



AVEVAWORLD

ACCELERATE INDUSTRIAL INTELLIGENCE

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The Industrial AI Triple Mandate: Smarter, Safer, Sustainable

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This is the Next 2 Years in Industrial AI

From: Tools You Use

To: Systems that Act



Models



Insights



Cloud-only



Generic AI



Agents



Actions



Edge autonomy



Domain-fluent AI

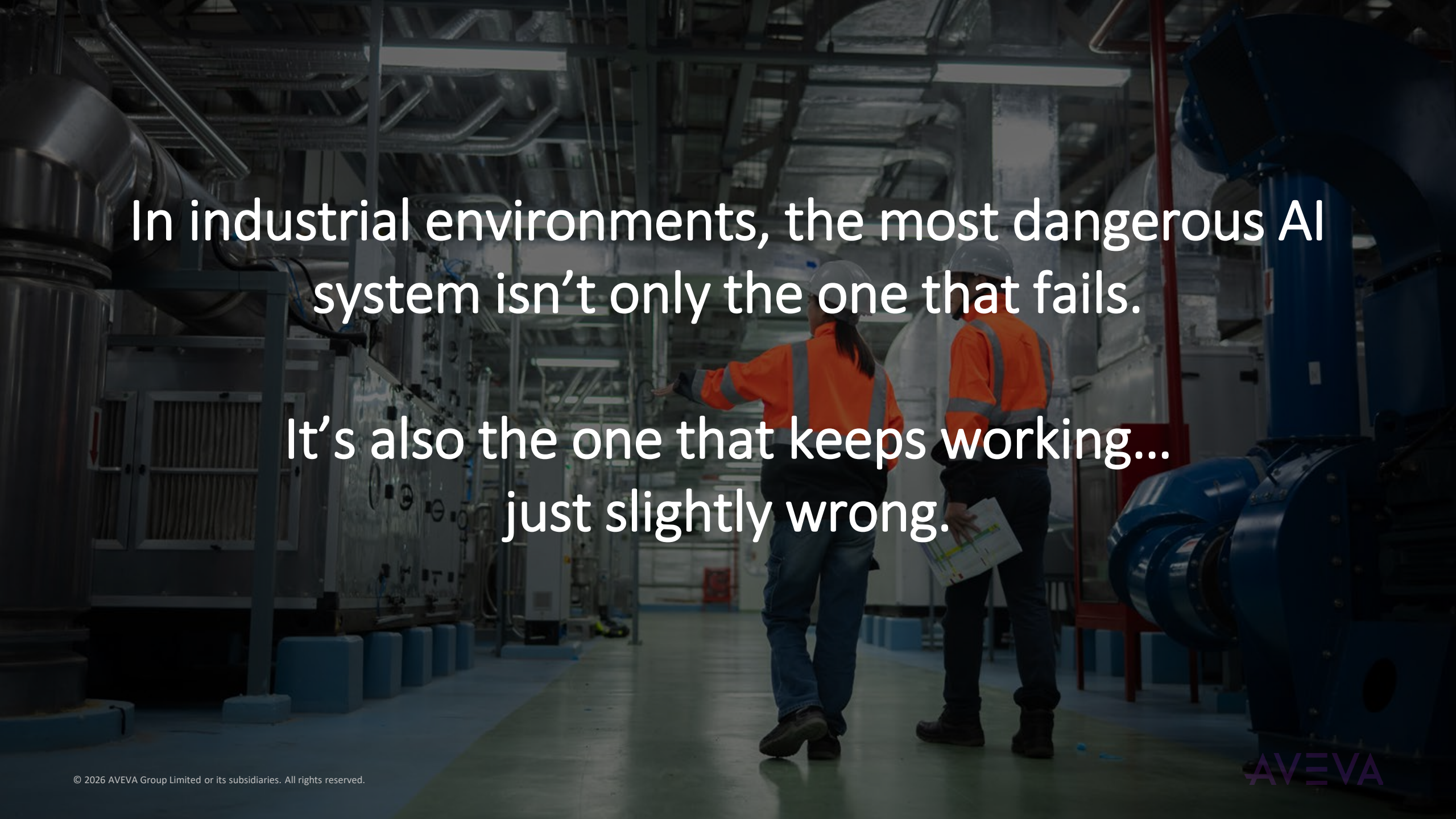


As AI technologies advance, they are not proportionally more understandable

Models are improving faster than:

- ✓ Governance
- ✓ Interpretability
- ✓ Interoperability
- ✓ Operational Readiness

In industrial environments, these gaps matter more than anywhere else.

