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Enabling Stakeholder Engagement

Ian Koeppel
Transportation Business Development Manager
Esri - Europe

High Level Training on Digital Twin applications in Port ecosystems, Venice 28th Jan 2025

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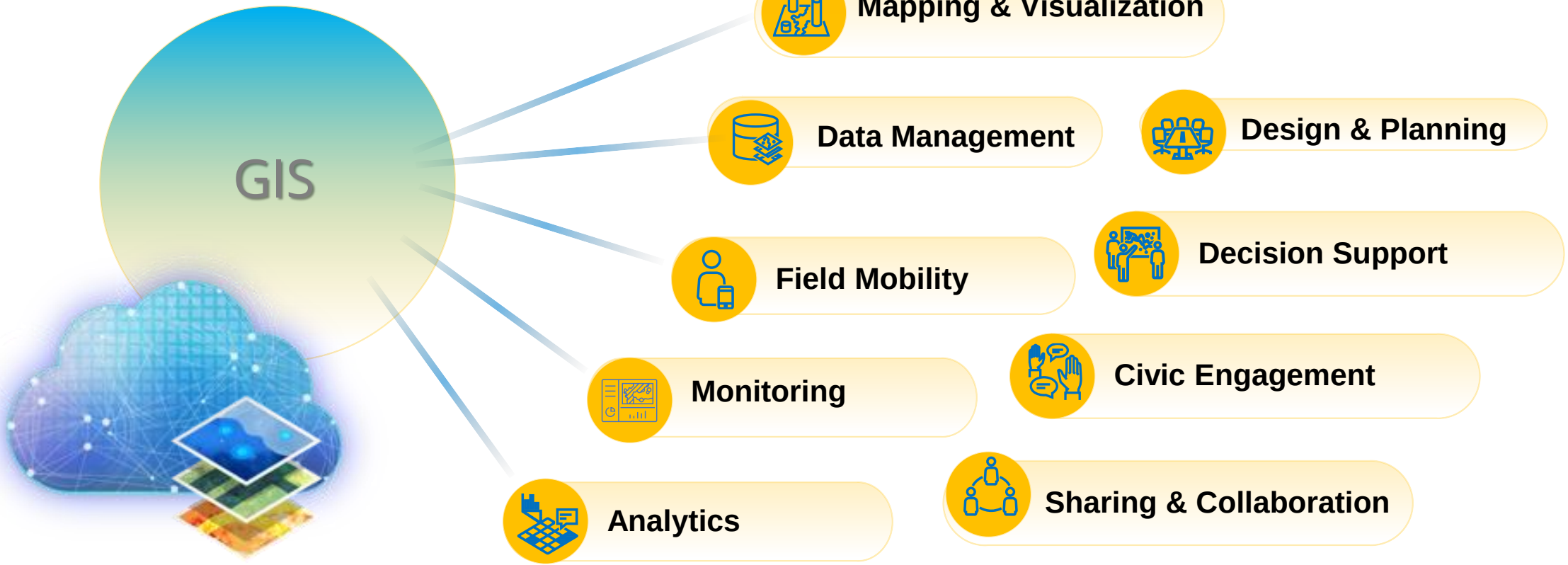
Capabilities of GIS-based Digital Twins



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Bring Stakeholders Together

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Why Use GIS to Enable Stakeholder Engagement?

- Share data and information products
- Communicate important topics to the public
- Improve public perception through engagement
- Build trust and advocacy with leaders

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GIS-Based Digital Twins Help to…

- Create interactive infographics, surveys and dashboards
- Analyse sentiment on initiatives and changes
- Facilitate two-way engagement with community

