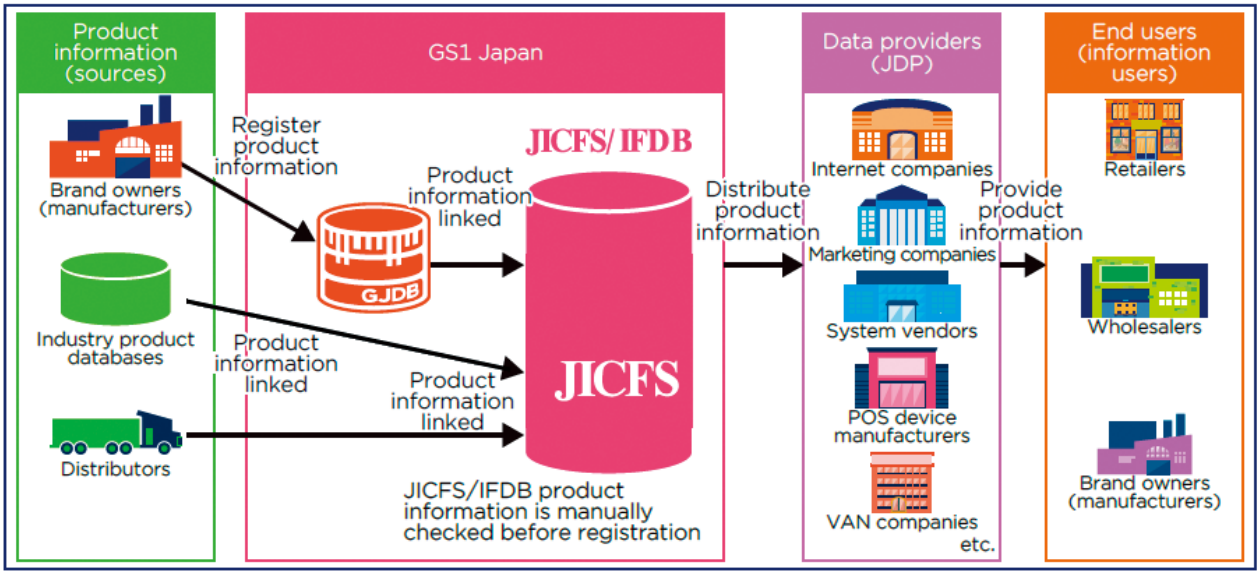

Figure 2.4-1 JICFS/IFDB system flow

In the past, these data were mostly used in the business-to-business field (B2B).

In other words, to support retailers in creating master data to introduce a point-of-sale (POS) system or an electronic ordering system (EOS), to suggest shelf allocations, and to analyse POS data.

Recently, however, usage in the Business-to-Consumer field (B2C) is growing according to the increase of online shopping sites and consumer apps for Consumer Panel Survey.

Since many stores in online shopping malls register product information using their own codes and product names, products are sometimes repeatedly 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 product information from JICFS/IFDB as data which assists users (consumers) in inputting merchandise information that they purchased into the application.

The product information in JICFS/IFDB includes the JICFS Classification Code System (Table2.4-2), which indicates product categories.

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

The JICFS-classification is revised as necessary.

Table 2.4-1 Number of Registered Products

	2025	2024	2023	2022	2021	2020	2019
Food	2,165,110	2,077,459	1,998,630	1,921,582	1,842,309	1,766,776	1,688,487
Commodity	1,234,484	1,190,102	1,145,897	1,097,244	1,032,509	976,486	937,338
Recreation and miscellaneous	935,634	888,264	848,880	803,756	738,773	695,942	653,634
Durable goods	672,246	635,924	576,124	556,217	515,591	485,633	459,415
Apparel, personal items & sporting goods	748,617	676,663	610,669	556,732	480,251	430,390	397,709
Others	3,053	3,058	3,062	3,072	3,080	3,092	3,111
Active item total	**5,759,324**	**5,471,470**	**5,183,262**	**4,938,603**	**4,612,513**	**4,358,319**	**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	**8,863,478**	**8,575,624**	**8,287,416**	**8,042,757**	**7,716,667**	**7,462,473**	**7,243,848**
Increase in number of items (year-on-year)	287,854	288,208	244,659	326,090	254,194	218,625	220,517
Rate of increase (year-on-year)	103.35%	103.47%	103.04%	104.22%	103.40%	103.02%	103.14%

Table 2.4-2 JICFS Classification

Food	Processed Food	Seasonings	Table Salt
(Broad category)	(Main category)	(Sub-category)	(Sub-sub-category)
1	1	01	09

2.5 GS1 Japan Data Bank (GJDB) -Party and Location-

In 2006, GS1 Japan created the GLN database.

Eighteen years have passed since the service was launched, and during that time, requests have been received from users such as, 'I want to be able to easily register and update information through just the website' and 'I want to be able to accurately register the addresses of our overseas offices' .

GS1 Japan has responded to these requests and renewed the GLN database to make GLN registration and management even more convenient, and in April 2024, the service was transferred to the GS1 Japan Data Bank (GJDB) -Party and Location-.

As of June 2025, there were approximately 146,000 GLNs registered in the GJDB -Party and Location- (including data transferred from the database prior to the renewal).

The potential applications of the GJDB -Party and Location- are as follows.

- Easy assignment of GLNs

GLN may be set up easily by following the following procedure.

1. Select the GS1 Company Prefix that has been allocated
2. Select the GLN type
3. Enter the location reference
4. Click on 'Check digit setting'
5. Click on 'Begin using GLN'

- Accurate GLN Management

  Duplicate GLNs can be avoided by managing them using the system. By using it as a registration ledger, it is possible to avoid uncertainties regarding which GLNs were assigned to what products, which may arise due to the member of staff who manage GLNs leaving the company, or the loss of the ledger that manages GLN data.

- Seamless link with Databases in Japan

  As the GLN data registered in the GJDB -Party and Location- is made public via the GLN Information Search Service managed by GS1 Japan, it is possible to smoothly share information with business partners and other parties.

The GJDB -Party and Location- may be accessed from a portal site for businesses that have been allocated a GS1 Company Prefix by GS1 Japan.

Figure 2.5-1 Illustration of New GLN Registration Scree

2.6 Verified by GS1

GS1 believes that, in a digitized society, it is important to manage not only information about businesses that have been allocated a GS1 Company Prefix but also GS1 identification codes, such as GTINs set by those business operators. Hence, in 2019, GS1 began providing the GS1 Registry Platform (GRP).

GRP currently stores information on businesses that have been allocated GS1 Company Prefixes through GS1 member organisations in over 110 countries and regions, as well as information related to GTINs and GLNs set by those businesses and also links to other sources of data with any GS1 key.

The name of the service that references the information stored in this GRP is 'Verified by GS1'.

GS1 Japan has created a Japanese version of Verified by GS1 based on the Verified by GS1 service provided by GS1, and in March 2022, began providing a service that can be used from the GS1 Japan website.

Figure 2.6-1 Screen image of 'Verified by GS1'(Japanese version)

The following functions are provided on Verified by GS1 for Japanese users.

- Verify Product

  By querying a GTIN that has been entered, the user can reference the basic information on a product and the information for the business that registered the GTIN.

- Verify Location/party

  By querying a GLN that has been entered, the user can reference information on the business that registered the business and location data.

- Verify other keys

  By querying any GS1 key that has been entered, the user is able to reference information on the business that registered with the GS1 key.

- Find company

  By querying the name of a business operator that has been entered, the user is able to reference

information on the business that has been allocated the GS1 Company Prefix.

