HANNOVER MESSE

orchestra
your smart monitoring system

Incubatore Imprese Innovative Politecnico Torino

fabbrica® intelligente

mesap
smart products and manufacturing

Smart Systems Integrated

@orchestraweb

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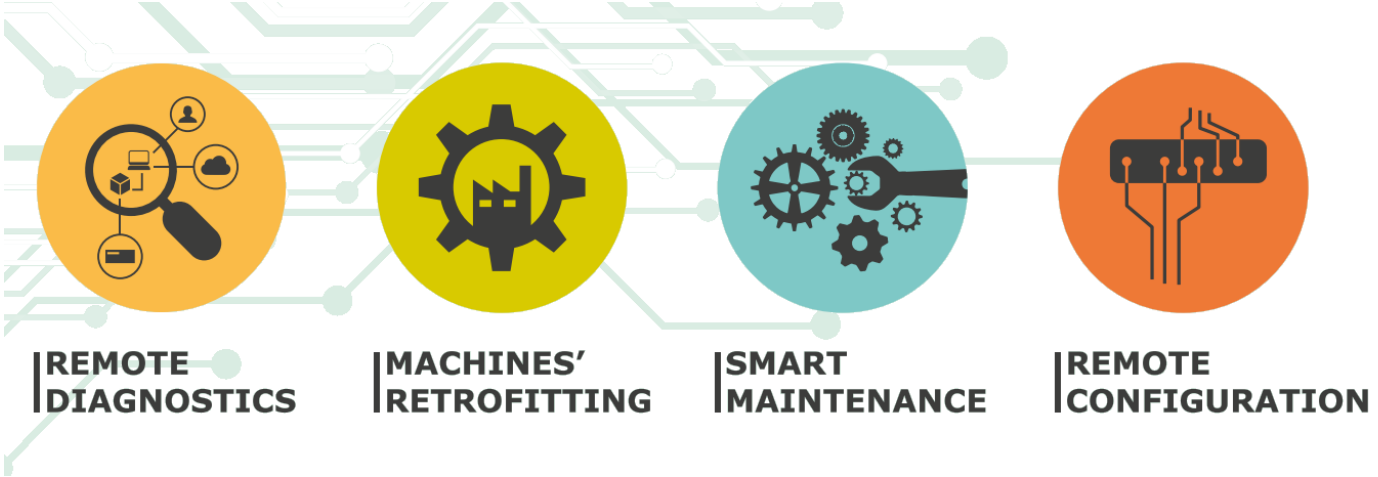
WE HELP YOU DESIGNING YOUR REMOTE MONITORING SYSTEM



The end to end solution for the entire manufacturing ecosystem

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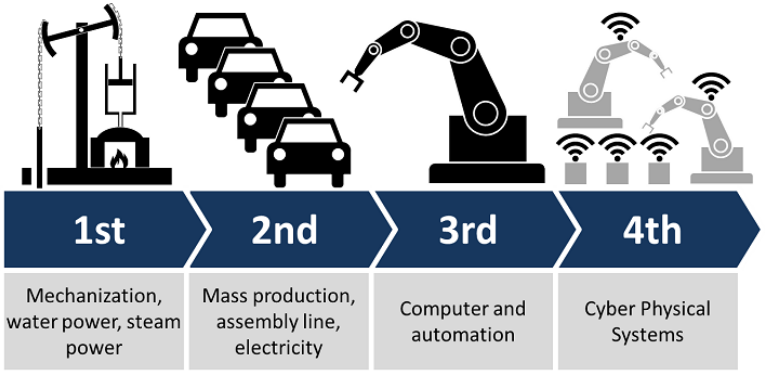
The Company

Innovative start-up selected and hosted by I3P, the Incubator of Innovative Enterprises of the Polytechnic of Turin.

INDUSTRY 4.0 technology and solutions by design, to bridge the gap between the operation technologies and the ICT of the manufacturers



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Machines as data generator: IoT versus IIOT

- Monitoring and control of machines' efficiency and drifts
  - Sampling of each process variable at different frequencies
    - °C, bar ≈sec.
    - Axis ≈ 0,01 sec.
    - Vibrations ≈ msec.
- Production progress
  - N. of good/no good items ≈ min.

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Machines as data generator: IoT versus IIOT

- Raw data marking
  - Source localization
  - Timestamp DD/MM/YY hh:mm:sec:msec
- Semantic of row data
  - Add metadata
- Data transmission on different protocols
  - Payload + overhead for transmission on confirmed protocols

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Machines as data generator: IoT versus IIOT

- The amount of produced data
  - Raw data+ timestamp + metadata
  - Sampling rate down to msec.
  - Encryption e confirmed protocol overhead ≈ 150 byte
- Daily volume for each variable
  - 200byte*1000*60sec*60min*8hours = 5,7 Gbyte
- Daily minimum volume of data for each machine (20 variables)
  - 115 Gbyte

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Infrastructure costs and bottlenecks

- Network
  - Broadband availability
- Storage
  - Space and storage access speed
- Computing
  - Number of processors

