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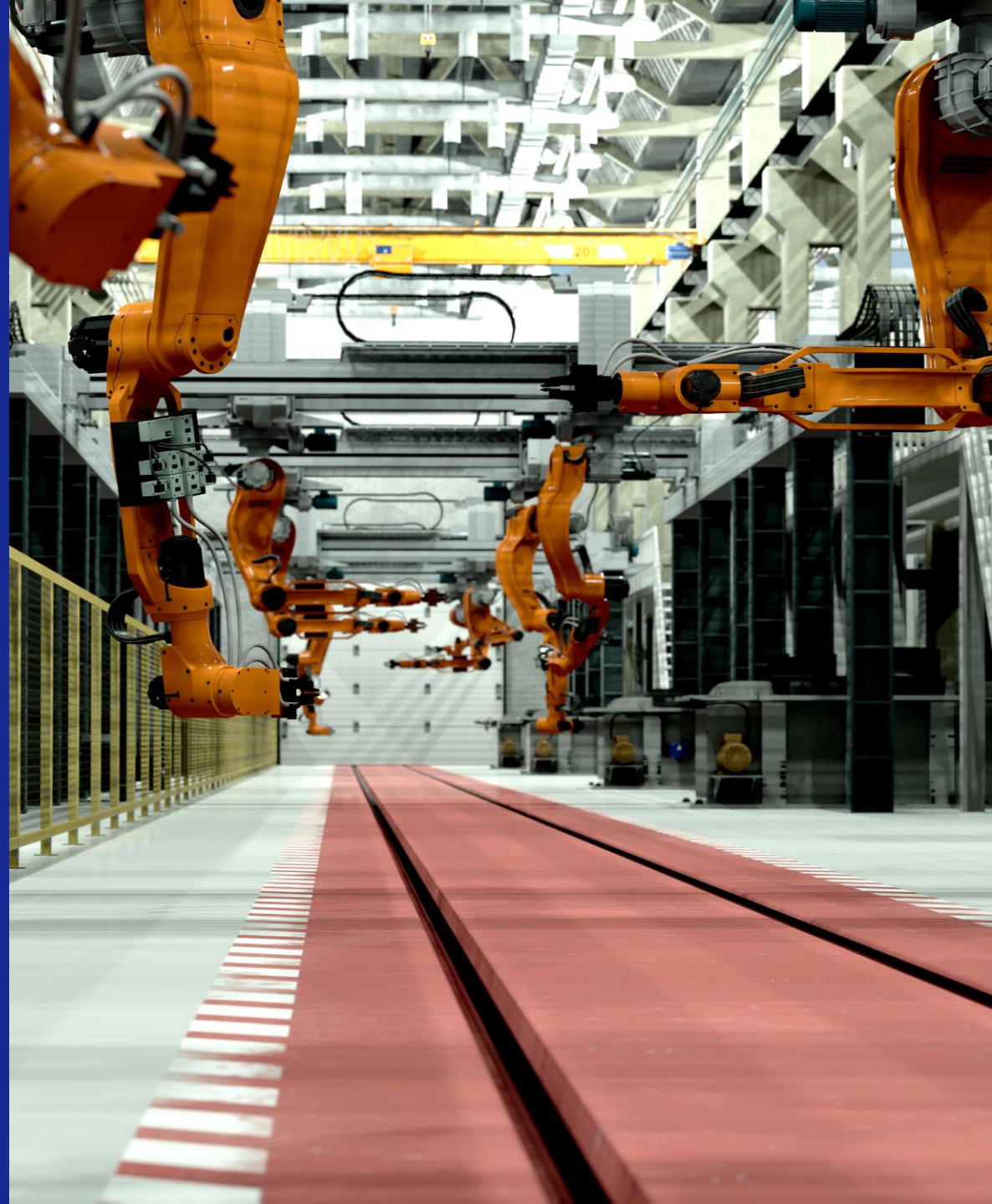
IoT in service to Manufacturing 4.0

Benefits and use cases

Dario Esposito La Rossa

IoT Pre-Sales Consultant



Dario Esposito La Rossa

IoT Pre-Sales Consultant

dario.espositolarossa@comarch.com

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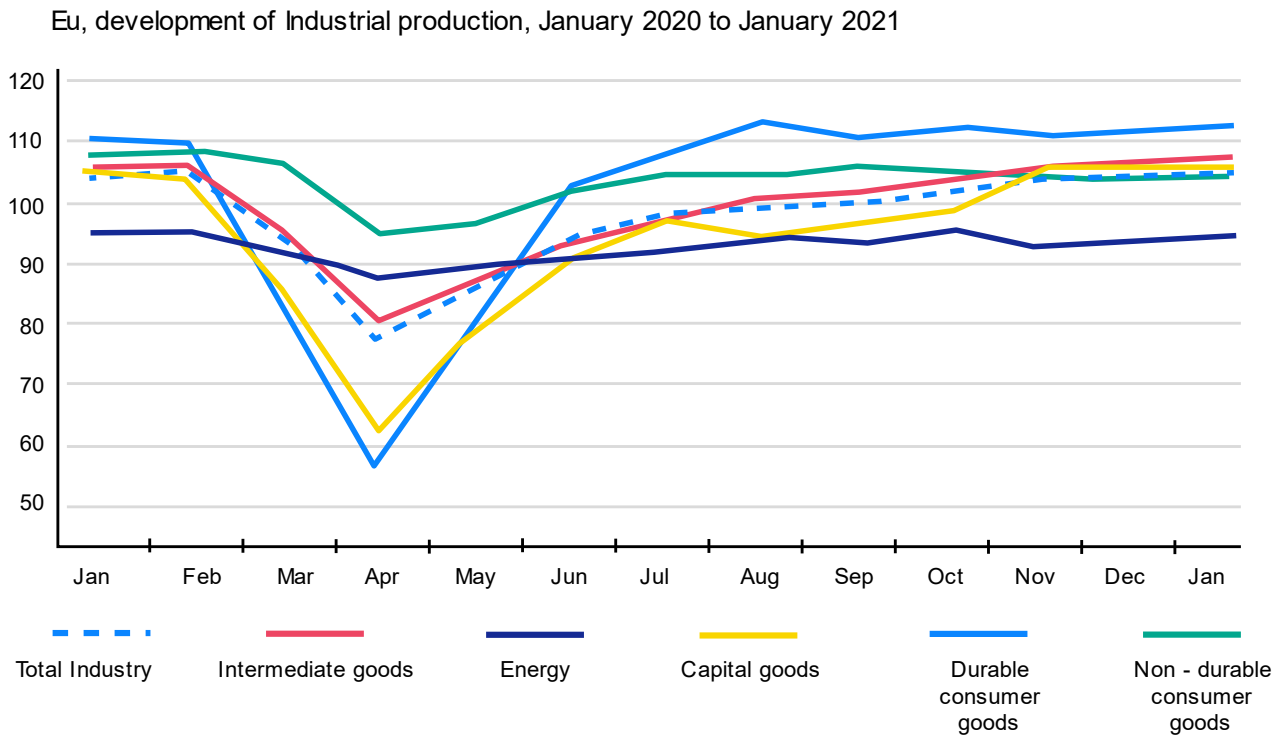
Pandemic COVID-19 effect on manufacturing

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).



