



ANDRITZ PULP & PAPER

THE ROLE OF GEN-AI COPILOTS TOWARDS AUTONOMOUS PLANTS

PRAXISFRÜHSTÜCK INDUSTRIE 4.0, ALPBACH



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Microsoft

ENGINEERED SUCCESS

ANDRITZ



Microsoft

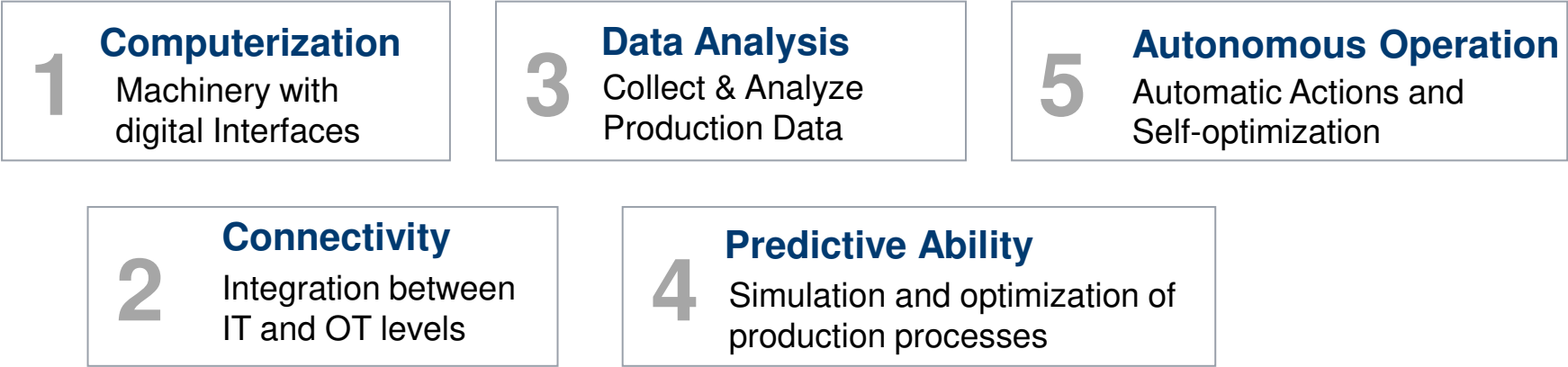
Strategic Partnership

“ANDRITZ & Microsoft join forces to co-innovate the future of the Processing Industry by **enabling fully autonomous factories and by creating a trusted data ecosystem** based on the ANDRITZ METRIS platform and Microsoft Cloud for Manufacturing.”



[Read ANDRITZ' full Press Release 10th April 2024](#)

PULP & PAPER PRODUCER IN EUROPE MARKET FEEDBACK



Market Feedback

- Optimization is no longer “Key Driver” for digital projects (**APC**).
- Solutions for simplifying complex workflows (**Copilots**).
- Autonomous production processes (**APC, Digital Twin, Copilot**)



Top industry challenges present opportunities for AI



Skill gap

Manufacturers face a shortage of workers, especially those with technical & language skills

- Factory copilot with natural language interface
- AI field service copilot
- Industrial knowledge copilots



Siloed systems & data

Productivity is constrained by the IT-OT divide and a lack of interoperable systems

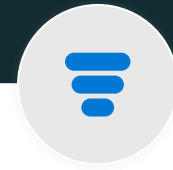
- Connected products
- Production monitoring and optimization
- AI enabled Data Platform across Manufacturing Value Chain



Supply chain complexity

Supply chains require resiliency amidst a constantly evolving geo-political climate

- Supplier contract review
- Risk management
- Demand and supply revisions
- Carrier collaboration



Business models

Manufacturers must adapt to customer needs by providing alternative business models