Figure 2.6-1 shows a screenshot of Verified by GS1 after the functional upgrade has been completed.

At present, Verified by GS1 is available to all free of charge, and users can conduct a maximum of 30 queries per day.

In October 2024, users will be able to conduct an additional 30 queries per day by logging onto the GS1 Japan portal site. As of June 2025, search volume per month is approximately 56,000, and continues to grow.

In addition, a service that will allow users to reference information more efficiently on businesses that have been allocated the subject GS1 Company Prefix is being provided.

2.7 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 the data pools of the Global Data Synchronisation Network (GDSN). As of June 2025, the development of 45 broad categories, including Food/Beverage, Tobacco/Cannabis, Kitchenware and Tableware, Beauty/Personal Care/Hygiene, and Pet Care/Food, have been completed and released on the GS1 website (www.gs1.org/standards/gpc).

Localisation has been progressing, with translations into 29 languages including Japanese available on the GS1 website.

Recently, there has been increasing demand to use GPC for other purposes than GDSN. The recall portal website managed by OECD has adopted GPC for its product categorisation.

The aim of this portal site is to facilitate the 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 the U.S., Australia, Canada, and countries in the EU. Japan also joined in January 2015, providing product recall information on Japanese products, as well as adding a link to the Japanese-language version on the home page of the site.

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

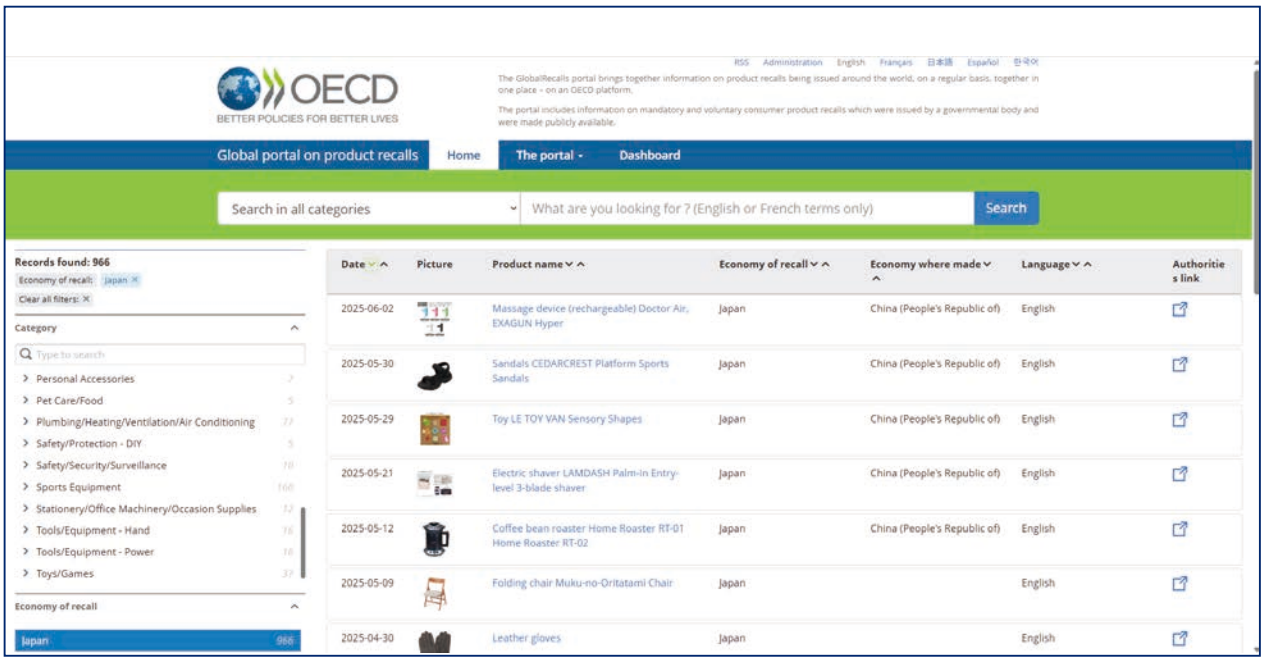

Figure 2.7-1 The Global Recalls portal showing Japanese products subject to recall

2.8 Ryutsu BMS (Business Message Standards)

The use of EDI in Japan's retail sector started with the adoption of the Electronic Ordering System (EOS) using the **JCA Protocol**, a standard data communication protocol that was drawn up in 1980 by the Japan Chain Stores Association (JCA).Since the 1990s, EDI has also been adopted for business processes other than ordering.

Furthermore, **Ryutsu** Business Message Standards (Ryutsu BMS) were established in the 2000s based on Efficient Consumer Response (ECR) and Quick Response (QR) procedures with the aim of improving information sharing between retailers and suppliers.

JCA Protocol: The standard communications protocol for electronic ordering, this was established in 1980 by the Japan Chain Stores Association (JCA). The communication circuits available for this protocol are public circuits (2,400 bps) and DDX circuits (9,600 bps).

It cannot transmit kanji characters and images.DDX circuits are packet type communication services that use telephone lines.

Ryutsu: This Japanese word refers to the entire supply and demand chain, which typically consists of three groups in the form of manufacturers, wholesalers, and retailers.

2.8.1 Development of Ryutsu BMS

Drawn up in 1980, the JCA Protocol became widespread as an EOS for retail businesses.In the 1990s, the business procedures covered by EDI expanded from EOS to the shipping and receipt of goods, invoicing, and payments.However, from the late 1990s to the early 2000s, the system was found to have the following problems.

- Low speed
- Inability to deal with kanji characters and images
- Discontinuation of necessary communication equipment
- Difficulty in adding new data fields due to fixed length data format
- Differences in message formats from one retailer to the next

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

2.8.2 Outline of Ryutsu BMS

Ryutsu BMS defines the following.

- 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, guidelines for secure internet communications have been prepared, and the use of a certificate authority that meets the requirements of the guidelines is recommended.

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

- Standard messages

  There are two types of message collections.

  - Basic messages

    Intended for use at supermarkets, chain drug stores, and the like, 28 basic messages were published based on the Order to Cash business model.

  - Department store messages

    Japanese department stores have unique transaction models that differ from those used by other retailers.For example, they register a merchandise purchase when the merchandise has actually been sold.Therefore, department stores use 27 unique messages in their transactions.

