



Industrial AI: Building trust in the autonomous factory

How safety, AI and human
expertise will shape the next era
of manufacturing

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CEO

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**Add value.
Inspire trust.**



01

General Overview

Powered by experience and teamwork, we enable change



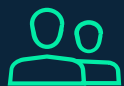
1,000+

Locations
worldwide



160

Years of safety,
security &
sustainability



>30,000

Employees



€3.6

Billion in annual
revenue



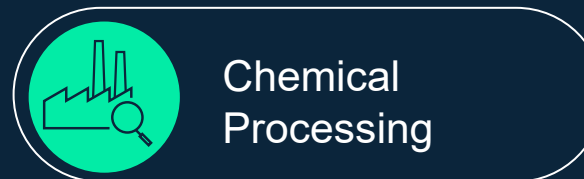
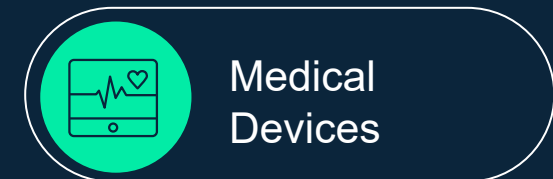
How do we raise industry benchmarks?

By turning expertise into value



Our experts help businesses to gain market access and manage risks.

-  Auditing
-  Inspection
-  Management System Certification
-  Product Certification
-  Technical Advisory
-  Testing
-  Training
-  Verification & Validation



02

Industrial trends



The new industrial era is characterized by AI, robotics, and autonomous systems.

Technology alone will not determine success. Trust will become the decisive factor.

The next industrial revolution needs more than AI

Why Japan matters



2nd largest
producer in
robotics



Decades of
operational
know-how



Export
Powerhouse



Future Trends:
Healthcare,
Service Robotics
and AI

How safety, AI and human expertise will shape the next era of manufacturing



Software eats hardware, AI eats software



From Automation to Autonomy



From physical reality to digital twins



From reactive to predictive maintenance



Trust becomes the new competitive advantage and TÜV SÜD is the trusted partner to enable safe innovations



**Cyber
Security**



Why trust matters

**Functional
safety**

**Human in the
loop and human
in the lead**

03

Physical AI & Digital Trust

Physical AI – intelligence that touches the world

AI no longer lives only on a screen. It runs on factory floors, in inspection cells, on collaborative robots and on autonomous material- handling systems. TÜV SÜD assesses all of it.

■ Inspection & quality automation

Computer-vision and ML-driven quality assurance for high-throughput production cells.

◆ Robotic & autonomous systems

Safety and conformity assessment for collaborative robots, AMRs and line-side autonomous handling.