- Product-as-a-Service
- Connected field service
- Customer support chatbot



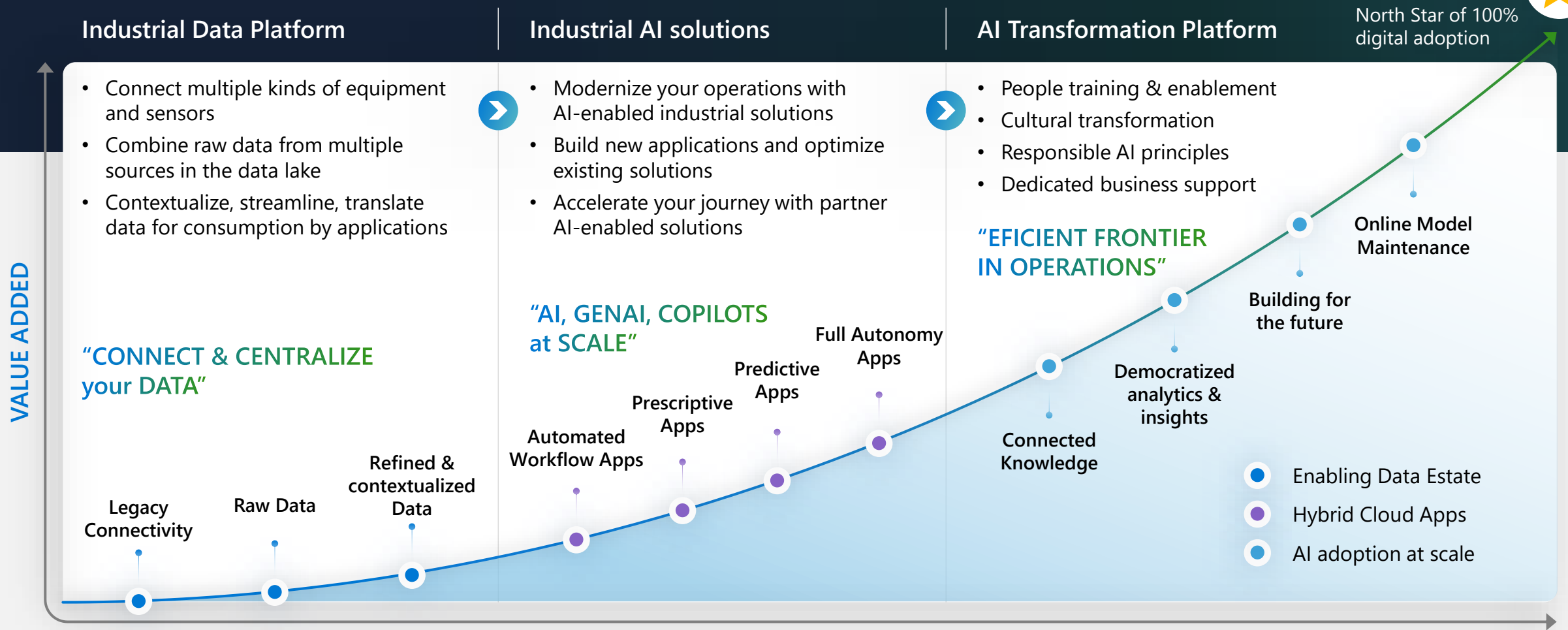
Sustainability

There is an increasingly pressing need to meet sustainability targets

- Energy cost optimization

AI opportunities

AI is transforming industry operations with an exponential impact



Partners

Dataverse, Microsoft Fabric, Azure Data & AI

Microsoft 365 & Teams

Microsoft Security

Power Apps, Power Automate, Power Pages & Copilot Studio

Copilot

Azure OpenAI Service & Power BI

Cloud for Sustainability

LEVELS OF AUTONOMY



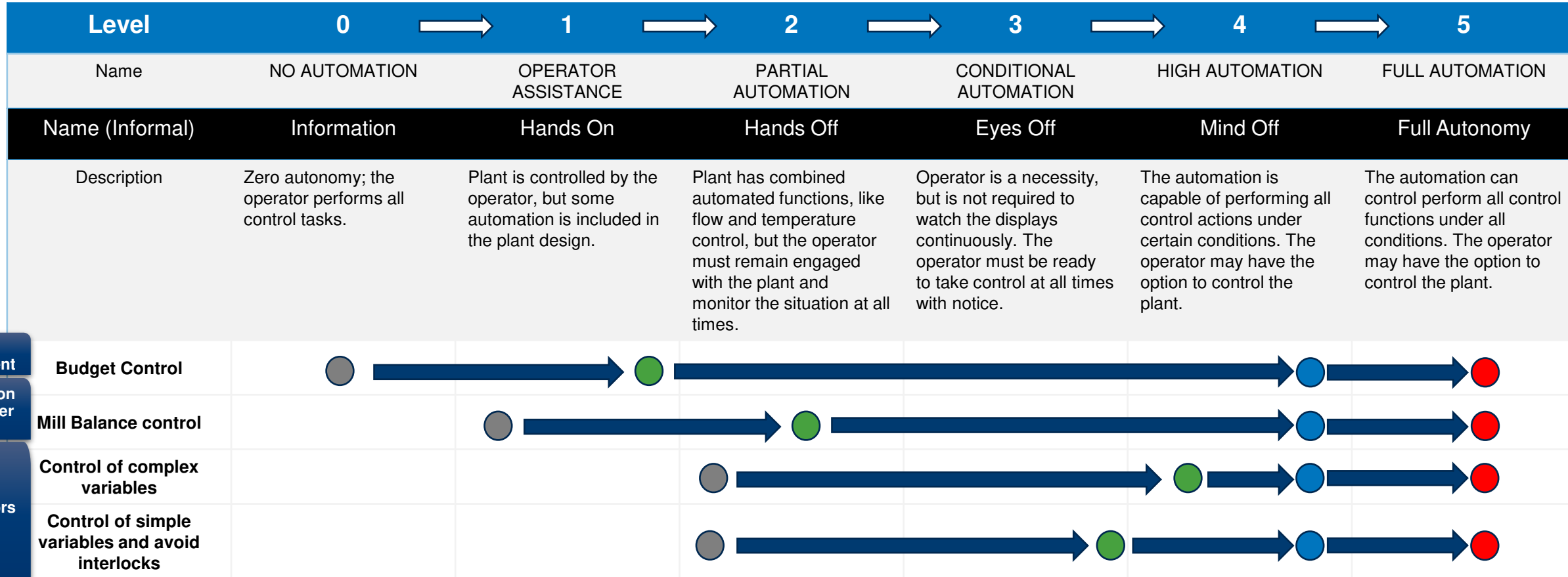
No only process by all important processes

