



ontotext

THE GRAPHDB COMPANY

# INDUSTRIAL KNOWLEDGE GRAPHS IN ACTION

Dataweek Leipzig, Apr 2024

# Company Overview

- **Leader**

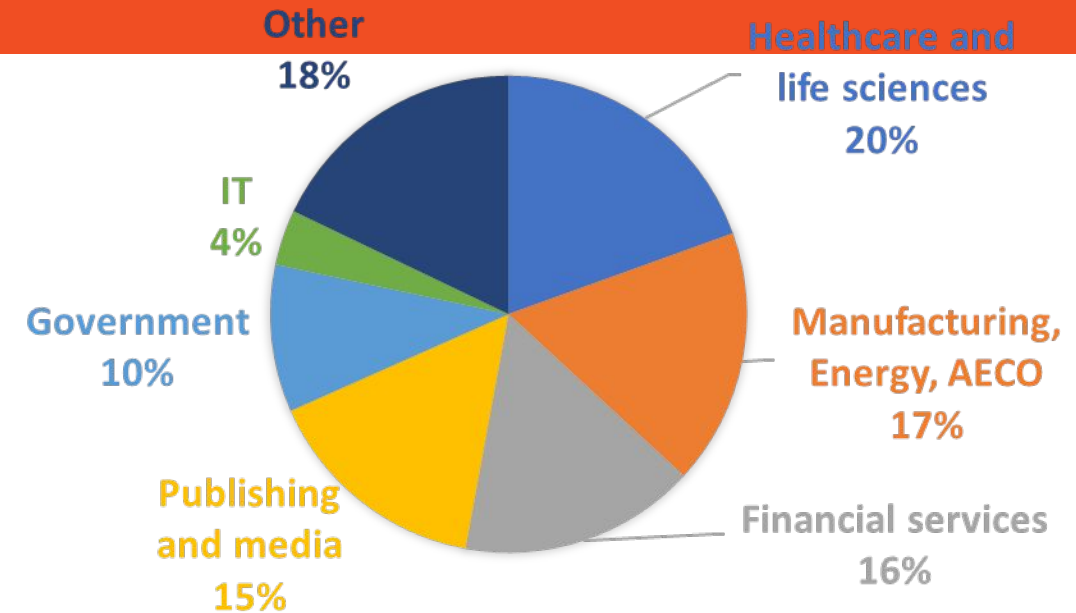
- Semantic technology vendor established in 2000
- Product company in growth phase

- **Profitable and growing**

- 80% of revenue from multinational companies
- **Clients:** S&P, BBC, FT, Top-5 US Bank, UK Parliament, NASA, Fujitsu, Novartis, Johnson Controls
- **Verticals:** Manufacturing, AECO, Fin. Services, Healthcare and Life sciences, Government

