DIGITAL TWIN PLANT & PRESCRIPTIVE MAINTENANCE
PREDICT TO IMPROVE PRODUCTIVITY

ALTEN and Siemens Customer Services Digital Industries have partnered to enable our customers to deploy real time production management and to make factory 4.0 more flexible and more resilient to crises. This is thanks to AI providing decision aids and risk management.
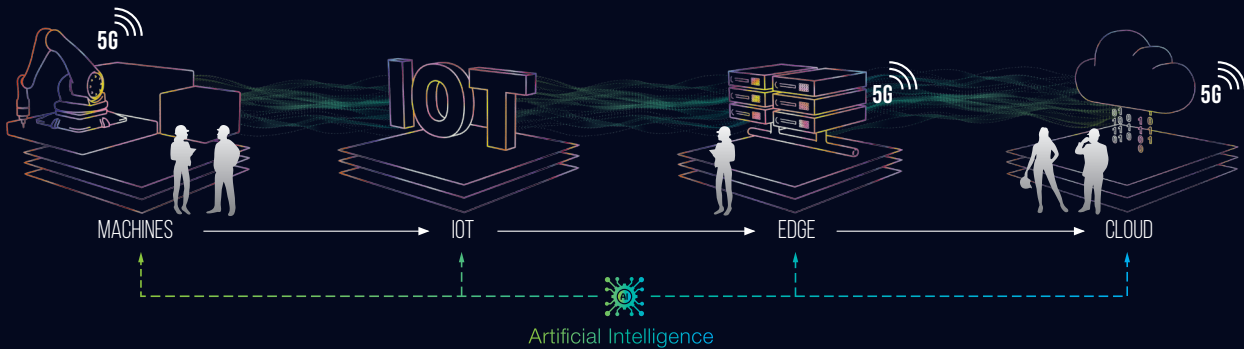
AN ALTEN – SIEMENS CUSTOMER SERVICE DIGITAL INDUSTRIES JOINT OFFER

CONNECT
ALERT
PRESCRIBE

HOW DATA LIVES INSIDE A SMART FACTORY

MACHINES → IOT → EDGE → CLOUD

Artificial Intelligence

Connect
· Converge IT (enterprise) & OT (factory) networks
· Process data across IoT, Edge and Cloud
· Manage several levels of computing power according to needs
· 5G connectivity audit

Alert
· Provide next generation Digital Twin Hypervisor
· Predict with AI to anticipate
· Generate intelligent alerts adapted to the user (Pilot or Operator)

Prescribe
· Improve productivity through recommendations from several IAs
· Prescribe contextualised maintenance for machines
· Trigger maintenance at the right time to not disrupt production

Multiple levels of AI

AI to learn
Identify misbehaviour compared to nominal production

AI to categorise drift
Integrate business expertise (defect and solution libraries)

AI to predict
Define the critical points
Define appropriate action to prevent or improve

AI to prescribe
Improve productivity, responsiveness and resilience

Supporting the optimisation of factory 4.0

· Strategic deployment of 4.0 bricks within the factory
· Implementation of digital twin with added-value for production:
  - Real-time monitoring
  - Decision support
  - Global risk and adapted maintenance management

- Securing of production rates
- Improvement of performance, quality and safety
- Optimisation of the life duration of production tools

ALTEN supports its customers' development strategies in the areas of innovation, R&D and technological information systems. Created more than 30 years ago, the Group has established itself as a world leader in Engineering and IT Services. Based in 30 countries, ALTEN currently has more than 54,100 employees all over the world.

