

SMART MANUFACTURING WITH CAUSAL AI

Business Context

In discrete manufacturing, production efficiency and product quality are tightly linked. When processes run smoothly, output increases, scrap and rework drop, and teams can focus on innovation instead of firefighting.

But persistent quality problems and recurring machine issues are often hard to trace back to their true origin. Traditional dashboards and monitoring tools may tell you **what** happened – but not **why**.

To drive real impact, you need to go beyond surface-level insights. That's where Causal AI comes in.

Causal AI: Powering Intelligent Interventions

With Xplain Data's Causal AI technology, you don't just detect problems – you understand their root causes. This enables smarter decisions, faster resolutions, and a proactive approach to significantly increase quality and performance.

KEY BENEFITS:

- ✕ Discover true **cause-effect relationships** in your production data
- ✕ Automate **root cause analysis (RCA)** across your manufacturing lines
- ✕ Understand **"Why"** events happen and test **"What-If"** scenarios
- ✕ **Minimize** downtime, scrap, and rework through early intervention
- ✕ Continuously **monitor** for new and emerging failure drivers



It's time to move from guesswork to insight-driven interventions."

PRODUCT HIGHLIGHTS

Xplain Data CausalDiscoverer – Reveal the hidden Drivers of Quality Issues

Dive into complex production data and identify which correlated variables truly have a causal impact. This reduces complexity and focuses your team on the real triggers for change.

- ✕ Pinpoint critical cause-effect relationships
- ✕ Integrate domain expertise to validate findings
- ✕ Create foundation for effective corrective actions

Xplain Data Causal DiscoveryBot – Root Cause Analysis on Autopilot

Once set up, the autonomous DiscoveryBot continuously scans live production data, automatically alerting quality managers when new causal drivers emerge that threaten production.

- ✕ Always-on background root cause analysis
- ✕ Alerts via email, Slack, or messaging tools
- ✕ Early issue detection before problems escalate

Xplain Data ObjectAnalytics – Your entire Production – in one View

Aggregate and align all production data – machines, sensors, systems, events, and logs – into a single, object-centric representation. Get a 360° view of every machine, part, and process. Our patented ObjectAnalytics Database powers successful Causal Discovery and enables high-speed complex queries across different sub-objects.

- ✕ Visual ObjectExplorer integration for pre- and post-processing analysis
- ✕ Holistic, object-centric data view delivering cross-process insights
- ✕ Complete information preservation – no manual feature engineering required

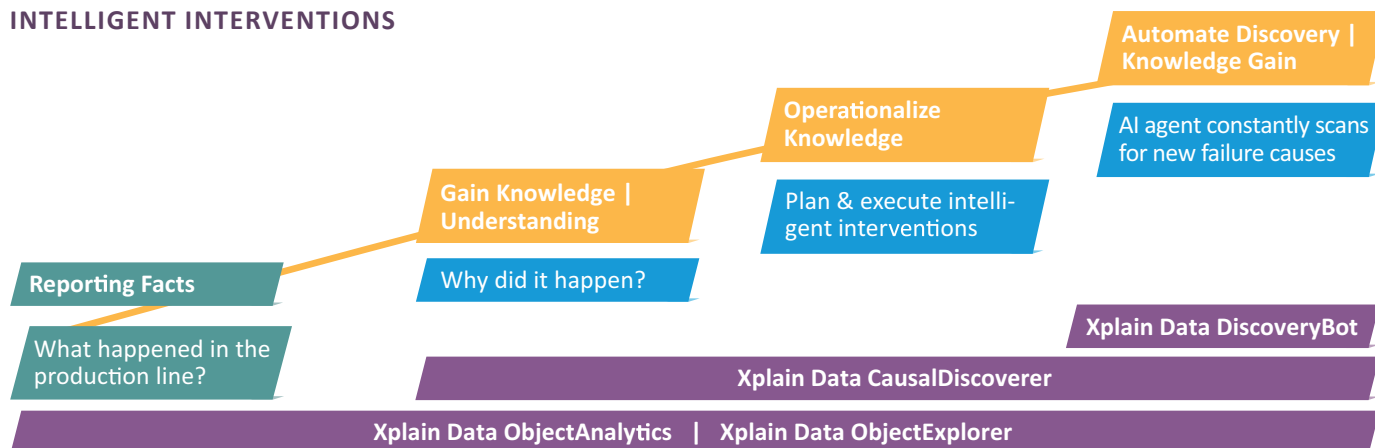


It's innovations like this [Causal AI algorithms] that have made us a digitization pilot customer with SW for many years. This application will be used in all production lines from now on."

Helmut Häckl, Managing Director,
Schabmüller Automobiltechnik GmbH



FROM DATA TO INTELLIGENT INTERVENTIONS



What makes it work: Capabilities that set Xplain Data apart

SCALABLE BY DESIGN

Causal Discovery thrives on data – and lots of it. Our platform is purpose-built to handle massive, complex production datasets, with real-time performance. Whether you’re tracking thousands of process variables or multiple production lines, it delivers speed, scale, and deep insight – without compromise.

OBJECT-CENTRIC DATA MODEL

Thanks to our unique object-centric architecture, you can instantly analyze relationships between all relevant elements – from workpieces and process parameters to events and messages. This enables fast, powerful analysis across the full production flow, not just isolated stations.

EMBEDDED CAUSAL DISCOVERY MODELS

Forget manual feature selection. Our platform enables intuitive, scalable modeling of causal relationships across your entire production environment – empowering domain experts and analysts to work together on what really matters.

HIGH-PERFORMANCE AD-HOC ANALYSIS

Explore your data from any angle – fast. Combined with the **Xplain Data ObjectExplorer**, our **ObjectAnalytics Database** lets you perform powerful on-the-fly analysis and simulate “What-If” scenarios to test the impact of interventions before applying them.

OPEN & FLEXIBLE INTEGRATION

We play well with your tech stack. Whether via Python, JavaScript, or WebAPI, our flexible interfaces make it easy to integrate Xplain Data solutions into your analytics workflows, quality systems, or web applications.

THE RESULT:
FASTER INTERVENTIONS,
SMARTER DECISIONS –
AND A CLEAR EDGE IN QUALITY,
COST, AND COMPETITIVENESS.

- ✖ **Fast, reliable Root Cause Analysis across production**
- ✖ **Early detection of anomalies or bottlenecks**
- ✖ **Continuous quality monitoring without human bottlenecks**
- ✖ **Design and process optimization driven by insights**
- ✖ **Smarter interventions for higher OEE and lower scrap**

About Xplain Data

Xplain Data specializes in Causal AI technology, helping manufacturers uncover hidden cause-and-effect relationships within real-world data. By identifying the true drivers of production inefficiencies and quality issues, our algorithms enable proactive interventions to optimize yields, reduce defects, and enhance overall efficiency. Leading enterprises in mechanical engineering and manufacturing rely on our solutions to move beyond correlations and make data-driven improvements with precision.

*Contact us to discuss,
how to best take advantage
of Xplain Data’s Causal AI solutions
in your production!*

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