

ARROWHEAD fPVN NEWSLETTER

Three years of progress, one shared direction

RESULTS, IMPACT AND THE PATH BEYOND ARROWHEAD fPVN · SUMMER 2026

WELCOME

Arrowhead fPVN closes its funded project phase with a practical legacy: industrial use cases, open technologies, stronger links between major data standards and a community that will continue the work. This final edition looks at what has been validated, what is now available for reuse and where the project's results will live beyond the formal end date.

IN THIS EDITION

- Seven industrial use cases across automotive, aerospace and process industry
- A technical legacy built around Eclipse Arrowhead, semantic models and autonomous translation
- Final impact, the Høvik summit and the next chapter for the community



"Transformative, autonomous and evolvable information interoperability for resilient production value networks"

45

PARTNERS

7

INDUSTRIAL USE CASES

8

CATALOGUED TECHNOLOGY
ASSETS

INDUSTRIAL VALIDATION

SEVEN USE CASES, THREE INDUSTRIAL DOMAINS



The project's use cases were selected to test interoperability where systems, data models and organisations meet. Together they show how service-oriented architectures, standardised information models and automatic translation can support more adaptable production value networks.



AUTOMOTIVE

- **EV battery lifecycle** — interoperable information across testing, operation and lifecycle optimisation.
- **Humans in the interoperable system** — speech-based interaction and modular services for noisy industrial environments.



AEROSPACE

- **Interoperable production-line management** — consistent exchange across engineering and operational systems.
- **Aircraft health management** — trend monitoring, predictive maintenance and fleet operations support.

THREE DOMAINS, ONE INTEROPERABILITY CHALLENGE

Automotive, aerospace and process industry differ in regulation, safety requirements and operating tempo, but each pilot faced the same underlying problem: getting independently built systems — vehicles, production lines, maintenance platforms — to exchange trustworthy information without custom point-to-point integration for every new connection.



PROCESS INDUSTRY

- **Pump-station engineering** — better reuse of engineering information across the asset lifecycle.
- **Digital twins for pulp and carton-board mills** — improved performance through interoperable data.
- **Technical information exchange** — structured collaboration across engineering suppliers and industrial stakeholders.



The catalogue connects Arrowhead projects and use cases with a structured, reusable knowledge base.

BEYOND THE PILOT

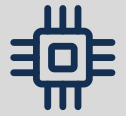
The final report records eight Arrowhead fPVN technological assets in the Innovation Catalogue. The catalogue links technologies to real deployment contexts, value propositions and reuse opportunities, making the results easier to find after the project.

[Explore the Arrowhead Innovation Catalogue →](#)

FROM PILOT TO REUSABLE ASSET

Each of the seven use cases proved that a specific integration challenge could be solved. The Innovation Catalogue is where that experience becomes something a new adopter can find, evaluate and reuse without repeating the original development work.

STANDARDS, SEMANTICS AND SYSTEMS THAT CAN EVOLVE



Arrowhead fPVN treated interoperability as a lifecycle problem rather than a one-off integration exercise. The final results combine the Eclipse Arrowhead microservice platform, major industrial data models and several approaches to automatic translation between them.



ECLIPSE ARROWHEAD 5.2.0

The 5.2.0 release added rule-based orchestration for fifth-generation Local Clouds through the SimpleStoreServiceOrchestration Core System, alongside improvements that support more flexible deployment and operation. The release gives future adopters a maintained, open technical base on which project results can continue to develop.

[Read the release overview →](#)



ARROWHEAD FRAMEWORK ONTOLOGY

The Arrowhead Framework Ontology makes deployment structure and dependencies explicit and queryable. RDF snapshots, SHACL validation, OWL reasoning and SPARQL queries support diagnosis, impact analysis and digital-thread use cases without requiring each individual system to have been designed for those questions.

[Open the publication and resources →](#)

TWO PILLARS OF THE TECHNICAL LEGACY

A maintained open-source platform and a machine-readable model of how it is deployed serve different purposes but reinforce each other: one gives adopters a stable base to build on, the other gives them the tools to understand and validate what they have built.



FOUR TRANSLATION TRACKS

- Ontology-based translation
- Machine-learning and AI-assisted translation
- Model-based translation
- Dataset and translation-quality assessment

Together, these tracks address the technical and semantic gaps that appear when industrial partners exchange information across independently developed systems and standards.



Standardisation contributions

The project maintained an active liaison with ISO and contributed to work involving ISO 10303, ISO 15926 and ISO 23726. The final report records more than 900 new classes and attributes prepared for the next revision of ISO 15926-4, including 484 media codes used by the Swedish pulp and paper industry. Related content was also added to the CFIHOS+ environment on the POSC Caesar Reference Data Cloud.

In parallel, the Arrowhead DSL for SysML v1.6 and SysML v2 was presented at the OMG Technology Meeting. The work connects service-oriented architecture, model-based systems engineering and ongoing alignment with the Industrial Data Ontology.

