Facts4Workers: Worker-Centric Workplaces in Smart Factories

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1 The Facts4Workers Project

Factories of the future will autonomously deal with the ever increasing amount of available data. Processes will be planned automatically. Computers will keep track of machine parameters, product quality and workforce activities. But, how powerful these systems might become, the resulting new "Smart Factories" will always rely on experienced human workers and their skills. Therefore, such systems should support the worker where possible. They should intelligently enable him to further develop his skills, to learn new things and to fully use his innovation capacities. Our project *Worker-Centric Workplaces in Smart Factories*[1] focuses on the factory worker. We do not understand the worker as a rather insignificant component of the modern factory, but as its center. Our ambition is to create "FACTorieS for WORKERS" (FACTS4WORKERS).

To reach that goal, our 4-year EU founded project will develop and demonstrate workplace solutions that support the inclusion of increasing elements of knowledge work on the factory floor. These solutions will empower workers on the shop floor with smart factory ICT infrastructure. Advancement will be gained through integrating several building blocks from a flexible smart factory infrastructure, focusing on workers' needs, expectations and requirements, and being supported by organisational measures and change management. We will develop our solutions according to four Industrial Challenges: personalised augmented operator (IC1), worker-centric rich-media knowledge sharing/management (IC2), self-learning manufacturing workplaces (IC3) and in-situ mobile learning in the production (IC4). Moreover, FACT4WORKER's objectives in terms of measureable indicators are (see also figure 1): (1) To increase problem-solving and innovation skills of workers; (2) To increase cognitive job satisfaction of workers participating in the pilots; (3) To increase average worker productivity by 10% for workers participating in pilots; (4) To achieve TRL 5-7 on a number of worker-centric solutions through which workers become the smart element in smart factories.

[1] `http://facts4workers.eu/`

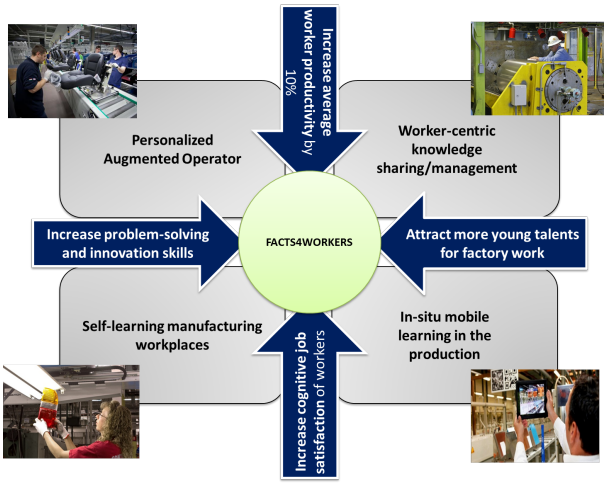

Fig. 1. Goals of the project.

2 Contribution to the session

Since our project start in January 2015, we tackled one of the main challenges towards our goal: we are implementing solutions for a heterogeneous field of businesses. Each factory is different. But, in all factories and for all workers, the organization of work flows—for human work, for machine tasks and especially for their combination—plays an important role. We automate this process using a semantic tool: the implementation is generic, but the final solution is very flexible. It only relies on data. Possible actions are described via rules which then can be combined into a reasoner's proof. Our algorithm uses such a proof as a plan and either performs (machine task) or recommends (human work) the necessary next step to reach a given goal. Every change of the current situation such as performed steps, new information or decisions taken by a human worker, are then used to update the plan. Being implemented like this, the system adapts to the worker, the worker does not need to adapt to the system. In the networking session we will provide a demonstrator of our work flow generation system.

3 Networking benefits

As a relatively young project we see the networking session as an excellent opportunity to learn from the experiences of other projects. We are especially interested in semantic workflow composition, smart factories and there in particular on the attention existing solutions put on the worker himself. Which software is used in other projects? Which experiences were made with this software? How is existing data represented? What are the problems similar projects have encountered so far? How can we avoid those problems in our project? We are hoping for an active discussion with related projects to exchange and also to keep exchanging knowledge and impressions in the future. The networking session can be a starting point to establish fruitful collaborations with other European projects.