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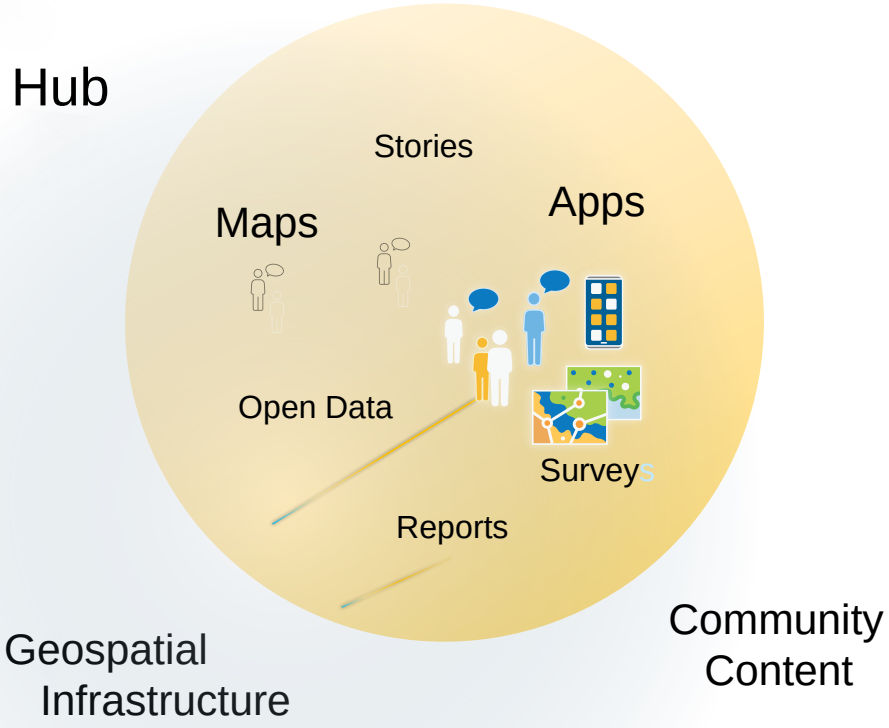
GIS Hubs

Interconnecting People, Organizations and Stakeholders



Improving Participation and Collaboration . . .
. . . Around Common Interests

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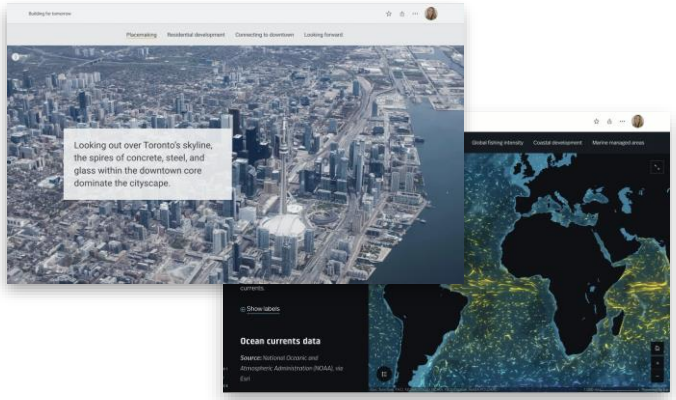
Telling Stories with Maps

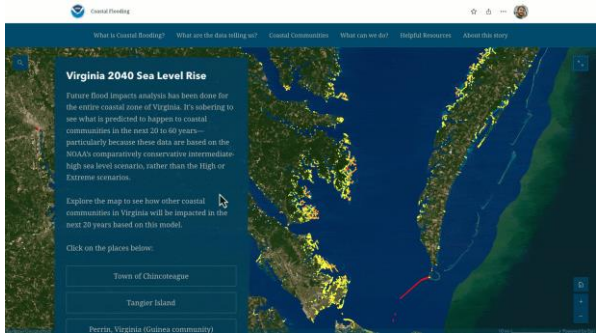
Common uses

- Sharing Maps & Reports
- Public Engagement
- Internal Communication
- Presentations
- Education

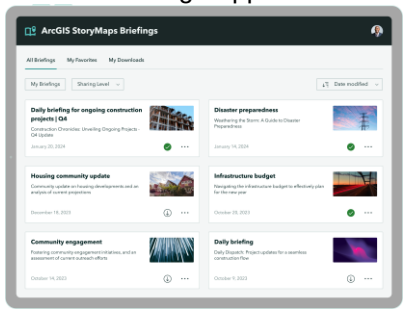
Put Maps at the Center of Your Story



Interactivity with Media Actions



Share Offline
with the Briefings App



Present Dynamic Maps
with Briefings

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Selected Use Cases

- Port of London - Interactive Master Planning Maps
- Port of Rotterdam - PortMaps Portal
- Ports of North Sea - IMMERSE project
- Port of Boulogne sur Mer - GIS-BIM Integration video