2.8.3 Efforts to promote Ryutsu BMS

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

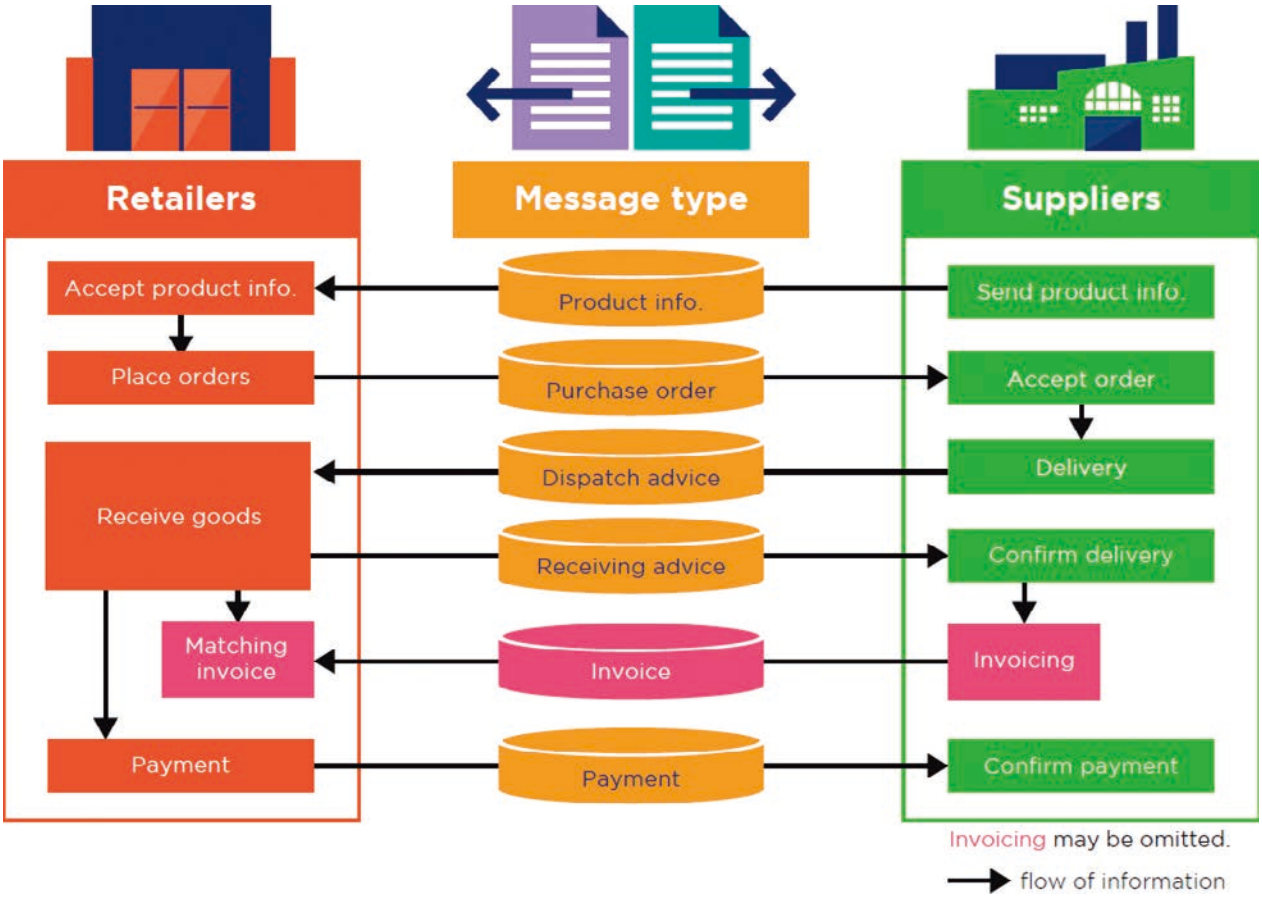

Figure 2.8.2-1 Typical turnaround business processes and Ryutsu BMS messages between retailers and suppliers

- Trainings and seminars:

  GS1 Japan offers a wide range of training courses, from introductory courses to advanced implementation courses.Some of these courses are available as e-learning.We also hold seminars to introduce 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 operate a dedicated Ryutsu BMS website that is constantly kept up to date.

2.8.4 User commitments to Ryutsu BMS

By June 2025 about 600 retailers and 21,600 wholesalers and manufacturers had already adopted Ryutsu BMS.

3. Community engagement and standards implementation

3.1 GS1 Japan Partners

In April 2015, GS1 Japan launched GS1 Japan Partners (GJP), a program mainly for solution providers.

This program is aimed at sharing information on the latest systematisation trends and case studies while also utilising GS1 standards to promote the systematisation of information and greater efficiency in the overall distribution industry.

In FY2024, the program had 111 members, including many of Japan's leading solution providers (Table 3.1-1).

Table 3.1-1 Membership breakdown (as of March 2025)

Sales [unit: JPY]	No. of members
Less than 1 billion yen	44
1 billion – 10 billion yen	32
10 billion – 1 trillion yen	33
1 trillion yen and above	2
Total	**111**

Table 3.1-2 Seminars held in FY2024

Date	Events	Topics
May 2024	1st Seminar	■ Current Retail Environment in Japan ■ 28 Years of Working with the International Retail Industry ■ GS1 Trends—50 Years of Transforming Tomorrow
Jul 2024	2nd Seminar	■ Progress of Studies on Improvement of Logistics Efficiency at the Collaborative Council of Manufacturers, Wholesalers, and Retailers
Oct 2024	3rd Seminar	■ Latest Trends for GS1 Company Prefix ■ Simplifying Registration, Management, and Promotion of GTIN and Product Information—Introduction to GS1 Japan Data Bank —Product Information ■ Introduction to 'Verified by GS1' & New Service 'Verification Service for GS1 Business Codes' ■ Renewal of GLN Database—Introduction of GS1 Japan Data Bank—Company and Location Information
Nov 2024	4th Seminar	■ Safe Food for All—Overview of GFSI and Its Activities— ■ Logistics Visibility and Efficiency through GS1 Standard—Establishing Sustainable Processed Food Logistics—
Feb 2025	Open Seminar	■ Story of SHOGUN Coffee—SAZA COFFEE's In-Shop and Online Strategies for Spreading Coffee Culture— ■ Increasing Use of GS1 Standards in Online Sales Around the World ■ Lazuli's Product Data Platform (PDP) Initiative and Its Long-Term Vision for the Distribution System

3.2 Supply Chain Standards Management and Promotion Council

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

The activities carried out by the council include maintaining and promoting Ryutsu BMS (see 2.8), which was initially developed with the support of the Ministry of Economy, Trade and Industry. At present, GS1 Japan serves as the council's secretariat.

The council held its inaugural General Assembly in Tokyo in April 2009. The council's full members consist of trade associations for manufacturers, distributors, and retailers in the consumer goods industry. As of May 2025, the council is composed of 47 full member organisations. In 2025, the council is being operated under the following structure.

3.2.1 Organisational structure

- General Assembly

  Once a year, the council holds its General Assembly to share and confirm its activity results for the previous fiscal year and approve its agenda for the new fiscal year. In addition, the officers of the council are appointed at the General Assembly to serve two-year terms.

- Executive Committee

  The role of the Executive Committee includes making important decisions concerning the management of the council, such as admitting new members, establishing and discontinuing working groups, and appointing working group members. As of 2025, the committee is composed of representatives from 16 full member organisations.

- Working groups (task forces)

  The council has the following three working groups (Figure 3.2.1-1).

  - Message Maintenance Working Group

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

    The group's work is conducted 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 them as a new standard.

  - Technical Specification Working Group

    This group maintains and manages guidelines for the network technologies and information processing technologies that are used to exchange standard Ryutsu BMS messages via communications circuits.

  - Promotion Working Group

    This group examines and implements steps aimed at encouraging the more widespread adoption of Ryutsu BMS among SMEs. The group also monitors 'off the standard usage' of Ryutsu BMS.

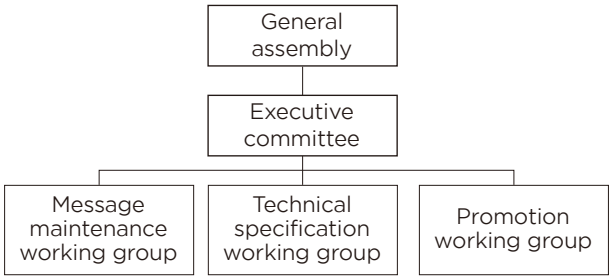

Figure 3.2.1-1 Organisational structure of the council

3.2.2 Activities for promoting and increasing the adoption of Ryutsu BMS

GS1 Japan and the council are working together to carry out various initiatives aimed at encouraging the more widespread adoption of Ryutsu BMS. For details, see 2.8.

