



PIXEL USE CASES

Energy Management

Introduction

Maritime ports concentrate, in direct link to their transport activities, logistics and industrial activities and interact with urban territories. PIXEL adheres to the principles of **sustainable development**, combining and balancing the requirements of environmental conservation, protection of individuals and economic development, and is in line with the EU's ambition: a secure, competitive and decarbonised transport and energy system in 2050, associated with the port of the future.

Objectives

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

- To **meet local energy needs** during the call of a ship in order to cope with renewable energy production the port must itself reduce its own carbon footprint,
- To create and deploy a Port Environmental Index (PEI) to **measure the efficiency** of a port's green policy, and of the supply chain connected to the port,
- To **analyse major traffic long term trends** thanks to deeper port statistics analysis.

Benefit for ports

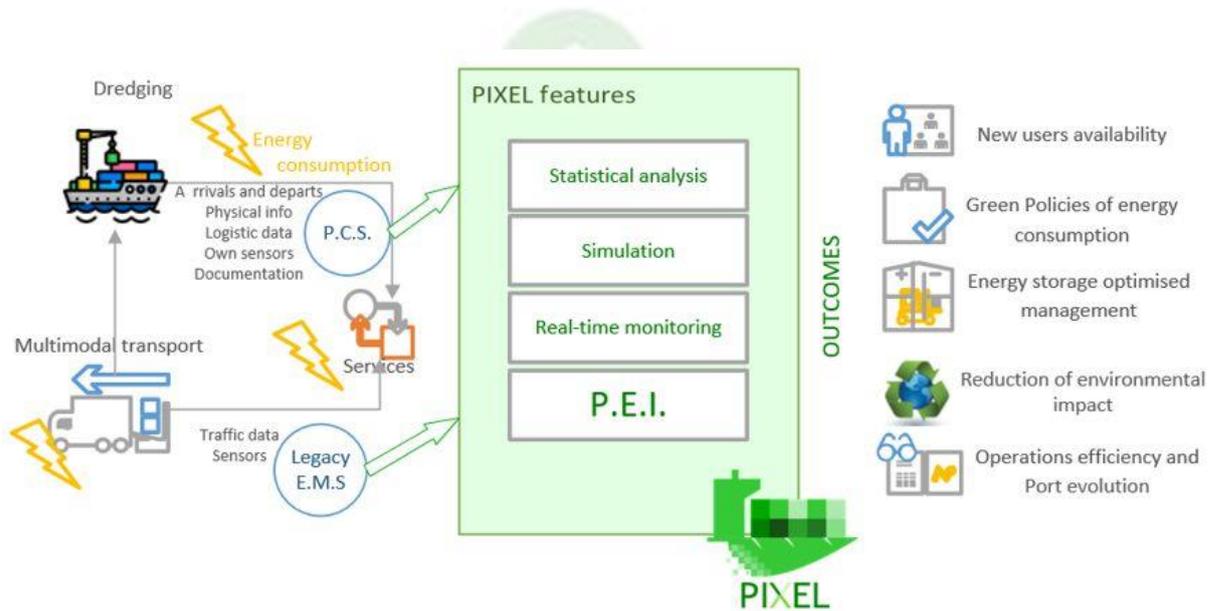
Thus, new modelling and predictive algorithms developed with the data and knowledge given by this location will take a major role in order:

- To **better manage traffic** entering and leaving the port to **optimize available energy resources**, reduce waiting times and reduce traffic impact in the city
- To **optimize multimodality** based on energy consumption
- To size **renewable-energy** production infrastructures (based on predicted consumption models) in an optimal and cost efficient manner
- To **reduce the storage needs** to reduce costs and be more environmentally friendly
- To **enable proposition** of new services associated with the overproduction of energy in times of low consumption

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 energy management use-case:

- PIXEL will **extend roles** of PCS in the overall port performance especially in the energy, port operations and port strategies fields.
- **Standard interfaces** are to be developed between PIXEL and different PCSs so that systems can send physical information and port statistics (energy-related data) 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.
- Integration of **machinery data** (consumption, features, datasheets...).
- To **monitor** and **integrate** different data coming from highly demanding energy-consuming processes in ports (such as loading, unloading, dredging, etc.).



Involved PIXEL ports

Port of Bordeaux

