

Accélérer l'adoption de l'IA dans l'industrie

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Today's Speaker



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Director AI Solutions, Energy & Manufacturing

Agenda

1. Dataiku
2. What our Manufacturing customers do?
3. In Practice

The Dataiku Universal AI Platform Unites

The 4 Pillars of an AI Platform



Your People

For builders and consumers,
coders and clickers,
across all functions



Your Technology

Optionality to use the LLMs, data platforms
and clouds that are right for you,
now and in the future



Your Data

All data types,
all compute engines
wherever it resides



Your Governance

All steps in the data-to-AI lifecycle,
covering data prep to modeling
to operations, fully governed



**YOUR AI
STRATEGY**

The Dataiku Universal AI Platform Expands



**YOUR AI PEOPLE
STRATEGY**

Meet Your People Where They Are Get All Teams Speaking a Common Language

No-Code



Low-Code



Full-Code



Builders and Consumers



Change Infrastructure Without Reskilling



The Dataiku Universal AI Platform Anchors



**YOUR AI DATA
STRATEGY**

Ground Your AI in Your Data

Build On Top of Your Multimodal Enterprise Data

Work With Any Data Type



Tabular data



Images



Documents



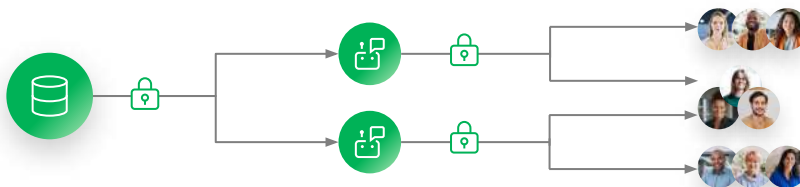
Vectors/Embeddings

Keep Your Data Where it Is, Migrate Anytime



LEGACY

Use More Data While Maintaining Full Control



The Dataiku Universal AI Platform Governs



**YOUR AI
GOVERNANCE
STRATEGY**

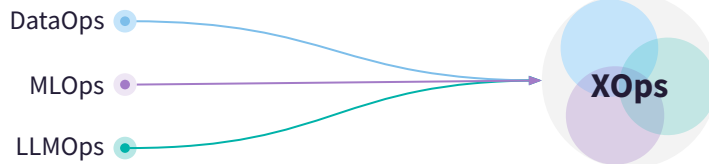
Full-Lifecycle Governance

Mitigate Regulatory, Financial, and Operational Risk

Business Alignment with End-to-End Platform



Cost Control and Efficiency by Uniting DataOps, MLOps, LLMOps



Anticipate Regulation with Ready-to-Use Compliance Templates



The Dataiku Universal AI Platform Future-Proofs



**YOUR AI
TECHNOLOGY
STRATEGY**

Maintain **Technology Optionality**

Today's Best Choice Will Not Be Tomorrow's Best Choice

Reduce the Risk of Infrastructure Lock-In



Integrate Any Generative AI Model and Service



Eliminate Future Technology Shocks

An example customer's technology journey with Dataiku

2014

2024



teradata.

MAPR



Future Technologies

700+ CUSTOMERS GET ROAI WITH DATAIKU

Proven results across industries
and all levels of AI maturity.



What our Manufacturing customers do?

From simple use case to full digital transformation



Global trends are reshaping opportunities in the industry

From challenges to data-driven opportunities



Data-driven Supply Chains

Maximise performance and enhance decision-making thanks to more accurate **forecasts**, better **inventories** and optimized **ressources**

SAFRAN

JK LAKSHMI
CEMENT LTD

Vestas



Smart Manufacturing

Incorporate AI in the **design** and **testing** of products, optimize your **production** to reduce **scrap** and improve **yield**

Kaneka

THALES



AI for Sustainability

Leverage your data to improve your **energy efficiency** while **reducing costs**. Thanks to AI, anticipate **safety issues** and reduce **risks**

SOLVAY
Leading Green Tech Innovation

DOOSAN



New Services and Personalization

Offer a wider range of **tailored products and services**, creating new market **opportunities** and enhancing **customer satisfaction**.

PON

WD Western
Digital

OSHKOSH



Data Literacy to Transform your Operations

Upskill your business professionals with AI to **reinvent** and **automate** your processes

NXP

BOEING

GE Aviation

Enhancing Employee & Customer Experiences with Big Data



For Safran, a company that designs, develops and manufactures aircraft engines and aerospace components

Challenge

The **Sales Administration department** wanted to **improve the performance of the delivery** of its products and services, in order **to make the Rolling Forecast (ROFO) more reliable**.

