Heading towards transparency: creating supply chain visibility to improve container transport

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Nowadays, container transport is facing several challenges. To mention only a few, these include the strong growth in container transport volume, bottlenecks in hinterland connections, complex logistics chains consisting of many actors, information gaps, as well as new security regulations. These exercises have to be managed both by industry and administration. The main factors in today's international intermodal container transport, logistics and security, are aiming at different objectives and sometimes lead to contradictory strategies.

In order to support container transport, the projects CHINOS (Container Handling in Intermodal Nodes – Optimal and Secure) and INTEGRITY (Intermodal Global Door-To-Door Container Supply Chain Visibility), both funded by the European Commission, are currently investigating how innovative technologies can increase the efficiency and security of transport processes. Within the projects, methodologies and IT systems are developed serving both issues, satisfying industry and authorities at the same time by creating Supply Chain Visibility. Enhanced security measures together with shared data on vehicles, cargo and inspection results shall lead to trade facilitation and pre-arrival clearance from Customs in the importing country; the whole transport chain performance shall become more reliable and predictable. Both projects are coordinated by the Institute of Shipping Economics and Logistics (ISL) located in Bremen and Bremerhaven, Germany. The consortia consisting of Customs Authorities, 3PLs, cargo owners, port operators, R&D institutions, and system developers guarantee a high potential for successful solutions.

Improve processes and security using RFID

The CHINOS project will use innovative IT technology like RFID (radio frequency identification) and automatic damage documentation in order to support transport and terminal operators. The implemented solutions can on the one hand optimise logistics processes e.g. by automatic identification of containers using container RFID tags, and on the other hand, can raise the security level of the transport process using RFID e-seals. Due to the fact that container transport is a global business, of course it is useless to perform tests with isolated applications. The employed technology must in fact be based on the existing global standardisation efforts. As an example, we expect the container tag to be specified as a passive UHF transponder working in a frequency band from 860 – 960 MHz. The global background is established by the standard ISO 10374, which will shortly be updated and replaced by the new standard ISO 10891. The e-seal, however, is specified by the standard ISO 18185, which is a published international standard. CHINOS puts a special focus

North Sea Terminal Bremerhaven (NTB) is the German terminal for the CHINOS pilot application.

The handheld RFID reader developed during the CHINOS project is the first one capable of reading both container tags and e-seals.

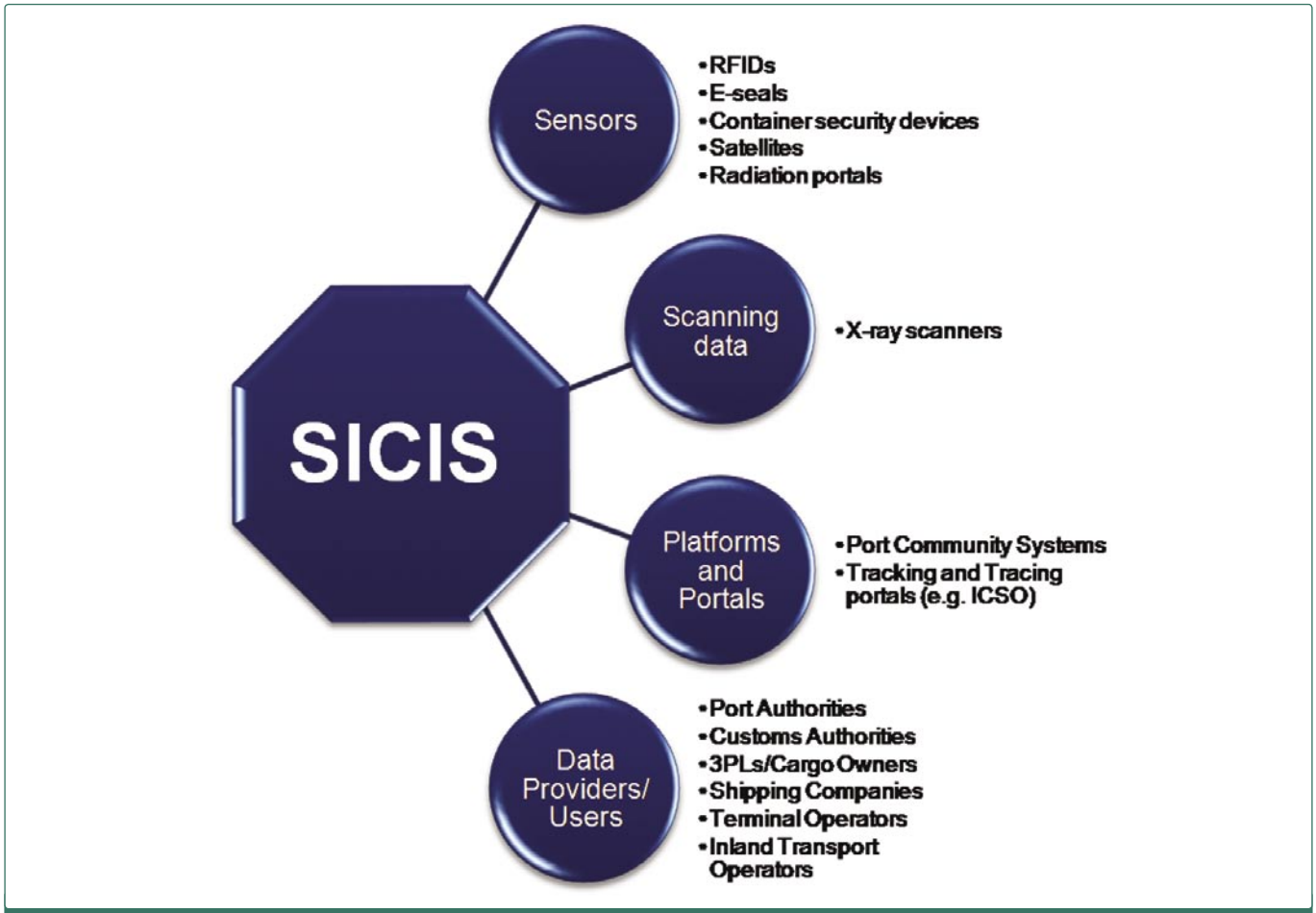
on the integration of these new technologies into the terminals' business processes. The applicability and usefulness of the CHINOS systems was successfully demonstrated at several European locations, in particular North Sea Terminal Bremerhaven (NTB), Germany, the Port of Thessaloniki, Greece, the POLZUG rail terminal at Warsaw, Poland, and Cargo Center Graz, Austria.