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

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

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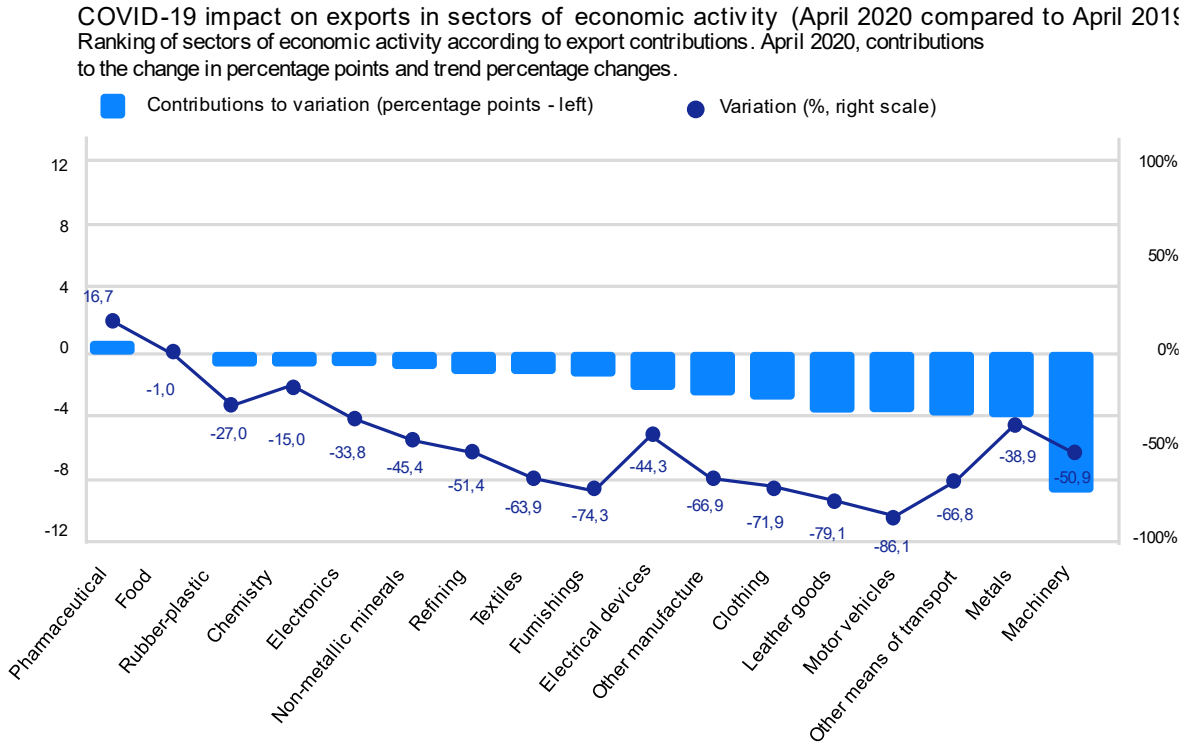
Pandemic COVID-19 effect on export



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?

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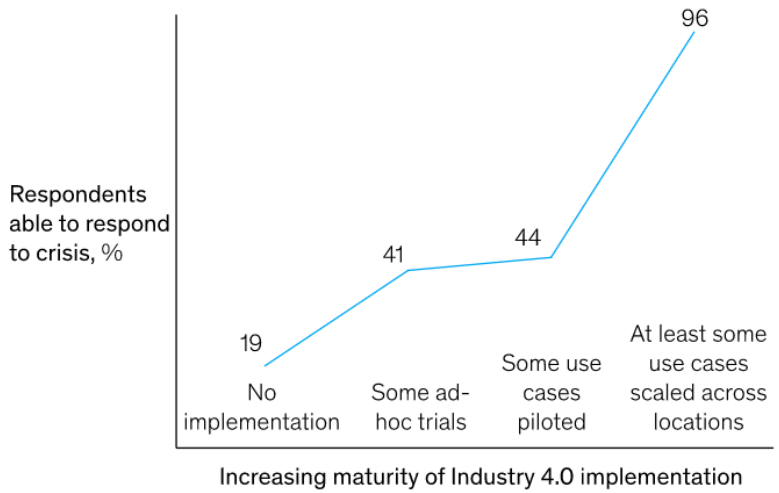
What is Industry 4.0 ?

Industry 4.0 vs COVID-19

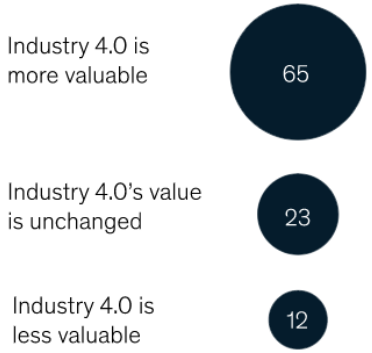
Early Adopters that already had Industry 4.0 and other digitization-related solutions in place even before the pandemic were able to freely continue their operations.

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, %



McKinsey & Company

Source: McKinsey, *COVID-19: An inflection point for Industry 4.0*

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.

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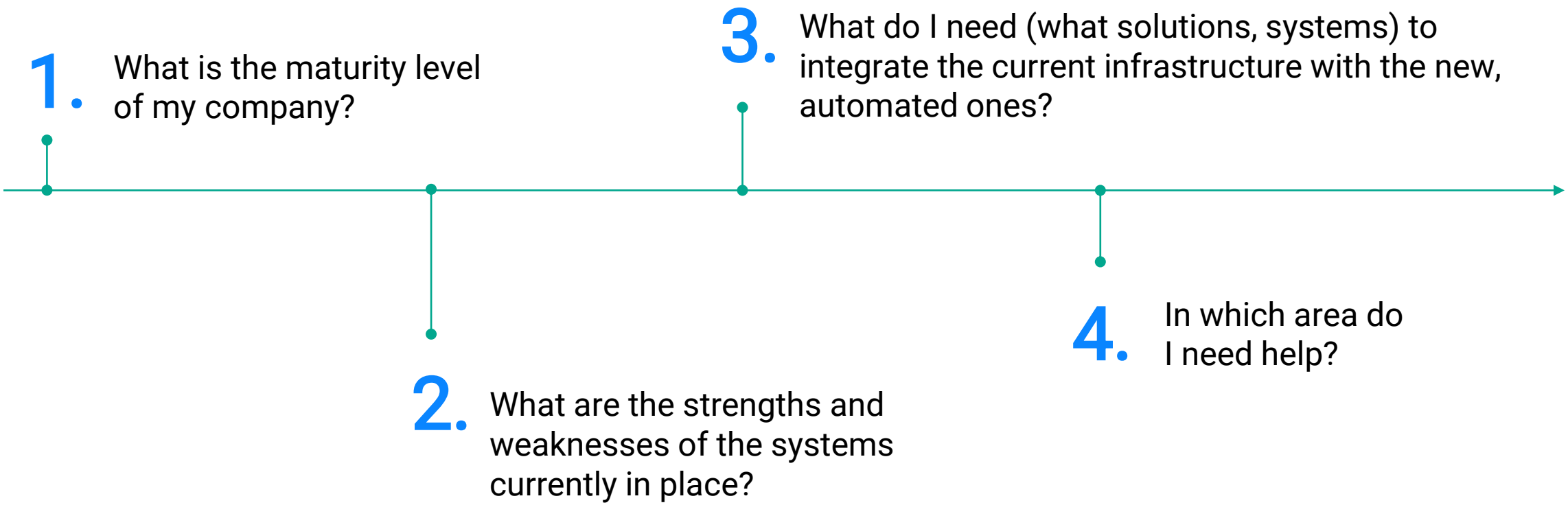
What are the challenges for manufacturing companies?

