

# I-RAMP<sup>3</sup>

Intelligent Network Devices for fast Ramp-up



## NEWSLETTER

No.3

### Content

- Editorial and I-RAMP<sup>3</sup> ID 1
- Progress and future developments of I-RAMP<sup>3</sup> 2
- I-RAMP<sup>3</sup> month-12 partner meeting in Athens 3
- Interview with Vassilis Spais (INOS Hellas Spa) 4
- ReBORN - a new EU project on the Factories of the Future track 5
- News from the field - Horizon 2020 official adoption 6
- Future events 6

### Editorial

Dear Reader,

Just before the end of 2013 we are proud to present the third issue of the I-RAMP<sup>3</sup> newsletter. From the project's point of view it was a very successful year. After the 6 month meeting in Porto we had two further important meetings: A programmer's meeting - internally called "Hackfest" - and the 12 month partner's meeting.

The Hackfest was held in Porto and was supposed to draw together the different technical implementations – largely, these were developed independently so far – in order to assemble a first prototype of the communicating heterogeneous devices within a manufacturing execution system (MES).

A few weeks later, in October, I-RAMP<sup>3</sup> celebrated its 1st anniversary. The "festivities" took place at partner INOS in Athens, and the biggest gift was the exceptional spirit of the highly motivated consortium. In the 12 month partner's meeting the various project results were present to all project partners. Furthermore, several workshops for practicing I-RAMP<sup>3</sup> technology and for identifying the first exploitable results were organized. The highlight of the meeting was the demonstration of the first prototype. Find the detailed reports on both meetings later in this issue.

While celebrating the 1st I-Ramp<sup>3</sup> anniversary, there was a birthday to be celebrated, too! ReBORN is a recently approved EU project, in which several I-RAMP<sup>3</sup> partners are also involved. Here, present ReBORN to you briefly and explain how both projects are linked, where overlapping; yet complementary activities shall ignite a fast implementation of both work plans.

As in the previous issues, we would like to give you the chance to know us better by sharing with you a chat with one of the I-Ramp<sup>3</sup> partners! In this newsletter, get to know INOS Hellas and our partner Vassilis on page 4. Last but not least, learn about upcoming events and get the link to the longtime awaited final work programmes for Horizon2020, the new funding program of the European Commission.

### I-RAMP<sup>3</sup> ID

#### Title

Intelligent Reconfigurable Machines for Smart Plug&Produce Production

#### Project duration

01/10/2012 – 30/09/2015

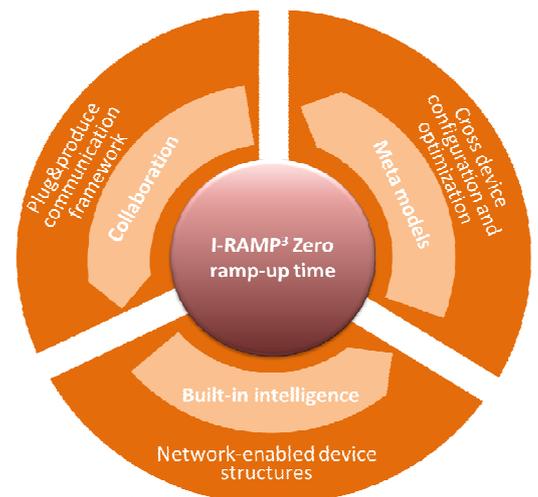
#### Main objective

I-RAMP<sup>3</sup> aims at enabling the European manufacturing industry towards smart manufacturing systems in conventional production.

This goal will be reached by a novel concept for fast, optimized ramp-up and operation of production lines. Therefore I-RAMP<sup>3</sup> proposes the transformation of conventional production equipment into **Network-enabled Devices (NETDEVs)**.

#### Partner countries

Germany, Hungary, Portugal, France, Netherlands and Greece



Just before the end of 2013... yes the year is almost over. We are looking forward to another successful and joyful year of I-Ramp<sup>3</sup> and we will be happy to continue sharing our news with you.

The entire I-RAMP<sup>3</sup> consortium wishes you and your family a very Merry Christmas and a happy New Year 2014!





