

Intelligent Field IQ

Bringing real-time intelligence to industrial field operations



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Executive summary

Industrial operations are dangerous, complex, and time-critical — and the intelligence that could make them safer has, until now, been trapped in the training room or in months-long digital-twin projects. Field IQ changes that. By combining fast visual recognition, augmented-reality anchoring, a functional model of the equipment, scenario simulation, and guided procedures, Field IQ lets a worker point a phone at real equipment and, in seconds, receive intelligent, situated assistance — with no pre-built 3D model. This paper explains the problem, why it could not be solved before, how Field IQ works, why it is defensible, and where it goes next.

1. The problem: intelligence stops at the training room

For 25 years, simulation and training have prepared workers for the job. But preparation is not the moment of risk. The accident happens later — in live operations, at 2 a.m., on a real skid, with no expert on site and no time. The cost is measured in lives and dollars:

- ~1,000 people die every day in workplace accidents worldwide.
- Oil and gas loses a worker every few days on average.
- A single serious platform incident can cost \$38 million or more.

The tools that reach the field today — remote video, checklists, static manuals — carry no understanding of the equipment in front of the worker. The tools that carry understanding — digital twins, engineering models — never make it to the field. Field IQ closes that gap.

2. Why it could not be built before: four breakthroughs

Field IQ is the convergence of four capabilities, each of which solves a distinct hard problem. None alone is sufficient; together they are transformative.

- Genesis — turns any procedure into an AI-guided, self-verifying experience (content → intelligence).
- EON Universal — recognizes and configures real equipment: what it is, its parts, its structure (reality → a model).
- Situation Room — a flight simulator for your equipment; a living scenario library that simulates what-ifs and their consequences (a model → foresight).
- Field IQ — delivers all of it hands-free at the point of work, on phone and AR glasses (intelligence → the worker's eyes).

3. How Field IQ works

The central design decision is to stop building geometry. Rather than a photorealistic 3D mesh — which costs hours per asset and is impractical in the field — Field IQ builds a functional model: a graph of components (nodes) and their connections (edges), anchored to the real world through augmented reality. This is orders of magnitude faster to produce and is exactly enough to guide, assist, and simulate.

3.1 Perception — recognition with location

The worker performs a brief pan across the equipment. Frames are analyzed by a vision-language model (Gemini), which returns each component with a label and a bounding box in one step — recognition and localization together. Because the model carries broad world knowledge, it generalizes to equipment it has never seen, with no per-asset training.

3.2 Spatial anchoring — placing it in the real world

Each bounding box is projected into 3D via an AR raycast using the device's spatial tracking (SLAM). The result is a world-anchored tag that stays fixed to the real component as the worker moves — the same anchoring technology already shipping in the Field IQ iOS app.

3.3 Topology — grounding to engineering data

Deriving connectivity from images alone is unreliable. For real customers, connectivity is already documented in Piping & Instrumentation Diagrams (P&IDs) and asset registries. Field IQ matches recognized components to those records and inherits the known topology and behavior — turning an intractable perception problem into a tractable matching problem.

3.4 Simulation — the Situation Room

With a functional graph in hand, the Situation Room becomes possible: state changes propagate through the graph. Close a valve and the downstream line loses flow; open a disconnect and the motor de-energizes. A growing scenario library lets workers rehearse over-pressure, valve failure, isolation errors and more — a flight simulator for the exact asset in front of them.

3.5 Guidance — Genesis

The experience flows into guided, self-verifying procedures: step-by-step instructions with photo verification, delivered hands-free, keeping the worker on every attested step of a safety-critical task such as lockout/tagout.

4. What makes it unique

Competitors own a piece of the problem. Field IQ is the only system that delivers all four at once:

- Speed — seconds, not months. No modeling, no scanning rigs.
- Accuracy — model-based recognition, grounded in real engineering data, anchored in AR.
- Visual — overlaid on the real world; the worker sees it exactly where it is.
- Intelligence — understanding of structure, physics and consequence, not just labels.

AR field-service tools provide the visual layer but no understanding. Digital-twin platforms provide understanding but take months and remain tied to the desk. Vision-AI tools provide recognition but no spatial anchoring or simulation. Field IQ combines all four, in the field, in seconds.

5. The defensible moat: the capture flywheel

Every scan in the field is a labeled example of real industrial equipment. More captures sharpen recognition, which drives more captures — compounding into the world's largest proprietary dataset of industrial equipment perception, plus a growing library of functional templates. The hundredth pump skid is recognized instantly because the first ninety-nine have been seen. There is no 3D model to copy and no dataset to buy; the moat widens with every use.

6. Representative use cases

- Lockout/Tagout (LOTO): recognize the isolation points, simulate the energy state, and guide the worker through a verified isolation sequence.
- Inspection rounds: identify assets and instruments, capture readings, and flag anomalies against expected state.
- Troubleshooting assistance: understand how the system connects to reason about symptoms and likely causes.
- Commissioning and handover: verify as-built configuration against design data.

7. Roadmap

- Phase 1 — a “Recognize” mode in the existing Field IQ app: pan → recognize → AR tags → connection lines → tap-to-simulate on a reference asset.
- Phase 2 — generalized recognition across assets; live ingestion of customer P&ID and asset data; multi-view graph fusion; the capture-to-improvement flywheel with a design partner.

- Phase 3 — deeper Situation Room simulation across asset types (energy isolation, flow, what-if) — the differentiator no competitor offers.

8. Conclusion

Field IQ is not a new product. It is the moment EON's technology was built toward: intelligence that leaves the training room and reaches the field, where it protects workers and assets in real time. The pieces exist, they are integrated, and the app is already in testers' hands. What remains is to point it at the world — and let every capture make it stronger.