

HuMan – Exoskeleton and Virtual Reality Integration and Assessment



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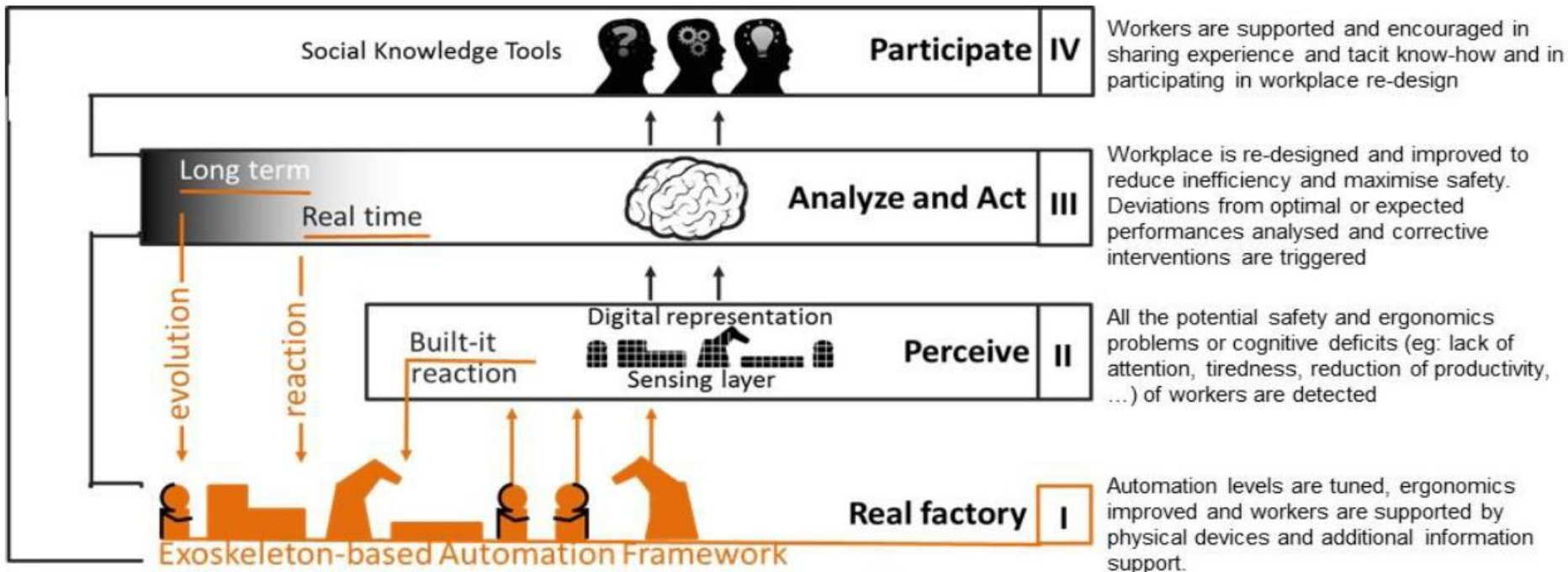
Laboratory for Manufacturing Systems and Automation

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HuMan Vision

The **HUman MANufacturing** workplace (HUMAN) aims to transform workplaces where automation and human workers operate in harmony, to improve the factory productivity, quality and performance.



HuMan Concept and Objectives

Objectives:

