



SPIRE and Catalysing the Circular Economy BROKERAGE EVENT

3-4 October 2017

PR-IN-DOT-COM

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NATIONAL POOLING OF RESOURCES FOR INDUSTRIAL PROCESS AUTOMATION

– an agenda for leadership, innovation and skills development



Need for digitalisation of the process industry

2017-10-03

Gunnar Widforss MDH



ORGANIZATION/COMPANY

RISE SICS Västerås

consists of a flexible group of researchers with a very strong knowledge in several areas including; embedded systems, the future of internet and services, industrial efficiency, optimisation, systems and software engineering, future energy, innovation and product realisation. The researchers are open minded and continuously work on their ability for innovation. The strength lies in the ability to put together a tiger team of great researchers to deliver tangible results to the customer.

RISE SICS has close relationships with several of the strongest players in Mälardalen, including ABB and Bombardier but also with smaller and medium sized companies as well as with the cities of Västerås and Eskilstuna. The SICS establishment in Västerås strengthens the innovation system in the whole region, primarily in contract research. The venture is in close collaboration with Mälardalen University and in collaboration with the network Automation Region.

RISE SICS Västerås hosts the strategic innovation program [PiiA](#) (processindustrial IT & automation).



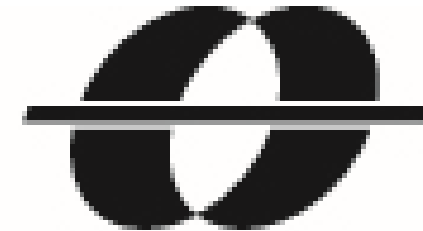
ORGANIZATION/COMPANY

Mälardalen University (MDH) is one of Sweden's large institutes of higher education. MDH is characterised by close partnerships with businesses and the public sector in the region.

The research direction **Embedded Systems** operates in computer science related to computers running parts of systems, entire systems or systems of systems often with a demand for real-time operation, in industrial setting from telecom to process industry. The largest research groups are

- Software engineering with focus on methods, processes and tools for development of large-scale industrial software.
- Dependable systems focussing on techniques and technologies to build dependable software systems.
- Verification and validation with focus on model-based testing and model-checking of timed and architectural models.
- Real-time systems with focus on methods and algorithms to construct predictable real-time software.

Embedded Systems hosts the advocacy project **HoPiiA+** which focusses on better H2020 calls in the area of IT and Automation for the Process Industry.



**MÄLARDALEN UNIVERSITY
SWEDEN**

PROJECT IDEA

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(**PR**ocess **IN**dustry **D**ata analysis platform for **CO**nnected **sM**art factories) will bring new and disruptive methods for data analytics to the core of the process industry across Europe. The inclusion of Big data technologies within the process industry will enable continuous resource productivity and considerable efficiency gains in terms of quality of products, energy, reliability, or even profit margins for EU manufacturing industry.

A Big Data based technological common platform will be designed to support a heterogeneous catalogue of data analytics applications and services in order to cope with common as well as specific analytics problems related to the process industry sector in general and those targeted subsectors. Pilots will be fully validated in real-world setting in companies.

PROJECT IDEA

The most relevant Key Component and Key Actions are:

2. Process: Solutions for more efficient processing and energy systems for the process industry, including industrial symbiosis

KA 2.3: Process monitoring, control and optimization

KA 2.4: More efficient systems and equipment

KA 2.5: New energy and resource management concepts

The addressed H2020 call is:

DT-ICT-07-2018-2019: Digital Manufacturing Platforms for Connected Smart Factories - Excellence in manufacturing: zero-defect processes and products

Furthermore we might later also address:

DT-SPIRE-06-2019: Digital technologies for improved performance in cognitive production plants (IA)

A Platform for connected smart factories

- The project
 - addresses continuous and batch process industry and their supply chains.
 - addresses four industrial sectors or sub-domains with several different use cases, and with different level of granularity according to the domain.
 - addresses cognitive computing
 - targets “Excellence in manufacturing: zero-defect processes and products” – one of the ‘grand challenges’, based on the EFFRA key priorities for the FoF 18-19-20 Work Programme
 - Reference implementations are developed in open-source, with one permissive open-source licence to be selected for all open-source components. APIs and SDKs are made available to third party developers to develop complementary applications. Standardization and integration can leverage on open data and open - source SDK
 - The business case is built up by the services produced on top of the platform.

