This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 603993

FIRST CORE SUPPLY CHAIN FORUM

Antwerp
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REPORT

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INTRODUCTION

The CORE project organised its first CORE Supply Chain Forum on the 24th of September 2015 in Antwerp, Belgium. It is a major demonstration project on supply chain management and supply chain security co-funded by the European Commission under FP7.
The **objective** of the first CORE Forum was to present the initial findings of the project and raise discussions on the issues imperative to various stakeholders in supply chain security and logistics.

The introduction of the event and the presentation of the CORE project was done by Nik Delmeire, the CORE project Coordinator. T**he first panel** of the Forum addressed the subject of policy developments in supply chain security and possible contribution of FP7 projects such as CORE, and H2020 projects to the policy debate. **The second panel** was centred on the CORE Demonstrators and gave an overview of the CORE supply chain security solutions for trade lanes on a global level. Th**e third panel** presented risk management and IT solutions. Forum panels were followed by Q&A sessions and raised interesting discussions. During the forum the sli.do online application was used for the Q&A sessions, as well as for the **CORE questionnaire** that the Forum participants were invited to fill in.

The event gathered 80 participants representing the European Commission, EU customs, shippers, logistics and freight forwarding organisations, research and academic partners and other.

PANEL 1. POLICY DEVELOPMENTS IN SUPPLY CHAIN SECURITY

Moderator: *William BOLEY, CONCEPTIVITY*

During the first panel on Policy Developments in Supply Chain Security the panelists presented the policy side of the three Directorate-Generals (DG) of the European Commission: DG for Migration and Home Affairs (DG HOME), DG for Taxation and Customs Union (DG TAXUD), and DG for Mobility and Transport (DG MOVE).

EU Security Research with emphasis on supply chain security

Paolo SALIERI, DG HOME, European Commission

The EU Research and Development aims to contribute to the setting-up of the European Research Area. It supports research in areas of interest to EU policies, and enhances the competitiveness of the EU Industry. With regard to the EU funding, the supply chain security is covered in FP7 Security Research Theme missions: "Increasing the Security of infrastructure and utilities" (€293.839.345 funding allocated) and "Intelligent surveillance and enhancing border security" (€210.528.107 funding allocated). Regarding the Horizon2020 research funding, supply chain security topic belongs to "Secure Societies" challenge (€1.695.000).

During the discussion it was said that the knowledge generated by the research contributes to the policy debate. But the policy process is very complex and requires synchronization of various aspects.

Securing Supply Chains & Facilitating Trade: the European Customs Policy approach

Wil VAN HEESWIJK, DG TAXUD, European Commission

As far as the European Customs Policy approach is concerned, it aims at securing supply chains and facilitating trade. To create trusted trade lanes the EU customs needs:

- auto detection in data flows, e.g. by big data analytics;
- auto-detection in the physical flow of goods (use of state-of-art detection equipment and novel technologies);
- innovative sharing of information between border authorities;
- innovative sharing of information between Customs and business(need for qualitative data at the earliest possible moment in the supply chain);
- Innovative enforcement.

Furthermore it was emphasized that CORE is a demonstration project to pilot and develop new approaches valuable for policy makers and the law enforcement authorities.

Regarding the EU – US dimension in supply chain security, the CORE project envisages EU – US interaction in several CORE demonstrators where available supply chain security technologies and practices will be deployed, demonstrated and evaluated. For customs, detection technology assists the field officers to make the right decisions to release goods or to retain them for further inspection. The technology typically generates an image, a number, a spectrum or a signal that is interpreted by the customs officers. The interpretation is supported by information from the customs declarations and intelligence (if present).

During the discussion it was noted that for the moment the Commission does not envisage to take an action to have scanned images of Air Cargo to be seen on E-WABs or customs declarations. However considering the further development of imaging technologies this cannot be completely excluded.

