



The Intelligence Layer for Industrial Machines & Production Systems

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SHOW OF HANDS

Who has already used **AI** for work today?

WRITING

RESEARCH

CODING

ANALYSIS

MEETING NOTES

THE FACTORY FLOOR

None of this has reached **physical production** environments.

Production & maintenance engineers work the way they did 10 years ago. The AI tools that are revolutionizing knowledge work stopped at the office door.

TROUBLESHOOTING

ROOT CAUSE
ANALYTICS

MAINTENANCE

QUALITY
INSPECTION

PLC / ROBOT CODE

THE PARADOX

Our factories are automated. They are not **intelligent**.

AUTOMATED

- **Sense** Thousands of signals, every second
- **Log** Every event, timestamped
- **Repeat** To the millisecond
- **Alarm** Thresholds, instantly
- **Dashboards** Every KPI, in real time

€30k / hour

a critical line is down

€2k / day

for external expertise

LEFT TO PEOPLE

- **Understand** What is actually happening
- **Explain** Why the deviation happened
- **Correlate** Across systems and time
- **Remember** What worked last time
- **Decide & Act** What to do next, and do it

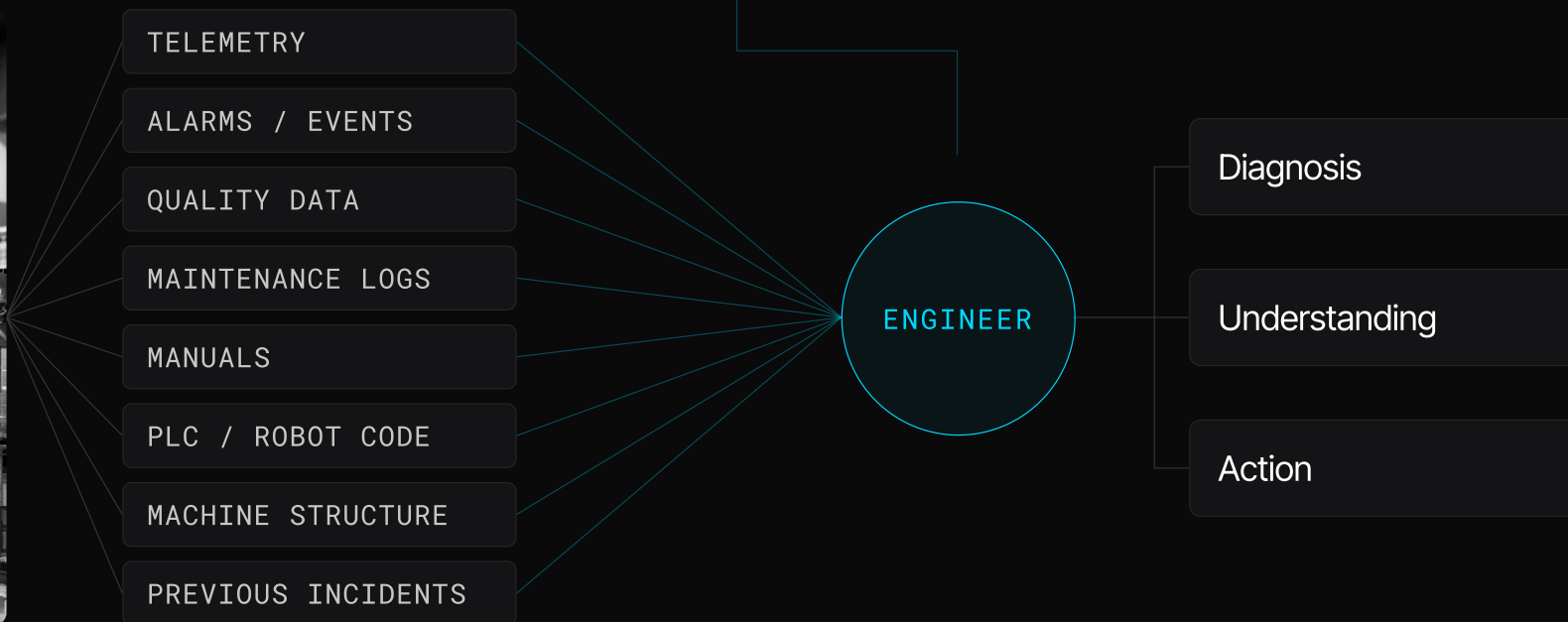
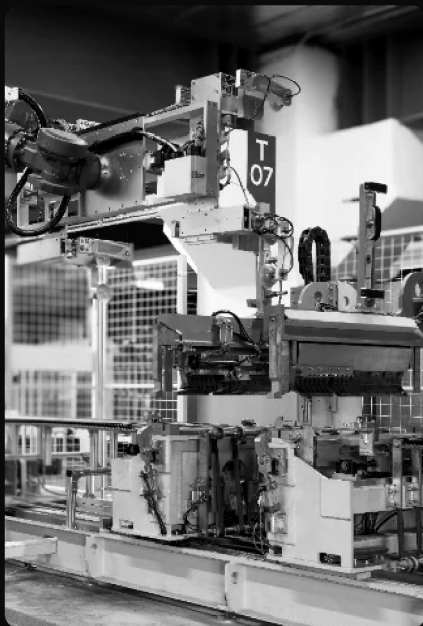
€2k / engineer / month

