

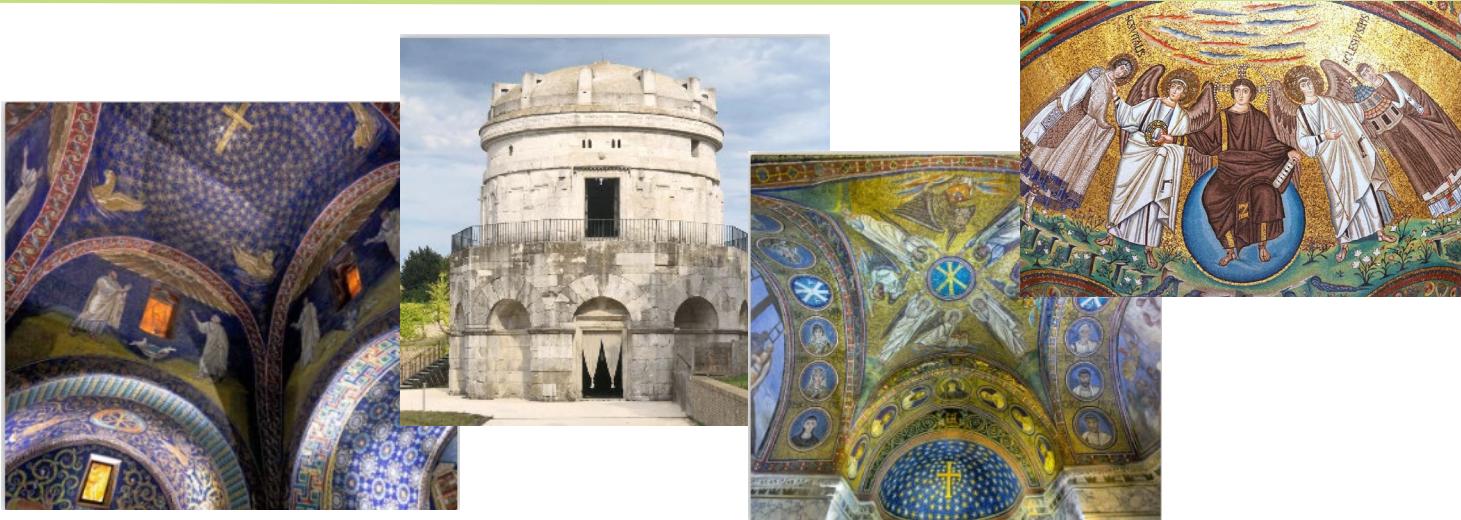


Digital twin of the port of Ravenna



Autorità di Sistema Portuale
del Mare Adriatico centro settentrionale
Port of Ravenna