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Work arounds and advice

- Package data to reduce transmission overhead
  - Growing latency for real time application
- Move only changed data
  - Differential algorithm for computing
  - Send data only when above thresholds
  - Controls and algorithm for analog variables when closed to threshold

Send information ready to be used versus raw data

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Industry4.0: an architectural choice

- Centralized logic in CLOUD
- Field HW to program
- SW distribution
- Modem / gateway
- One protocol at a time
- Proprietary systems

- Project by project solutions

versus

- Distributed logic on the IIOT stack
- Configurable devices
- Remote refirmware
- Edge e fog computing
- Multiple protocols at the same time
- Open systems
- Public standards
- Plug&play solutions

Big data only when really needed

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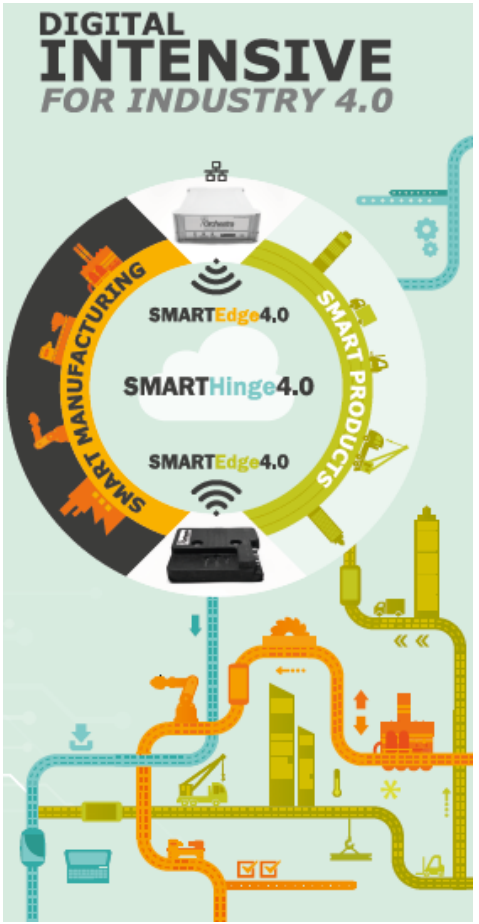
The ORCHESTRA's spirit of innovation

EDGE computing on CLOUD architecture:
to distribute monitoring and control functions between the shopfloor and the CLOUD on the most effective proper configuration

Ready to use, plug & play, no programming:
to shrink the time to market, making life much easier to customers and business partners

We are the hinge, bridging the gap between operation and information technologies



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The Orchestra solution

The Orchestra **SMARTHinge4.0**

- Provides full production tracking, tracing, and alert services connecting remote users on their private or public CLOUD
- Takes care of the full field devices management
- Connects the shopfloor with the rest of the company organization
- Connect products to provide new support and configuration services

The all-in-one Orchestra **SMARTEdge4.0**

- Connects new and existing machines on multiple protocols and connectors, and with their digital twin too
- Sets itself properly to run the monitoring services as asked by the remote users
- Connects users in proximity for AR or local controls