- **Innovator**

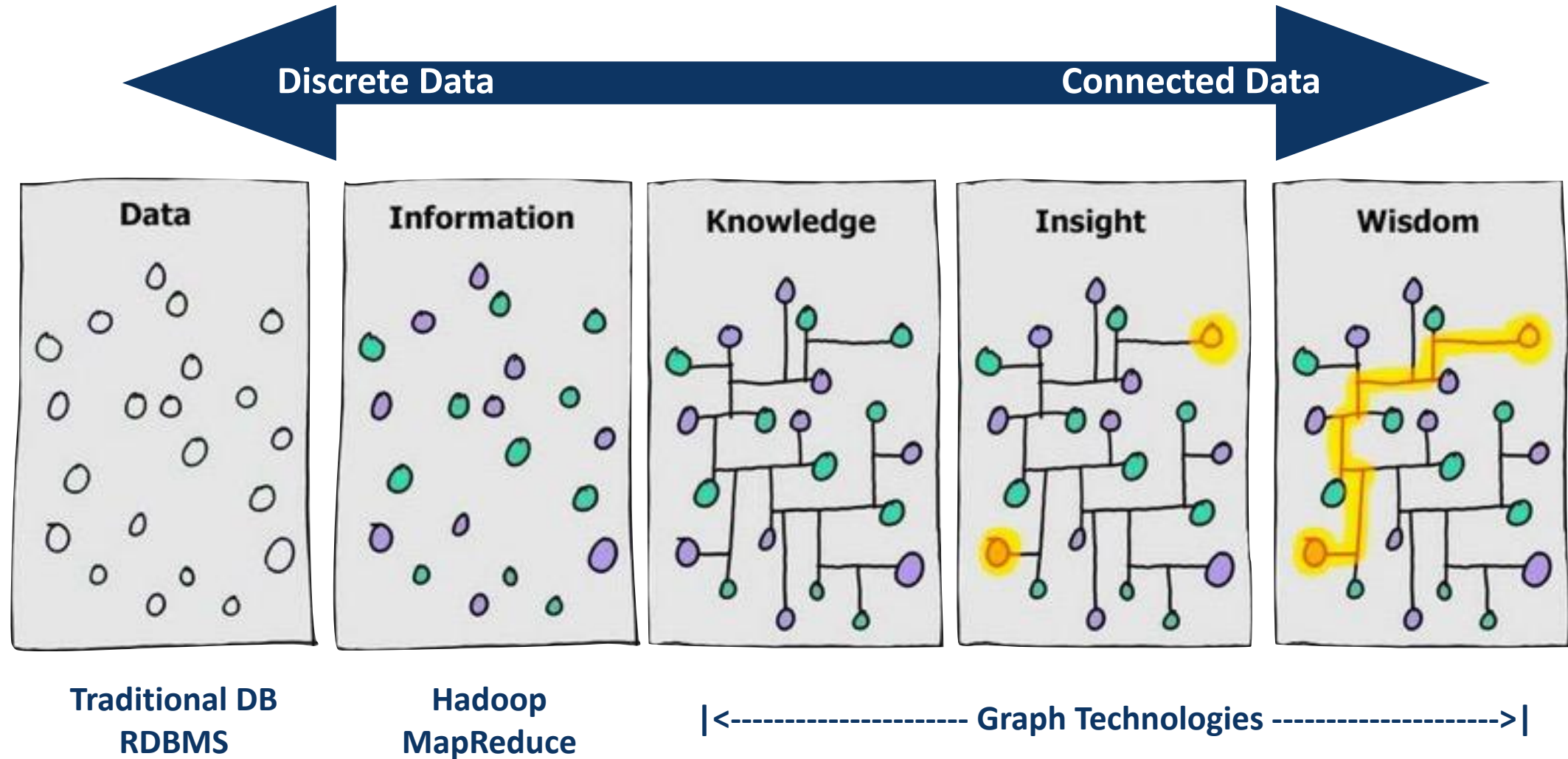
- Member of W3C, ODI, STI, LDBC, DBPedia Association, Pistoia Alliance, DHI Cluster
- 30+ collaborative research projects with the best academic groups in Europe



# KGs: The simplest model “connecting the dots”!

The inherent **complexity** of **big enterprises** is such that **knowledge graph** is the simplest model that enables them to “**connect the dots**” across 100s of operational IT systems and turn the **diversity** of their business into a **competitive advantage**.

# Why Graphs?



## Put data in context via semantic metadata and linking

Help enterprises gain deeper insights via linking and analysis of:

- **Diverse databases**
- **Text documents** and other content
- Non-proprietary **domain knowledge**

## The sweet spot

Knowledge-intensive domains and applications, which require:

- Large highly interconnected reference data sets
- Very diverse data
- Complex relationships, simplified user engagement

# LLM?

# JA

# "Ja, natürlich machen wir LLMs.,,

- generated with ChatGPT

(if the translation is bad, please blame OpenAI)



# KGs + LLMs = Innovation

## ○ GraphDB integrates with ChatGPT

- Enhances user interaction with RDF, catering to both novices and experts
- Simplifies diving into RDF, leveraging ChatGPT to uncover deeper insights from the data

