

DataPorts in Action



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INTRODUCTION

Managing and sharing product information across the entire value chain is still a fundamental challenge for the consumer goods and retail industry. The Board of The Consumer Goods Forum (CGF) acknowledges the need to move urgently and at scale beyond current industry and organisational paradigms to drive a step-change forward via the Product Data Coalition of Action.

Most of the current initiatives have focused on managing and sharing product master data across the industry: (1) verifying GTINs globally, (2) defining and maintaining a core set of product attributes and (3) ensuring the best possible data quality via a consistent approach based on Data Quality Business Rules. In addition, there is a voluntary innovation track which has focused on new technologies to leapfrog data exchange (4) via DataPorts.

The potential value of data-sharing via DataPorts goes well beyond just the use-cases of product master-data sharing. For example, DataPorts are envisioned to enable a whole spectrum of data to be shared directly between large numbers of value chain partners, like forecasting data, transactional data, event data and sensor data.

In the recent CGF paper 'DataPorts, Solving End-to-End Value Chain Content Integration', the conceptual architecture and solution-direction for this is described, successfully addressing the question: is there a durable way in which we can design and build an open-source technical framework for peer-to-peer content integration for value chain partners, in full support of current and future industry and open standards?

This new paper, 'DataPorts in Action', intends to take this DataPort solution concept a step further, and to describe how such architectural framework can work, based on a technology Proof-of-Concepts with real data, conducted by SyncForce and Capgemini, in collaboration with The CGF.

This document intends to share and encourage others to further work on DataPorts, in order to enable a subsequent leapfrog across the industry.

With regards to product data exchange, it is important to understand that DataPorts will work alongside the 3 other key Data Leapfrog initiatives, and that they will reinforce each other. Furthermore, DataPorts can very well co-exist with today's approaches to data exchange – including GDSN. This means that companies could proceed at their own pace towards the adoption of next generation technologies.



One of the key premises is that new technologies such as Artificial Intelligence (AI) promise a future for data transformation, validation and exchange that is likely to be more responsive and accurate than current approaches. For that reason, we are currently exploring "DataPorts" as a new, easy and cost-efficient way to exchange data in a decentralised, federated manner across the whole value chain (including consumers), leveraging technology innovations in cloud/APIs, AI and Machine Learning (ML). This new way of peer-to-peer data exchange allows for more automation and flexible dialogues between systems of trading partners.

SITUATION

Despite all efforts made so far, the industry is still facing significant issues on data sharing:

- Fast changing consumer behavior and new competitive landscapes make the product-related data sharing requirements more critical, more dynamic, more real-time and more complex (and therefore more costly to manage).
- There are lots of different ways and technology solutions that are currently used to exchange product-related data across the end-to-end value chain (not just between manufacturers and retailers), often not compatible with each other. Also, in many cases the widespread adoption of data exchange solution practices is lacking, due to the complex and proprietary nature of these solutions, which are barriers for especially smaller retailers and brands.
- Gaps in adoption are often covered by manual work (and therefore more costly).
- Quality of shared product and trade data is often lacking.
- Complete standardisation (beyond the common core-attributes of product master data, as defined in Verified by GS1 and the Global Data Model) is difficult and slow.