● Average of first quartile (Top25% best)

● Best today

● Latest sold

● Next step





Metris Copilot from Andritz

Unlock autonomous plants with the **ANDRITZ Metris Copilot**

Andritz Driving operational excellence with Metris Copilot

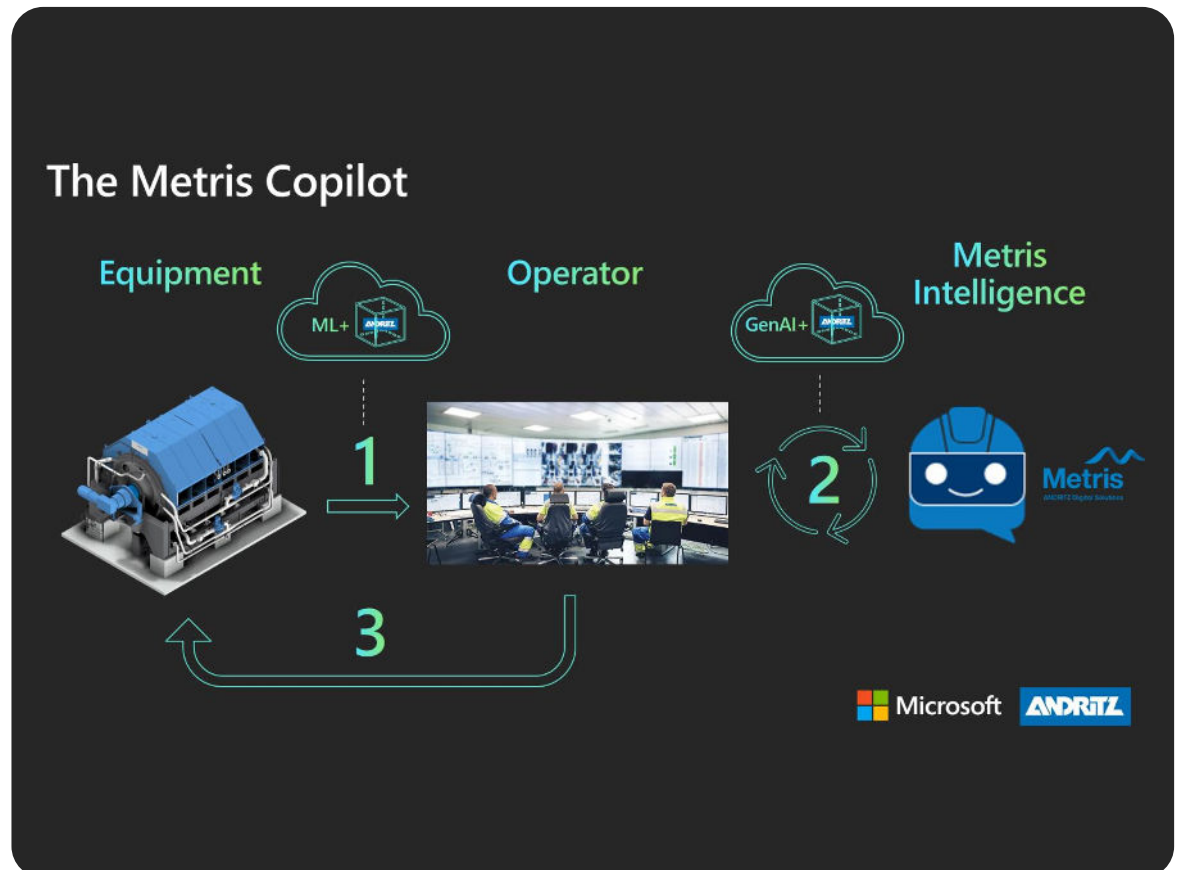
ANDRITZ's vision is to build fully autonomous plants capable of self-operating by delegating as much workload as possible to machines and AI, leaving humans in control and empowering them to make important decisions without having to deep dive in every single detail. The Metris Copilot is the latest innovation towards realizing that vision.

