



CELTIC-NEXT



Proposers Brokerage Day

11th September 2025, Aveiro

Pitch of the Project Proposal

TwinX Europe

Reference Architectures for AI-Driven,
Networked Production



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Teaser

- **EU-wide “Production Lab”**: interconnected production hubs that validate a fully networked, circular value chain in real industrial settings.
- **Beyond DPP**: continuously updated Digital Product Records plus Digital Twins
- **Federated, sovereign data spaces**: Gaia-X/Catena-X/Manufacturing-X–aligned architecture for secure, permissioned, tamper-evident data exchange.
- **AI readiness end-to-end**: harmonized semantics (Models-in-the-Middle), MLOps, and energy-aware “green AI” for scalable, compliant deployments.

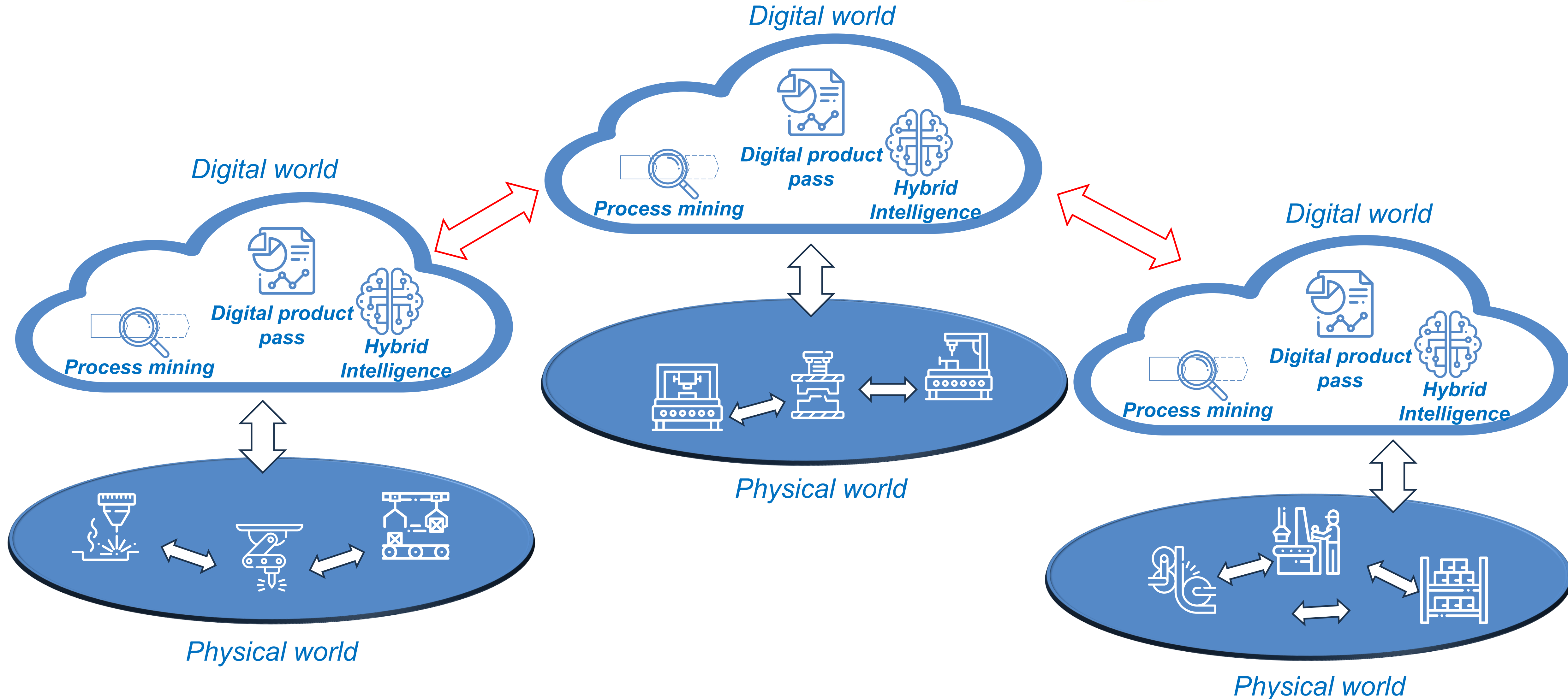


Organisation Profile



*The Fraunhofer Institute for Production Technologies IPT develops system solutions for **networked, adaptive production**.*

Proposal Introduction (1)

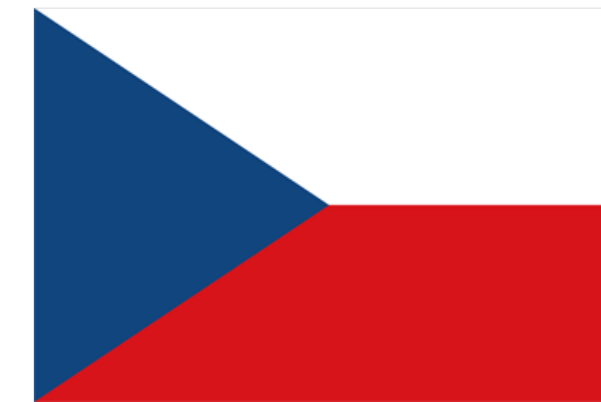


Proposal Introduction (2)

- ***Pan-European reference architecture for federated Digital Product Records (DPRs) and cross-site Digital Twins (DTs), aligned with AAS, Gaia-X/Data Spaces, Catena-X/Manufacturing-X, ISO 23247.***
- ***Open building blocks: interoperable connectors (e.g., OPC UA, MQTT, IDS), semantic adapters (Models-in-the-Middle), provenance/LCA submodels; ESPR/DPP extractors.***
- ***Networked Adaptive Production blueprint: edge–cloud orchestration, carbon/latency-aware scheduling, dynamic reconfiguration and circular upgrade production.***
- ***Energy- and privacy-preserving AI: federated learning, physics-informed models, and reinforcement learning for cross-plant scheduling; industrial MLOps/ModelOps.***
- ***Security and data sovereignty patterns: zero-trust, confidential computing, verifiable credentials/SSI, policy-based access and usage control across organizations.***

Partners

Interested partners from multiple eureka countries



The Fraunhofer IPT serves as the German “production hub” offering our machine hall and infrastructure as a testbed.

We are looking for other partners as additional “production hub testbeds”, from across the value chain (e.g. recycling, raw materials)

Contact Info

For more information and for interest to participate please contact:

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Presentation is available via:



Join the Consortium Building Sessions

**17. September
from 10:00-10:45 CET**

Connection details:
Via

www.celticnext.eu/new-ideas