Resilience & Optimization

ROADMAP: What solutions do I need to accomplish them?



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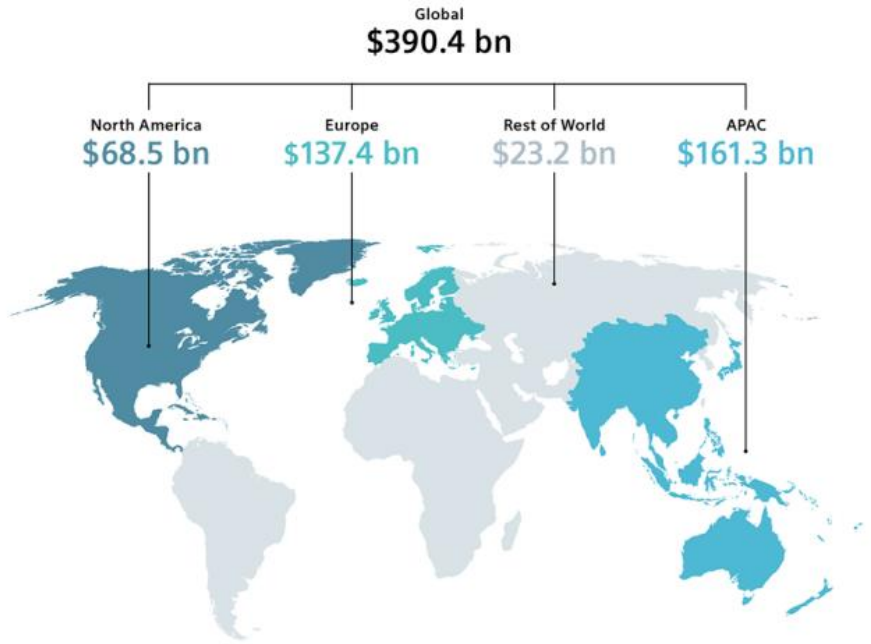
Market and trends 4.0

- 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**



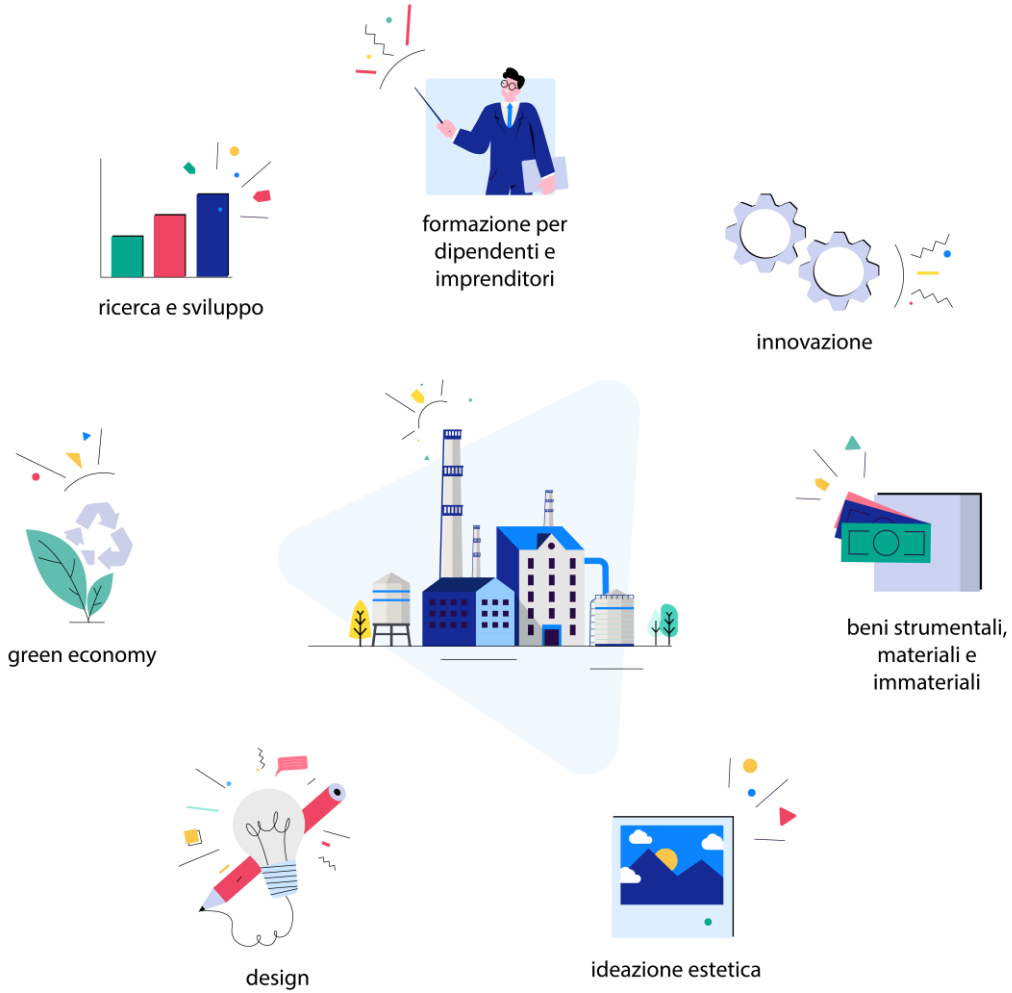
Source: Siemens, *Industry 4.0: Rising to the challenge*.

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'é e come accedere alle agevolazioni”

Source: MISE, *legge di Bilancio 2021 (L 178/2020)*

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Benefits of implementing 4.0 solutions

Producer perspective (B2B)	Consumer perspective (B2C)
• 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	• Customized products (personalization) • High-quality products • Reducing the number of complaints • Shortening of delivery time

Comarch experience: the 9 pillars

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Big Data

Cloud

Cyber-security

Internet of Things

Vertical and Horizontal Software Integration

Other suppliers

Autonomous robots

Simulations

Additive manufacturing

360°

Augmented reality

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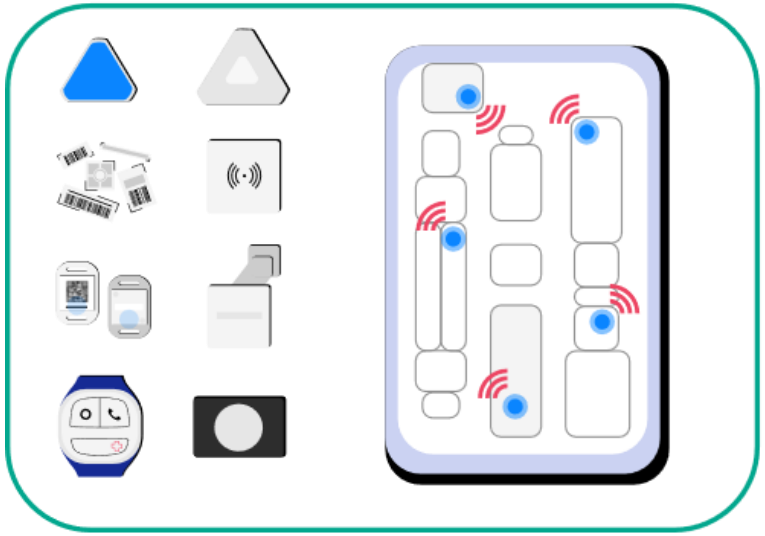
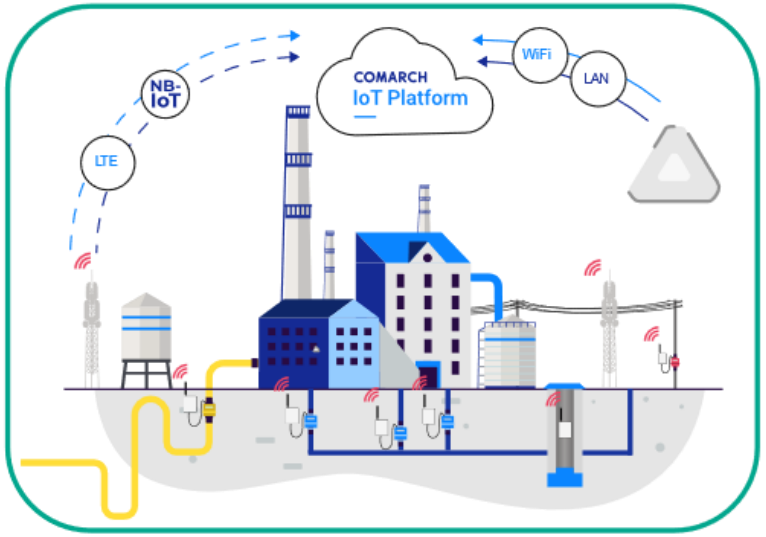
IoT ecosystem for Industry 4.0



