

Flexible and Autonomous
Manufacturing Systems
for Custom-Designed
Products



FASTEN: EU-Brazil cooperation in IoT for manufacturing. Embraer use case

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RJNDR1

9th EASN

3th September 2019

This project has received funding from the European
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EMBRAER
FASTEN
FASTEN USE CASE
FINAL REMARKS

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Slide 1

RJNDR1 Missing people???

RICARDO JOSE NUNES DOS REIS; 26/08/2019

EMBRAER: A GLOBAL COMPANY



Production Of Large, Critical and/or Complex Parts

Wings And Empennage Assembly

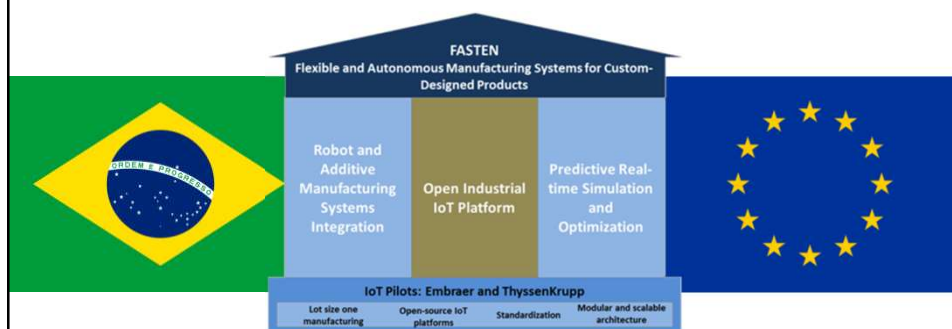
High Automation And Digitalization

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What is FASTEN?



Foster digital manufacturing sustainability and enable technology development between Brazil and Europe

Provide a multi-disciplinary decision support tool to improve trade-off analysis

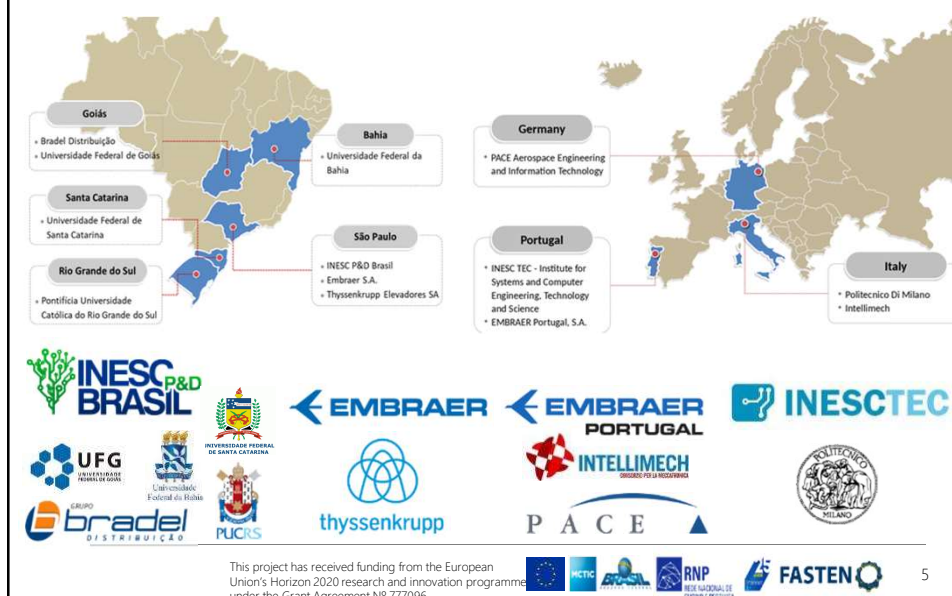
Contribute to the competitiveness of Brazil and Europe

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Partners from Europe and Brasil



Two pilot demonstrations

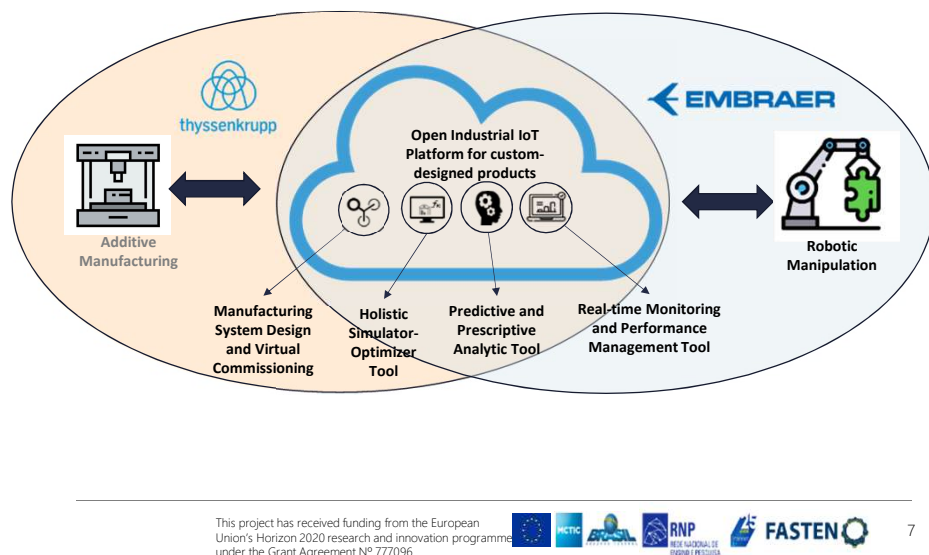
Design of an Additive Manufacturing Supply chain in Brazil