## ○ Query and result explanations

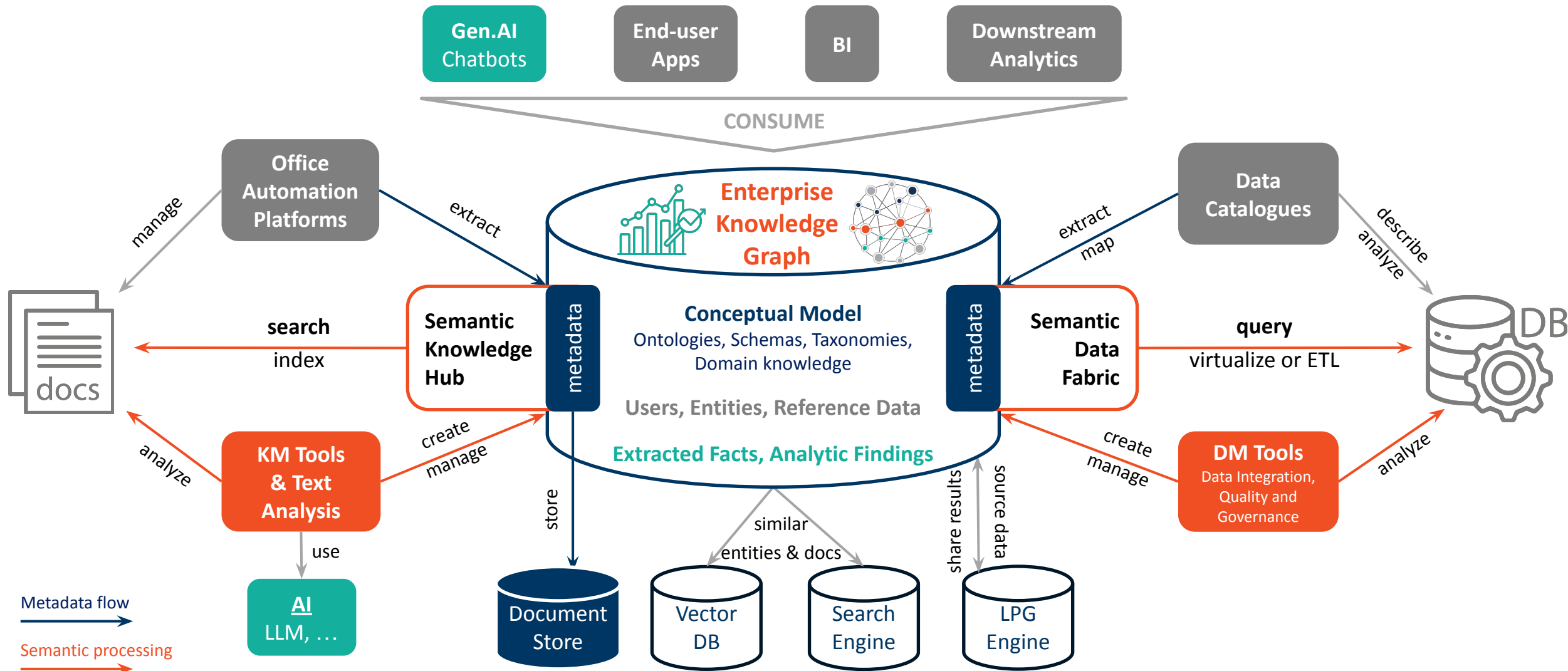
- Users can get textual summary of the results, instead of just a table of strings and numbers
- Brings clarity from the underlying logic
- Makes RDF and SPARQL easy to understand

## ○ Ask generic questions to ChatGPT from SPARQL

- Enrich your graphs and extract additional information from your data



# The Big Picture of the Graph Platform



# Automotive

Top 10 automobile manufacturer needed an effective way to handle complexity in uncovering relationships and dependencies around capabilities, requirements and compatibility between 100's of installed components. Extremely diverse configuration options required detailed modelling and inferencing capabilities to effectively understand relationships and enable capabilities or identify gaps.

The solution relies on multi-DC cluster deployment, onsite consulting and training.

## Vehicle Configuration Use Case

- Create an **automobile electronics digital twin** delivering a compatibility map across all installed ECUs
- Develop new B2C opportunities by **increasing user engagement** with upgrade recommendations
- Enable pathway for **over-the-air upgrades** to optimize delivery and operational costs

## FUNCTIONALITIES

- Integrates with constraint solver to calculate minimal upgrade paths
- Delivered 7 level ontology on functions & services, assemblies, alternative implementations & ECU
- Robust deployment and high-availability

Key facts: 18 months to delivery using GraphDB with training and consultancy



# Cable Manufacturing

Top 10 auto parts maker needed an easy way to manage their auto cables CPQ process. A knowledge graph was built to handle sizable amount of configuration options taking into account technical requirements such as: signal types, physical properties, termination options, raw material availability, cost, production complexity etc.

