5G business opportunities for port and logistics operators

Lessons learnt from 5G-LOGINNOV and feedback from stakeholders

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TRA Conference 2022, Lisbon
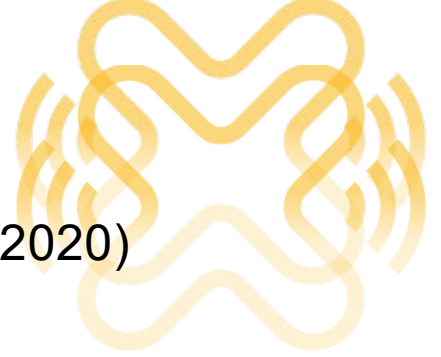
5GLOGINNOV

Agenda

- 5G-LOGINNOV project overview

- Marketplace and new actors: lessons learnt from the 5G-LOGINNOV experience

- Additional stakeholders' feedback

5G-LOGINNOV Project Overview

Project Fact Sheet

H2020 Innovation Action with 36 months duration (started September 2020)

- **15 partners** (BE, ES, FR, IT, RO, GR, SI, DE)
- **Sectors involved:** Logistics, Automotive and Telecom Industry, Infrastructure operators, Research Institutes, SMEs and Start-Ups
- **3 LLs** (Athens-Piraeus, Hamburg, Koper)

Overview

5G-LOGINNOV SUPPORTS

- New generation of 5G-CAD terminals;
- New type of IoT-5G connectivity devices;
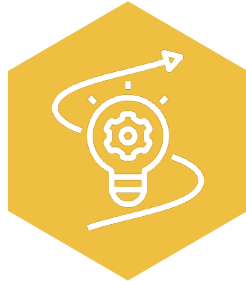- Deployment of new CAD and Logistics as a Service in real-life port-city areas.

5G-LOGINNOV CENTRAL INNOVATION

- To build a first-class European industrial supply side for 5G core technologies and new IoT-5G devices.

5G-LOGINNOV IMPACT

- The project impacts the Logistics industry for which tests are developed and 5G-enabled services are evaluated.

5G-LOGINNOV INTEREST

- The emergence of new market players, such as SMEs and start-ups.

5G-LOGINNOV CONTRIBUTES

- To the emergence of global standards and globally harmonised frequency bands for 5G.

5G-LOGINNOV & THE 5G PPP PHASE

- Being part of the third 5G PPP phase implies supporting the development of a "lead" market involving cooperation models with key vertical sectors.

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LL Piraeus-Athens
Greece

Real-time tracking and enhanced visibility of 5G yard-trucks for service optimization, job allocation and predictive maintenance.

Partners involved: ICCS, PCT, VODAFONE

- Real-time tracking and enhanced visibility of 5G yard-trucks for service optimization, job allocation and predictive maintenance.

- 5G enabled video analytics targeting safety/security and logistics applications, orchestrated as NFV-MANO services.

- Real-time monitoring of the logistics supply chain with live tracking/positioning of 5G connected trucks.

LL Hamburg
Germany

5G to improve port operations, connecting Hinterland to Hamburg's port facilities.

Partners involved:T-System,Continental,Swarco,Tec4U

Floating Truck and Emission Data (FTED) for improved monitoring of vehicle emissions.

5G GLOSA and Automated Vehicle Platooning (GTP) avoiding collisions by 5G ultra-reliable Low Latency Communication.

Dynamic control loop for environment sensitive traffic management actions (DCET).

SCAN ME

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LL Luka Koper
Slovenia

5G to improve logistic processes automation in ports and mission critical services with continuous business &technical-related 5G system optimization.

Partners involved: ININ, Telecom Slovenia, Luka Koper

- 5G and cloud infrastructure design and deployment assuring novel virtualization and cloud-based principles.

- Automation for ports through 5G: port control and logistics process.

- 5G supporting mission critical services in port (drone-based video surveillance, AI-assured video analytics).

