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Workshop on Inspection and Maintenance

Inspection and maintenance robotics: Learning across industries

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Want to join the
euRobotics topic group on
I&M robotics? E-mail
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euRobotics topic group (TG) on Maintenance and Inspection Robotics

Started in 2014

Led by Ekkehard Zwicker, GE Inspection Robotics, until Oct 2016

Now led by Aksel A. Transeth, SINTEF, in cooperation with Ekkehard Zwicker

Ca 120 members

Goal and scope: To influence and to drive the research, development and operative deployment of robotics in the domain of maintenance and inspection of process plants such as oil&gas facilities, power stations or chemical plants by connecting the stakeholders from research and industry.

2.6.3. Sub-Domain Inspection and Maintenance

2.6.3.1 Sub-Domain Overview

Robotics provides significant advantages over current methods of inspection and maintenance, for example 24/7 working, and have the ability to operate in hazardous, harsh and dirty environments. The utility and energy domains have begun to explore the potential of robotic technology. There is an emerging trend for these industries to include robot based maintenance and inspection within their forward planning. However there is currently no wide scale adoption or validation of this technology.

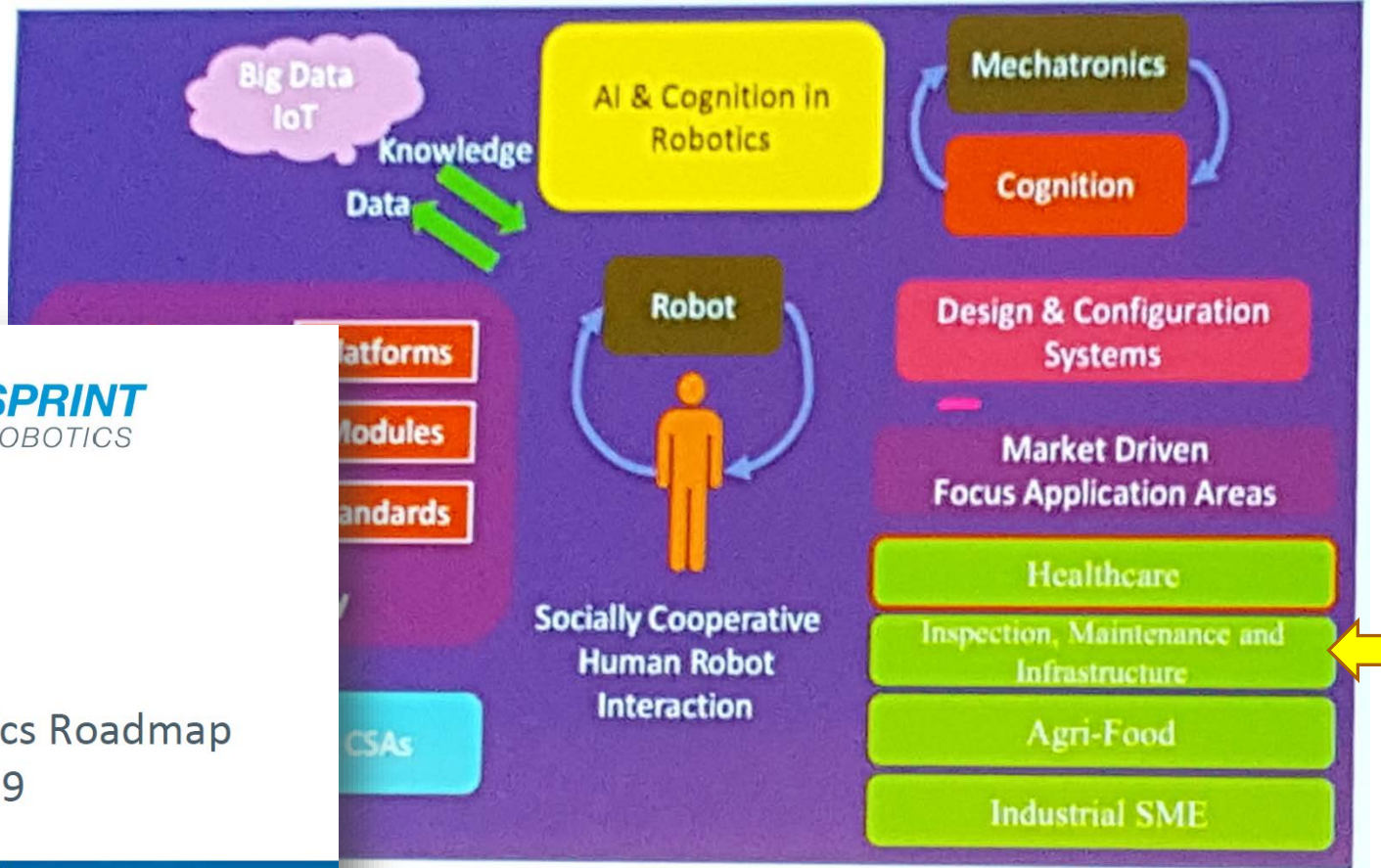
The lack of wide scale adoption can be attributed to a number of factors including insufficient availability of robust technical solutions and the disconnect between the requirements of the industry and the requirements of the users. This is due to the various challenges being faced by asset owners for inspection and maintenance, and the basic requirements that drive their needs for robotic technology.