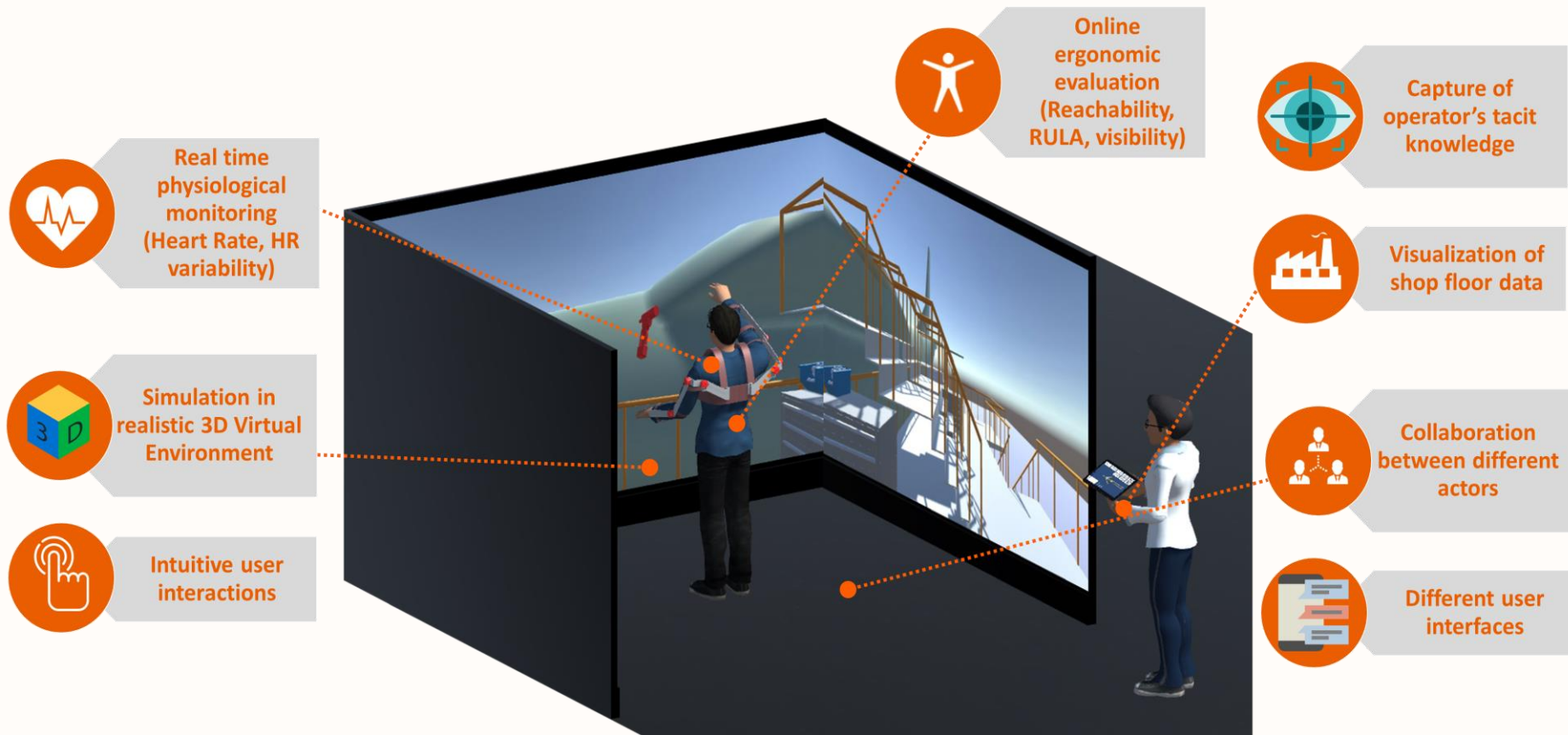
- Integrating HUMANS with workplace
- Enhancing the monitoring and wellbeing of HUMAN automation co-operation
- Stimulating HUMAN-automation interaction for optimal performance
- Advancing HUMAN-automation co-operation to achieve complex tasks
- Adapting the workplace and tasks to HUMAN skills and knowledge

Exoskeleton-based automation framework is part of short term interventions in HUMAN. It is currently being developed and will be utilized to enhance the physical and operational capabilities of the workers.

