IPIC 2019

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London

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Towards a Shared European Logistics Intelligent Information Space

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Towards a Shared European Logistics Intelligent Information Space

European Union Horizon 2020 Research and Innovation Programme

Call: MG-6.3-2015 Common Communication and Navigation platforms for pan-European logistics Applications

Project Coordinator: INLECOM Systems Ltd

inlecom systems
Research & Innovation for Transport and Logistics

Action Type: RIA

Start Date: 01/09/2016
End Date: 31/08/2019

Top Class Consortium

38 Logistics stakeholders

11 EU countries

SELIS Mission

European Commission Context

The European Commission strategy for Smart, Green and Integrated Transport and Logistics (T&L), highlights the **need for a single European logistics information space,** that is accessible by actors in the transport sector, its users and public authorities. The aim is to boost the competitiveness of European T&L industries and to achieve a European transport system that is resource-efficient, environmentally-friendly, as well as safe and seamless for the benefit of all citizens, the economy and society

ALICE Vision

Interconnected Logistics and SC Collaboration is a key pre-requisite to realising the PI's strategic vision

SELIS provides a directory of open sourced components enabling stakeholders in the logistics sector to create and maintain 'federatable' collaborative environments referred to as **SELIS Community Nodes (SCNs).**

The approach is consistent with the DTLF Federated Platform concept and provides a route towards the direction of the Physical Internet

The industry requirements

Supply Chain actors across Europe and globally (Producers, Retailers, Shippers, Logistics Service Providers, Authorities) need a secure and trusted vehicle to share data and information for better horizontal and vertical supply chain collaboration and optimisation. All these actors are seeking ways to:

1. **extract value from shared industry data**
2. **maintain full control over own commercially sensitive data**, including whom they share data with, the duration of time data is shared, the ways shared data is used, managed and exploited.

Key advances in last three years

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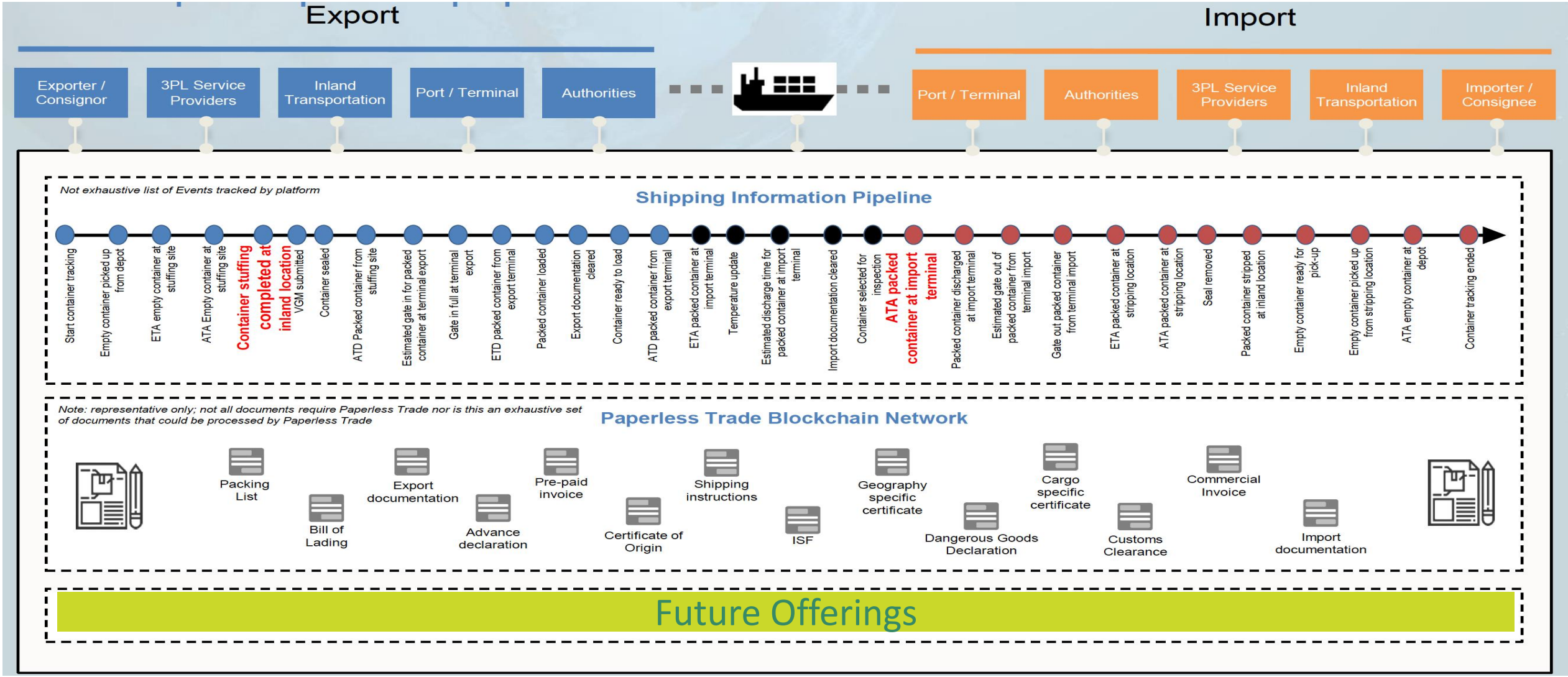
- During the SELIS project period, in the last three years, **the application of blockchain technologies has addressed trust issues** in data sharing, thus enabling interconnection and interoperability to achieve truly global supply chains.
- However, the need remains to move to federated industry-wide solutions.
- Also advanced and innovative ways to **extract value from shared industry data is likely to remain a research and innovation focus for years to come.**