3.2.3 Self-Declaration of Conformity and use of the Ryutsu BMS logo

The Ryutsu BMS Council grants permission to use the Ryutsu BMS logo on products and services that have submitted a 'Self-Declaration of Conformity' indicating that they comply with the Ryutsu BMS specifications. As of May 2025, 132 accredited products are permitted to use the logo.

This logo (Figure 3.2.3-1) is a registered trademark. For details, see 2.8.

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 device manufacturers, wholesalers, and solution providers.

The group works with GS1 Healthcare, the Ministry of Health, Labour and Welfare, and other organisations to promote standardisation with the aim of ensuring patient safety, maintaining traceability, and enhancing efficiency in distribution and medical management.

As of June 2025, GS1 Healthcare Japan has 124 members.

3.3.1 Activities

The members of GS1 Healthcare Japan are actively engaged in 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 Activities of work groups

- International Standards and Regulations Study Work Group

  Research into trends in international regulations and standardisation, propel medical safety system installations to hospitals.

- Medical Solutions Study Work Group

  Promotion of GS1 standards as measures aimed at improving safety and supply chain efficiency throughout the entire medical industry.

- Planning and Public Relations Group

  Promotion of using GS1 standards to medical institutions.

3.3.3 Topics in 2024/2025

GS1 Healthcare Japan holds its annual conference every spring to share case studies of GS1 barcode usage at medical institutions and the latest regulatory information.

This year's conference was held through a combination of online and face-to-face events. At the conference, seven speakers from medical institutions and other healthcare-related organisations that have implemented GS1 standards gave lectures and participated in panel discussions. Some of the GS1 Healthcare Japan members exhibited their medical products at the event venue, which facilitated matching between the manufacturers and healthcare service providers.

This event attracted 1,028 attendees on the day itself, and the streaming views increased this number to 1,185 later dates. Those attendees were from medical institutions, medical device manufacturers, pharmaceutical companies, automatic identification technology-related companies, and others. The conference was generally very well received by those who attended.

We remain committed to actively sharing information related to the utilisation of GS1 standards.

3.4 ICT-Oriented Wholesale Industry Study Group

With GS1 Japan acting as its secretariat, the ICT-Oriented Wholesale Industry Study Group was established in August 1985 in accordance with instructions issued by the Ministry of Economy, Trade and Industry (METI).

The purpose of this group is to promote the rationalisation of the wholesale industry.

To this end, member wholesale companies take the lead in studying common issues every year.

Wholesalers play a major role in Japan's supply chain system since most manufactured products are delivered to retailers through wholesalers.

This study group is operated primarily by wholesalers dealing in fast-moving consumer goods (FMCG) in a variety of different industries (foods, household products, etc.).

It has 44 members as of June 2025.

The group is further divided into several sub-working groups according to themes related to the interests of its members, with each sub-working group holding monthly meetings.

In line with its mission of pursuing 'Transformation into Next-generation Wholesalers', the study group worked on the following six topics in FY2024.

- Improving efficiency of wholesale logistics for

the next generation

- Collaboration and co-creation in the wholesale industry
- Digital transformation for the next generation wholesaler
- Cybersecurity strategies in the wholesale industry
- The ideal state of the information system department of the wholesale industry, and reskilling
- Data management for the next generation wholesaler

3.5 Collaborative Council of Manufacturers, Wholesalers, and Retailers

The Collaborative Council of Manufacturers, Wholesalers, and Retailers (herein under the council) was formally established in May 2011 with 43 member companies, with the aim of improving global competitiveness and contributing to a more prosperous lifestyle through the pursuit of extensive innovations and improvements to supply chain management in the consumer product industry.

As of June 2025, 54 companies are participating in the council.

GS1 Japan and the Distribution Economics Institute of Japan (DEIJ) jointly serve as the council's secretariat.

Since its launch, the council has received continuous support from the Ministry of Economy, Trade and Industry (METI).

The council employs a three-tier structure that consists of the following: general meetings, steering committee meetings, and working group meetings.

The outcomes of the working groups are reported at the annual general meeting.

In recent years, the council has been facilitating discussions towards the realization of the physical internet.

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

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

This voluntary study group for liquor and processed food businesses was established in 1983 with the aim of conducting studies to identify the most appropriate information systems for use.

The study group consists of 51 Japanese leading companies in the processed food, marine product, and liquor industries.

GS1 Japan serves as the group's secretariat.

It holds regular quarterly meetings to introduce best practices for the pursuit of information systemisation by its members.

It also organises seminars where outside lecturers are invited to discuss the latest topics and conducts study tours of pioneering businesses.

Figure 3.6-1 Regular meeting

3.7 User support

GS1 Japan offers various training and e-learning courses so businesses can better understand GS1 standards.

The following are being offered as scheduled seminars and e-learning courses:

- Introduction to Barcodes
- Introduction to EPC/RFID
- Introduction and Implementation of Ryutsu BMS
- Introduction to EPCIS
- Introduction to GS1 Digital Link
- Technical Seminar on EPC Encoding/Decoding
- Technical Seminar on EPCIS
- Technical Seminar on GS1 Digital Link
- Introduction to Barcodes for Prescription Drugs and Medical Devices

3.7.1 Introduction to Barcodes

This regularly scheduled online course is mainly intended for businesses that have newly acquired or are considering acquiring a GS1 Company Prefix.

By attending this course, participants will acquire a basic knowledge of GTIN-13 and of how to display it on products, as well as basic knowledge of GTIN-14, which is required at many logistics sites.

In some cases, courses are also held in response to requests from businesses requiring barcode compliance from their suppliers or local governments wanting to promote barcodes to expand their sales channels.

In addition to the above courses, we also offer an e-learning program that allows participants to learn the basics of barcoding without being restricted by time or location.

3.7.2 Introduction to EPC/RFID

This program is intended to give newcomers to EPC/RFID an understanding of approaches to the utilisation of EPC/RFID.

Participants are expected to learn about the characteristics of RFID, case studies on the successful implementation of EPC/RFID systems, GS1 EPC/RFID standards, and other related information.

3.7.3 Introduction and Implementation of Ryutsu BMS

The program 'Introduction of Ryutsu BMS' explains EDI from the basics through to an outline of Ryutsu BMS, the results of implementation, and more.

This program is intended for persons related to CPG supply chains, especially persons newly assigned to information system departments or who are considering introducing Ryutsu BMS.

In addition, it is also useful for solution providers or consultants when supporting user companies.

The e-learning course called 'Introduction to Ryutsu BMS' offers participants to learn the basics of Ryutsu BMS online.

As the next step after Introduction to Ryutsu BMS, another e-learning course called 'Ryutsu BMS Implementation Course' is also offered.

This course explains the key points in effectively introducing Ryutsu BMS while complying with the standard specifications.

3.7.4 Introduction to EPCIS

This course explains the concepts behind supply chain visibility systems using the EPCIS and Core Business Vocabulary (CBV) standards (collectively referred to below as the 'EPCIS standards').

Expected participants for this course are anyone who is interested in the supply chain visibility, and this course does not require any background knowledge of computer systems.

The following is explained during the course: background knowledge of GS1 systems; core concepts of the EPCIS standards; use cases; and basic methodology for visibility system design using the EPCIS standards.

3.7.5 Introduction to GS1 Digital Link

This program is designed to give an overview of GS1 Digital Link to participants who do not know anything about GS1 Digital Link but are interested in it.