## Cable Manufacturer Use Case

- Model multiple aspects of configuring auto cables
- Provide assistance with designing a product for particular usecases considering specs, intended usage and cost
- Provide viable alternative designs with pros & cons

## FUNCTIONALITIES

- Computes compatibility between different engineering options
- Extract information from fact sheets
- Understand units of measure, materials and physical limitations

**Key facts: 12 months to delivery using GraphDB services and consultancy**



# Car parts Manufacturing

Top 3 Japanese auto parts maker needed a backend partner for a knowledge graph solution to optimize their product development processes. Key focus was placed on understanding reasons for failing during the simulation and testing phases.

## Car part Manufacturer Use Case

- Comprehensively manage key aspects of car part development
- Manage requirements, specifications, engineering options, testing scenarios and results.
- Enable integration capabilities with numerous systems

## KEY FUNCTIONALITIES

- Effective reasoning
- Analytical capabilities
- RBAC
- Robust highly available deployment

**Key facts: Product deal: GraphDB-Enterprise and maintenance**





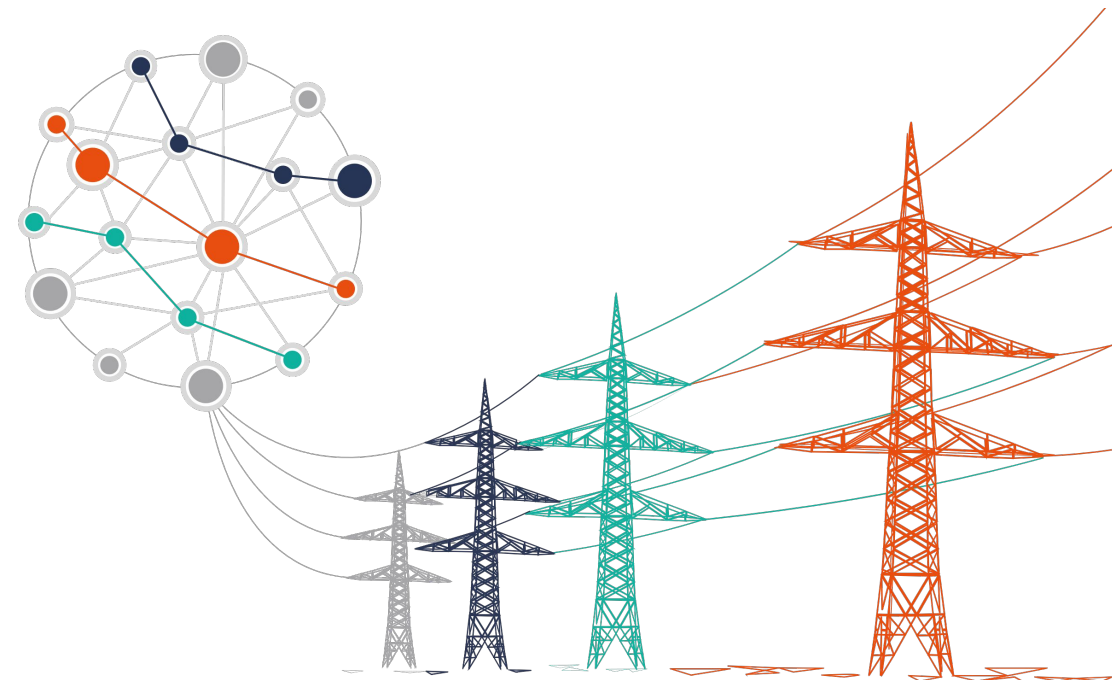
# Smart Grid Management

**Statnett**  
— **EnBW**

 **SVENSKA  
KRAFTNÄT**

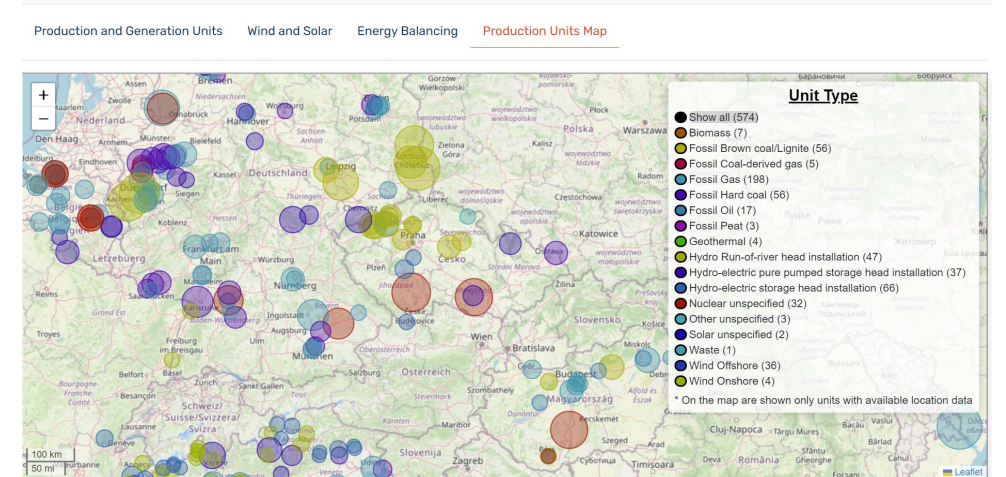
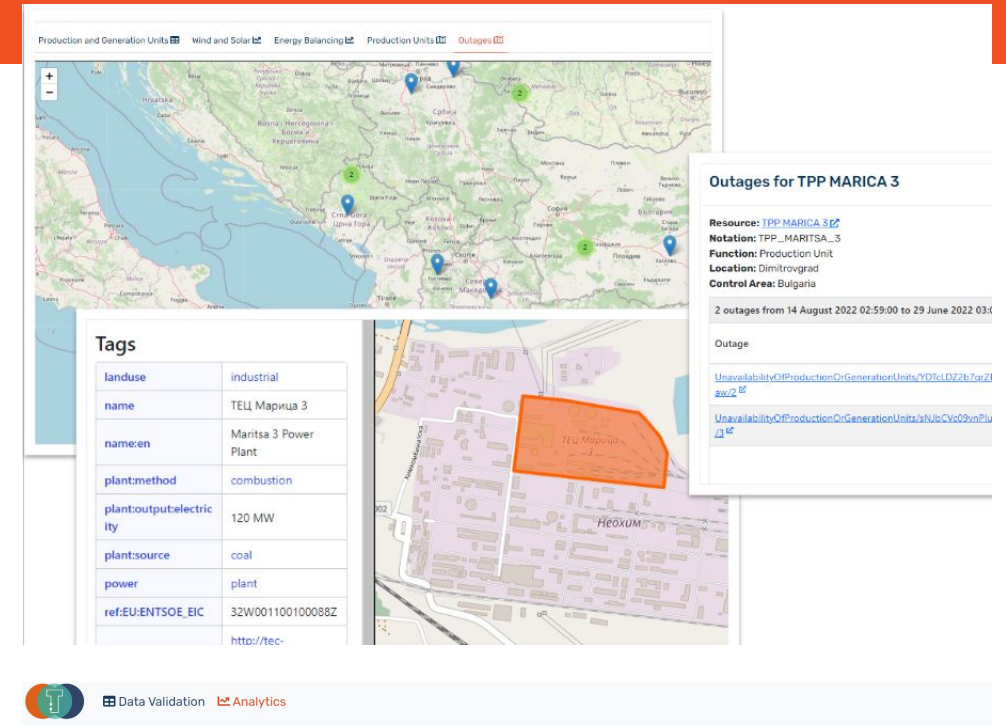
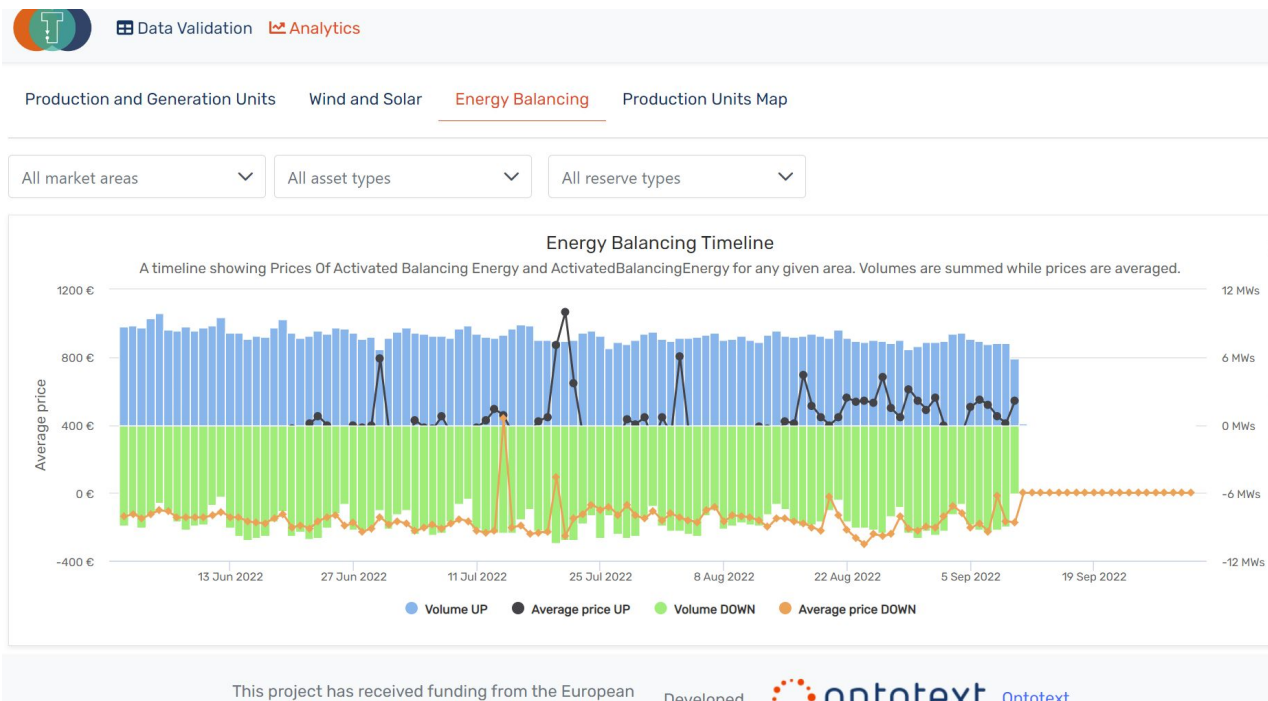
  
