Flexible and Autonomous Manufacturing Systems for Custom-Designed Products

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Flexible and Autonomous Manufacturing Systems for Custom-Designed Products

Coordinators

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Joint EU-BR Calls

- IoT Pilots - EUB-02-2017
  - Smart Manufacturing: Customization
    - Continuous additive manufacturing
    - Flexible automation for robot manufacturing
    - Robot systems for additive manufacturing
    - Production of one-of-a-kind customer designs; and dynamic production systems and shop floors - mobile robot for efficient and flexible use in cleanrooms

This project has received funding from SEPIN/MCTI under the 4th Coordinated Call BR-EU in CIT and from the European Union’s Horizon 2020 research and innovation programme under the Grant Agreement Nº 777096

Project Partners

Brazil

Europe

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Management Structure

- The FASTEN Project is divided into 7 WPs and 27 tasks.
- A WP leader and a Task leader are appointed to coordinate each WP and Task.

European Comission Project Officer (PO)

Exploitation Manager (INESC TEC /IB)

General Assembly (All Partners)

Advisory Board

WP2 (IMECH/IB)

WP3 (POLIMI/PUCRS)

WP4 (INESCTEC/IB)

WP5 (PUCRS)

WP6 (EMBPT)

WP7 (PACE/PUCRS)

Project start date: November 1st, 2017
Project duration: 36 months

Project Office

Project Coordinator (INESC TEC)

a. Challenges being addressed

- **Develop and demonstrate a flexible and scalable robotic system** and its integration with mass customization production lines
- **Standardize data repository and decision-making integration**, from end-users (consumers) services to the manufacturing and supply levels
- **Optimize, synchronize, and improve the coordination in real-time of the production and logistic activities**
- **Validate and demonstrate the FASTEN Framework** in two cross-sectorial industrial pilot cases
- **Improve the overall supply-chain performance and decision-making effectiveness**
- **Validate technology and IoT architectures**
b. Objectives

- **Foster digital manufacturing** sustainability and be an enabler of technology development between Brazil and Europe
- Provide a **multi-disciplinary decision support** tool that will improve the trade-off analysis
- **Contribute to the competitiveness** of Brazilian and European industries

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c. FASTEN Impact

- **Promote and speed up the adoption of Industry 4.0**, fostered by additive manufacturing and IoT solutions, both on the Brazilian and European scenarios
- Propose a **sustainable approach to the manufacturing industry improvement**, with highly efficient energy management designs, reduced raw material consumption, improved scheduling approaches

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d. Approaches

Flexible and scalable robotic system [WP2]

Open Industrial IoT Platform for custom-designed products [WP3]

FASTEN Predictive and Prescriptive Analytic Tool [WP4]

FASTEN Holistic Simulator-Optimizer Tool [WP4]

FASTEN Real-time Monitoring and Performance Management Tool [WP4]

FASTEN Industrial Analytics Suite
d. Approaches – **WP2** – Flexible and scalable robotic system – **Visual recognition of a part: Arm robot interaction**

![Image of robotic system]

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d. Approaches – **WP3** – Open Industrial IoT Platform for custom designed products – **Context Provider and Context-based Security modules integration**

![Image of industrial IoT platform]

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d. Approaches – WP4 – Predictive Real-time Simulation and Optimization – Design and simulation of the supply chain system

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e. Roles and contributions: Embraer and ThyssenKrupp

1. Offer a real-workshop environment test zone and adequate infrastructure
2. Provide access to production facilities
3. Give support on the assessment of the industrial constraints
4. Identify relevant technical challenges
5. Contribute in the use case requirement definition and system integration
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Thank you!

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