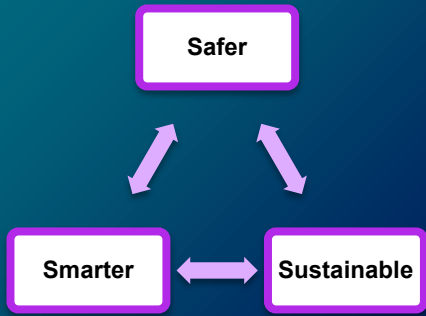


In industrial environments, the most dangerous AI system isn't only the one that fails.
It's also the one that keeps working...
just slightly wrong.

THE IMPERATIVE

Industrial AI must be smarter, safer, and more sustainable.





THE TENSION

In reality, can you maximize all three at the same time?

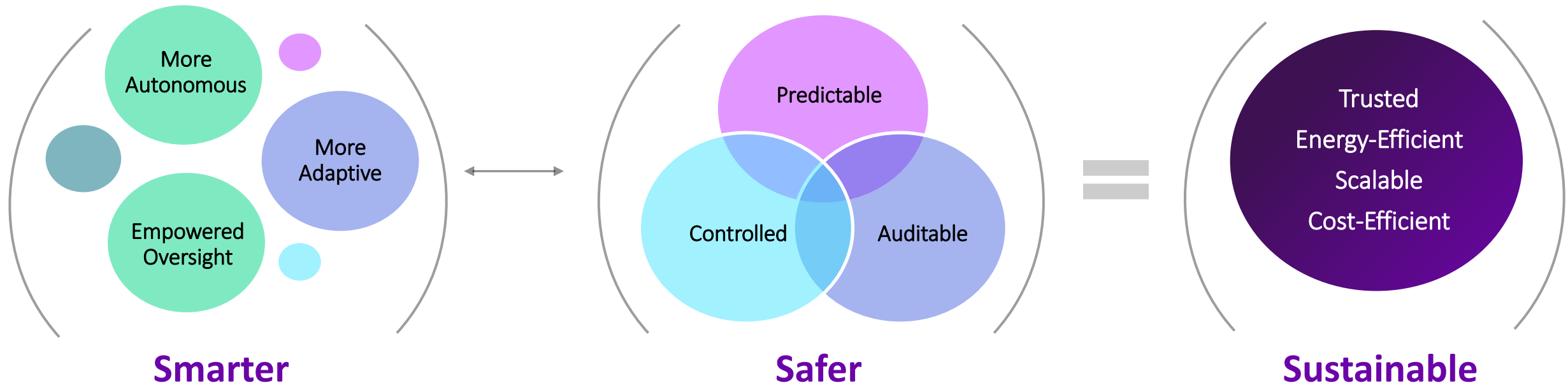
This tension isn't a reason to stop.

It's the mandate and reason to be more deliberate because in industrial environments, the cost of error is non-zero.

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The Triple Mandate is not a Trade-Off

Responsible Industrial AI is not a concept, it is a deployment strategy



What Responsible Industrial AI Requires Now & At The Frontier

Bounded Autonomy

AI that acts – but only within clearly defined operational guardrails

Clear definition on what AI should and should not do

Hard constraints > soft guidelines

Closed-Loop Accountability

If your AI learns, your governance must learn faster

Continuous monitoring

Feedback loops tied to outcomes

Ownership of decisions – not just models

Industrial-Grade Resilience

Fail-safe design

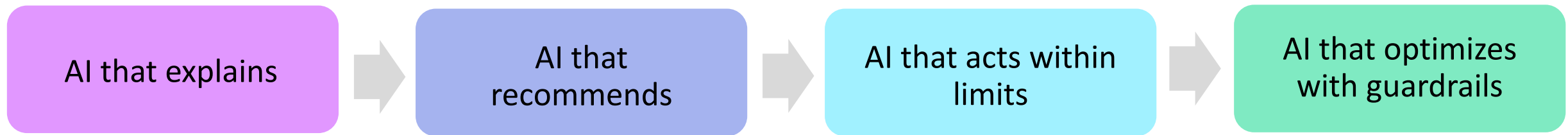
Degradation modes

Human override that works under pressure

Responsible Industrial AI isn't about slowing innovation.
It's about making sure control stays one step ahead.