ANDRITZ Metris Copilot integrates **anomaly detection** and a **chat interface** to provide real-time insights for operators and maintenance teams. It uses **IoT sensors** and **machine learning** to identify and prevent faults.

Key Features:

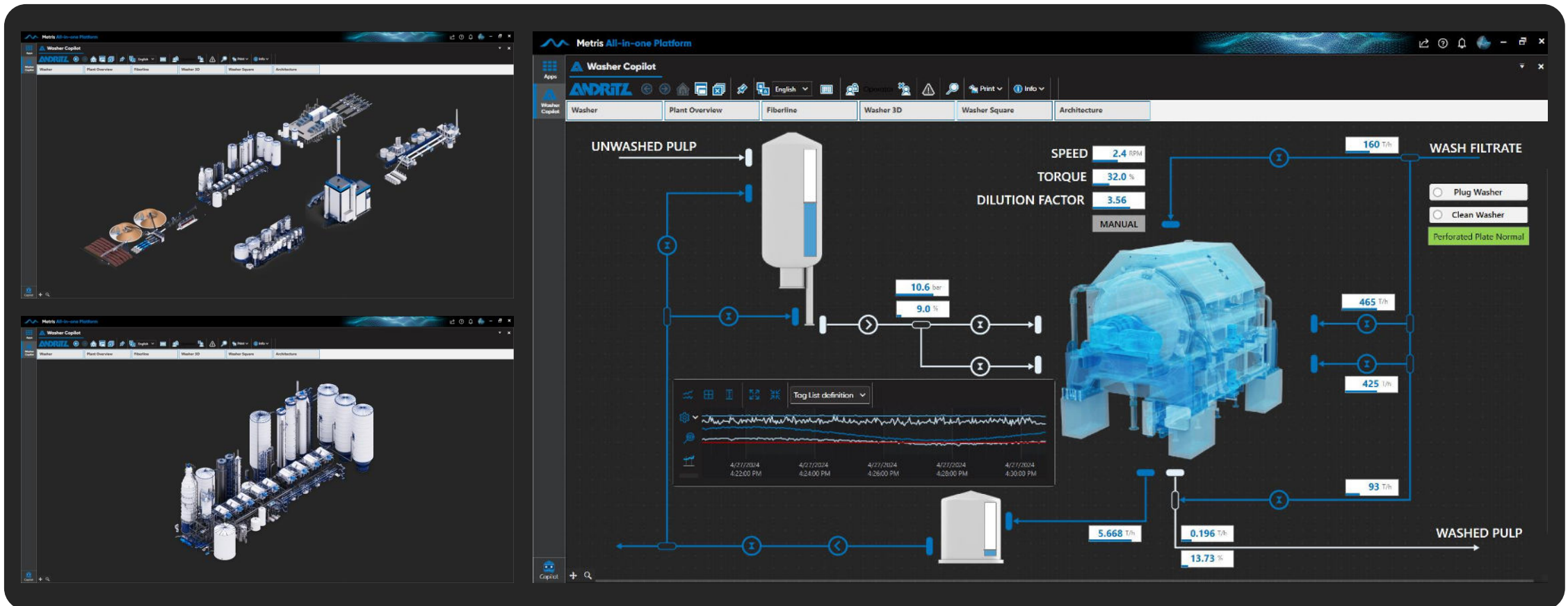
- **Digital Assistant:** Uses generative AI for seamless human-machine communication.
- **Data Integration:** Combines data from OEE, SPC, and cost for a comprehensive view.
- **Optimization:** Helps optimize manufacturing, prevent downtime, and increase customer satisfaction.