SPRINT Robotics
SPRINT Robotics Roadmap
2019



Work Programme 2018-2020



AGENDA

10:45-10:50: Introduction (E. Zwicker, A. Transeth)

10:50-11:45: Learnings across industries – presentations:

- Ekkehard Zwicker, GE Inspection Robotics, Area: nuclear.
- Francisco Alvarez, Arquimea, Area: Nuclear.
- Dragos Axinte, University of Nottingham, Area: Aerospace.
- Helge-André Langåker, KVS Technologies, Area: Energy distribution.
- Anders Røyrøy, Equinor, Area: Topside oil and gas.
- David Rollinson, HEBI Robotics, Area: Oil and gas, Nuclear.
- Aksel Transeth, SINTEF, Area: Subsea oil and gas.
- Christophe Leroux, CEA / RIMA, RIMA project (H2020), CEA / RIMA, Area: All.
Status open calls in RIMA

11:45-12:10: Moderated workshop discussion. Golden questions:

- Q1: What are the common problems and challenges?
- Q2: How can we leverage similarities between the various industrial sectors
- Q3: How could we team up & collaborate

12:10-12:15: Summary

Introduction by Ekkehard Zwicker

Observations ...

- Robotics is about to start getting common practice, slowly but surely
(this is what I'm stating every year at the ERF ...)
- Different industries might run different type of applications and business models but share the same challenges towards robotics
 - Significant invest is needed to buy into robotics (systems and know-how)
 - Changing & unclear business models
 - Robotics means changing of how to do things, often the value is questioned
 - The asset owner / asset operator are setting the operational envelope
 - Getting the value chain lined up takes a lot of effort
- Listening to each other and learning from each other helps to move robotics with its benefits forward

Golden questions for discussion

Q1: What are the common problems and challenges?

Q2: How can we leverage similarities between the various industrial sectors (Oil&Gas, Power Generation, Public Infrastructure, Civil Construction, ...)

Q3: How could we team up & collaborate

In the subsequent slides we summarize the discussions during the workshop.

Discussion moderator: Ekkehard Zwicker

Minutes by: Aksel A. Transeth

Summary of workshop discussion

Summary of discussion (I)

The common problems and challenges

Challenge with introduction of new technology and new operational models. It is not only an issue of technology, but it is an issue of change management (e.g., sense of urgency, management attention). We need to change the way organizations work. We have technology available that saves the industry money, but it is difficult to get the technology being taken into use.

Suppliers are selling man-hours. This makes also it challenging to introduce new tech.

Fighting between business units. Need bold statements from the leadership of the asset owners that are followed-through. Need leadership commitment.

A change in the KPIs of the middle-management may be one step to deploying more robots for I&M?

The adoption rate of I&M robotics is sped up if an asset owner has an urgent and/or large problem, or that it is implemented top-down through KPIs that welcomes robotics.

Need to also bring a bottom-up approach. Experiments, validation trials, small competitions. Incremental improvements.

There is a challenge with people over-selling technology. Technology solutions appears a lot better/more advanced on, e.g., YouTube, than it really is. The expectations from the I&M personnel are then not met. We need to be more "sober" in terms what the tech can deliver.

It is challenging to define right requirements to robotics for I&M. On the one hand, end users can set requirements that are unrealistic to realize as robotic systems within the foreseeable future, and on the other hand it is challenging to define requirements that meet end-users' real needs.

Risks. Needs to revisit the concept of risks. Move quicker and get better iteratively. But it is hard to get the industry to accept higher risk. The way risk is perceived has to do with the top-down messages. Its about the perception about risk.

Summary of discussion (II)

similarities between the various industrial sectors

team up & collaborate

Team -up with similar solutions across industries – to see what is working in one industry and learn how to transfer that to another industry.

RIMA offers a way to look to other industries.

Need to determine how to achieve funding for collaboration, and how to deal with followup and future projects.

The presentations from the workshop offered insights into a large range of applications and system. One approach to finding similarities between industry sectors could be to start with these presentations.