



STAIR

The logo icon for STAIR is a white gear with a brain-like pattern inside, featuring an orange semi-circle in the center of the gear's teeth.

www.star-ai.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°956573

STAR PROJECT WORKER UPSKILLING PLATFORM

R2M Solution

Sustainable Places 2023

June 2023, Madrid, Spain

www.star-ai.eu

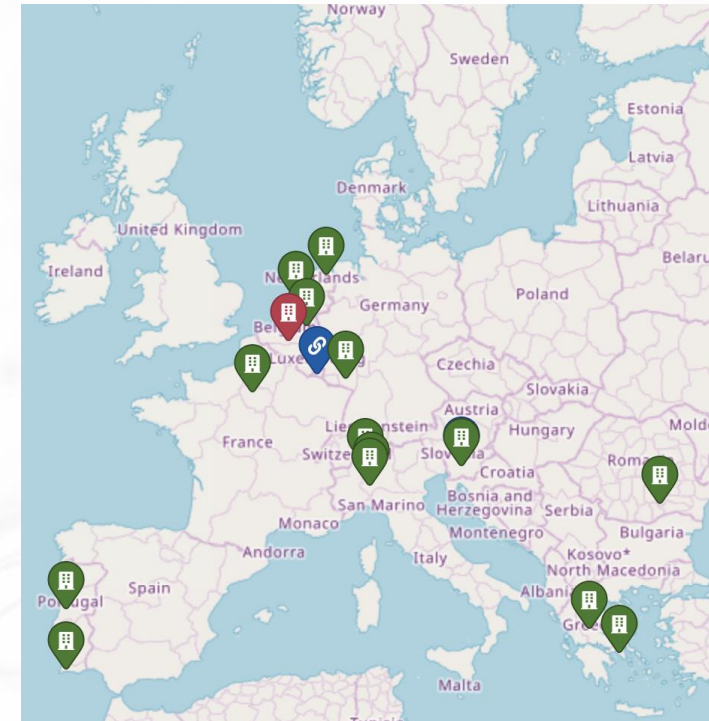


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STAR Project

- is a joint effort of 15 European partners towards designing new technologies to enable the deployment of standard-based secure, safe, reliable and trusted human centric AI systems in manufacturing environment. STAR aims to research, develop, validate and make available to the community leading-edge AI technologies including explainable AI, active learning systems, simulated reality systems, human-centric digital twins, advanced reinforcement learning techniques and cyber-defense mechanisms, thus becoming a catalyst for the deployment of advanced AI systems in the manufacturing shop-floor.