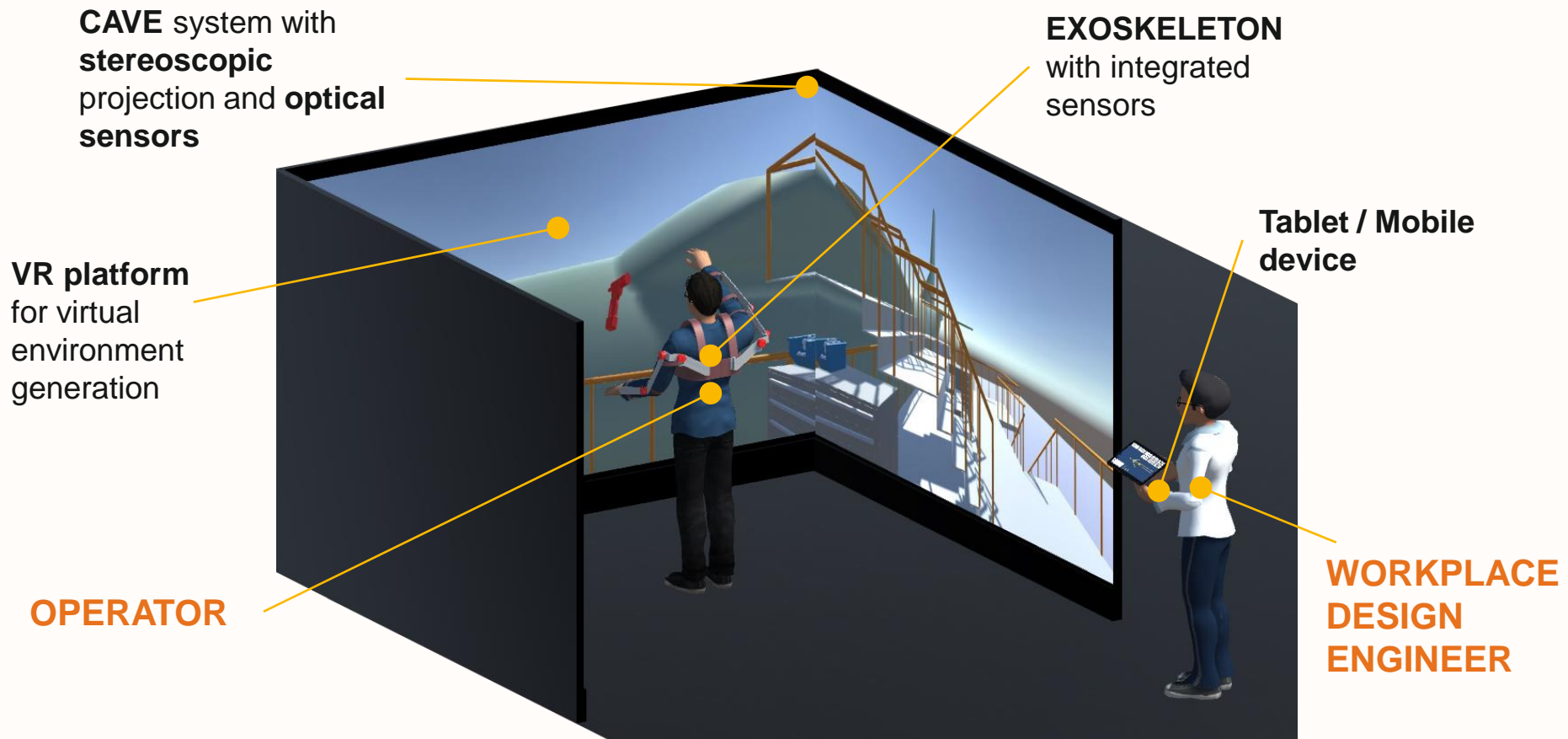
Workers suffering from physical stress are invited to adopt passive exoskeleton with active regulations and supported in learning how to use it. The exoskeleton helps to maintain a **correct posture** and **release some load from low-back or arm**, allowing to complete the job with less strain. It allows to set an initial level of support (low, medium, high) and adjust when necessary.

LMS is working on a VR based platform for managing workplace knowledge through collaboration of all actors involved in the adaptation of a workplace.

Exoskeleton and Virtual Reality integration



Exoskeleton and Virtual Reality configuration



Benefits



Validation of exoskeleton design through prototype visualization and various assessments in the virtual shop floor (such as visibility, reachability, usability etc).



Training of the workers in the proper use of the exoskeleton through ergonomics assessments (Online scoring) avoiding hazardous situations



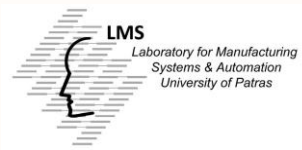
Workplace Improvement - the exoskeleton and the mixed reality solutions offer the possibility of pre-viewing and pre-testing the new configuration and layout alternatives.
Collaboration between different actors – **Capture of tacit knowledge** – **Content creation**



Easy transfer of field of application to **different use cases**
Eg. from white goods to aerospace



The HuMan Consortium



University of Applied Sciences and Arts
of Southern Switzerland



AIRBUS
DEFENCE & SPACE



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THANK YOU!



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