Expected participants for this program are from any type of business, including brand owners and solution providers.

The course firstly shows the core concepts of GS1 Digital Link, then explains how it works in an

easy-to-understand way.

Finally, the course introduces some envisaged use cases and existing case studies on GS1 Digital Link.

3.7.6 Technical Seminar on EPC Encoding/Decoding

The objective of this course is for participants to become able to understand the procedures to encode and decode the memory contents of EPC/RFID tags based on the EPC Tag Data Standard (TDS).

Expected participants for this course are technical engineers at RFID solution providers.

There are two types of courses on the TDS. The first covers the previous version of the TDS (TDS 1.x), while the second explains the new specifications of the TDS (TDS 2.x).

This course is part of the membership services offered to member companies participating in the GS1 Japan Partners program. Staff at these member companies can take this course for free.

3.7.7 Technical Seminar on EPCIS

This course introduces the technical content of the EPCIS standards in detail. It is essential to design and develop information systems that improve supply chain visibility in accordance with the EPCIS standards.

The course first describes the logical definitions of the EPCIS Event Data Models and the EPCIS Capture and Query Interfaces, and then describes the bindings of these definitions for implementation in real-world systems.

This course is part of the membership services offered to member companies participating in the GS1 Japan Partners program. Staff at these member companies can take this course for free.

3.7.8 Technical Seminar on GS1 Digital Link

This course explains the essential knowledge required to develop applications and information systems in accordance with GS1 Digital Link and related standards.

The course provides detailed technical explanations on GS1 Digital Link URI syntax rules and the behaviour of GS1-Conformant Resolvers.

Quizzes in the course help participants develop a deeper understanding.

This course is part of the membership services offered to member companies participating in the GS1 Japan Partners program. Staff at these member companies can take this course for free.

3.7.9 Introduction to Barcodes 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 people working at drug or medical device manufacturers, wholesalers, medical service providers and related solution providers.

3.8 Publications and PR tools to promote GS1 standards

3.8.1 Guidelines

GS1 Japan has been providing materials about the GS1 standards to retailers, wholesalers, product manufacturers, and solution providers.

This information is published in order to promote the GS1 standards, and most of the materials are also available on our website.

The following are examples of our current publications:

- JAN symbol marking manual

  This manual explains the technical basics of EAN (called 'JAN' in Japan) symbols, such as their structure, size, and colour, as well as some examples of practical symbol creation to avoid the creation of incorrect symbols which take a long time to or are difficult to read.

  The manual is intended not only for brand owners who are responsible for displaying EAN symbols, but also for companies providing equipment and services related to printing, acquiring and verifying symbols.

Figure 3.8.1-1 JAN symbol marking manual
www.gs1jp.org/code/jan/jan_marking_manual.html

- Barcode guidelines for UDI

  With regard to barcode labelling of medical devices, there are subtle differences between the GS1 standards and the rules of each country, including Japan. As barcodes are increasingly used for the import and export of products, it is important for brand owners to correctly understand the regulations and industry rules of each country in addition to the international GS1 standards. This guide provides basic information about the GS1 standards as well as points to note when distributing healthcare products in Japanese markets. Furthermore, it provides fundamental information to exporters about FDA UDI regulations in the US.

Figure 3.8.1-2 Barcode guidelines for UDI
www.gs1jp.org/group/gshealth/guide-tools/guide.html

- Let's Scan
  -Barcodes on pharmaceuticals make work efficient and safe-

  Let's Scan, a manga (cartoon) promoting the use of GS1 barcodes, explains in simple terms the benefits of using GS1 barcodes in healthcare institutions, such as preventing medication mix-ups, managing checks when mixing orders and correcting medication errors.

Figure 3.8.1-3 Let's Scan -Barcodes on pharmaceuticals make work efficient and safe-
www.gs1jp.org/group/gshealth/guide-tools/tools.html

- GS1 2D symbol implementation guidelines for carton cases

  These guidelines outline the rules and provides useful information for utilising GS1 QR codes or other GS1 standard barcodes to encode GTIN, date information (production, best-before and expiry date) and lot numbers on carton cases.

  It has been developed to enable the efficient management of date information for packaged consumer goods, including processed foods requiring strict FIFO inventory control.

Figure 3.8.1-4 GS1 2D symbol guidelines for carton cases
www.gs1jp.org/standard/barcode/gs1-qr/carton/

- Source marking guideline for raw materials

  These guidelines define standard data items such as GTIN, lot number and date information (e.g. expiry date) to be displayed, as well as recommended barcodes for raw materials.

  We hope that these guidelines will encourage the use of barcodes with globally unique identification (i.e., without any duplicates) anywhere in the world, helping make supply chains more efficient and improve food safety and security.

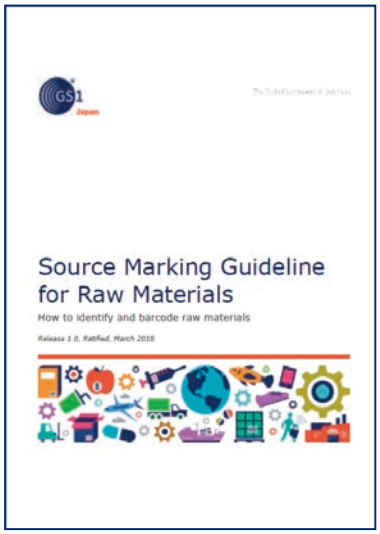

Figure 3.8.1-5 Source marking guideline for raw materials
www.gs1jp.org/standard/industry/upstream/

- GS1 Barcodes Basic Guide

  This guide is a significant revision of 'GS1 AIDC standards conformity check guide' providing technical information on GS1 identification codes and GS1 barcodes.

  It contains essential information for companies manufacturing and selling barcode-related equipment and users utilising GS1 barcodes.

Figure 3.8.1-6 GS1 Barcodes Basic Guide
www.gs1jp.org/standard/barcode/

3.8.2 Periodical Publications

- GS1 Japan Review

  GS1 Japan Review is issued twice a year and provides detailed information, including case studies.

Figure 3.8.2-1 GS1 Japan Review
www.gs1jp.org/seminar_book/publication/gs1japanreview/

- GS1 Japan News

  GS1 Japan News is issued six times per year and provides the latest information about GS1 standards, events and trends in industry standardisation.

Figure 3.8.2-2 GS1 Japan News
www.gs1jp.org/seminar_book/publication/gs1japannews/index.html

3.8.3 GS1 Japan Scan mobile app

In 2018 GS1 Japan has developed a mobile app called 'GS1 Japan Scan' to promote the utilisation of the GS1 standards.

This app allows users to easily check their products' barcodes to provisionally find if they meet GS1 standards and the Japanese industry rules for medical devices, pharmaceuticals, or food raw materials.

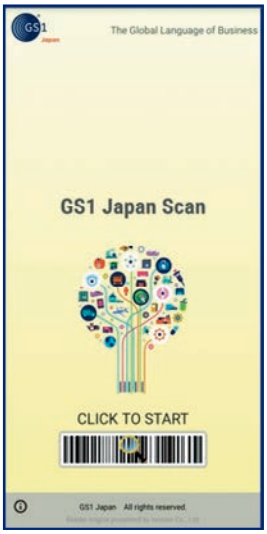

Figure 3.8.3-1 GS1 Japan Scan
www.gs1jp.org/seminar_book/application/index.html

3.9 Events

GS1 Japan organises and sponsors various events. Key events are introduced below.