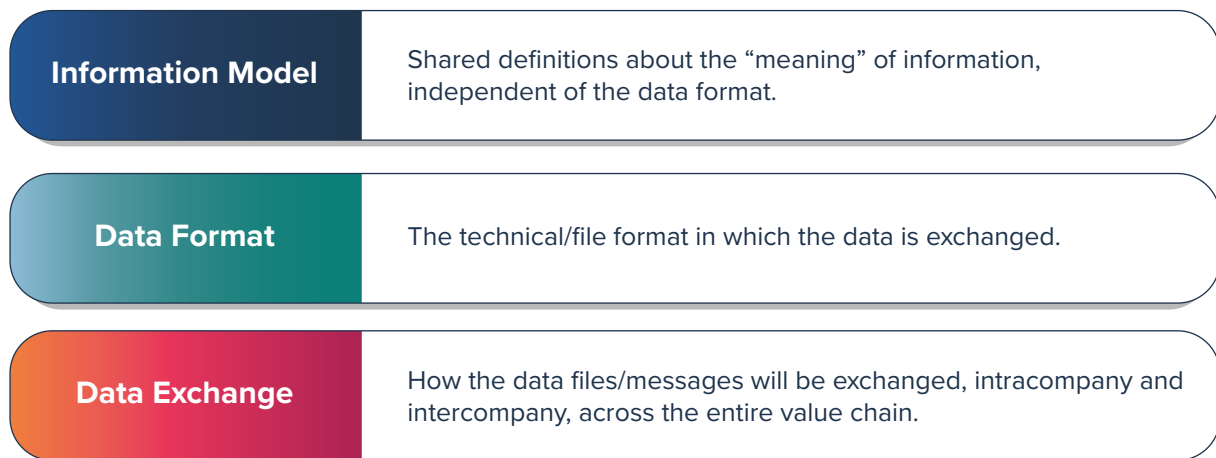
This situation leads to an undesirable situation, where across the value chain much of the product-related data is missing, inaccurate, not shareable and/or unreliable. This is impacting further value chain collaboration, and overall results in lost sales, high costs and most importantly dissatisfied consumers.

Instead of setting up single use proprietary interfaces, it is now possible to create more modular and layered solutions which are quickly anticipating the changing data needs from consumers and businesses.

This means that collaboration on data sharing can be flexible and easily adoptable by both parties. We should aim for seamless data sharing without the need to change the data models of both receiver and sender, so that the barrier of entry is low.

For this reason, it is important to make a distinction between the information model (as addressed in the Global Data Model Initiative), the format of the data itself, and the way data is exchanged. DataPorts are only focused on the bottom layer: data exchange regardless of data format or information model.

DATA LAYERS AND FUNCTIONS



DATAPORT SOLUTION PRINCIPLES

The solutioning question we look to address with DataPorts is: can AI-enabled federated data sharing via DataPorts provide an opportunity to leapfrog on how product data is exchanged across the whole value chain?

The solution we are looking for needs to provide the lowest cost across the industry, have a very low entry-barrier, must be able to be adopted at global scale, must allow for trusted authentication, be flexible, and provide full freedom of choice regarding commercial service providers.

The key design principles for the DataPort solutioning are:

- Decentralised: Drive peer-to-peer and many-to-many through a simplified & unified client (make the API a commodity).
- Simplified Protocol: Convention based list of business questions for specific relations (ship answers instead of big sets of data).
- Fast Response: Embed flexibility in the design by assuming a dynamic reality of shifting sources and fast increasing data demands.
- All Data: Cover all sources which support business processes and decision-making right from the start, include transactional, financial, environmental, document based and master data from the beginning in the option space.
- Open Standards: Provide basic building blocks as open framework to secure interoperability of individual solutions as well as scalability and frequent re-use of capacity and capability (example: GraphQL/Linux Foundation).
- Eco-system: Encourage open eco-system of competing solutions and service providers to boost commercialisation.
- Modular Design: Envision AI/ML, cloud technologies to enable digitally autonomous processes in the value chain machine-to-machine where possible (increase options for automation where it drives value).
- Push & Pull: The new digital economy increases the need to be able to pull data real-time, DataPorts will support both.

DATAPORTS PROVIDE A NEW WAY TO EXCHANGE DATA

Information Model	Shared definitions about the “meaning” of information, independent of the data format.
Data Format	The technical/file format in which the data is exchanged.
Data Exchange	Dataports will be the enabler for how the data files/messages will be exchanged, intracompany and intercompany, across the entire value chain.