EXPECTED IMPACT

**DT-ICT-07-2018-
2019**

- Significant increase in the options for SMEs and mid-caps to integrate different technologies, unlock the value of their data, deploy complementary applications, and to become a more responsive link in changing supply and value networks.
- Strengthened competitive position of European platform providers.
 - The project will improve the position of technology providers through an innovative platform and larger visibility
- Increased cooperation between industrial and academic communities; increased synergy and collaboration between projects.
 - The project is a product of the industrial community of process industry and technology providers, at one hand and the academic community of big data and Artificial Intelligence researchers at the other.
 - The project foresees collaboration with projects as FUDIPO...

EXPECTED IMPACT

- *In relation to the SPIRE roadmap*

Key Action 2.3: Process monitoring, control and optimization:

- Better process integration and optimisation.
- Better plant control on a more efficient basis
- Better process control and hence more sustainable processes

. Key Action 2.4: More efficient systems and equipment

- Resource efficiency
- Reduction in emissions, waste, energy consumption and waste water as well as the environmental footprint
- Faster, smaller, more flexible, modular, safer, standardised and cheaper production equipment with higher yields
- Spread of standards and best practices
- Distributed manufacturing
- More rapid process design
- A more precisely defined product quality

Key Action 2.5: New energy and resource management concepts

- Cost-saving optimizations of energy and resources supply
- New business models and service concepts
- New holistic energy and resource management systems

EXPECTED IMPACT

The cross-sectorial characteristics

- Collaboration on a conceptual level will be established between different process industries in different sub-domains, as well as with technology providers and computer security experts in the private sector. Large benefit will also be made from the planned collaboration with RTD (universities and institutes) in the public sector.
- With a joint platform, with high secrecy and security, process industries of different sub-domains (as steel or food) will commonly support each other to develop even better functionality. The collaboration with public RTD (institutes and universities) will guarantee an increased competence level also in small companies and deliver knowledge and disruptive technology at the edge of current engineering.
- The concept of circular economy will be strictly related to the improvement of efficiency along the whole life cycle of the process and the ecosystem in the supply chain.

EXISTING PROJECT CONSORTIUM

Mälardalen University (SW) - RTD

RISE (SW) - RTD

Gradiant (ES) - RTD

Deusto (ES) - RTD

The Basque Cluster of Food (ES) - OTH

Sidenor (ES) - LE (Steel)

RapidMiner (GE) - SME (Technology provider)

CINI (IT) - RTD

LOOKING FOR PARTNERS

- *Small and Medium sized Process industry within different subdomains (as e.g. Chemicals, Iron&Steel, Mining, Pulp&Paper, Food and Pharmacies)*

Contact details



Gunnar Widforss, Research Proposal & Project Manager

- ▶ At School of Innovation, Design and Engineering (IDT), Division of Networked and Embedded Systems (NES) at Mälardalen University (MDH)
- ▶ Actively working for fitting funding and the creation of new consortia and new research projects.
- ▶ IPMA-certified project manager, with experience from managing and evaluation of different kinds of projects.
- ▶ Project manager for MegaM@Rt² (ECSEL), HoPiiA (VINNOVA's advocacy platform for process industry) and SafeCOP (ECSEL).
- ▶ Expert evaluator at REA (EC)

Competences and experiences

- *Research funding*
- *Proposals, agreements and negotiations*
- *Project management and advocacy*
- *Networking and match making*



Foto: Jonas Blberg

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Svenskt Projektforum
Föreningen för projektledare i alla branscher
Gunnar Widforss

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