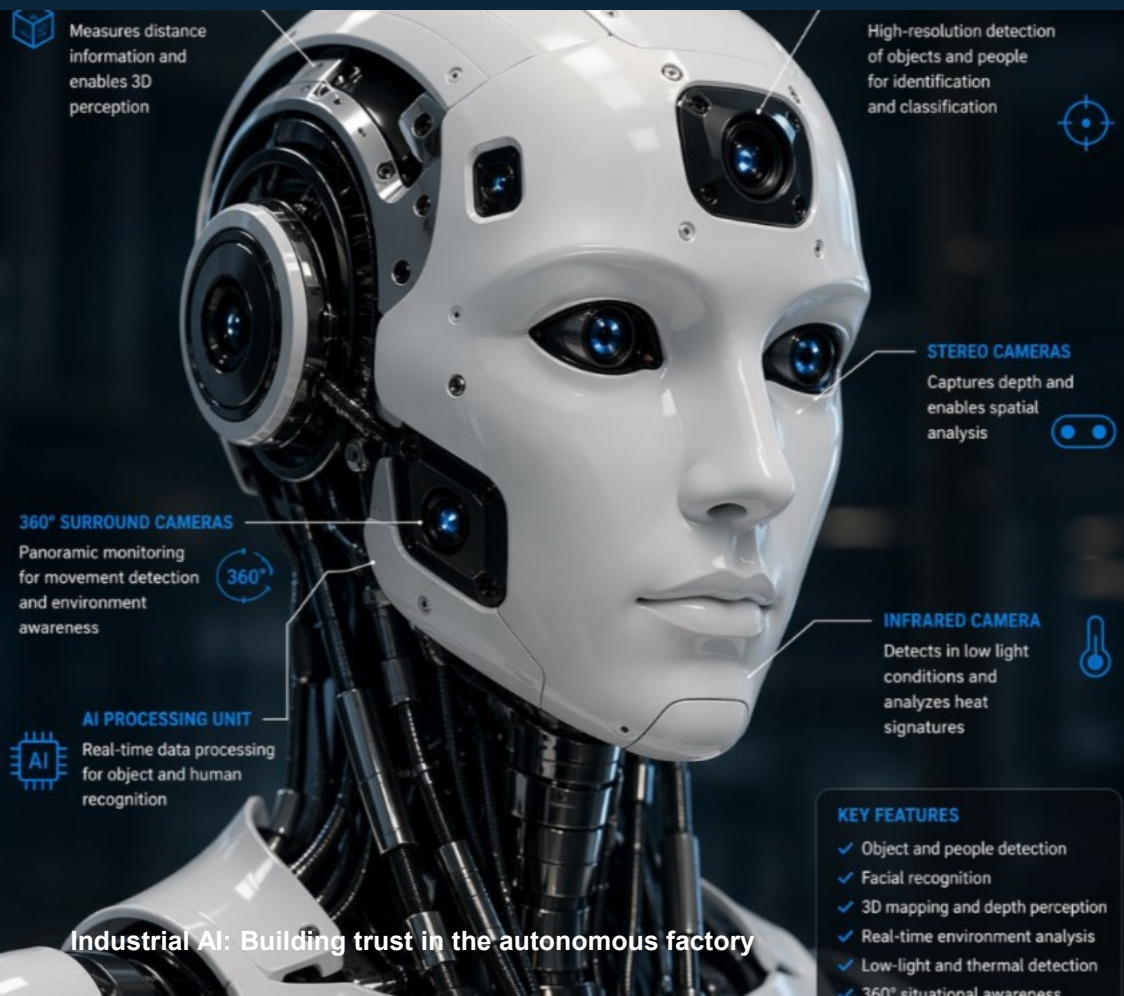
● Industrial-grade ML evaluation

AI models reviewed under real industrial conditions - robustness, bias, drift and edge-case failure modes.

In collaboration with TÜV AI.Lab



Humanoid robots are on the verge of taking a pivotal role across industry, services and public spaces.



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Humanoid Robot Certification

TÜV SÜD takes a wide-ranging approach that supports the entire certification journey



Cybersecurity:

Protection of networked systems.



Functional safety:

Assessment of safety-critical systems.



AI assurance:

Assessment of AI systems in compliance with the EU AI Act.



Sensor certification:

Testing and validation of modern sensor technologies.



System integration:

Assessment of complex entire systems.

Expanding need across the full trust lifecycle of Physical AI ...



Shape the assurance framework

accenture



- Physical AI Safety Suite embeds safety from planning to operation and scale.
- TÜV SÜD: Assesses risks, validates AI behavior, and provides independent safety assurance.



Physical AI Pilots we are currently involved in...



SAFELOG  ScaliRo

 mimic

accenture 

AGV/AMR OPS COMPLIANCE

- Build a **TrustOps operator-side compliance layer** integrated into existing AGV systems (SAFELOG)
- Focus: **regulatory Intelligence/ Validation/ Automation layer**:
 - Integration into existing fleet management/ manufacturer systems
 - Workshop for detailed positioning/ requirements in July

HUMANOID AI AT SCALE

- Use TrustOps to enable **safe deployment of Mimic Robotics in Audi environment**
- Focus on the **assessment of safety impact**, regulatory aspects, AI / robotics standards ahead of scaling in production
- Translate one real deployment into a **reusable safety logic** for AI robotics
- Understanding the regulatory role in advanced AI/ Robotics

END-TO-END PLATFORM

- TrustOps for **site certification and ongoing monitoring**
- Focus on:
 - Automated risk assessment
 - Runtime compliance monitoring
 - Change impact analysis
 - Evidence generation

Success factors for scaling physical AI



- Just another technology

- I become redundant

- It's dangerous

- I don't trust AI

- We need regulation

- Independence & sovereignty

- 100% right first time



- Reinvent manufacturing

- AI helps my work / career

- Safety promotes trust

- Trust promotes adoption

- We need reliable rules

- Working in partnerships

- Experiment - fail fast

**Thank you for your attention.
Please access below for Patrick Vollmers' contact info.**



TÜV SÜDのAI関連サービス



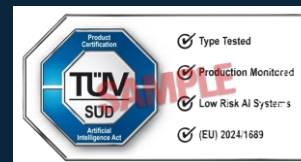
EU AI法関連 - 適合準備フェーズ

- AI法概要トレーニング
- AI法要求事項トレーニング
- リスククラス評価
- スコープ診断
- ギャップ分析

EU AI法関連 - 適合性評価

- 適合性評価
- AoC発行
- 認証書発行 *準備中
- TÜV SÜDマーク発行

TÜV SÜDの新しい「ローリスクAIシステム向けマーク」は、適合性評価の法的義務がないAIにも構造化された評価を提供します。



既存EU法令でのAI対応

- 欧州機械規則
- 欧州医療機器規則／体外診断用医療機器規則

ISO/IEC 42001

- トレーニング
- 監査
- 認証書発行



Unique AG: Pioneer in responsible AI
now with ISO/IEC 42001 certification

UNIQUE

その他

AI Verify

- AI Verifyフレームワーク
- AIガバナンスに関する試験

IEEE CertifAIED

- IEEEの倫理フレームワーク
- 認証書発行



ISO PAS 8800

- トレーニング



Built on trust. Open to partnership.

 @tuvsud

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**Add value.
Inspire trust.**