

CONFERENCE DAY SEPTEMBER 30, 2022  
INDEPENDENT WORKSHOPS SEPTEMBER 29, 2022



[summit.datamass.io](https://summit.datamass.io)

# DATAMASS GDANSK SUMMIT

CLOUD AGAINST DATA

Anomaly Detection in Network with the use of ML Pipelines  
in Vertex AI

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Orange Innovation Data & AI

# — Agenda

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**1 Data and AI in Orange Innovation**

**2 Anomaly detection in Network**

**3 ML Pipelines in Vertex AI**



# — Data and AI

## **Our vision:**

**AI opens up possibilities for improving the lives of the individual, the society and the planet**

## **Our challenge:**

**Becoming a data driven and AI – powered Telco company**



# — Extend digitalization and AI



Customer experience

- Scale deployment of chatbots
- Digitalize sales in MEA & Europe
- Streamline online subscription
- Personalized recommendations
- Optimized churn management



Smart Networks

- **Predictive maintenance solutions**
- Automated failure analysis
- Anticipate network degradation
- Digitize the tools of technicians and subcontractors

# Predictive Network Maintenance

## Use Case

Service **Anomaly Detection** and Identification of Impacted Customers with **Root Cause Analysis**



## Data

KPIs:

- **Call Drop Rate**
- Call Setup Success Rate
- Call Attempts

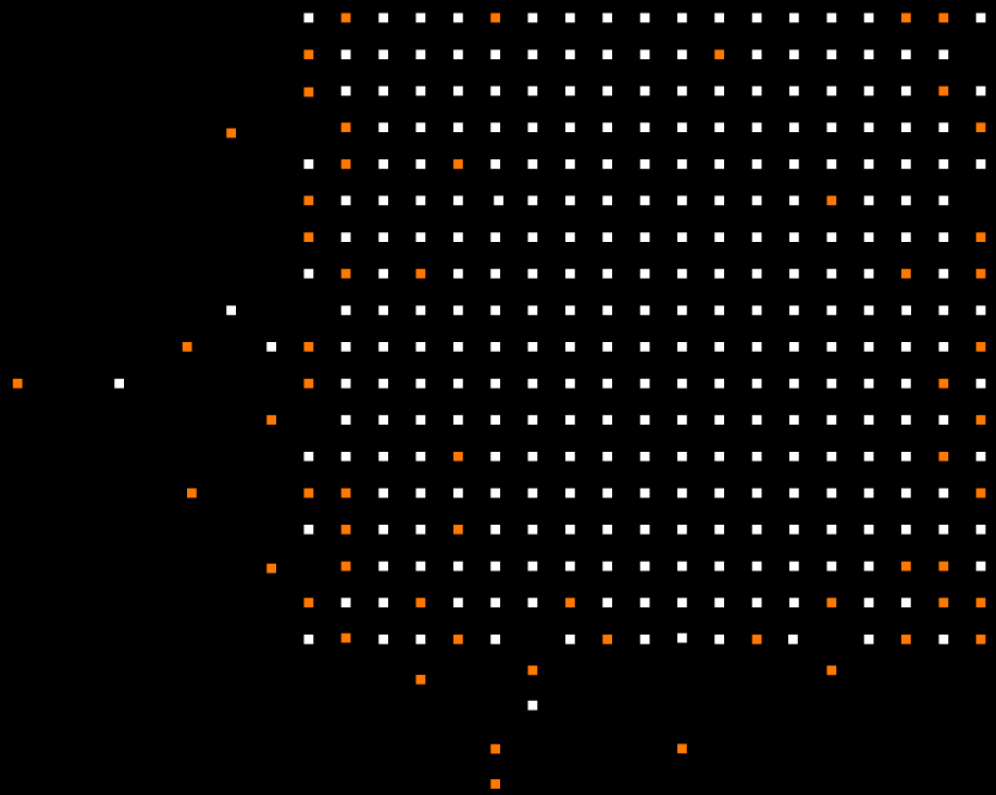
Error Codes

Alarms



# ML phase

Algorithms,  
challenges



# — Key challenges

## Many false positives

Existing tools provided a lot of false alarms

## Class imbalance

Anomalies occur relatively rarely

## Multiple time series

Anomaly detection on different levels

## Multi – country

Different methodologies for aggregation