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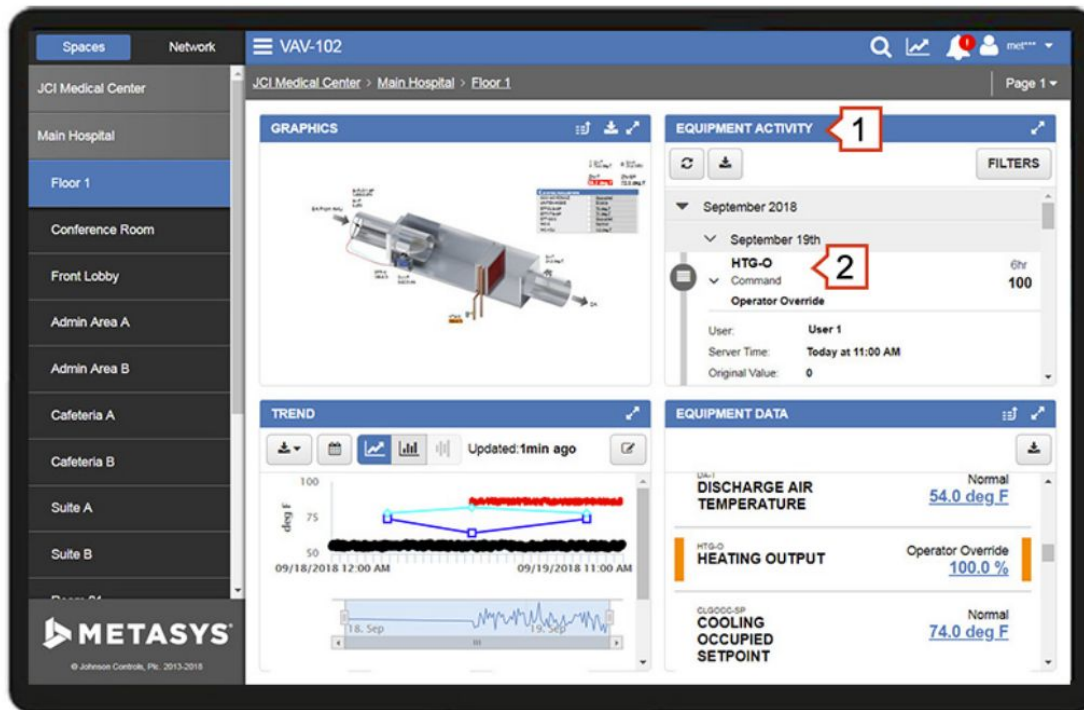


