



Digital Risk and Compliance Management

From show-stopper to supporter through technological innovations using the example of iaHAZOP

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**Add value.
Inspire trust.**

Situation across Industry Sectors



Challenges



Demographic change



Changing market requirements / supply chain turbulences



Increasing bureaucracy



Sustainability



Events and KPI

Consequences

Industry needs to solve challenges of the future

- with fewer and less skilled workforce
- in higher frequency
- under more complex regulations
- and with high pressure to operate sustainable, financial efficient and resilient.

“We have to digitalize and automate more. Otherwise, our business will be disrupted.”
[customer citation]

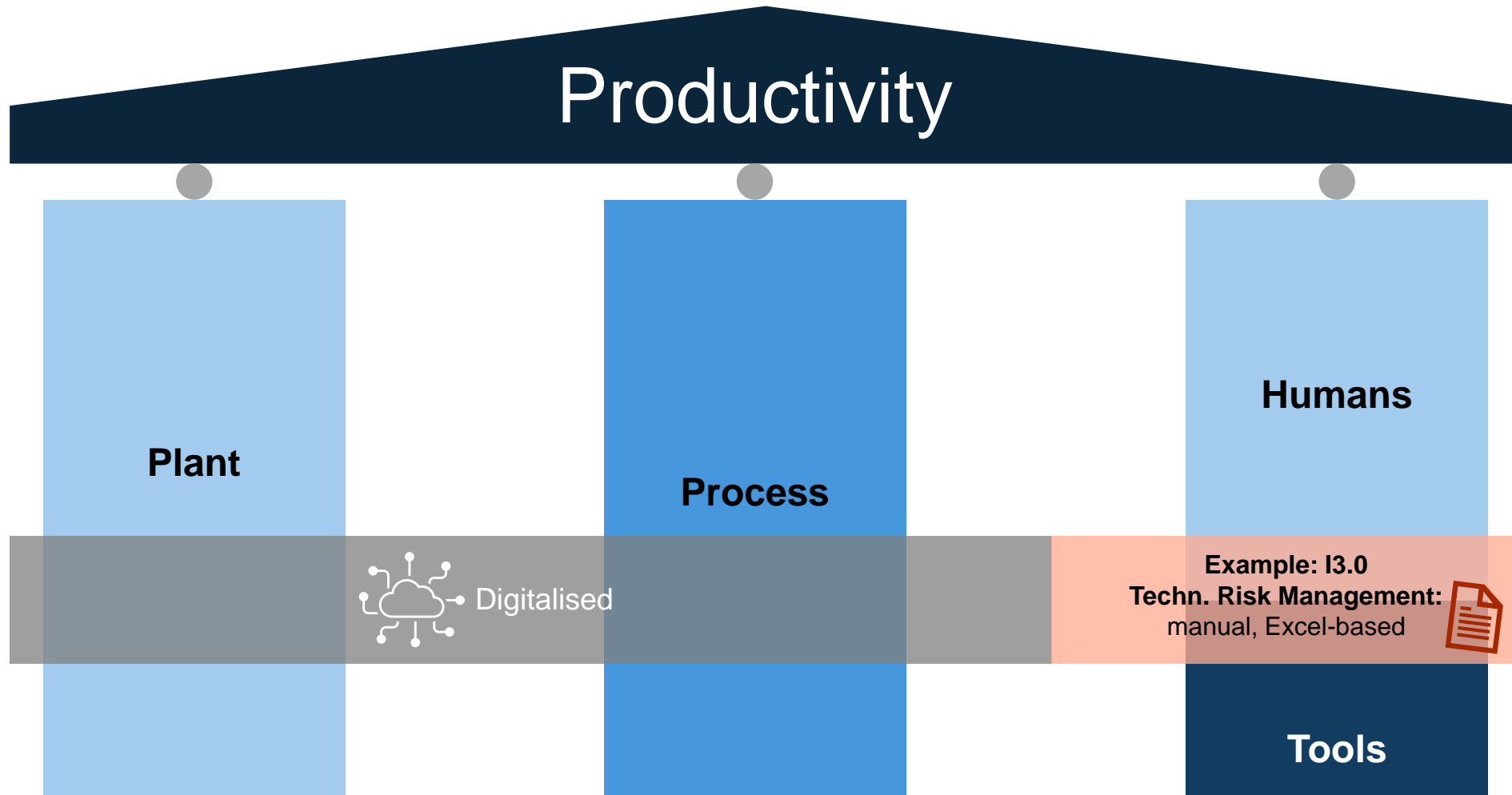
Customer Conclusion



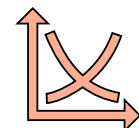
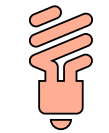
“We will be
4 times
less efficient as today.”*

