

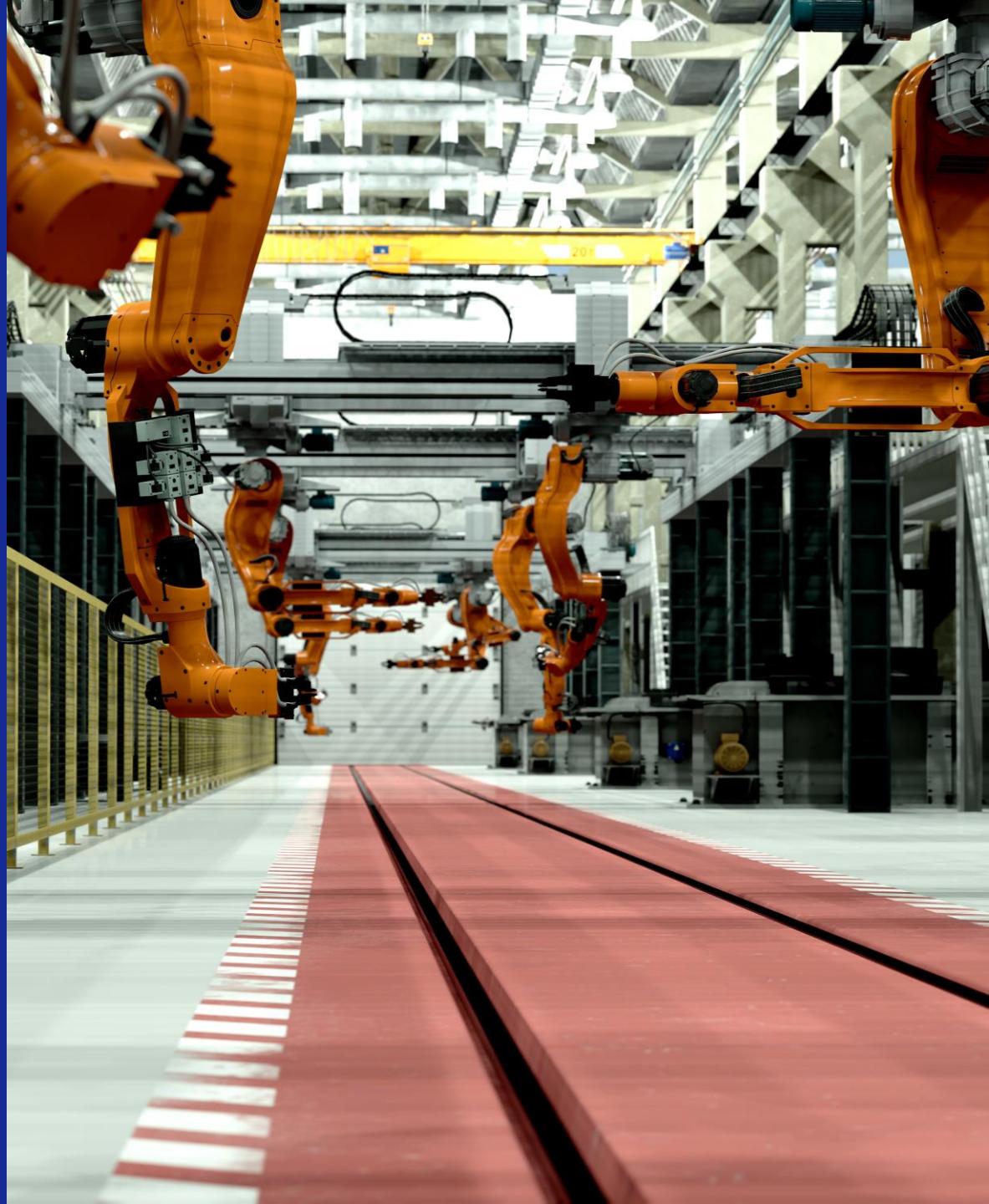
COMARCH

IoT in service to Manufacturing 4.0

Benefits and use cases

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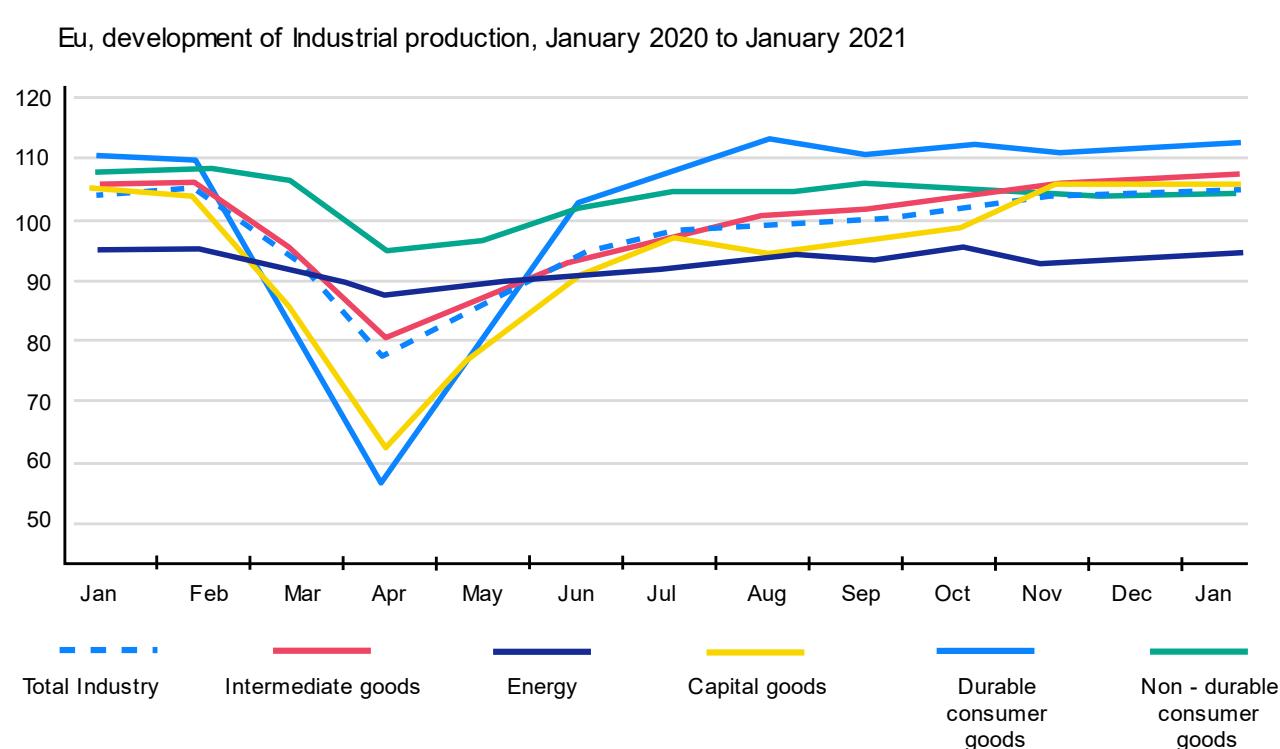


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Pandemic COVID-19 effect on manufacturing

COVID-19 pandemic affected the industrial production of EU countries. Between January 2020 and January 2021, the biggest falls were recorded since when WHO declared a pandemic (11 March 2020).