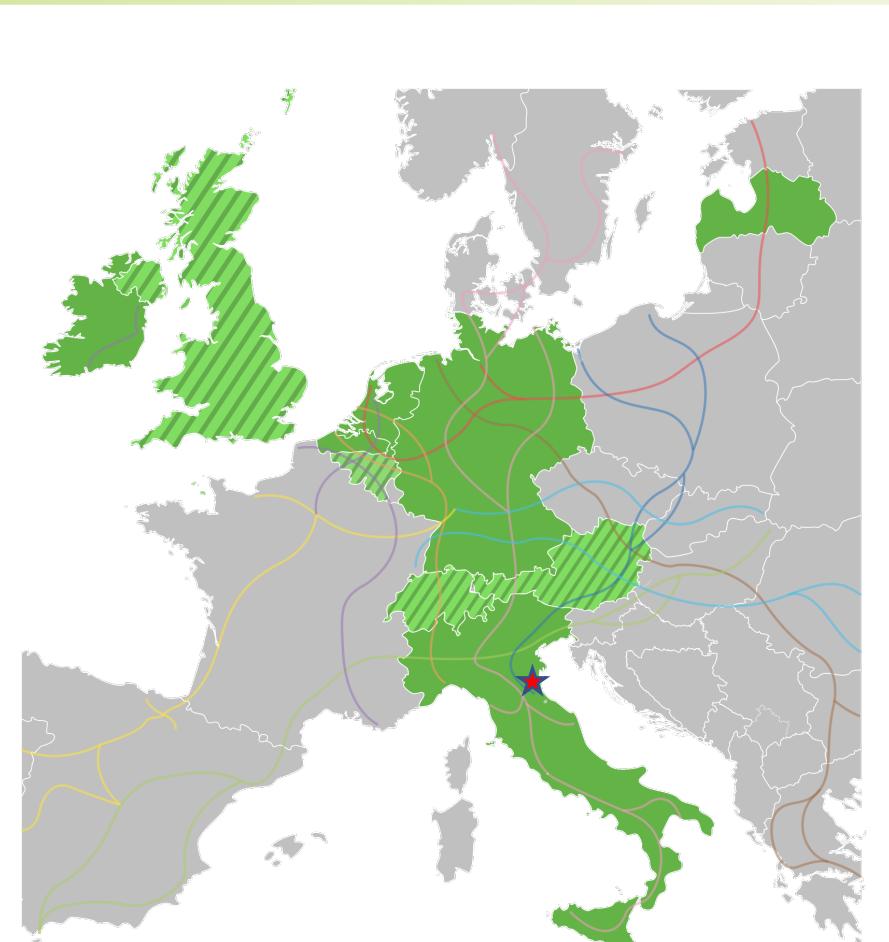
RAVENNA



Famous worldwide for its artistic treasures, Ravenna preserves **the greatest mosaic heritage** dating back between the 5th and the 6th century AD, decorating Early Christian and Byzantine monuments declared Unesco World Heritage.

Eight Unesco monuments bear witness to the greatness of Ravenna over time.

Eight treasures tell the story of a territory and city that became capital for three times – of the Western Roman Empire, of the Ostrogothic Kingdom (493-553) and of the Byzantine Empire (568-751).



PORT OF RAVENNA

MERIDIAN



KEY FIGURES

Total Area:	21 sq. km	Private port terminals: n. 27
Port canals length:	14,0 km	Yards: 1,414,348 sq.m
Current max depth:	-11,5 mt	Warehouses: 845,542 sq.m
Forecast max depth:	-14,5 mt	Silos 313,600 cum
Operational quays:	14,5 km	Storage tanks: n. 372 - 1,017,960 cum

PORT OF RAVENNA

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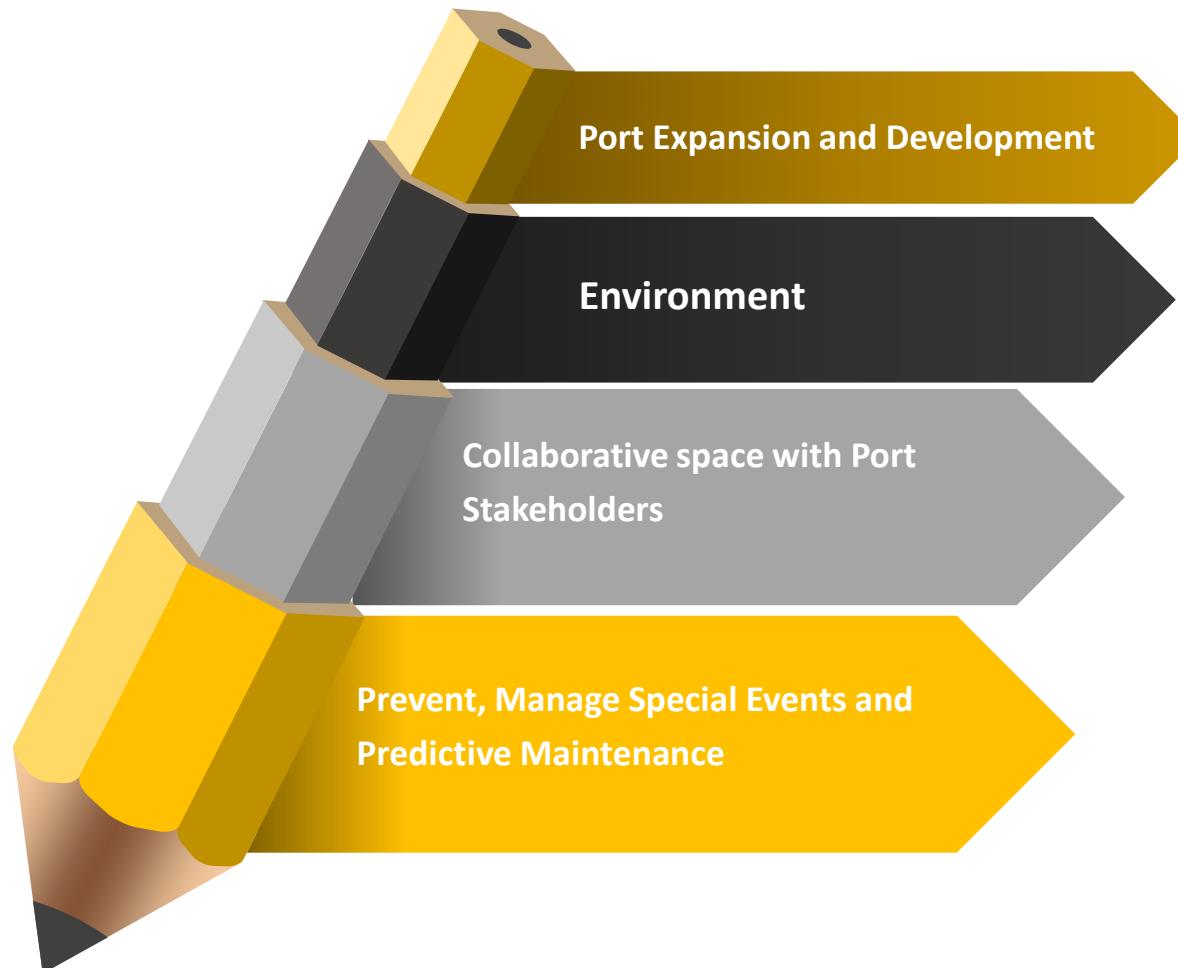