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ALTEN SUPPORT FOR THE IMPLEMENTATION OF THE DIGITAL TWIN

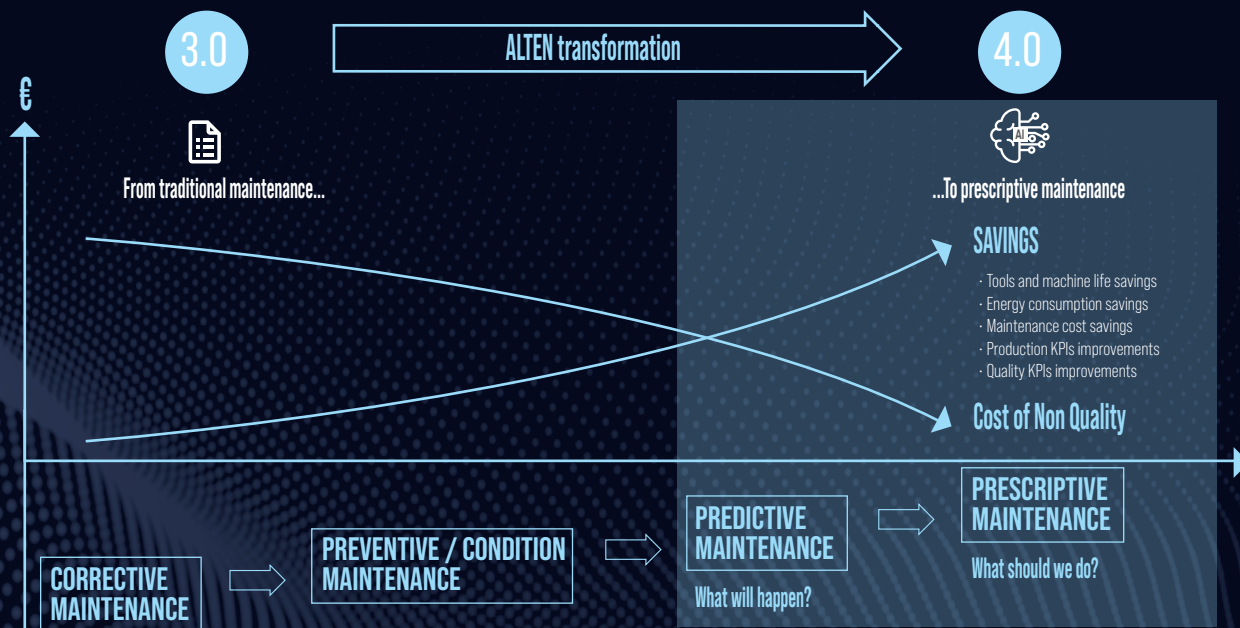| AUDIT	MODELLING	IMPLEMENTATION	HYPERVISION	OPTIMISATION
· Analysis of the as is situation · Definition of the 4.0 bricks with added-value	· Factory modelling · Simulation of 4.0 bricks	· Connecting the digital twin · Training of plant staff	· Implementation of an intelligent factory control tower · Real-time monitoring	· Consideration of business feedback · Learning of alert and prescription models

TECHNOLOGY BRICKS 4.0

1.
Optimisation of the IT/OT connection for real-time update of the digital twin

2.
Automating data and images processing and preparation with AI in the Edge and Cloud

3.
Integration of intelligent IoT sensors for data processing close to the machines

4.
Use of 3D printing for the creation and integration of "Smart Parts"

5.
Implementation of real-time control of machines and factory

6.
Implementation of Machine Learning in the factory (e.g. Sinumerik Edge from Siemens) or in the IoT (e.g. STM32 from STMicroelectronics)

7.
Interaction of the Intelligent Hypervisor with its users

8.
Implementation of mixed reality solutions to assist operators

9.
Life cycle assessment and energy performance

TO GO FURTHER
Human Factor Integration in Factory 4.0 Digital Twin

Factory Manager augmented by AI to make factory 4.0 more flexible to decision and more resilient to crises

Operator augmented by virtual reality to facilitate his adaptation to factory 4.0 jobs, to guarantee his safety and to ensure quality control

From predictive maintenance to prescriptive maintenance

3.0

ALTEN transformation

4.0

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From traditional maintenance...

...To prescriptive maintenance

SAVINGS
· Tools and machine life savings
· Energy consumption savings
· Maintenance cost savings
· Production KPIs improvements
· Quality KPIs improvements

Cost of Non Quality

CORRECTIVE MAINTENANCE

PREVENTIVE / CONDITION MAINTENANCE

PREDICTIVE MAINTENANCE
What will happen?

PRESCRIPTIVE MAINTENANCE
What should we do?

LEARN MORE
HUMAN AT THE HEART OF FACTORY 4.0

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