

# Industry eXperience 4.0 in azione

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La fabbrica non può guardare solo all'indice dei profitti. Deve distribuire ricchezza, cultura, servizi e democrazia.

*Adriano Olivetti*



# Automation

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# Hyper-Robotization

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# Industry 4.0 revolution

- **Interoperability:** machines, devices, sensors, and humans are now connected
- **Information transparency:** information systems can create a virtual copy of the physical world
- **Technical assistance:** cyber physical systems can physically support humans by conducting a range of tasks that are unpleasant or unsafe for their human co-workers
- **Decentralized decisions:** cyber physical systems can make decisions on their own and to perform their tasks as autonomously as possible

# Industry 4.0 Puzzle



Cloud



Augmented  
Reality



Big Data &  
Analytics



IT Security



Software  
Integration



Artificial  
Intelligence



Customization



Automatable  
Robots

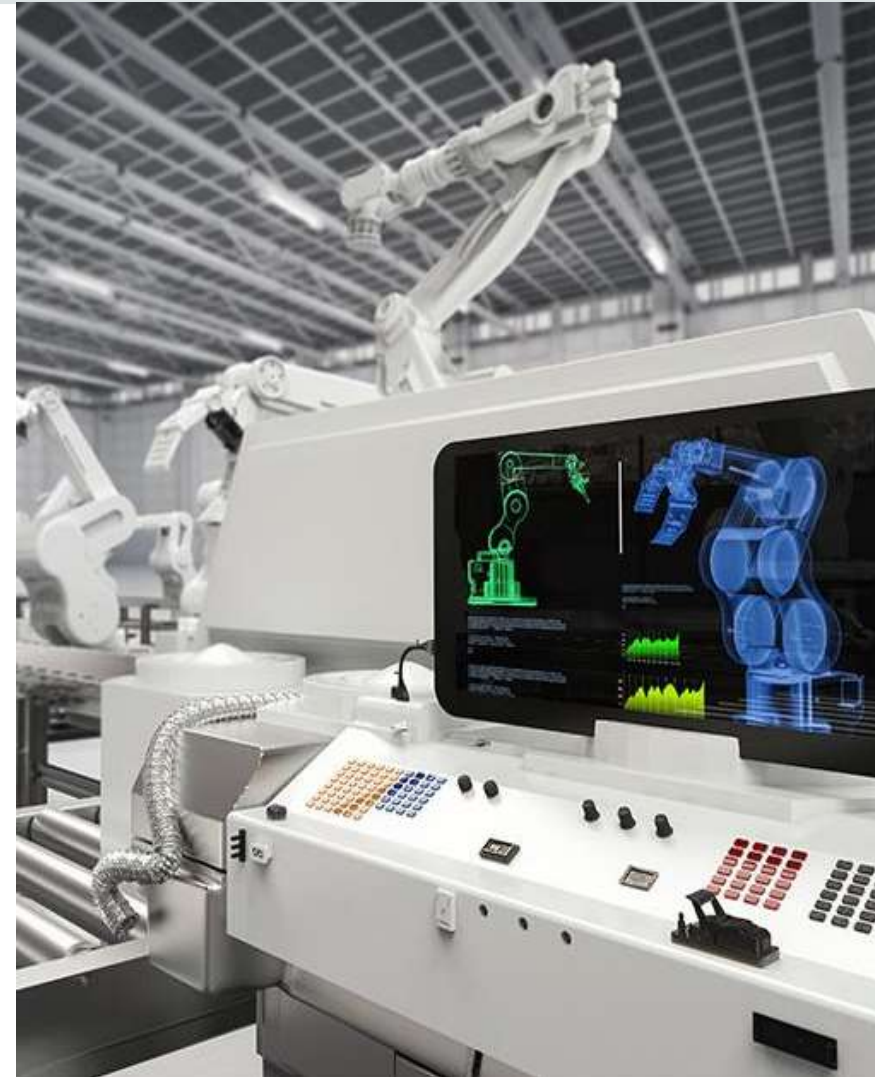


# New Innovation Paradigm

The inevitable **consumerization** trend can't be ignored: manufacturers need to develop **new tools and technologies** with real **workers' mental models** and habits in mind.