WORKS ONGOING

- ❖ Dredging up to -14.5 m
- ❖ Refurbishment of 6,5 km of existing quays for container and multipurpose terminal
- ❖ Urbanization of areas 2 Million sq.m.
- ❖ New container and ro-ro terminals
- ❖ Sediment materials treatment plant
- ❖ Energy platform

WORKS PLANNED

- ❖ New rail connections layout
- ❖ Second drawbridge
- ❖ Offshore breakwater

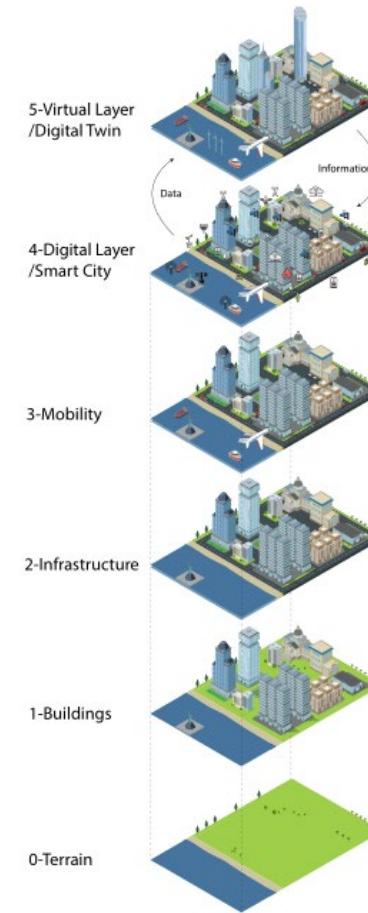


CHALLENGES

We expect our Port of the Future will be able to enhance sustainable development manage the resources to be invested, their employment and their stakeholders for a competitive advantage.