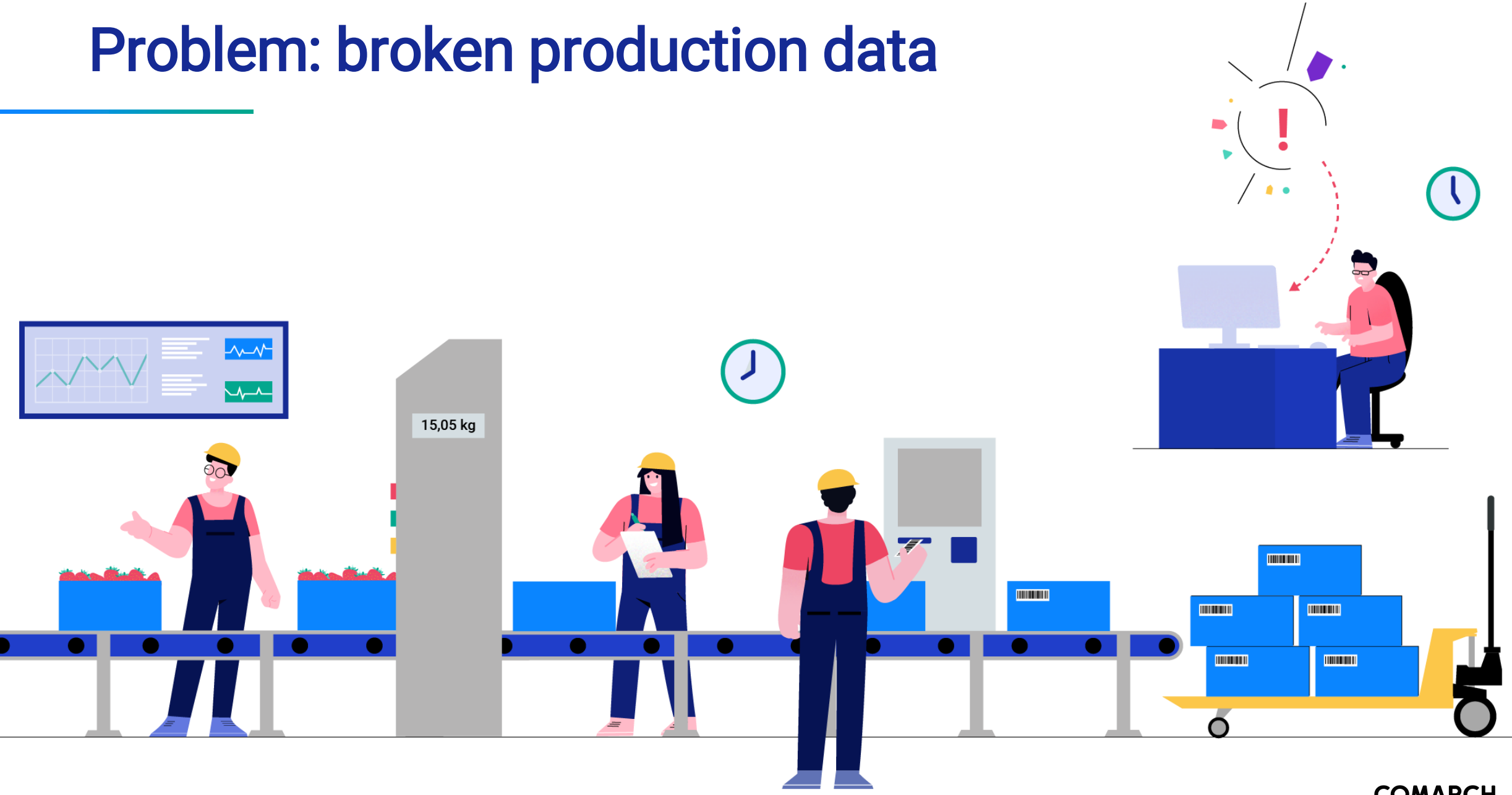
Asset Tracking



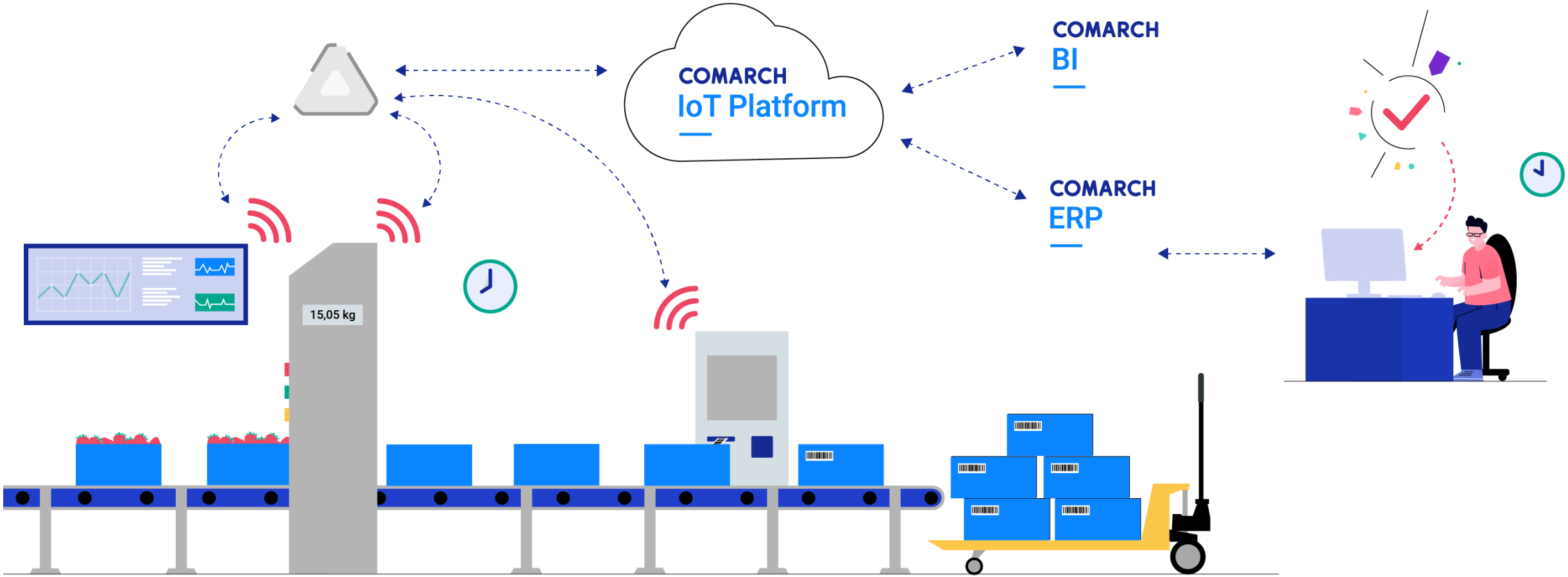
Smart Metering for Industry

MES Application

Problem: broken production data

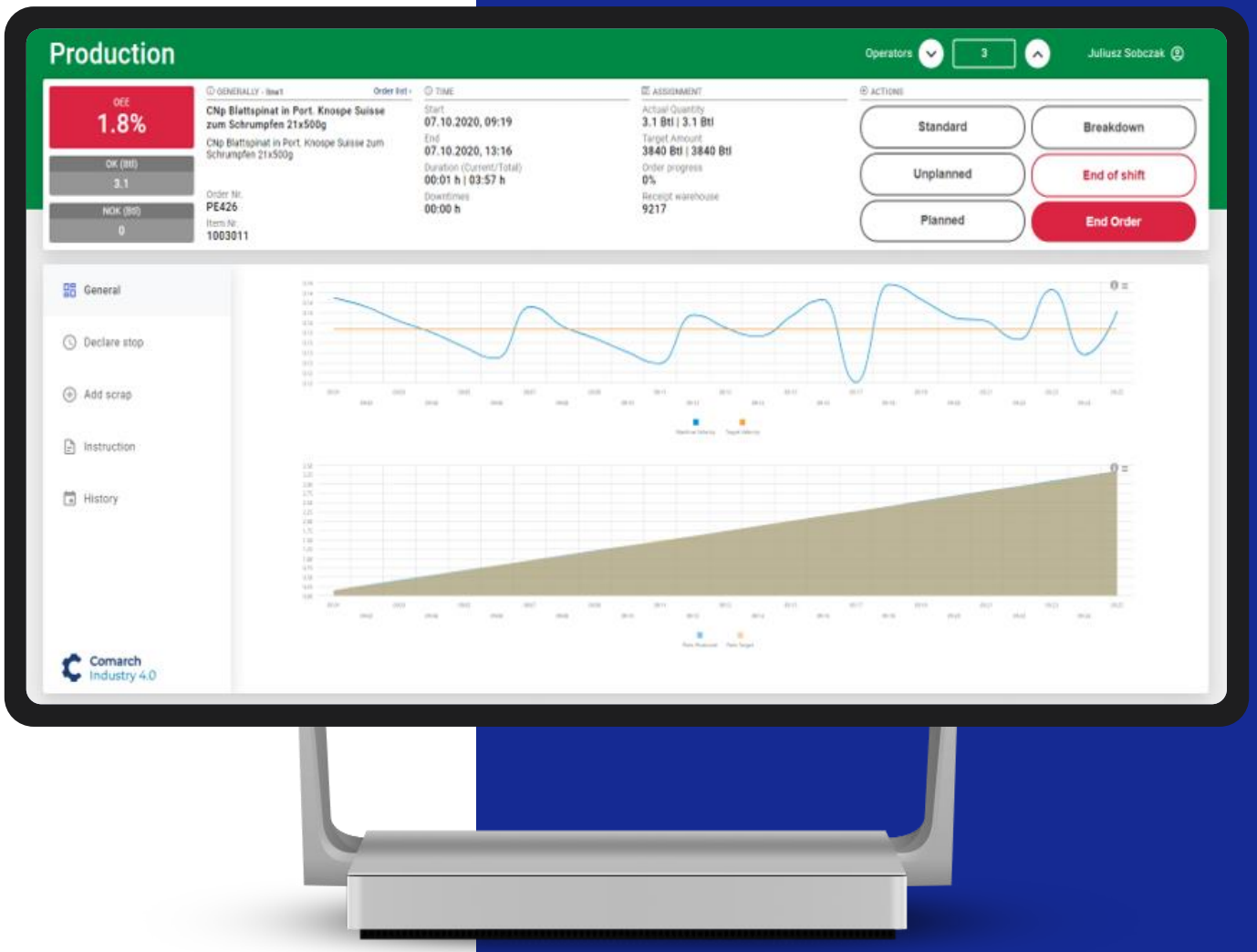


Solution: automated real-time reporting