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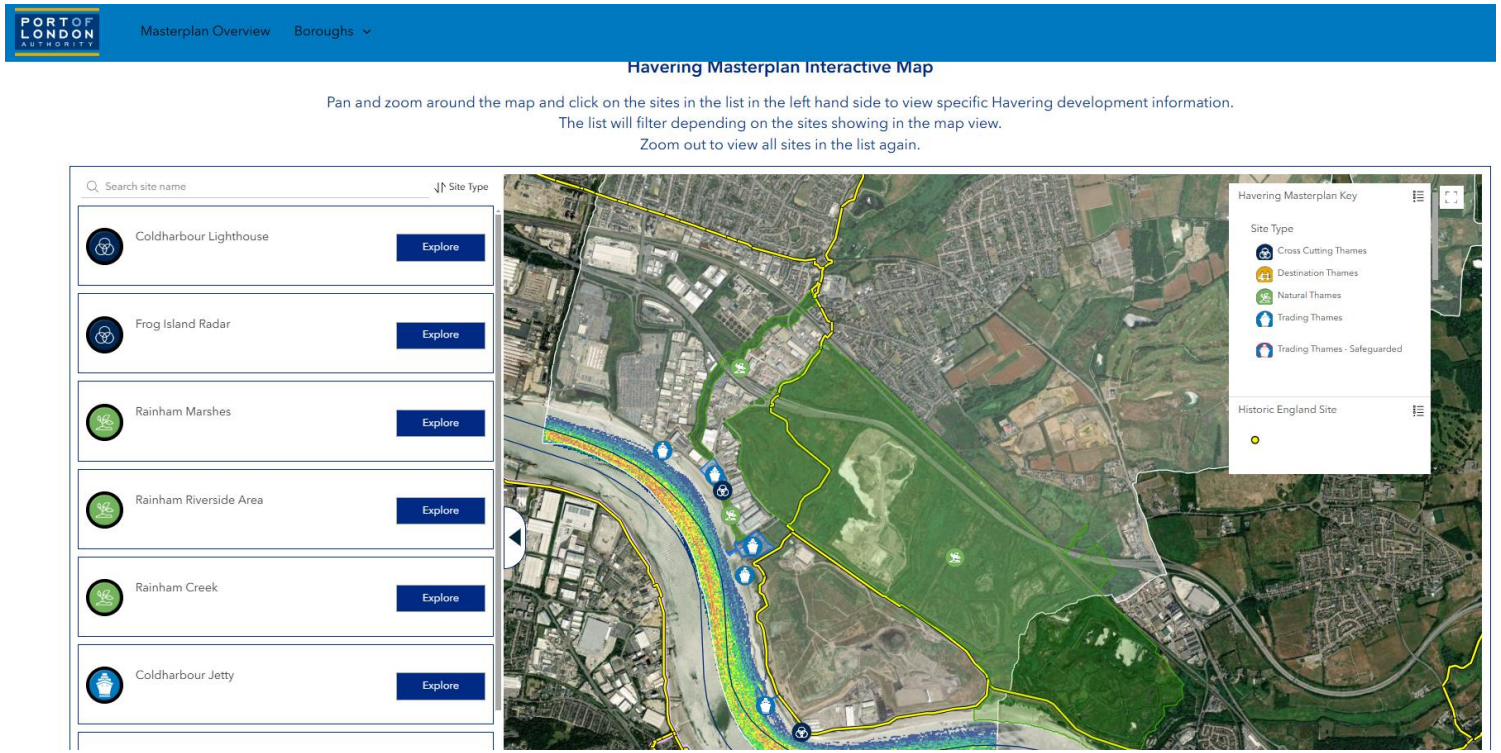
Port of London
Interactive Master Planning Maps



