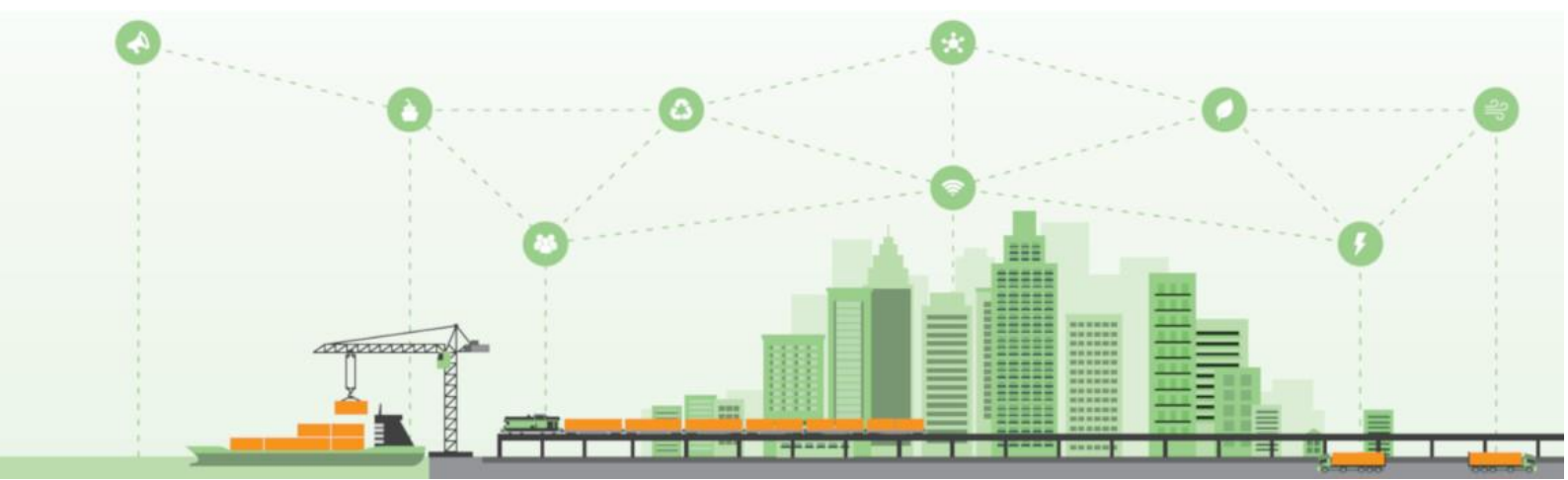# Where IoT meets the Port of the Future

5th NEWSLETTER

SEPT 2021

Summary- Save the Date!

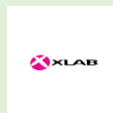Welcome to the **fifth and last** PIXEL newsletter,

We are delighted to present our last **newsletter** aimed to provide an **update** on the activities carried out since the fourth release (Feb 2021). Moreover, we would like to thank all stakeholders who somehow participated in the project and helped us achieve our objectives successfully. Our PO and Advisory Board, the PoF network, international institutions (e.g. WPSP, FIWARE Foundation, etc.), port stakeholders in our pilot ports, external ports and entities filling questionnaires and giving feedback…**THANK YOU!**

During the last months, all partners have strived for **deploying the PIXEL platform** with their models, predictive analysis and visualizations in our four pilots and **proceeding with the evaluation**. This evaluation took place both technically and economically (from a business perspective), and intended to provide relevant practical information for its further usage in external ports. It was linked with two additional activities carried out: (i) **transferability analysis** of the platform and any of its models and predictive algorithms, and (ii) **final exploitation analysis** with the consolidation of the different **Key Exploitable Results**.

We would like to tell and explain to all of you the results and outcomes from the PIXEL project, and – apart from all deliverables and YouTube videos - the best way is to invite you to participate in *THE CLOSURE EVENT OF PIXEL*, expected as a great event where we will summarize our most relevant achievements in one morning, so please **SAVE THE DATE**. It will take place on **SEPTEMBER, 28**.