spent searching for answers

THE HUMAN FACTOR

Today, the **engineer** is the intelligence layer.

They connect the evidence.
They reconstruct the context.
They decide what matters.



Industrial software is shifting to **Industrial AI**.

From collecting data to producing answers and acting on them.

Empowering every engineer and operator to achieve more.

01

What is happening?

02

Why is it
happening?

03

What should we do
next?

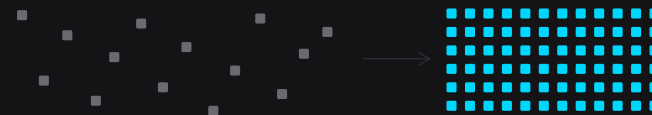
INTRODUCING MARENTIS

The Intelligence System for Industrial Assets

MACHINE DATA TO MACHINE INTELLIGENCE

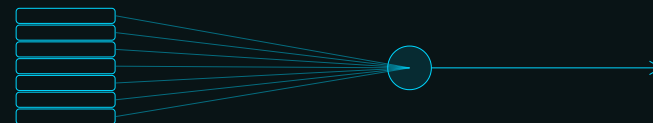
01 DATA LAYER

Any industrial raw data. Upload, connect, calibrated and structured into AI-ready context.



02 INTELLIGENCE LAYER

Multi-agent reasoning and orchestration for clear root cause analysis and understanding.



03 ACTION LAYER

Built for production and maintenance engineers. Resolutions, analytics, next steps, continuous improvement and action.



The engineer starts with a problem
that needs understanding and solving.

Why are we observing an increasing NIO rate on the main curing station?



THE DATA LAYER UNDERNEATH

CHAMBER TEMPERATURES

Every sensor, every chamber

INLET CONDITIONS

Humidity, layer height

BATCH QUALITY RESULT

Lab score per batch

BATCH STRUCTURE

One curing cycle per batch

MACHINE HIERARCHY

What sits where, in what order

HISTORICAL BASELINE

Three Years of History

Industrial reasoning is not one model. It is a **system**.

DOMAIN EXPERT / REASONING AGENT

Decides what a question needs, calls the agents that can answer it, and holds the investigation together.

CUSTOMER OPERATIONAL CONTEXT & MEMORY

STAYS IN THE CUSTOMER ENVIRONMENT

PROCESS CONTEXT

OPERATIONAL CONTEXT

KNOWLEDGE BASE

LEARNING & DECISION MEMORY

KNOWLEDGE EXTRACTION

Knowledge out of documents, manuals and SOPs.

DATA STANDARDIZATION & CONTEXT

Normalizes data, captures context and feedback.

ANOMALY & PATTERN ANALYTICS

Detects anomalies, patterns and key signals.

PROCESS CALIBRATION

Calibrates to the machine and the process.

"The AI said so" is not enough.