*assumption: if, there is no increase in the failure rate

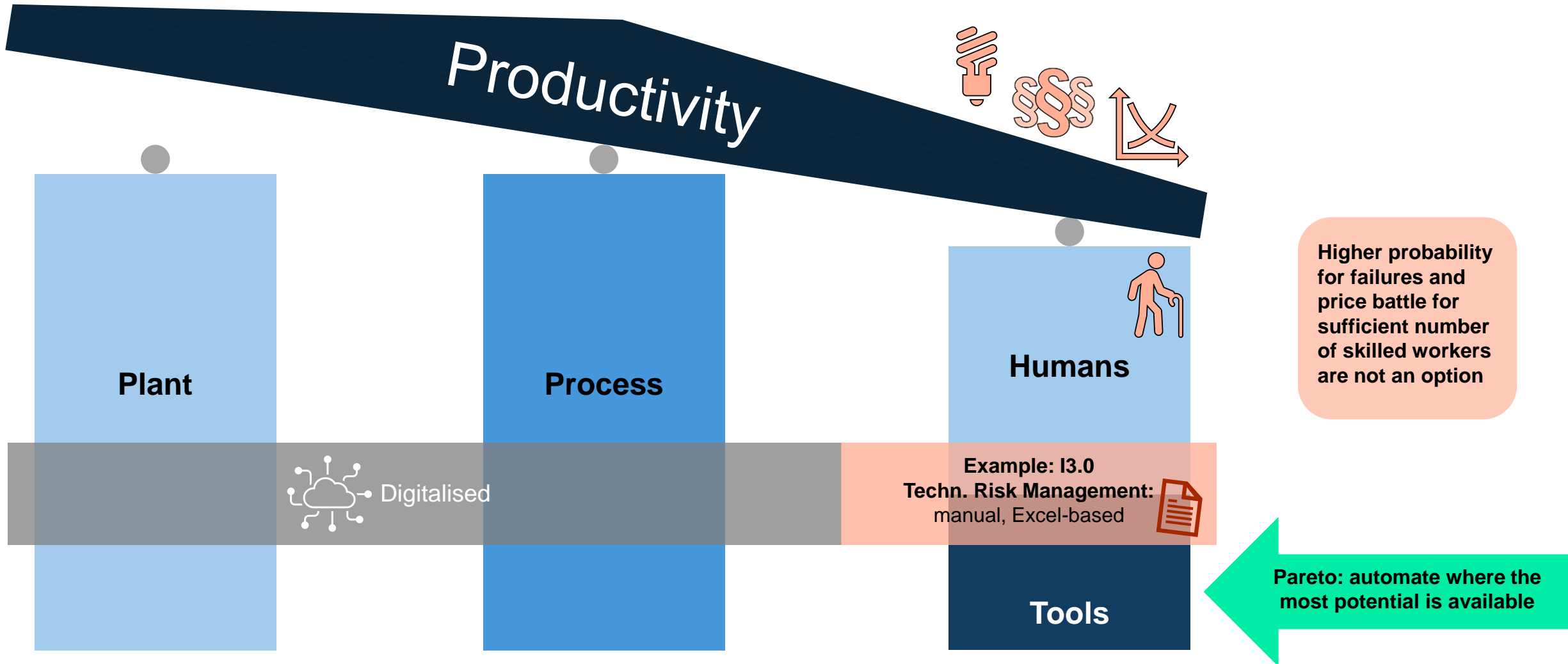
Why Risk and Compliance Management?