3.9.1 GS1 Japan Annual Conference

The GS1 Japan Annual Conference is held every December and attracts over 300 participants from a wide range of organisations and companies.

The event features keynote speeches by industry leaders, along with an awards ceremony recognising individuals and organisations that have made outstanding contributions.

The conference also includes a networking reception, providing participants with a valuable opportunity to exchange ideas and build connections across sectors.

Figure 3.9.1-1 Keynote speech

Figure 3.9.1-2 Awards ceremony

3.9.2 Mobile Seminar 2024

GS1 Japan holds annual seminars to promote GS1 standards in B2C environments.

This seminar has been supported by a wide range of industry associations, including the Japan Retailers Association (JRA), the National Supermarket Association of Japan (NSAJ), the Japan Automatic Identification Systems Association (JAISA), the Mobile Computing Promotion Consortium (MCPC), the Mobile Content Forum (MCF), and the Japan Academic Society of Direct Marketing (JASDM).

On 19 February 2025, GS1 Japan held the 'Mobile Seminar 2024'.

The event attracted approximately 70 participants from various industries and business sectors, including retail stores, manufacturers, and online retailers.

The theme of this year's seminar was 'Business Process Re-Engineering in Digital Transformation and Omni-channel Environments through GS1 Standards 2024'.

The following three presentations were delivered on that day.

- SAZA COFFEE's In-Shop and Online Strategies for Spreading Coffee Culture

  Taro SUZUKI (President and CEO, SAZA COFFEE Co., Ltd.)
- Increasing Use of GS1 Standards in Online Sales Around the World

  Hideki ICHIHARA (Expert, GS1 Japan)
- Lazuli's Product Data Platform (PDP) Initiative and Its Long-Term Vision for the Distribution System

  Seigen HAGIWARA (President and CEO, Lazuli Inc.)

The seminar was completed with great success.

The seminar participants reviewed EC case studies and the latest database initiatives, gaining insights into the importance of GS1 standards and current trends.

Going forward, GS1 Japan plans to continue hosting similar seminars to promote the adoption of GS1 standards.

Figure 3.9.2-1 Seminar speakers

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 the widespread use of EPC/RFID and to encourage its appropriate usage.

The year 2024 marked the 20th anniversary of the establishment of the EPC RFID FORUM. In September 2024, the 19th forum was held with the theme, 'The Past and Future of RFID: Expanding RFID Applications Across Industries'.

Opening the conference, Professor Jun Murai from Keio University delivered the keynote speech. Following this, presenters from various industries—including apparel, home appliances, and daily necessities—were invited to deliver their presentations. Topics included the expanding scope of RFID applications within companies and the challenges of implementing RFID across the entire supply chain.

In addition, the conference also featured a panel discussion, during which speakers shared their perspectives on the expectations and challenges faced by each industry regarding RFID, resulting in an even deeper and more insightful exchange.

With over 200 attendees participating, the forum concluded with great success.

Figure 3.9.3 Scene from EPC RFID FORUM

3.9.4 RETAILTECH JAPAN 2025

RETAILTECH JAPAN is an annual four-day trade show held by Nikkei Inc., which specialises in retail information systems.

GS1 Japan supports the exhibition as a special collaborator.

With keywords such as AI and data utilisation, e-commerce and digital marketing, logistics and IoT, and IT solutions, more than 200 exhibitors showcase the latest retail information technology.

The latest conference, 'RETAILTECH JAPAN 2025' (held 4–7 March 2025) attracted 75,845 visitors.

GS1 Japan set up a joint booth with the 'Supply Chain Standards Management and Promotion Council' to actively promote Ryutsu BMS and GS1 standards.

At the 2025 GS1 Japan booth, the following demonstrations were conducted.

- LINE Yahoo x GS1 Japan Collaboration Project (see the section 3.9.5)
- POS registers utilising 2D in Retail
- Logistics visibility and traceability utilising EPCIS and GS1 Digital Link

Additionally, a new section was added to introduce products from GJP members that have self-declared compliance with GS1 standards, and the panel display of the GS1 Japan Data Bank - Product Information Database was expanded.

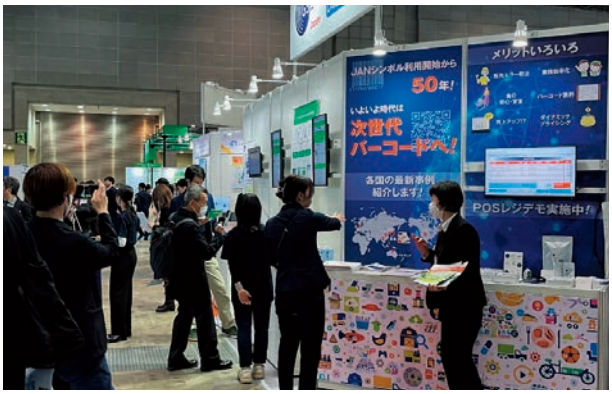

Figure 3.9.4 Scene from RETAILTECH JAPAN 2025 Exhibition

3.9.5 RETAILTECH OSAKA 2024

Starting in 2021, RETAILTECH OSAKA has been held regularly over a two-day period each year. GS1 Japan has also been participating in these events.

At last year's 'RETAILTECH OSAKA 2024' (held on 17-18 October 2024), GS1 Japan's booth featured two main areas: a corporate exhibition by related vendors and a demonstration of '2D in Retail'.

We jointly gave the '2D in Retail' demonstration with LINE Yahoo as a new initiative.

LINE Yahoo's proposed "smartphone-based register", utilises 2D symbols to offer various services that were impossible with traditional POS registers. LINE Yahoo has unveiled a smartphone-based register with four functions as an example of the utilisation of 2D symbols.

- Preventing the sale of expired products
- Reducing food waste through automated price discounts and loyalty rewards
- Provision of allergy information to customers
- Display of product origin information

Figure 3.9.5 Scene from RETAILTECH OSAKA 2024 Exhibition

3.9.6 Discover GS1 2025

3.9.6.1 Introduction

GS1 Japan hosted a special two-day event titled 'Discover GS1 2025', which took place from 20 to 21 January 2025. This marked the second edition of the event, following a successful launch last year that commemorated the 50th anniversary of the EAN symbol.

3.9.6.2 Participation and Engagement Overview

The event attracted a high level of interest and participation, as shown in the following engagement metrics.

- Total registered participants: 387 (first-time participants: 263 [87%])
- Participation rate: 78.0% (up 11 points from previous year)
- Total session attendances: 1,473 (average of

4.88 sessions per person)

- Total materials viewed/downloaded: 3,465
- Total videos viewed/downloaded: 4,938

3.9.6.3 Session Programmes

The two-day programme featured a diverse range of sessions designed to deepen participants' understanding of GS1 standards and their practical applications.

3.9.6.4 Guest Speaker Highlights: GS1 Standards in Action

Among the various sessions in the programme, the following guest speaker presentations stood out for their particularly strong reception. Their practical presentations likely offered participants concrete inspiration that could be adapted to their own business contexts.

- The Benefits of Using GTINs for Export

  Speaker: Ms. Miho Ninomiya, Deputy Director, Platform Business Division, Digital Marketing Department, JETRO

  The Japan External Trade Organization (JETRO) is a government-affiliated organization that supports Japanese companies in expanding into international markets.

  JETRO promotes the registration of Global Trade Item Numbers (GTINs) as a standard for product identification on its Japan Street platform, which connects Japanese suppliers with overseas buyers. Currently, more than 70% of products on the platform have registered GTINs, with over 90% adoption in key categories such as cosmetics, healthcare, and outdoor goods. By utilizing GTINs, suppliers can uniquely identify their products during negotiations, which significantly reduces errors and streamlines communication, ultimately enhancing buyer trust and expediting deal closure.

