

H₂

IH-MIE CHALLENGE 6 • HYDROGEN DISTRIBUTION

H2VERIFY

Field-Verified Engineering Intelligence for Hydrogen Distribution Infrastructure

Sensifai B.V. × Panza Robotics, s.r.o.
January–December 2027 • €120,000 requested funding

Verify whether hydrogen engineering records still
match the physical installation.



The problem: the drawing is not always the plant

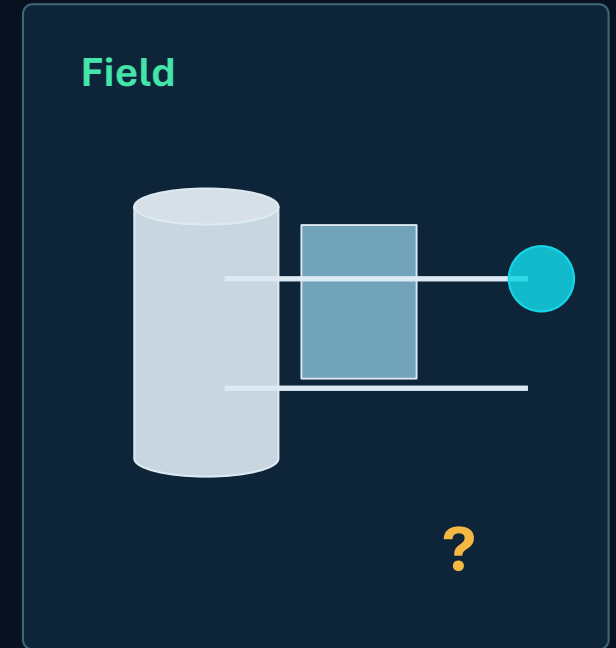
Configuration drift increases cost, risk, and uncertainty



Manual reconciliation today



Where the record drifts from reality, engineers spend time finding out what is actually installed.



- Changes during commissioning, maintenance and retrofits can outpace documentation updates.
- Manual walkdowns are slow, expensive and hard to repeat consistently.
- Untrusted records increase effort before maintenance, MoC and troubleshooting.

H2VERIFY focuses on configuration assurance: “Does the engineering record still match what is installed?”

H2VERIFY closes the document-to-field loop

From static P&IDs to verified configuration evidence



Read-only decision support: H2VERIFY highlights mismatches for operator review; it does not command plant equipment.

Technical architecture

Three layers, one evidence chain



What is new?

Configuration assurance — not just digitisation or inspection

H2VERIFY connects assets, evidence and discrepancies—not just documents or inspection photos

Existing tools answer isolated questions

- P&ID digitisation: “What does the drawing contain?”
- Robotic inspection: “What can the robot observe?”
- Asset databases: “What was entered into the system?”

H2VERIFY adds the missing question

Does the engineering record still correspond to the physical hydrogen installation?

Hydrogen ontology

Evidence-linked findings

Root-cause grouping

Device-independent evidence

DEXPI-oriented graph

Innovation = field-verified configuration assurance for hydrogen distribution and refuelling assets.

TRL 6 starting evidence

Existing technology base + H2-specific digital demonstrator

- GraphPID: operational P&ID-to-engineering-graph platform
- RoundProof + GaugeVision: inspection evidence and analogue gauge digitisation
- Artaban: developed quadruped with prior industrial deployment
- Sensifai-Panza: existing DORAI ROS2 / Artaban integration work
- H2FIRST benchmark: five hydrogen-station P&IDs, 403 tags, 26 classes
- Discrepancy demo: five controlled configuration changes detected