The PIXEL team

Join us on the 5th webinar

Technical achievements and deliverables

During the last months of the project, following **achievements** have been performed:

- **Deployment of all models and predictive algorithms in the PIXEL platform** in the four ports participating in the Consortium. This implied not only the publication of the model, but also the incorporation of needed NGSI agents with the proper data models. All models are now functional and under further evaluation in the four ports of the project: Bordeaux, Monfalcone, Thessaloniki and Piraeus.
- **Enhance the documentation** associated to the PIXEL solution. Specifically, the most relevant models and predictive algorithms have been described in terms of requirements in order to facilitate further deployment in other ports (transferability).
- All pending **NGSI agents** have been **integrated** in the PIXEL installations of the pilot ports using the **DAL orchestrator**. Specially, there is a **HOPU station** able to provide real time data (e.g. **noise and light pollution**) to feed the PEI. It is now ready in all ports, even with different network configurations and integration approaches.
- Participation in the **COREALIS Final Conference**, with which PIXEL was liaised through the **PoF network** coordinated by the CSA.
- **Proof-of-Concept tests on external ports** have already been launched; we will collect results and provide the outcomes by the end of the project.
- Participation in **webinars** and **scientific dissemination** activities, even launching the **PIXEL webinars** to showcase PIXEL from different perspectives. Two research papers have been published and other two have been submitted.

The following deliverables have been released, available in our PIXEL website

- **D2.9: Project Management Report v5** (April 2021)
- **D5.4: PEI Manual for adoption in ports and guidelines for environment and society** (May 2021)
- **D7.2: Integration Report v2** (June 2021)
- **D7.3: Pilots and Cross Pilot Collaboration Report** (June 2021)

The pending deliverables, mainly related to **assessment** (WP8), **dissemination and exploitation** (WP9) will be released by the end of the month.
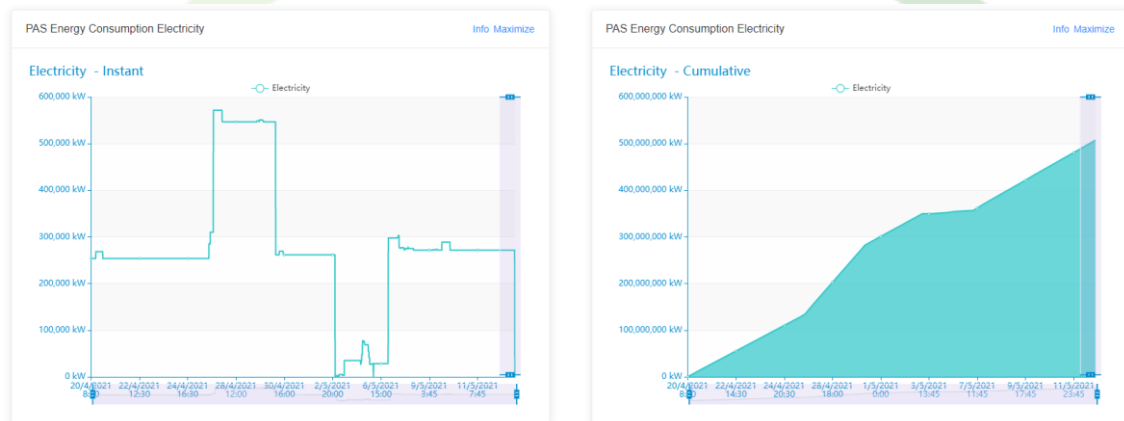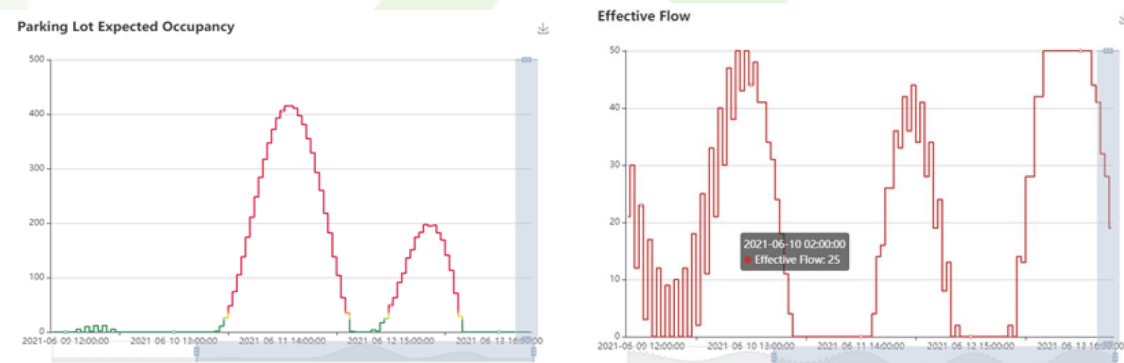
Final Integration and Evaluation

During the last months many activities were carried out in order to perform **a final integration** of the different components of the PIXEL platform developed in WP4, WP5 and WP6, as it involved four use cases with various **models, predictive algorithms and the PEI**.

