Consortium Project
„Advanced Robotics & Automation“

Key facts
JOIN THE CONSORTIUM

Major outcome of the project

Tackle the most relevant questions and challenges for **automated production and intralogistics** as well as the **implementation of robotic based solutions** to boost your production efficiency:

- Receive a **detailed, global overview** of the current research trends and **best practice applications** in the area of advanced robotics and industrial automation.
- Gain a **deep technological evaluation** for your relevant applications and **key questions** answered by research experts from RWTH Aachen institutes and Fraunhofer entities.
- **Network** with cross-industrial players and RWTH Aachen research experts to discuss future potentials and benefits for your business.
- Evaluate the opportunities for **joined follow-ups** in terms of **demonstrators** and **trials** at RWTH Aachen campus.

Framework Conditions

- **Start:** August 2019
- **End:** June 2020
- **Partnership Fee:** € 29,000
- **Up to 20 cross-industrial consortium partners**
Initial Situation

Automation and the use of robotic solutions in production is rapidly evolving. As competitiveness in production industry rises, so does the need for cost reduction. Shorter cycle times combined with error minimization can significantly increase process efficiency. New applications offer large potential for enhanced productivity:

- Smart robotics and cobots
- Cloud robotics
- Process learning
- Intelligent automation
- ...

Procedure

The project is divided into three stages to structure and analyze the field of “Advanced Robotics & Automation” along the following aspects:

- Evaluating the individual needs and questions of the consortium partners as well as identifying current developments and applications for “Advanced Robotics & Automation”
- Detailed investigation for selected applications and technologies resulting in roadmaps, demonstrators and/or economical evaluation
- Consolidation of the generated results with user-oriented innovation patterns and tools to support management decisions

Major Outcome

In the systematic approach of the project, the highly dynamic area of “Advanced Robotics & Automation” is structured and individual starting points for e.g. the implementation of solutions are identified:

- A detailed overview of the key technologies and applications
- Technological deep-dives for applications selected by the consortium partners
- Structured workshops for e.g. customer-specific implementation potentials
- Access to a large cross-industrial and interdisciplinary partner network
- Possible realization of demonstrators based on relevant use-cases
**STAGE 1**

**Structure & application overview**
- Structured overview on industrial robotics, intralogistics and controlling solutions
- Assessment of relevant technology trends and consortium needs
- Suggestion of relevant segments and sub-segments to be assessed
- Scanning & scouting for cross-industrial best practice and research applications

➢ Applications for deep evaluation in Stage 2

**STAGE 2**

**Detailed technology assessment**
- Systematic selection of attractive applications and specific technology questions by the project partners
- Detailed technological evaluation of each selected application by e.g. assessing the technological feasibility
- Cross-industrial workshops to identify individual use-cases of robotics or automation solutions

➢ Information basis for selection of focus cases in Stage 3

**STAGE 3**

**Focus assessment**
- Different directions for focus assessment:
  - Business cases & cost estimation
  - Derivation of implementation roadmaps
  - Demonstrators for selected applications

➢ Information basis for partner-specific strategic decisions and bilateral follow-ups

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**TIMELINE & POTENTIAL RESULTS**

**Advanced Robotics & Automation**

- **Kick-off**
  - August 20th, 2019
- **1st Report**
  - November 2019
- **2nd Report**
  - March 2020
- **Final Meeting**
  - June 2020

- **Questionnaire**
- **Consortium meeting**
- **Optional workshops with partners/experts**
- **Optional network/platform meetings**
SUGGESTED PROJECT SCOPE
Advanced Robotics & Automation

Application Areas
- Discrete Manufacturing
  (Material Handling, Joining, Assembly, Co-Bots, ...)
- Process Engineering
  (Process Automation, ...)
- Logistics
  (Warehousing, Packaging, AGVs, ...)
- New Application Areas
  (Medicine, Construction, ...)
- Concepts
  (Robot as a Service, ...)

Enabling Technologies
- Robotic Components & Solutions
  (Sensor, Gripper, Joints, ...)
- Middleware, Protocols & Connectivity
- Software
  (A.I., Learning Methods, Cloud Robotics, ...)

Enabling Technologies
- OPC UA
- 5G
- MQTT
Stage 1: Segmentation & application scanning

Segmentation
- Evaluation of the **consortium preferences and key questions** (questionnaire)
- Structured overview of **relevant focus areas** and sub-segments within these focus areas
- Aggregation of **market and technology intelligence** for each segment
- Possibility for a **technology landscape** on chosen technological areas

Application trees
- Pre-evaluation of the most relevant approx. 200 **cross-industrial solutions** to be presented to the consortium during the 1st report meeting
- **Structured overview** of current and future solutions in the context of specific applications fields
  - The consortium will vote for applications/solutions to be evaluated technologically in project Stage 2
Stage 2: Technology Assessment

Detailed technology analysis
- Assessment of different technological concepts leading to a technological deep dive
- Aggregation of relevant technology- and market-related information
- Evaluation of current advantages and disadvantages of the applications chosen by the consortium and their technological feasibility
- Identification of potential technology partners
- Executive Summary for a quick evaluation of each application

Cross-industrial workshops
- Cross-linking of compatible partners from different industries in a facilitated workshop
- Derivation of clusters of common problems and derivation of possible common solutions
  - The consortium has the opportunity to vote on the most promising solutions for a further and deeper evaluation in Stage 3
Stage 3: Business cases/roadmaps/demonstrators

Business case analyses
- Detailed calculation of business cases for the selected applications/solutions with possible collaboration of consortium partners
- Derivation of relevant technologies, solutions and/or services to address the highlights voted by the consortium
- Assessment of chances and risks for the project partners

Technology/application roadmap
- Analysis on the research activities in specific technology fields for the chosen applications or technologies
- Estimate the time of market maturity

Demonstrator
- Possibility for the preparation of a Minimum Viable Product (MVP) directly from consortium partners

➢ Information basis for partner-specific strategic decisions
CONSORTIUM STRUCTURE
Advanced Robotics & Automation

**Industrial user**
- Professionals in production management, technology management, strategy and business development
- Representatives of industries affected by advanced robotics and automation

**Research partners**

**Interdisciplinary consortium**
- Approx. 20 consortium partners
- € 29,000 per partner
- 12 month duration
- Four major project meetings
- Networking with the consortium partners at each meeting

**Technology providers**
- Hardware providers
- Software and platform providers
- System integrators
- ...
EXPERT NETWORK

Advanced Robotics & Automation

Professional technology and market information provider founded 2012 as a spin-off of the Fraunhofer IPT
www.kex-ag.com

Knowledge and experience in all fields of production technology for optimizing solutions for modern production facilities
www.ipt.fraunhofer.de

Knowledge and experience in all fields of production engineering and production management
www.wzl.rwth-aachen.de

External partners:

Knowledge and experience in all fields of factory operation and automation
www.iff.fraunhofer.de
REFERENCE PARTNER
Former KEX Consortium Partners

More than 250 previous Consortium Partners*

* all mentioned companies are partners of a former consortium project hosted by KEX AG and it’s research partners
your contact person

Advanced Robotics & Automation

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