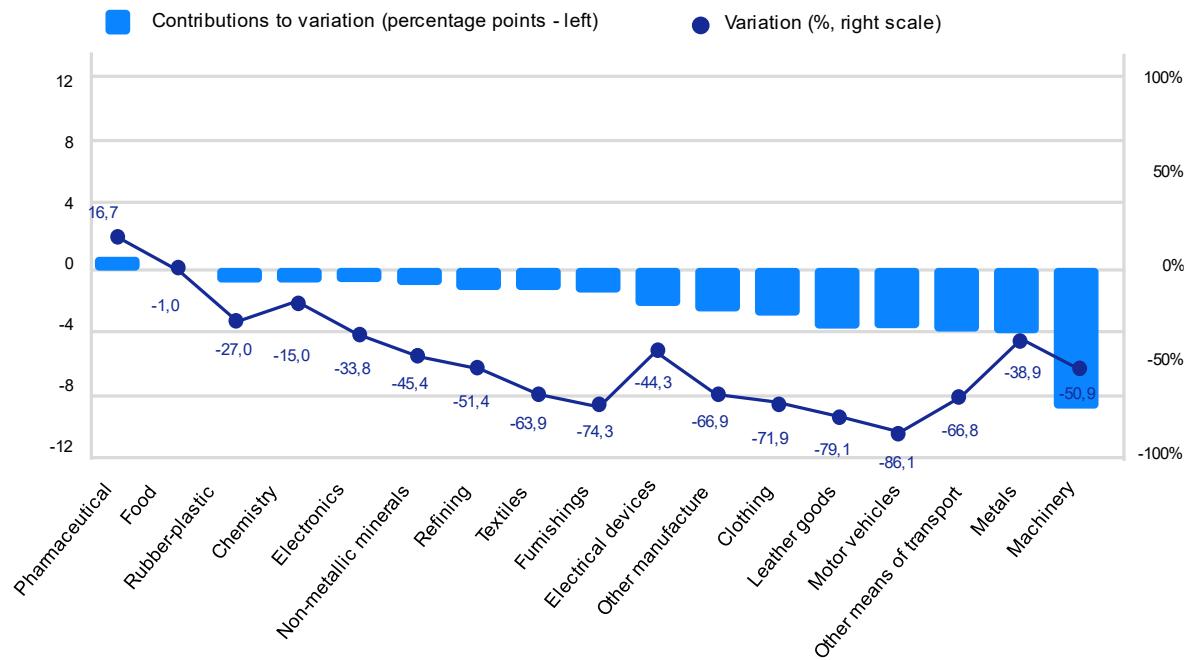


In Italy, in the first eleven months of 2020, manufacturing production decreased by about 13% compared to 2019 (source Confindustria).

Source: Eurostat, *Impact of Covid-19 crisis on industrial production*.

Pandemic COVID-19 effect on export

COVID-19 impact on exports in sectors of economic activity (April 2020 compared to April 2019)
Ranking of sectors of economic activity according to export contributions. April 2020, contributions
to the change in percentage points and trend percentage changes.



Source: Istat, 2020

Italy is one of the greatest global industrial powers, ranked in top 10 exporter of goods and manufacturing products in the world.

The highly restrictive measures adopted by foreign governments to counter the spread of the pandemic inevitably led to a decrease in exports and to a **reputational impact on "made in Italy" products**.

Are digitization and Industry 4.0 able to cope with the current conditions?

Which of them are indispensable for manufacturing companies that want to remain competitive and strong in such an uncertain market?

What is Industry 4.0 ?

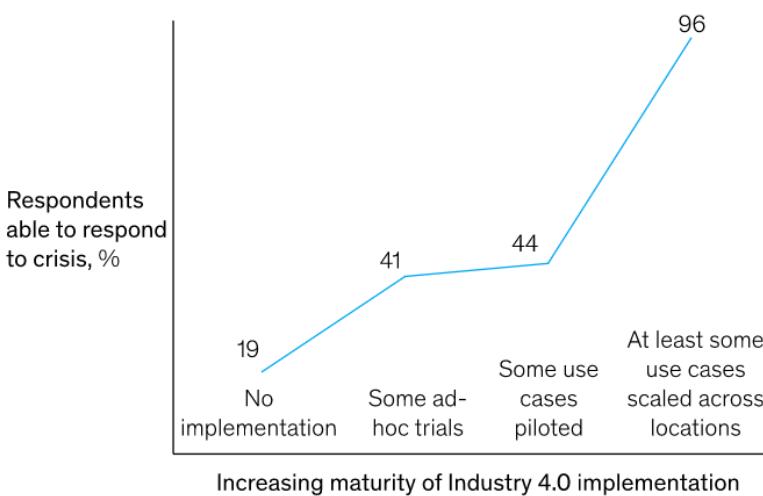
A photograph of a modern industrial factory floor. In the background, several orange robotic arms are mounted on a metal structure, likely a gantry. The floor is a polished concrete with a red and white striped safety line. The background is slightly blurred, showing more of the factory's complex infrastructure, including pipes, beams, and other machinery.

Fully-integrated, collaborative manufacturing systems that respond in real time to meet changing demands and conditions in the factory, in the supply network and in customer needs.

Industry 4.0 vs COVID-19

Early Adopters that already had Industry 4.0 and other digitization-related solutions in place even before the pandemic were able to freely continue their operations.

Companies whose Industry 4.0 implementation is more mature report stronger ability to respond to crisis.



How has your perception of Industry 4.0's value changed since the pandemic?

Respondents, %

Industry 4.0 is more valuable

65

Industry 4.0's value is unchanged

23

Industry 4.0 is less valuable

12

The number of “smart” companies in EU stands at 18%, while in Italy about 23% of companies use IoT solutions (source Eurostat).

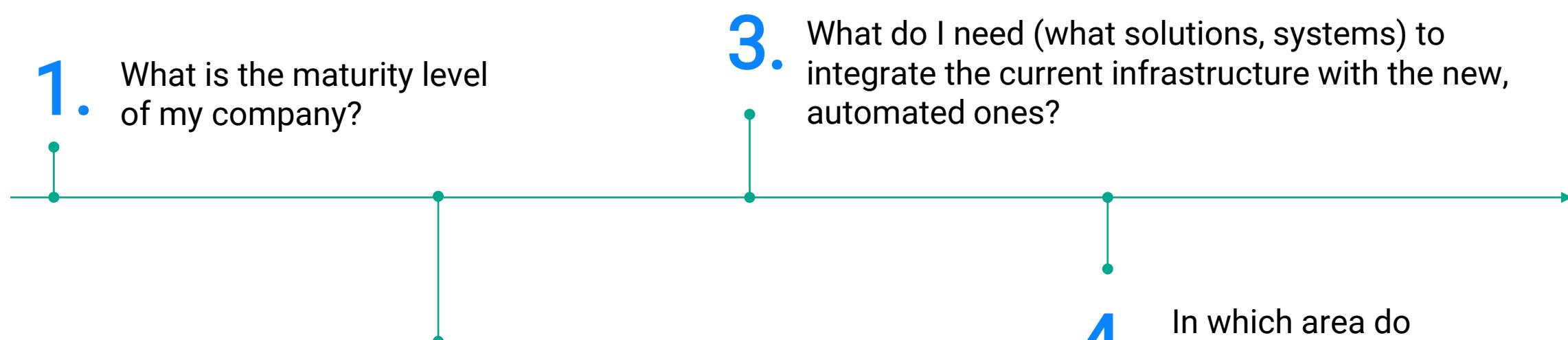
21% of them are big companies and they use IoT for energy efficiency.

The rest are SME companies and mostly use IoT for vehicles tracking.

What are the challenges for manufacturing companies?

Resilience & Optimization

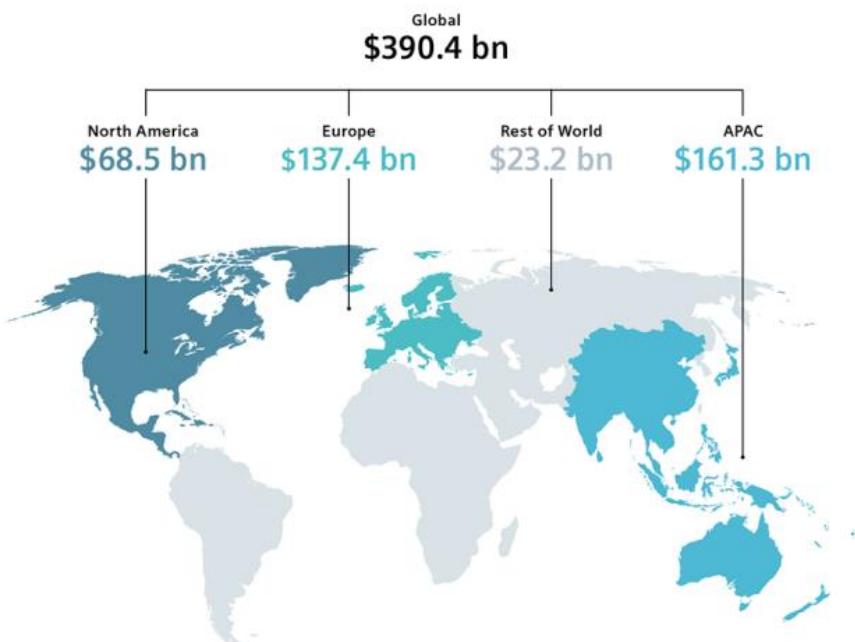
ROADMAP: What solutions do I need to accomplish them?