Each of the pilots, associated to one of the ports of the project, has tried to solve the real need of the port. The **energy management trial**, in the Port of Bordeaux allowed to better understand the energy needs and the impact of the different port activities in terms of energy consumption. It also allowed to **optimize** and **well dimension renewable energy networks**.
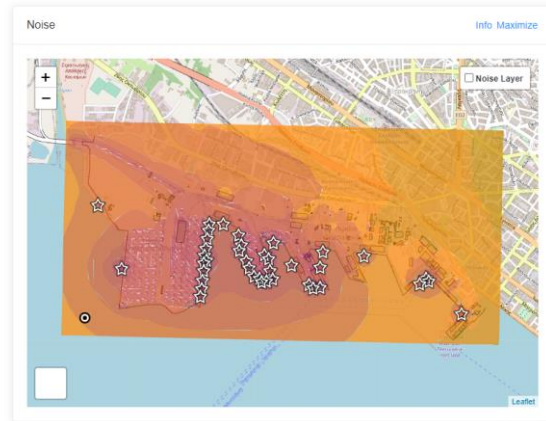

The **Intermodal transport trial**, in the Port of Monfalcone was aimed to **improve intermodal transport,** sharing data between the Port of Monfalcone and SDAG to avoid bottlenecks and congestions in port areas and to promote the use of railways where necessary. Two models related to **truck congestion** at different areas/gates are used to predict traffic congestion. This information is being used by the port to organize its activity in order to **reduce the parking and road congestion**.

The **Port-City integration trial**, implemented in the Port of Piraeus and Thessaloniki, improved the **port-city relationship** and helped **minimising the environmental and traffic impact** due to port activity. Two models related with **air quality and noise** have been used to calculate how the port activity affects these environmental factors.

On the other hand, the traffic congestion caused by Ports is also analysed by a **traffic prediction model**. These models provide useful data to make decisions in order to become greener ports and reduce their impact in cities.

The **Port Environmental Index** is one of the main results of the project and it has been applied successfully in the four PIXEL Ports. Thanks to the PEI the ports have a useful tool to monitor and measure their environmental impact in different time frames, including recommendations.

PIXEL Webinar series

In the last stage of the project we are being disseminating the main outcomes of PIXEL in different **webinars**. The first webinar took place in January and presented the project as a whole to introduce the attendees to the different **challenges met by PIXEL**. In the following months, specific webinars were held to target specific aspects and outcomes of the project. We are eager to present all the results during our **last (5th) webinar. Please register!**

USER STORIES MODELS ALGORITHMS	**Webinar 2. Technical presentation of user stories, models and algorithms (February 10th, 10:00 AM CET)**
	The Webinar was a presentation of the science behind the PIXEL project: (i) Use Cases and User Stories, (ii) Models, (iii) Predictive Algorithms, and especially (iv) the Port Activities Scenario (PAS), as a meta model. The session was recorded and is available at our **YouTube channel**
PIXEL PLATFORM FIWARE	**Webinar 3. The PIXEL platform (June 17th, 10:00 AM CET)**
	The PIXEL team presented the engine that allows everything to work: The PIXEL Platform. The key technical difficulties addressed to implement a replicable, sustainable and scalable platform were explained, as well as the solutions developed. The session was recorded and is available at our **YouTube channel**
PEI PORT ENVIRONMENTAL INDEX	**Webinar 4. Port Environmental Index -PEI- (July 1st, 10:00 AM CEST)**
	The Webinar presented the need for PEI: What it is, what it measures, as well as what are the benefits compared to traditional ways of assessing the environmental impacts of ports: qualitative vs quantitative approach and related environmental Key Performance Indicators (eKPIs). The session was recorded and is available at our **YouTube channel**
PIXEL SOLUTION KPIS RESULTS	**Webinar 5. PIXEL Closure event. PIXEL solution and project results (Sept 28th, 10:00 AM CEST)**
	The Webinar will show the results of the PIXEL project, conceived as a solution for ports in terms of IoT and environmental impact analysis and evaluation, among others. *Please register!*

Meetings and PoF network

Some virtual **meetings** took place since Feb 2021 to coordinate and advance on the project, as well as to prepare the final results of the project towards the final review. Additionally, after the final Conference of CSA DocksTheFuture, another final Conference took place from the RIA CORALIS within the **PoF network**.

23rd April-2021. COREALIS Final Conference (ONLINE)
The COREALIS Final Conference took place virtually on April 23rd, where the main outcomes of the projects were shown to the audience. The proposed beyond state-of-the-art innovations, targeted to increase efficiency and optimize land use, while being financially viable, respecting circular economy principles and being of service to the urban environment. These innovations were implemented and tested in real operating conditions in 5 Living Labs. Our project coordinator, Carlos Palau, presented PIXEL during this conference. He showed a high level perspective of the project and linked it with the PoF network. The session was recorded and is available at our **YouTube channel**

8/9th June-2021. 4th PIXEL technical meeting
The main goals of the 4th technical meeting were:
- to transfer the technical work performed in WP7 to ports, so that they could start their pilots,
- to comment on pending deliverables (D7.X),
- to focus on exploitation activities,
- to show our results to our Advisory Board, and
- to review the final dissemination tasks to be accomplished, with special focus on webinars.