Raising a question about AEO and mutual recognition, one of the participants stated that there is approximately a 15% fail rate for applicants to join the AEO programme. Commenting on this issue the speaker explained that when a company considers to apply for the AEO programme they can do self-assessment questionnaire to assess whether they would meet the requirements. If the self-assessment Questionnaire indicates sufficient scoring that would qualify to be eligible for the AEO programme customs will support and guide the applicant during the application process. Customs look at direct partnerships to advise and to cooperate with the economic operators so that when there is the stage of the real assessment audit, the failure rate is reduced.

Digital Transport and Logistics

Astrid SCHLEWING, DG MOVE, European Commission

During the intervention of DG MOVE, it was emphasised that the transport and logistics sector is increasingly evolving and the digitilisation is already happening now. While the digitalisation enables transport and supply chain optimisation, it also makes the supply chain more visible, efficient and resilient. There are fewer costs, less administrative burden, and moreover, new business opportunities. But there are some challenges: non-interoperable standards, a lack of interconnected systems for information exchange, sensitive information protection, data quality and non-recognition of eTransport documents by authorities, banks, and insurances. Some of these challenges can be addressed with the help of public authorities through the legislation in data protection and cybersecurity to create trust. H2020 and Connecting Europe Facility (CEF) funding may assist in standards challenge. There is also the Digital transport and logistics forum that brings all relevant stakeholders together in a multimodal perspective. The Digital transport and logistics forum further supports freight transport/logistics digitalisation with analyses and proposals. The Working groups of the forum focus on 1. Digitalisation of transport documents and acceptance of e-transport documents; 2. Standards; 3. Safe and interconnected systems for data exchange; and 4. Social and educational aspects of digitalisation

During the discussion it was specified that for DG MOVE the research is embedded in the policy directorate. By definition they do research that supports policy and implementation.

PANEL 2. DEMONSTRATORS

Moderator: *Paul VAN DE LANDE, TNO*

Within many CORE demonstrators, a challenge is to capture high quality data along the transport chain and to enable data sharing. This would allow businesses along the supply chain to better control their risks and optimize their processes. On the other hand, control agencies like Customs can improve their risk analysis allowing for alternative ways of supervision (and by doing this reduce the physical checks). The CORE Demonstrators will validate the applicability and benefits of the CORE approach in representative operating scenarios characteristic of the global supply chain. During this panel 6 of the CORE demonstrators were introduced.

Localisation and Tracking Solutions of Dangerous Goods Transportation

Antonella Di Fazio, TELESPAZIO SPA, Italy

The localisation and tracking solutions for dangerous goods transportation are based on the use of satellite navigation (GNSS - Global Navigation Satellite Systems) and are largely adopted for tracking & tracing the shipment and movement of freights. As a result, they bring enhanced efficiency and safety, and increase the level of security. Particularly for the transport of dangerous goods, this generates economic benefits and social interests.

In the past decade, through various research initiatives, the European Commission has been specifically supporting the adoption of the European GNSS (EGNSS, consisting of EGNOS[1] and Galileo) and stimulating technological innovation based on the use of the relevant positioning services, with focus also on security aspects.

CORE will develop and demonstrate a localisation solution for the intermodal transport of dangerous goods based on EGNSS. The Demonstrator will validate the developed solution in real business cases of road/rail transportation of chemicals and gas shipped across Europe (in particular tank containers transporting Argon from Duisburg in Germany to Terni in Italy, and from Linz in Austria or Lyon in France to Terni in Italy).

EGNOS is today available and will be operational also in the future with Galileo.

During the discussion, it was said that CORE makes use of EGNOS because it gives a robust and reliable position, as required for the safe and secure monitoring of the transport of dangerous goods. CORE will also consider the future scenario with Galileo and other global constellations, through which the robustness and reliability of the position will be further improved.