Collaboration: Combines Microsoft's machine learning with ANDRITZ's process intelligence for a win-win-win situation.



Metris Copilot Displays

A comprehensive simulation model was constructed, capturing all the intricate dynamics of the process and the Washer, to ensure a thorough understanding of operations.



Metris Copilot Commands

Basic commands

- Once the copilot is opened for the first time, some suggestions are automatically provided **1 2 3**
- By clicking option **1**, question **4** is answered automatically, the answer is provided **5**, and additional recommended questions **6** are added automatically based on the context of the previous answer.
- Similarly by clicking in the option **3**, but in this case the Data Analytics App is opened automatically and the trend **7** with the variable selected. Additional recommended questions **8** are also added automatically based on the context of the previous answer.

The image illustrates the Metris Copilot interface in three stages:

- Initial Suggestions:** The Metris Copilot interface shows a greeting: "Hello! I'm Metris Copilot, the official Metris Assistant, Here's some suggestion of how I can help:". Below this are three numbered suggestions: **1** "Could you explain what the washer does?", **2** "What are the start-up and shutdown procedures?", and **3** "Could you show me a trend for the tag DD Washer #1 Pulp Dissolved Solids?".
- Q&A Session:** After clicking suggestion **1**, the interface shows a question **4** "Could you explain what the washer does?". The Copilot provides an answer **5** explaining the DD Washer function and importance. Below the answer are three recommended questions **6**: "What are some common problems that can occur with the DD Washer and how can they be solved?", "What is the importance of maintaining a certain feed pressure in the DD Washer?", and "How can I monitor the DD Washer to ensure maximum efficiency?".
- Data Trend View:** After clicking suggestion **3**, the Data Analytics App is opened, showing a trend for the tag "DD Washer #1 Pulp Dissolved Solids [T/h]". The trend is a blue line graph with a value of **0.1903 T/h**. Below the graph, a table provides summary statistics:

Eng Units	Last	FirstStringValue	LastStringValue	Avg	StdDev	Min	Max	Min - Max	Variability	Median	Count	First (Date/Time)	Min (Date/Time)	Max (Date/Time)	LCL	UCL	UC
Dissolved Solids T/h	0.1903			0.2032	0.0167	0.1661	0.2514	0.0853	14.428	0.203	1514	0.2056	4/27/2024 5:10:56 PM	4/27/2024 5:57:03 PM	0.1593	0.2472	0.0