Open Digital Twin Port: Concept

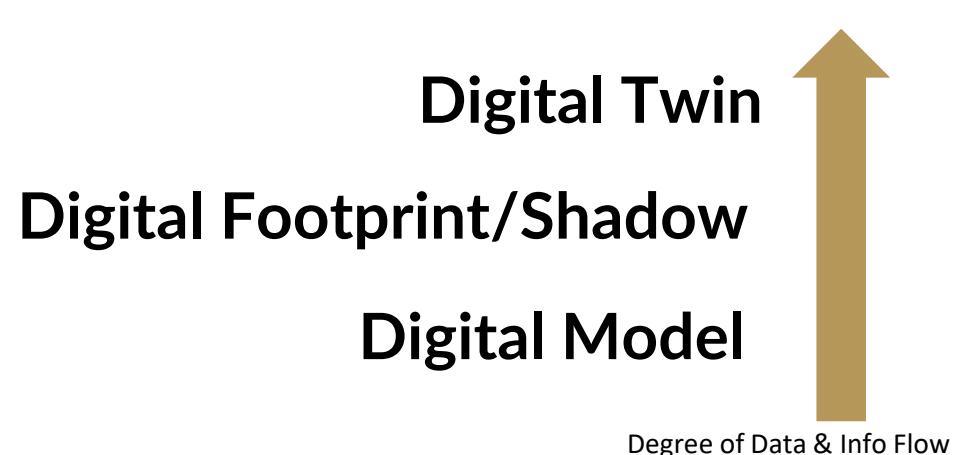
Our Digital Twin is «a realistic digital representation of assets, processes or systems in the built or natural environment» of the port of Ravenna.



Open Digital Twin Port: Characteristics

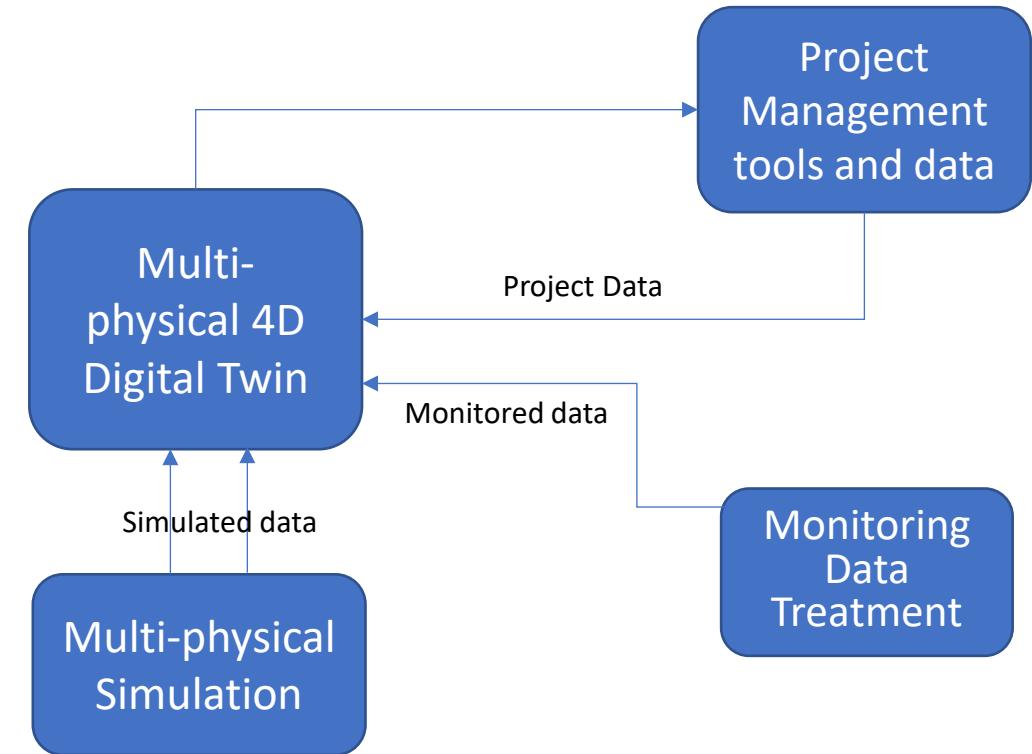
- **Connectivity:** Between the physical component and its digital counterpart - sensor;
- **Homogenization (of data):** **Decoupling** from the Physical form. **Sharing** of information;
- **Digital Traces:** Analysis of data on a time scale;
- **Modularity:** Customization and Improvement.

«Simulator» a machine designed to provide a realistic imitation of the controls and operations of a vehicle, aircraft or other complex systems, used for training purpose.

