# SICK concept for future cloud-based processing of incoming goods

Merged sensor data and secure data transfer increase efficiency in the supply chain

Waldkirch/ Hannover, April 2018 – The future of automatic processing of incoming goods and a networked logistical chain lies in the cloud. For this purpose, in addition to high-performance sensor and system solutions to generate and consolidate data, SICK also offers the IDS Trusted Connector of the International Data Spaces Association – a secure concept for digital data transfer. A variety of security technologies are used, depending on customer requirements, in order to transfer data to the IT infrastructures of supply chain participants and the cloud via the internet. Incoming goods processes can thus be completely digitalized in future – down to the digital signature on the electronic delivery note or record-keeping regarding the goods received.

Fewer IT interfaces, no programs for the individual preparation and structuring of notification data, no e-mail traffic between the recipient and sender in the case of delivery errors – instead, simplified and accelerated unloading processes, fully automatic 24/7 receipt of incoming goods, and their inspection in real time with the simultaneous activation of downstream ERP processes: The supply chain collaboration of the future will offer major advantages to all participants. A prerequisite for this is that freight and shipping information can be reliably detected, and exchanged electronically. SICK offers everything required from a single source: Innovative tunnel systems for identifying freight in automated goods receipt areas, powerful processor modules in single-box designs for merging the most varied of camera and sensor data, applications for data analysis, and a concept for secure, encrypted data transfer between the process participants on the internet.

**Process-oriented collection, consolidation and evaluation of data**

At the start of the transport process the sender provides the logistical service provider with a data set for each packing unit to be collected. This service provider loads the notification information (e.g. tracking ID, address data, dimensions, weight and delivery date/period into the SICK integration space (cloud). As soon as the packages arrive, their bar codes with the tracking IDs are read out by a SICK tunnel system using, for example, the camera-based ICR89x code reader. Additional sensors and systems can be integrated if desired, for example a volume measurement system or camera sensors with which the packages can be measured and checked for possible damage. As a programmable control and evaluation unit, the SIM2000 Sensor Integration Machine merges the data from the various sensors within the tunnel system. It transmits the detected data via the internet to an app in the cloud that checks receipt of each package, comparing this data with the notification data provided by the logistical service provider. Another app developed by SICK is used to ensure secure data transfer – it packs the data, encrypts it, and sends it to the internet. After the inspection on receipt of the package, the app autonomously decides – on the basis of the data – whether the package should be accepted and stored, or rejected, returned and a complaint sent. If the incoming goods are in order the application transmits the ERP-relevant data from the cloud (also using the app for secure data transfer) for automatic booking in the system. At the same time, the application acknowledges collection and the consequent transfer of risk by adding an electronic booking stamp (a digital signature for example) to the package’s data set.

**Security through multiply encrypted data transfer via IDS Trusted Connector**

In the world of industrial digitalization, data become goods and thus increase in value. So it is important to protect these data – particularly when they are sensitive. SICK, one of the founding members of the International Data Spaces Association user alliance, employs the IDS Trusted Connector to inspect data and for the secure monitoring of data communication. Building upon the fundamental system structure of the virtual International Data Space (IDS), it is both a solution approach and a tool for ensuring the digital data sovereignty of all participants in the logistical chain. The IDS Trusted Connector uses tried-and-tested encryption technologies; it ensures secure identification by means of digital identities, authentication and authorization during exchanges and the linkage of data in business environments; it records and monitors the use of data; and protects against unauthorized external access. The Trusted Connector was developed by the security experts of the Fraunhofer Institute for Applied and Integrated Security (AISEC).

**Transparent and secure flow of information throughout the supply chain**

In SICK’s concept for future supply chain collaboration, the SICK Integration Space (cloud) will take over many of the functionalities and ensure transparent, trustworthy and secure transfer of data between the process participants by means of the IDS Trusted Connector. Whereby the app for data analysis is an important component because it analyzes and verifies the data, ensuring a consistent and dependable data pool. The software solution, still under development, will be installable on a wide variety of hardware platforms – on a server or on the SIM2000 in a tunnel system from SICK, for example. Logistical service providers will be able to upload consignment data in the SICK Integration Space (cloud) via an IDS Trusted Connector, making the package trackable along the entire logistical chain. Current information on an individual package will be detected by a tunnel system – or other suitable hardware – at the recipient’s site and uploaded to, and updated in, the cloud via the IDS Trusted Connector. Here, they will be available for all authorized process participants and the web-based description will permit flexible, individual access to the data. The data analysis, the secure data pool, the protected data transfer, and the defined access rights (including complete monitoring of use) will ensure maximum data security. Standardized interfaces will allow straightforward integration of the captured data in existing IT infrastructures and ERP systems.

The automated processing of incoming goods and transfer of risk within a supply chain is one use case whose concept can also be adapted for other fields of activity and business models. Whereby SICK can supply the secure components, integrate them, and operate and monitor the systems. In this field, too, SICK is one of the pioneers of industrial digitalization – with what is probably the broadest portfolio of sensors, control systems, software tools and services, as well as the integration of solutions via the IDS Trusted Connector to the world of the cloud.

**About the International Data Spaces Association:**

The founding of the International Data Spaces Association permits business and industry to actively participate in designing the architecture of International Data Spaces (IDS). More than 80 companies and institutions from 16 countries are members of the association. The strategic initiative based on the IDS is intended to ensure data sovereignty via a peer-to-peer network that enables monitoring of the use of industrial data. The International Data Spaces Association consolidates IDS-related requirements, organizes the exchange of knowledge between research and business, and develops guidelines for the certification, standardization and use of the results of the various IDS-related research projects on European and national levels.

Further information on the International Data Spaces Association is available at <http://www.industrialdataspace.org/en/>

Bild: infographic\_Trusted\_Connector.jpg
Simplified unloading processes, fully automatic 24/7 processing of incoming goods, and their inspection in real time with ERP linkage: The supply chain collaboration of the future offers major advantages to all participants.

SICK is one of the world’s leading producers of sensors and sensor solutions for industrial applications. The company, founded in 1946 by Dr. Erwin Sick and based in Waldkirch-im-Breisgau near Freiburg, is a technology and market leader with a global presence – with more than 50 subsidiaries and associated companies, as well as numerous sales offices. SICK achieved Group sales of about EUR 1.5 bn. in the 2017 fiscal year with almost 9,000 employees worldwide.

Further information on SICK is available at http://www.sick.com or by phone at +49 (0)7681 202-4345.