GS1 Finland

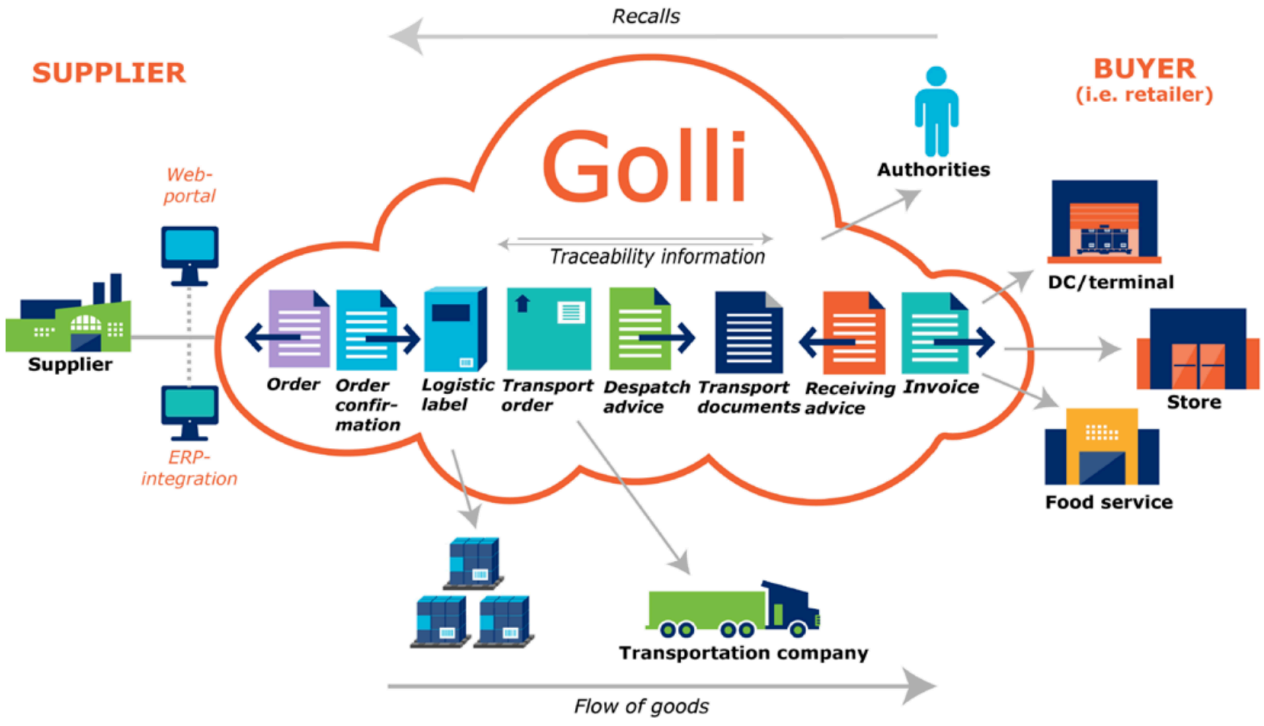
Final report on the experiences and benefits of GLS (i.e. Golli) service

1 Golli service solution briefly explained

The Golli-service is a cloud service that enables digitalization the of supply chain management process. Golli-service facilitates electronic data interchange between business partners. Golli-service covers electronic messages all the way from orders to delivery and billing. It also automatically generates logistic labels and transport documents. The service is normally used through a web portal, but an integration from the companies own ERP (Enterprise Resource Planning) -system would be possible (1 customer up to this point).

The picture below shows the role of Golli service as one tool in a complex order-delivery process. With the data Golli-service facilitates and transmits, a company can improve its processes linked to traceability, recalls, foodwaste management, and resource allocation.

This report describes the experiences of Golli users and the observed benefits of Golli service.



2 Assessment of user experiences and benefits of Golli service

The Golli service has been in production since the beginning of 2016. For companies using the service, Golli has enabled the digitalization of processes.

The number of users has increased (Chart 1) and the number of shipments delivered by Golli-service has also increased over the years (Chart 2).