A Secure and Efficient Port-Hinterland Containerized Supply Chain

Luca URCIUOLI, Zaragoza Logistics Center, Spain

The scenario of a Secure and Efficient Port-Hinterland Containerized Supply Chain focuses on the transportation of household appliances from China to Spain and addresses the issue of unpredictability of the cargo arrival time. Variability and unpredictability of arrival time of cargo during shipments can cause substantial economic losses for manufacturing companies. To mention but a few:

- Brand image damage and unmet customer demands;
- Necessity to inflate safety stocks and pipeline inventories, thus an increased capital tied up and storage costs;
- Difficulties to schedule transport, hence, increased administrative processes and costs.

The Demonstrator is planning to implement some of CORE's main technologies in order to improve visibility in complex tracking operations while minimizing risks that affect the unexpected variability of cargo delivery time.

During the discussion the presenter stressed that while the Demonstrator solution will be used for the China – Spain trade lane, the final objective is to have it available for any other supply chain. Regarding the B2B and B2G information exchange to mitigate risks, theoretically it is possible to feed B2B directly to B2G. But this will require an exercise and understanding of risks from the societal point of view.

[1] European Geostationary Navigation Overlay Service

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Secure and Efficient Port-Hinterland Containerized Supply Chain

David HESKETH, HM Revenue and Customs, UK

This Demonstrator concerns improving the data quality and supply chain visibility on selected trade lanes through the UK Port of Felixstowe. The problem is a lack of quality data and a lack of information "in time." The customs don't know what is in the container before it arrives. The carrier doesn't know either, but the shipper knows. In order to have an appropriate quality and detail ask the data for customs declarations from the right person. The key tool and the concept of this Demonstrator is the seamless integrated data pipeline. The construction of this pipeline is from a series of risk based milestones from the point of view of the importing retailer from which we can identify planned supply chain activities, roles, responsibilities, data requirements and exception reporting. The task is to use these data pipelines to enhance the retailers' visibility of their supply chains thereby reducing their risks and better managing transactions, overheads and margins. The improved data will then be sent to the importing and exporting regulatory authorities to demonstrate compliance, improve their targeting and risk management capability and improve public, private partnerships.

A regulatory data model based on EU Customs legislation has been created and applied to the UN/CEFACT Core Component Library to form UML diagrams. The end to end supply chain has been divided into four Waypoints at which the right data will be sent to the right person at the right time to provide early assurance to the regulatory authorities and facilitate more efficient 'de-risking' or selection of mandatory controls. XML schemas have been built for those four Waypoints and now there is the process of sending that data from the pipelines to the regulatory authorities in the UK. When this has been provided data will be sent to UK export destinations such as Australia.

During the discussion it was clarified that all data used is confidential and that there are several security protocols. The data will come from several sources and will be built into a consolidated picture. There is a different requirement for the data for the import declaration and the data required for the safety and security reasons. The UK customs are trying to break down those barriers. M&S and Sainsbury's are looking to use this data to head towards self-assessment data for the UCC.

David also confirmed that they would use the new UCC requirements for the data pipeline demonstrator. At the moment the work is done together with DG TAXUD and the WCO to make sure it is fully compliant with the data model. Regarding the 10+2 importer filing system of the US, the EU is not searching to implement it. It should be moved upstream to the person who can give the strongest evidence.

Regarding the use of different transport modes, the data pipeline can be used for all modes of transport including air and it can be applied to a freight loaded by multiple suppliers to multiple buyers. The data model is a flat model and it goes at house and master bill level, and for the groupage consignments it is essential to see the information at both house and master level.

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"Utility Blocks" in the Long-Range Rail Transportation Involving Sensitive Goods

Bernard VAN HOORDE, Logit One NV, Belgium

The Belgium demonstrator will show best practices in the implementation of the so-called Utility Blocks, which are domain-specific frameworks within Globally Networked Customs (GNC). The main objective is to release the security for transit more quickly in order to save costs. These Utility Blocks enable an industrial implementation of e.g. mutual recognition agreements or procedures for systems-based controls to ensure the integrity of the supply chain. The Demonstrator focuses on specific measures for long-range rail transportation involving sensitive goods. Main stakeholders here are customs and shippers between Europe and Asia.