# Energy Knowledge Graph

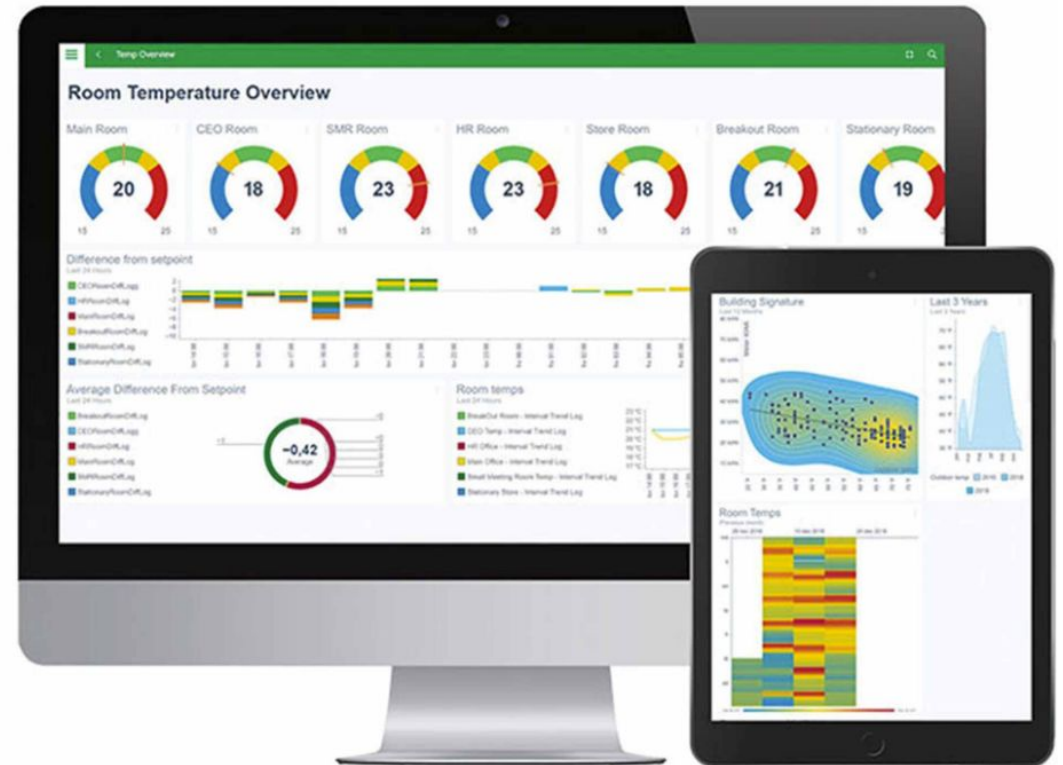
## Demo: Transparency Energy Knowledge Graph



