Industrial intent platforms for Logistics 4.0

Logistics industry, process chains, value creation, networks, networking

The vision of Industrie 4.0 confronts the logistics sector with new challenges - although topics such as networking and digitized process chains that follow the “Smart Factory” pattern are in fact well-known themes. Yet, in the face of exponentially growing volumes of data and the rising number of players in global supply chains, a rethink is required. Conventional management methods and systems are reaching their limits. But how to exploit the potential of digitalization in a targeted way to develop internationally competitive business models within logistics?

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The German Federation government’s recommendations for implementation of Industrie 4.0, which has been officially declared a matter for top-level politics, clearly state: “In Industrie 4.0, business and engineering processes are dynamic in character, meaning that production processes can be modified at short notice and respond flexibly to equipment failures or other disruptive events, caused by suppliers for example.” But without seamless digitalization of supply chains, none of this will succeed.

Industry or politics – who is driving the process?

Could politics be the real driver here? IT firms such as SAP, Telekom and Bosch are probably better placed than the world of politics to develop a robust business model. In the USA, the scene is dominated by the international Industrial Internet Consortium (IIC), whose members include IBM, Microsoft and Cisco, among others. Besides these companies, there are already innovative medium-sized enterprises that are systematically exploiting the opportunities of digitalization and are offering tools for the networking of companies in spite or maybe even because of the lack of standards. The goal is always to network the logistics systems in a more intelligent manner as an integral component of all value creation steps and to eliminate system boundaries. These networking platforms have the potential to make disruptive change in the logistics industry. Today’s planning processes, still mostly organized manually and based on the laborious exchange of information by telephone, fax and e-mail, will either disappear or be pushed to the margins.

Towards Industrie 4.0 with industrial Internet platforms

So how can the entire logistics process be digitized with the ultimate aim of implementing automated communication that spans multiple companies and is at the same time immune against errors? In the past, the generally chosen route was to link companies via bilateral interfaces. In today’s conditions, this is no longer appropriate since the lengthy implementation time and the huge effort entailed by this method negatively impact the flexible networking of enterprises. Moreover, there is a constant need for updating the interfaces. All this represents a substantial obstacle to the prompt networking of enterprises in a business relationship, especially in case of ad-hoc relationships.

This is why the economy needs open industrial Internet platforms with which dynamic and complex business networks can be flexibly established and controlled. This will allow the flexible interlinking of different services so that every participant is supplied with all the necessary information (e.g. order status) at all times. In addition to order details and checklists this includes status information for preceding and subsequent steps. The innovation: New standards can be configured online at any time and system updates leading to unproductive downtimes are a thing of the past. Users benefit in multiple ways:

- The IT effort for interfaces drops drastically.
- Process transparency rises throughout the entire process chain; order status is visible for any participant with the appropriate privileges.
- The effort involved in data capture is reduced, errors are avoided.
- Data is available in real time.
- Resource deployment can be planned and controlled more efficiently.
- The administrative effort is significantly reduced.
- Ad-hoc as well as long-standing business relationships are equally supported.

While the focus of Web 2.0 was on private Internet users and their networking by Social Media and B2C solutions, platforms in the B2B field provide effective and convenient support for the networking of business processes in collaborative economic structures.

What will be the impact on staff?

Industrie 4.0 is also bringing drastic changes to working environments. The range of communication channels being used is shifting from telephone, fax and e-mail to structured order communication via platforms. In planning and scheduling this means a focus on order execution monitoring and control centers and the disappearance of the shift handover book and the sticky yellow note. Individual members of staff will profit from a reduced workload thanks to the use of ergonomic cockpit displays playing job functionality, planning diagrams and controller dashboards.

Employees working outside the office will receive their daily tasks with all job details electronically via smartphone or tablet and report the progress of work back in the same way. Thus work processes are integrated between all companies and individuals involved and of course also the machines. The platform concept makes it easy to include information accompanying an order such as matching of services provided, photos, status reports, GPS tracking or capture...
The use of Web browsers or apps makes it easy for any user to actively participate
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Data can be captured and reported at the point of origin in real time

The availability status of all resources is visualized on the job monitor

of mobile working hours. This will not only facilitate scheduling/job allocation, but also make the work of quality assurance and accounting departments significantly easier.

There are scenarios for application in practically every sector. The itinerary of a container shipment from Asia to an end-customer in Europe, for example, involves inputs from shipping agents, freight forwarders, container terminals, shipping lines and rail and road haulers. The result of the all-embracing transport management will be a significant acceleration of the administrative and hence also physical throughput times, cost reductions for all parties, plus considerable gains in transparency and quality. To this end, it is not imperative that any and all enterprises should take part from the outset. Even with only a few partners involved, the effect already becomes noticeable. Similar scenarios can be observed in the field of facilities management, maintenance/industrial services, the energy sector and many more.

Industrial Internet – for everyone?
Everyone involved should feel the benefit of these platforms. It is therefore important to prevent entry barriers. Success comes when every party concerned can take an active part in the simplest possible way via the Web and apps. Small enterprises and freelancers use browsers and apps, companies with an extensive IT landscape integrate their systems step-by-step via the open platform specification. In addition, the in-house ERP system can be supplemented with mobile apps for the company's employees.

Digitizing staff deployment
The key objective is to network the company and any mobile staff throughout the order execution process. The advantages are obvious in comparison to the dilemma of conventional staff deployment planning. Every day, transport and logistics service providers in particular are faced with enormous documentation efforts as well as time-consuming planning and coordination processes. In addition there is the risk of errors. Systematic staff planning for order execution, the integration of temporary and agency staff and a coordinated control of the company's permanent mobile resources can only be implemented with a great deal of effort.

In contrast, modern platforms following the Logistics 4.0 concept provide simple and secure support for data reporting at the point of origin in real time. For this purpose, apps must be robustly designed to prevent errors and disruption. This will make communication and coordination problems, which are typical of collaborative processes, a thing of the past. All information relevant to the current process step is displayed in a clear manner on the job monitor. In parallel, the scheduler receives instructions on the deployment or availability status of all resources on employee and machine level. Planning errors are avoided and idle time is reduced.

Summary and outlook
Modern industrial Internet platforms create the conditions for simple, clearly structured and secure communication across the entire order management process and are thus particularly suited to logistics. They enable transparency and improve the exchange of information throughout the logistics network. Media discontinuities are cleared by this type of “central interface” so that transport jobs can be handled more efficiently between all participants. The error rate drops significantly and process costs are demonstrably reduced. An authentication procedure ensures that process information is only made available to the defined authorized parties in the chain.

In the coming decade, the number of platforms will grow considerably, the number of platform users even more so. With networking via platforms, Internet and apps, transparency in logistics processes will become the norm. Already today there are clear indications that the technological developments in the scope of the development of Industrie 4.0 will bring disruptive change to the entire logistics sector. Opportunities are arising for new business models, while conventional business models must either be quickly adapted or will be reduced to filling niches. The control of logistics processes can be partly automated, and scheduling departments will have more time available to devote to core tasks and management of non-standard events and processes.

Where will we be in 10 years' time?
If industry and industrial equipment and machines become increasingly networked and “smart”, then logistics within and between the value creation stages must reach a new information level. The traditional freight forwarder as a provider of transport and a data entry services will increasingly become a manager of complex processes. Thus logistics in an industrial value creation chain must become even smarter and more digitally networked than today. The enabling technologies are available and ready to deploy – now we need bold decision makers who recognize the opportunities of digitalization and want to actively shape this development. They will be rewarded by enormous gains, both qualitative and financial.


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