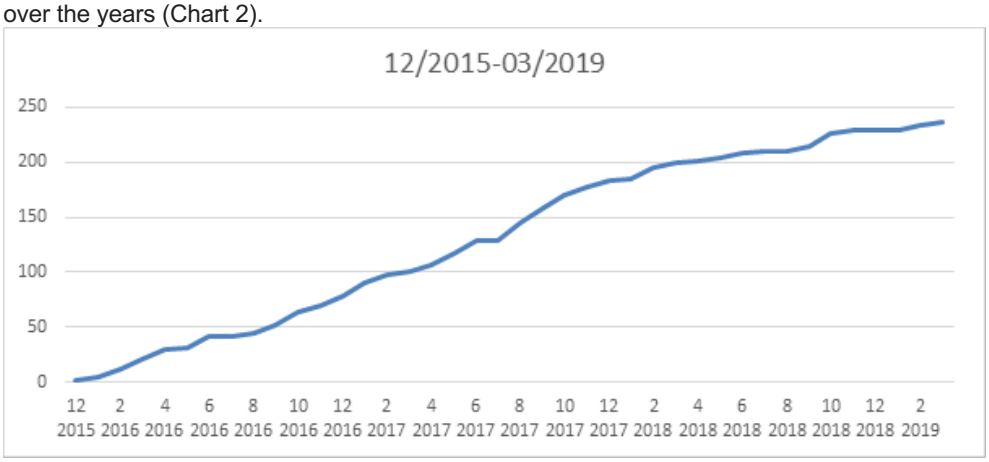


Chart 1: Number of Golli-service users 2015-2019

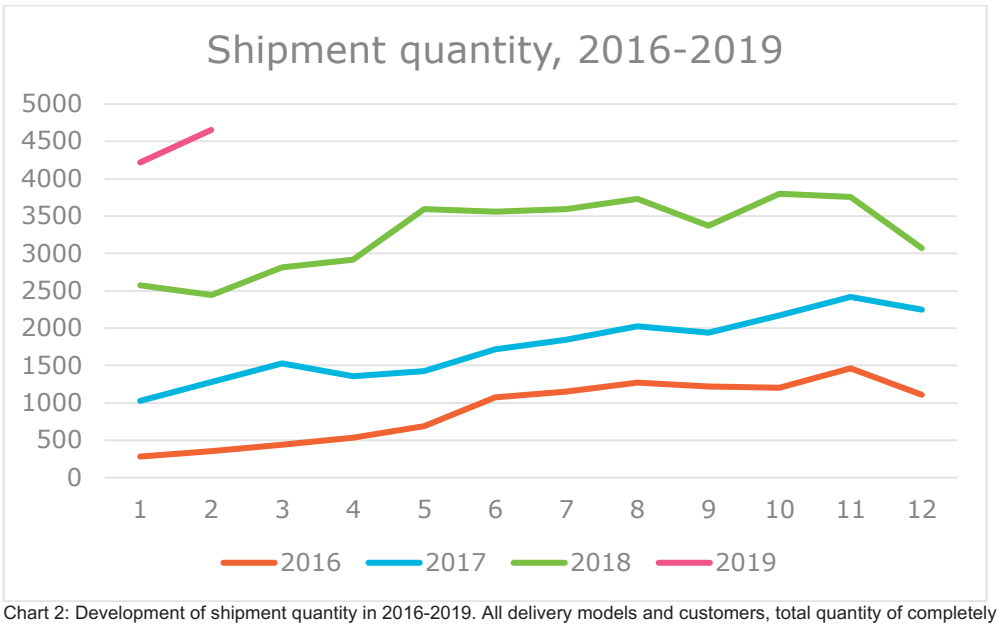


Chart 2: Development of shipment quantity in 2016-2019. All delivery models and customers, total quantity of completely processed deliveries. One delivery may include multiple orders and multiple product lines.