Automatic Pick'n'Place at Embraer Portugal

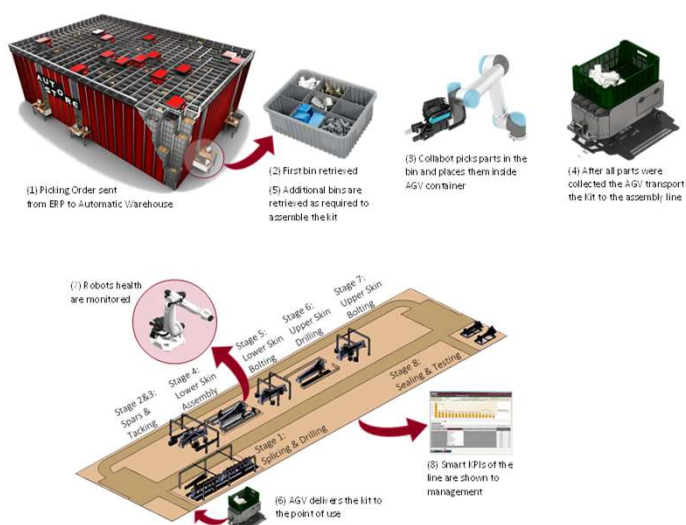
Logos: thyssenkrupp, EMBRAER, Brazilian flag, European Union flag, gear icon.

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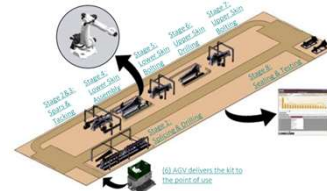
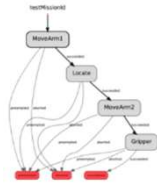
FASTEN – Project Structure



EMBRAER Use Case : Overall view



Goals



Generic Solution

Adaptable & Self-Learning

Service Oriented

Architecture

Skills based approach

Self-evolving with real data

Support Plant Management

Manage disruption

Load balancing for new or improved products



Prognostics&Prescription
Towards CBM

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Main expected results



FASTEN
Predictive and
Prescriptive
Analytic Tool



FASTEN Holistic
Simulator-
Optimizer Tool



Flexible and
scalable robotic
system

FASTEN
INDUSTRIAL
ANALYTICS
SUITE



FASTEN Real-
time Monitoring
and
Performance
Management
Tool



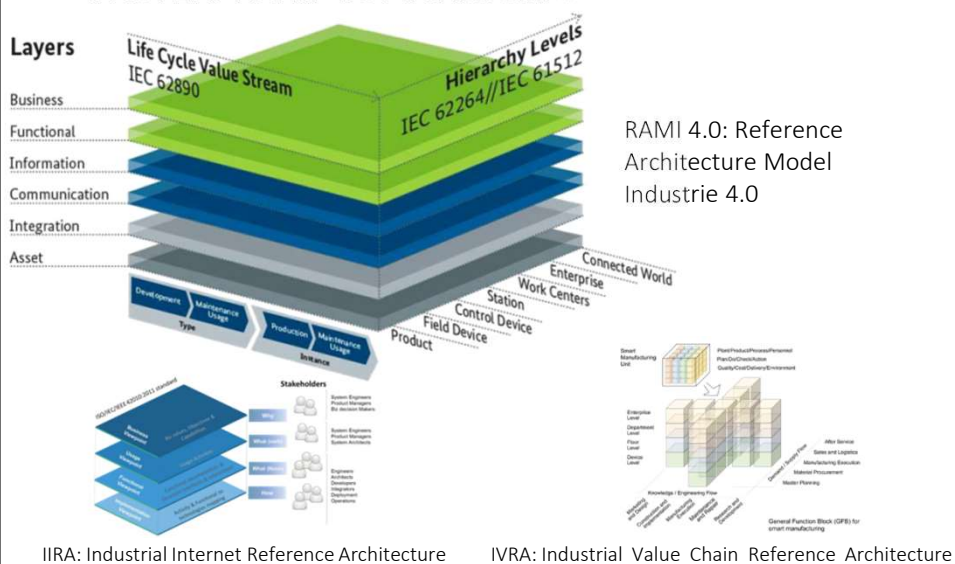
Open Industrial
IoT Platform for
custom-
designed
products