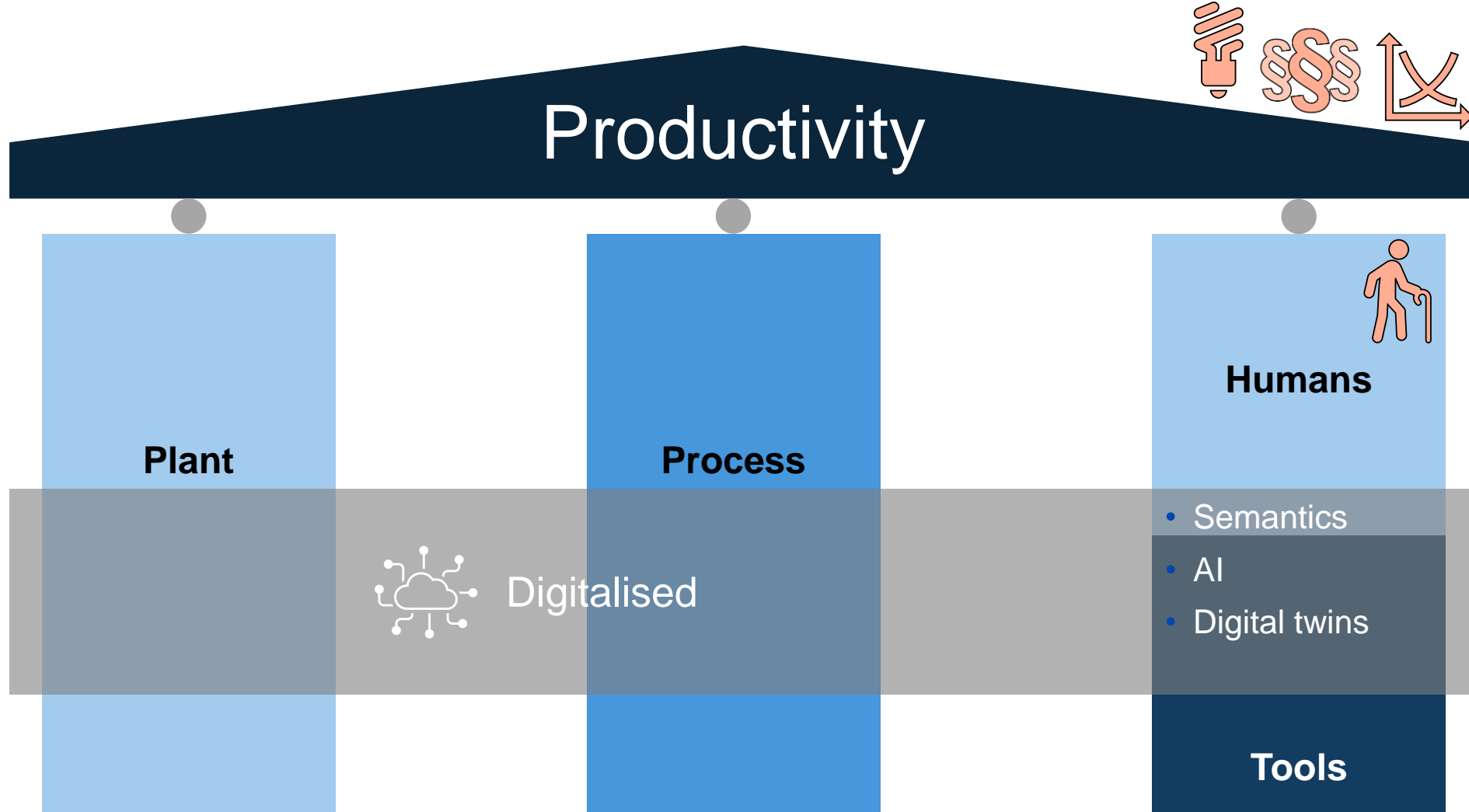
Boundary conditions



Why digital Risk and Compliance Management?

