

Paperless transport.

It sounds simple in legalese: “The carrier may require a consignment note to be issued containing the following particulars...” states Section 408 of the German Commercial Code (HGB). This entails time, money, and a lot of paperwork.

COPY — Roger Homrich

Both senders and recipients must deal with quantities, shipping notes, and numbers associated with the freight items, as well as gross weights, packaging types, customs instructions, and other official handling of the goods. Anyone transporting goods from point A to B ends up sending piles of consignment notes with information about the transported goods – three copies of course. What follows is a series of signatures and confirmations as well as the required archiving period of six years.

HUGE POTENTIAL FOR SAVINGS

According to the Bundesverband Güterkraftverkehr Logistik und Entsorgung (Federal Association of Road Haulage Logistics and Waste Management, or BGL), tens of millions of euros would be saved every year in Germany alone if goods traffic were to be completely converted to digital consignment notes. According to the Dutch freight carrier association TLN, the savings potential is about 4 euros per consignment note. In Germany, with an estimated 150 million consignment notes issued, this would amount to around 600 million euros. The BGL and the Deutsche Speditions- und Logistikverband (German Freight Forwarding and Logistics Association, or DSLV) have been campaigning for years for electronic consignment notes. According to Hubert Valder, BGL's legal advisor, the cost of archiving and shipping documents would decrease significantly. In addition, electronic consignment notes enable the transfer of information such as goods receipt or acceptance in real time.

The time savings would be immense. Maersk wanted to know exactly how much and documented the path of a refrigerated container filled with avocados from a farm in Kenya to a Dutch supermarket. The logistics company found that nearly 30 people from different organizations had to deal with the shipping documents along the way. Without the constant processing of documents and

associated wait times, the journey would have taken only 24 days instead of 34.

DISPLAYS INSTEAD OF PAPER

The cloud-based IoT solution Paperless Logistics from T-Systems exploits this potential for savings. It facilitates the digital dispatch of shipping documents, accompanying documentation, and barcodes. To support this, developers have expanded telematics modules into intelligent displays that are temporarily or permanently installed in the compartments of containers and transport boxes. “The display technology consumes little energy and is compatible with e-readers, among other devices,” explains Torsten Chudobba, Head of IoT for Automotive & Manufacturing Industry, which came up with the idea. The scratch- and break-resistant hardware is particularly robust and eliminates shocks and jolts to ensure that the device does not malfunction during the first trip.

The intelligent display also captures locations, movements, and conditions such as temperature, humidity, vibration, and speed of the cargo and sends the data over the mobile network to Deutsche Telekom's IoT cloud platform (the so-called Cloud of Things). The necessary technology is already integrated in the device. Crates



Digital freight documents make transportation processes faster and less expensive.

600 million €

According to the Bundesverband Güterkraftverkehr Logistik und Entsorgung (Federal Association of Road Haulage Logistics and Waste Management, or BGL), 600 billion euros would be saved every year in Germany alone if goods traffic were to be completely converted to digital consignment notes.



Paperless logistics could reduce transport times in global container freight transport by up to 30 percent.

and containers can also be equipped with beacons that communicate with the device via Bluetooth. "This way it can be determined at any time on the road if something unusual has happened during transport," says Chudobba. "It's even easier to define thresholds and limits before the start of transport. If values deviate from the target, the system alerts the recipient by e-mail or text message." And should a device ever be damaged, the data is retained – all documents are stored in the cloud and automatically archived.

ELECTRONIC MODIFICATION AND CONFIRMATION OF SHIPMENTS

Thanks to GPS positioning and geofencing, the display shows specific location-dependent information. In the future, different languages will also be supported. When the shipment leaves the supplier, for example, the system displays the consignment note. When the goods reach the customer, the display automatically reports the unloading point. If required, the deliveries can be confirmed with a signature directly on the display. Employees can also make changes to parts lists electronically. If, for example, it turns out there are fewer goods in the transport container than indicated, the quantity can be corrected. This information is then provided in real time

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Head of IoT for Automotive & Manufacturing Industry

through the IoT cloud platform and is available online or transmitted to the customer's systems. The display always shows the updated information.

"Paperless Logistics is already attracting great interest from companies where the correct delivery of individual parts plays an essential role in the production process," explains Chudobba. For example, if a shipping crate reports a severe shock, say on the way from Asia to the final assembly site or vice versa, the mechanical engineers must carefully inspect parts prior to installation. And the solution is being developed further. "For air freight, we are aiming for certification that meets American and European aviation regulatory standards," says Chudobba. "Goods marked with Bluetooth low energy beacons can be automatically recorded in shipping manifests. And we are currently analyzing whether paperless logistics can support existing RFID infrastructure."



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