Platforms, Digital Infrastructure & Interoperability

Thu. Nov 12, 2026 2:00 PM - 3:30 PM JST | Thu. Nov 12, 2026 5:00 AM - 6:30 AM UTC | Room B (Kujaku) (2F)

Oral B2 Digital Twin Infrastructure and Operational Services

Chair: Avichal Mehra, Shintaro Momose

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[Z-NE6gfo-05] MeDITTO: Engineering an AI Agent Integration Layer for Interoperable Ocean Digital Twins

Simon Keeble[2], *Miguel Charcos-Llorens[1] (1. SOCIB (Spain), 2. Blue Lobster IT Limited (UK))

Digital twins of the ocean are proliferating, but each comes with its own data services, formats, and interfaces, and the cost of connecting them falls on every user. MeDITTO, a prototype within the SOCIB2030 strategic framework, developed collaboratively by Blue Lobster (UK) and SOCIB (Spain), demonstrates a different approach: AI agents, communicating over open protocols, serve as the integration layer, and natural language serves as the common interface to observations, models, and twins.

The platform gives researchers, managers and the public conversational access to SOCIB's multi-platform observing and forecasting system in English, Spanish and Catalan, returning live data as interactive plots, maps and species datasheets, adapted to user expertise. Three examples of SOCIB digital twins, within the MeDITTO prototype, run as first-class agents: ecological surveillance of the Cabrera National Park's protected waters, shoreline adaptation planning for the urban beach of Cala Millor, and meteotsunami early warning for Ciutadella Port.
Architecturally, a supervisor agent classifies intent and maintains shared session context, while specialist agents for catalogue, data, visualisation, knowledge, and species each own their tools, prompts, and model choices. Every digital twin is an independent agent reachable via the Model Context Protocol, so adding new twins, including external EDITO services, is a registry entry rather than a rewrite. The platform is self-hostable on an open-source substrate, routes across LLM providers rather than binding to one, and pairs per-agent tracing with an evaluation harness run in continuous integration, so agent behaviour cannot regress silently. Provenance follows the data: sources are referenced in responses, and quality and FAIR assessment surface alongside results. The design aligns with the EU AI Act and GDPR.

We present the working system, the architecture decisions that underpin it, and evidence that agent-based integration is a transferable pattern for the interoperable digital twin ecosystem DITTO is building.

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