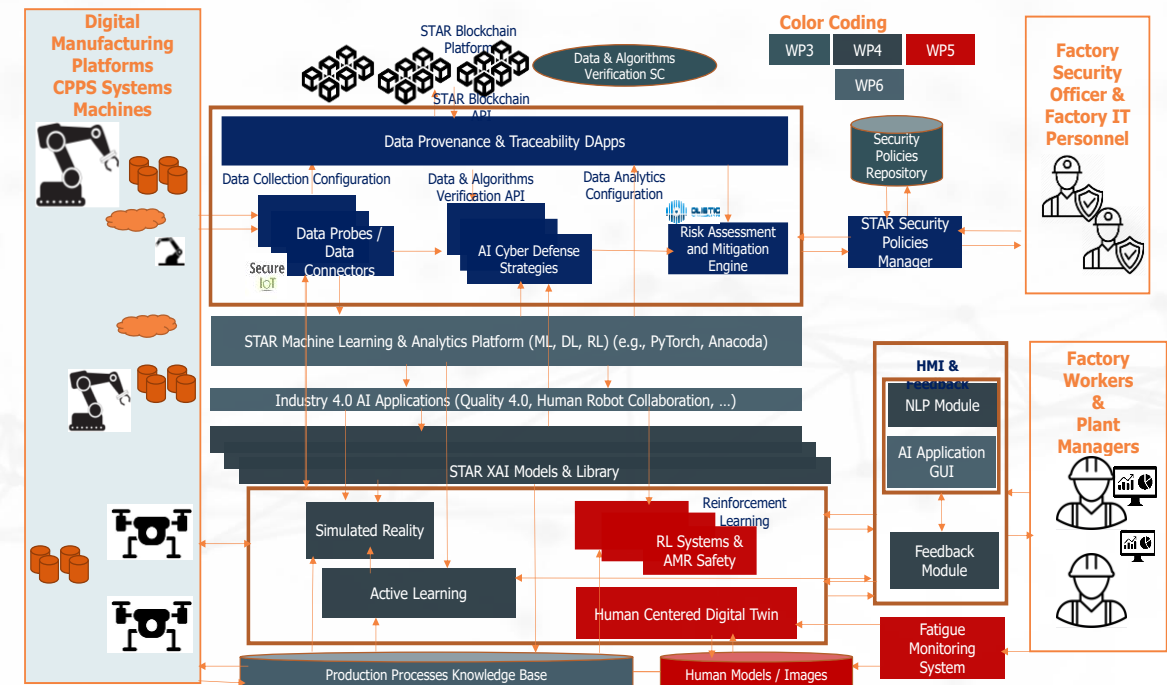
source: cordis

STAR'S VISION

- Reference and Catalyst for Trusted and Human Centric AI in Manufacturing
 - Addressing **Security, Safety** and **Human-Robot Collaboration**
- Implement and Demonstrate the transition to **Industry 5.0** in terms of Human Centric Manufacturing and Robot Collaboration

Activities I

- Systematic requirements engineering & co-creation
 - State of the Analysis of Trusted AI Technologies & Standards
 - Library of Reference Use Cases
 - Co-Creation Workshops
- Architecture & legal analysis
 - Reference Architecture for Trusted AI
 - Legal and Ethical Frameworks
 - BigData Management Infrastructure



source: STAR

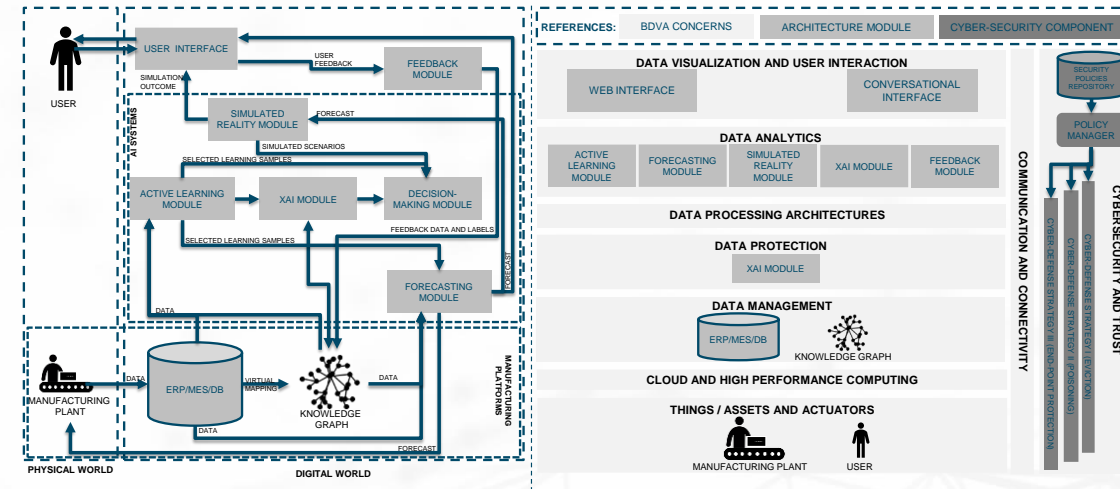
Activities II

- Active Learning and Human-Robot Collaboration

- Baseline Explainable AI Infrastructure
- Active Learning System
- NLP and Multimodal Interaction