The experiences and benefits of the Golli-service has been assessed by the following means:

- Assessing the experiences of fast-moving consumer goods (FMCG) suppliers of Golli service
  - User experience surveys carried out in 2017-2019
  - Survey on the Golli-services impact on the supplier processes (51 respondents)
- Interviewing retailers (SOK/Inex Partners, Kesko Oyj, Wihuri Oy Aarnio) about the observed benefits of the Golli-service, carried out in March 2019
- Interviewing other stakeholders about the observed benefits of the Golli-service, carried out in March 2019

The following paragraphs describe the benefits of the Golli-service for each stakeholder separately.

2.1 Retailers

For retailers, the digitalization of order-delivery processes is critical. Major suppliers have capability to provide and maintain systems needed, and for example to receive and send electronic messages. Volume of such suppliers typically covers about 80%. The remaining 20% consists of micro, small and medium-sized suppliers, typically hundreds of suppliers.

The Golli-service is specifically designed for small and medium-sized suppliers that do not have the capability to acquire the necessary systems. For retailer it is easy to add products on selection as supplier uses the Golli-service.

The most significant benefits for the retailers have been:

1. Generally, improving the supply chain, as more and more small suppliers are implemented in the digital process
2. Adding a new supplier to the supply chain requires a lot of manual work. If the supplier uses the Golli-service, the order forwarding can be started immediately, and no separate system testing is required.
    - Retailers have estimated that this means hours, or in some cases even tens of hours of time savings
    - For a supplier this also means time savings and faster access to the selection. Most importantly products are available to the consumer faster
3. Automatic reception in warehouses with a delivery message reduces manual work. It has been estimated that the manual reception of one package costs € 0.50 more than automatic reception
    - The number of packages delivered with the Golli-service is illustrated in Chart 3. The figures include all delivery models and all customers. Different delivery models have different reception practices. However, the figures illustrate the potential for enhancement of digitalization in reception work.

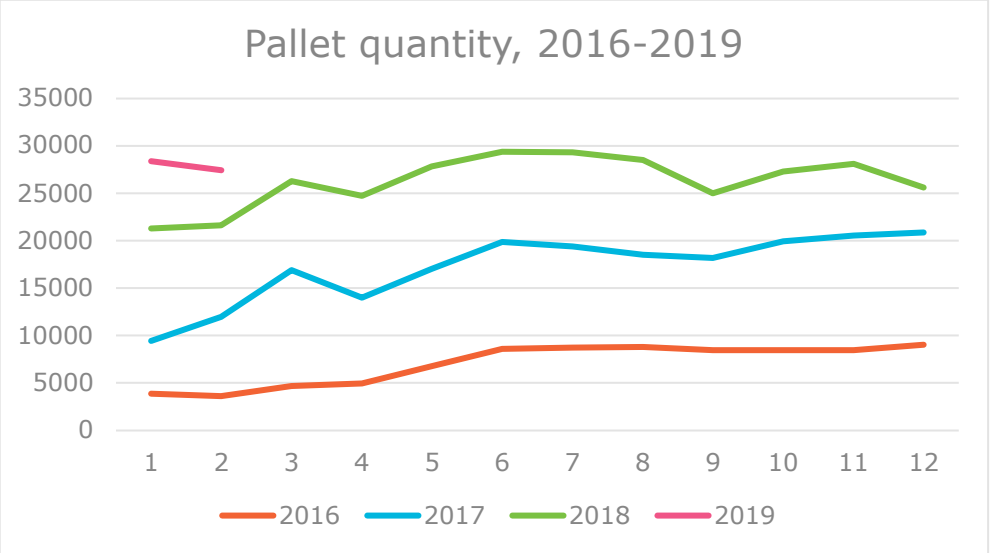


Chart 3: Number of packages delivered with the Golli service (one pack = one SSCC code). The figures include all delivery models and all customers.

4. The Golli-service has made different delivery models and practices visible and understandable, especially for small suppliers.
    - The understanding of the processes of the major retailers has increased
    - The understanding of digitalisation of order-delivery processes has increased

2.2 Suppliers

Seven user experience surveys have been carried out in 2017-2019:

- 09/2017: overall rating 3,66
- 11/2017: 3,5
- 02/2018: 3,73
- 04/2018: 3,63
- 06/2018: 3,35
- 01/2019: 3,43
- 03/2019: 3,00

Customers have rated the service on a scale of 1-5, and they have been able to provide open feedback as well. Feedback has been utilized both in the development of the Golli-service and in the improvement of guidance materials.

