

Project Partners

The **I-RAMP³** consortium consists of a well balanced group of 12 industrial and scientific partners from 6 European countries. Leading-edge research organizations and universities as well as well-known equipment vendors and system integrators built the **I-RAMP³** consortium. Hence, the partners bring in diverse but complementary competencies in the areas of equipment development and operation. Furthermore, companies specialised in software technologies and knowledge based manufacturing as well as technology transfer management are integrated in the consortium.



Harms & Wende GmbH & Co. KG
www.harms-wende.de
Germany



AWL-Techniek BV
http://en.awl.nl
Netherlands



Fraunhofer IPA
www.ipa.fraunhofer.de
Germany



GAMAX Ltd.
www.gamax.hu
Hungary



Technax Industrie
www.technaxindustrie.com
France



Hochschule Karlsruhe Technik und Wirtschaft
www.hs-karlsruhe.de
Germany



University of Porto
www.up.pt
Portugal



Steinbeis-Europa-Zentrum
www.steinbeis-europa.de
Germany



Critical Manufacturing
www.criticalmanufacturing.com
Portugal



IEF Werner GmbH
www.ief-werner.de
Germany



INOS HELLAS
www.inos.gr
Greece



FreedomGrow
www.freedomgrow.pt
Portugal

Expected impacts

I-RAMP³ contributes to the transition of the European manufacturing industry and especially SMEs into a **knowledge-based business**. With the integration of specific knowhow into machines and devices an **added value** will be generated and a **competitive advantage** for this sector will be reached. As a consequence of the novel technology, a huge step towards flexible and sustainable production made in Europe will be done. In particular, the following impacts are expected:

- Drastic reduction of the ramp-up time and efforts for new or re-configured manufacturing systems
- Increased production efficiency by optimal production system setup
- Increased Overall Equipment Efficiency (OEE) of the entire manufacturing system
- Quality aggregation and assessment on different levels of production processes
- Improved services for NETDEVs by component suppliers & integrators
- More flexible, project-based collaboration between different component supplier