## NEWSLETTER

### Progress and future developments of I-RAMP<sup>3</sup>

#### 1st Hackfest of the I-RAMP<sup>3</sup> project

Which essentials do programmers need in order to implement good software? Well, at least Coke, Chips and Pizza! Plenty of those three ingredients were available during the first "Hackfest" ("hacking" = rapid software programming; "fest" = German word for Party) of the **I-RAMP<sup>3</sup>** project, which has been organized by and at the facilities of partner University of Porto.



The purpose of the one week programming session was to setup a 1st prototype, in which the **I-RAMP<sup>3</sup>** technology for enabling fast ramp-up of manufacturing systems could be demonstrated. To do so, the **I-RAMP<sup>3</sup>** partners defined a setup in advance and started to implement the various software packages. The main elements are the NETDEVs (Network-enabled Devices), which consist of versatile features that allow for the discovery and the exchange of self-descriptive data. With the help of an intelligent communication and negotiation framework NETDEVs are enabled to explore the capabilities of other network entities and thus, are able to form a manufacturing system in a semi-automated way.

The implemented prototype consists of a Sensor&Actuator NETDEV, which interfaces several sensors such as temperature, humidity and accelerator sensor in one sensor box and another temperature sensor in another sensor box. Several Device NETDEVs are in the network, too: A PLC NETDEV, a Camera NETDEV and a Welding NETDEV. Physical devices were connected to

the camera NETDEV (laptop webcam) and to the PLC NETDEV (Siemens S7 PLC). A Processing NETDEV is also present, which is not connected to a physical hardware, but processes image data coming from the camera NETDEV. It analyzes the images in order to identify the shape of the brightest section of the images. The cmNavi-go Manufacturing Execution System (MES) of partner Critical Manufacturing is included via a MES adaptor and is used for graphical representation of the NETDEVs. All communication is done in a decentralized way without a broker. During the Hackfest, various use-cases including NETDEV discovery or for automatic NETDEV integration in a MES were tested.

Using standard technology for communication and its enhancement with the required features, the prototype was fully implemented within 3 days. It works reliably in laboratory environment. The prototype has successfully been demonstrated at the **I-RAMP<sup>3</sup>** 12 Month Partner Meeting on 23rd October in Athens. Further work will concentrate on the stabilization of the prototype also for industrial setups and on the implementation of further NETDEVs.

A second, more sophisticated prototype is planned to be demonstrated during the mid-term project meeting in May 2014.





## NEWSLETTER

### I-RAMP<sup>3</sup> partner meeting in Athens, 22nd - 24th October 2013

#### One year I-RAMP<sup>3</sup> - striking progress and exiting first results

Motivation and good communication is a reliable motor. So it proved to be for the **I-RAMP<sup>3</sup>** project, as became obvious during the consortium's 12 months meeting, which was hosted by partner INOS Hellas Spa in the city of Athens. Not only the recent results of the several workpackages were presented, but also a preliminary integration prototype could be demonstrated at this rather early stage of the project.

During three days **I-RAMP<sup>3</sup>** partners had the chance to present and also to actively discuss current developments and future steps. An important feature of the meeting was the emphasis on interactive sessions giving room for discussions, brainstorming, reflection and practical work. On day one all partners enjoyed a hands-on training on programming and interfacing of NETDEVs, which constitute the major logical components of the **I-RAMP<sup>3</sup>** concept (see page 1 – general project approach). The idea was to gain important input from non-programmers in order to assess the usability and easiness of handling of the approach chosen. In fact, enabling several kinds of NETDEVs to be interfaced, to communicate and to be integrated was one of the major goals of the recent project period. The joint experience of the results within the workshop and, on day 2, during the integrated prototype demonstration underscored the considerable progress of the project work. Further interac-

tive sessions were dedicated to technical discussions on details of implementation of the individual workpackages and a workshop on IRP (Intellectual Property Rights) and exploitation issues. The latter was the first workshop to be held in a series of several such seminars during the course of the project organized and led by partner SEZ. The aim is to gather all IP relevant information within the consortium and to timely start to explore the potential for exploitation in both, commercial and other (e.g. academic) sense, of the emerging project results.

Last but not least, the consortium had the chance to visit partner INOS's premises and get some insight into the daily business of sensor solutions for inline metrology applications.