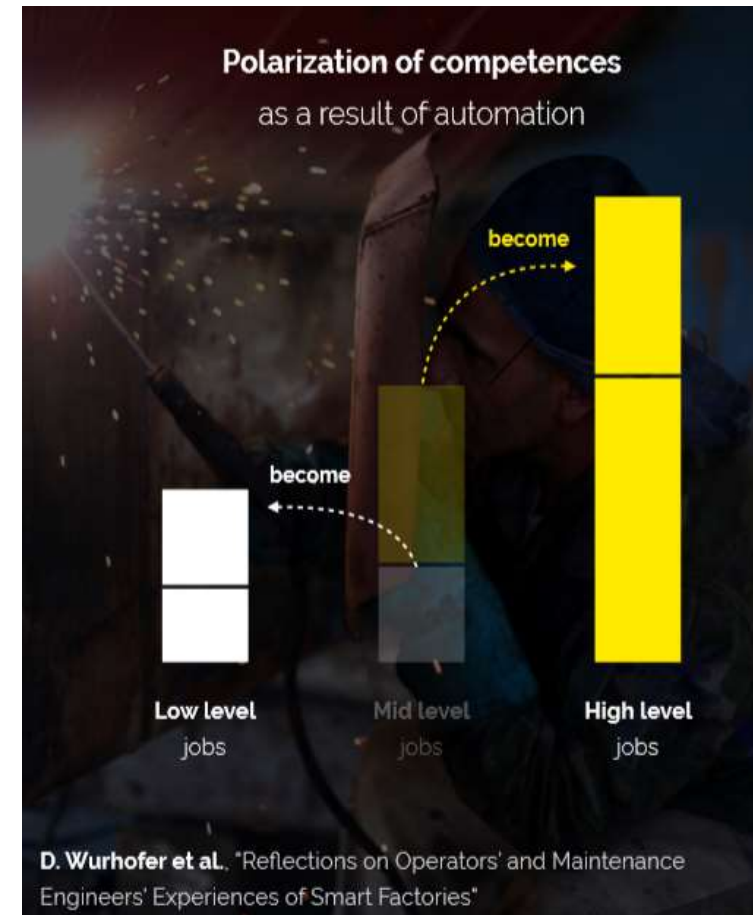
# Smart Connected Factory

- Changing the ways that **humans and machines interact** and learn from one another – so that **both can do more**
- **Sensors, platforms, and people** constantly generate **data** that the SCF can analyze and **act on its own** through deep automation
- That **data** provides the **foundation** for the factory, enabling the use of all kinds of sophisticated, **intelligent tools and technologies**



# Are factories still a place for humans?

- Technology won't make workers useless, but **jobs themselves will change**
- High-level workers will need effective support to enable **real-time decision making** and **boost creativity**. Low-level workers will need **mistake-proof solutions** that reduce cognitive loads
- In this new context, **user experience and human-machine interaction design will be key**, enabling behavioral change and smarter, seamless processes



# Advanced Robotics

- Today's manufacturing robots are **directed by data gathered from across the business**, and able to execute precision tasks such as product customisations
- **Cobots** are robot intended to **physically interact with humans** in a shared workspace
- **Robotic process automation** (or RPA) is an emerging form of business process automation technology based on the notion of **software robots or artificial intelligence (AI) workers**



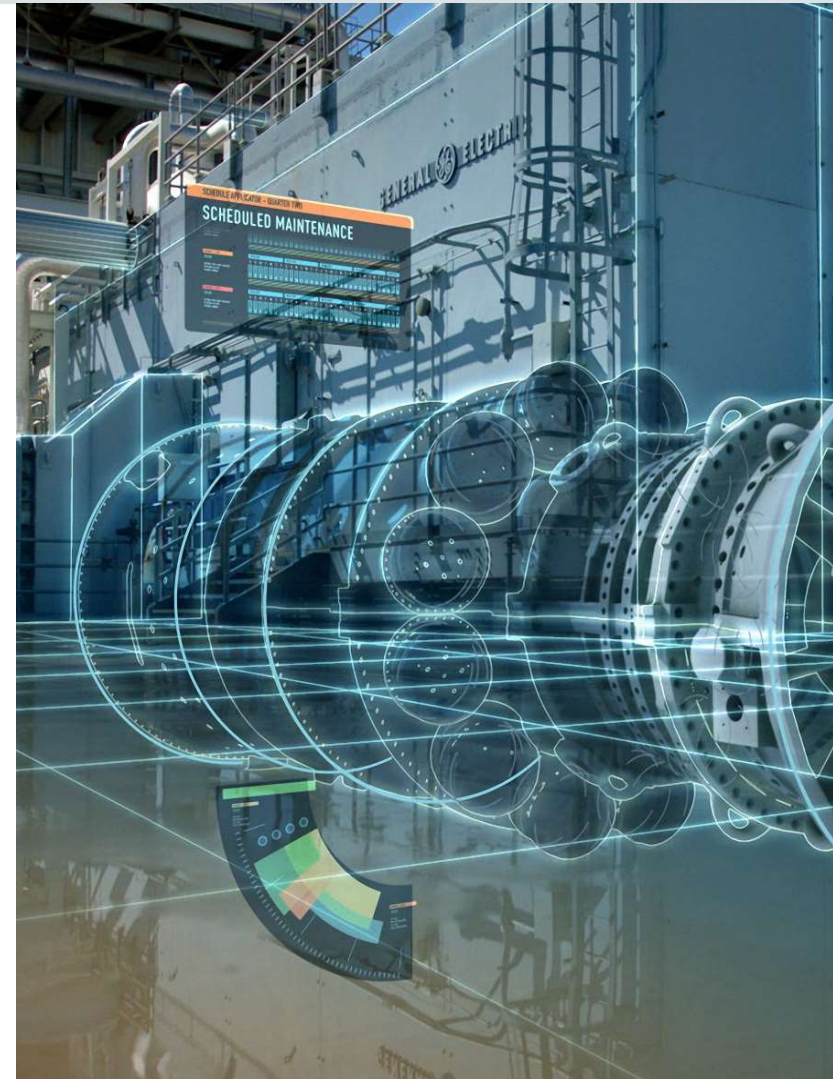
# HMI and Augmented Reality

- **Human-Machine Interfaces** allow intuitive interaction of people with computers and smart tools
- AR can help with building and testing product prototypes, **giving humans manual control** of advanced robotics, exploring factory operations in granular detail
- By **keeping more work in the virtual domain**, it significantly **lowers the cost** of everything from R&D to maintenance cycle



# Digital Twin

- A digital twin is an accurate **digital representation of a physical object**, reproducing not only its exact shape, but also the object's data values, states and properties
- Quickly find out **malfunctioning components and potential issues**
- Switch from programmed to **predictive maintenance**
- Show the **consequences of different use scenarios** in a much shorter timespan





# Manufacturing is becoming less about muscle and more about brains

Greg Kinsey VP, Hitachi Insight Group

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