EON AI Ventures

EON AI VENTURES · WORK INTELLIGENCE

Facility-Agnostic Field Intelligence

Turning any worker into a thirty-year expert

A composable equipment ontology for the industrial enterprise

White Paper Companion Deck · June 2026

THE PROBLEM

The expertise cliff

The people who hold thirty years of judgment are retiring. The people replacing them are green — in environments where being wrong is a safety problem, not an inconvenience.

Demographic loss

Decades of tacit diagnostic intuition retire with the people who built it — and it was never written down.

Procedural fragmentation

What is documented is scattered across SOPs, P&IDs, and manuals — rarely available at the point of work.

Configuration explosion

Thousands of individually engineered facilities. No two alike, so site-by-site training never scales.

The traditional fixes — long apprenticeships, flying scarce experts between sites — do not survive the retirement wave.

THE VISION

Any worker. Any facility.

A technician three weeks on the job is sent to a facility no one has worked before. They put on the glasses. The system recognises every component in front of them, knows how each behaves, and guides each step — watching the work, flagging what looks wrong, and escalating to a human when the situation exceeds what it can safely advise.

Recognise

Names every component on sight

Guide

Composes the correct procedure, step by step

Escalate

Stops and hands off when unsure

The worker is green. The guidance is not.

THE CORE INSIGHT

Composition, not enumeration

A facility is not a monolith to be memorised. It is a graph assembled from a finite library of known components.

Enumeration

Model every facility.

Scales with the number of facilities — An unbounded, ever-growing problem

Every new site is a new modelling effort — The project never ends

Permutations are effectively infinite — Hopeless

Composition

Model the component vocabulary.

Scales with component classes — A bounded library — ~50 to start

Recognise nodes, infer topology, compose — Works on facilities never seen

Every job makes the system smarter — A product that compounds

You don't program 5,000 locations. You program the vocabulary the locations are built from.

THE MATH

Fifty classes, not five thousand locations

~50

equipment classes
to start

15

top classes carry
most daily value

80%+

of real field
interactions covered

Tier 1 is small enough to build now — and large enough to matter. Everything beyond it is the flywheel doing its job.

THE COMPONENT ONTOLOGY

Anchored to the industry's own standard

Built on ISO 14224 — the petroleum industry's equipment taxonomy. When the system recognises a component, its output maps straight into the customer's existing reliability and maintenance data. It speaks their data language on day one.

12

classes

Rotating

15

classes

Static & mechanical

11

classes

Valves & flow

7

classes

Instrumentation

8

classes

Piping · electrical · safety

54 classes across five families — the full vocabulary a field technician physically touches.

WHAT 'KNOWING A COMPONENT' MEANS

The six-layer competence record

1. Identity

Nameplates

ISO class, aliases, tag pattern

2. Geometry

Photo corpus

3D model + multi-angle imagery

3. Anatomy

Engineering teardown

Subcomponents & boundary

4. Function

Skill capture

What it does; operating envelope

5. Behavior

Simulator

How it responds to upsets

6. Procedure

SOP library

Operate · inspect · isolate · fix

Recognition keys on layers 1–2. **Guidance** composes from layers 3–6.

COVERAGE

Three tiers, one bounded library

TIER 1

~50 classes

Core equipment a technician physically touches

80%+ of interactions

TIER 2

~300 types

Variants and subtypes for robust breadth

Rarely surprised

TIER 3

1,000–2,000 items

Maintainable items — seals, bearings, actuators

Long tail, over time

The top 15 classes — pumps, compressors, separators, exchangers, control & relief valves, core instruments — carry most of the daily value.

THE ARCHITECTURE

The Intelligence Flywheel

EON Conductor

Orchestration — routes each task to the right model and knowledge

EON Verdict

Trust gate — decides when to guide a green worker and when to escalate

In a high-consequence environment, the Verdict gate is not optional — it is the difference between a helpful system and a dangerous one.

HOW IT WORKS

The green-worker journey

1

Recognise

Identify the class; read nameplates, tags, gauges

2

Locate

Infer local topology — role, not just name

3

Compose

Assemble the right procedure, even for an unseen layout

4

Verify

Watch the work; flag deviations in real time

5

Escalate

Low confidence or safety-critical → hand to a human

6

Learn

Verified outcome compounds the library

REALISM

What is deliverable today

Deliverable now

- Visual recognition of class & type from labelled 3D + imagery
- Nameplate, tag, and gauge reading
- Local topology inference from sight + engineering logic
- Procedure retrieval and composition from the SOP library
- Simulator-grounded behavior — cause and effect, not just steps

Genuinely hard

Multi-sensory diagnosis — Veterans use sound, vibration, smell — recognition is solved; diagnosis is only partial

Novel upset conditions — When several systems interact unexpectedly — the hardest mile

Calibrated uncertainty — Rust, occlusion, undocumented retrofits — the system must know when it is unsure

The deliverable core compresses a green hire toward a competent multi-year technician. That capability alone is the business.

THE HONEST FRAMING

We don't ship a thirty-year veteran on day one.

We ship a reliable multi-year technician on day one — and the flywheel compounds it toward the veteran, facility by facility, month by month.

A system that demonstrably gets smarter is a moat that generic, public-knowledge AI cannot build.

DEPLOYMENT REALITIES

What most people miss

Hazardous-area hardware

Live process zones require intrinsically safe, certified devices (ATEX / IECEx). A hard regulatory gate — not a preference.

Connectivity & edge

Remote, RF-restricted sites. Must run real capability at the edge and degrade gracefully.

Accountability

A human stays accountable for safety-critical calls, with an auditable record of guidance and action.

Brownfield drift

Facilities don't match their drawings. Topology inference must tolerate as-built reality.