Anomaly detection and solution search

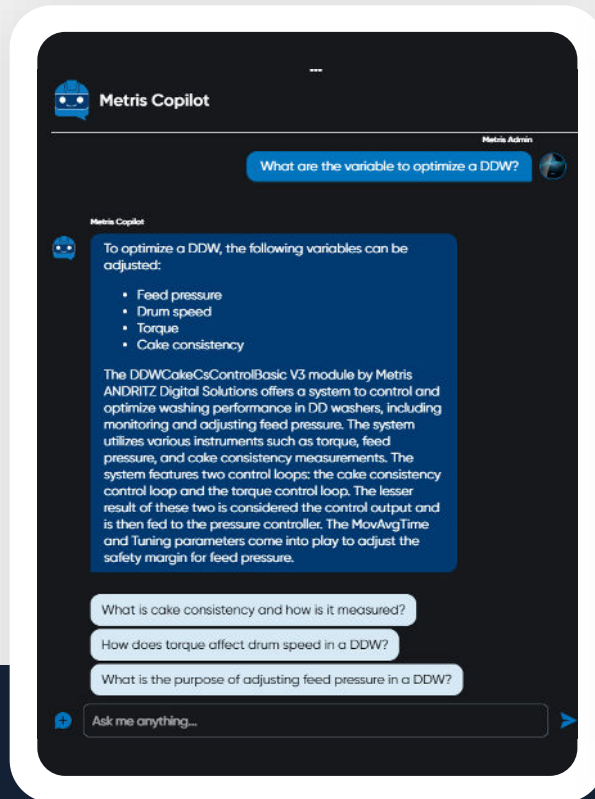
- When an anomaly is detected **1** , recommended actions **2** **3** are showed.
- By clicking on the button **3** , Metris Copilot will search for variables with anomalies and will open the trend **4** with the related data.
- When the anomaly is back to normal, the operator will receive a notification **5**

The image displays a multi-panel interface for the Metris Copilot system. The left panel shows a chat conversation where the Copilot identifies a 'Warning : Perforated Plate Plugged Detected' and suggests showing related trends. The middle panel shows the Copilot's response to the user's request, displaying 'No anomalies have been detected!' and a subsequent notification that 'Washer performance has returned to normal'. The right panel shows a 'Data Analytics' dashboard with a 'Trend - Copilot Trend' chart. The chart displays three data series: '2020-DF-001' (blue), '2020-XC-0070' (white), and '2020-DF-0001' (light blue). A red circle labeled '4' highlights a peak in the blue series. To the right of the chart is a 'Bargraph' with four bars representing different metrics: 'DO Washer #1 Filtrate Dissolved Solids [L/h]' at 5.0412, 'DO Washer #1 Dilution Factor [-]' at 3.0503, 'DO Washer #1 Pulp Consistency [%]' at 12.785, and 'DO Washer #1 Pulp Dissolved Solids [T/h]' at 0.241. Below the chart is a table with columns for Line, Color, Tag Name, Description, Eng Units, Last, FirstStringValue, LastStringValue, Avg, StdDev, Min, Max, Min - Max, Variability, Median, Count, First, (Date/Time) Min, (Date/Time) Max, LCL, and UCL.

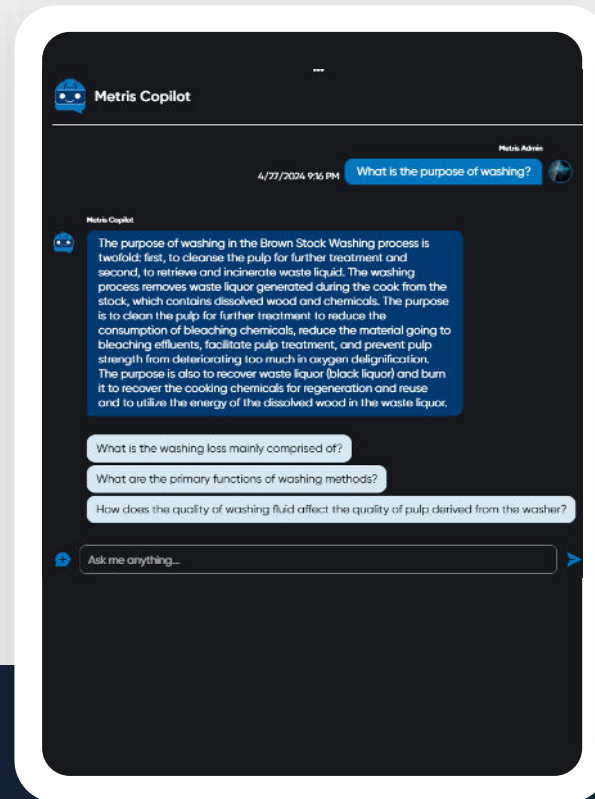
Line	Color	Tag Name	Description	Eng Units	Last	FirstStringValue	LastStringValue	Avg	StdDev	Min	Max	Min - Max	Variability	Median	Count	First	(Date/Time) Min	(Date/Time) Max	LCL	UCL
1	Blue	2020-DF-001	DO Washer #1 Filtrate Dissolved Solids	T/h	5.0412															
2	White	2020-XC-0070	DO Washer #1 Dilution Factor		3.0503			3.5497	0.1335	2.9158	3.9351	1.0193	75221	3.5544	3403	3.5591	4/27/2024 8:02:42 PM	4/27/2024 7:35:36 PM	4.4262	6.7963