Optimising transport by Supply Chain Visibility

The INTEGRITY project has a wider approach. It aims at creating Supply Chain Visibility by providing a basis for securing intermodal container chains. This will be achieved by evaluating information from various sources, such as RFID for container identification, e-seals or container security devices, X-ray inspection and radiation portals to identify illegal contents, satellite tracking of vessels and other vehicles, and external databases for tracing and validity checks, among others. Supply Chain Visibility will lead to a better reliability and predictability of the transport chain performance. Different organisational and technical measures can simultaneously enhance the security of the chain, support Supply Chain Visibility and benefit logistics. Major 'clients' of the approach are the commercial participants in the chain (3PLs, cargo owners, exporters, transport and port operators) and authorities (mainly Customs) creating a win-win situation for both of these groups.

Involving industry and Customs

Different measures, such as the introduction of the ISPS code in 2004 and the C-TPAT programme in the US, enhanced the security in parts of the international intermodal chain, but a worldwide approach covering the chain from origin to destination is still missing. However, first attempts have been made by the US with the programmes OSC (Operation Safe Commerce) and SST (Smart and Secure Trade Lanes).



The Shared Intermodal Container Information System (SICIS) will process data from different data sources and communicate with various platforms.

An important step towards secure operators is the EU Customs Code issued by the Directorate-General Taxation and Customs Union (DG TAXUD) with its AEO (Authorised Economic Operator) approach. Cooperation between Customs Authorities is actually being discussed e.g. in the SSTL project between EU and China Customs Authorities which is closely linked to INTEGRITY. Here, issues of the Customs-to-Customs cooperation will also be tackled from the industry's perspective supporting Customs-to-business and business-to-business cooperation.

If Customs Authorities agree on a mutual recognition and a common set of data facilitating pre-arrival clearance before the cargo arrives at its destination, this will speed up the whole process and – even more importantly – lead to an improved reliability and predictability of the whole chain. Due to the active involvement of Customs services along the intended demonstration chains as well as the close link to the EU/China Customs Project, the ease of administration together with supporting measures and incentives, e.g. the green lane for supervised secure transports, is covered as well.

Integrating existing building blocks

INTEGRITY is an integration project. Although a lot of building blocks exist, most of the above mentioned technologies have been run through technical feasibility tests without tackling the integration into a common concept on the level of business processes, legal and administrative changes and possible incentives when using them in a consistent and reliable manner. But technology is only one part of the story. The combination of existing technologies and new business processes together with legal and administrative agreements between the 'administration world' and the 'logistics world' will create a win-win situation for both target groups. The full-scale integration of IT systems along the chain will enable the creation of a Shared Intermodal Container Information System (SICIS) containing either the data itself or links to the data providers (such as port community systems, shipping lines, port authorities) allowing fast and reliable access to the data.

Please visit www.chinos-rfid.eu and www.integrity-supplychain.eu for further information about the projects.

ABOUT THE AUTHOR AND ORGANISATION

Dr. Nils Meyer-Larsen joined the Institute of Shipping Economics and Logistics (ISL) in 2000. He has been working as Project Manager of national and international projects for several years. Currently, Dr. Meyer-Larsen is leading ISL's section 'Auto-ID and Security in Container Transport'. He coordinates the CHINOS project and is technical coordinator of the INTEGRITY project.

More than 50 years ago, the **Institute of Shipping Economics and Logistics** (ISL) was founded in Bremen. Combining tradition with modern research, we have since positioned ourselves as one of the European-wide leading institutes in maritime research, consultancy and know-how transfer. On location in Bremen and Bremerhaven, about 50 employees work in interdisciplinary teams on projects from all over the world. Whether in China, Saudi Arabia or Russia, be it logistics systems, maritime economics and transport or information logistics – on behalf of our partners from the public and private sector at home and abroad, we arrange for innovative ideas to become practical solutions.

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