## Big Data

A few TB for one country per month

## Lack of labels

Unsupervised methods are used

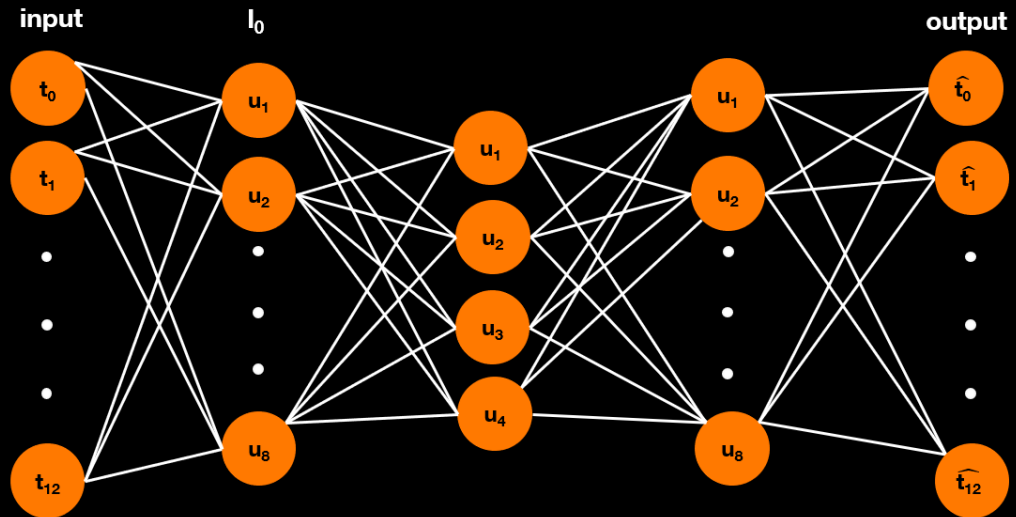


# AutoEncoder for anomaly detection

Input data

DAY	DAY	DAY	DAY	DAY	DAY
1	2	3	4	5	6
12	15	11	17	19	12

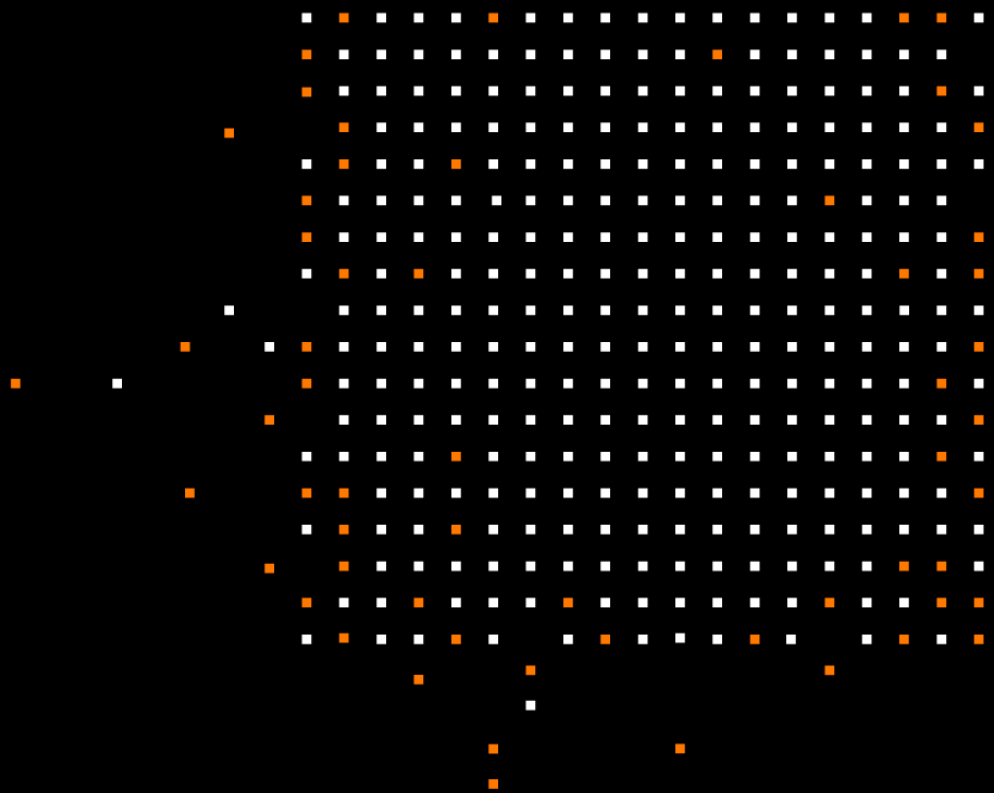
Model architecture





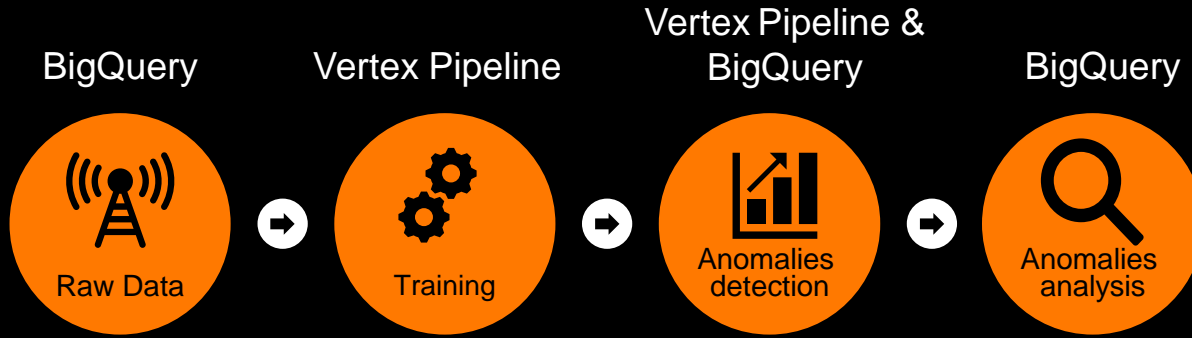
# ML Pipelines

Vertex AI



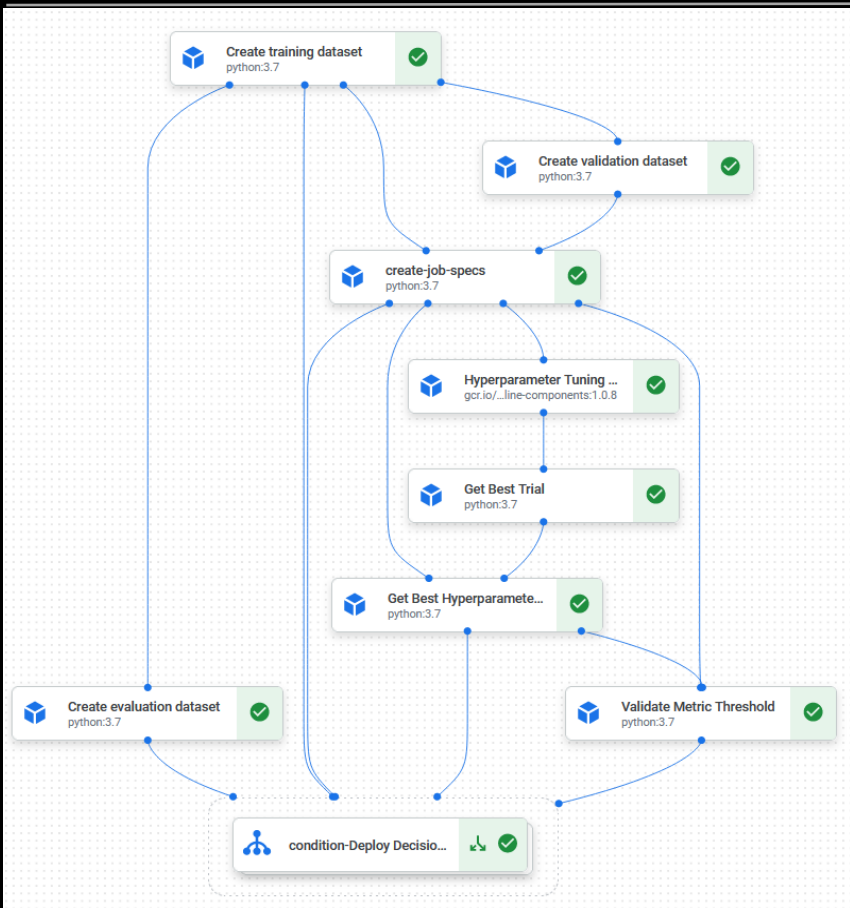


# Technology



Unsupervised Machine Learning

# ML Pipelines



From creating **datasets**, through **modeling**, ending at **detected anomalies**

# — Key takeaways

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- ✓ Extending of digitalization and AI
- ✓ Autoencoder for unsupervised anomaly detection
- ✓ **Big Query as Big Data tool**
- ✓ End-to-end pipeline in Vertex AI



# Contact us!

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