

Foreseen the Future: Human Factors Integration in European Horizon Projects

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Abstract : Foreseen the future: Human factors integration in European Horizon Projects The development of new technology as artificial intelligence, smart sensing, robotics, cobotics or intelligent machinery must integrate human factors to address the need to optimize systems and processes, thereby contributing to the creation of a safe and accident-free work environment. Human Factors Integration (HFI) consistently pose a challenge for organizations when applied to daily operations. AGILEHAND and FORTIS projects are grounded in the development of cutting-edge technology - industry 4.0 and 5.0. AGILEHAND aims to create advanced technologies for autonomously sort, handle, and package soft and deformable products, whereas FORTIS focuses on developing a comprehensive Human-Robot Interaction (HRI) solution. Both projects employ different approaches to explore HFI. AGILEHAND is mainly empirical, involving a comparison between the current and future work conditions reality, coupled with an understanding of best practices and the enhancement of safety aspects, primarily through management. FORTIS applies HFI throughout the project, developing a human-centric approach that includes understanding human behavior, perceiving activities, and facilitating contextual human-robot information exchange. It intervention is holistic, merging technology with the physical and social contexts, based on a total safety culture model. In AGILEHAND we will identify safety emergent risks, challenges, their causes and how to overcome them by resorting to interviews, questionnaires, literature review and case studies. Findings and results will be presented in "Strategies for Workers' Skills Development, Health and Safety, Communication and Engagement" Handbook. The FORTIS project will implement continuous monitoring and guidance of activities, with a critical focus on early detection and elimination (or mitigation) of risks associated with the new technology, as well as guidance to adhere correctly with European Union safety and privacy regulations, ensuring HFI, thereby contributing to an optimized safe work environment. To achieve this, we will embed safety by design, and apply questionnaires, perform site visits, provide risk assessments, and closely track progress while suggesting and recommending best practices. The outcomes of these measures will be compiled in the project deliverable titled "Human Safety and Privacy Measures". These projects received funding from European Union's Horizon 2020/Horizon Europe research and innovation program under grant agreement No101092043 (AGILEHAND) and No 101135707 (FORTIS).

Keywords : human factors integration, automation, digitalization, human robot interaction, industry 4.0 and 5.0

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