This innovation project is aimed at:

- Improve delivery planning.
- Make quarterly turnover forecasts
- Become more reliable
- Improve the image of the Sales Administration Department

Domain | Service Delivery

Delivered by | Data & Sales teams

Delivered for | Sales Department

Manufacturing

How to?

Inputs:

-  Data from different sources
-  More than 200 variables
-  Address
-  Content of packages
-  Supply times to make predictions



Algorithms for **Predictive Analysis** process

Predict the blockages made in the coming days **as well as the delivery date** when ordering

Results:



Personalized emails to right people with actions to take

Dashboards providing transparency across the **entire delivery chain**

Value



Improved customer / employee satisfaction



Time savings

Gain of **30 min/day** for experienced employee

50%

Reduction in stoppages

Improved processes efficiency



Improved on-time delivery

80% to 85%

Digital Asset Management To Optimize Soda Ash Production Costs

For Solvay, a multinational chemical company



Challenge

The asset management team wants to **minimize the soda ash production costs** by taking into account all meaningful parameters, among which:

- Energy prices (differ from country to country & highly volatile),
- Fuel sources (different between the plants by design),
- Load charges of energy assets (depend on each energy type and energy asset),
- Demand (varies)

Domain | Production optimization

Delivered by | Central DS & plant managers

Delivered for | Asset Management Team

Chemicals

How to?

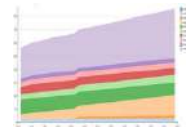
Inputs:

-  Consumption data - electricity, gas, coal etc.
-  Equipment availability data
-  Forward/Spot energy market prices
-  Variable production costs
-  Weather Forecasts



**Data preparation
Optimization
Automation**

Results:



Forecasting quarterly/yearly energy budgets

Customizable dashboard

Google sheet export for non-Dataiku users

Value



Optimize and plan accordingly

Weekly production planning in each soda ash plant for the following week.

15 min

To take supply chain decisions

on all factories in vs 1 week before



Robust & replicable project

Implemented in 6 plants



Reduced Costs

Million of € per year

Controllers identification for specific maintenance campaigns

From GRDF, a major French energy player having the largest gas distribution network in Europe

Challenge

Easily identify **200k specific gas controllers** out of a portfolio of **5M** gas controllers across the French Territory.

GRDF had **2 options**: a manual, cost-intensive one requiring to send maintenance teams to all addresses, or a data driven one leveraging smart meters deployment campaign - with the challenge of missing controller types in the database.

Domain | Visual Inspection

Delivered by | Data Science Team

Delivered for | Internal Operations/Maintenance

Energy

How to?

Inputs:

Pictures of smart meters taken during deployment



In **3 weeks**, **10k images** labelled by experts

Models built with labelled images and transfer learning on **Resnet** & **Xception**

Results:

A simple Web application allows the user to confirm if the prediction is accurate or not



Value



Automated image recognition process

20M photographs processed



Reduced operations cost

Due to targeted campaigns



Equipment identified

And changed to avoid risks



Accuracy

Compared to 85% accuracy previously

Air Conditioning Equipment Control Using Gen AI

For Mitsubishi Electric Corporation, a leading electronics manufacturing company



Challenge

Mitsubishi plan to **maintain the office room at an optimal temperature** while reducing electricity consumption as much as possible.

They leveraged Dataiku to **efficiently visualize the office building information** and verify it against past data. They plan to expand this application to their data centers and factories in the future.

Domain | Process Automation

Delivered by | Data Science Team

Delivered for | Digital Innovation Centre

Manufacturing

How to?

Inputs:

- **Environmental data** from inside and outside the office
- Air conditioning **temperature settings**
- Air conditioning **usage location information** (number/distribution of workers, images/heat map of indoor temperature, ...)
- **Comfort feedback** from workers



Multimodal Foundation Model (GPT 4)

The input data is fed into the **pre-trained Gen AI model on Dataiku**, that generates the optimal temperature prediction

Results:



Optimal temperature implemented for air conditioning equipment, **predicted every 2 hours**



Comfort and power usage are **continuously monitored**

Value

48%

48% Reduced Electricity Consumption

Average reduction over the time period compared to the baseline figures

26%

26% Comfort Improvement

Based on comfort feedback collected from office workers



Reduced Learning Costs

Save the time and cost required for teaching the system unique knowledge by leveraging the pre-trained Gen AI LLM in Dataiku