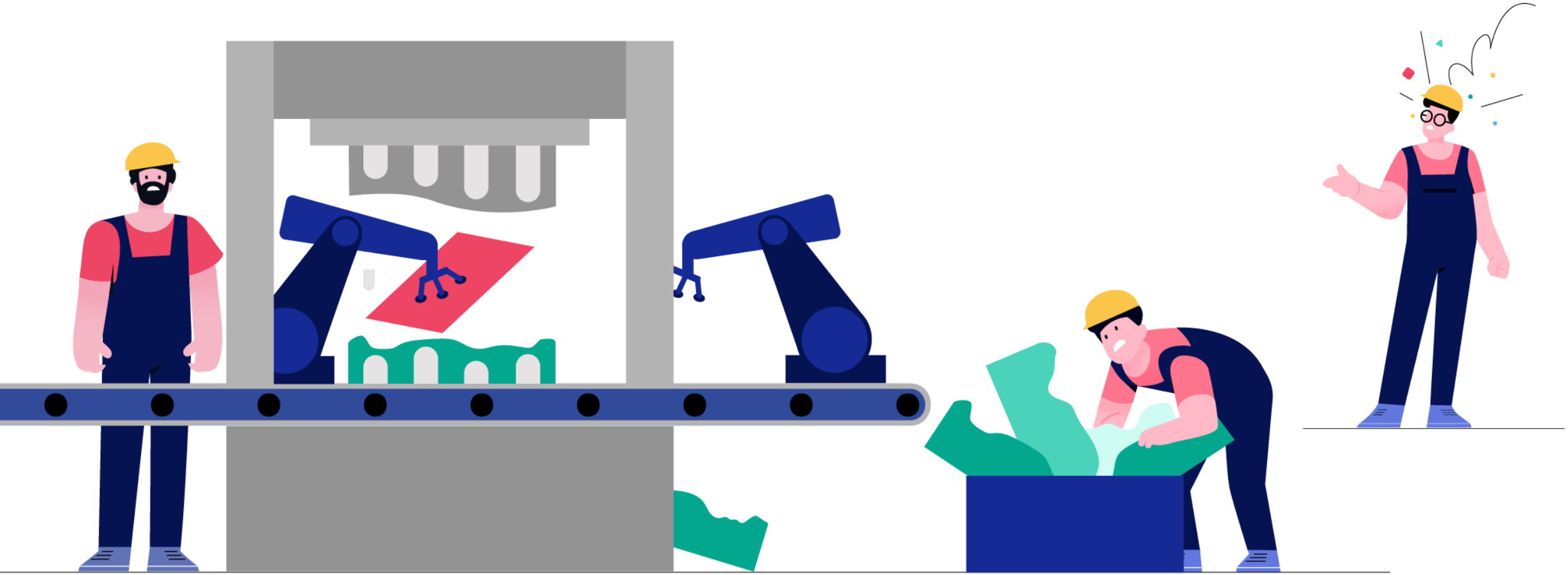


Manufacturing Execution System

- 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



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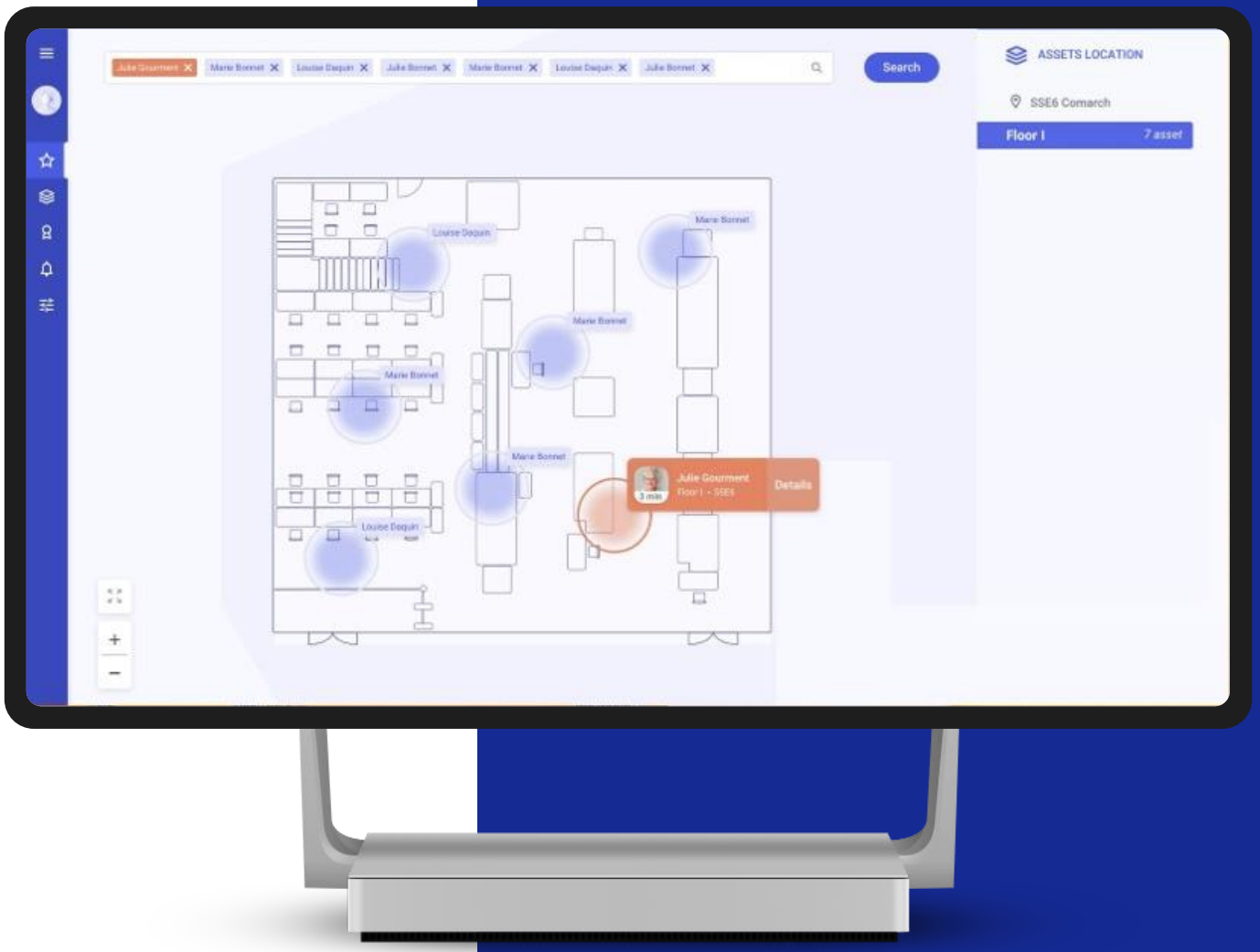
Solution: Automated tool tracking

