

**Pro²Future
Products and Production Systems
of the Future**

Programme: COMET – Competence
Centres for Excellent Technologies

Programme line: COMET-Centre K1

Type of project: AI2Human
4 years, multi-firm



INCREASING OCCUPATIONAL SAFETY AND ACCIDENT PREVENTION IN INDUSTRIAL PRODUCTION WITH TINY AI AN EFFORT TO DEMONSTRATE THE SAFE USE OF AI TECHNOLOGIES IN INDUSTRIAL ENVIRONMENTS TO INCREASE WORKER HEALTH & SAFETY

The technological revolution is rapidly transforming the work environment, subjecting workers to **new challenges**, such as **collaborating** with highly efficient and partially **autonomous** machines. Currently, computer-assisted techniques and AI systems (human-centered artificial intelligence) are utilized in production research and machine development to **enhance productivity** and **flexibility**. However, **occupational safety** is often overlooked or given low priority in these advancements.

Pro²Future leverages the emerging generation of AI-based production systems to promote **occupational safety** and **accident prevention**. Partnering with domain experts from the **AUVA** (Allgemeine Unfallversicherung), and researchers from the **Institutes** of Pervasive Computing, and Polymer Processing and Digital Transformation, demonstrators have been developed that exemplify safe use of AI to address (i) **hazard assessment** during production processes, (ii) **building**

trust and enabling transparent communication with safety-relevant AI systems, and finally (iii) providing feedback and **proposing intervention measures**, with a focus on worker safety.

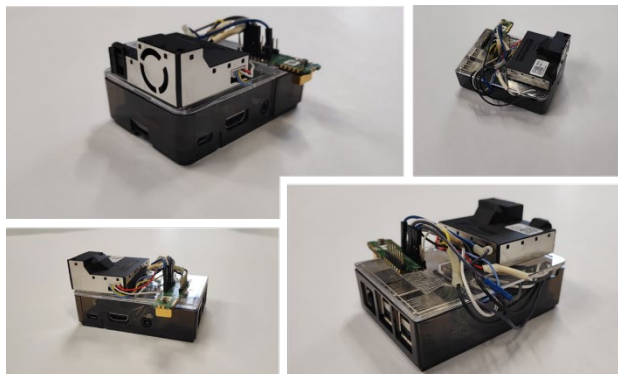
The consortium decided to focus specifically on **air quality**, as poor air in industrial environments poses significant dangers to both the environment and the health of individuals working within these settings. Industrial activities often release various **pollutants** into the air, including particulate matter, **volatile organic compounds** (VOCs), **nitrogen oxides**, **Sulphur dioxide**, and other harmful substances. These pollutants can have severe consequences for human health and the surrounding ecosystem.

The developed prototypes encompass all hard- and software systems required to **implement air quality assessment**, observation of human movements to avoid dangerous collisions or accidents, as well as systems to **assist workers** in choosing suitable protective

SUCCESS STORY



gear, including a feedback modality suitable for industrial workers.



Smart Sensors for monitoring dust and CO₂ in the production.

By **addressing key aspects** like hazard assessment, transparency, and feedback systems, the partners contribute to the realization of a safer work environment and promote compliance with relevant EU regulations related to AI and machine safety.

Apart from the technical work, Pro²Future identified **national- and EU norms** regarding AI systems and worker safety and contributed to standardization meetings to address weaknesses in existing norms and practices.

Impact and Effects

The implemented prototypes are used to spearhead Pro²Future's efforts in **increasing awareness** and **interest in workplace safety and worker well-being** in the face of evolving technological advancements within the technical and industrial communities. Further, the created systems are used as a resource to demonstrate proper methods for safely applying AI in production environments to be used by industries and related stakeholders. In this, the conducted work constitutes a cornerstone of Pro²Future's strategic mission to advance **cognitive, sustainable** and **human-centered AI** going forward.

Pro2Future GmbH

Altenberger Straße 69
4040 Linz, Austria

T +43 (0) 732 2468 – 4783

office@pro2future.at

www.pro2future.at

Area Manager

DI Dr. Michael Haslgrübler

michael.haslgruebler@pro2future.at

Center Communications Manager

DI Dr. Markus Jäger, MLBT

markus.jaeger@pro2future.at

Success Story by

DI Dr. Bernhard Anzengruber-Tanase

bernhard.anzengruber@pro2future.at

Univ.-Prof. Dr. Alois Ferscha

alois.ferscha@pro2future.at

Jaroslava Huber, MSc

jaroslava.huber@pro2future.at

Mag. Bernhard Löw-Baselli

bernhard.loew-baselli@jku.at

DI Martin Schobesberger

martin.schobesberger@jku.at

DI Robert Fischer-Schwarz

robert.fischer-schwarz@auva.at



Project partner

- Johannes Kepler University Linz, Austria
- Allgemeine Unfallversicherung (AUVA), Austria

This report was released for publication at the FFG website by the centre management and its project partners. Pro²Future is a COMET Centre within the COMET – Competence Centres for Excellent Technologies Programme and funded by BMK, BMDW, Upper Austria and Styria. The COMET Programme is managed by FFG. Further information on COMET: www.ffg.at/comet

 Federal Ministry
Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology

 Federal Ministry
Republic of Austria
Digital and
Economic Affairs

Austrian Research Promotion Agency
Sensengasse 1, A-1090 Vienna
P +43 (0) 5 77 55 - 0
office@ffg.at
www.ffg.at