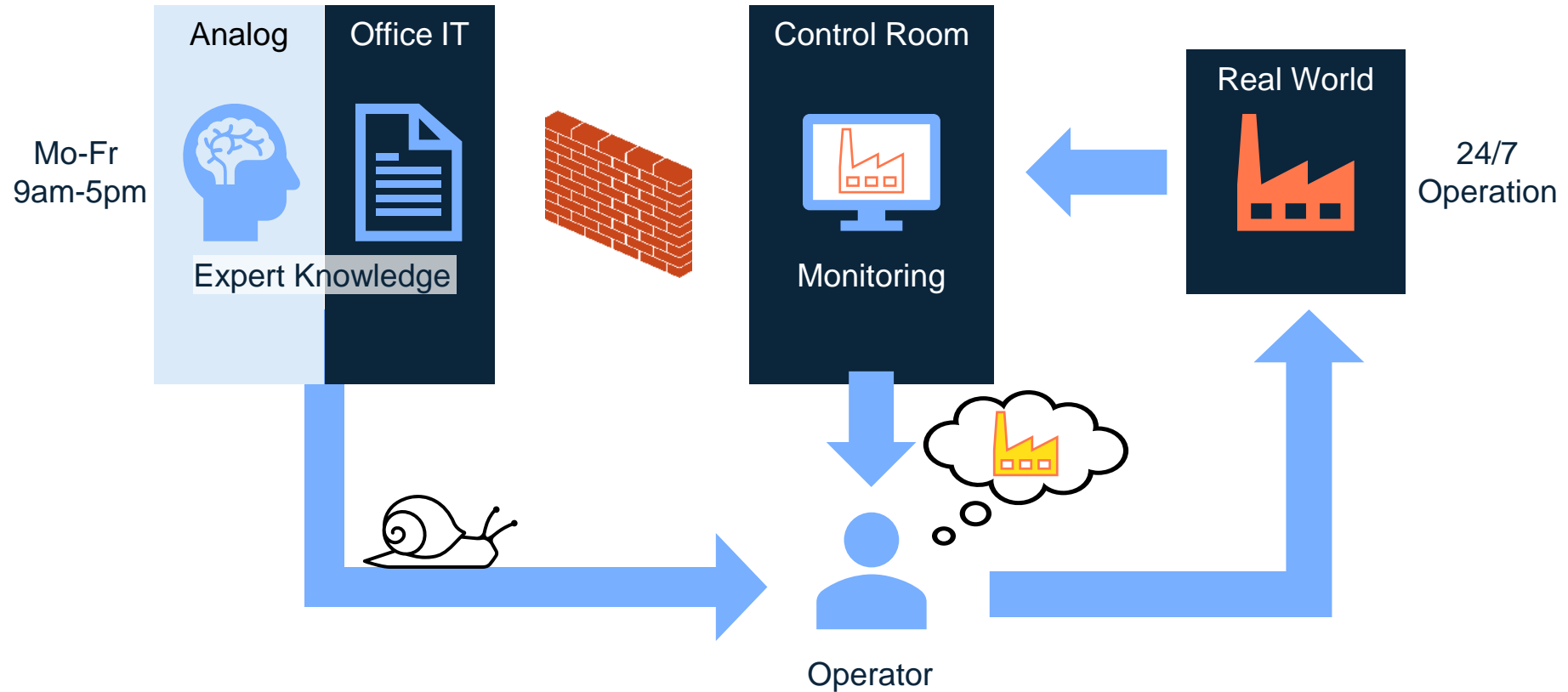


What do we need?