Many thanks to INOS for providing an excellent framework to the meeting and to all participants for a cheerful and productive atmosphere!





## NEWSLETTER

### Interview with Vassilis Spais, project manager at partner INOS Hellas Spa

#### Which is INOS's main area of activities?

INOS Automation (part of the Grenzenbach Group of companies) has several areas of activities. Our main focus is machine vision, inline metrology and robot guidance for application in the automotive and logistics sectors. We provide three main product lines including software and hardware components. These are employed for intermediate or final verification of the product against order (gVerify to verify e.g powertrains), for robot guiding (fitting, racking, moving to specific locations; gGuide) or for measurements applications using machine vision (e.g. inspection of gaps; gGauge). The field of application for these products is really wide. In logistics, for instance, gGuide is used for allocation of cargo and management of pallets. In the automotive sector we offer complex applications where a combination of two robots with the specific guidance software is required.

#### What is exactly the role of your department at INOS?

INOS Hellas mainly covers the R&D activities of the company, which make about two third of our business. Another third is dedicated to installation, configuration and ramp-up. The headquarters in Stuttgart deal with product management, sales, local support and configuration of the installations within Europe. A sister company in the USA performs sales, local support and configuration in North America.

#### How did your group become involved in the I-RAMP<sup>3</sup> project? Are you involved in other European R&D projects, too? In case this is a "new experience" for INOS, how do you feel about it after 12 months of run time?

There was a contact from an earlier European project (SIARAS), in which we participated in the framework of FP6 some years back. So, being involved in I-RAMP<sup>3</sup> is not a new experience, but it's on a good way to become a very positive one. Seriously, the project is well run – we at INOS share the general feeling expressed by the entire consortium during our last meeting – well integrated and focussed.

**That's a fantastic feedback! I personally agree. And it's good to see that all involved are willing to keep**

#### Short profile

**Vassilis A. Spais is an electrical engineer with a background in systems engineering, technical management, software development and robotics. He works for INOS Hellas S.A. as a project manager and processes optimization manager while performing system engineering technical work. His research interests include system engineering, embedded systems and systems optimization. He graduated from the Aristotle University of Thessaloniki as an electrical engineer.**

#### going that way! Now, talking about your expectations on the output for you....being embedded in a large company, how strategic is the I-RAMP<sup>3</sup> project really for INOS or the parent group?

There are, indeed, clear expectations regarding the benefit. INOS Automation, our parent company, is interested in firstly, reducing its cost (mainly as concerns the installation and configuration effort) and, secondly, in making steps forward in metrology and in increasing the company's competitiveness in this regard.

#### Your role in IRamp<sup>3</sup> is to contribute to the development of the general I-RAMP<sup>3</sup> sensor integration abstraction and to develop measurement specific capabilities. Could you explain briefly what this means concretely?

Our contribution is several-fold. In the early phase of the project, we are involved in specifying industrial scenarios relevant for fast configuration of optical measurement systems (related to WP1). We also contribute to the specifications of the capability layer of the information exchange protocols for industrial measurements. This is specific information which the devices involved in the measurement process (such as sensors, sensor head, robot) need to be able to exchange certain information related to their tasks, methods and performance.

The third field of contribution is the development of a general, not application specific optical measurement device to be attached on a robot. ...

Follow the interview on the next page!

# I-RAMP<sup>3</sup>

Intelligent Network Devices for fast Ramp-up



## NEWSLETTER

The aim is to get a single hardware device in combination with a family of algorithms to perform dimensional measurements. In such an “all-in-one” device where the relevant algorithm can be selected depending on the current need, the configuration and installation would be way faster, since only the software would have to be exchanged, not the entire sensor.

Finally, we aim to create a system that allows CAD (Computer Aided Design) input to be used to guide a metrology set-up.

**Do you expect to be able to implement the project developments seamlessly into your current processes? Who are your direct commercial customers for a product that could potentially emerge from the project?**

The developments I mentioned above will help us to reduce the currently high effort and long time - and consequently the costs - we have to spend for the installation and configuration of each of our products. The customers will remain the same and will purchase the same products. However with “I-RAMP<sup>3</sup> inside” our products, INOS will experience a considerable advantage from reduced costs and time for putting them in action.