There exist challenges on different levels. For the import there are fewer problems as long as the required information is provided on time. Challenges of customs procedures are found in the export flow. Every single container requires customs documents. A disadvantage is that there are a lot of documents and it takes time to process the files at the border. Lost documents or missing information result in more delays, sub-optimized border crossings and risk of complications. In case of transit large amounts in customs guarantees/bonds remain outstanding.

There is a need for situational awareness dashboards that provide reliable and complete supply chain visibility. Track and trace technology can contribute to security. Simplification and digitization of the current rail export process for long range rail transport can benefit the shippers and rail companies. It will also benefit Customs authorities enabling them to optimize their public services and monitoring assignment.

During the discussion it was confirmed that transit and export procedures for rail in the existing legal framework are considered for potential optimisations. Validation of these processes is the basis for developing a formal solution, be it by legislation or special ruling. Regarding the risks of rail transport from Europe to Asia, it was noted that for specific goods there might be a specific import limitation in Russia. There are external factors that should be taken into account, and Belgian customs do what is viable and try to optimise the custom practices.

Technologies towards the Development of a Secure Hybrid Composite Container

Flavio BONO, Joint Research Centre, European Commission

The CORE project will also focus on testing and evaluating the use of a secure hybrid composite container (SHCC) in the supply chain. Components of the system include sensors, communication devices and the use of composite materials. The CORE project will evaluate the feasibility of key technical components, such as the structural measurements of the fibre-reinforced components, the sensitivity of the embedded measurement sensors and their potential for their use as low energy consumption anti-tampering systems in combination with container security devices. The SHCC RTD activities combine technologies and expertise from EU and USA research institutions (EC Joint Research Centre (JRC), Georgia Tech (GT)) and a global shipping company and industry partner (Maersk), with the supervision of respective policy-making organizations (US DHS, EC DGTAXUD and DGHOME. The CORE is not developing a product but is investigating different solutions and technologies for the development of SHCCs.

During the discussion it was said that most of the production of steel containers is in China and the number of European certification facilities is nowadays limited. It is possible to build containers with materials other than steel (and some commercial production is available); however, the adoption of new materials may have an impact on the actual logistic industry in terms of maintenance of the new assets.

Intercontinental Secure Trade lane and Resilient Supply Chain Optimisation (General Motors trade lane)

Henk VAN UNNIK, Georgia Tech Institute, USA

Trade lane security cooperation between EU and US in the past 15 years has been improved through legislation and certification programs. Nevertheless, the level of security needs more attention. The involvement of customs here is crucial. The CORE security benefits will be demonstrated in the General Motors' Global Secure Trade Lane Enterprise (ISTLE) utilizing an automobile parts trade lane from multiple factories in the EU (with a consolidation center in Bremen) to the USA. The transportation modes include truck, ocean carrier and rail.

The test will demonstrate value added enhanced multiple levels of security (e.g. low level seal to a door opening monitor), demonstrate geo-location information and visibility, determine data elements needed to add value to government and commercial entities that can also be used in optimization algorithms to deliver important collateral benefits including major efficiency gains, supply chain resiliency and reduction in environmental impact.

During the discussion it was said that using the CORE system will give more visibility to the GM's trade lane. When supplies are not on time for their delivery, this can cost GM tens of millions US dollars a year. In this stage, GM brings to the supply chain its own efficiency and resilience programs and when disaster strikes a 24/7 response team will deal with the unwanted and unforeseen effects. They have experience how to deal with these issues globally gained at many occasions.

PANEL 3. IT AND RISK MANAGEMENT SOLUTIONS FOR SUPPLY CHAIN SECURITY

Moderator: *Wout HOFMAN, TNO*

Route-Based Risk Analysis for Shipping Containers

Aris TSOIS, Joint Research Centre, European Commission

Customs authorities consider the transportation route as an important factor for the profiling & targeting of high-risk cargo containers. However, in most of the cases, authorities have very limited or incomplete information about the actual global routes of the containerized cargo. On the other hand, ocean carriers, which transport the cargo containers, collect, store and own Container Status Messages. These records, called CSM, describe the global movement and status of the containers.