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

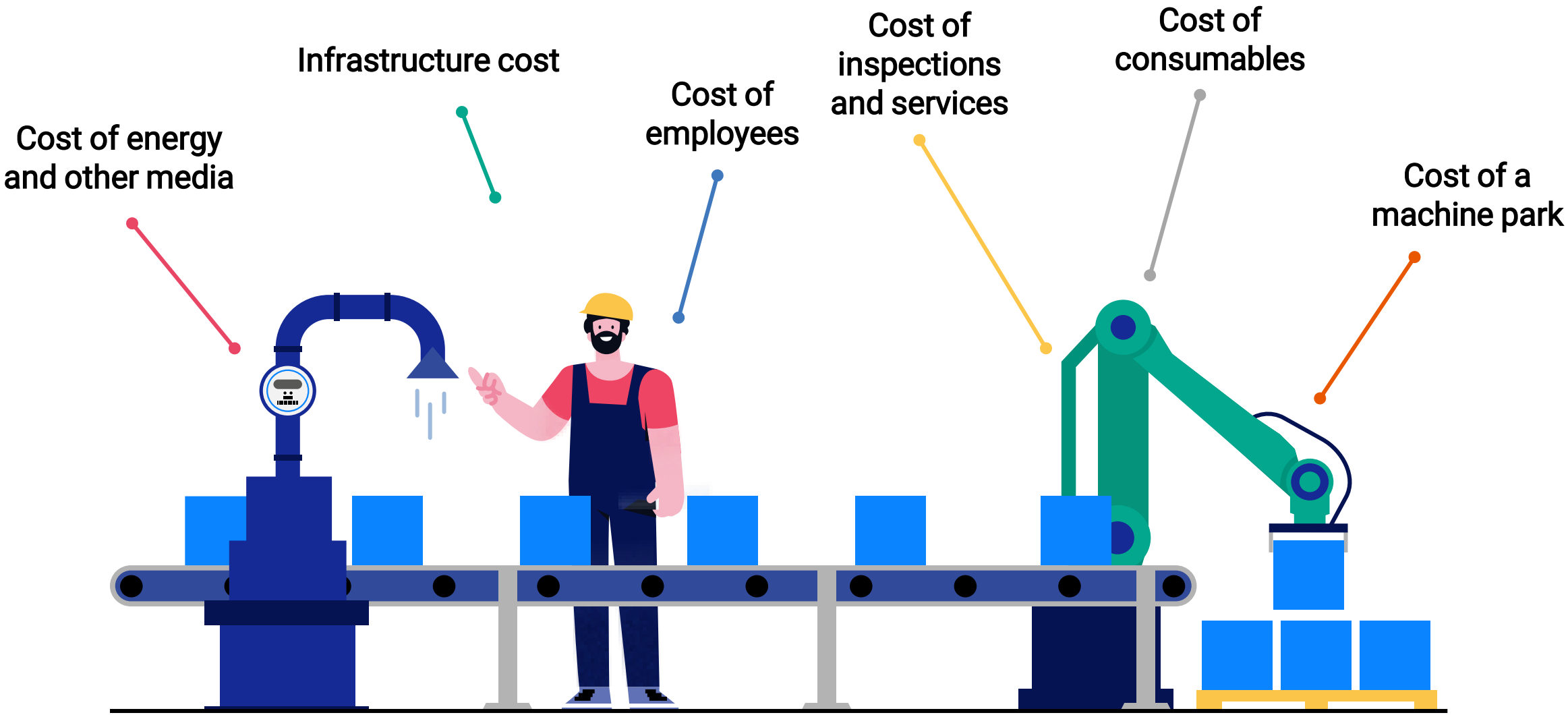


Problem: No data available for product cost calculation

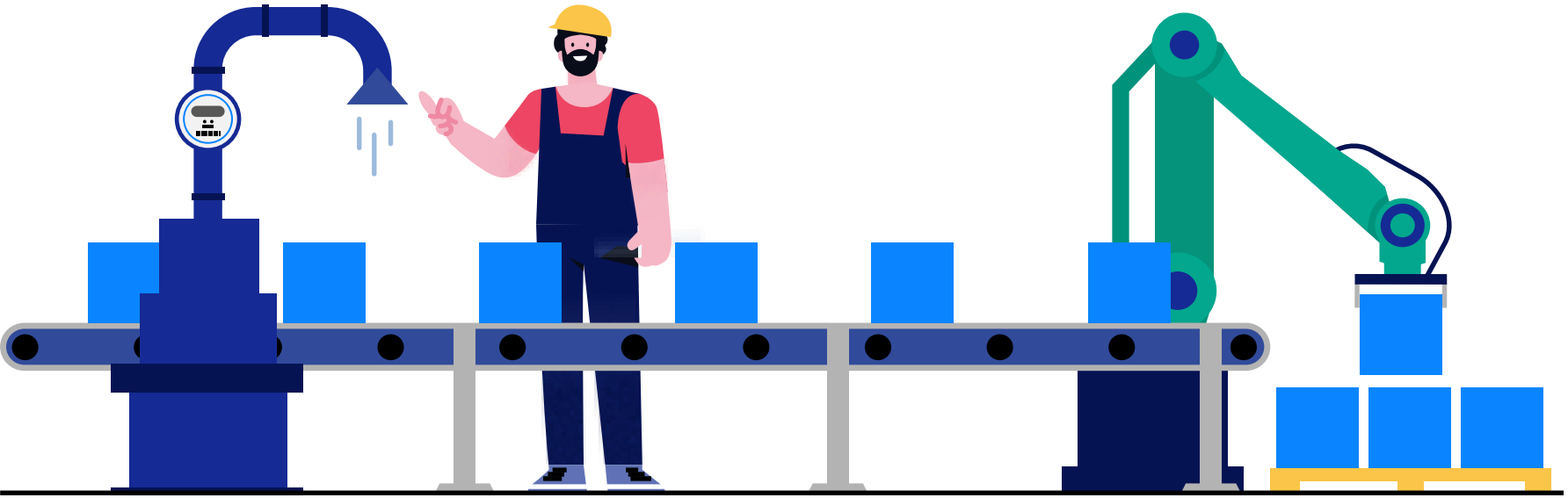
How do I calculate the total cost of a product?

complete cost of the product = cost raw materials + (cost hours Production × time Production) / efficiency

Structure of production costs



