



DIGITAL HUB LOGISTICS HAMBURG



THE LOGISTICS FLOW.

Sharing pays off

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How cooperation and data sharing improve logistics



Introduction

In Europe, the heavily fragmented logistics business is embroiled in cost-intensive competition. Conventional business models are coming under pressure on multiple levels; for instance, due to new regulatory requirements, higher costs, the increasingly serious shortage of drivers, and the emergence of new digital business models among young companies and even those new to the industry. At the same time, B2C customers are demanding greater convenience and reliability, while B2B decision-makers are increasingly looking for a one-stop solution for logistics services.

Enhanced collaboration within the logistics business could be an answer to these challenges. But that also presents many obstacles, whether in the form of dated IT systems or people having reservations about cooperating more closely with competitors. It has long been established in research that the transfer of information and data – up to and including data sharing – would bring many advantages to the logistics industry. A look at other sectors already shows how completely new business models can be developed around data.¹

We at RIO and the Digital Hub Logistics Hamburg are convinced that the benefits will ultimately only go to those who share information and confidently engage with their in-house data as well as outside data. By reference to selected literature, we will demonstrate in this white paper why data sharing solves problems and – for instance, within supply chains – can benefit **all** participants at the same time. In the second part, we will explain why platform structures are ideally suited to helping us successfully complete complex tasks such as logistics services **together**. In addition, we will set out the benefits that each partner can gain from this. Finally, we will address blockchain technology, which could render intermediaries obsolete, making it possible to practise completely new business models, as well as optimising existing business processes.

We hope that in your capacity as a decision-maker from the logistics industry, you can glean some exciting new insight from reading the paper and we look forward to your feedback!

Your team at RIO and the Digital Hub Logistics Hamburg

¹ Microsoft, for example, managed to establish a monetisation model around the Office file formats. Other examples include Spotify (music) and Facebook (user data for advertising).

1. Shared services in logistics at present

As a consequence of the financial and real estate crisis in 2008, the concept of the sharing economy experienced new popularity. Concepts like Uber and AirBnB have since shown that the idea of shared ownership has great potential to completely redesign value chains. Several thousand transactions are handled each minute on online sharing platforms under the mantra of “access, not ownership”, creating new companies worth billions.

In general, the sharing economy is associated with attributes such as non-ownership, temporary access and redistribution of ownership. The emergence of social media and mobile Internet access has ensured that sharing of all types of goods has now been transformed from a mega-trend into a social fact. By no means is the sharing economy simply a B2C sector phenomenon. Examples are also increasingly found in the B2B area. Logistics examples include platforms for searching, booking and communication such as Sharehouse (marketing and notification of warehouse capacity), XChange (platform for maritime equipment management) and Birdiematch (logistics job portal with automated matching).

Within logistics and supply chain management, transportation and warehouse services are particularly suitable for sharing. Not only with cooperating companies, but also directly between competitors. The World Economic Forum predicts that by 2025, up to 15% of truck haulage will use shared transport platforms and 20% of inventory turnover will occur under sharing agreements.² In addition, the following data and information are generated in day-to-day logistics operations:

| General area of information sharing | Type of information |
|-------------------------------------|--|
| Products | Product structure |
| Processes | Manufacturing lead time, delivery lead time, cost of processes, quality, delivery, configuration costs |
| Inventory | Inventory level, inventory holding cost, cumulative costs, service level |
| Resources | Capacity, variation of capacity |
| Orders (demand) | Demand, demand variability, batch size, delivery date, quantity, demand correlation |
| Planning | Demand forecasting, production scheduling, forecasting model, planning horizon |

Source: Montoya-Torres J. R., Ortiz-Vargas D. A., 2014

Figure 1: Types of information in supply chains

² Ocicka B., Wieteska G., 2017. Sharing economy in logistics and supply chain management. LogForum 13 (2), 187.



