

CONCEPT NOTE FOR CONSORTIUM POSITIONING

Proposed topic: HORIZON-CL4-2027-01-MAT-PROD-61

Organisation(s): Erising, CCG, IST and PlasOeste as industrial pilot partner.

Contact person(s): João Sousa (joao.sousa@ccg.pt) and Paulo Peças (ppecas@ist.pt)

Version / date: v5 / 17 September 2026

1. Core contribution and pitch

Core contribution and partners. **Erising** is a Portuguese industrial technology SME contributing the industrial retrofit, exploitation route and access to low-digital-maturity manufacturing contexts. **CCG** is an applied R&I centre leading the semantic core, including ontologies, knowledge graphs, Retrieval-Augmented Generation (RAG) and conversational agents. **IST** contributes research expertise in sensing and advanced analytics. **PlasOeste** provides the industrial test environment, equipment, intervention histories, maintenance technicians and real operating conditions for TRL 4 validation. The partners are connected to the **PRODUTECH** ecosystem, supporting dissemination and consortium-building in advanced manufacturing.

One-minute pitch. “Erising, CCG, IST and PlasOeste aim to turn tacit shop-floor know-how into an evolving, governed semantic memory for European manufacturing SMEs. The concept links technician dialogue, operational evidence and intervention outcomes to propose, validate, version and reuse industrial knowledge as equipment and processes change. The first research case is maintenance on low-digital-maturity equipment at PlasOeste, reaching TRL 4 in a controlled industrial testbed at PlasOeste. The resulting methods, models and software components can later support setup, quality, troubleshooting and recovery tasks”.

2. Strategic rationale and fit with the topic

HORIZON-CL4-2027-01-MAT-PROD-61 is an open Fast Track to Research and Innovation topic for small consortia, targeting breakthrough industrial technologies up to TRL 4 and requiring explicit alignment with a relevant partnership SRIA. The concept is positioned under the Made in Europe SRIA as an industrial knowledge technology: a governed method for capturing, testing, versioning and reusing shop-floor knowledge as equipment, processes and workforces evolve.

Critical manufacturing know-how remains tacit and dispersed across experienced workers, documents and intervention histories. The project investigates an evolving semantic memory that converts technician dialogue, multimodal operational evidence and validated intervention outcomes into a versioned industrial knowledge model. Maintenance of low-digital-maturity equipment is the first research case, with transfer potential to setup, quality, troubleshooting and recovery tasks.

3. Joint value proposition

The challenge is to capture tacit industrial knowledge without losing context, transform it into an evolving and traceable semantic asset, and reuse it through people and AI as operating conditions change. We contribute a closed knowledge-evolution cycle: observe, propose, validate, verify, version and reuse. This combines evolving ontologies, multimodal evidence and human governance into a reusable industrial knowledge technology. CCG leads semantic memory and conversational access; IST links equipment condition, technician actions and intervention outcomes; Erising defines the retrofit path, industrial use cases and exploitation model; and PlasOeste provides controlled proof-of-concept validation in a real industrial maintenance environment.

4. Proposed technical and industrial contribution

Area	Proposed contribution
Breakthrough technology	Evolving ontology and knowledge graph; candidate knowledge extraction from dialogue, documents and operational traces; expert validation, consistency, provenance, versioning and controlled deployment.
Manufacturing/process integration	Non-intrusive adapters for legacy assets and controlled links to CMMS, MES, IoT or Asset Administration Shell data; edge-compatible capture without full-line digitalisation.
Digitalisation / AI / data	Multimodal contextualisation, semantic retrieval and knowledge-grounded generation with uncertainty and source traceability; novelty in semantic evolution and governance.
Research validation and TRL	Start at TRL 2-3 and reach TRL 4 in a controlled industrial testbed at PlasOeste; assess semantic evolution, consistency, traceability, reuse and cross-equipment transfer.
Sustainability / resilience	Longer equipment life, fewer avoidable interventions, less rework, scrap, spare-part use and travel; avoids premature asset replacement.
Exploitation and market uptake	Modular engine and APIs for integrators and CMMS/MES providers, plus Erising services; standards-oriented interfaces and a protectable evolution/governance method.

Preferred role: a core consortium with CCG leading semantic R&I, IST multimodal sensing and analytics, Erising industrial requirements and exploitation, and PlasOeste hosting the industrial testbed. One HCI/human-factors or second-domain partner may complete the consortium.

5. Research pathway and expected impact

The research pathway will define the domain model, evidence states and tacit-knowledge elicitation protocol; derive candidate concepts, relations and rules from multimodal evidence; implement expert validation, consistency checking, provenance, rollback and versioned deployment; and demonstrate the core at TRL 4 in a controlled industrial testbed at PlasOeste.

Assessment will cover semantic-change precision and acceptance, provenance completeness, knowledge retrieval time, transfer effort, traceability, portability and user trust. The expected impact is a low-barrier industrial knowledge infrastructure for retaining critical know-how and supporting human-centred SME digitalisation, with reusable methods, models and TRL 4 software for later validation and productisation.

6. Consortium fit and partners sought

This concept is positioned as a focused pilot-based contribution to a small consortium under the FTRI topic, addressing industrial knowledge technologies within the Made in Europe SRIA. It offers coordinators a ready-to-integrate research case combining semantic R&I, multimodal evidence, retrofit constraints and access to a real industrial validation environment at PlasOeste. Best fit: consortia on human-centred manufacturing, SME digitalisation, zero-downtime production, industrial AI, semantic interoperability and retrofit of legacy assets.

Partners sought: (1) an experienced FTRI/Horizon Europe coordinator; (2) an HCI/human-factors partner; (3) an interoperability partner for CMMS/MES/IoT/Asset Administration Shell; and (4) a second industrial case for transfer validation.

7. Next steps

We are ready to align with coordinators and partners to define the WP/task contribution, scope key deliverables, define the validation protocol at PlasOeste, and integrate the semantic-memory use case into a four-to-six-partner FTRI proposal of up to EUR 2.5 million.