Change management

The experts whose knowledge is captured must be partners, rewarded — not treated as extraction.

THE STRATEGIC FRAME

Makers vs. takers — and the fourth system of record

The moat is the competence

General AI averages public knowledge — a taker. Captured equipment-specific expertise exists nowhere online — a maker. The moat is not the model; it is the competence and the flywheel that compounds it.

Work Intelligence = the 4th system of record

ERP records resources. CRM records customers. PLM records product. None records how work is actually performed. Work Intelligence is that living record of operational competence.

ERP	CRM	PLM	WORK INTELLIGENCE

Three systems of record run the enterprise. The fourth captures the expertise that makes it run.

ROADMAP

Five moves to scale

1	**Recognition core**	Identity + geometry across ~50 classes. The glasses reliably name what they see.
2	**Procedure layer — top 15**	Full guidance for the highest-frequency classes, where daily value concentrates.
3	**Behavior via simulator**	Ground rotating and fired equipment in simulated cause-and-effect.
4	**Verdict gates**	Hard escalation on every relief valve, shutdown valve, F&G detector, pig trap, wellhead, lineup.
5	**Topology & compounding**	Compose guidance for unseen layouts; turn the Compound IQ loop so the library improves with every job.

EON AI VENTURES · WORK INTELLIGENCE

The fourth system of record for the industrial enterprise.

Capture the expertise. Recognise the parts. Compose the guidance. Compound it with every job.

EON UNIVERSAL · THE 'WHY NOW'

Why this was impossible—until today

Four hard problems. One moment. And a system that only works when all four are solved together.

Investor & strategy briefing · June 2026

THE QUESTION BEHIND THE QUESTION

The vision isn't new

People have wanted a veteran in the worker's ear for thirty years.

The dream — walk a green technician through any facility with expert guidance — has been obvious for decades. Which raises the only question a serious investor will ask:

"If it's so great, why hasn't someone already done it?"

THE ANSWER

Four problems crossed the line at once

Each of these was, on its own, a research project that didn't work in the real world. They became usable at roughly the same moment — and the system is worthless unless all four work together.

1

Recognition

that survives the real world

2

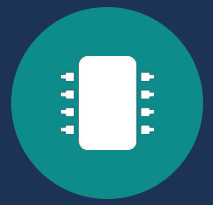
Reasoning

over a novel combination

3

Interaction

real-time, situated advice



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Edge economics

all of it, affordably, anywhere

Solve three and you have nothing. The window opened when the last one crossed.

PROBLEM 1 OF 4

Recognition that survives the real world

The capability finally crossed from fragile demo to deployable product.

THEN — WHY IT WAS IMPOSSIBLE

Old computer vision could spot a clean object in a clean photo. It could not reliably identify a rusty, insulated, half-occluded pump in bad light at an odd angle — the demo worked in the lab and failed on the catwalk.

NOW — WHAT CHANGED

Modern vision models, trained with synthetic data rendered from 3D models under simulated wear and occlusion, make field recognition robust instead of fragile.

PROBLEM 2 OF 4

Reasoning over the combination

The capability finally crossed from fragile demo to deployable product.

THEN — WHY IT WAS IMPOSSIBLE

Even with every part recognized, older systems were lookup tables — ‘that's a pump, here's the pump page.’ They could not reason that this pump, connected to that vessel, in this configuration, means something specific.

NOW — WHAT CHANGED

General reasoning over a novel arrangement of known parts — composition — is now deployable, so guidance can be assembled for a facility never seen before.

PROBLEM 3 OF 4

Real-time, situated interaction

The capability finally crossed from fragile demo to deployable product.

THEN — WHY IT WAS IMPOSSIBLE

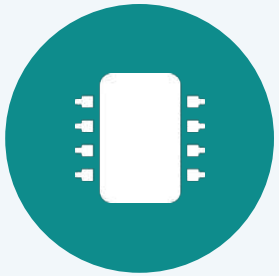
A manual is static. A veteran in your ear is interactive — they answer back, adapt to what they see, and change the instruction when the worker does something unexpected. That responsiveness did not exist in usable form.

NOW — WHAT CHANGED

Fast, low-cost language-and-reasoning models generate correct, step-by-step, responsive guidance live — and know when to say ‘stop, I'm not sure.’

PROBLEM 4 OF 4

Edge economics



The capability finally crossed from fragile demo to deployable product.

THEN — WHY IT WAS IMPOSSIBLE

Even if each piece existed, running vision + reasoning + interaction together, fast, on a device in a field with no connectivity, was economically impossible. It stayed a science-fair project.

NOW — WHAT CHANGED

The collapse in AI cost turns the lab demo into a product you can put on five thousand sites and run at the edge, offline.

The chain breaks if any link is missing

Recognition without reasoning

= a label-maker

Reasoning without recognition

= blind

Both, without interaction

= a smarter manual

All three, without cheap edge

= a lab demo

Each piece alone is useless. The value exists only in the convergence.

The window opens with the last link

Because all four are required, the window could only open when the slowest of them — affordable, real-time reasoning at the edge — finally crossed the line.

That moment is now — not three years ago, and the reason no incumbent has shipped it.

The convergence is the entry fee. The flywheel is the moat.

The convergence

Cost of entry

Everyone gets access to the same four capabilities at the same time. The convergence explains why it's possible now — but it is not, by itself, defensible. It's the ticket to the game.

The flywheel

Durable advantage

On top of the convergence we stack the one thing money can't instantly buy: captured proprietary expertise that compounds with every job. That's the moat — and it grows while competitors are still assembling the entry fee.

We are standing on the first moment all four are buyable — and building the compounding asset on top before anyone else starts.

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The hard part was never the vision.

It was that the vision required a convergence nobody could assemble — **until now.**