Currently, 3PL and 4PL logistics service providers in particular can offer their customers an exchange of information and, in turn, shared services. The Sphinx Project adopted by French logistics company FM Logistics in 2016 can be considered a best-practice example. A number of manufacturers of consumer goods, which are potential competitors in the consumer market, agreed on the use of the FM transport and storage capacity to pool their products, making possible shared deliveries to supermarkets and hypermarkets in European retail distribution networks. For this to succeed, it was not only a case of organising the groupage freight; it was also necessary to share data and information which were essential for forecasting, planning and replenishment. They managed to achieve the following key performance indicators: Deliveries by the full truckload with 38 floor pallets to a truck, delivery rate multiplied by a factor of 2.5, 30% less docking at the receiving distributor's premises, 20–30% less stock coverage at the distributor's warehouse facilities, and a substantial decrease in CO₂ emissions.³

Furthermore, new ideas for information exchange within logistics and supply chain management could be translated into reality by trends such as cloud computing and big data analytics. Existing customer relationships could be made even better and in particular more flexible using cloud-type services such as infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (SaaS). To a greater and greater extent, logistics service providers are relying on third parties for smooth information sharing. An external service provider, Interlog Services, was also involved in the FM project. On a daily basis, the data specialists coordinated and controlled the transport planning of their seven partners from the consumer goods industry using Click'n Track, a specially developed software programme.⁴

However, the sharing of information within logistics faces several obstacles. While each individual member of a supply chain has perfect information about themselves, uncertainties arise from a lack of perfect information about the other parties involved. In a true *supply chain partnership*, however, all partners are prepared to share information and boost their performance as a result. Some studies even assume that a Pareto improvement (where no-one becomes better-off at the expense of another member) could be achieved⁵ through true *information integration*.⁶

Another obstacle to the free flow of information is confidentiality – regarding purchasing prices or cost structures, for instance. If competitors exchange data within an industry, there is a risk of price collusion and anti-trust authorities could feel a need to step in. An additional limitation is the costly, time-consuming and risky nature of introducing a multi-organisational information system; for example, if the partners cannot agree on the technical specifics, the electronic data processing

³ <https://www.faq-logistique.com/CP20130605-FM-Logistic-Mise-En-Place-Sphinx-Pool-Europeen.htm>

⁴ Ibid.

⁵ This means that data from external partners exerts direct influence on an organisation's internal process planning and operational activities.

⁶ Zhenxin Yu, Hong Yan, T.C. Edwin Cheng, 2001. Benefits of information sharing with supply chain partnerships. *Industrial Management & Data Systems* 101/3, 118.

standard or apportionment of investment costs. The question of whether shared information is up-to-date and accurate is another stumbling block.⁷

Finally, it should be noted that information sharing cannot be more than a necessary condition for better coordination and planning of logistics and supply chains. To realise all the potential of a *supply chain partnership*, companies must develop the skills to join together to interpret, analyse and effectively use shared information.

Preliminary conclusion #1: sharing and interpreting information and data is becoming increasingly important for the logistics industry. But not all companies have enough resources and know-how. Section 2 will lay out the benefits that platforms can provide in terms of complex networks and productivity.

2. Using platforms to manage complexity and add value

Long supply chains are complex systems stemming from company structures that are interconnected to varying degrees. In particular, there is a wide variety of transport management systems at the logistics sector's disposal. Completely different data formats also need to be kept available at the interfaces (for instance, related to risk transfer) when working together with shipping lines, airlines and customs authorities.

Complex tasks are easier to undertake as part of a network. A network can offer services and take on tasks beyond the capabilities of individual companies by adding external resources and skills. Challenges arise within the network from the need to manage and orchestrate the different participants, along with their products and services. Platforms like RIO are a response to this complexity and seek to facilitate transactions between the associates by providing infrastructure and setting out certain rules.

The literature discusses five factors that make it easier for companies to provide complex and networked services when using a platform:

1. *Expanding the role of network orchestrator*
As a result of technical development, falling IT costs and the spread of mobile solutions, platform initiators can include more partners than ever before using websites, applications and virtual spaces. This increases the efficiency of member management and extends the reach of all platform participants.
2. *Using a complex supply base by creating new combinations of resources and skills*
The orchestrator's key role in these new combinations is to bring together stakeholders who were previously unable to do so. In addition, they can provide help with navigating the traditional conventions of the sector and crossing industry boundaries.

