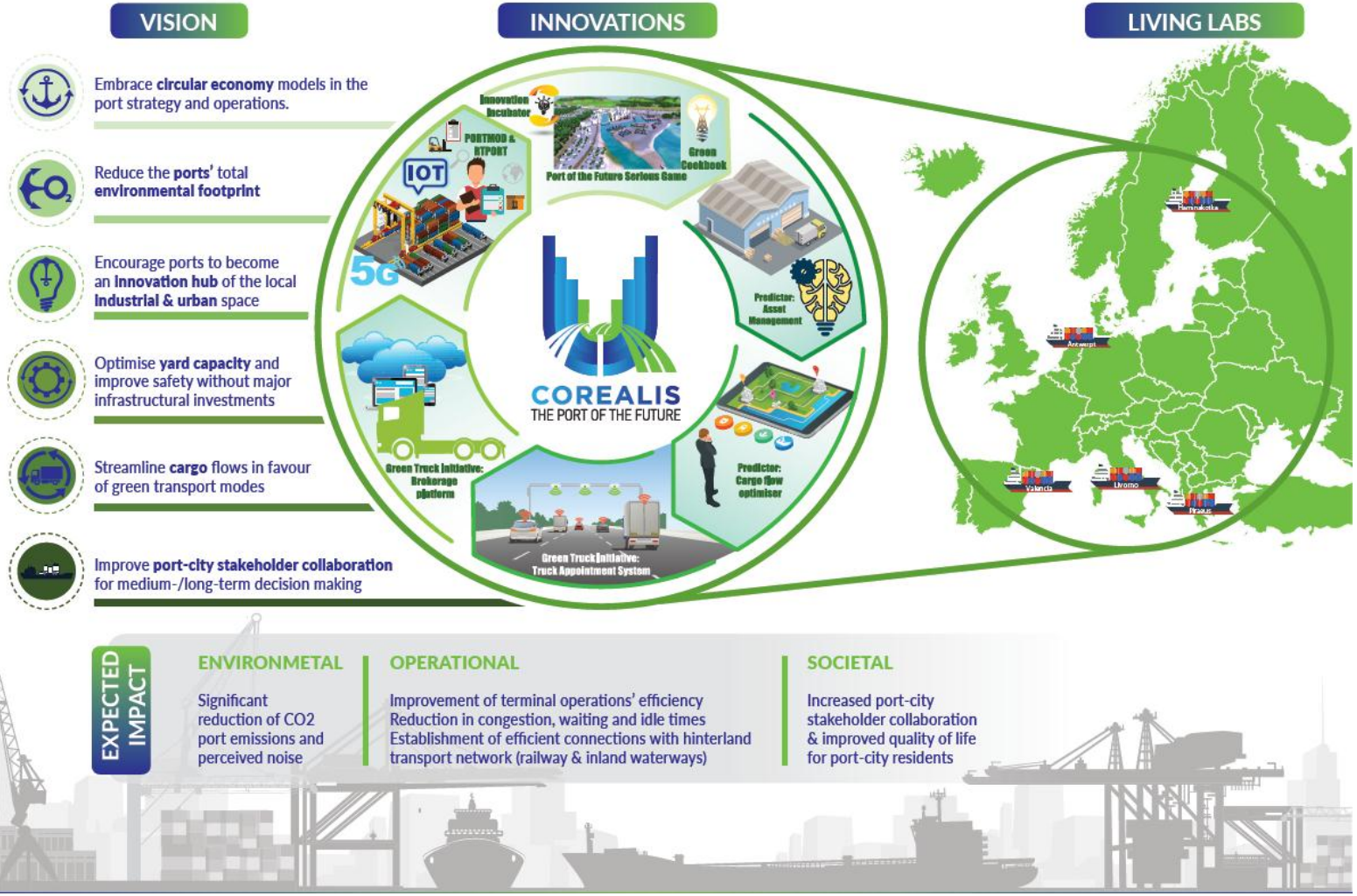
COREALIS
THE PORT OF THE FUTURE

4th ITS Hellas Conference

Ports of the Future as a part of a multimodal transport system: Challenges and Innovations

ICCS

COREALIS: The Port of the Future



2 Truck Appointment System

Challenge:

- Congestion in the port area and highways around the port, noise

- Booking of a specific time slot according to preference/existing capacity in the CT (pre-reserve mode)
- Live virtual Queue for users that do not have an advance booking
- Priority Queue for last minute container delivery

❑ **Innovation**: Innovative TAS able to coordinate and optimise the arrival of trucks according to city traffic, terminal and other operations in the port area

✓ Minimisation of waiting times at the port gates

✓ Improved traffic flows

✓ Increased terminal throughput

Circular-economy based Fleet management

Challenge:

- Optimization problems related to efficient management of equipment
- Broader traffic within ports

❑ **Innovation:** Leasing service for storage and maintenance requirements (i.e chassis for intra-terminal truck operations) and other required services (i.e. trucks, drivers etc)

✓ Booking of assets/visualization of statuses of cargo arriving to the port

✓ Reduction of storage and maintenance costs

Predictive Asset Management

- Predictive/descriptive analytics

Challenge:

- Ports have limited storage capacity and increased maintenance costs

❑ **Innovation:** Asset management requires for the optimal use of port assets, (i.e. yard vehicles, forklifts, cranes, trucks)

✓ Optimal maintenance schedules

✓ Schedule of purchases of new spare parts or yard vehicles for just-in-time inventory

✓ Reduction of the inefficient use of storage space

Analytics-driven Cargo Flows Optimisation

- Predictive analytics based on rail/barge/vessel ETAs

Challenge:

- Sub-optimal organisation of pickup and delivery of containers due to schedule changes and misalignments (inland waterways, rail)

❑ **Innovation**: Cargo flow optimisation component for minimising containers' waiting time at the port.

✓ Improvement of the modal split towards rail and barge

✓ Increased cargo throughputs

✓ Reduction of the dwell time of containers in the port

Port-City Decision Making via Serious Gaming

Challenge:

- Ensuring sustainability of port activities
- Better coordination between the port and city authorities

❑ **Innovation**: Innovative and interactive training and simulation tool for assessing the feasibility and sustainability of ports

✓ Emission reduction and noise reduction

✓ Real-time sustainable complex scenarios of logistics flows, port design and planning

✓ Improved decision making

5G-driven Situational Awareness

Challenge:

- Non-optimal intra-terminal operations

- Remote video processing, image and context recognition
- AI processing to guide drivers with Augmented Reality info in real time
- Real-time 3D monitoring and control

❑ **Innovation**: Real time control of operations in CTs

✓ Vessel operation completion times

✓ Improvement of stacking and availability of container handling equipment and cranes

✓ Better allocation of work effort and costs to each stage of the process

Optimisation of Container Terminals' Energy Profile

Challenge:

- Ensuring energy efficiency for port operations while respecting environmental concerns

❑ **Innovation**: Development of a comprehensive framework for analysing energy efficiency of ports, including guidelines for reduction

✓ Assessment of most energy-savvy operational points in the terminal

✓ Energy profiling produced by heavy equipment using sensors

✓ Improved decision making for green, efficient and cost-effective solutions

COREALIS
THE PORT OF THE FUTURE

www.corealis.eu
corealis_eu
COREALIS EU Project
Corealis_eu
info@lists.corealis.eu

THANK YOU FOR YOUR ATTENTION

ICCS, COREALIS Coordinating Team

Mailto: Athanasia.Tsertou@iccs.gr

This project has received funding from the European Union's horizon 2020 research and innovation programme under grant agreement No. 768994