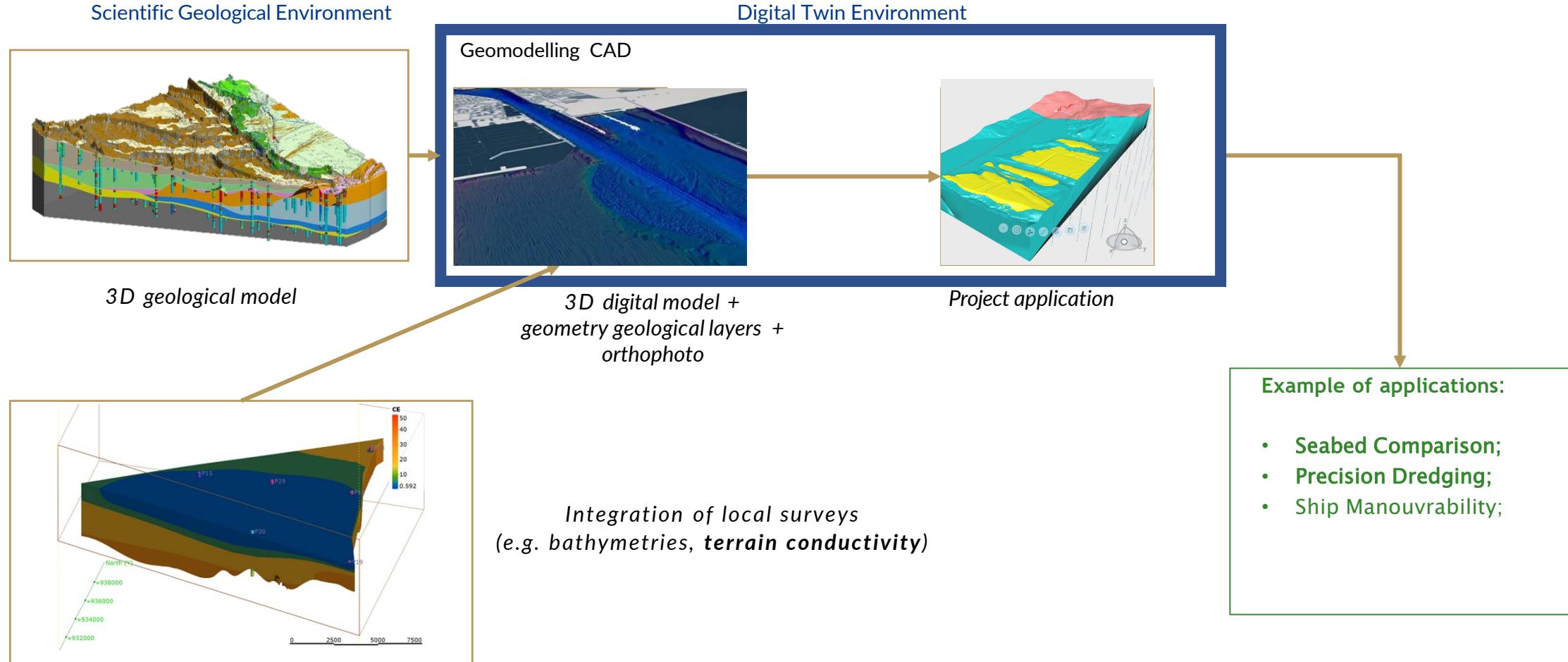


Open Digital Twin Port: EcoSystem

Development and Deployment of methods and tools
to support management of **design, construction, operation, maintenance, safety and monitoring;**

