

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 update regarding the project developments and the MANUWORK pilot cases. Finally, recent project activities and future events are presented.

Sincerely,

The MANUWORK project consortium

The project

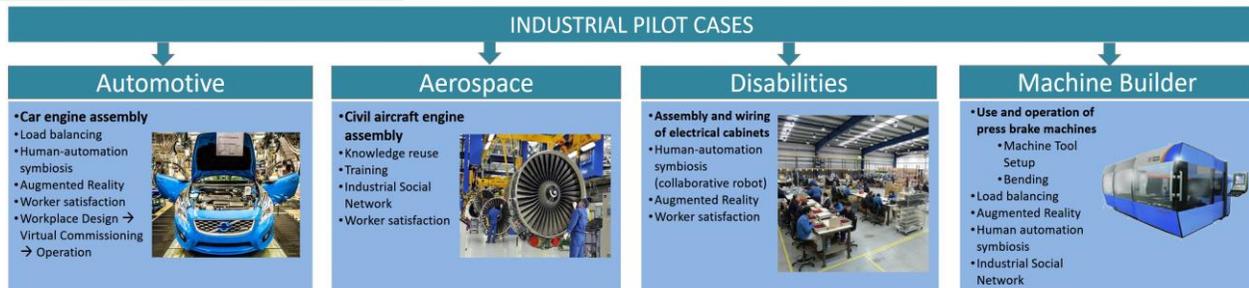
MANUWORK – Balancing Human and Automation Levels for the Manufacturing Workplaces of the Future (FOF-04-2016, Grant agreement no: 723711) is a European Union funded H2020 Research & Innovation Project.

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

MANUWORK pilots aim to study under different cases how human-centered manufacturing may benefit modern manufacturing. The pilot cases aim to evaluate human-automation symbiosis, load balancing considering operator skills, advanced visualization techniques and Industrial Social Network.

As MANUWORK developments start to take shape and their functionalities are operative, initial testing on the MANUWORK Use Cases has begun. As the industrial requirements and specifications were set, through a strong collaboration between the partners of the consortium in the first months of the project, analyzing the current status and highlighting the points where MANUWORK developments would contribute, now the focus is shift towards the development and continuous testing of the tools. In the automotive pilot (Volvo Cars), which revolves around the assembly of the car engines, the developments are focused on providing solutions for quick and accurate estimation of cycle time in human-robot collaboration tasks in order to support load balancing and increase the throughput of production. Additionally, novel visualization technologies (Augmented & Virtual Reality) will support the improvement of the ergonomics of the current practice, supporting the design of workplaces with increased functionality and reduced workload for the operator.



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 to support people with disabilities to perform complex assembly tasks.
- ✓ **Machine tool (PRIMA, BAZIGOS):** The machine tool use-case will form the basis for a pre-pilot validation

In the aeronautics pilot case (Safran), the objective is to capture and evaluate the skills of the operators, and also to use the Industrial Social Network (ISN) as a mean for effective knowledge distribution; the focus is on the final assembly of civil aircraft engines. The people with disabilities pilot case (LANTEGI Batuaak) focuses on the human-robot symbiosis, utilizing Augmented Reality (AR) to guide the operators through complex assembly tasks. The pilot cases will also explore the connection of the collaborative robots in the ISN, making them a part of the social part of the company. Moreover, MANUWROK has two pre-pilots. In machine tool builder pre-pilot (PRIMA) the focus is on providing AR-based instructions for the process and machine maintenance to the operator. Additionally, in the machine tool user pre-pilot (Bazigos) the utilization of ISN will be explored, drawing meaningful insights for the integration in the industrial demonstrators of MANUWORK.

MANUWORK developments aim to have a significant impact on the following:

- ✓ Create a framework for workplace adaptation based on socio-organizational factors.
- ✓ Develop a human-automation load balancing method that determines the optimal trade-off between automation and human involvement at a workplace
- ✓ Develop a method for connecting operators' skills with task requirements
- ✓ Develop an advanced social networking shop-floor application which will be used

Next Steps

MANUWORK is currently in its second phase. This phase started at month 10 and finishes at month 30. The Technology providers have ramped up their efforts towards developing the Software and Hardware modules that will address the determined requirements. The modules materialize the R&D objectives of the project and initial applications/ demonstrators have started to be tested and validated upon the industrial pilot cases.

List of selected events

- On 6 February 2018, MANUWORK was presented in EFFRA Connected Factories workshop. LMS presented the project objectives to the attendees.
- On 13 March 2018, MANUWORK was presented in Industrial Robotics workshop in Tampere. TEKNIKER presented the project objectives to the attendees.
- On 19 March 2018, MANUWORK together with other four projects, A4BLUE, Factory2Fit, HUMAN, and INCLUSIVE, funded under the European Union's Horizon 2020 research and innovation programme release a joint press release on how "European projects put workers at the center of future manufacturing"
- On 21 March 2018, MANUWORK had a Review Meeting in Brussels. The project consortium presented to the Project Officer and the Reviewer the current progress and received valuable feedback for the future steps.
- On 5 and 6 of June 2018 MANUWORK Consortium had a General Assembly meeting in Patras, Greece to discuss on their progress and plan ahead their steps until the next Review Meeting.

Upcoming events

- Project General Assembly, 18-19 September, Turin, Italy

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Consortium