**Thank you very much, Vassilis**

The interview was led by Patricia Wolny from partner Steinbeis-Europa-Zentrum (SEZ).  
wolny@steinbeis-europa.de

### ReBORN - a new EU project on the Factories of the Future track

On September 1st a new FP 7 project named ReBORN has been initiated. ReBORN stands for “Innovative Reuse of modular knowledge Based devices and technologies for Old, Renewed and New factories”. In contrast to I-RAMP<sup>3</sup> which intends to reduce the ramp-up time in the starting phase of production lifecycle, ReBORN addresses the upcoming industrial needs of equipment re-usage

at the end of the production lifecycle. Even if nowadays production facilities contain a lot of (expensive) automation equipment with different implemented several scientific approaches for condition monitoring of devices and factories, and despite of the existence of life cycle assessment and plug&produce devices, planners and integrators often hesitate to re-use equipment. This is because relevant information like the degree of utilization, wear out and costs for equipment refurbishment are not available. ReBORN exactly tackles those issues and provides technologies to maximize the efficiency of equipment re-use by extending their lifetimes. To do so, existing traditional equipment can be enhanced extended with additional capabilities in order to enable its re-use. In addition to that, also factory planning using reused equipment will be supported.



ReBORN is a three-year project which targets mainly on the demonstration of relevant technologies. Several physical demonstrators for example for the electrical and automotive will be built in order to show and to test the project’s achievements. The scientific basis for these ambitious goals is paved by the three former European Projects XPRESS, IDEAS and TRANSPARENCY. The project consortium is composed of 17 partners from 9 European countries. 12 of the 17 partners have been involved in the three projects mentioned before. By this a solid basis for a good collaboration within the consortium is available. From the I-RAMP<sup>3</sup> consortium Harms&Wende (Coordinator), Fraunhofer IPA, Gamax, Technax, the University of Applied Science Karlsruhe, University Porto, Steinbeis Europa Zentrum, Critical Manufacturing and IEF Werner are involved.

We’re looking forward to follow the project’s evolution soon on the ReBORN website and on LinkedIn!



## NEWSLETTER

### News from the field

#### Horizon 2020 — Official adoption of work programme and publication of first calls for proposals 11th December 2013

[Horizon 2020](#) is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Running from 2014 to 2020 with a budget of nearly €80 billion, the EU's new programme for research and innovation is part of the drive to create new growth and jobs in Europe.

On December 11th 2013 were the official adoption of the work programmes and the publication of first calls for proposals. Especially interesting for the manufacturing and machine tool industry is the part of Horizon2020 called "Leadership in enabling and industrial technologies" (LEIT). To learn more about LEIT, please follow this link: [Introduction to LEITs](#). The mentioned programme also includes numerous interesting opportunities within Public-private partnerships (PPPs).

PPPs as vehicles to implement technological roadmaps in particular areas are implemented either through Joint Technology Initiatives (JTIs) or through dedicated calls for proposals and topics (contractual PPPs).

The contractual PPP, which you all know very well, "Factories of the Future" is implemented through different topics and calls. A complete list of all the topics, the calls for proposals for Factories of the Future (in total 14) as well as the relevant associated documents you can find online here: [calls 2014](#) and [calls 2015](#).



### Future events

#### NORTEC 2014 – The manufacturing trade fair in the North, January 21st - 24th 2014, Hamburg, Germany

At NORTEC 2014, all links in the value added chain for manufacturing and manufacturing engineering can be found. Special focus is being placed on new technologies in metal working and processing, lasers, automation and electronics.

Further info: <http://nortec-hamburg.de/en/>

#### Techni-Show, Trade Fair for Industrial Production Technology, March 11th - 14th 2014, Utrecht, Netherlands

Techni-Show is the largest and most important exhibition in the field of industrial production techniques, processing and treatment of metals, appliances and tools. The last

edition attracted more than 44,000 visitors.

Further info: <http://www.technishow.nl/en>

#### METAV 2014—International fair for manufacturing technology and automation, March 11th - 15th 2014, Düsseldorf, Germany

Marketplace for modern production engineering: As an international showcase for manufacturing technology and automation, the METAV offers trade visitors a comprehensive overview of the market, clearly and lucidly organized into the various technological sectors.

Further info: <http://www.metav.com/>