TRL 6

starting point

403

tagged hydrogen
engineering items

26

equipment /
instrument classes

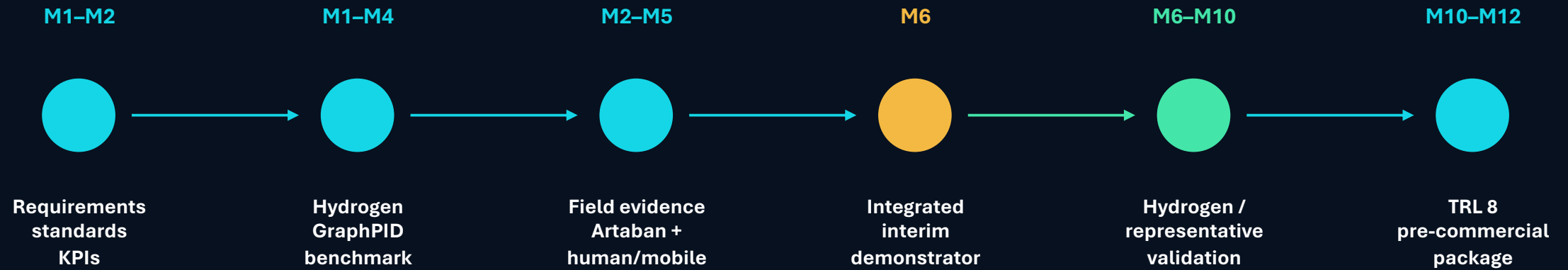
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controlled drift
events detected

The project funds integration, hydrogen adaptation and validation — not basic research.

Validation path to TRL 8

Milestone logic for a fixed 2027 project window



June 2027 milestone: objective integrated demonstrator, independent of unrestricted operational site access.

Final outcome: TRL 8 qualified pre-commercial system with validation evidence and deployment package.

≥90% extraction precision/recall

≥95% discrepancy recall

0 ATEX-zone robot operations

target ≥40% effort reduction

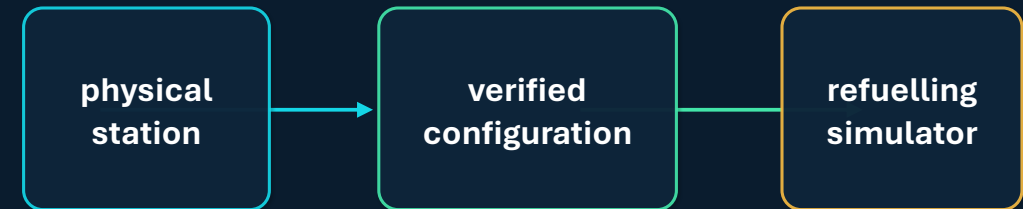
Programme alignment

A configuration-assurance layer for Challenge 6

Challenge 6: Hydrogen Distribution

- Improves reliability of engineering information used for operations and modification
- Reduces manual complexity in configuration verification
- Supports regulatory readiness through auditable evidence chains
- Creates DEXPI-oriented data that can interface with other digital tools
- Directly relevant to HRS/distribution equipment, storage, valves, gauges, piping and dispensers

Pioneer synergy



H2VERIFY can provide verified station configuration context for the Challenge 6 bidirectional refuelling simulator.

H2VERIFY strengthens the digital foundation needed to scale hydrogen mobility infrastructure.

Market and impact

Software-led configuration assurance for hydrogen assets

Target users

HRS operators
Hydrogen production/storage sites
Gas distribution companies
EPCs and inspection providers

Commercial offer

Site onboarding / engineering digitisation
Annual software licence
Optional verification campaigns
Partner-enabled services

Measured value

Reduced verification effort
Earlier discrepancy detection
Better handover / retrofit readiness
Reusable evidence baseline

**lower manual
effort**

less rework

**asset lifecycle
reuse**

**recurring
revenue**

Environmental impact is indirect but credible: fewer repeat walkdowns, reduced rework, and better lifecycle management for hydrogen infrastructure.

Consortium and outcome

Two SMEs with complementary execution capability

Sensifai B.V.

GraphPID • RoundProof • GaugeVision
AI, knowledge graphs, data validation, productisation

Panza Robotics, s.r.o.

Artaban quadruped • ROS2 • field deployment
Slovak industrial network and validation support

By December 2027, H2VERIFY will deliver:

- TRL 8 pre-commercial demonstrator
- validated hydrogen engineering-graph workflow
- field / representative validation evidence
- deployment and safety documentation
- commercialisation and replication roadmap

Ask: support a practical digital layer that makes hydrogen infrastructure records verifiable, traceable and ready for scale.

H2VERIFY