

MANUWORK Newsletter



Preface

Dear Reader,

MANUWORK is a European Union funded Research & Innovation Project under the H2020 Program. The project has started on 1st October 2016 and will last until the 31th March 2020. The project engages 13 organizations from various EU countries and the consortium is coordinated by the Laboratory for Manufacturing Systems and Automation (LMS) of the University of Patras, Greece.

MANUWORK aims to focus on the development of an integrated platform for the management of manufacturing workplaces of the future that will be characterized by the complementarity between humans and automation. This requires new methods and tools for the design and operation of optimized manufacturing workplaces in terms of ergonomics, safety, efficiency, complexity management and work satisfaction.

The research activities of MANUWORK are strongly driven and are related to the requirements of the European Industry. The first phase of the project has focused on the definition of a set of industrial pilot cases based on the needs of the project industry namely Volvo Cars, SAFRAN and Lantegi Batuak and Prima. Two additional pre-pilot cases have been defined by partners PRIMA and BAZIGOS. The definition of the pilot cases have provided the basis for the definition and consolidation of a set of generic use cases and system requirements so as to broaden the application scope of the MANUWORK technology.

The main goal of this newsletter is to provide an overview of the industrial pilots. Finally, recent project activities and future events are presented.

Sincerely,

The MANUWORK project consortium

The project

MANUWORK – Balancing Human and Automation Levels for the Manufacturing Workplaces of the Future (FOF-04-2016, Grant agreement no: 723711) is a European Union funded H2020 Research & Innovation Project.

The project started on **1st October 2016**. The overall work plan is divided into work packages and their sub and covers **42 months** of industrial driven requirements, research, development and realization of final demonstrators.

- **Phase 1: Industrial requirements and system specification.**
- Phase 2: Modules development
- Phase 3: Integration
- Phase 4: Pilot cases execution and assessment



Industrial Pilot Cases

The research activities of MANUWORK are strongly driven and are related to the requirements of the European Industry. During the first nine months of the project a series of workshops and meetings in industrial sites took place in order to identify, analyze current processes and procedures adopted by the project end users (Volvo Cars, Safran and Lanteri Batuk). The automotive: (Volvo Cars) use case focuses on the assembly of car engines targeting at optimal manual/automation load balancing with consideration of the real-time status and knowledge extracted from shop-floor. The aerospace (Safran) use-focuses on the final assembly of civil aircraft engines and the focus will be on feedback/ information sharing, workers' training and satisfaction. The disabilities (LANTEGI) pilot case will use the human-machine symbiosis paradigm for supporting people with different disabilities to perform complex assembly tasks. In the context of MANUWORK a pre-pilot step focusing on machine tool builder (Prima) and

MANUWORK supports the design and operation of human-centered manufacturing that is based on the human-automation symbiosis. In this paradigm the system adapts in order to compensate for operators' limitations (skills, knowledge, disabilities), thus ensuring a socially sustainable working environment without compromising production targets.

Industrial Pilot Cases

The developments will be demonstrated in three industrial pilots and one pre-pilot setting:

- ✓ **Automotive: (VOLVO):** The automotive use case focuses on the assembly of car engines.
- ✓ **Aerospace (SAFRAN):** The aerospace use-focuses on the final assembly of civil aircraft engines
- ✓ **Disabilities (LANTEGI):** This pilot case will use the human-machine symbiosis paradigm for supporting people with different disabilities to perform complex assembly tasks.
- ✓ **Machine tool (PRIMA, BAZIGOS):** The machine tool use-case will form the basis for a pre-pilot validation activity.

user (BAZIGOS) will take place. The machine tool use-case will form the basis for a pre-pilot validation activity planned prior to the industrial demonstrators of MANUWORK.

In order to address the needs of the user pilot MANUWORK targets at the following objectives:

- ✓ Create a framework for workplace adaptation based on socio-organizational factors.
 - Workplace attractiveness
 - Well-being and engagement of the worker in the design and adaptation phases based on their experience.
- ✓ Develop a human-automation load balancing method that determines the optimal trade-off between automation and human involvement at a workplace, taking into account the process flexibility required, available skills, safe integration of human and automation into the process and the overall load of the line.
- ✓ Develop a method for measuring worker satisfaction, safety and health at work, i.e. "ergonomics climate."
- ✓ Develop an advanced social networking shop-floor application, facilitating AR technologies, which will be used for knowledge capturing, networking, guidance and decision support.

Next Steps

Following the definition of the pilot cases and the system requirements the project is in its second phase. This phase starts at month 10 and finishes at month 30. During this phase the initial step is to define the SW and HW modules that are required to support the requirements and then to implement those modules. The modules will materialize the R&D objectives of the project and will form user applications/ demonstrators that can be tested and validated upon the industrial pilot cases.

List of selected events

- On 01 March 2017 the project 2nd Consortium Meeting took place in Collegno, Torino, Italy together with a RPIMA pilot workshop. All project partners participated and provided insight into the definition of the project pilot cases.
- On 27 April 2017 all project partners participated in WP1 “Specifications and Industrial Use-cases definition” workshop in Skövde, Sweden hosted by Volvo cars. The objective of the meeting was to review the status of the pilots and assess how MANUWORK modules fit to the pilot needs
- On 16 May 2017, the workshop on the “FoF Community Day 2017” took place in Brussels, Belgium. LMS presented MANUWORK and technical/non-technical cross cutting issues with other FoF projects was discussed.
- On 24 May 2017 the FoF-04-2016 projects cluster group organized a workshop in the context of SPS IPC Drives Italia 2017, in Parma Italy. LMS presented the MANUWORK objectives to the cluster and also to external attendees.

Upcoming events

- Project General Assembly, 5-6 October, Athens Greece

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Consortium