- AI & Cybersecurity

- Scalable Data Collection Infrastructure
- Blockchain Infrastructure for Industrial Data Reliability
- Prototyping Cyber-Security (e.g. Poisoning attacks)
- Integration & Demonstration



source: STAR³

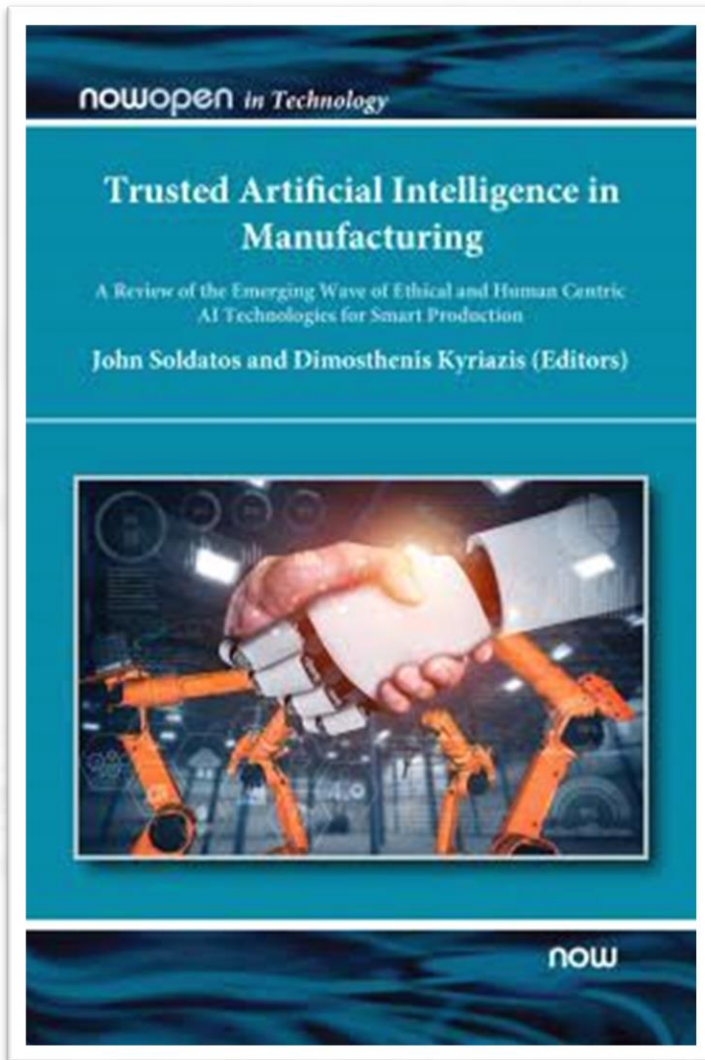
Activities III

- **Safety**
 - Prototype Simulated Reality System
 - Human Centred Digital Twin
 - Pose detection and safe Placement of Automatic Mobile Robots
- **Pilots**
 - Scenarios identification and documentation
 - Data collection
 - Solution design and components identification
 - Initial training & development of ML models



source: STAR

Dissemination and Open Access Books



Review of technologies, techniques and systems for trusted, ethical, and secure AI in manufacturing

Downloaded: +37500 times

Stay tuned, new Open Access book coming soon

Artificial Intelligence in Manufacturing

Human-Centric manufacturing?

- Human factor at the centre of production
- Well-being of the worker is prioritized
- Empower [...] industrial operators
- **Improve [...] individual skills and competences**
in collaboration or cooperation
with digital technologies
- More sustainable and resilient production systems



Source: Alves, J.; Lima, T.M.; Gaspar, P.D. Is Industry 5.0 a Human-Centred Approach? A Systematic Review. Processes 2023, 11, 193. <https://doi.org/10.3390/pr11010193>

- State of the art platform for
 - Upskill/Reskill & Continuous learning
 - Skill Gap Analysis
 - Career Development & Capacity building
- Multi-Sectoral (born in Manufacturing domain, supports all)
- Privacy by Default/Design
- Multimodal
- Based on standards and well-known competence databases: O*NET, ESCO...

