

Smart and adaptive interfaces for INCLUSIVE work environment



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Executive Summary

This deliverable reports the main information about the INCLUSIVE project. It is organized in the form of a fact sheet in order to serve as a document that makes the project details publicly available.

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1. Project synthesis

Acronym	INCLUSIVE
Full title	Smart and adaptive interfaces for INCLUSIVE work environment
Programme	H2020 FOF-04-2016: Continuous adaptation of work environments with changing levels of automation in evolving production systems
Contract number	723373
Abstract	<p>The challenge</p> <p>Modern manufacturing systems are becoming more and more complex because of higher demands for fast production rate with high quality and flexibility, that is the ability to customize the production lines to the constantly changing market requests. Despite high levels of automation of machines and robots, humans remain central to manufacturing operations since they take charge of control and supervision of manufacturing activities. Human operators interact with machines and robots by means of human-machine interfaces (HMIs), which are unavoidably becoming very complex as new functions are implemented by the production system and include a wide range of possible operational modes and commands. In this scenario, human operators experience many difficulties to interact efficiently with the machine; this is particularly true for middle age workers who feel uncomfortable in the interaction with a complex computerized system and young inexperienced or disabled people who cannot effectively manage such complex production systems.</p> <p>Project objectives</p> <p>The INCLUSIVE project aims at covering the increasing gap between machine complexity and user capabilities by developing a smart and innovative HMI that adapts to the workers' skills and flexibility needs, by compensating their limitations (e.g. due to age or inexperience) and by taking full advantage of their experience.</p> <p>Methodology</p> <p>To achieve this, first the developed HMI system needs to be able to <i>measure</i> the sustainable cognitive load of the human operator and her/his capability to accomplish automation tasks in cooperation with the production system. Second, it must be able to <i>adapt</i> the automation functions and the information load of the production system to the measured capability of the user. Third, the HMI has</p>

to support and *train* low skilled operators to accomplish a complex automation task properly, also by integrating a virtual environment and an industrial social network.

Results

Ultimately, the goal of the project is to develop an inclusive working environment to ensure the widest workers' acceptance and productivity for new automatic production systems. To reach this goal, INCLUSIVE will develop an ecosystem of technological innovations driven by human factor analysis applied to three concrete industrial use cases coming from companies that produce or use automatic machines whose acceptance and productivity are strongly connected to system usability, personal characteristics and working environment comfort.

Duration	36 months
Start date	2016-10-01
Project funding	€ 4,324,587.50
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