

CROBOHUB

Croatian robotics digital innovation hub

*XS2I4MS – Final Event of the Mentoring
and Coaching Programme
Madrid, 21 September 2017*

*Dr. Davorka Moslavac Forjan
Innovation Centre Nikola Tesla*

Introduction to the HUB



- **Region and country**
 - South-eastern Europe, Croatia
- **Partners**
 - **Faculty of Electrical Engineering and Computing (UNIZG-FER)** is the largest technical faculty and leading educational and R&D institution in Croatia
 - **Innovation Centre Nikola Tesla (ICENT)** is a non-profit institution established to enable and accelerate efficient commercialization of new technologies
- **CROBOHUB purpose/mission**
 - to increase the competitiveness of the Croatian economy
 - to close the gap between Croatian R&D&I performances and those of the leading EU MS
 - based on knowledge and expertise of robotics research groups in ICENT and UNIZG-FER with more than 50 researchers

Overall approach followed

Tools used in the process

- Innovation ecosystem assessment was performed in order to identify relevant stakeholders and SMEs necessary for CROBOHUB kick-off and sustainability
- Two workshops were organised in order to strengthen networking contacts, share experiences and assess the need for CROBOHUB
 - round tables with SME representatives
 - discussing problems and sharing good practices
- On-site visit
 - tour around SME's facilities
 - discussion with CEO, owner, factory workers

Achievements/Outcomes (Use case 1)



1. Mobile platform and application for enhanced worker management in factories

- MURAPLAST Ltd.
- the leading and most modern producer of polyethylene blown film in Croatia and South-eastern Europe

PROBLEM: Worker needs to wait for the polyethylene film roll to be finalized in order to transport it to the next stage. If the worker is not at the position when the roll is finished the production is halted, thus reducing the efficiency of production.

SOLUTION: remote alerting system based on mobile technologies that would inform the worker of the polyethylene film roll process stage and exact time when he should be at the post to remove the produced film roll from the machine

Achievements/Outcomes (Use case 2)

2. Increasing flexibility through learning by demonstration

- HSTEC Ltd.
- offers optimal solutions for the implementation of robotic systems in robot-based drives and modernization of existing drives in various industries and technological processes

PROBLEM: Some products are being produced in small batches with a number of tasks, some executed by workers, some by robotic manipulators. Both groups are dedicated to a limited number of tasks which results in suboptimal production efficiency.

SOLUTION: implementation of learning-by-demonstration algorithms to robotic manipulators in order to avoid repetitive reprogramming of the manipulator to perform different tasks for diverse production batches

Achievements/Outcomes (Use case 3)



3. Automatic task and resource allocation

- CROCOM Ltd. (Confidentiality issues!)
- manufacturing facility utilising the latest technologies for manufacturing metal products and one of the largest manufacturing facilities in the world for their particular metal products

PROBLEM: Robot workstation grinds outer surfaces of metal products and is needed in different manufacturing process phases of different products using different operating regimes. There is the need to increase the quality and efficiency of workstation.

SOLUTION: integrated, process-oriented management model for the high-level control of the production process that automatically allocate resources (robots, human workers, interaction components etc.) and its rapid and straightforward dynamic re-allocation

Lessons learned/conclusions

- SMEs are dedicated to the implementation of innovative solutions in their production processes
- Lack of resources (financial, infrastructural and human) for introducing robotic innovative solutions
 - too expensive
 - requires expert manpower
- Evident need for the hub that will offer such services in this region – **CROBOHUB!**

Next Steps

Activity	Year				
	2017	2018	2019	2020	2021-2025
CROBOHUB establishment					
CROBOHUB market launch and business start-up					
Further development of CROBOHUB services					
New building construction and equipping					
Full CROBOHUB operations					

Contact persons

For questions about CROBOHUB use cases

nikola.miskovic@fer.hr

nedjeljko.peric@fer.hr

For questions about CROBOHUB in general

davorka.moslavac@icent.hr