

EU SPACE FOR SMART CITIES · PROOF OF CONCEPT

Coastal water quality monitoring

Know where and when bathing water needs a closer look, every day, before pollution reaches bathers.



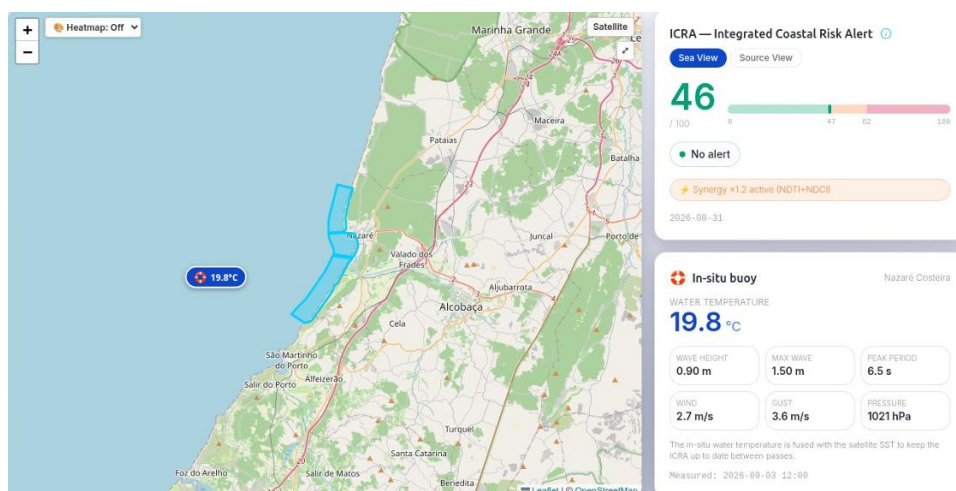
The challenge

Europe has around **22,000 bathing sites**, mostly checked through periodic sampling (EEA). Pollution after heavy rain or runoff can **come and go between two weekly samples**, leaving cities to close beaches too late, or too broadly. In the pilot areas of Nazaré, Bruges and North Yorkshire, there was **no real-time view of water quality**.



The solution

A web platform that combines **Copernicus satellite images with local buoy data** to give each beach zone a daily 0–100 risk score. Municipal and coastal teams get maps, email alerts, 10–20 m high-resolution views and three years of history, so they can **target sampling and warn the public**.



EU Space inside



Copernicus

Sentinel-2 water indicators (chlorophyll, turbidity) at 10 m;
Sentinel-3 daily sea-surface temperature



Galileo / EGNOS

Not used in this PoC: beach zones and buoys are at fixed, known positions



Other data

Offshore buoys (Nazaré Costeira, Bol van Heist) reporting water temperature every 10 minutes



How it works



Space data

Sentinel-2, Sentinel-3 and buoy data



Processing

Cloud filtering and one combined risk score



Outputs

Zone maps, alerts, 10 m views and history



City action

Targeted sampling and timely public warnings



Results at a glance

33 of 40

Highest-level alerts matched a real sewage discharge (North Yorkshire)

78%

Discharge episodes flagged at the surveillance level or above

3 of 3

Testers would recommend the tool



Who benefits

- **Coastal municipalities**, beach managers and lifeguards
- **Ports**: dredging plumes, discharges and algal blooms
- **Environmental and public-health authorities**



Pilot at a glance

Location	Nazaré (PT) · Bruges (BE) · North Yorkshire (UK)
Period	02/2026 – 09/2026
Partners	EY · Libelium · Factual
Users	Municipal and coastal teams, lifeguards



Lessons learned and future avenues

- Alerts work best with **thresholds set per zone** from local history
- Sampling and discharge records **arrive late**, which limits real-time checks
- **Next**: oil-spill detection (Sentinel-1) and locally calibrated forecasts



Meet us at the EUSPA booth

Smart City Expo World Congress · Barcelona, 3–5 November 2026

Scan to download the PoC presentation, factsheets and the brochure 'EU Space for smart cities'. Want it in your city? Talk to us.

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