- Utilising EPC/RFID in the Apparel Industry

  Speaker: Mr. Mitsuhiro Sawada, Expert, Systems Department, Goldwin Inc.

  Goldwin is a Japanese company that is well known for its high-performance sports apparel and brand portfolio.

  Since beginning RFID implementation in 2018, they now use RFID tags across multiple apparel brands. The time required for inventory tasks has been reduced from 4 hours to 2, making it feasible to conduct these tasks during the day. Improved item traceability has led to increased staff efficiency in directly managed stores. By adopting EPC/RFID, they have achieved both operational efficiency and enhanced customer experience.

- EPC/RFID for Management of Rental Logistics Assets

  Speaker: Mr. Chinami Hamada, General Manager, DX Promotion Business Division, Sales Headquarters, Nikken Lease Kogyo Co., Ltd.

  Nikken Lease is a company that offers a comprehensive range of rental services for materials and equipment in construction, agriculture, and logistics.

  Since 2019, they have been implementing GRAI-encoded RFID tags on agricultural mesh pallets and other returnable assets that circulate among various stakeholders. This enables item-level traceability and facilitates

Day1	Day2
Opening Remarks	GS1 Standards/Guidelines and Useful Tools for solution providers
Getting Started—What Is GS1?	Japan's Standard EDI: 'Ryutsu BMS'
GS1 Standards Started Here: GTIN and EAN symbol (with JETRO)	GS1 Standards x Web: 'GS1 Digital Link'
The Essence of GS1 Standards: 'GS1 Identification Keys' and 'GS1 Application Identifiers'	Achieving Logistics Visibility through GS1 Standards (with Ajinomoto Co., Inc.)
Ensuring Safe and Efficient Healthcare: Trends in the Use of GS1 Standards in the Healthcare Sector	GS1's Global Product Master Database: Exploring Its Benefits (with AEON Co., Ltd.)
Ambition 2027! What Is '2D in Retail' and How Is It Being Deployed Globally?	Closing Remarks
Rapid Expansion of Application Areas: The Real Value of EPC/RFID(with Goldwin Inc and Nikken Lease Kogyo Co., Ltd.)	
Networking Reception: Let's Discuss Future Business Opportunities with GS1	

Figure 3.9.6.3-1 Discover GS1 2025 Session Programmes

efficient tracking and recovery of assets, even amid labour shortages. The GS1 standard has proven to be essential for balancing operational efficiency and sustainability in rental logistics.

- Logistics Visibility and Efficiency through GS1 Standards

  Speaker: Mr. Kenji Nagahama, Group Manager, Logistics Planning Dept., Food Products Division, Ajinomoto Co., Inc.

  Mr. Yohei Izuhara, Manager, Logistics Planning Dept.,

  Food Products Division, Ajinomoto Co., Inc.

  Ajinomoto is a global Japanese company that is well known for its seasonings, processed foods, and amino acid-based products.

  Ajinomoto and Nissin Foods collaborated on a pilot project to improve logistics within the processed food supply chain by utilizing GS1 standards. GTIN, SSCC, and EPCIS were applied to share shipment-, pallet-, and item-level events. This improved inspection efficiency on the receiving end and enhanced inter-company collaboration and supply chain transparency.

- AEON × GS1 Product Database

  Speaker: Ms. Hiroko Yamada, DX Strategy Planning Team, AEON Co., Ltd.

  AEON is the largest general retail group in Japan.

  Ms. Yamada states that GTINs are essential for uniquely identifying the wide range of products handled by AEON and for utilising that product information. She also emphasises the importance of effectively utilising existing standards (i.e., GS1 standards) rather than establishing new internal rules. GTINs can be utilised not only for POS registers but also for demand forecasting, marketing, online sales, and other areas that help give a company a competitive edge. Therefore, the company plans to place even greater importance on utilising GS1 standards and the GS1 database for product identification and information.

3.9.6.5 Feedback and Evaluation

The event received extremely positive feedback from attendees:

- Learning opportunity score (for GS1 standards and technical content): 8.15 / 10
- Learning score (for real-world applications): 8.14 / 10
- Willingness to participate again: 8.45 / 10

These results highlight that Discover GS1 was not merely a seminar but a practical and interactive learning experience that effectively bridged both theory and implementation.

3.9.6.6 Closing Remarks

Discover GS1 2025 provided an exceptional opportunity to share the latest developments and real-world use cases of GS1 standards across various industries. This was an outstanding chance to reintroduce not only the basic value of GS1 standards, such as GTIN and EAN codes, but also the practical significance of GS1 identification codes beyond GTIN, the utilization of next-generation barcodes, and the GS1 product database.

4. About GS1 Japan

4.1 Overview

GS1 Japan was founded in 1972, through the efforts of the then Ministry of International Trade and Industry (now the Ministry of Economy, Trade and Industry [METI]) and private sectors as a non-profit organisation to promote the implementation of distribution systems. Since then, we have been striving to rationalise and increase the efficiency of supply chains.

As our first mission, we conducted studies on the standardisation of national product codes for apparel and groceries. Drawing on systems already standardised in Europe and the United States, we began developing a unified system of standard product codes and symbols for Japanese industries. In 1978, we became the first non-European member of the EAN Association.

The most remarkable milestones in expanding the use of source marking was the adoption of the POS system by SEVENELEVEN JAPAN CO., LTD., a leading convenience store chain, at all their stores in 1982.

Over the years, demand from retailers to gain quick access to basic product information grew that we launched GS1 Japan Data Bank -Product- (refer to 2.2), aiming to collect all the products identified with 4 GTIN that start with GS1 Prefix 45 and 49.

In the area of EDI, Ryutsu BMS (refer to 2.8), EDI standard for business primarily between retailers and wholesalers was developed in 2007, through collaboration of various industries, solution providers, and METI. Ryutsu BMS defines not only messages but also communication protocol and is now adopted by more than 20,000 companies.

Other topics such as EPC/RFID, Healthcare, T&L, Apparel, 2D barcodes and their progress are discussed in this GS1 Japan handbook.

4.2 GCP allocation by GS1 Japan

GS1 Japan joined GS1 in 1978 and obtained the GS1 prefixes '490 – 499'.

We subsequently applied for additional prefixes in 1992, obtaining the prefixes '450 – 459'.

Initially, we were allocating seven-digit GS1 Company Prefixes (GCPs), but since January 2001, we have started to allocate nine-digit GCPs, given the diffusion of GTIN usage rise and a recommendation from GS1.

To provide GCPs in a more appropriate manner for the effective use of GCP resources, we started to allocate 10-digit GCPs in 2021.

Currently, GS1 Japan generally allocates nine- or 10-digit GCPs to new applications.

76% of all applicants in FY2024 registration applications were allocated 10-digit GCPs.

4.2.1 Transition to Online Application Procedures

GS1 Japan has been continuously working to digitize membership application processes in order to streamline operations and enhance convenience for our members.

Online application forms were introduced for new membership registration in 2015, for membership renewal in 2018, and for updating member information in 2020.

Trends in online application rates are shown in Figure 4.2.1.

Since FY2020, nearly 100% of new licensees have submitted their applications online.

The online application rate for membership renewals has been gradually increasing but remains at 72.5%.

For registration data updates, the rate has increased significantly since FY2021, reaching 89.7% in FY2024.