Based on the experience with the ConTraffic research prototype at JRC and the work in the CORE project, CSM data can efficiently be used to obtain adequate information on the route and perform route-based risk analysis. Such analysis can contribute to the overall risk assessment of cargo containers done by authorities. Based on the reformed European legislation (EC) No 515/97, adopted by the European Parliament on the 9th of September 2015, the EU national customs organizations will soon have access to all the CSMs for imported containers making the proposal directly applicable for anti-fraud purposes.

During the discussion it was stressed that for the proposed route-based risk analysis a new information is requested from the ocean carriers of maritime containers. These new data elements are the elements that customs do not currently ask and do not get in a systematic way. It is not about having more accurate or correct data but to have new data. There was a question whether other data sets already submitted from port authorities are not enough, whether they can be reused instead of enforcing other obligations on carriers. The presenter commented that the information that the port authorities have does not give a holistic view of all the containers from the origin to the destination. It's better to oblige the carrier to provide the information because they are already doing this for the US. All carriers in Europe will have to submit CSM data for the transportation of the goods for the whole trip based on the new regulation.

The Multi-Method Threat & Vulnerability Assessment Suite

Aaron TRANT, eBOS

The Multi-Method Threat and Vulnerability Analysis (MTVA) methods and services are being developed in collaboration with key supply chain industry stakeholders and will provide guidance to other organisations on managing risks within the supply chain. By establishing risk assessment methods and services that can be configured and applied to multiple transportation modes for risk mitigation, the MTVA could make the EU logistics supply chains more integrated and more secure. It can be utilised by all supply chain stakeholders, regardless of their scale.

During the discussion the speaker informed that there are additional tools in the MTVA that can deal with real time threats. There is a visibility tool in another work package in the project that is linked into the MTVA solution. This is the strategic planning tool.

New Training Materials to Improve Risk Management Capabilities at Both Law Enforcement Agencies and Supply Chain Companies

Juha HINTSA, Cross-border Research Association

Access to criminal data and valuable intelligence derived from specialized LEA sources, such as information about financial flows can enhance preventative approaches to supply chain security, and enrich capacity to manage risks within the supply chain. The goal in the CORE project is to identify who in police law enforcement is engaged in supply chain security-related processes or potentially interested in supply chain security endeavours on the side of customs and the economy.

Ideally, CORE wants to contribute to the identification of feasible ways to inhibit criminal networks. The way to do it is by interlinking the information gathered by or accessible to the private sector, customs, and police law enforcement to hinder the illicit profits gained through criminal intrusion into existing supply chains.

The CORE capacity building programming envisages classroom based training. Law enforcement training will be practical, hands-on and concrete, with very real and clear applications to their daily work. The courses are as interactive as possible, centred around case studies, group work, discussions and hands-on demonstrations.

Commenting on one of the questions regarding the possibility to use this training material for logistics operators, the speaker replied that they plan to do focus surveys and anticipate this possibility. More information will be required from the supply chain companies to come up with the concepts. There will be different ways of presenting but there will be common blocks as well.

A representative from DG TAXUD commented that it is a very sensitive issue. "There are a lot of competency issues within the 28 EU member states that are difficult to solve. There is a lot going on with Europol and contacts of SOCTA - the Serious Crime Threat Analysis" and customs and police cooperation discussed in the CCWP. These aspects are seriously to be considered if this training module, developed in cooperation with Interpol and WCO would be applied in an EU context.