Journey to Action

Industrial AI is not a binary choice between human control and full autonomy.
It is more a question of how much permission the system earns over time.



Journey to Action: The Blueprint

Practical steps that allow industrial AI to move from insight, to recommendation, to controlled action

BUILD

(The Foundation)

- Shift from "generic" to "domain-specific"
- Extend AI capability with task-focused tools
- Build on top of your industrial knowledge graph and real-time sensor data
- Ground AI in your physical reality

MANAGE

(The Oversight)

- Live observability and "Health" Scores
- You don't just "deploy" AI; you monitor its drift
- If AI moves outside "safe" parameters, it auto-shuts down
- Accountability through continuous monitoring

SCALE

(The Expansion)

- Template-driven deployment
- Once a "Bounded" agent works on one pump, you don't rewrite the code for the next—you template the guardrails
- Standardized safety allows for speed

Operationalizing the Triple Mandate

What should industrial leaders do differently now?

Benchmark for Drift

- ✓ Identify where "slightly wrong" becomes a non-zero risk before it impacts production

Code Safety into the System

- ✓ Transition from policy PDFs to hard-coded, real-time API guardrails
- ✓ Decide which decisions AI can recommend, and which ones it can actually act on
- ✓ Put monitoring and override mechanisms in place before scaling

Empowered Override

- ✓ Train operators to challenge the machine, not just monitor it
- ✓ Human intelligence remains the final, domain-fluent layer of control

Standardize the Stack

- ✓ Ensure every model, from every vendor, respects the same industrial guardrails and physical limits

Smarter + Safer = Sustainable

When you build it right, you don't have to choose between the three mandates; they reinforce each other

Control Room Guidance



Context

- ✓ Leveraging the innovative capabilities of NLR eGridGPT, a fine-tuned generative AI model designed for on-prem deployment in the control room

Challenge

- ✓ Assisting operator decision support
- ✓ Enhancing real-time grid awareness and predictive operations
- ✓ Managing grid complexity for energy transition
- ✓ Improving automation, accuracy, operator training and simulation

Solution

- ✓ By integrating AI and Digital Twins with the AVEVA PI System, NLR eGridGPT enables the control room of the future - delivering real-time, decision-ready intelligence for modern grid operations

Dynamic Process Control



Context

- ✓ Harnessing advanced analytics and real-time data in the cloud to enhance product quality and minimize waste

Challenge

- ✓ Fully manual operation of the agglomeration process caused variability in product moisture and density
- ✓ Low product yield due to low moisture
- ✓ Inconsistent product caused unnecessary waste

Solution

- ✓ AVEVA Advanced Analytics Perfect Quality model was used to predict quality parameters of powder production and recommend optimal process setpoints
- ✓ Removed need for resource constrained on-premises systems to carry the additional burden of supporting this solution

The Near Future: The Autonomous Industrial Enterprise

When safety is the floor, sustainability is the ceiling

Today: Tools You Use	The Frontier: Systems that Act
Data-Rich, Information Poor: Operators spend 60% of their time finding data to explain a failure	The "Domain-Fluent" Assistant: AI proactively surfaces the cause and simulates the solution before the alarm ever sounds
The Safety Handbrake: Innovation is slowed by the fear of things going "slightly wrong"	The Innovation Accelerator: Bounded Autonomy allows you to push for 100% efficiency because the guardrails are hard-coded
Fragile Systems: An "edge case" creates a catastrophic knowledge gap	Institutional Intelligence: Mission critical expertise is captured, templated, and scaled across every asset in the fleet

A dark, atmospheric photograph of an industrial facility, likely a refinery or chemical plant, with complex piping and structures. The image is dimly lit, with a blueish-grey color palette, and serves as the background for the text.

Industrial AI is the most powerful tool for sustainability and growth we will build.

The next advantage will not come from adding AI everywhere; it will be knowing where AI can safely and impactfully move the operation forward.

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