The total number of applications for membership renewals and registration information updates has also increased significantly since the 2021 revision of the membership program.

This is because members can now choose annual membership in addition to the previously only option of three-year membership. Also, they now receive yearly notifications of their registered information, encouraging them to make updates if necessary.

GS1 Japan will continue to accelerate the transition to online procedures to improve data accuracy and enhance the quality of member services.

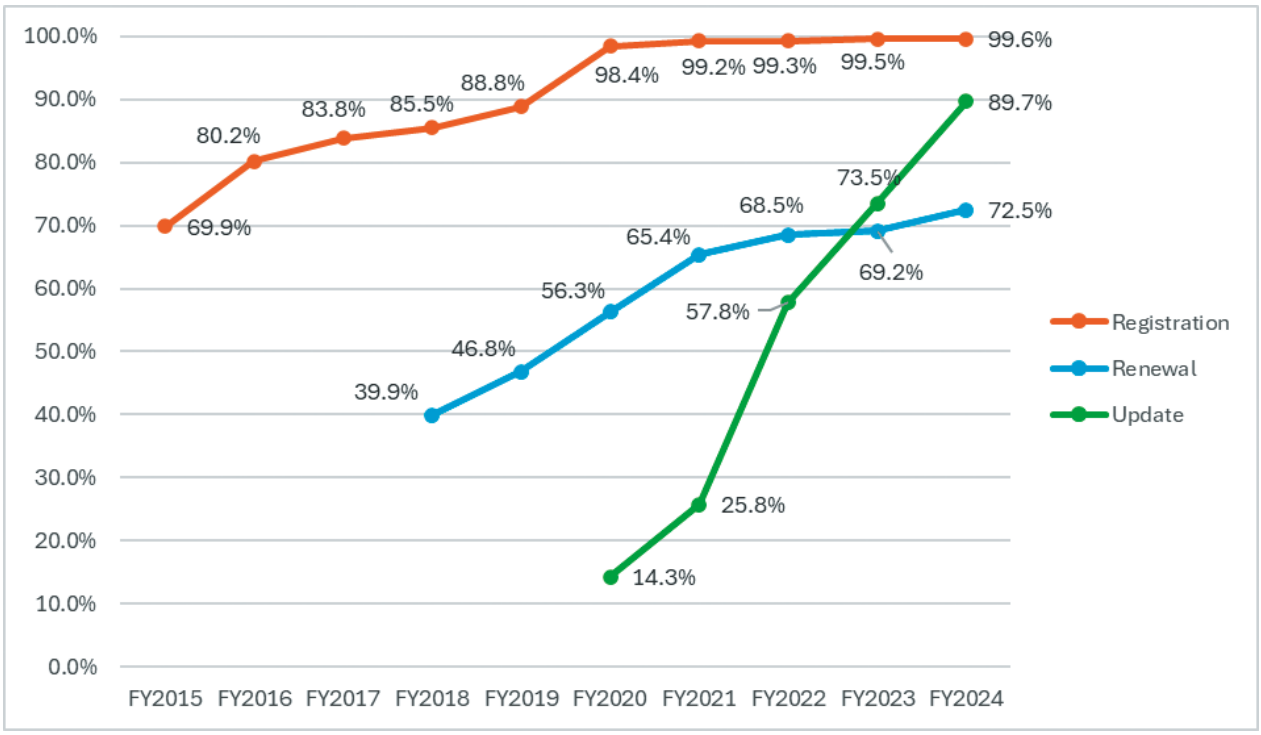

Figure 4.2.1 Trends in online application rates

4.2.2 GCP Registration Status

As of the end of FY2024, the number of GCP licensees reached 138,099.

In FY2024, we had around 9,000 new licensees, 27% of which are sole proprietors. The number of sole proprietors went down a bit compared to the previous year.

The top product categories handled by new licensees in the FY2024 are as follows (multiple selections allowed).

- Processed foods (25%)
- Sundries (24%)
- Confectionery (12%)
- Cosmetics and hairdressing products (11%)
- Apparel (11%)

Processed foods slightly exceeded Sundries and topped the list.

Sundries had stayed in first place from FY2019 to FY2023 due to the impact of COVID-19 pandemic, but this effect now appears to have cooled off.

4.3 History

Year	Events
1972	DSRI (Distribution Systems Research Institute) is established. (Shinagawa-ward)
1974	'Distribution & System' (quarterly journal) first issue is published.
1975	'Distribution System Design Engineer Course' and 'Distribution System Management Course' are started.
1977	'Distribution Code Centre' is opened. (predecessor of GS1Japan)
	Allocation of 'Common Supplier Codes' is started.
1978	Joins 'EAN International' and GS1 Prefix '49x' is allocated.
	Allocation of 'GS1 Company Prefix' starts.
1979	First POS pilot is conducted at a supermarket in Tokyo (Tatsumi Chain, Tokyu Store).
1980	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: UnitedSupermarkets Holdings Inc.), Kishi Shopping Center (now called: Watahan & Co., Ltd.), etc.).
1982	'DCC Japan Newsletter' (later, the name changed to RYUKAI Centre News' (Bi-monthly)) is first published.
	Moves office to another location in Shinagawa-ward.
1983	'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.
1987	'Common Magazine Code' registration has started.
	Utility bills collection service system using barcode symbols has started
1988	Practical application experiment of JICFS (JAN Item Code File Service) is started.
	EAN International General Assembly is held in Tokyo.
	U.P.C. Company Prefix application service is started.
1990	Barcoding in Book Industry.
1995	Acquires additional GS1 Prefix '45x' and started allocating '45x' GS1 Company prefix.
1996	Moves office to Minato-ward.
2001	9-digit GS1 Company Prefix has been introduced.
2002	EAN International's Asia Pacific Regional Meeting is held in Tokyo.
2003	GEPIR operation has started.
2004	'EPCglobal Japan' is set up.
2005	'DCC Japan' changed name to 'GS1 Japan'.
2006	EPCglobal Board Meeting is held in Tokyo.
2007	Ryutsu BMS (Japanese XML-EDI Message Standards) has published.
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.
2011	'The Collaborative Council of Manufacturers, Wholesalers, and Retailers' has started
2012	'GS1 Advisory Council Meeting' is held in Tokyo.
	Changes corporate form to 'General Incorporated Foundation'.
2014	'GS1 Japan UDI & Drug Traceability Seminar' is held in Tokyo
2015	'GS1 Japan Partners' membership has started.
	'GS1 Company Prefix' application on the web has started.
2017	Hosts 'GS1 Asia Pacific Regional Forum' in Tokyo.
2018	'GS1 Japan Scan' app distribution has started.
2019	GS1 Japan has launched 'GS1 Japan Data Bank - Product -' service.

Year	Events
2020	Moves office to Minami-Aoyama. (Minato-ward: Current location)
	Renewed 'RYUKAI Centre News' design and changed the name to 'GS1 Japan News'.
	Renewed 'Distribution & System' design and changed the name to 'GS1 Japan Review'.
2021	'GJDB × scan' app distribution has started.
	'10-digit GCP' allocation has started.
	'GCP one-year-renewal' system has started.
	'Tenbun Navi' app distribution has started.
2022	GS1 Japan celebrates its 50th anniversary.
	GS1 Japan launches 'Verified by GS1' information retrieval service via GJDB.
2023	GS1 Japan has jointly conducted Japan's first demonstration of dynamic pricing using GS1 DataMatrix.
2024	GS1 Japan has commenced 'GS1 Japan Data Bank - Party and Location -'service.

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