THE ANSWER

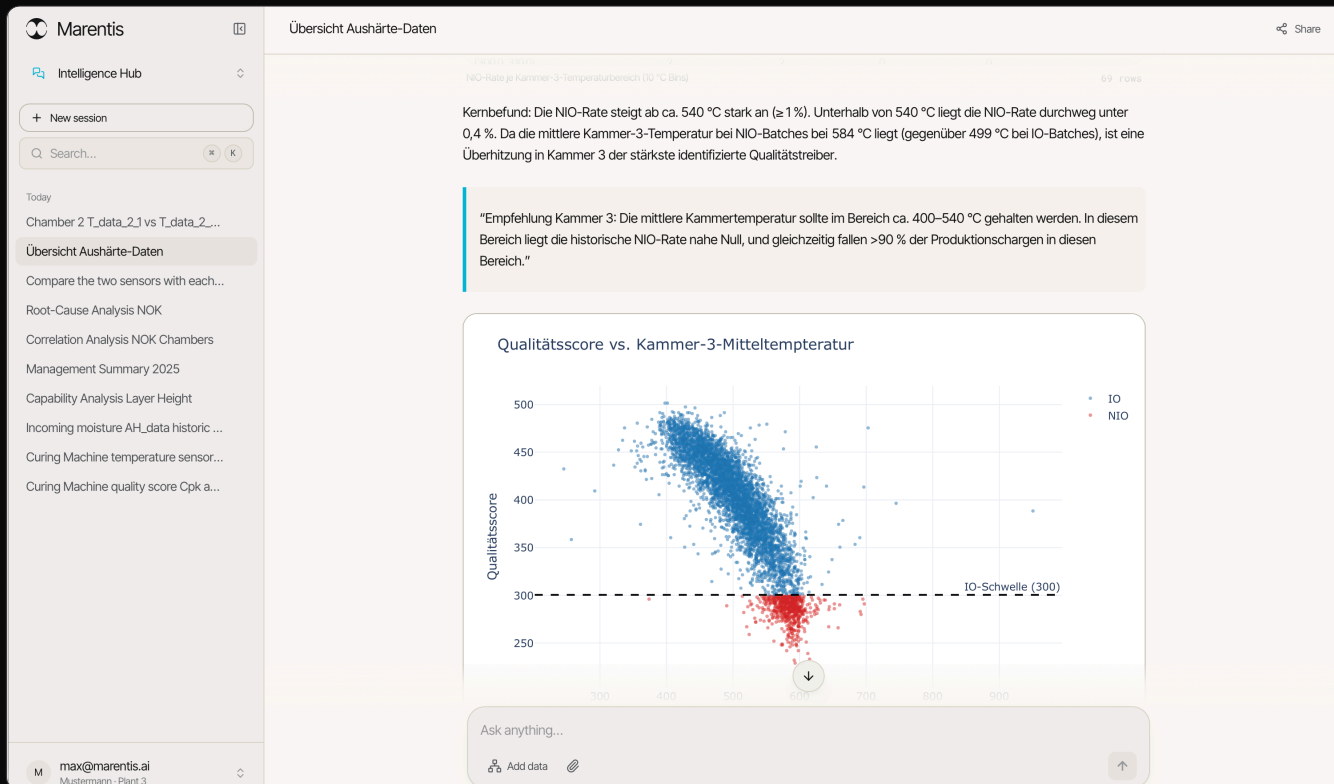
An answer on its own is a claim. Nobody acts on a claim.

THE REASONING

The engineer has to see how the system got there, and be able to disagree.

THE EVIDENCE

Every conclusion stays attached to the data it was built from.



An answer is not the **finish line**.

The screenshot displays the Marentis Intelligence Hub interface. On the left is a sidebar with the Marentis logo, a search bar, and a list of recent sessions. The main content area is titled 'Curing Machine quality score Cpk analysis'. It contains a section 'Parameters Requiring No Quality-Linked Limits' with a text block stating that all parameters (AH_data, T_data_4_1, T_data_4_2, T_data_4_3) have a Spearman $\rho < 0.05$, indicating that standard equipment operating ranges suffice. Below this is a 'Summary of Key Actions' section featuring a table with four rows of critical boundaries and rationales. A quote at the bottom emphasizes that these boundaries are derived from historical data and should be validated against process engineering knowledge. At the bottom of the interface is a chat bar with the placeholder text 'Ask anything...' and buttons for 'Add data' and a share icon.

Marentis Intelligence Hub

+ New session

Search...

Today

- Übersicht Aushärte-Daten
- Compare the two sensors with each...
- Root-Cause Analysis NOK
- Correlation Analysis NOK Chambers
- Management Summary 2025
- Capability Analysis Layer Height
- Incoming moisture AH_data historic ...
- Curing Machine temperature sensor...
- Curing Machine quality score Cpk a...

Curing Machine quality score Cpk analysis

Parameters Requiring No Quality-Linked Limits

AH_data, T_data_4_1, T_data_4_2, T_data_4_3 — all have |Spearman ρ | < 0.05. Standard equipment operating ranges suffice; no quality-linked control boundaries are warranted.