1. What is the maturity level of my company?
2. What are the strengths and weaknesses of the systems currently in place?
3. What do I need (what solutions, systems) to integrate the current infrastructure with the new, automated ones?
4. In which area do I need help?

Market and trends 4.0

- The largest Industry 4.0 market in 2020 -> **Europe** (Source: Mordor Intelligence)
- The total global investment in digital transformation is expected to reach nearly **€400 billion**



Source: Siemens, *Industry 4.0: Rising to the challenge*.

Investments 4.0 trends in 2021:

- 1) Reducing energy consumption
- 2) Internet of Things
- 3) The use of cloud technologies

Italy Government funds: “Piano Transizione 4.0”



- Support the process of technological transition and environmental sustainability.
- 24 Bln € investments
- Concessions in the form of tax credits

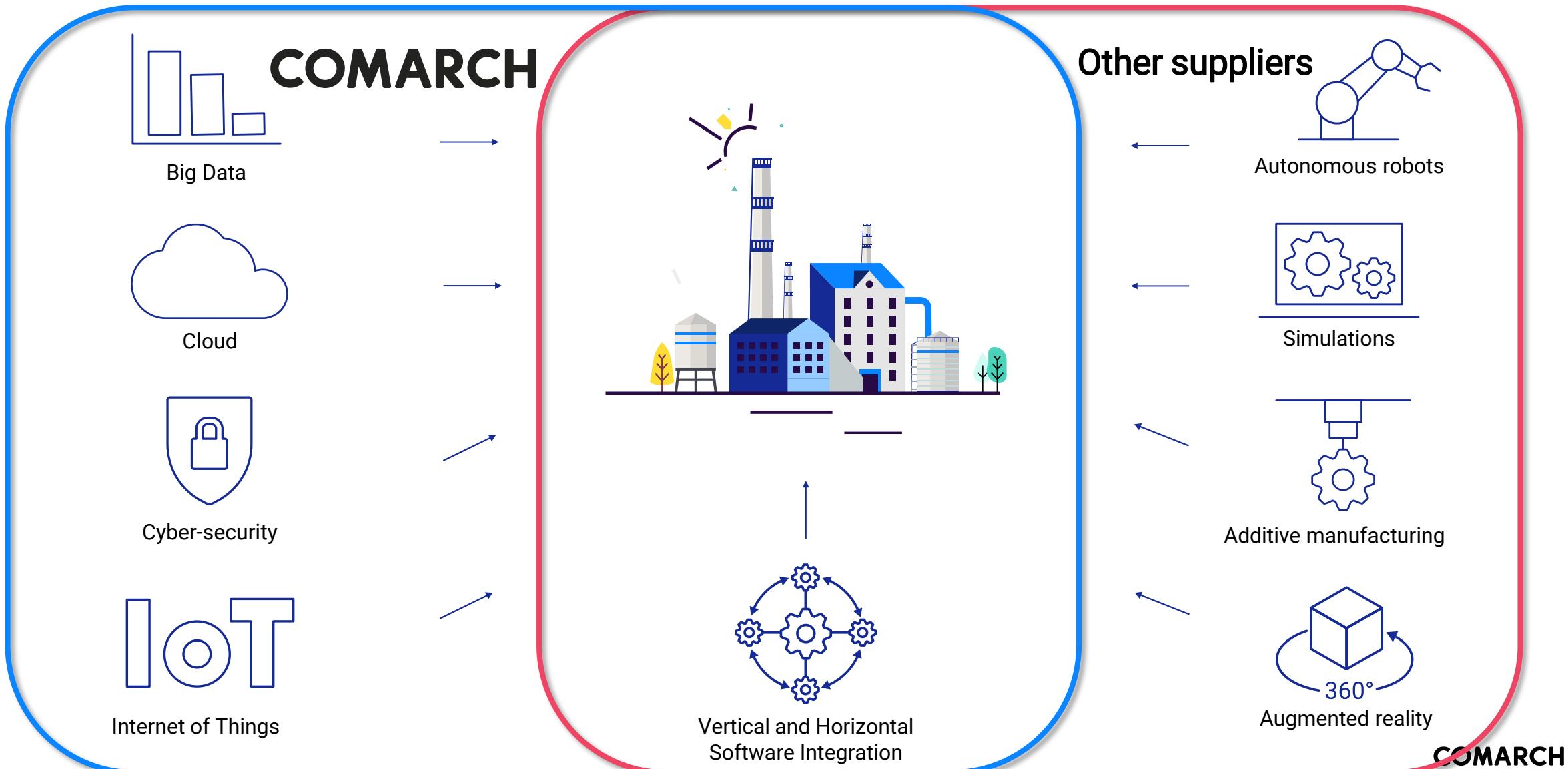


Article: [“Piano Transizione 4.0: cos'è e come accedere alle agevolazioni”](#)

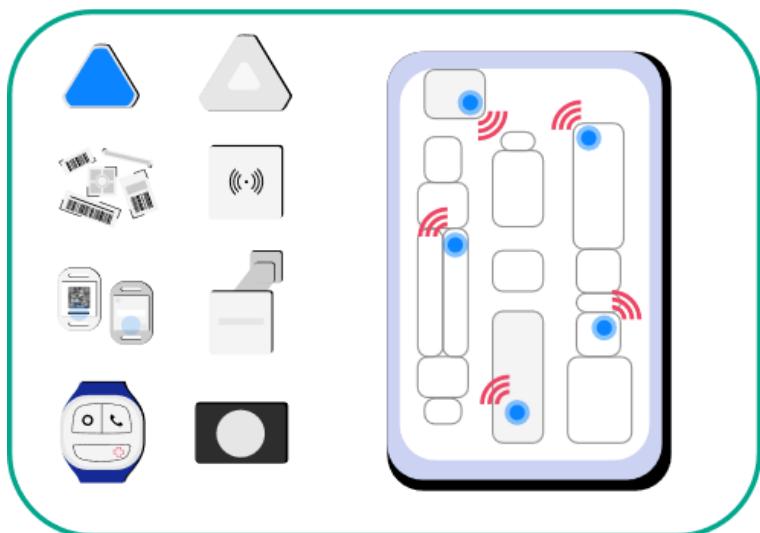
Benefits of implementing 4.0 solutions

Producer perspective (B2B)	Consumer perspective (B2C)
<ul style="list-style-type: none">• Full control over production processes• Reducing the risk of manufacturing defective, low-quality products• Continuity of production and preventing failures (predictive maintenance)• Remote access to data• Reducing costs of energy consumption• Retrofitting of the existing infrastructure	<ul style="list-style-type: none">• Customized products (personalization)• High-quality products• Reducing the number of complaints• Shortening of delivery time