The virtual meeting achieved its objectives and the whole PIXEL team was fully committed to reach the pending tasks.
Periodical meetings and continuous monitoring on the evaluation process allowed to correct any detected bug and produce new releases in short time.

16th July 2021 – DtF Network of Excellence
The main objective was to present the Port Environmental Index tool to the ports that are part of the Network of Excellence under request from the Coordinators of the NoE. The audience was composed of external ports (10-20) with different expertise and profile. UPV presented the tool and addressed several questions.

Events

Even though face-to-face events have been cancelled during these months due to the Covid19 pandemic, PIXEL partners have participated in different **events** since Feb 2021, and obtained some acknowledgment from relevant external entities including PIXEL as part of their project portfolio.

Salon de la Recherche
Préparons le futur

24th March-2021. Salon de la Recherche (online)

This is a global event sponsored by Orange to showcase technological developments in their different projects. During this event, our partner Marc made a short presentation about PIXEL. The session was recorded and is available at our **YouTube channel.**

24-26th March-2021. Huawei Industrial Digital Transformation Conference (online)

During March Huawei performed on online conference where different areas of the industry as well as of the Technology where addressed. Dr. Georgia Ayfantopoulou, Deputy Director of CERTH/HIT was invited as keynote speaker. The session was recorded and is available at our **YouTube channel**

8th April -2021. Faculty of Medicine 2020 Annual Days

Scientific achievements in 2020 was held within the Faculty of Medicine 2020 Annual Days where our young researcher PhD student, Stjepan Piličić presented PIXEL project on April 8th, 2021 at Faculty of Medicine, University of Rijeka. Participants followed the presentations online

PIXEL – Port IoT for environmental Leverage
BDV BIG DATA VALUE ASSOCIATION
BDVA DataWeek 2021
27th May 2021
PIXEL
Carlos E. Palau (UPV)
Project Coordinator

27th May-2021. BIG DATA VALUE Dataweek (online)

Data Week is the spring gathering of the European Big Data Value and Industrial AI research and innovation community. Our PIXEL project coordinator, Carlos Palau, presented PIXEL and its main contribution in terms of Big Data. The session was recorded and is available at our **YouTube channel**

INTERNATIONAL LEADERS IN SMART SHIPPING
GREEN MARINE ALLIANCE VERTE
GREENTECH 2021

2/4th June-2021. Green Tech (online)

 The Green Marine team planned their yearly gathering in maritime transportation and its greater sustainability through greener technologies, innovation and best practices. Our partner Fabrice (GPMB) participated in the conference pitching PIXEL.

8/10th June-2021. FIWARE Smart Fest (online)

The FIWARE Community presented during three days various sessions showcasing the power of open source, and outstanding use cases that are leading by example. Our partner Marc (Orange) made a short presentation about PIXEL. The session was recorded and is available at our **YouTube channel**

14/16th June-2021. IPIC - International Physical Internet Conference (online)

The Physical Internet Initiative aims at transforming the way physical objects are moved, stored, realized, supplied and used, pursuing global logistics efficiency and sustainability. Our partner Charles (CATIE) gave a presentation entitled Port Digitalization Through an Activities Scenario Model as a First Step for a Digital Twin of Port.

14th June - 31st June-2021. IEEE 7th World Forum on Internet of Things

The WF-IoT 2021 brought the latest from the research and academic community. It included a broad program on the latest innovations in the many fields and disciplines that drive the utility and vitality of IoT solutions and applications. Our partner Rafa (UPV) gave a presentation entitled 'Leveraging IoT and prediction techniques to monitor COVID 19 restrictions in port terminals'

16/18th June-2021. UMT - 27th International Conference on Urban and Maritime Transport and the Environment (online)

The UMT analyses the growth of maritime shipping, and the need for innovative solutions for ports and fleet. Our partner Nacho (UPV) gave a presentation about the advantages of a Green and Smart Port of the Future, and how PIXEL is contributing towards it. The session was recorded and is available at our **YouTube channel**

14th September-2021. The OR Society's 63rd Annual Conference

This year OR63 explored how operational research can help society and organisations move towards a post-COVID-19 world. Our partner Charles (CATIE gave a presentation about the PEI and how it can help maritime ports