Democratizing Data & AI for factory engineers & manufacturing experts



*“Dataiku is being **used daily in our factories**, from maintenance & quality assurance, to energy consumption reduction. **We can now put the use of data in the hands of technicians.**”*

~ Head of AI for Manufacturing



700+ users

80% Business (R&D engineers, Quality Technicians...), 20% Data Experts

6 months to 1 hour

To identify correlated factor to a product anomaly

40+

Factories onboarded on Dataiku worldwide

As part of its *People, Planet, Profit* strategy, Michelin has set itself the goal of **empowering its engineers with data**. But with 80+ factories worldwide, the group struggled to easily **leverage factory/on-prem data & reuse use cases at scale**

To overcome these challenges, Michelin adopted Dataiku to:

- Allow **quick & easy data access for R&D engineers, Quality Technicians & data scientists** in the 4 main BUs (R&D, Manufacturing, Services & Corp)
- Facilitate **central use case reuse, local self-service**, and robust **data & AI governance**

MANUFACTURING

- Predictive Maintenance
- Detecting Machine Failures
- Parameters Analyzer
- Digital Twin Data Prep

R&D

- Tire Design

AFTER SALES SERVICES

- Consumption-based model
- Mobility Intelligence

In Practice



Dataiku reconciles Platform and Solutions to boost AI trajectories



The perfect workbench to efficiently build and operate **all use-cases**.

Dataiku Platform



Dataiku Solutions



Ready-to-implement use-cases which can be quickly adapted to needs and rolled out with full transparency, robustness and governance.

Value Proposition

A full suite of pre-built use-cases

20+ plug-and-play applications

15+ analytical templates

Providing **actionable business outcomes** for both data and business experts.

Powered by Dataiku's unique platform.

Dataiku Solutions for Manufacturing

Supply Chain

Demand Forecast



Forecast the future demand of your products at your preferred granularity.

Distribution Spatial Footprint

Delivery Dock Optimization

Inventory Allocation Optimization



Engineering & Manufacturing

Maintenance Performance & Planning



Reduce unplanned downtime & optimize maintenance plans for your equipment

Parameters **Analyzer**

Batch Performance **Optimization**

Aveva PI System Plugin

Production **Quality Control**

Factories Electricity & Emissions Forecasting

Sales & Marketing

Market Basket Analysis



Accelerate identification of product association rules and optimize sales strategy.

RFM **Segmentation**

Customer **Satisfaction** Reviews

Customer **Lifetime Value** Forecasting

Markdown Optimization

Operational Efficiency

Process Mining



Create a visual map of your processes based on available process logs.

Financial Forecasting

Interactive Document Intelligence for **ESG**



Maintenance Performance & Planning

Reduce unplanned downtime & optimize maintenance plans for your equipment

[Test the solution here](#)



From Business Needs to Solution

Dataiku Maintenance Performance & Planning Solution turn vast volumes of maintenance history into **optimized maintenance plans**.

Survival Analysis and ML models provide **remaining useful life** based on maintenance history and a recommended maintenance schedule per asset, allowing Service Managers to **adjust strategies**.

GenAI transform analytics into business insights for actual usage by operations team.

Equipment
information

Maintenance
History



The screenshot shows the 'Choose the parameters for the analysis' step in the Dataiku Project Setup. It includes fields for 'Asset list of the project' (set to 'All Assets'), 'Target Forecast Horizon' (set to '30'), 'Maximum forecast horizon' (set to '30'), and 'Asset list' (set to 'All Assets'). A 'Dashboard' section at the bottom lists 'Figure 1: Predictive Maintenance Dashboard'.

Dataiku Project Setup

Equipment Survival
Analysis



Maintenance Performance
Determinants

In A Nutshell: What's Inside the Solution?



Data Experts

Quickly **set up** and **scale** with
the Maintenance Planning
Dataiku Project Setup.



Choose the parameters for the analysis

You can find a detailed description of the configuration options in [here](#)

Initial dataset of the analysis: **data003**

Use an existing variable (or create a new variable): **No**

Target Planned Variable Name: **No**

Maximum allowed in-group size: **No**

Apply

Dashboard

Expenses for Financial Statements

Dashboard



Data Experts

Adjust and **extend** thanks to a structured **Flow** and extensive **Wiki**.