Contact

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I-RAMP³

Intelligent Network Devices
for fast Ramp-up

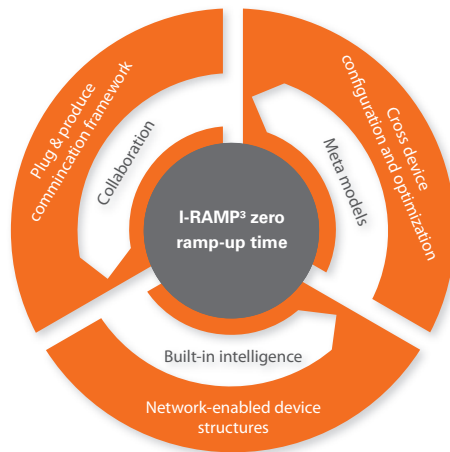


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I-RAMP³ vision

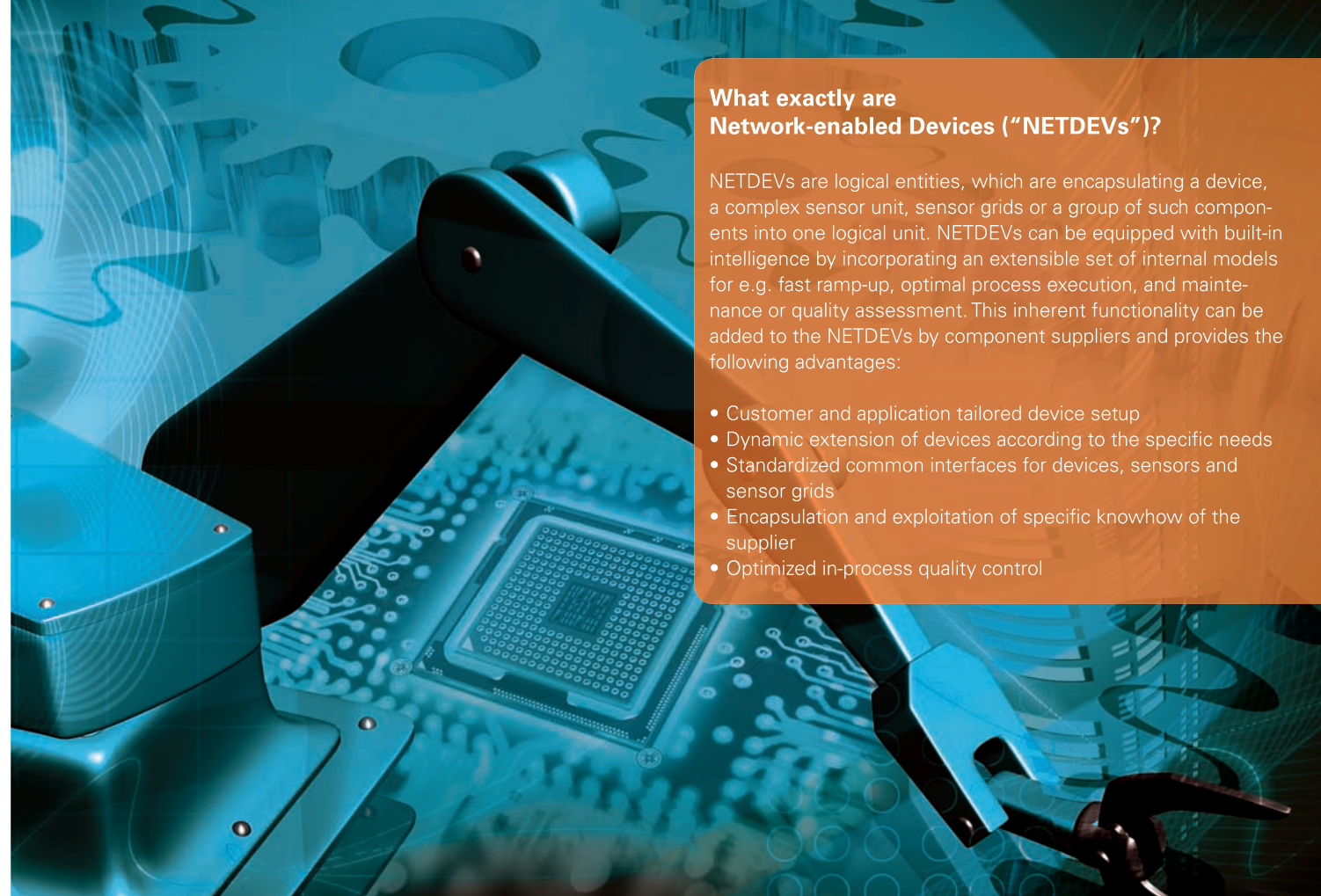
The vision of I-RAMP³ is to enable the European manufacturing industry towards **smart manufacturing systems in conventional production**. The project aims at creating innovative solutions in order to improve the competitiveness for this industry sector. This goal will be reached by a **novel concept for fast, optimized ramp-up and operation of production lines**. By this, significant reduction of time and efforts during the setup and re-configuration of production plants will be reached. At the same time, production costs will be reduced by increasing the efficiency of manufacturing.



From vision to reality

I-RAMP³ proposes the transformation of conventional production equipment into **Network-enabled Devices (NETDEVs)** which form the building blocks of a heterogeneous production network. Those agent-based production devices are equipped with standardized interfaces and standardized communication protocols as well as self-descriptive capabilities.

NETDEVs are able to adopt themselves to varying production setup and production conditions by negotiating with each other on optimal configuration. In addition, also sensors and sensor grids can smoothly be integrated in the NETDEV-based manufacturing system. This holistic approach enables fast component integration and exchange as well as rapid adaption of the entire manufacturing system on changing customer demands.



What exactly are Network-enabled Devices ("NETDEVs")?

NETDEVs are logical entities, which are encapsulating a device, a complex sensor unit, sensor grids or a group of such components into one logical unit. NETDEVs can be equipped with built-in intelligence by incorporating an extensible set of internal models for e.g. fast ramp-up, optimal process execution, and maintenance or quality assessment. This inherent functionality can be added to the NETDEVs by component suppliers and provides the following advantages:

- Customer and application tailored device setup
- Dynamic extension of devices according to the specific needs
- Standardized common interfaces for devices, sensors and sensor grids
- Encapsulation and exploitation of specific knowhow of the supplier
- Optimized in-process quality control

Project specific objectives

I-RAMP³ aims at enabling the industry towards **zero ramp-up time integration** of additional capabilities in existing and new production networks. In order to realize this goal the project will target four specific objectives.

1. Plug&Produce devices, sensors and actuators with built-in intelligence for fast exchange
2. Standardized communication and collaboration mechanisms in heterogeneous production environments
3. Intra- and inter-device optimization models for automated device configuration
4. Enhanced Manufacturing Execution Systems for workflow optimization and production data assessment

Production efficiency