https://experience.arcgis.com/experience/8b200c3e35214f088d4c0ac6a8b1cc7c/

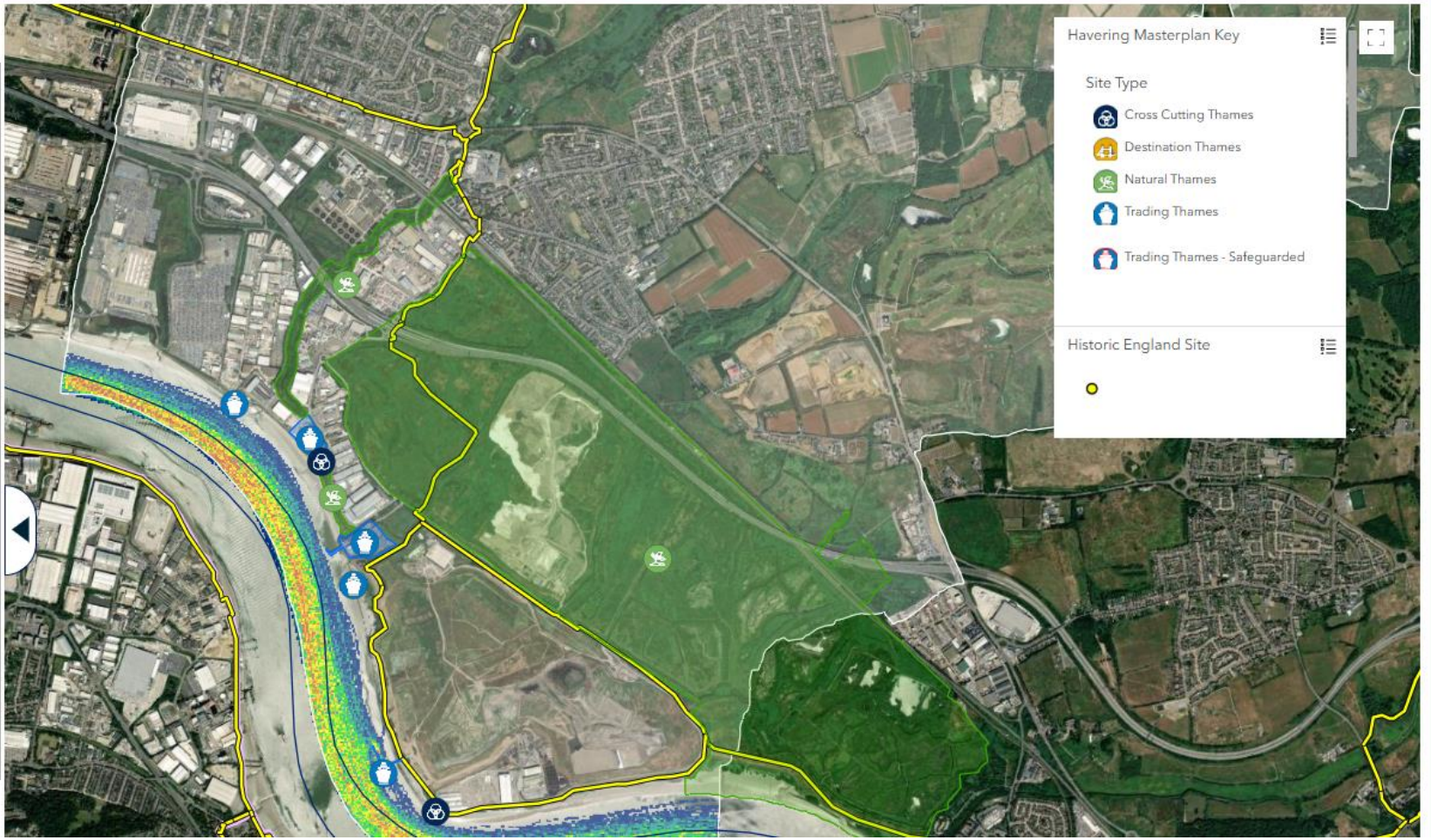
Havering Masterplan Interactive Map

Pan and zoom around the map and click on the sites in the list in the left hand side to view specific Havering development information.
The list will filter depending on the sites showing in the map view.
Zoom out to view all sites in the list again.

Search site name

Site Type

- Coldharbour Lighthouse — Explore
- Frog Island Radar — Explore
- Rainham Marshes — Explore
- Rainham Riverside Area — Explore
- Rainham Creek — Explore
- Coldharbour Jetty — Explore