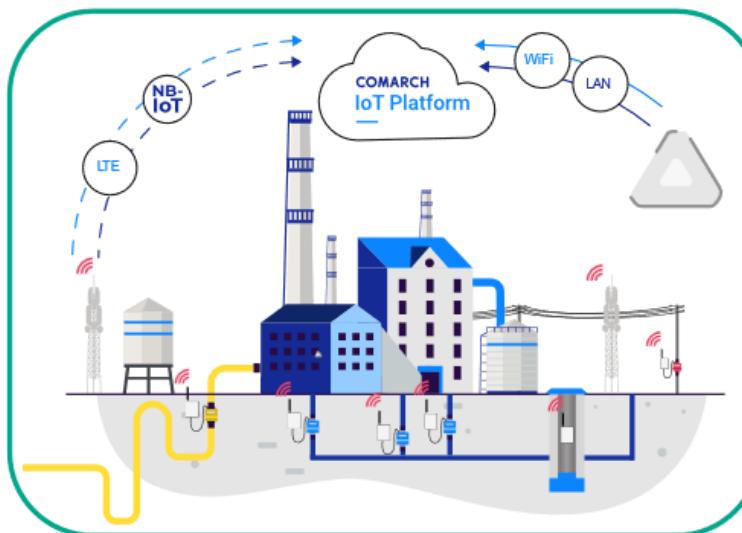
Comarch experience: the 9 pillars



IoT ecosystem for Industry 4.0



Asset Tracking

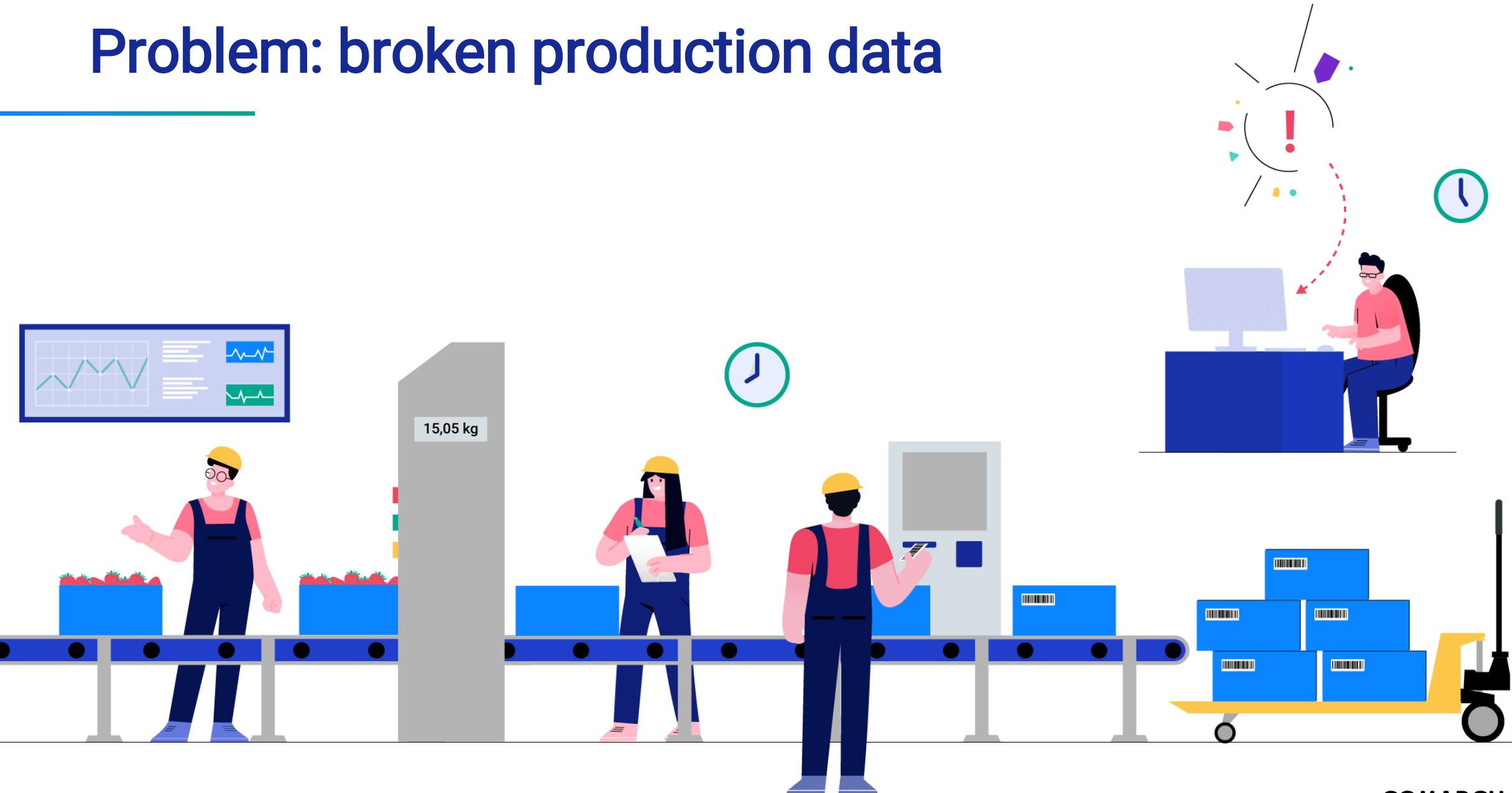


Smart Metering for Industry

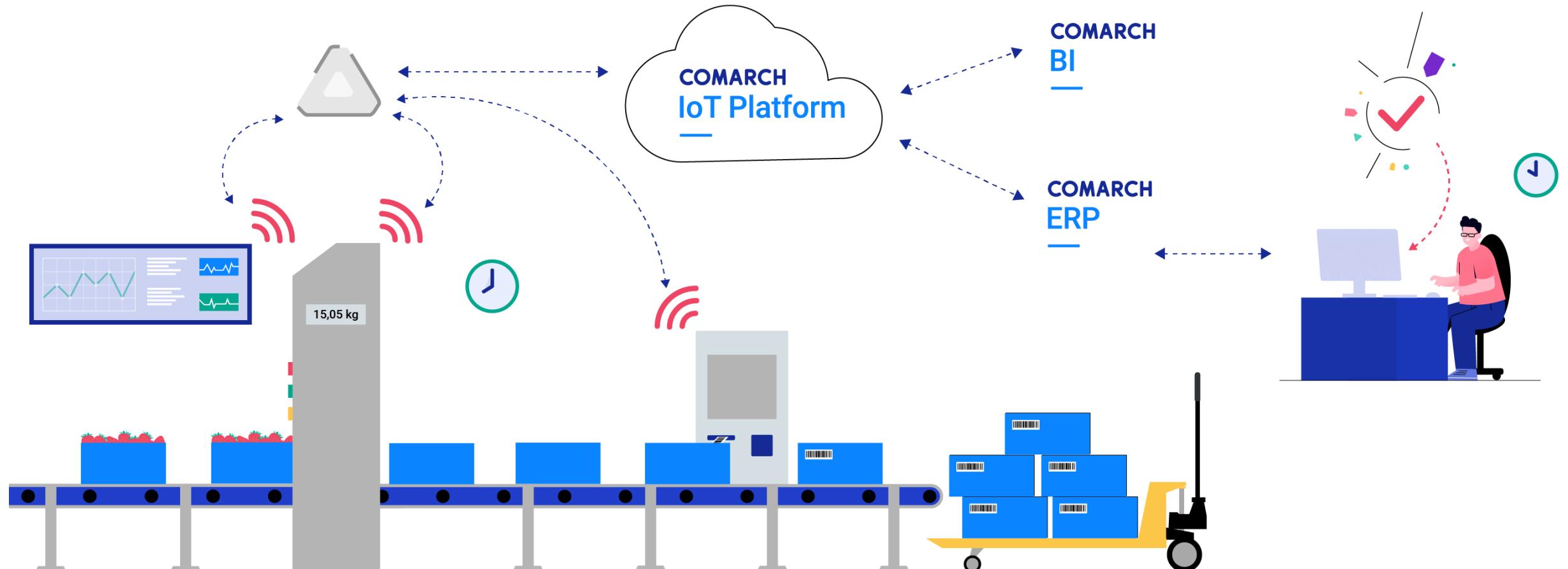


MES Application

Problem: broken production data

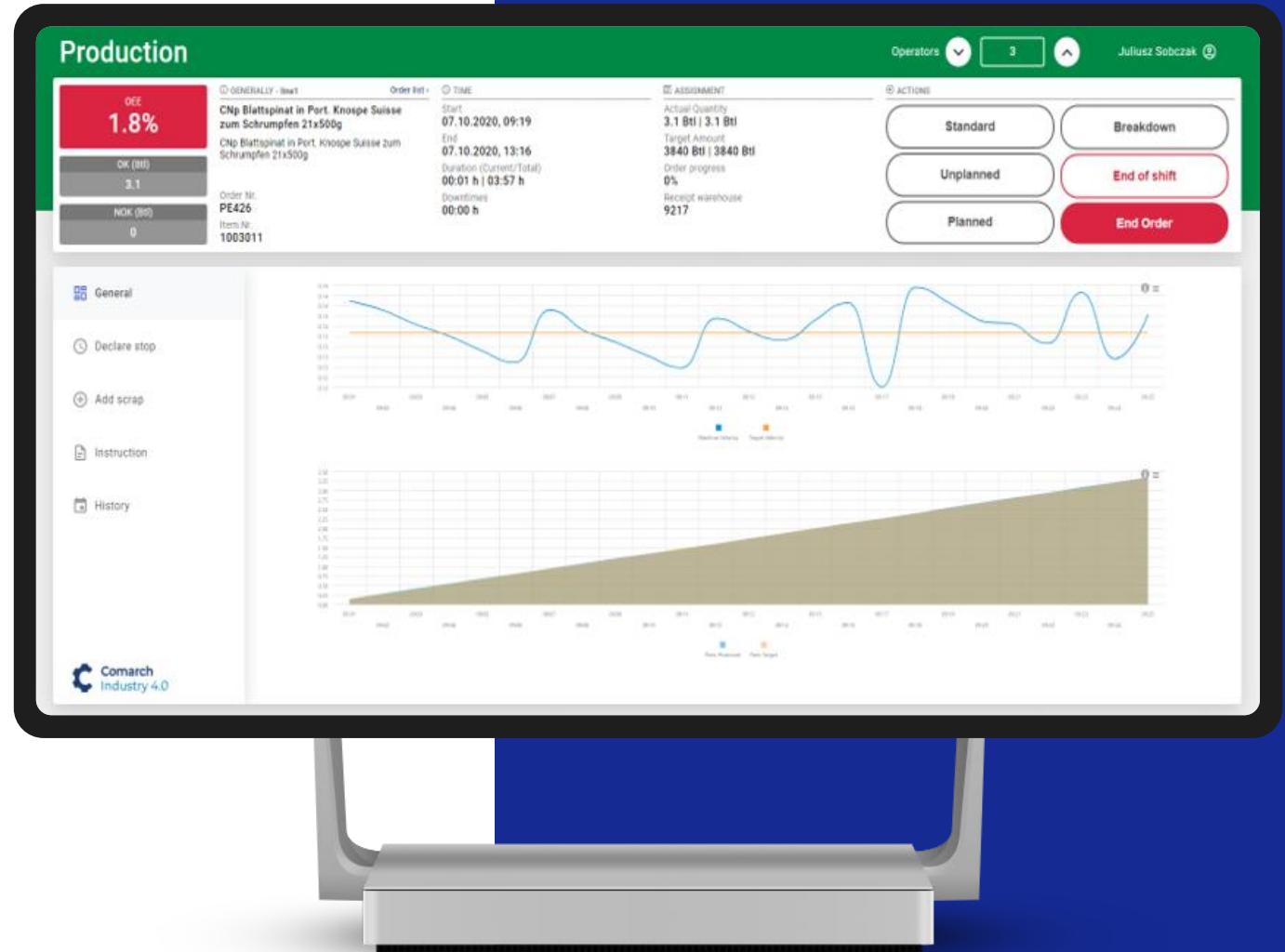


Solution: automated real-time reporting