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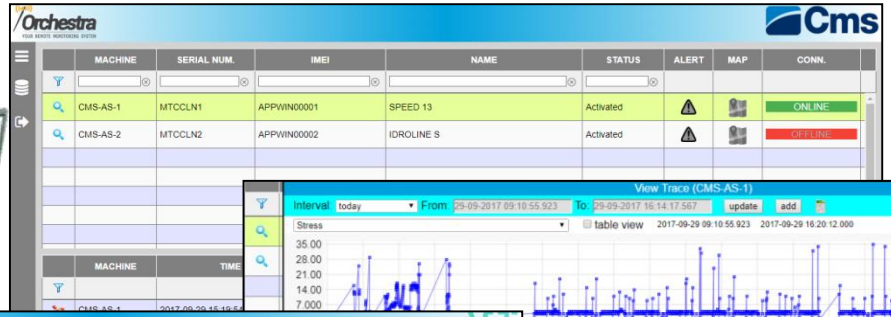
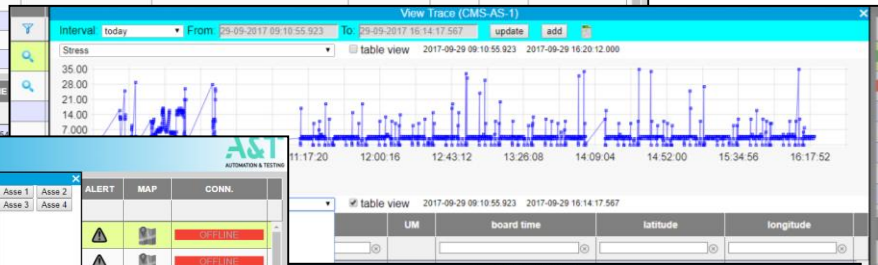
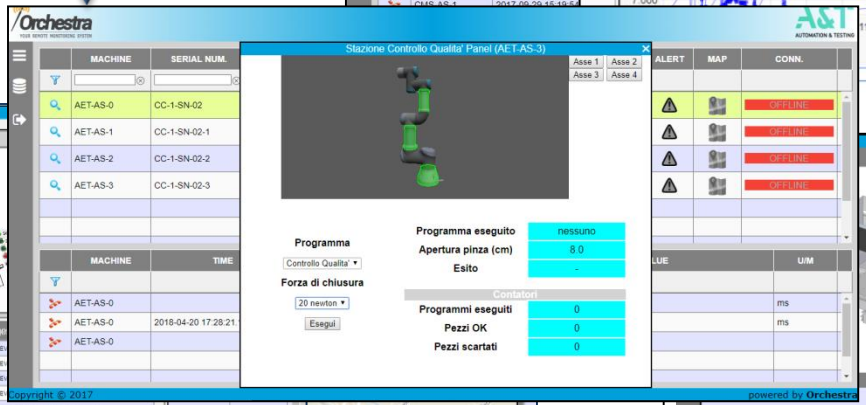
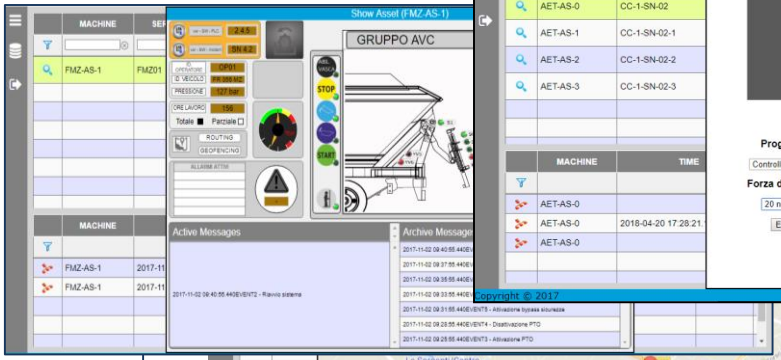
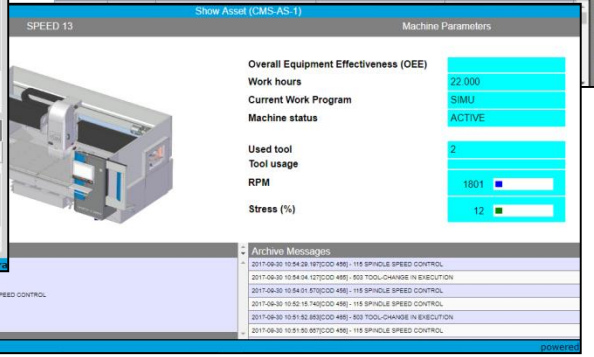
3D HMI for different users

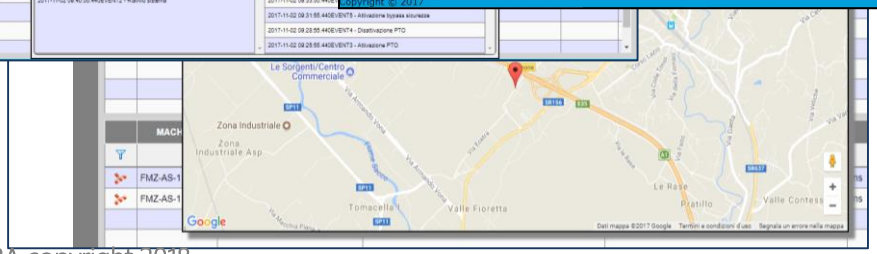












Tailored on your business

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SMART SYSTEMS INTEGRATED PRODUCT

Product Name
SMARTEdge4.0

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In-depth support for innovation and exploitation in Smart Systems Integration

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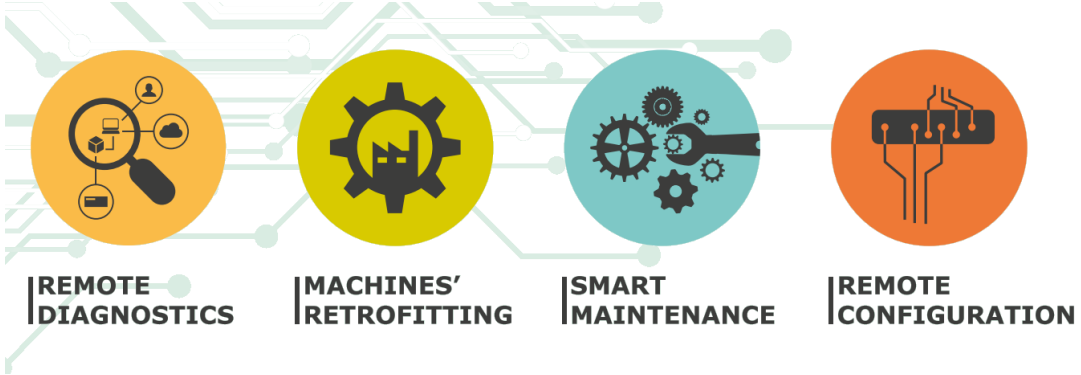
HANNOVER MESSE

Showcases in Hall 8 - D33



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