## Johnson Controls Metasys



## Schneider Electric EcoStruxure

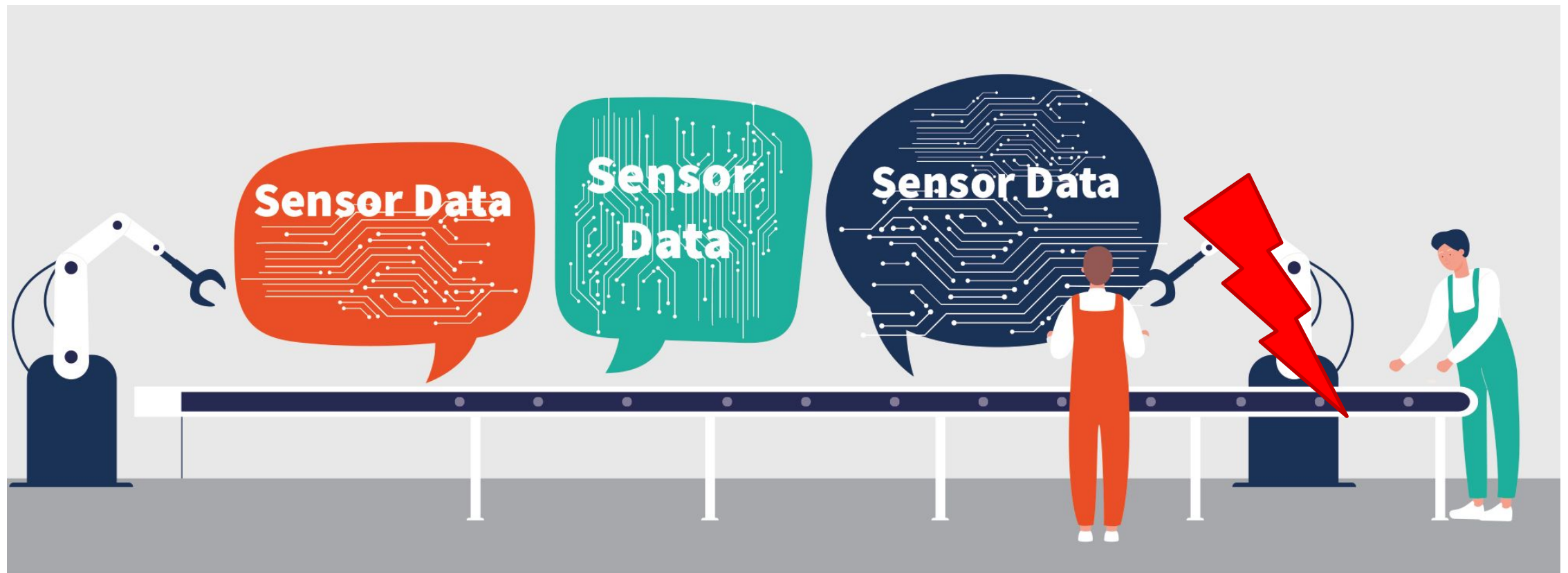




# A data story



# A data story



# A Data Story



# A Data Story





## To Do List

1. \_\_\_\_\_

2. \_\_\_\_\_

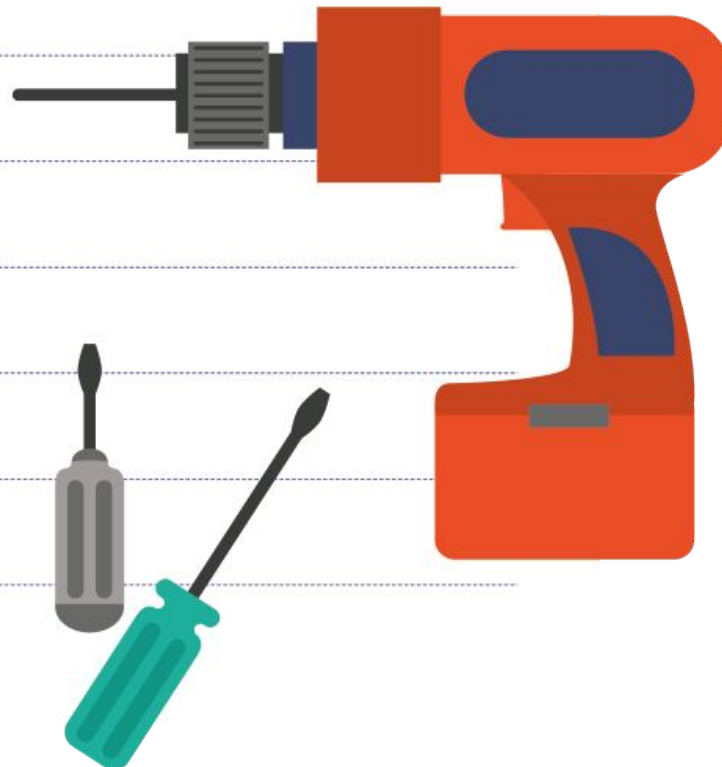
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7. \_\_\_\_\_







**eccenca**  
mastering complexity



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