"Capacity-building is defined as the process of developing and strengthening the skills, instincts, abilities, processes and resources that organizations and communities need to survive, adapt, and thrive in a fast-changing world" (United Nations)

Virtual Star Interviewer

- CV Analysis
- Multimodal Interaction
 - STT/TTS
- Conversational agent
- Web UI

Search for a job:

Select the job:

Accountants and Auditors
Actors
Actuaries
Acupuncturists
Acute Care Nurses

Nessun file scelto

Input CV

Yes, I have a Computer Science Master Degree. I have studied Mathematics and Computers Electronics Problem Sensitivity, Information Ordering Working with Computers Programming, Listening, Critical Thinking, Complex Problem Solving Computer servers

Virtual Star Interviewer

VSI: What work activities have you experienced?

User: Working with Computers

VSI: What are you best skills?

User: Programming, Listening, Critical Thinking, Complex Problem Solving

VSI: Which tools do you know best?

User: Computer servers

VSI: What work tasks are you most skilled at?

Occupational Chatbot

- AI chatbot
- Transformers to learn context
- Knowledge based on Occupational and competence DBs
- Open Domain support
- Linked to training course DB

The image displays two side-by-side screenshots of the Occupational Chatbot interface.

The left screenshot, titled "Templates", shows a list of "Query Types" and "Examples of query templates".

Query Types:

1. Alternate names of jobs
2. [Abilities | Knowledge | Skills | Tasks | Tech-Skills | Tools used | Work activities] that are important or necessary in any job
3. Description of a job
4. The similarities between a couple of jobs
5. Which jobs require a specific [Ability | Knowledge | Skill | Task | Tech-Skill | Tool | Work activity]
6. Recommendations on how to improve one [Ability | Knowledge | Skill | Task | Tech-Skill | Tool | Work activity]
7. Anything on the internet

Examples of query templates:

1. List alternate names for taxi drivers
2. Tell me other designations for developers
3. List tools for programmers
4. List some skills that actors need
5. Tell me some work activities performed by actors
6. Describe the work of a taxi driver
7. Describe the work of the actors
8. Compare the jobs of pilots and actors
9. What are the similarities between surgeons and nurses?
10. What job requires servers?
11. Which professions require medical masks?
12. Can you teach me something about python?
13. How can I improve my speech clarity
14. When was the web born?
15. When did men land on the Moon?

The right screenshot, titled "StarBot", shows a chat window with a robot icon. The chat text reads:

Welcome! I'm StarBot, your personal assistant. What can I do for you?

Tell me other designations for developers

Some alternative names for Developer are: Database Architects, Analytics Manager, Automatic Data Processing Planner (ADP Planner), Big Data Engineer, Cloud Architect, Computer Architect, Data Analyst, Data Architect, Data Base Design Analyst, Data Center Manager

Worker Self-Assessment and Skill Gap Detection

- Self Assessment
 - Abilities
 - Knowledge
 - Work Activities
 - Tasks
- Comparison with baseline
- Gap Detection and upskilling recommendation

Search for a job:

Manufacturing Engineers

Select the job:

Manufactured Building and Mobile Home Installers

Manufacturing Engineers

Potters, Manufacturing

Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products

Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products

Start

Please select your level on the following elements:

► Abilities:

► Knowledge:

► Skills:

► Work Activities:

▼ Tasks:

Apply continuous improvement methods such as lean manufacturing to enhance manufacturing quality, reliability, or cost-effectiveness.

none little medium good excellent

Design layout of equipment or workspaces to achieve maximum efficiency.

none little medium good excellent

Communicate manufacturing capabilities, production schedules, or other information to facilitate production processes.

none little medium good excellent

Training Recommendations

- Integrated with MOOCs
 - Udemy, Coursera...
- Impact on eligibility
- Trainable with in-house training materials

Missing knowledge or skills by which you can raise your score

Tech Skills:

17% - Not yet eligible...