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Engagement of new actors: 5G-LOGINNOV welcomes 5 start-ups

- Summer-Autumn 2021: Implementation of an Open Call for Start-ups and engagement in the project of the Open Call winners
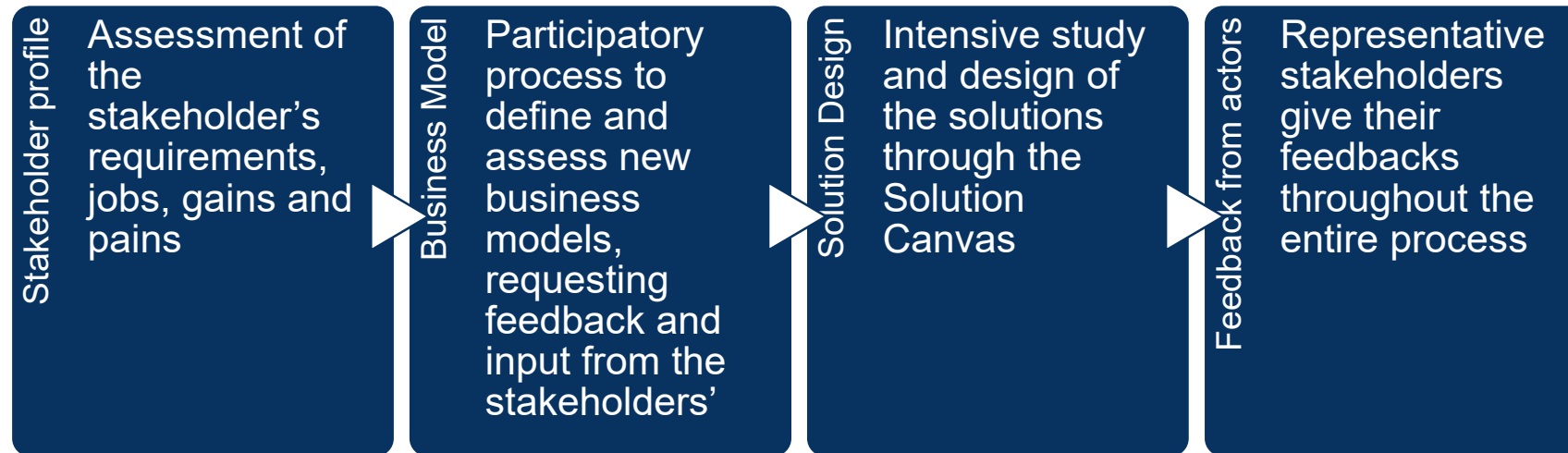
Acronym	Full Title	Applicant	Athens LL	Hamburg LL	Koper LL
TRITON	auTonomous dRones for marITime OperatioNs	Hellenic Drones			X
RESONATE	Real timE drowSiness detectiON, AlerTing and rEporting	Libra AI	X		
5G4A	5G-Loginnov-4-Amazon	eShuttle		X	
TAADD	TAXi-AD Data	TAXi-AD GmbH		X	
ITGS	Intelligent Traffic Guidance System	Roads.AI		X	

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Marketplace and new actors: lessons learnt from the 5G-LOGINNOV experience

The 5G-LOGINNOV approach

- 5G-LOGINNOV deals with business related aspects of 5G innovations in WP4 «Marketplace and new actors»

- The GUEST methodology for business modelling is designed to control the process, from the original idea to its implementation. It provides a conceptual and practical tool to the various stakeholders, enabling them to communicate their vision.

Stakeholder profile	Business Model	Solution Design	Feedback from actors
Assessment of the stakeholder's requirements, jobs, gains and pains	Participatory process to define and assess new business models, requesting feedback and input from the stakeholders'	Intensive study and design of the solutions through the Solution Canvas	Representative stakeholders give their feedbacks throughout the entire process

- In 5G-LOGINNOV the GUEST methodology is used to develop new business models collaboratively

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Application of a taxonomy to recent or ongoing projects

- The involved technologies were mainly 5G, Artificial Intelligence, IoT and AR/VR and the main purposes of assessed projects were: full digitalization and automation of terminals, and autonomous vehicles, improve efficiency and safety

- 5G networks are usually supported by a massive adoption of Artificial Intelligence and Machine Learning technologies, sensors spread into the port to monitor different parameters (e.g., air quality conditions) and Augmented Reality/Virtual Reality tools. End to End network slicing services enable flexible slicing of 5G network resources into multiple virtual networks to meet specific customers' requirements.

- While the initiative of these projects is taken by both private and public bodies, the **funding is mainly public**. Two main gaps have been identified:
  - **Few projects have running solutions or a specified product fully operational after the pilot phase**. Thus, **a greater attention to the design of the business model and its scalability is needed.**
  - Port-terminal logistics **needs to be better aligned with an urban freight transport and city logistics perspective.**

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Living Labs' stakeholders survey

- 5G-LOGINNOV has developed a survey addressed to Living Lab actors, with the aim of assessing the level of knowledge and adoption of innovative technologies related to Industry 4.0 and Logistics 4.0 in the project consortium. **44 responses have been received** (15 from Athens LL, 16 from Hamburg LL, 13 from Koper LL).