DATAPORT SOLUTION ARCHITECTURE

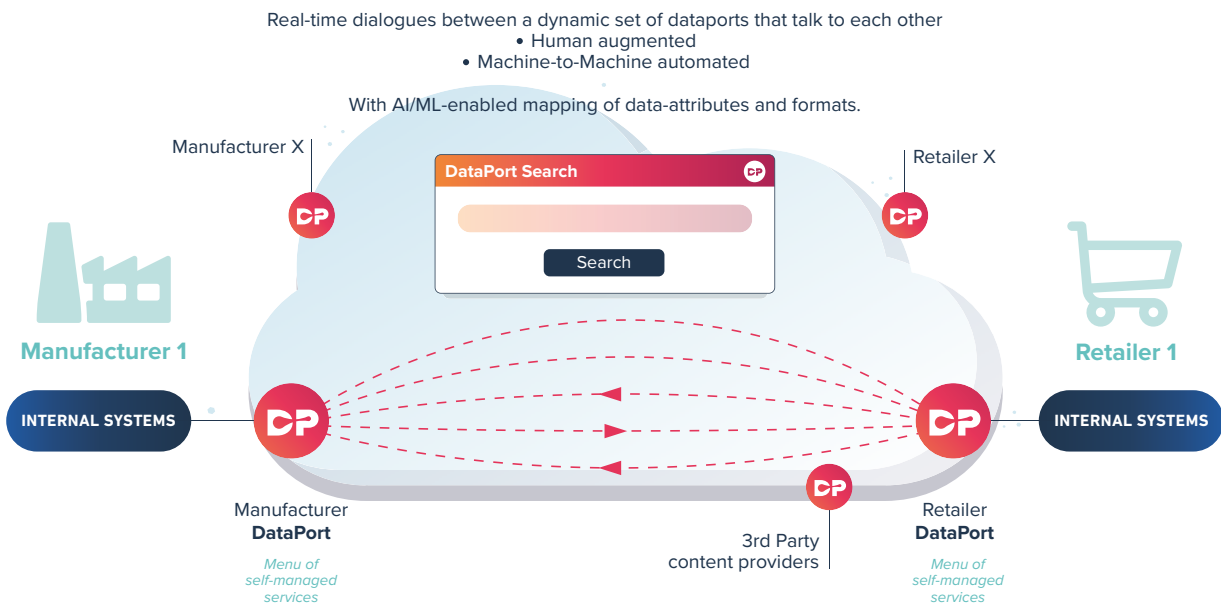
DataPorts are the gateway for dynamic peer-to-peer exchange of data. DataPorts enable flexible dialogues between entities that need specific information or services and entities that can provide that.

In order to understand the concept from a non-technical perspective, it makes sense to think in terms of a physical-world metaphor: transportation of goods via water and land.

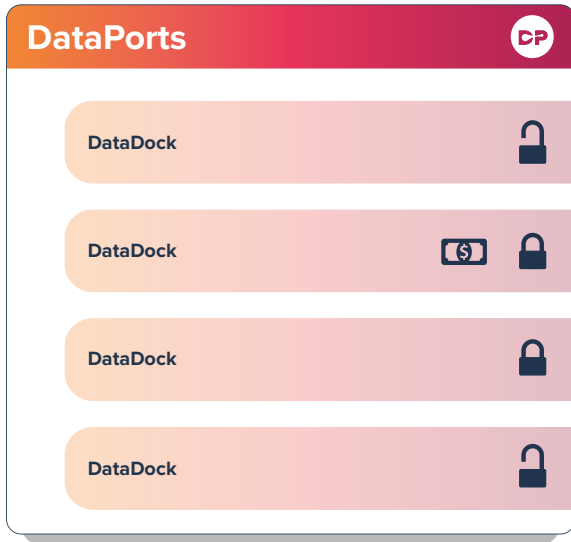
DataPorts are the digital version of the real-world harbors: virtual ships with data-containers directly travel from DataPort



to DataPort, unloading or loading data via DataDocks. Each DataPort can have multiple DataDocks, which come in different sizes and forms each for a specific purpose. The DataDock is the destination of the ship where the data container will be unloaded by data pickers, in the real world one would call this the docking stations of the harbor where the goods are delivered. To deliver the goods, the ships and the containers should fit the destination dock. Therefore, the data will be cross-docked by the DataPort to enable seamless delivery of the data containers

