General Theme

Maritime engineering for the climate: anticipating, adapting, innovating.

Red thread: The twin acceleration of climate change and digitalisation.

Axis 1 — Coastal protection & resilience

Positioning. Designing coastal territories able to anticipate hazards, take proactive upstream action, respond to crises, and evolve sustainably over time (adaptation). Engineering connects nature-based solutions, governance and decision-support tools.
Key questions.

- How do we move from risk mapping to operational planning?
- What socially acceptable "soft adaptation" strategies (retreats, spatial recomposition)?
- How can we assess the long-term performance of nature-based solutions?

Expected contributions. Case studies on dynamic coastal risk management plans, early warning systems and coastal digital twins, NBS to reduce flooding/erosion, reconfiguration of infrastructures, feedback from municipalities/ports, resilience indicators.
Keywords. Coastal risks, NBS, digital twin, governance, social acceptance, indicators.

Axis 2 — Energy transitions & maritime sovereignty

Positioning. Making the maritime realm a pillar of long-term climate sovereignty: securing supplies, decarbonising uses and mobility, integrating marine renewable energies (MRE), aquaculture and ecosystem services within coherent spatial plans.
Key questions.

- How to reconcile energy security, biodiversity and maritime uses?
- Which system architectures and business models for sober and circular port territories?
- Which planning frameworks (MSP, EEZ) to accelerate deployment without degradation?

Expected contributions. Port energy hubs, shore power and port electrification, co-location of MRE–aquaculture, carbon accounting and MRV methodologies, multi-criteria optimisation (cost/impact/risk), operators' feedback.
Keywords. Sovereignty, MRE, energy sufficiency, maritime spatial planning, co-uses, MRV.

Axis 3 — Technological & digital innovation serving the living world

Positioning. Smart ports and territories: sensors, ROV/USV, eDNA, AI and big data to observe, understand and manage. “Augmented” engineering connects data, models and decision-making processes while integrating living systems.
Key questions.

- What data standards and QA/QC for robust decisions?
- How to hybridise measurements (eDNA, imaging, IoT) and predictive models for anticipation?
- How to move from prototype to operational service (scalability, cybersecurity, ethics)?

Expected contributions. Real-time observatories, digital twins of basins/logistics chains, predictive maintenance of structures, early detection using eDNA, adaptive regulation (traffic, dredging, water quality), decision-support interfaces.
Keywords. AI, big data, eDNA, ROV/USV, observatories, QA/QC, cybersecurity.

Axis 4 — Integrated design & engineering of structures and systems

Positioning. From systemic design to life-cycle management: resilient design, environmental performance, operational frugality and co-design with ecosystems.
Key questions.

- How to integrate climate uncertainties and usage trajectories from the very first sketches?
- Which multi-criteria performance metrics (carbon, biodiversity, service delivered, costs)?
- How to industrialise “regenerative” engineering (processes, contracts, O&M)?

Expected contributions. Adaptive design methods, performance criteria and dashboards, environmental performance-based contracts, operational feedback (monitoring, resource-efficient O&M), participatory approaches (users, fisheries, NGOs).
Keywords. Systemic design, performance, regenerative, uncertainties, O&M, participation.

Short Version – Programme

AXIS 1 — Resilient coasts: anticipate, act, adapt
Planning and steering coastal resilience to hazards (erosion, flooding, crises). Nature-based solutions, digital twins, governance and effectiveness indicators.

AXIS 2 — Maritime resources sovereignty & energy transitions
Making the maritime sector a low-carbon pillar: MRE, electrification, sufficiency and co-uses. Reconciling energy security, biodiversity and activities through integrated planning.

AXIS 3 — Techno-digital innovation serving the living world
Smart ports and territories: IoT, ROV/USV, eDNA, AI & big data for better decisions. From measurement to action: QA/QC, predictive models, secure operational services.

AXIS 4 — Integrated design & engineering of structures and systems
From systemic design to life-cycle: performance, frugality, "living" structures. Integrating climate uncertainties, uses and co-design with ecosystems.

Red thread: The twin acceleration of climate change and digitalisation.

Call for Papers – Submission Template

Title of the contribution
Targeted axis: 1 / 2 / 3 / 4
Type of contribution: Applied research / Feedback from practice / Pilot-demonstrator / Data & tools / Cross-perspectives
Authors & affiliations: … (corresponding author + e-mail)

Abstract (≤ 250 words).

- **Context & challenge**. Problem addressed, concerned territory/sector.
- **Approach & methodology**. Data, protocols (QA/QC), models/tools, stakeholders.
- **Key results**. 2–4 quantitative/qualitative results, limitations and uncertainties.
- **Contributions & transferability**. What changes for engineering/public practice: replicability, scale, TRL/status (if relevant).
- **Climate & living impact**. Gains (carbon, risks, biodiversity, service delivered), residual risks.

Keywords (3–5): …
Key references (≤ 3): …