In March 2019, customers answered on a broader survey to investigate changes in supplier processes after implementation of the Golli-service.

Key findings from the survey on the challenges associated with use of the Golli-service were:

1. Most suppliers have systems in addition to Golli. Systems should be better integrated to avoid overlapping and often manual work. The challenge is illustrated in Chart 4.
    - 72% of all respondents have an inventory management and/or enterprise resource planning system
        - For example: Netvisor, Visma Nova, Odoo, MS Navision, Standard ERP, Emce, Alpha Manager
    - 72% of all respondents have a financial management system
        - For example: Netvisor, Visma Nova, Fennoa, Jeeves, Emce, Alpha Manager, MS Navision
2. The use of the systems above is mandatory for the company's own activities. The Golli-service is seen as an extra system that has increased work.
    - 76% of respondents believe that Golli has added at least some work in order processing

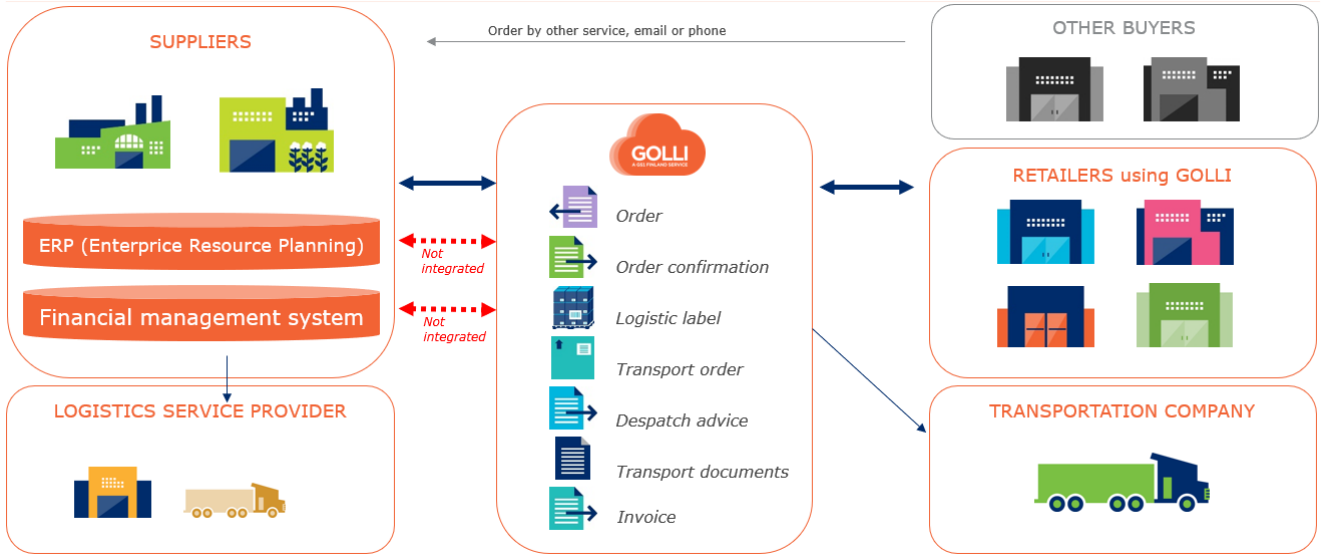


Chart 4. Suppliers have to use multiple systems and services. Manual work could be reduced if systems were better integrated.