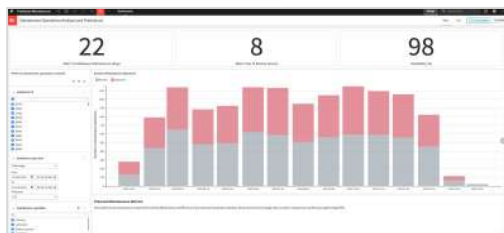


Reliability Engineers

Move from insights to action with comprehensive Business Dashboards



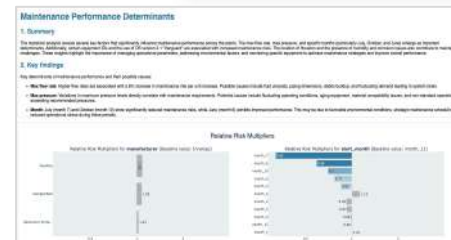
Maintenance Supervisors



Maintenance History by Asset



Optimized Maintenance Schedule



Generated Reports about Performance

Dataiku Maintenance Performance & Planning Solution: a deeper look at the flow

Downtime Analysis

- Prepare charts and trends for Pareto analysis of downtime causes and MTBF/MTTR
- Compute Weibull distribution for characterization of action down to component level

Input Data

- Maintenance Operations data
- Equipment information

Data Preparation

Combine data to put maintenance activities in context of service & downtime

Estimate Survival Probability

- Estimate Remaining Useful Life for equipment and for each equipment and maintenance operation
- Use Plugin Survival Analysis

Explain results with GenAI

- Leverage GenAI to combine unstructured data with structured data
- Provide explanations that everyone can understand

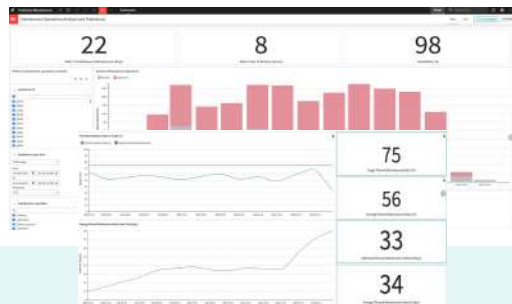
Train Survival Model

- Build the Survival Model with the input data
- Generate insights on the relative risk multipliers for each equipment parameter



Dataiku Maintenance Performance & Planning Solution Dashboard

Perform an analysis of maintenance operations & discover the best schedule for your equipment



Maintenance Performance Determinants

1. Summary

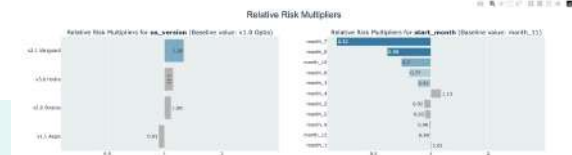
The maintenance performance of equipment assets varies in plants and environmental factors. It is influenced by specific elements identified through our analysis. Factors are observed to be more prevalent in equipment situated in specific locations, particular models, and with certain equipment models. Notably, specific breakdowns such as bearing wear and tear, are observed to be more prevalent in equipment situated in specific locations, particular models, and with certain equipment models. Notably, specific breakdowns such as bearing wear and tear, are observed to be more prevalent in equipment situated in specific locations, particular models, and with certain equipment models.

2. Key Findings

• Location: Equipment in plants in maintenance problems, with a 30% increase in issues linked to humidity and corrosion.

• Equipment Features

• VCI: VCI and Software: Lowest with collaborative maintenance, presenting a 30% higher maintenance risk.



Optimized Predictive Maintenance Schedule

This section offers a forward-looking maintenance schedule uniquely tailored for each piece of equipment. Our predictive model uses survival analysis to find the best times for maintenance. Essentially, we align these times to meet your target maintenance ratio. For example, if your goal is a 70% planned maintenance ratio, our model predicts the exact moment when there's a 70% chance the equipment will keep running smoothly until the next check-up. This ensures things happen just when you need them, saving resources.

Predictive Maintenance Schedule



Define your “Planned” target

- Select your **period** of analysis and your planned maintenance target to start
- Review your maintenance KPI's including **Mean Time Between Failures (MTBF)** and **Mean Time To Repair (MTTR)**

Understand equipment failures reasons

- **Understand** which elements affect the likelihood of equipment failure
- Uncover potential **causes** in your **documents** and **generate** automatic reports thanks to **Dataiku's GenAI capabilities**

Review maintenance schedule

- **Review** your tailored maintenance schedule
- Assess remaining **useful life**



Thank You

Do you have any questions?



**Accelerate AI in
Manufacturing**



Meet Dataiku

The Universal AI Platform



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