THE VISION: FEDERATED PEER-2-PEER SHARING VIA DATAPORTS



DataDocks



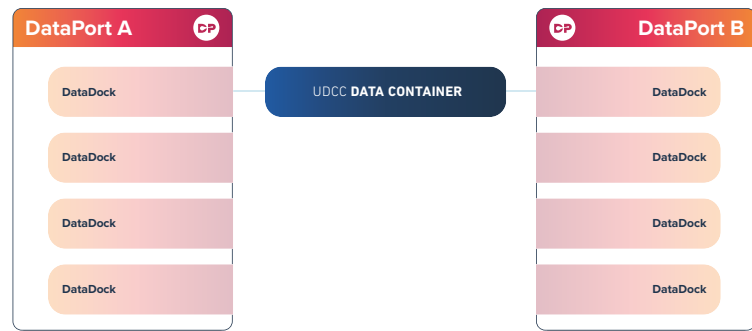
-  COMMERCIAL DATA SERVICE
-  AUTHORISED ONLY DATA SERVICE

Any company in the value chain, raw materials, producers, brand owners, trading partners (retail and wholesale) can operate multiple DataPorts. Each DataPort can have one or more DataDocks. A DataDock provides specific data services. In our Proof of Concept we have focused on product data, but this has now been extended to also be transactional data like demand forecast. In the future we even envision DataPorts embedded in smart shelves.

DataDocks can be open, restricted (only authorised parties can dock) or can be commercial docks (e.g. subscription is needed to use the DataDock). Think of DataPorts for product data (master data), trading conditions (pricing, min order quantities, lead times), consumer generated content (reviews) and transactions (demand forecast, replenishment). DataPorts support both push and pull data exchange. The data exchange is async and semi-realtime. It starts with DataPort A asking a question to DataPort B.

Next step is that DataPort B processes the request pulling data realtime from one or more internal systems, after which the answer is pushed to the right DataDock at DataPort A.

The data between DataDocks is transported via DataContainers. Every DataContainer has an UDCC (Unique Data Container Code, based on UUID) that can be used by the framework to identify a data container.