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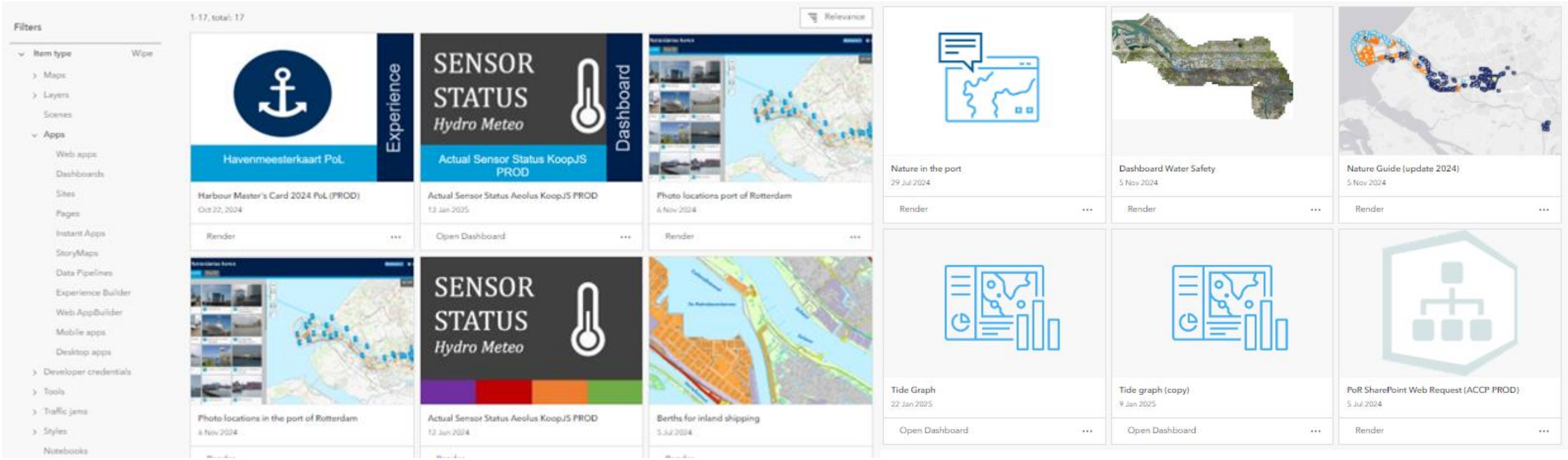
Port of Rotterdam
External PortMaps Portal



https://portmaps.maps.arcgis.com/home/gallery.html?sortField=relevance&sortOrder=desc&focus=applications

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Interreg North Sea Region IMMERSE

Collection

IMMERSE Project

IMplementing MEasures for Sustainable Estuaries

Get started

Accelerated the **implementation of large-scale measures** that address multiple estuary management challenges while increasing their cost-efficiency and enhancing stakeholder commitment.

1 IMMERSE

2 Pressures

3 Danish fjords

4 Elbe Estuary

5 Göta Estuary

6 Humber Estuary

7 Scheldt Estuary

8 Tees Estuary

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IMMERSE philosophy

IMMERSE activities were not only about technology but were also related to any **new approach or method to address an estuarine problem** (like a new way of sediment management) or a new way to involve stakeholders (governance).

The development of solutions during the stages of development, from idea, to pilot, to measure, were used to give structure to **IMMERSE** activities. These three stages of development were also advanced through activities in cross-cutting work packages on **transnational exchange and stakeholder engagement**.

The **IMMERSE** project developed measures in **6 North Sea Region estuaries.**

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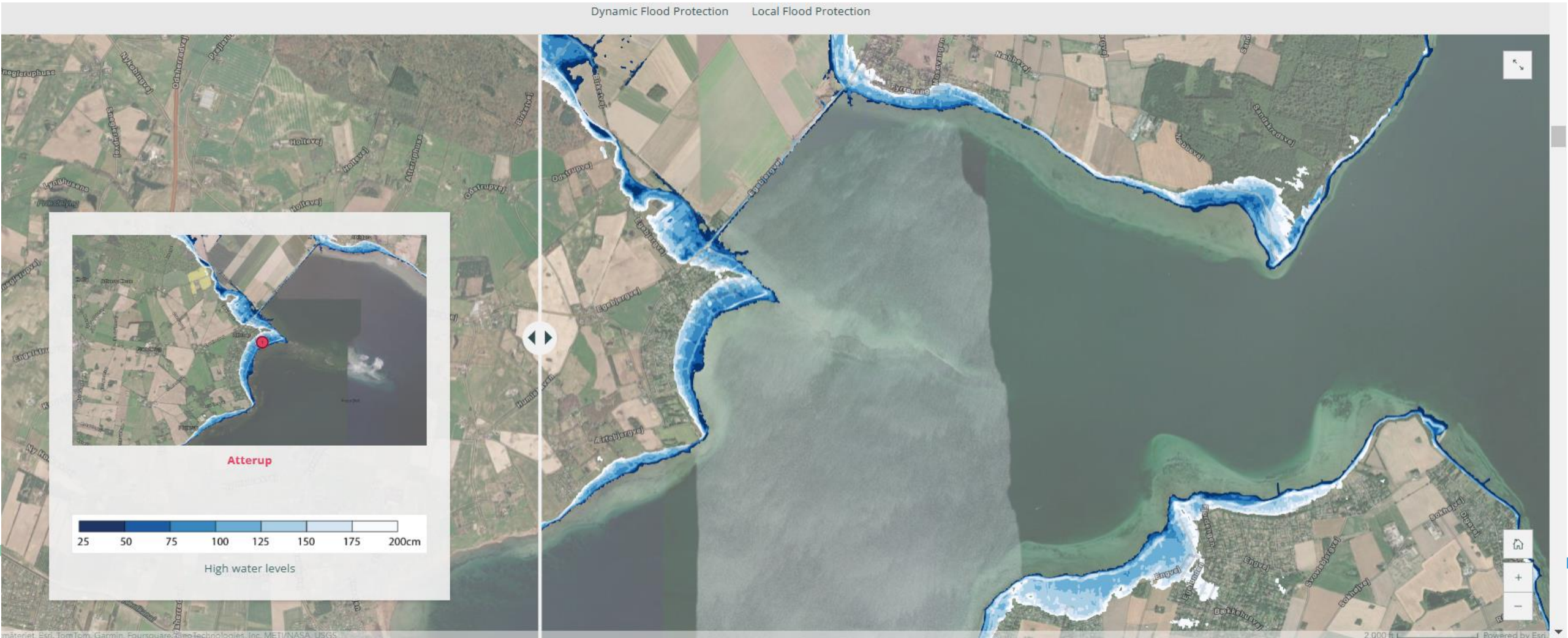