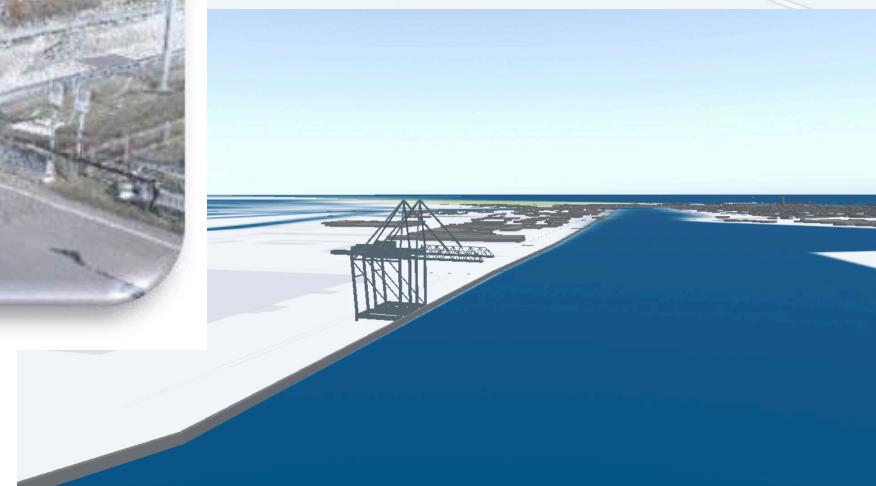
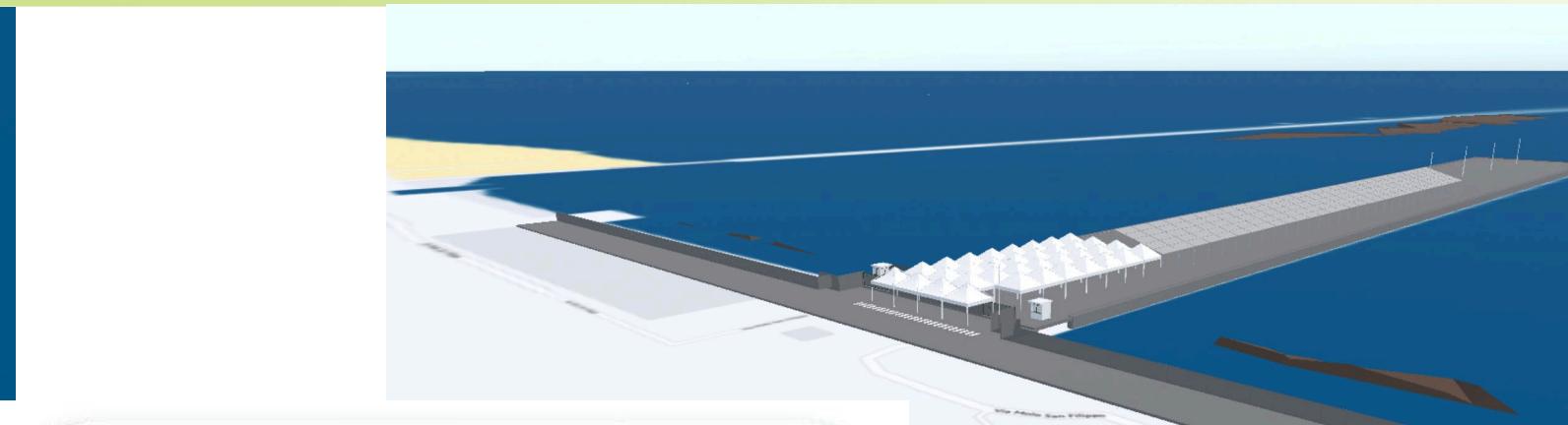


