



PIXEL USE CASES

Port-City Integration

Introduction

Ports are **key agents for the cities** they co-live with. Actually, the economy of a port-city is sensibly tied to the evolution of the port, which normally boosts, with a tractor effect, the population welfare, growths on employment rates and the image of the city towards the community. However, sometimes this symbiosis can lead to unfortunate situations. Ports can be greedy components with regards to environmental impact. Dredging, traffic bottlenecks, noise, air pollution and other types of inconveniences are bounded to daily port operations. The **impact** of these effects towards cities and their citizens are **trending topics** that should be addressed in order to nurture (even) better relations among ports and Smart Cities communities.

Objectives

Framed in achieving this new port concept in a very efficient way, PIXEL aims at achieving these objectives:

- To **share information** and build integration synergies among the port, the city and the transportation actors
- To **fuse** and **populate** into an online platform with all available **information sources** for **environmental monitoring** of port activities that can impact the city presenting in real time environmental measurements from a variety of operational areas (e.g. inferred emissions from the container handling equipment in the Container Terminal based on TOS feedings, inferred emissions from vessel operations, measurements from online sensors etc.)
- To create a **development strategy** that meets the demands on transport in and around the port area while at the same time mitigating the negative impact on the environment and on specific social groups

Benefit for ports

Thus, new modelling and predictive algorithms developed with the data and knowledge given by this location will take a major role in order to:

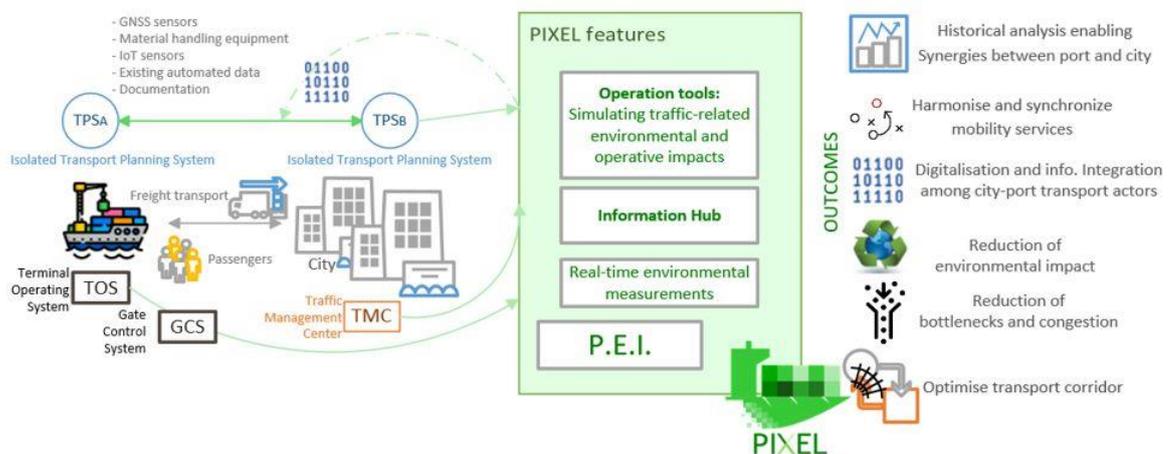
- To **improve the access** to the seaport so that it can ensure sustainable economic growth in port cities
- To **evaluate and measure scalability**. Both ports are key in the traffic in the area and in the corresponding TEN-T corridor
- To **efficiently implement sustainable, cost-effective and environmentally-friendly measures** regarding transport demand around port area and mobility

- To **integrate data** from different transport planning systems (port, road, train), IoT-enabled city and port services to improve synchronization of mobility services and improve the awareness of the general public
- To **self-monitor** and appraise of different mitigation measures in order to define and apply effective mobility management measures the port surrounding area aiming at the improvement of the air quality, energy consumption, noise, relationship with local community, port development (land related) and dust KPIs

IoT and systems integration envisaged

For achieving the mentioned objectives and enabling ports to benefit our solution for energy efficiency aims, PIXEL works hardly on **sensing, monitoring, data processing** and, principally, **integration**. Below are listed the main integration and IoT activities that PIXEL undertakes under its port-city integration use-case:

- **Standard interfaces** are to be developed between PIXEL and different PCSs so that systems can send physical information and port statistics (city-related data such as traffic, weather or important events) to PIXEL, and, in return, PIXEL sends back analysis and simulation results.
- Integration of **sensors (IoT)** for a more real-time monitoring of the port.
- To **homogenise** and **integrate** data from several software sources: Traffic Management Centres, Terminal Operation Systems, Gate Control Systems, GNSS and on-board systems, etc.



Involved PIXEL ports

Port of Piraeus, Port of Thessaloniki

