Addressing the challenge
To enable the Factory of the Future (FoF) – a permanently-connected unit with disruptive technologies such as big data analytics, digital twinning and collaborative robotics – optimisation must be reconciled with security. The growing reliance on vulnerable IT components and services exposes manufacturing systems to cyber-threats of ever growing diversity and sophistication. Due to increased product and asset connectivity, cybersecurity needs to be addressed from early design stage and throughout the life-cycle. This makes cybersecurity an enabler for the development of innovative data-centric business models.

Proposed solutions
With ten use-cases from the transportation, automotive, electronics and machine manufacturing industries, the CyberFactory#1 project will seek optimisation and security of European Industry in a System of Systems (SoS) approach. 12 enabling capabilities are targeted across three capacities: FoF modelling and simulation, FoF optimisation and FoF resilience. FoF modelling and simulation includes cyber-physical system modelling and digital twinning, ecosystem modelling, human behaviour modelling and SoS modelling. The optimisation capacity will encompass real-time sensing, data lake exploitation, human/machine collaboration and distributed manufacturing. The resilience capacity will cover human/machine access and trust management, robust machine learning, human/machine behaviour watch and self-healing mechanisms.

This approach acknowledges the technical, economic, human and societal dimensions of Industry 4.0, boosting acceptability to businesses, policymakers and customers.

Projected results and impact
CyberFactory#1 is an entry point into the Industry 4.0 market, which is expected to reach a value of USD 152.31 billion by 2022. Thanks to increased efficiency and new business options, the consortium expects to produce over EUR 300 M€ in revenue and save or create almost 2500 jobs by 2023. For employees, IT and data technology offer alternatives in the face of declining assembly and production jobs. In wider society, both cybersecurity and sustainability are having a deeper impact on the wealth and wellbeing of European citizens, notably enhancing resilience of EU industry in time of pandemics.

CyberFactory#1 will also contribute to the reduction CO2 emissions linked to worldwide logistics by enabling agile distributed manufacturing techniques. An effort in standardisation across sectors will permit cost reduction and enhanced supply chain efficacy.
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