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Welcome to the cognitive era

The next stage of development in logistics

Digitization and networking of logistics processes have been discussed for a while. And development is continuing: Cognitive systems are capable of learning, recognizing patterns and recommending action on that basis. This means they can support warehouse employees with decision-making and provide advance notification of events that are likely to occur. These are capabilities which will be of benefit in particular to the logistics industry in the future. But there is still a long way to go until self-learning systems can be deployed in warehouses. Many companies have recognized that it is essential to link up processes and technologies to remain competitive and ready for the future. Implementation, however, is progressing very slowly.

The ordered items are not delivered on the next day at the latest. The desired item is not in stock. And order tracking is not available. In these cases, it is very likely that customers are not satisfied. Consumer behavior has also changed as a result of digitization. Expectations are growing, especially in e-commerce: Customers now expect same day or next day delivery, 100 percent product availability and continuous status updates as a matter of course. And these expectations are no longer limited to the private sector. Customers in B2B are also demanding this level of service.

High-performance IT as the basis

To meet the continuously growing requirements, companies have link up all the systems along the supply chain. This requires a powerful system that not only links up the individual participants, but manages them as well. A modern supply chain execution system (SES), for example, as a smart control center, transparently provides all relevant data across the entire supply chain and links that data together. A comprehensive overview and more efficient design of the underlying original processes is in fact only possible when the various pieces of data are made visible and transparent. This is what turns the value and supply *chain* into a value and

supply *network*. Supply chain execution systems are already in use as tools to increase productivity and prevent errors. But they have even greater potential. An SES is, in fact, a platform for the next phase of development in logistics – cognition.

The Internet of Things becomes the Logistics of Things

By analogy with the "Internet of Things", "Logistics of Things" has become an established terms in the logistics industry. In the past, a manageable number of hardware components were used in warehouses. Now, warehouses are overrun by vast numbers of digital gadgets. It is now common to see tablets, smartphones, scanners, pick-by-voice, pick-by-vision and even picking robots in today's warehouses. But the increasing number of technologies is also generating more data. The challenge lies in making the most of that data. What are the available options to find the relevant information in this flood of data?

Quality, not quantity

Until now, process optimizations were based on findings from past experience. In the era of cognitive logistics, the perspective is changing. The key question now is: "What is going to happen and are we ready for it?" Predictive analytics, which turns big data into smart data, provides the answer. It is no longer the quantity of data, but the quality that counts. Filtered, categorized data and additional external data, such as weather and traffic information, can be used to make predictions about situations that are likely to occur. Predictive analytics increases planning certainty, because the method identifies repeating patterns. So companies can prepare for probable scenarios early on. For example, i the system identifies trending items at a certain point, it is useful to align product assignment in the warehouse to trends in order to accelerate order picking. Upcoming maintenance and potential for improvement in the material flow can also be identified in this way. This represents an important step towards cognitive logistics.

Cognitive logistics: Trend or dream?

In the future, it is conceivable that smart systems will make decisions based on predictive analytics without any human intervention. A sophisticated cognitive – i.e.

learning – system can communicate with human beings in natural language, making it a smart "colleague". Such a system is also capable of actively thinking, supporting employees with decision-making, issuing warnings in case of impending supply bottlenecks and making recommendations. This artificial intelligence allows the system to exploit deep learning, where artificial neural networks teach machines to think. The required computing power is provided by a new generation of computers and algorithms. Nevertheless, cognitive logistics is still in its infancy. Many companies either have not yet completed the digitization and connection phase or have not even started implementation. But companies must work up to this level to open the way for cognitive logistics and avoid being left behind in the future.

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Photo captions: **Photo 1: A modern SES is a platform for the next development phase of logistics – cognition.**
Photo 2: Cognitive systems can support warehouse employees with decision-making and provide advance notification of events that are likely to occur.
Photo 3: Cognitive systems can communicate with human beings in natural language, creating a smart "colleague".

Ehrhardt + Partner

The Ehrhardt + Partner Group (EPG) is one of the world's leading logistics experts and offers a comprehensive solution for all industries in the form of the LFS software suite. LFS as a supply chain execution system is currently in successful use across five continents and allows the entirety of logistics processes to be managed and controlled across all business units. E+P, the global group, was founded in 1987 and now employs upwards of 500 staff at 14 locations. More than 60,000 users the world over use the LFS system for their supply chain management. The features offered by the LFS

software suite include everything you might need for comprehensive logistics management: The LFS.wms warehouse management system for managing and controlling intralogistics, the LFS.mfc material flow calculator, the LFS.tms transportation management solutions for efficient tour handling and planning and the LFS.iss international shipping system for processing shipping logistics. Radio data transmission solutions, warehouse planning and -consulting, private cloud and hosting services , and warehouse seminars conducted at the LFS.academy round out the list of comprehensive solutions provided by the E+P Group. Together with in-depth consulting services for warehouse technology, extensive expert knowledge in the area of warehouse logistics and reliable technical support: E+P is your one-stop solution provider. At present, more than 1,000 customers across all industries can be found on our list of references.

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