Benefits for use of Golli-service suppliers described:

1. The Golli-service has streamlined processes, especially for suppliers who are able to use the Golli-service with multiple buyers
2. Producing logistic labels and transport documents is easier for those suppliers who had no previous solution for this

3. The Golli-service has made it possible to provide a delivery message to those retailers who require it

As further developments, the suppliers chose the following from the options given in advance:
- Sending invoicing material to Financial Management Systems, 57.15% (of votes)
- Sending a transport order to other carriers (in addition to Schenker Oy), 37.14%
- Uploading Product Data to the Golli-service directly from The Synkka-Product Database (GS1 Finland service), 34.29%
- Developing picking processes in terminal models, 28.57%
- Uploading product data with eg Excel, 22.86%
- Enable invoicing in terminal models, 14.29%
- Developments on linking multiple orders to one shipment in terminal models, 14.29%

In other open comments, respondents mentioned the following development needs:
- Handling and editing orders should be more flexible
- Inventory management system should be combined or integrated with the Golli-service
- The handling and picking should be simpler and faster, with fewer clicks

2.3 Other stakeholders

Summary of the project and interview with Encore Ympäristöpalvelut Oy

Terminology:
Load carrier (pallet) is a flat (often made of wood) platform. It is used in shipping goods from supplier (manufacturer or importer) to retailer (e.g. super market chain). The goods are packed on a load carrier for transportation and unpacked from load carrier at the destination (e.g. retailer's warehouse or supermarket).
RFID technology uses electromagnetic fields to automatically identify and track tags attached to objects.

Encore Ympäristöpalvelut Oy (formerly Paperinkeräys) is providing load carrier services to suppliers and retailers throughout Finland. Encore Ympäristöpalvelut is buying, selling and renting re-usable load carriers. Old worn out load carriers are bought and repaired for further use.

The use of circulating load carriers can significantly reduce the generation of load carrier waste. Encore Ympäristöpalvelut has estimated that **one circular Encore load carrier replaces 7-10 disposable load carriers per year. It is estimated that 50 circular pallets save about a ton of new wood (as load carrier raw material). This means about 38.000 tons of less wood as waste or raw material yearly**. Intelligent Encore load carriers utilize RFID detection technology. It allows precise monitoring and route follow-up of both a single load carrier and its load, as each pallet is identified by a standardized returnable load carrier identifier (GRAI).

The identifying code of a load carrier is read with RFID technology, and the data is transferred via Golli to business partner, along with data of products packed on the load carrier. This technology allows more precise traceability of each load carrier, and thus reduces the loss of load carriers.

The project piloted the use of recyclable load carriers with RFID tags instead of disposable load carriers in deliveries between suppliers and retailers. A key goal was to improve resource efficiency. The method showed cost savings to the supplier. The retailers got an opportunity to have monetary return against returned load carriers. Encore Ympäristöpalvelut gained more profitable business thanks to effective pallet tracking and faster circulation. In a functional system, a circular load carrier is a cheaper solution for all parties in the chain than a single-use one.

The Golli project focused on small and medium-sized suppliers. The operating model also allows small companies to use load carriers equipped with RFID technology without the need for investing in reading ports and other expensive infra. The load carrier identifier is read when the pallet is activated and electronic data is automatically sent to Encore Ympäristöpalvelut. The identifier is also on the delivery message sent to the retailer, so that it can be utilized when receiving the shipment.

The solution enabled a new kind of business model for Encore Ympäristöpalvelut, where the supplier pays rent on the pallets only for the period when the pallet is in use instead of the previous flat fee. Computational cost savings for the supplier is estimated to be 30-40% compared to the purchase of load carriers.

The identification of the load carriers with the RFID tag enables effective monitoring and control of the carriers. For example, the speed of recovery of the load carriers from the central warehouses of the retailers can be measured, which makes it possible, for example, to reward a faster round of load carriers with pricing. There is also information about the life cycle of the load carriers, such as the number of uses and the intended use of load carriers.

At the warehouse, the use of intelligent load carrier reduces the need for re-packing the goods on another carrier supported by the warehouse automation system, if the RFID identifier on load carrier is utilized in the automation system. In the store, the identifier can be used in receiving the goods, and no separate check is required. In addition to tracking the load carrier, the identifier enables also monitoring and tracking the shipment loaded onto the carrier.