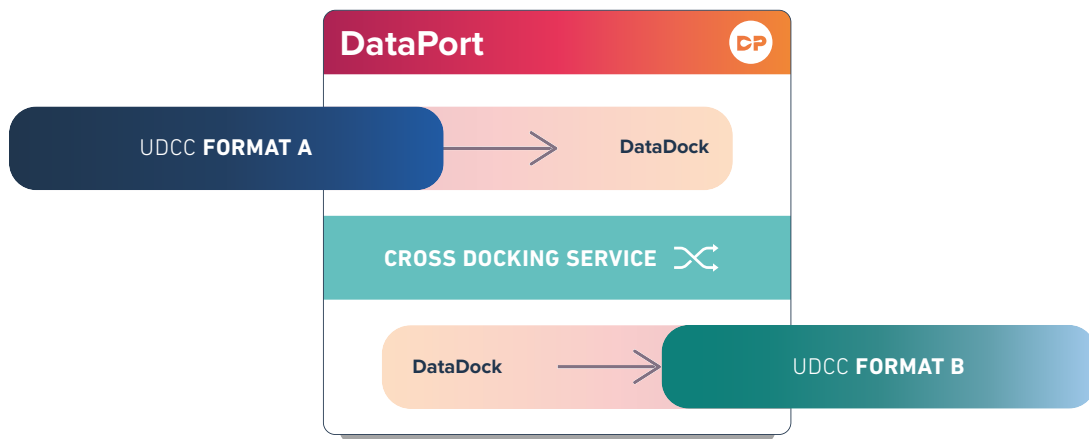


Data containers can contain any type of data in any format (product data, trading conditions, transaction data, et cetera). Using any information model (like ETIM, or Global Data Model) in any Data Type (MS Excel, XML or Json) and Data Format: GDSN-CIN, BMEcat, OAGI) or even bi-lateral agreed format between two parties, to support the situation that two parties want to move faster than the market. For example a data format for sharing information per ingredient about the reason why this ingredient is added to the product which is “agreed” between one specific food manufacturer and a retailer.

Cross-Docking Services

DataPorts enable federated exchange of data, in which both sender and receiver do not have to worry about the actual format of how it is being sent. The DataPort Framework provides optional Cross-Docking services. This allows one party to always send data in one format, while the receiving party can receive the data in a different format. This will put an end to the situation where parties need to provide data in a growing number of formats. This transformation service can be provided by multiple parties and will be a combination of community-maintained (open), commercial and ML/AI enabled transformation services. The DataPort framework will be open to any new format.

Even though DataPorts promise to enable a direct and flexible dialogue between entities (with 'translation' services in-between) - in reality, like in real-life, not all dialogues will be seamless from the start. For example, a retailer may be asking information that a manufacturer may not have available at that moment, the data sent may not pass the quality-validations on the receiving end, or the initial attribute mapping can be inadequate. Yet, we expect to see a (steep) learning curve, supported by machine learning mechanisms, to rapidly make these dialogues more and more seamless.



DataPorts in action in Fashion Industry

BUSINESS CONTEXT

Fashion is more dynamic than ever before. Material manufacturers (buttons, zippers, linings, fabrics) need to deliver on time in full, while limiting the risk on obsolete stock. A number of fashion manufacturers and suppliers have recently started a DataPort initiative to share demand forecasts.

A REAL WORLD DATAPORT PILOT IN FASHION:

DataPort Purpose: Enable material/component manufacturers to pull the demand forecast from the brand manufacturer, based on the Brand Manufacturers Material Resource Planning.

AT ALL BRAND MANUFACTURERS

Brand manufacturers are constantly updating their production planning within their MRP software. The MRP software “calculates” the demand forecast per “component” based on the production numbers and current stock levels on a continuous basis. For example: we need 500 blue buttons for a production run on April 14th, we still have 100 in stock, so the demand for this item is 400 on April 14th. The brand manufactures have implemented a DataPort and have activated the Demand Forecast DataDock. The MRP Software vendors have connected the DataPort to the MRP system. Brand Manufacturers can have multiple DataPorts, for example one for every production location.

AT THE COMPONENT MANUFACTURER

The production planner at the component manufacturer wants to update the production planning. At that moment Demand Forecast requests are sent to all her customers DataPorts by the Components Manufacturers ERP/MRP system.

All brand manufacturer DataPorts with an active Demand Forecast DataDock provide the Demand Forecast data for all items (so for the 400 blue buttons and all other “buttons”).