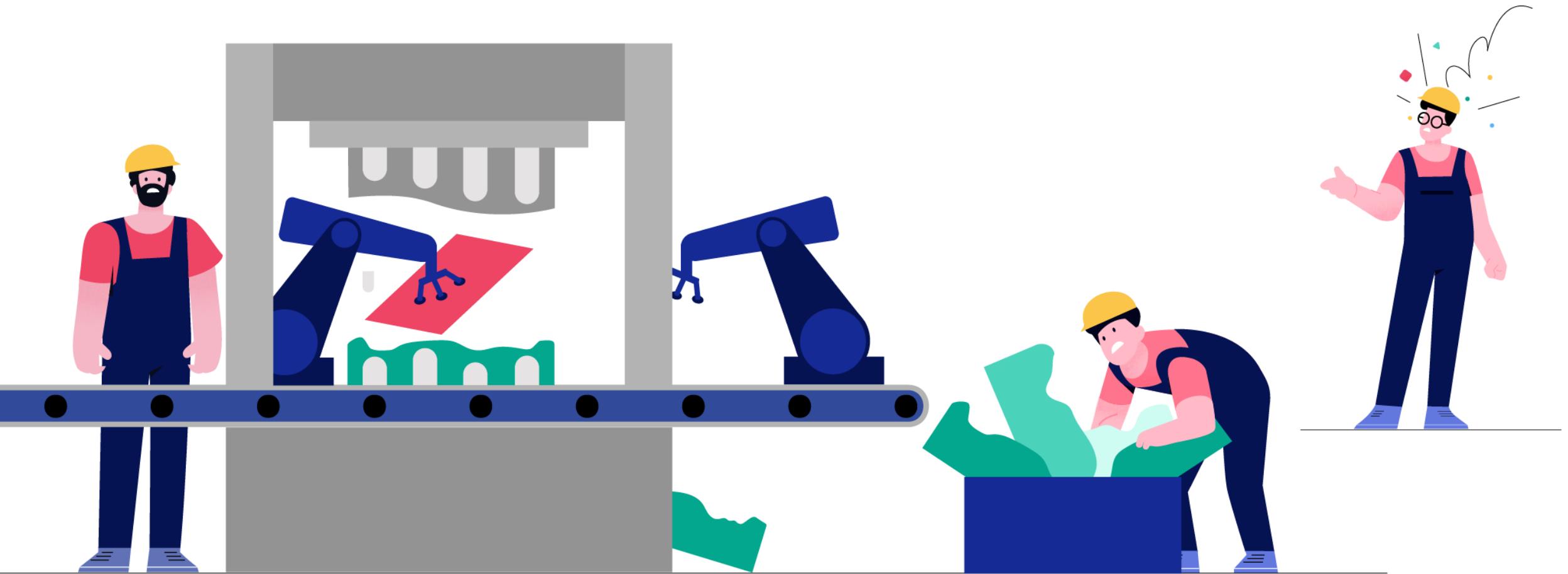


Manufacturing Execution System

- Real-time production order status check
- Overall equipment efficiency
- Optimization of working time and downtimes - personnel and machines
- Authenticating operators in accordance with the latest security standards
- Statistics Digital drawings and instructions
- Automation of information exchange between multiple systems