Summary of Key Actions

Priority	Parameter	Critical Boundary	Rationale
#1	Chamber 3 (T_data_3_avg)	Upper alarm: 606.1 °C / Upper control: 577.0 °C	Primary NIO driver ($p = -0.83$)
#2	Chamber 5 (T_data_5_1/5_2/5_3)	Lower control: ~206–207 °C / Lower alarm: ~191–192 °C	Under-heating in Chamber 5 c
#3	Layer height H_data	Lower control: 153.1 mm / Lower alarm: 150.8 mm	Thin layers show ~2× NIO lift;
#4	Chambers 1 & 2	Lower control: ~206 °C (Ch1) / ~303 °C (Ch2)	Mild NIO enrichment at low ter

"Important: These boundaries are derived purely from the historical IO population (2015–2018). They represent statistically safe operating zones but should be validated against process engineering knowledge and confirmed through designed experiments before being implemented as formal control limits."

Ask anything...

Add data

PRIORITISED

Not a list of everything. An order of what matters most.

SPECIFIC

A parameter, a boundary, a number to act on.

HONEST

Stated confidence, and what still needs validating.

Every interaction makes the system and the factory smarter.

TODAY

The investigation happens once, then scatters.

EMAIL

NOTEBOOK

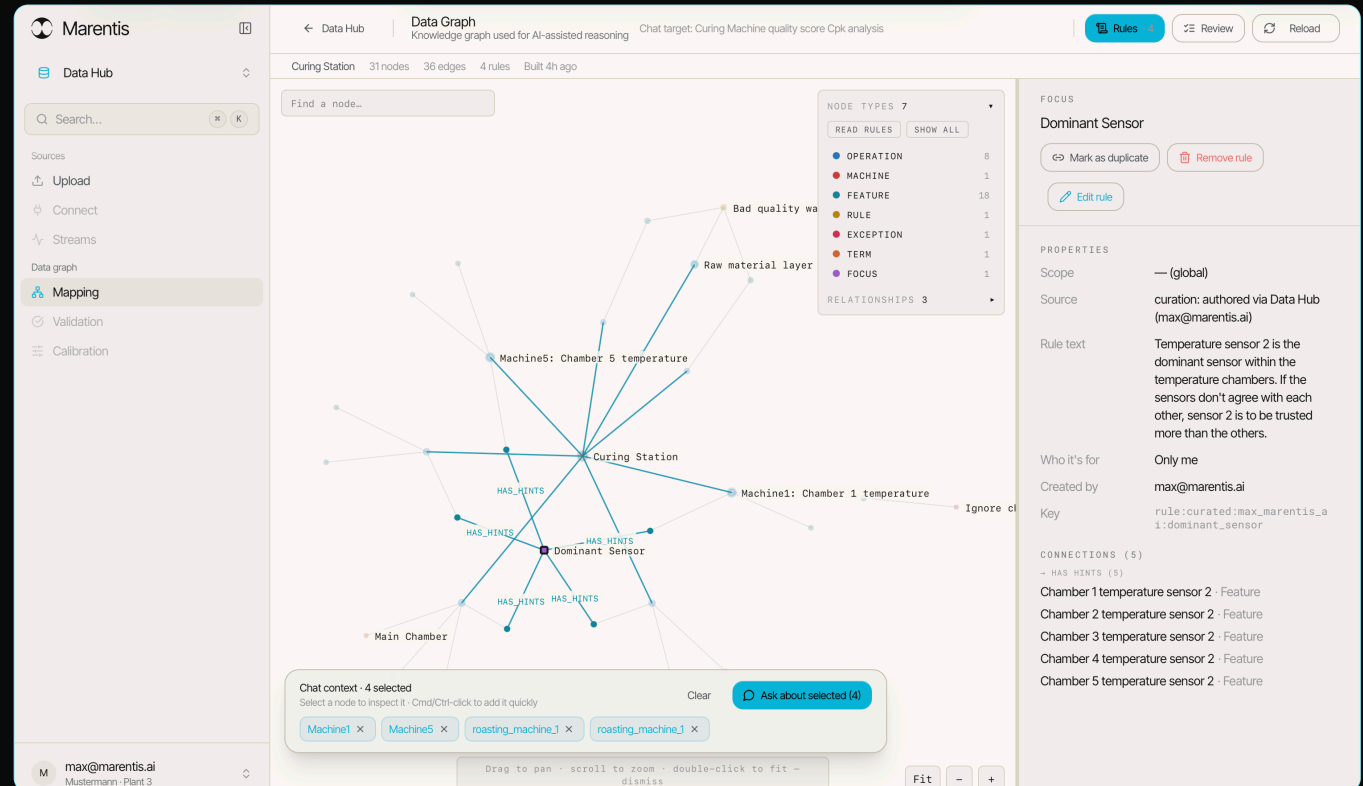
SHIFT HANDOVER

POWERPOINT

SOMEONE'S MEMORY

Eventually it fades.