⁷ Lee, H.L., Whang, S., 2000. Information sharing in a supply chain. *Int. J. Manufacturing Technology and Management* 1 (1), 14.



3. *Establishing organisations more strongly in social terms (within the industry)*
 Platforms offer their customers a huge range of solutions. This increases social capital,⁸ which leads customers to trust platforms more and believe that they possess expertise in providing solutions. In turn, other platforms integrate smaller partners into their service and create a significant reach for previously unknown solutions and newcomers. As a result, platforms become conveyors of excellence. The prevailing confidence in a platform incentivises all parties involved to share further resources and expertise to achieve more sales.

4. *Recognising customer needs*
 Service sharing faces challenges related to the diversity and complexity of the different contexts in which a platform is used. Platforms therefore provide support in meeting these challenges by collecting feedback from users and using this to improve their own product. Partners can also use this knowledge for their own product pipeline.

5. *Restructuring of the competition and modified player roles*
 A platform approach opens up the possibility of acting as an intermediary and uncovering potentially opportunistic behaviour between different players in the network. For this purpose, platforms can either create full transparency among their members or develop a clear vision and rules to safeguard the platform's objectives.⁹

In summary, we can conclude that platforms facilitate three basic functions, which simplify the provision of complex services in areas such as logistics. Firstly, they bring together a massive range of different players. Each participant can independently decide what value to draw from the new association. By synchronising areas of mutual interest, the orchestrator can uncover opportunistic behaviour and ensure that developments move in a favourable direction for all concerned. This strategy particular important for business networks like LinkedIn and XING.

Secondly, platforms allow for the shared use of resources. It is therefore important in the implementation of the platform to build trust between all the participants, giving them both influence and safety when it comes to using their own resources and third-party resources. Yet at the same time, the participants need flexibility to organise their services as they wish and as they are able, a state of affairs which is especially helpful for dealing with unforeseen customer requests. Opportunistic behaviour or changes in participants' roles can be prevented by communicating a clear vision. In particular, this strategy is used by AirBnB.

⁸ For the concept of different sorts of capital, see: Bourdieu, Pierre: The forms of capital. In J. Richardson (Ed.) Handbook of Theory and Research for the Sociology of Education. New York, 1986: 241-258.

⁹ Eloranta, V., Turunen, T., 2016. Platforms in service-driven manufacturing: Leveraging complexity by connecting, sharing and integrating. Industrial Marketing Management 55.180-183 et seq.



The third function of platforms is to integrate different systems. However, this is not only to be understood in technical terms, but also includes workers, as well as other connections between resources and skills. Unlike the first function, it is not just a case of creating connections; the operational resources must also be efficiently integrated into the various participants' processes. This approach goes beyond simple resource sharing, as it also involves controlling the value chain in a targeted way. This strategy is brought to bear at [salesforce.com](https://www.salesforce.com), for instance. The platform has its own extensive range of services, to which additions are made by the third-party developer community. The company maintains a dominant market position in the network, establishing the rules and regulations under which the partners are to work.¹⁰

Preliminary conclusion #2: Platforms offer many advantages for all parties involved, particularly in coordinating and providing complex services, a role that they significantly play in the logistics industry. Blockchain technology has the potential to freeze out intermediaries like platforms (as well as stock exchanges, power companies and administrative bodies). Section 3 explains the status quo regarding the new technology in the logistics field.

3. Blockchain – looking past the hype

First, a quick reminder: The term “blockchain” describes a distributed, decentralised database, where all participants have identical copies of the current data status and can change this through transactions according to specific rules. Technical solutions such consensus algorithms can be used to ensure that the transactions are valid in public blockchains.¹¹ In private blockchains, however, the participants independently agree on governance.¹²

As well as in the financial sector, there is already a wide variety of blockchain examples in the logistics industry, ranging from the digital consignment note to in-journey temperature control and management of loading equipment.¹³ This suggests that the new technology should be ready to take logistics by storm. But this is not the case and until further notice, blockchains will be not be a business model destroyer. Firstly, this is because most solutions at the moment are still ideas in an inventor's mind and will take another three to five years to market. Secondly, because most competing companies must first go through a painstaking process to agree on technical standards and the consensus architecture. Nevertheless, logistics decision-makers should not neglect the strategic potential to create a new and open standard protocol for trusted data, identities, and

¹⁰ Ibid., 184.