Calculate the cost of a product based on assumptions



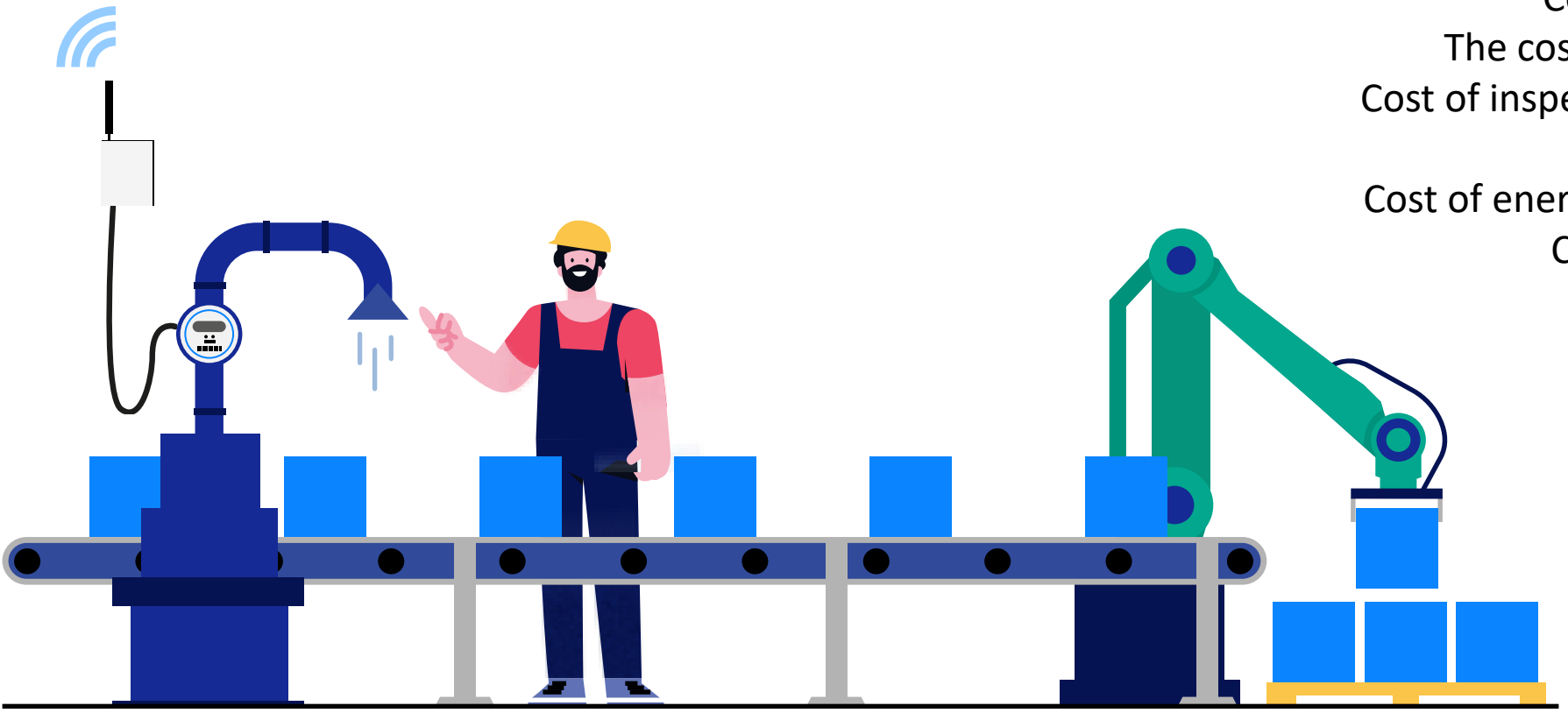
20 500 €

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€

Cost of raw materials	10 000 €
The cost of a machine park	1000 €
Cost of inspections and services	500 €
Cost of employees	1200 €
Cost of energy and other media	~~7000~~ 4000 €
Cost of consumables	800 €