1. Intelligent handling of custom objects
2. Full connectivity among all hardware and software components
3. Improve accuracy and provide better insights regarding the near-future
4. Solid understanding of the system's behaviour and its sensitivity to different parameters

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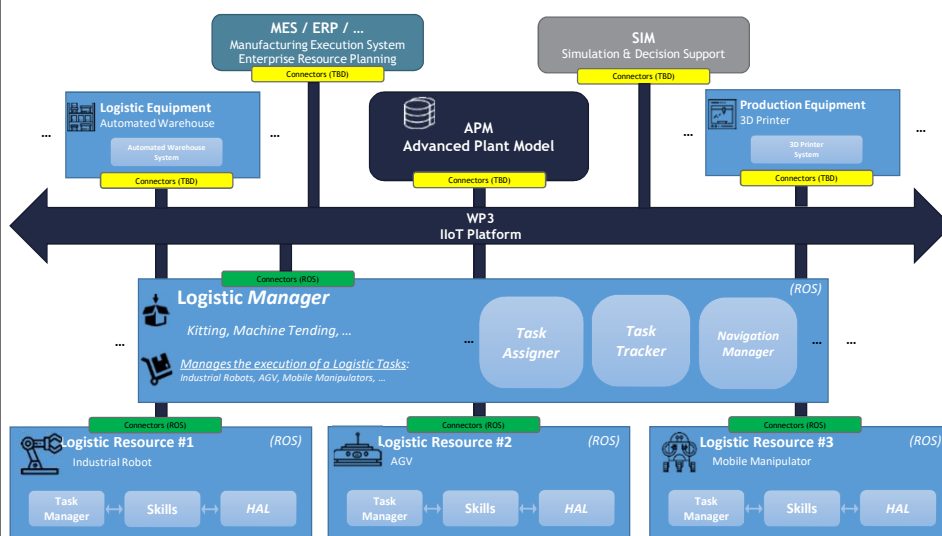
FASTEN: RAMI 4.0 Architecture



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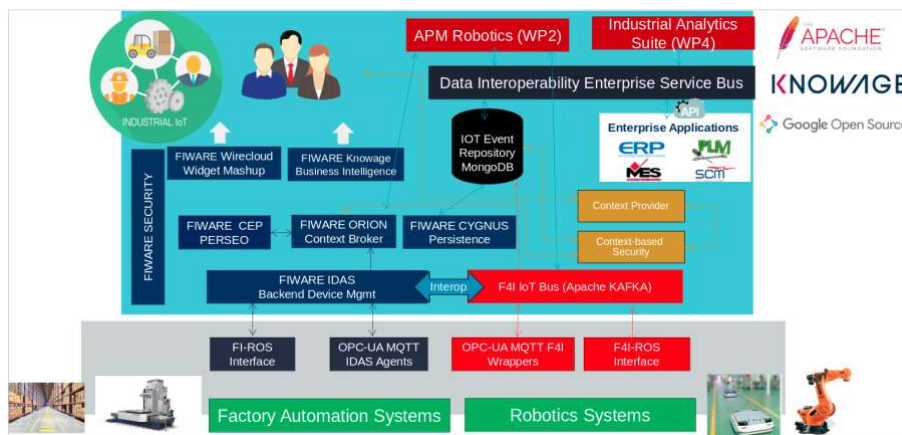
FASTEN ARCHITECTURE



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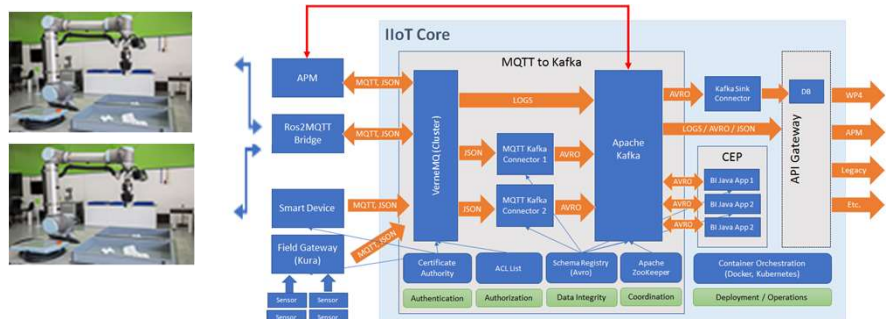
Results – Open Industrial IoT Platform for custom designed products – *Reference architecture and system specification*



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APACHE implementation and learnings



APACHE - Huge tool box, maintained tools, easy to use and easy to configure, in combination with docker running on a variety of platforms, high performance, robustness, cascable, ...



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Review meeting



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Next activities

1. Final technology demonstration 2020
2. Exploitation and way forward: Brasil-EU Industrial Lab ?

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FASTEN



Thank you
Questions?

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