The functionality of the system was piloted and verified at the Gold & Green Foods Järvenpää plant. Reading the RFID tags in a small shipping area with multiple load carriers at the same time in the same space proved to be a challenge. Often tags of several load carriers or wrong load carrier was read. The solution planned to this was reading the tag at earlier stage, already at the end of the production process when preparing the load carrier. However, this was not carried out within the framework of the project, but the operational model has been described for possible future implementation.

The solution is open and based on GS1 standards. Thus, in principle, it is possible to use of any operator's load carriers in Golli deliveries. At the end of the project, Transbox Oy joined in, whose recyclable and stackable plastic boxes are widely used in the supply chain of fresh food, such as meat, fish and convenience foods. Transbox Oy has been established as a joint venture between commercial logistics companies and the food industry to reduce logic costs and reduce environmental waste load.

There are currently no RFID tags in the Transbox boxes, but the boxes are identified by a barcode from which the identifier can be read. The hygiene requirements of food containers are high and the management of their washing cycle is challenging. The wastage of boxes is also a big problem. When using the Golli-service, the barcode on the box is read when collecting goods to the box. And as the code on the box is read again at the different stages of the circulation, a loss or too slow rotation of the boxes can be revealed.

Encore circulating load carriers

Transbox

3 Further development of Golli service

The main target for 2019 is to increase the number of service users to 300 suppliers, so that Golli service can continue as financially self-supporting.

After reaching the goal, updates to the service must be done in order to ensure the system is up to date. In the summer of 2018, the service provider Solita Oy did a report about the most important technical update needs. These are to be implemented in autumn 2019.

The most important functions of the service are already fully operational. In order to further expand the service and the number of users, further development actions should be planned for the following areas:

- integrations to suppliers' internal ERP (enterprise resource planning) and financial management systems
- expanding the network of partners: logistics service providers and transportation companies
- further development, efficiency and user-friendliness of terminal models
- enabling invoicing function to terminal models

Development needs are assessed in the Golli service development group.

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The following describes in more detail the most important development needs and other future themes.

3.1 Integrations to other systems and partners

It is challenging for suppliers in particular to use multiple parallel systems. The challenge is described in Chapter 2.2 Suppliers. The smallest suppliers may not have **additional** systems **in use** and the problem **does not concern them**. However, a large number of suppliers (72%) currently have to work **manually** in parallel multiple systems. **At the moment t**his may even be a**n obstacle for** to **becoming a Golli service user.** Especially medium-sized companies with a lot of deliveries and order lines do not want to do manual work.

In order to remove this obstacle, the function for transferring information to the most commonly used systems among suppliers should be built. The solution must take into account that there are dozens of systems and they may change over time.

In addition, a large number of suppliers use a partner company for storage, collection and delivery. Currently, the Golli-service has an integration with LTP Logistics Oy. Similar integrations with other partners should also be planned.

Golli-service user can send an electronic transport order from the Golli-service to Schenker Oy. No additional work nor logging in to the shipping company’s web service is needed. Suppliers using Golli service have also requested other carriers, such as Posti and Kaukokiito, to be integrated as partners.

3.2 Traceability

Companies have identified various needs, where more accurate traceability in supply chain will be more important. For example, certain product batches or the origin of product batches must be identified. The data can be used for example to:

- meet regulatory requirements
- improve the supply chain efficiency
- improve inventory management, to reduce wastage
- increase the amount of information displayed to the consumer

Golli service can be used in transmitting information about for example product batches, best before -dates or country of origin per shipment or shipping box. At the moment, mainly date information (such as best-before date) has been transmitted about deliveries to fulfill the needs of central warehouses.

As the actual needs for traceability become clearer, the batch-specific data Golli-service facilitates can be utilized more extensively.

3.3 Resource efficiency

Deliveries don with Golli service generate a lot of information that could be used to enhance the efficiency of different stakeholders. For example, the company that manages transport aids can use the information to optimize the transportation described in paragraph 2.3. Other stakeholders.

Four different kind of reports have already been created to suppliers to review data in Golli service:

- Orders
- Deliveries
- Products shipped
- Invoiced products

Reporting function can be further developed in the future, to make it easily utilizable tool for suppliers operational planning.

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