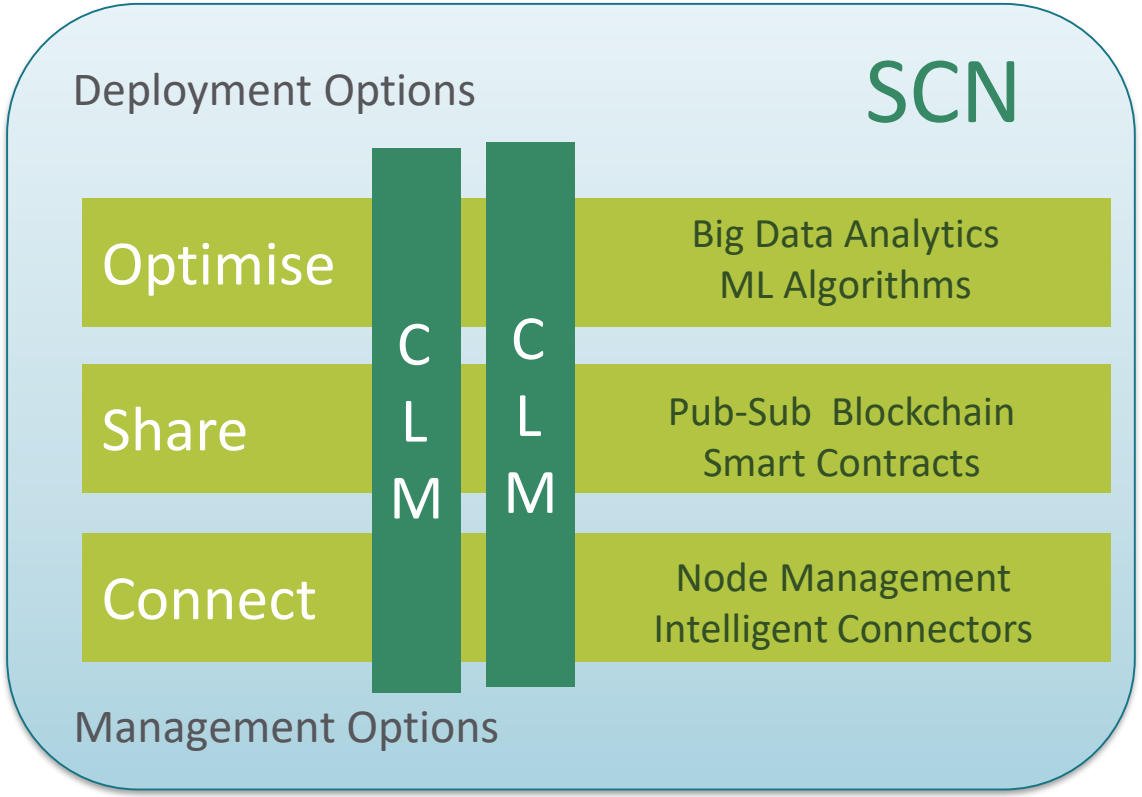
Industry State of the Art

Today, IBM & Maersk are working towards an entire SC ecosystem that will share a single trusted view of shipping events, in support of paperless trade (GTD)



SELIS (Supply Chain) Community (SCN) [7 Patent Applications 3 Awarded already]

SCNs combines, collaboration, connectivity, communication, privacy & data protection with analytics and visualisation tools, enabling end-to-end visibility across value chains and the management of 'Green Logistics' KPIs