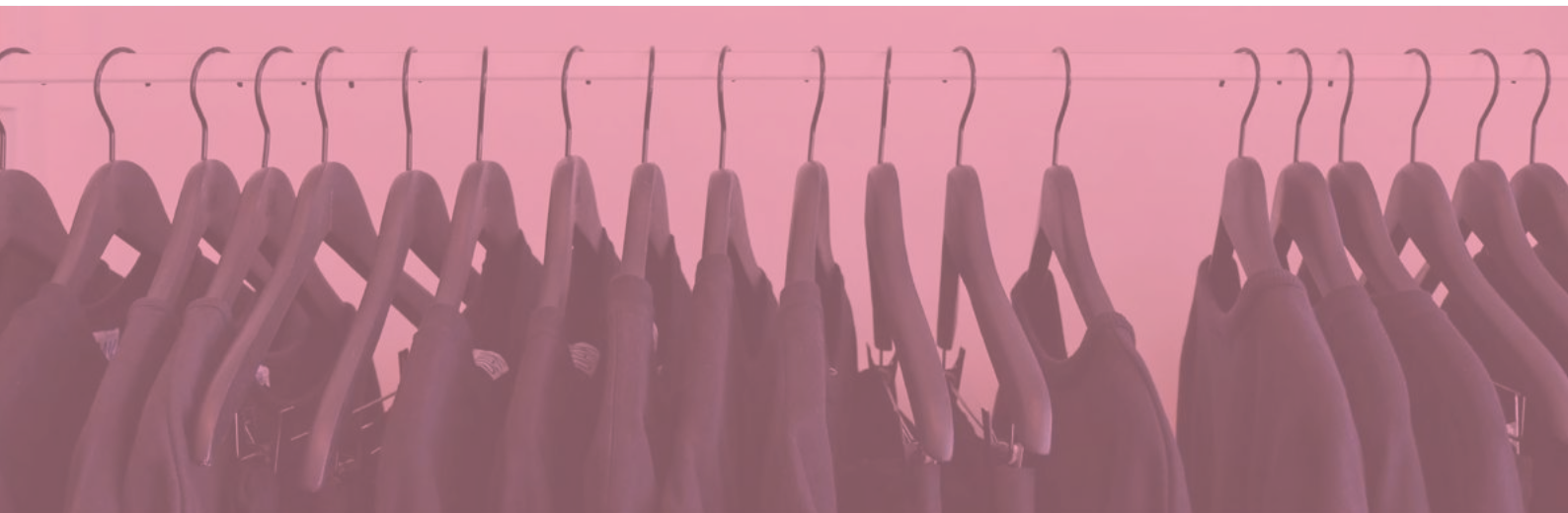
The MRP software at the Component MFG uses the Demand Forecast sum provided by all DataPorts as input for the production planning.

Participants for the pilot are:

- 2 Material Manufacturers
- 3 Brand Manufacturers
- 3 Software Vendors

DISCLAIMER

DataPorts are a first step into a new layer of technology that gives more options and need to be explored. It is important that this will be a learning process (leveraging AI and ML technologies), with feedback-loops driving subsequent improvements in the further dialogues (such as on data-accuracy and attribute or format mapping).



ABOUT



The Consumer Goods Forum (“CGF”) is a global, parity-based industry network that is driven by its members to encourage the global adoption of practices and standards that serves the consumer goods industry worldwide. It brings together the CEOs and senior management of some 400 retailers, manufacturers, service providers, and other stakeholders across 70 countries, and it reflects the diversity of the industry in geography, size, product category and format. Its member companies have combined sales of EUR 3.5 trillion and directly employ nearly 10 million people, with a further 90 million related jobs estimated along the value chain. It is governed by its Board of Directors, which comprises more than 50 manufacturer and retailer CEOs.

For more information, please visit: www.theconsumergoodsforum.com

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ABOUT



A global leader in consulting, technology services and digital transformation, Capgemini is at the forefront of innovation to address the entire breadth of clients’ opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. Capgemini is driven by the conviction that the business value of technology comes from and through people. It is a multicultural company of almost 220,000 team members in more than 40 countries. The Group reported 2019 global revenues of EUR 14.1 billion.

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ABOUT



SyncForce helps manufacturers achieve improved business results, faster, with our web based Product Success Platform. Packaged Good Manufacturers now operate in a world of constant product change. From new product ideas to changes in formulas or packaging of existing products (to address environmental pressures or the latest health trends), manufacturers must find ways to manage and coordinate high volumes of product activity, packaging changes, and getting those products digitally available across all channels. While many tools exist to help with pieces of the problem, SyncForce accelerates product success by addressing the entire product life cycle from a predictable product pipeline to best in class digital availability.

For more information, please visit: www.syncforce.com

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