Problem: Delays in machine retooling



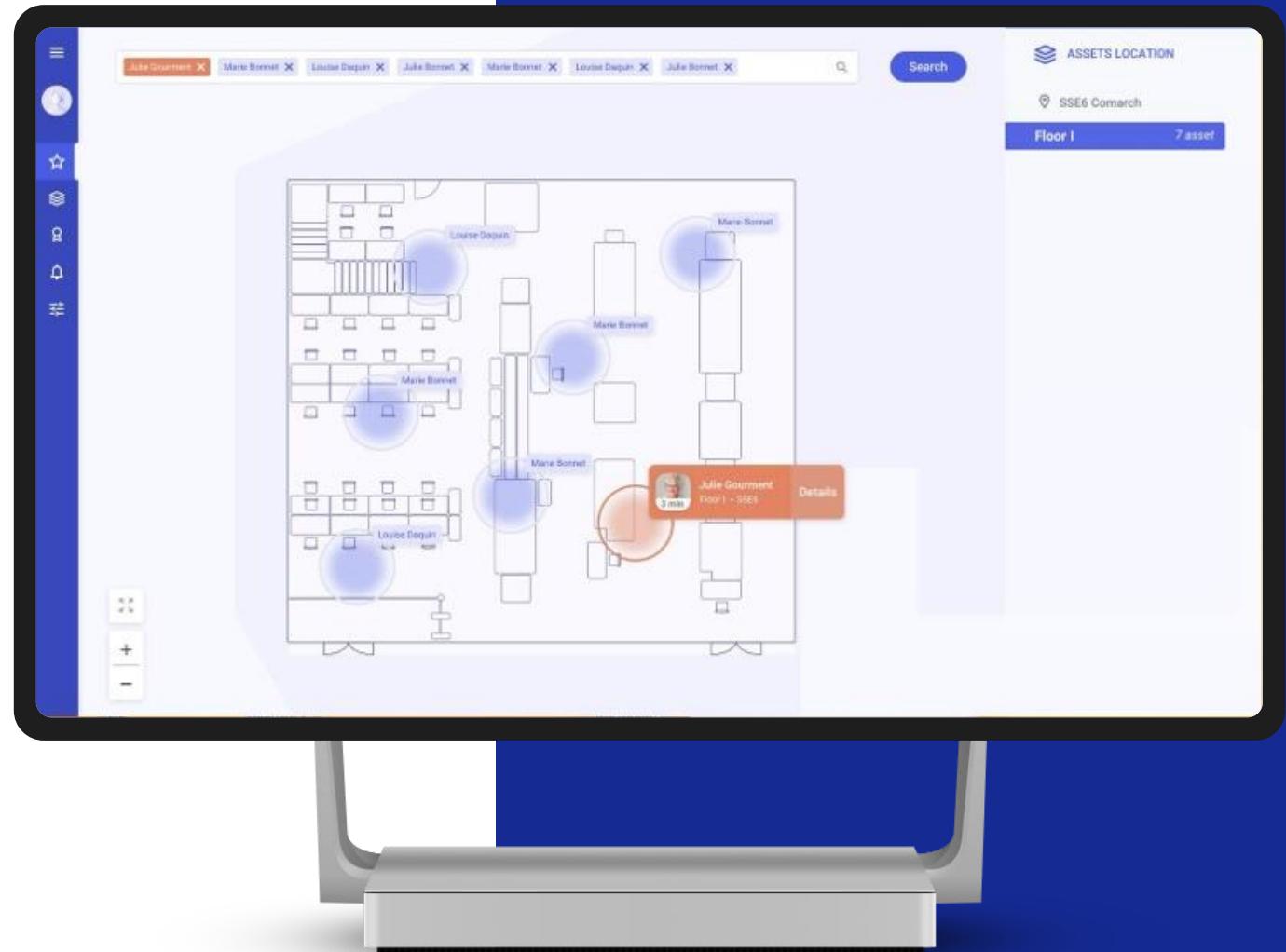
Solution: Automated tool tracking



Asset tracking

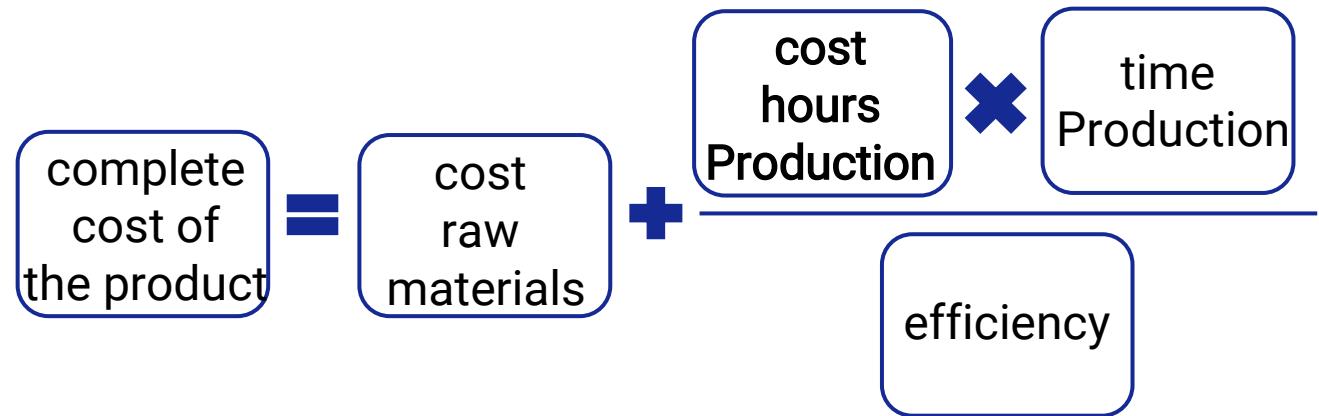
A cloud-based solution that allows users to manage and track resources.

- quickly find resources by tracking them on the object map
- optimize asset movement with their location history
- standard reporting
- add and edit tracked resource parameters
- get key notifications by defining your own rules