The standards work also reached beyond the consortium, feeding into related national initiatives: the DISC project in Norway and Digitala Stambanan in Sweden, where three use cases contributed directly to the development of ISO 23726-3 and to a better understanding of how reference data can improve everyday industrial information exchange.

[ISO 10303](#)[ISO 15926](#)[ISO 15926-4](#)[ISO 23726](#)[CFIHOS+](#)

BEYOND THE PROJECT

STANDARDS IN PRACTICE, ALREADY



Standardisation work rarely stops at a project's formal end date. Two developments from the final months show Arrowhead fPVN results already shaping work outside the consortium.



REAL-WORLD IMPACT: THE STEEL INDUSTRY

A newly granted RFCS project, PRISMA, is building a Unified Environmental Data Model (UEDM) on top of the Industrial Data Ontology, drawing directly on results from Arrowhead fPVN's WP2, WP3 and WP4. Started in April 2025 and coordinated by Luleå University of Technology at the request of the steel industry, the consortium brings together Europe's four largest steel-plant builders — Tenova, Danieli, SMS and Primetal — together with steelmakers including Tata Steel.



A NEW ALIGNMENT: THE DIGITAL PRODUCT PASSPORT

The EU's Ecodesign for Sustainable Products Regulation (ESPR) introduced the Digital Product Passport (DPP) as a parallel standardisation effort during the project's lifetime. Its eight underlying EN 1821x/1822x standards were officially launched on 28 May 2026. Arrowhead fPVN partners engaged directly in the CEN/CLC JTC 24 working groups, positioning the project's use cases to align with DPP requirements as they become mandatory — starting with the first dedicated act, covering EV and large stationary batteries.

DIFFERENT INDUSTRIES, SAME FOUNDATION

Steel manufacturing and product-passport compliance sit far apart in the value chain, yet both draw on the same semantic groundwork built during Arrowhead fPVN. That is what durable interoperability infrastructure looks like once a project ends: other initiatives build on it without needing to ask permission.

COMMUNITY AND IMPACT

THE FINAL EVENT, AND THE PROJECT'S FORMAL CLOSE



The Industrial Semantic Interoperability Summit, held at DNV in Høvik from 9 to 11 June 2026, provided the setting for the Arrowhead fPVN final event. Around 150 participants from industry, associations and academia joined three days of presentations, workshops and discussion. The programme showed that ontology-based interoperability has moved from a specialist topic to a practical concern for data strategy, AI readiness and cross-company engineering.

Two weeks later, on 23–25 June 2026, the consortium met the European Commission in Graz, Austria for the project's final review — presenting three years of dissemination, communication and standardisation results and formally closing out Work Package 11.



The Arrowhead fPVN team celebrating three years of collaboration.

FINAL REVIEW

 **23–25 June 2026**

Graz, Austria — final EC review of the project's results.

WHAT CONTINUES

An Implementor Forum around the ISO 23726 OBI standard family is emerging as a concrete next step, connecting organisations that develop and maintain ontology-based interoperability.

[Watch the summit recordings](#)





Final communication snapshot

The project also reached 319 LinkedIn followers and over 2,000 unique website visitors, and completed the planned four-edition newsletter series. These figures are taken from the final dissemination and standardisation report and represent the status recorded at project closure.

RESULT	PROJECT RECORD	WHY IT MATTERS
Industrial outreach	14 exhibitions	Direct contact with industrial and technology communities
Technical video library	96 clips / 296 subscribers	Reusable demonstrations, training and implementation guidance
Scientific outputs	11 journal papers / 30 conference papers	Peer-reviewed and specialist dissemination of project work
Demonstrations	6 conference demos	Technical results shown in practice
Training	34 tutorials / 3 PhD schools / 18 webinars	Capacity building for engineers and researchers
Professional networks	15 workshops and seminars	Collaboration across interoperability communities
Open repository	12 public deliverables	Long-term access to approved project documentation





Where the results live on

- **Eclipse Arrowhead** — the open framework, implementation resources and future releases
- **Arrowhead Innovation Catalogue** — use cases, technologies and value propositions
- **POSC Caesar Reference Data Cloud** — maintained industrial reference data and ontology resources
- **Project website and open channels** — news, public deliverables, presentations and videos

[Website](#) | [LinkedIn](#) | [YouTube](#) | [Innovation Catalogue](#)

Arrowhead fPVN is contributing to the development of interoperable and flexible industrial systems in Europe.

Through collaboration, research and technology development, the project has supported the transition toward more connected and adaptive manufacturing environments — leaving behind seven validated use cases, an open technical platform and a community that will carry the work forward.

THE END

Acknowledgement

This project has received funding from the Chips Joint Undertaking under grant agreement No. 101111977. The JU receives support from the European Commission.

Thank you to every partner, contributor and stakeholder who helped turn interoperability into shared industrial progress.