Hydromorphological changes

Land use changes and river engineering works lead to **changes in the geometry and bathymetry** of the estuary and, in extension, to changes in tidal propagation.

considering it a process of experimentation and communication.'

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Solutions for Pollution

Tees

Co-location of mariculture in an inshore windfarm to improve water quality and create economic stimulus

Industrialisation of the Tees estuary caused the environment to be heavily modified with both organic and inorganic pollutants, such as TBT and heavy metals. These pollutants still have a significant impact on the water quality and in extension to the health of living organism in the estuary.

Bivalve shellfish and macroalgae are able to remove pollutants from the water and store them, lowering concentrations in the water and thus improving the quality. Both surface-suspended and seafloor-based mariculture installations are suitable within a wind farm.

The co-location of mariculture inside an inshore wind farm can increase the water quality of the estuary and support commercial fish populations, sequester additional carbon and protect against coastal erosion.

Göta älv

Innovative raingardens to filter and degrade microplastics from road run-off water

The wear and tear of plastic materials such as car tires produce large amounts of microplastic particles, which are transported into rivers and estuaries by run-off water from roads, presenting a serious threat for the water quality in the Göta estuary.

Different filter materials, a selection of plants and possibly fungi have the potential to retain, degrade or recover microplastics, metals, nutrients and organic pollutants from runoff water. This water can pass through rain gardens installed alongside roads and pavements, filtering pollutants, before flowing to the estuary.

Building rain gardens along the run-off routes from roads reduces the transport of microplastics (and other pollutants) to rivers and estuaries and improves the water quality.

Humber

Use of biological agents to filter microplastics from the water column

Microplastics are abundantly found in the water column and sediments of the Humber estuary. Plants and animals are influenced by, and influence, microplastic storage and transport within estuaries.

Benthic biofilms protect sediments against erosion, trap and bind fine particles and provide food to benthic infauna (invertebrates). With these characteristics they play an important role for capturing and resuspending microplastics. Also filter feeders draw microplastics from the water column and retain them.

Understanding the mechanisms and conditions in which these processes occur can help remove microplastics from the estuary. This knowledge can be used to inform habitat creation and management solutions to control this persistent pollutant within estuaries.

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At the Exchange Labs, **IMMERSE** partners, North Sea Region estuary managers, and relevant stakeholders explored solutions, tested new ideas, and shared experiences together through a variety of discussion formats.

Stakeholder engagement

IMMERSE seeked to engage stakeholders to collaboratively develop measures and set corresponding management targets that go beyond the requirements of EU directives. When working with stakeholders, mutual trust among the various parties is very important. In order to reach the required audience, new, easily understandable, and specific communication tools are almost a must when one wants to transfer a message and stimulate people to get engaged.

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Build Trust and Advocacy to Evolve and Inspire Action

- Connect data and expertise between multiple teams
- Measure community requirements and gaps
- Fine-tune outreach with real-time analytics
- Improve decision making with key performance indicators

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