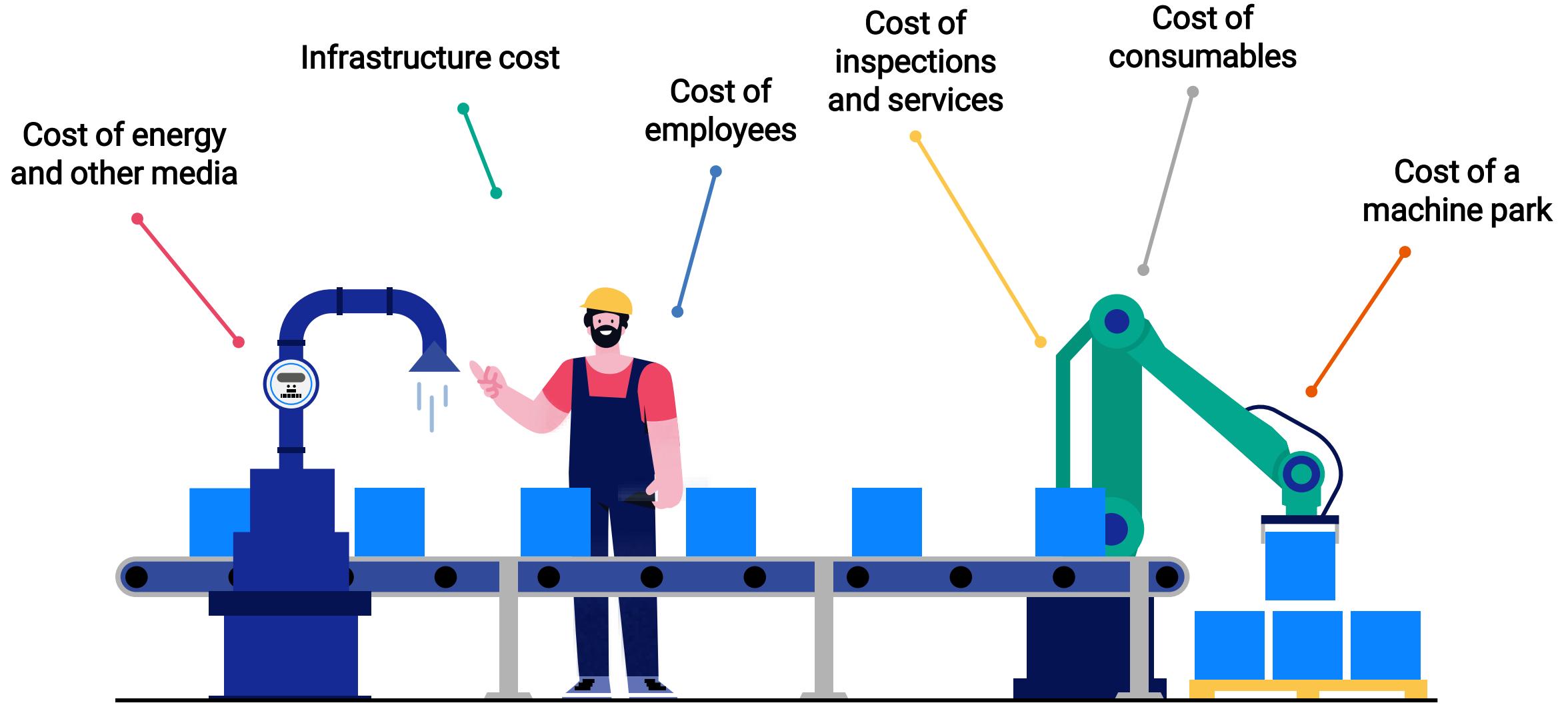


Problem: No data available for product cost calculation

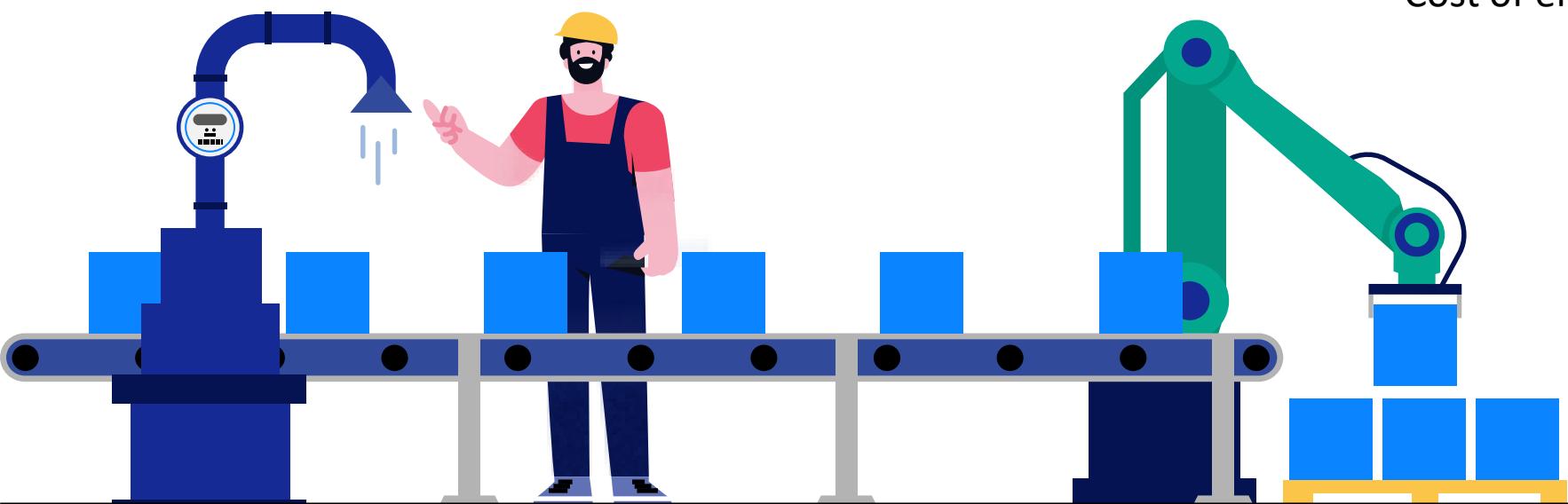
How do I calculate the total cost of a product?



Structure of production costs



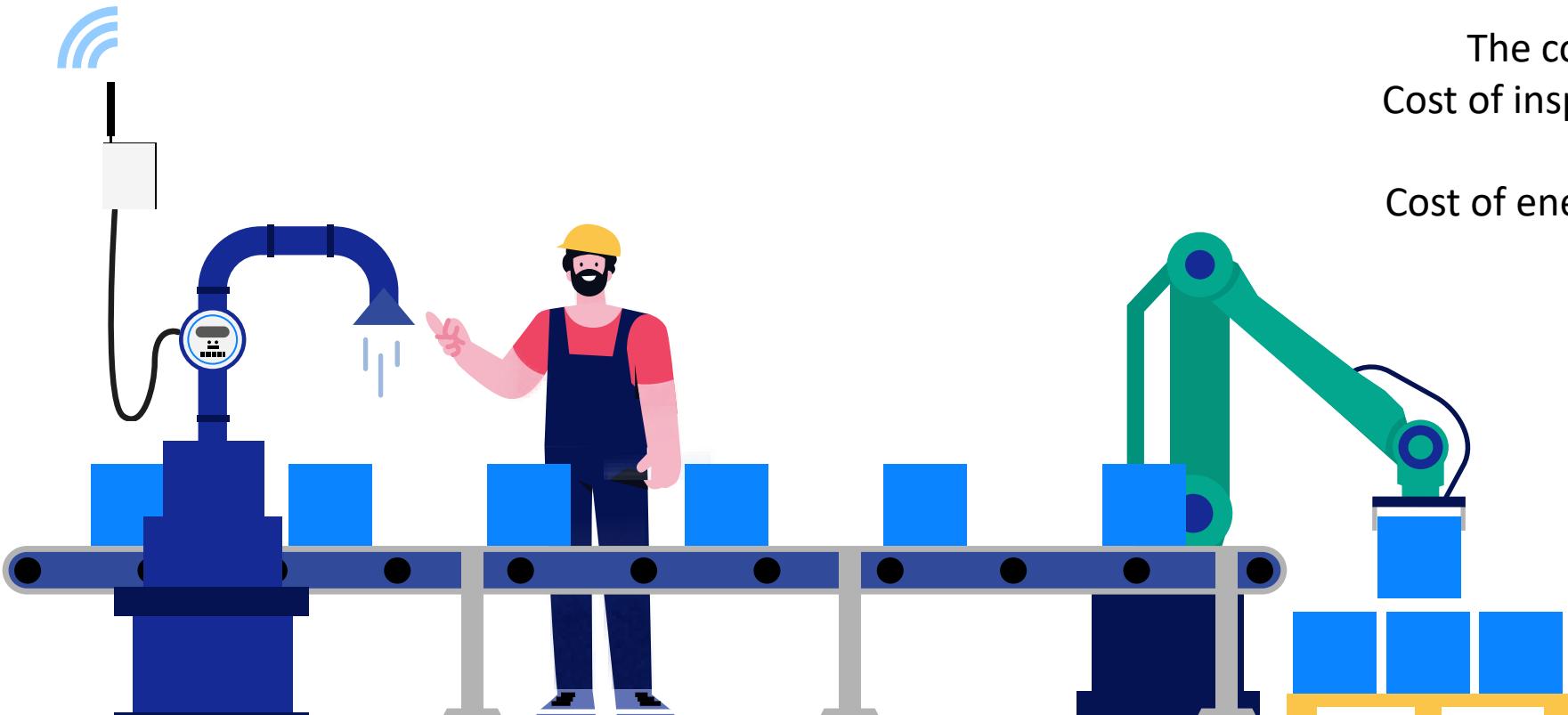
Calculate the cost of a product based on assumptions



20 500 €

Cost of raw materials	10 000 €
Cost of a machine park	1000 €
Cost of inspections and services	500 €
Cost of employees	1200 €
Cost of energy and other media	7000 €
Cost of consumables	800 €