Additional Capabilities of the Metris Copilot

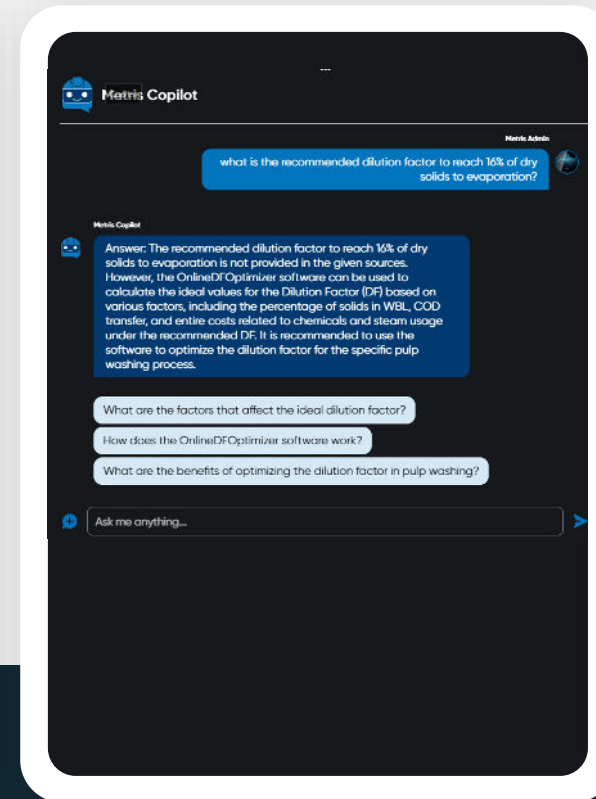
And more including multi-lingual support



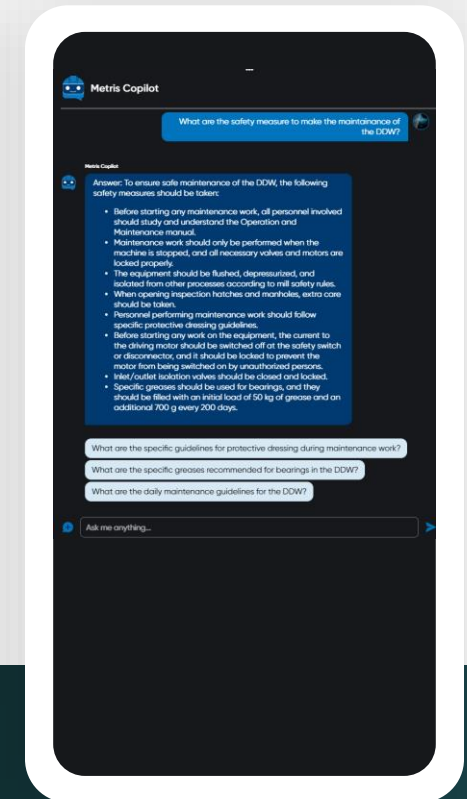
Process Optimization related questions



Troubleshooting and Training



Combining multiple data sources to find an alternative



Safety and maintenance instructions

ANDRITZ WINS 2024 MICROSOFT INTELLIGENT MANUFACTURING AWARD WITH METRIS

Our cutting-edge digital solutions empower autonomous operation of pulp mills



Winner in the category Disrupt!

Case: ANDRITZ: Paving the way for autonomous pulp mills

Disrupt category honors

- Digital transformation of the industrial value chain.
- The potential of solutions to fundamentally change the value chains in a company or industry.



MICROSOFT
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Want to know more? Let's connect



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