Trusted and Secure Data sharing	SAFE
Pre-built collaborative intelligence	Rapid ROI
Secure Rapid implementation	Future Proof
Future proof collaboration engine	Protect/Maintain Current IT Investments

CLM: Collaborative Logistics Models represented by Knowledge Graphs based on EGLS European Green Logistics Strategies

Collaboration Logistics Models

- SCNs support the **implementation of configurable Collaboration Logistics Models** typically used by Logistics Communities using cloud computing fundamentals, open standards and state of the art technologies,
- Collaboration Logistics Models specify **collaboration actors, KPIs, information sources** and machine learning goals for identifying optimisation opportunities or providing insights to the participant's Decision Support Systems
- A Knowledge Graph **captures primarily the SCN semantics** linking entities relevant to a Collaboration Logistics Models such as organisations, logistics objects, resources and locations; it integrates spatial, business-social and temporal data.
- The Knowledge Graph **organizes design and tuning guidance** for collaboration, connectivity adaptors, content-based routing and SC performance optimisation. It is possible to introduce **additional semantic content to the Knowledge Graph**, to further enhance and enrich the modelled information on CLMs.

CLM FOCUS AREAS

- Synchro-modality - Optimisation of T&L resources
- Pooling and integration for urban distribution
- Retailer-centred stock optimisation
- E-compliance
- SC financials optimisation

Through analysis of the Project's Living Labs, we have been able to identify the key entities and relationships required to represent supply/logistics chains that are compliant with European Green Logistic Strategies (EGLS)

		STRATEGIES						
Living Lab	Use Case	EGLS1	EGLS2	EGLS3	EGLS4	EGLS5	EGLS6	EGLS7
LL1 DHL	UC1	2		1		3		
	UC2			2		3	1	
LL2 Port of Rotterdam.	UC1	1		2		3		
	UC2	1		3		2		
LL3 SUMY	UC1	1		2			3	
	UC2	1		2		3	4	
	UC3		1	2		3		
LL3 ZANARDO	UC1			1		2		
	UC2			1		2		3
LL3 SARMED	UC1	1		2				
	UC2		1				2	
LL4 North germany Hinterland	UC1		2	1				
	UC2			1		2		
	UC3	1		2		3		
LL5 AK	UC1	1		2		3		
	UC2					2	1	
	UC3					2	1	
LL6 DFDS	UC1		2	1				
	UC2					2	1	
LL7 CONEX	UC1							1
	UC2			1				2
	UC3			1				2
LL8 ELGEKA	UC1	2		1				
	UC2				1			
LL8 SONAE	UC1			1			2	
	UC2			1	2			

8 Living Labs
26 Applications

EGLS No.	Name
EGLS 1	Collaborative Planning and Synchromodality
EGLS2	Collaborative Value and Risk sharing
EGLS3	Supply Chain Visibility and CAPA
EGLS4	Supply Chain Finance
EGLS5	Environmental Performance Monitoring
EGLS6	Supply Chain Optimization
EGLS7	E-compliance for Customs and Applicable Regulations

SCN Open Source Components

- **Node Management (CLMS):** A GUI-based configuration and management tool for the SCN (SELIS Community Node).
- **Pub/Sub (TuD):** A secure content-based publish-subscribe system for message exchanges between different logistics providers.
- **Big Data Analytics Module (ICCS):** A generic cloud-enabled distributed big-data framework offering machine learning and analytics capabilities over logistics data.
- **Knowledge Graph (VLTN):** A modelling framework (GUI + API) for describing logistics ecosystems / communities as knowledge graphs. The Shared Knowledge Graph (SKG) is based on open standards such as UBL 2.0 and open source data management technologies
- **Data authorization Module (ICCS)**: A Role/User Based authorization/authentication framework for secure access to logistics data and recipes execution.
- **Monitoring Module (IBM):** An IT infrastructure monitoring tool reporting on SCN components health status. A microservices orchestration that can be deployed in order to produce a cohesive SCN operating stack deployed against the backdrop of a customised security model.