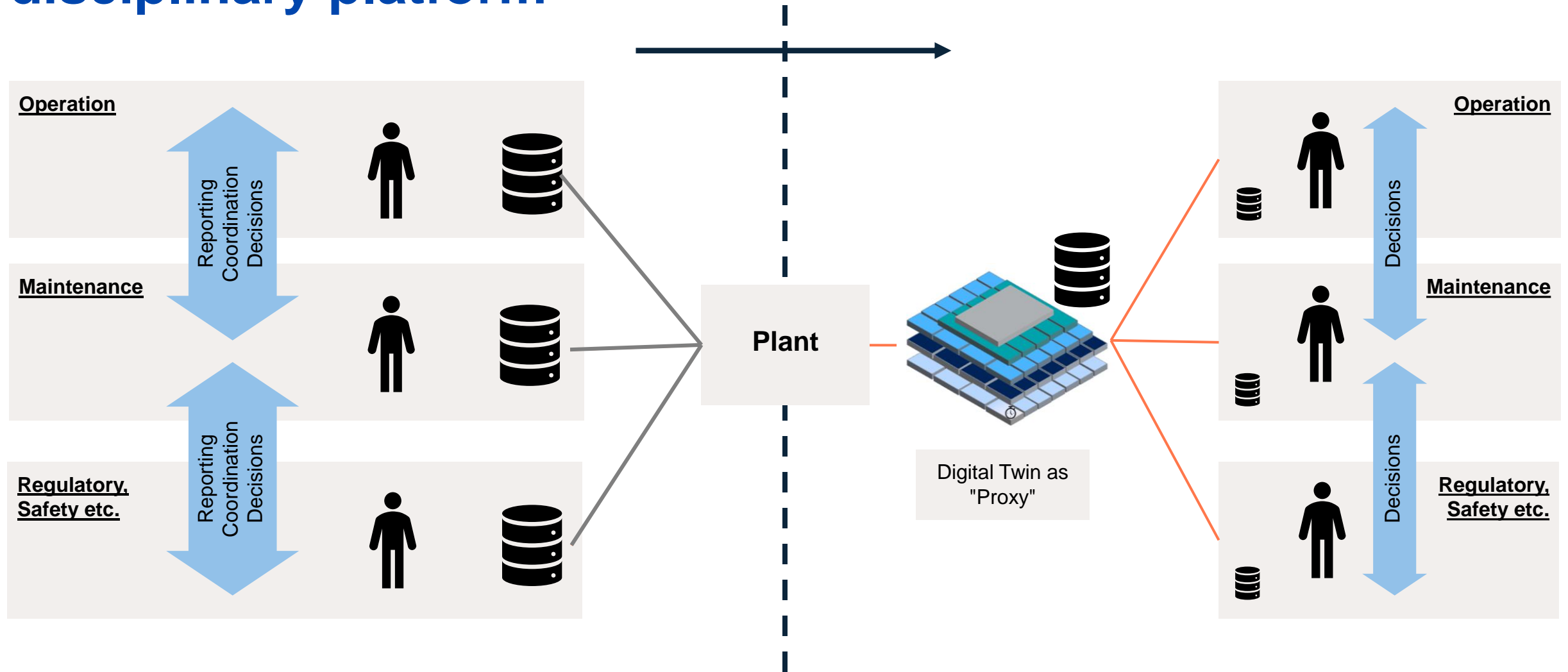


- ✓ Motivation
- ✓ Concepts
- ✓ Technology
- Let's do it!

