A4BLUE PROJECT- Adaptive Automation in Assembly
For BLUE collar workers satisfaction in Evolvable context

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A4BLUE, funded in the frame of Horizon 2020 TOPIC FOF-04-2016, proposes the development and evaluation of a new generation of sustainable, adaptive workplaces dealing with evolving requirements of manufacturing processes and human variability. A4BLUE will introduce adaptive automation mechanisms for an efficient and flexible execution of tasks, ensuring a constant and safe human-machine interaction as well as advanced and personalised worker assistance systems including virtual / augmented reality and knowledge management capabilities to support them in the assembly and training related activities. Furthermore, A4BLUE will provide methods and tools to determine the optimal degree of automation of the new assembly processes by combining and balancing social and economic criteria to maximize long term worker satisfaction and overall process performance.

The 3-year project is carried out by a first-class international consortium led by IK4-TEKNIKER (Spain) and involving prestigious universities such as RWTH Aachen University (Germany) and Cranfield University (UK) and companies such as AIRBUS Operation SAS (France), Compañía Española de Sistemas Arenonauticos - CESA (Spain), Engineering-Ingegneria Informatica SPA (Italy), Illogic Società a Respponsabilità Limitata (Italy) and Ingeniería de Automatización y Robótica KOMAT SL (Spain) and CiaoTech srl (Italy).

Which are the involved partners and what they will do?

IK4-TEKNIKER (coordinator) is a technological centre legally constituted in 1981 as a private not-for-profit Foundation that aims at the development and transfer of technology to improve the competitiveness of industry. IK4-TEKNIKER not only provides companies with technological support, but is also involved in generating new business initiatives, which are usually technological and, often, "spin offs" of the centre itself. Apart from the project coordination activities, IK4-TEKNIKER will focus the main research activities in developing the A4BLUE Adaptive Framework and contributing importantly in the Conceptualization and architecture where its experience in CPS and semantics will be of great value. It will be also in charge of the experimentation site for their use case where multi-dimensional aspects will be included as requirements (organisational, technical, ethical and legal).

The RWTH Aachen University (RWTH), established in 1870, is divided into nine faculties. In 4BLUE project, it is responsible for the definition of the reference assembly system and the virtual representation of the assembly system. The regarding tasks are executed by the Chair of Production Engineering of E-Mobility Components (PEM) due to the various experiences PEM has regarding automotive assembly systems both in academic as well as industrial contexts. PEM also supports during demonstration with the infrastructure of the Centre of E-Mobility Production (CEP). The Laboratory for Machine Tools and Production Engineering (WZL) will execute the tasks regarding the economic assessment of the optimal degree of automation.

Cranfield University is a wholly postgraduate university specialising in science, technology and management. Its core activities in A4BLUE project are: the definition of requirements and use cases where will take special care of all the requirements related to ethics and human factors; the methodology for assessment usability and the model for the assessment of worker satisfaction which will ended as a practical assessment tool; support to the risk assessment and safety system development activities, responsible for scientific dissemination as well as Human Factors Manager in order to ensure the inclusion of the human related considerations along the whole project.

AIRBUS designs, sells, builds and supports the most modern and comprehensive aircraft family in the world thanks to unrivalled flexibility across four aircraft families, 59,000 employees around the world, including France, Germany, Spain, the UK, North America, China, Japan and Russia. The main participation of AIRBUS in A4BLUE is in the definition of their use case and the validation process on their site (including the multidimensional perspective requirements along with the rest of partners, i.e. at organisational, technical, ethical and legal levels) where they will lead the Preparation, experimentation and evaluation work package.

ENGINEERING Ingegneria Informatica S.p.A. (ENG) is the leading Italian software and service group, with over 8.100 employees and more than 40 sites distributed in Italy, Belgium, Republic of Serbia, South America (Brazil and Argentina) and United States. As a system integrator, it will bring in the A4BLUE project the experience on reference architecture definition and system specification, a deep knowledge on existing FIWARE Generic Enablers (GEs) and the capability to develop new ones, as well as a long-year experience on FIWARE and cloud-based system integration, and on knowledge and information management.

ILLOGIC is an atelier-style lab that develop Digital Creativity: designers, engineers, artists and programmers work together to built 3D interactive visualization and simulation solutions to help customers enhance their business. Some of A4BLUE objectives include building context aware tools, training through simulations or guiding worker so that he/she can use automation mechanisms and perform assembly and auxiliary activities properly. This is the place in which augmented reality could provide tools needed for the on the job training and guiding part, and virtual reality for the training part too. Illogic has more than ten years of on field expertise in Virtual Reality training for industry and a solid research & development roadmap.

Ciaotech, part of the PNO Group, is specialised in Innovation Management and funding, providing support services to private and public organizations in Innovation processes, Technology Transfer, IT solutions and funding for research, development and innovation. CTECH brings to the A4BLUE partnership its wide networking capacity, expertise in innovation management, impact assessment and exploitation and market analysis. In particular, CTECH will lead the plan for industrial exploitation tasks and coordinate the involvement of all partners, particularly industrial partners. Moreover, CTECH will be in charge of the development of the dissemination and communication strategy and execution of the related activities with the value chain stakeholders.

Compañía Española de Sistemas Aeronáuticos (CESA) is a Spanish industrial company European leader in the manufacturing of fluid and electromechanical systems for the aeronautic sector. As an industrial use case provider, CESA will contribute to the A4BLUE project with the definition of their use case (organisational and technical aspects but also ethical and legal levels) and the validation process on their site. This stage will be followed after the preparation of the experimentation protocol and the experimentation preparatory activities.

KOMAT S. L. is an electrical Engineering company created in 1986 that offers automation services, robotics and industrial computing applications. In A4BLUE project, its main contribution is in the implementation and/or adaptation of the automation mechanisms to be proved in the use case scenarios providing with reconfigurable functions that may be adapted to different workers' requirements, either related to their physical and cognitive characteristics or their skills and expertise. KOMAT will also have big workload during the integration of the A4BLUE components and the validation at the use case scenarios.

For more info about the project visit the A4BLUE website at: www.a4blue.eu

A4BLUE Consortium

IK4-TEKNIKER (Coordinator)
www.tekniker.es

RWTH Aachen Universtity (RWTH)
www.pem.rwth-aachen.de

Cranfield University (CRAN)
www.cranfield.ac.uk

AIRBUS Operations SAS (AIRBUS)
www.airbus.com

ENGINEERING – INGEGNERIA INFORMATICA SPA (ENG)
www.eng.it

Illogic

(ILL)
www.illogic.us

CiaoTech S.r.l. (100% PNO Innovation B.V.) (CTECH)
www.ciaotech.com

Compañía Española de Sistemas Aeronáuticos (CESA)
www.cesa.aero

INGENIERÍA Y SERVICIOS DE AUTOMATIZACIÓN Y ROBÓTICA KOMAT, S.L. (KOM)
www.komat.es

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