- The analysis of the results of the survey mainly highlighted:
  - **A high interest of the stakeholders to improve the effectiveness of the logistics processes**, with direct connections with continuous monitoring and optimisation of the resource usage, to improve service quality and reduce costs.
  - These objectives can be reached through **continuous data collection and analysis between different actors of the supply chain**, in the perspective that the improvement of the effectiveness of the overall process will bring benefits to all the actors involved.
  - All the stakeholders involved in the survey declare a **very high level of knowledge and implementation of the enabling technologies, but the low trust in data sharing technologies** can act as a barrier to the development of collaborative business models for the implementation of innovative services.

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High-level preliminary remarks

- Recommendations:
  - the financing and revenue models for the new solutions shall **consider not only 100% public, but also public-private forms of funding, so that the investment risk is shared**, but the commitment of the involved parties remains clear;
  - the port area has to be considered as part of the wider urban environment: the **inclusion of non-port actors and other non-industry actors representing different urban categories may bring an added value** in terms of innovative and inclusive design thinking when the business models are discussed.

- The proposition of new 5G enabled products and services must focus on the definition of collaborative environments within the Living Labs, at the same time ensuring **a high level of data protection:**
  - The new actors that have been involved in Living Labs through the Open Call shall collaborate to address the needs for data sharing. The already involved actors, on the other side, shall define a strategy to include new actors also in terms of data sharing infrastructure to enhance a smooth data sharing process.
  - The new actors and the old actors may be trained to improve the knowledge on the respective tools for data exchange and data collection at the very beginning of Living Labs iterations

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Additional stakeholders' feedback

Which are the other promising technologies that must be integrated with the 5G connectivity infrastructure?

- Data spaces & Data sharing capabilities
- Secure Service development and Smart Security Microelectronics-based Solutions
- B2B navigation combined with advertisement
- Offshore wind development has a number of use cases in need of a 5G infrastructure.
- Traffic management and geo location/maps
- Artificial Intelligence
- IoT sensors, HD video, global positioning and localised positioning sensors for enhanced accuracy, edge computing, blockchain, AI for decision support and network resource management
- Peak traffic management by Slot booking systems, this allows port operators better manage operation
- Carbon credits for saving emissions under the CO_2 saving policy target
- IoT and telematics devices
- Emission technologies
- Robotic Process Automation
- Digital Twins and simulation technologies
- Infrastructure: road, rail, inland waterways, …

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Which are the main barriers and problems for the market adoption of 5G and companion technologies in logistics?

- Many silos to integrate

- Complexity in aligning needs and understanding between vertical end-users, developers and those providing connectivity.

- Difficult to set up a viable business model. Innovation in public authorities (such as ports) is a very long process.

- Sharing infrastructure costs, etc. is an enabler but companies are not ready to co-invest/share

- Adequate governance and regulatory frameworks and requirements for spectrum utilization.

- Already low revenue streams in logistics to implement 5G. Who pays/Who rents/ who benefits

- Harsh environment, involvement of multiple actors and high investment costs.

- Logistics operators don't want to share data with ports free-of-charge as they pay a fee already for using port warehouses, etc.

- Difficult to identify the revenue streams

- Onboarding of companies that have low levels of digitalization

- For Campus (Private Networks) Port operators need extra personnel efforts

- Expensive infrastructure that needs to be justified

- Cross-border handovers

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When introducing 5G related innovations in (port) logistics, what role shall the TELCO operator have in the business structure?

- Different options could be possible and would depend on internal capabilities of the telco and their ability to serve the specific needs of the port companies.

- A key partner, or they are just a utility service subject to regulation and price controls.

- A sub contractor. Because Communication is not the industry in focus but rather logistics and mobility. If we were to discuss the IT/communication sector than TELCO companies are industrial partner. But for logistics and ports they are external sub contractor

- As B2B key partner, there is not enough Economy of Scale for local ports, MNOs need volume customers

- As a key industrial partner considering 5G is an enabler for the technologies we're discussing here and the high dependency of these solutions make it necessary that the TELCOs are involved as a partner and can be held liable in case of critical failures due to network issues.

- MNOs provide the infrastructure, the added value and services should be built by SMEs etc

- Probably more in providing the infrastructure related services, but not the applications on top

- Key partner: they should also take the risk of the investment!

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Thanks for your attention!

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