Open Digital Twin Port: EcoSystem



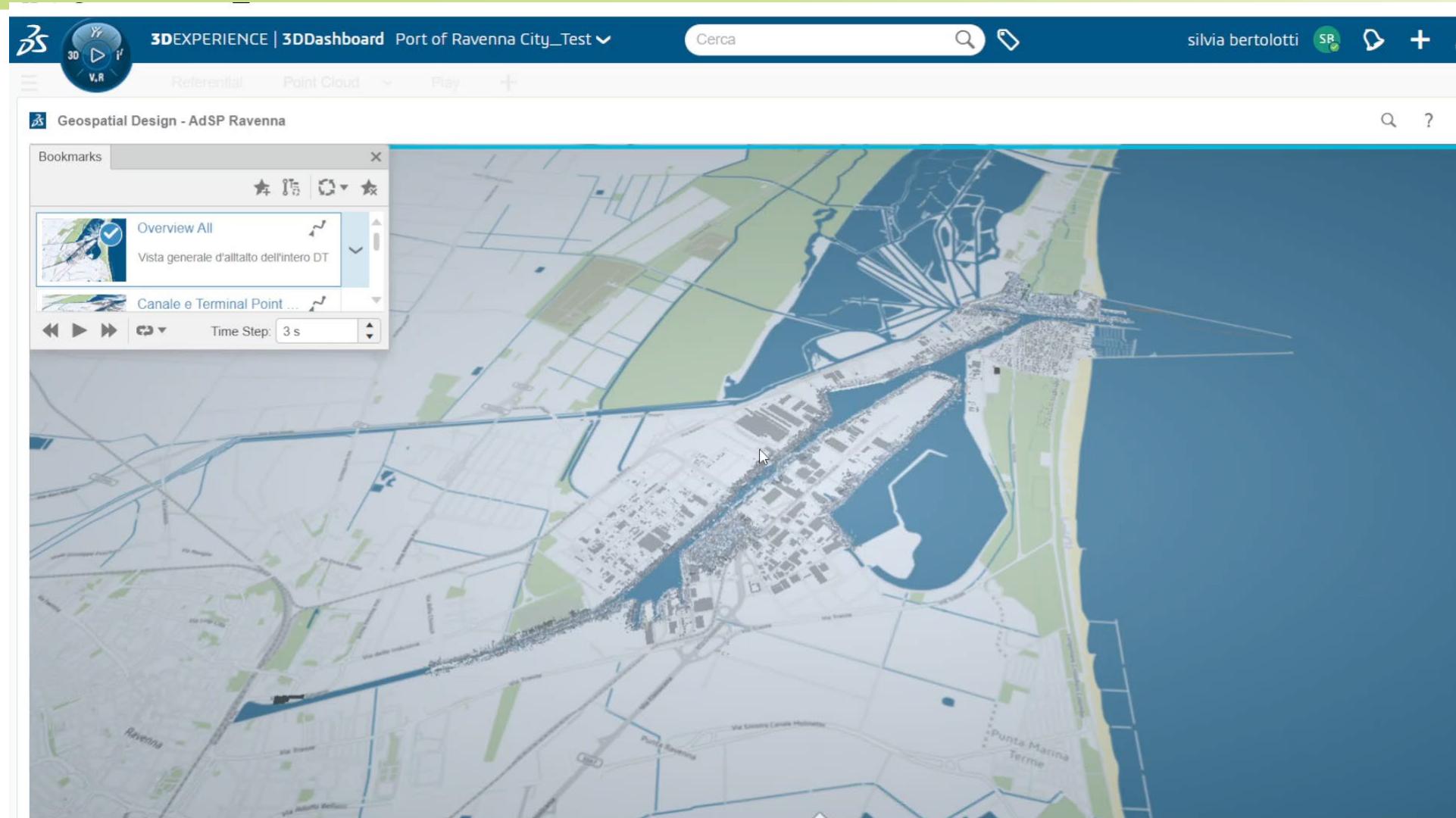
Open Digital Twin Port: Work in progress

MERIDIAN



Open Digital Twin Port: Work in progress

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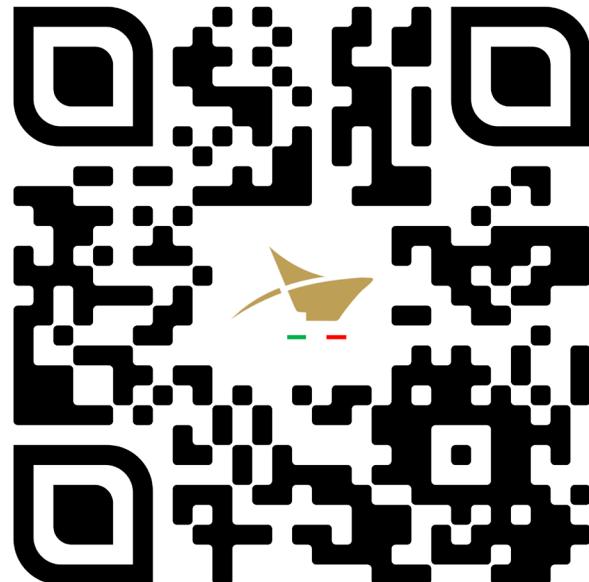
IMPLEMENTATIONS

- New data sources: AIS data – Meteo stations and weather forecasts – Traffic data
- Completion of infrastructures modelling: drawbridge (+ sensors) – quays – buildings - bathymetry
- Simulation capabilities

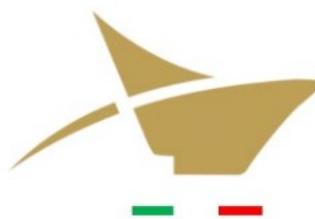


USE CASES

- Infrastructures monitoring and maintenance
- Seabed monitoring and maintenance
- Resilience in response to climate events and disasters
- Traffic monitoring and simulation
- Monitoring and simulation of polluting gases
- Environmental impact – water quality



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