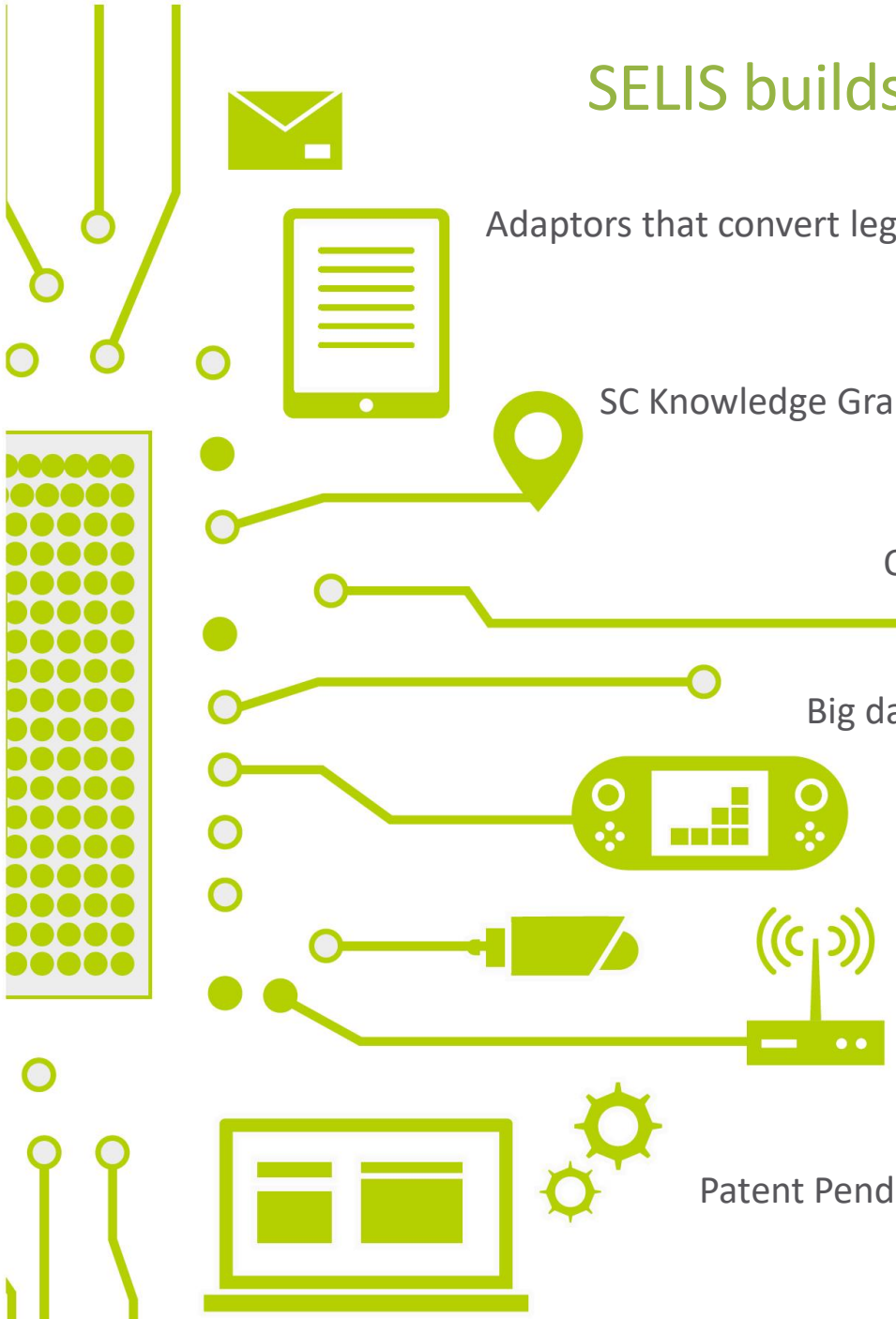
In summary

We want to remove the barriers to creating Innovative supply chain collaboration communities

SELIS “Pan-European Logistics Collaborative Intelligence-Sharing Platform” unifies business, technology and capacity across the broader EU Transport & Logistics sector in support of green, efficient and profitable T&L

- A trusted data sharing environment
- Pre-built Industry knowledge
- Open standards and a common Language
- Easy to integrate
- Non disruptive
- Protect existing IT Investment

SELIS builds on 10+ years of R&D in T&L across 11 EU Projects



Adaptors that convert legacy formats to industry standards (WCO/EU datamodel, USO, UN/CEFACT, GS1, etc)

SC Knowledge Graphs for T&L Segments (Shipping, Rail, Retail, etc)

Ontologies, domain/entity extraction, data conversion/normalisation

Big data processing, storage, analytics, management/security, GDPR

Public, Private and Hybrid Cloud Technologies

Collaborative Logistics Models based on European Green Logistics Strategies eFreight,

Patent Pending Technologies (7 filed patents 3 awarded already)

Next Steps

Supply Chain Community Nodes (SCN) finalised for each Living Lab

Opensource version of SCN for use by EU researchers, industry actors and commercial development

Expand market testing of the SELIS proposition