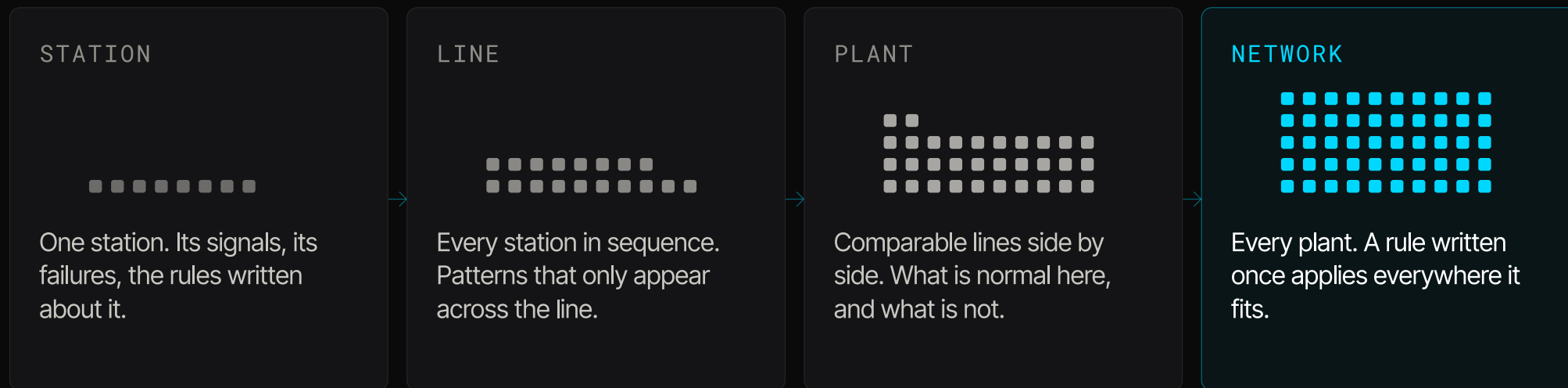
WITH EXPERT MEMORY



HOW THE INTELLIGENCE COMPOUNDS

The system gets more valuable with every data point and **interaction**.

AND WHAT IS LEARNED IN ONE PLACE DOES NOT STAY THERE



FROM ASSISTANCE TO AUTONOMY

Autonomy is **earned**, not switched on.

THE HUMAN DOES NOT LEAVE. THEY MOVE FROM DOING THE WORK TO SETTING THE LIMITS.



IN PRODUCTION TODAY

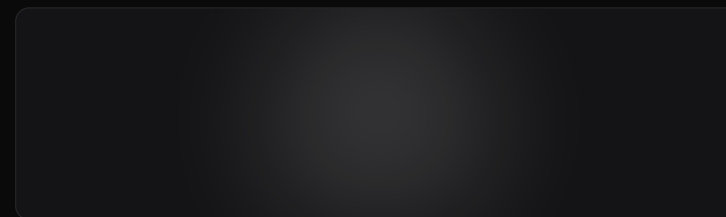
Not a prototype.

>30%

average productivity gain / user

3d to 1h

for complex, data-heavy analytics



PREMIUM AUTOMOTIVE OEM, GERMANY

IN-DEPTH ANALYTICS

"The value add is undeniable. I can see the immediate impact in my daily work."

SENIOR PRODUCTION ENGINEER

WORK SPEED

"What we achieved in an hour, would have cost me 3 days of concentrated work without Marentis."

SENIOR DATA ANALYST / MAINTENANCE

ENABLEMENT & RELIEF

"A Junior Engineer does the work of 2 FTEs with results that would otherwise even stay hidden to very experienced colleagues."

TEAM LEAD / PRODUCTION

The future factory will
not just collect data.

It will **understand** what is happening.

COME TALK TO US

What is the question you would ask your **factory**?

Stephan Hotz

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