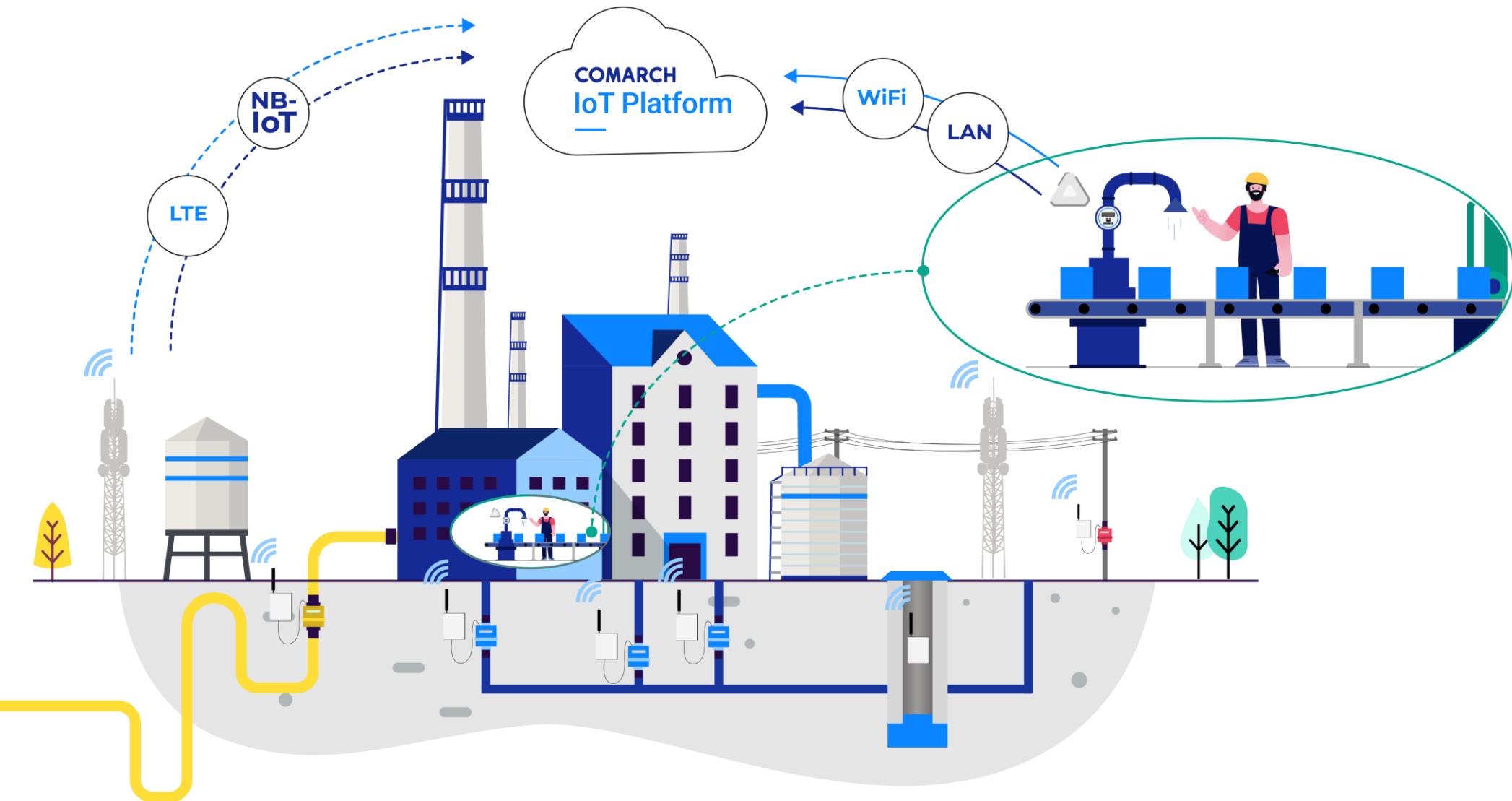
Calculate the cost of a product based on data



~~20 500~~ 17 500€

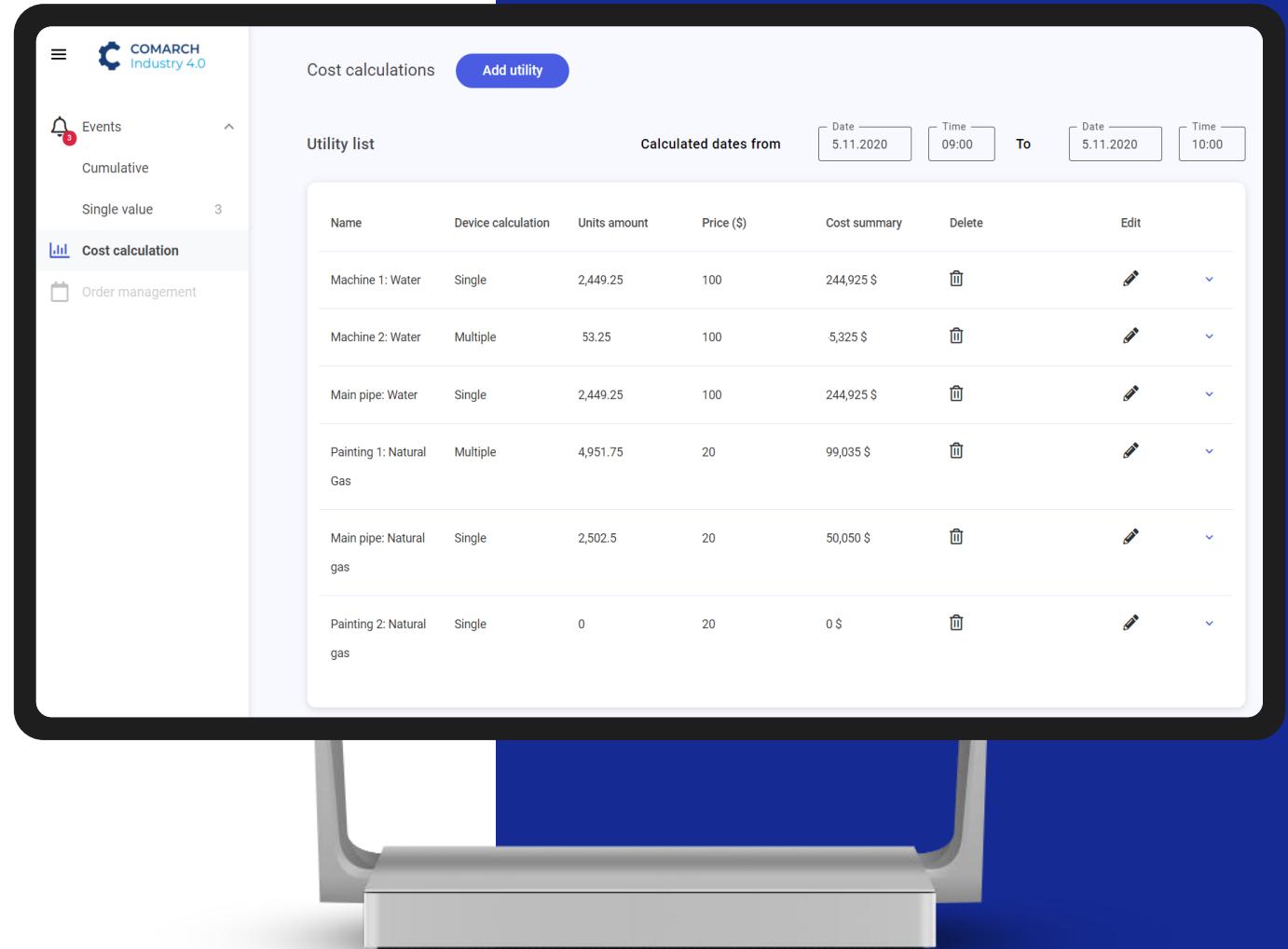
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Solution: Smart Metering for Industry



Smart Metering for Industry

- Full visibility of utilities costs
- Setting alerts
- Online data monitoring
- Possibility to verify the status of stored media
- Standard reporting



The image shows a screenshot of the COMARCH Industry 4.0 software interface, specifically the 'Cost calculations' module. The interface is divided into several sections: a left sidebar with navigation links for 'Events', 'Cumulative', 'Single value', 'Cost calculation' (which is currently selected and highlighted in blue), and 'Order management'; a top header with the COMARCH Industry 4.0 logo and a 'Cost calculations' button; a sub-header 'Utility list'; a 'Calculated dates from' section with date and time inputs; and a main table listing utility costs. The table has columns for 'Name', 'Device calculation', 'Units amount', 'Price (\$)', 'Cost summary', 'Delete', and 'Edit'. The data in the table includes:

Name	Device calculation	Units amount	Price (\$)	Cost summary	Delete	Edit
Machine 1: Water	Single	2,449.25	100	244,925 \$		
Machine 2: Water	Multiple	53.25	100	5,325 \$		
Main pipe: Water	Single	2,449.25	100	244,925 \$		
Painting 1: Natural Gas	Multiple	4,951.75	20	99,035 \$		
Main pipe: Natural gas	Single	2,502.5	20	50,050 \$		
Painting 2: Natural gas	Single	0	20	0 \$		

Case study - FMGC Company

DITZLER



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Developing the future