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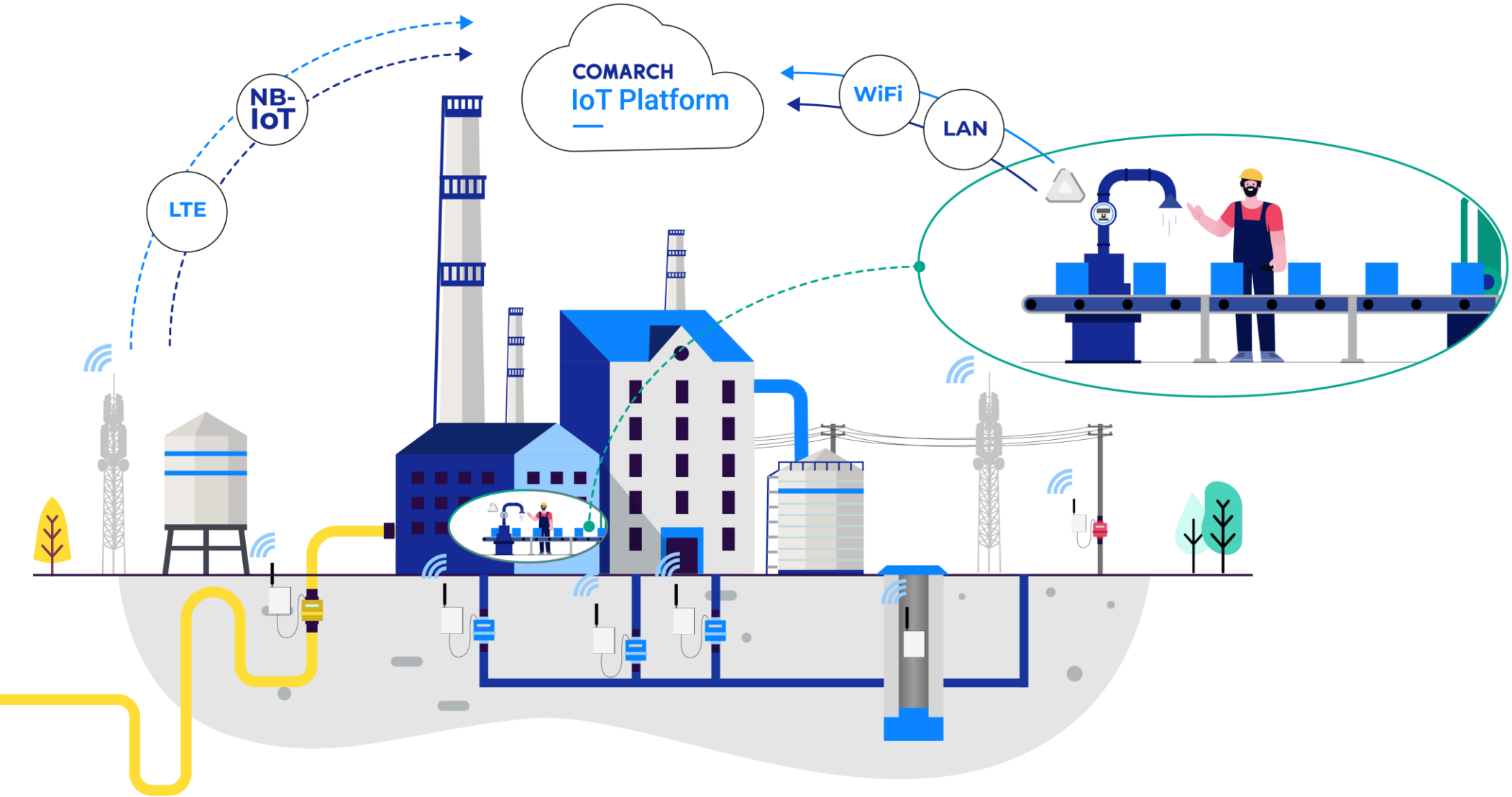
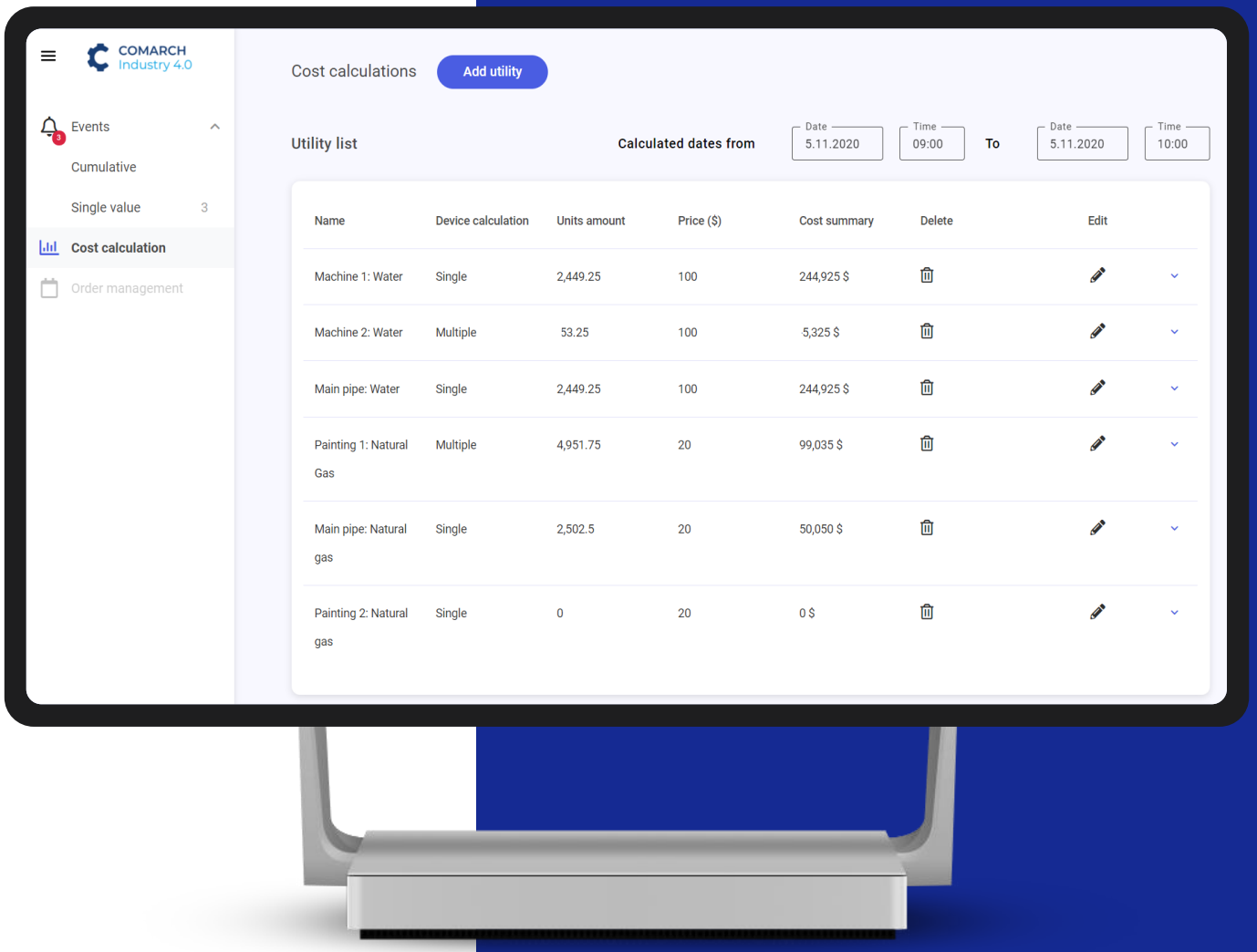
Solution: Smart Metering for Industry



Smart Metering for Industry

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



Case study - FMGC Company

- Remote reading of the utilities
- Optimization of production costs
- Automation of data analysis
- Increase of production efficiency

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Developing the future