CONCLUSION

At the First CORE Supply Chain Forum the participants were presented with **policy developments** of the European Commission Directorates – General whose work is interlinked in the supply chain security area: DG HOME, DG TAXUD, and DG MOVE. DG HOME provides security policy cover to the supply chain. DG TAXUD is competent for the supply chain security and trade facilitation and participates actively in the security research and monitors the CORE project very closely. DG MOVE focuses on the transport and logistics digitilisation, with the EC Digital transport and logistics forum bringing all relevant stakeholders together in a multimodal perspective.

The CORE project directly addresses the issue of the global supply chain security and put an emphasis on its **Demonstrators,** six of which were presented during the CORE Forum:

- To localize and track the transportation of dangerous goods, CORE will develop and demonstrate a localisation solution for the intermodal transportation based on EGNSS. The Demonstrator will validate the developed solution in real business cases of road/rail transportation of chemicals and gas shipped across Europe;

- CORE will address the issue of unpredictability of the cargo arrival time. The Demonstrator will implement some of CORE's main technologies in order to improve visibility in complex tracking operations while minimizing risks that affect the unexpected variability of cargo delivery time;

- Data quality and supply chain visibility issues will be addressed in the UK Demonstrator through the seamless integrated data pipeline tool and concept. The data will come from several sources and will be built into a consolidated picture. All the data is confidential and will be provided to the

customs and regulatory authorities. The Demonstrator will use the new UCC for the data pipeline tool;

- Best practices in the implementation of the so-called "Utility Blocks" will be shown in the Belgium demonstrator. Main stakeholders here are customs and shippers between Europe and Asia. Simplification and digitization of the current rail export process for long range rail transport can benefit the shippers and rail companies. It will also benefit Customs authorities enabling them to optimize their public services and monitoring assignment.

- The CORE project will test and evaluate the use of a secure hybrid composite container and other cargo security technologies in the supply chain;

- To improve efficiency, visibility, resilience as well as to reduce environmental impact, the CORE system will be used in the General Motors EU-US trade lane Demonstrator. The test will present among others the value added enhanced multiple levels of security and demonstrate geo-location information and visibility.

The CORE Partners also presented the CORE **IT and Risk Management solutions**. One of them focuses on the analysis of the transportation route as an important factor for the profiling and targeting of high-risk cargo containers. The analysis of the data contained in the Container Status Messages (CSM) can contribute to the overall risk assessment of cargo containers done by authorities. These new data elements will give a holistic view of all the containers from the origin to the destination. Another solutions is the Multi-Method Threat and Vulnerability Analysis.

The CORE project is also working on new training materials to improve risk management capabilities at both law enforcement agencies (LEA) and supply chain companies. Access to criminal data and valuable intelligence derived from specialized LEA sources, such as information about financial flows can enhance preventative approaches to supply chain security, and enrich capacity to manage risks within the supply chain. The possible use of this training material for logistics operators will be also anticipated. The two training would have a different way of presenting but share common blocks.

Forum panels were followed by **Q&A sessions** and the participants were also welcome to ask questions after each presentation. The sli.do online application was used for the Q&A sessions and registered 41 questions. A special interest was raised by the seamless integrated data pipeline concept presented by the UK HM Revenue and Customs with 12 questions followed. Due to the time limit only some of the questions were discussed. However, the CORE project partners will take them into consideration in further CORE developments. Some of the questions concerned: the possibility to use a certain CORE solution for another lane, or for another transport mode; confidentiality of data; information exchange between customs; how CORE can bring changes to Customs policy and others.

The **CORE questionnaire** was also filled in by 60 participants through the online sli.do application. One of the questions, *Standardization, harmonization and mutual recognition amongst Customs Authorities at an international level would be of great help to all the Supply-Chain actors,* got 100% positive response. More results are available in Annex Questionnaire.

CORE project thanks all participants for the stimulating discussions and looks forward to maintaining the interaction with the stakeholders in supply chain security and logistics and further consolidating and amplifying CORE solutions for the secure global supply chains. Information on the CORE Forum including the agenda, presentations, and the summary of the report can be found at www.coreproject.eu.

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ANNEX. QUESTIONNAIRE