¹¹ Further explanation of blockchain functions from Innovationsforum Blockchain (24-minute video in German language): https://www.youtube.com/watch?v=qZvN_iZndQM

¹² This means that the administration of the blockchain is in the hands of the participants who need to communicate about it. In the field of logistics, [cobility.org](https://www.cobility.org) is the latest attempt.

¹³ German company Chainstep offers an overview of application examples from key economic sectors (including transport/logistics): <https://www.chainstep.com/use-cases/?lang=en>

transactions using Blockchain. In addition, distributed databases such as blockchains could help to cut costs in the short term.¹⁴

This has also been acknowledged by major players working with technology companies to find a solution for their particular industry sector (logistics).¹⁵ However, small and medium-sized enterprises feel a particular pressure from this and are thinking about finding their own answers to the new challenges – including in partnership with local competitors.¹⁶

In a similar vein to the (web-based) network platforms addressed in Section 2, blockchains also benefit from the network effect. While the potential benefits increase with the size of the network, this is also associated with rising complexity in the participants' coordination. The parties involved in blockchains must initially agree on how transactions are to be carried out and consensus established. As a result, the partners must make arrangements about the future management of data, systems and investments. Often, a neutral third party, such as a trade association or an already established platform such as RIO is needed once again to resolve these questions.

While information is exchanged on Web 2.0, blockchains have the ability to add secure value relationships to the Internet. Unlike network platforms, blockchains open up the possibility of rewarding participants for their contributions or paying for resources that have been provided directly with tokens (application-related crypto-assets) and, in turn, to participate in future increases in value.

Preliminary conclusion #3: blockchains do not (yet) seem to be a big platform-killer. Instead, they can expand existing platforms' range of functions, as well as making them safer and more efficient to use. But again, those who do not know their data or are unprepared to share it will not receive any benefit from the new technology. In addition, logistics service providers should look into possible practical applications for blockchain use in their day-to-day operations to ensure that they are not left behind in the world of tomorrow.

4. Conclusion

Data sharing: basic requirement

Platform: value-adding facilitator

Blockchain: platform add-on

As we have seen, data sharing provides measurable benefits. Logistics service providers can increase their productivity and minimise costs. And the higher the quality of the logistical services (such as

¹⁴ McKinsey estimates that 70% of blockchain's potential comes in the form of cost reduction, followed by revenue generation and capital relief. See: <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/blockchain-beyond-the-hype-what-is-the-strategic-business-value>

¹⁵ Maersk has teamed up with IBM and wants to document the origin of coffee beans using blockchain.

¹⁶ For instance, four hauliers and IT companies, three higher education institutions and a blockchain start-up have come together to develop blockchain-based solutions for the transport industry as part of the Hamburg Logistics Initiative's Hansebloc consortium. See: <https://www.hamburg-logistik.net/veranstaltungen-und-projekte/projekte/laufend/hansebloc/> (German language)

order processing, packaging, labelling, performance in logistics information systems), the larger the positive effect on the provider's financial and practical resources.¹⁷

In the future, customers will choose the logistics service provider that offers a large number of services from a single source or can establish the best data connection to their own interfaces. If more specialised service providers are added into the mix, it is all the more important to have a shared data pool. Certain companies are still overwhelmed by these requirements, which is why specialised platforms such as RIO are emerging to a growing extent as the order of the day.

Blockchain is still an alien technology to many. Nonetheless, it has the potential to quickly expand platforms' functionality and add value – for example, in cases involving building further trust, designing existing processes more efficiently and less expensively (such as in accounting) or implementing completely new business ideas for the logistics business.

¹⁷ Chen, L., Baofeng, H., Shulin, L., Xiande Z., 2015. Effect of information sharing and process coordination on logistics outsourcing. *Industrial Management & Data Systems*, 115 (1). 54.