Today: Interrupted Information Flow

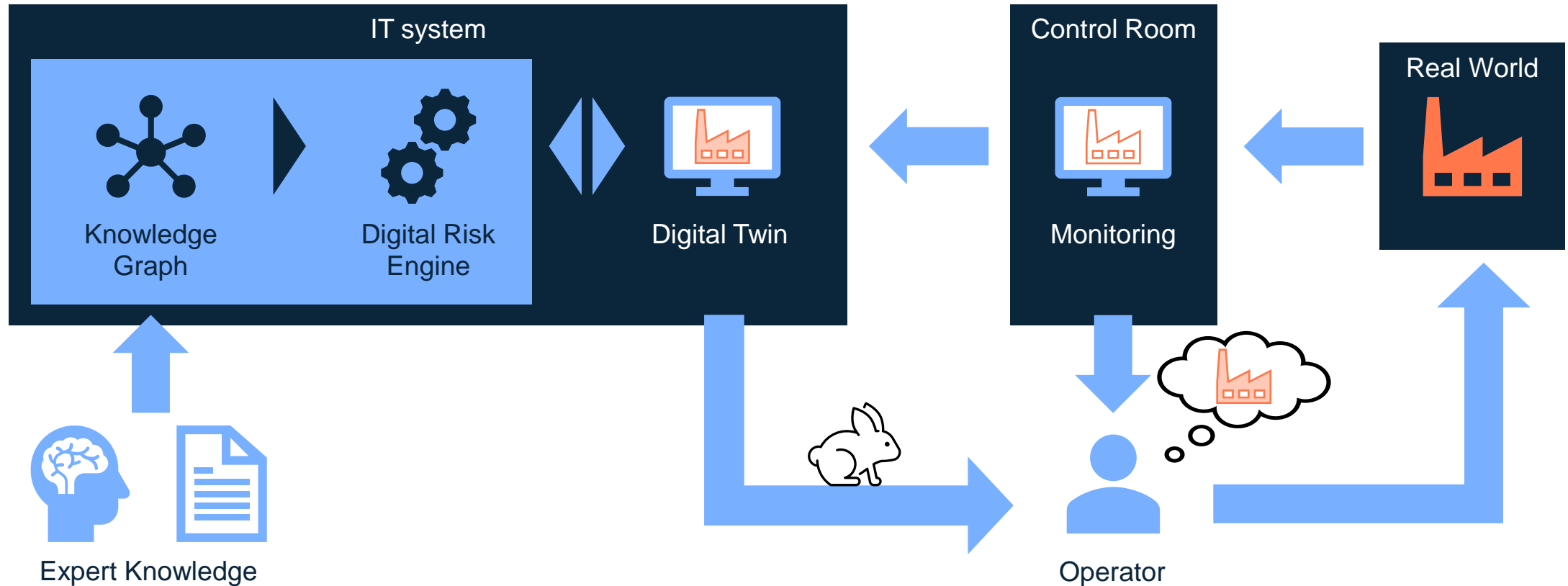


From separate data silos to a central, cross-disciplinary platform

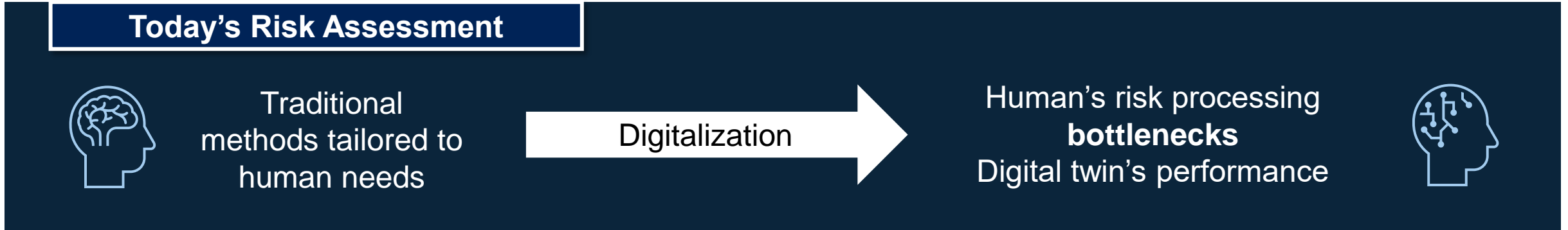


Interactive HAZOP

for fast information flow, high quality decisions and resilient operations



Formalizing the Language of Risk



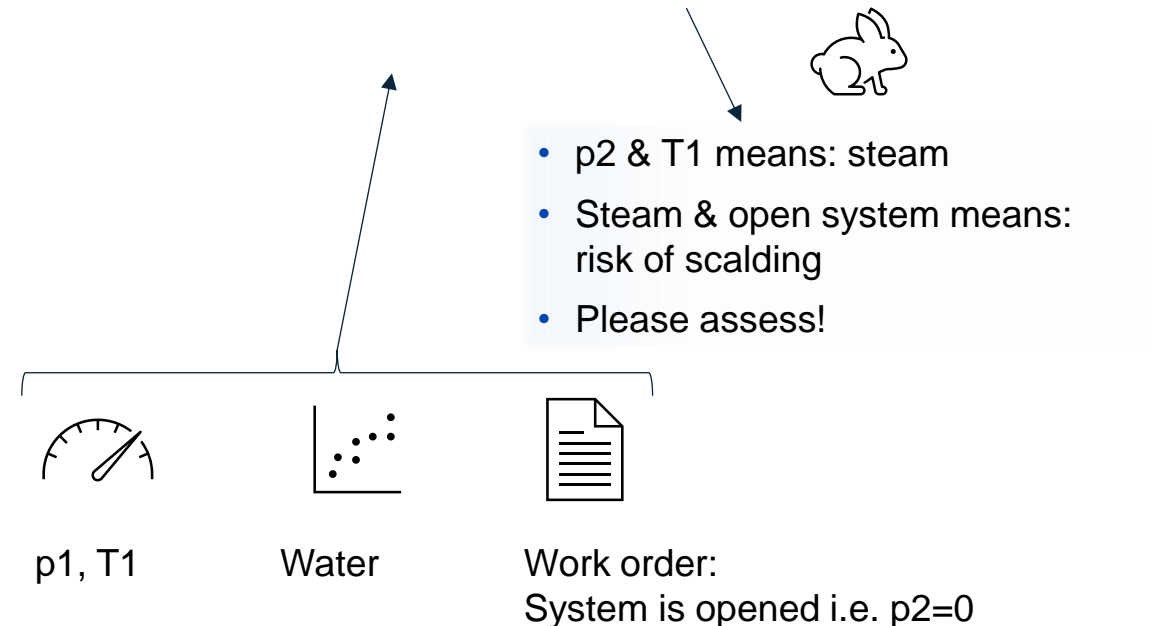
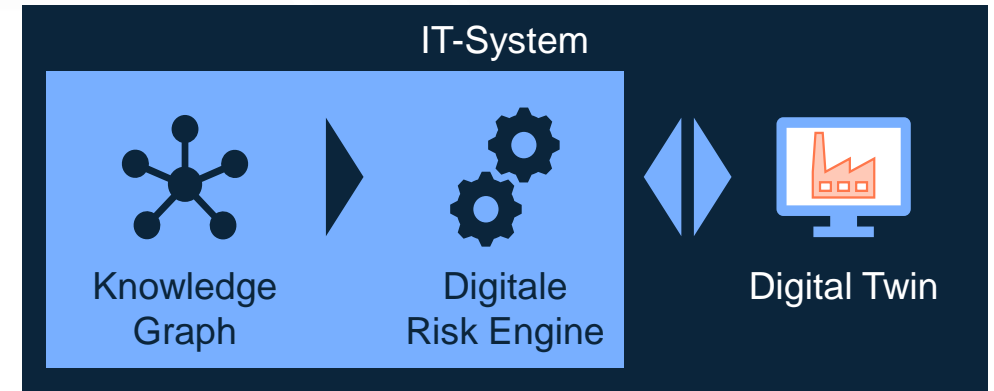
Maintenance, Technology, Risk Management Hand in Hand - Example



Maintenance on a valve:


- Boiler still hot, contains water
 - Low residual pressure was overlooked
 - LMRA → OK
 - Maintenance staff → hospital (scalded by steam)
 - Work had to be compensated by others
- **Longer unplanned maintenance time**
- **Liability event & damage > - 50 000 000 €**

→ Small cause,
big (avoidable) effect



Need for Verification and Validation

- Run time simulations and decision support helps to solve the upcoming challenges.
- But human **perception of risk is very subjective**, especially when it comes to new methods or technologies. **To do business**, customers must be **able to trust**.

	The tree is running.	The dog is running.
Information	v = 15 km/h	
Assessment	v & "running" = 	
Semantic	Has roots (anchoring, water intake)	Has legs (movement, scratch)
Property	v max = 100 km/h (wind resistance)	v max = 45 km/h (moving)

For V&V we need to know the **asset's properties** and **semantic description of information**.



What else?



Information: The tree has yellow leaves.		
Grammar	✓	
Information Assessment	✓	
Context	Summer	Fall
Context Assessment	⚡	✓
Conclusion	Tree is ill or information is wrong.	Everything is fine.
Liability issue	Possible	No indication
Action	Investigate	Sell product

The **relevance** of an information **depends on the context!**

What **depth of investigation** for V&V? Depends on the sector and requires **community alignment.**



iaHAZOP: Digital Risk & Compliance Management Benefits



- **Time to market - 4x faster**
Plant Modifications
→ **Immediate update of risk assessment**
- **Up-time - up to 10%**
Improved decision support and LMRA
→ **Less incidents**
- **Efficiency - up to 200%**
Use of resources incl. high qualified staff
- **Faster - 1.5x faster in MTTR etc.**
Fewer events grow into incidents or accidents
→ **Less liability events**



→ Transform from reactive to **predictive risk management**



Jeff Bezos, Amazon: "Most of what slows things down is taking too long to make decisions at all scale levels."



It's time for the next level...

...now, together!



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