▼ ☐ Adobe Systems Adobe Acrobat

Udemy course recommended:



[Adobe Acrobat DC Pro Advanced](#)

- ▶ ☐ Adobe Systems Adobe Illustrator
- ▶ ☐ Adobe Systems Adobe Photoshop
- ▶ ☐ Advanced business application programming ABAP
- ▶ ☐ AJAX

[more...](#)

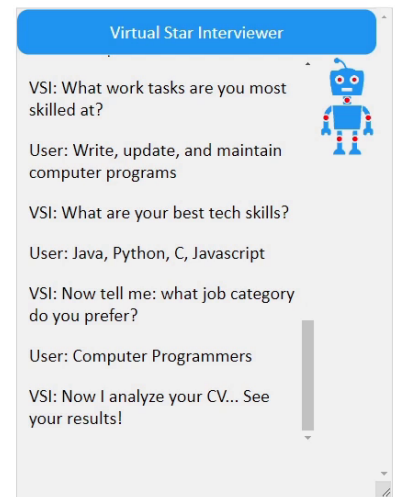
Skills:

69% - Eligible!

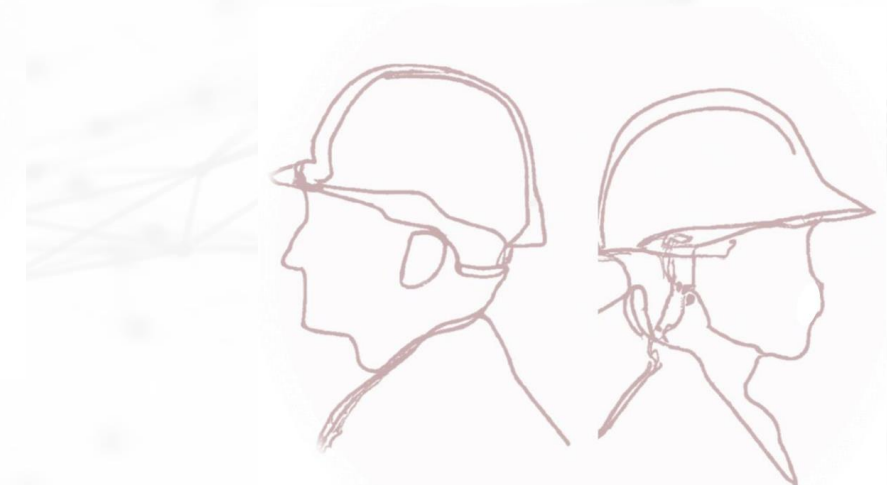
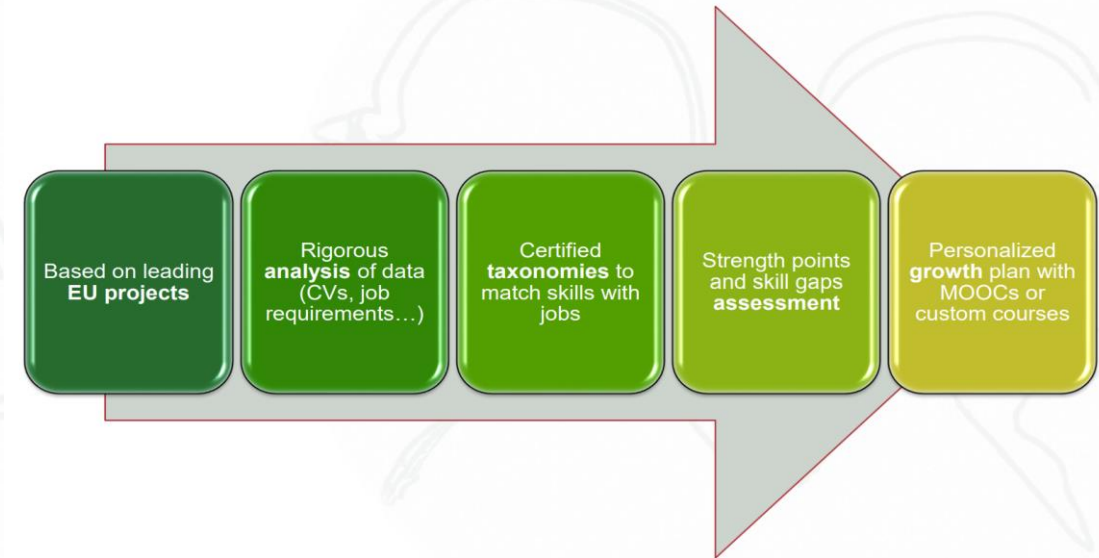
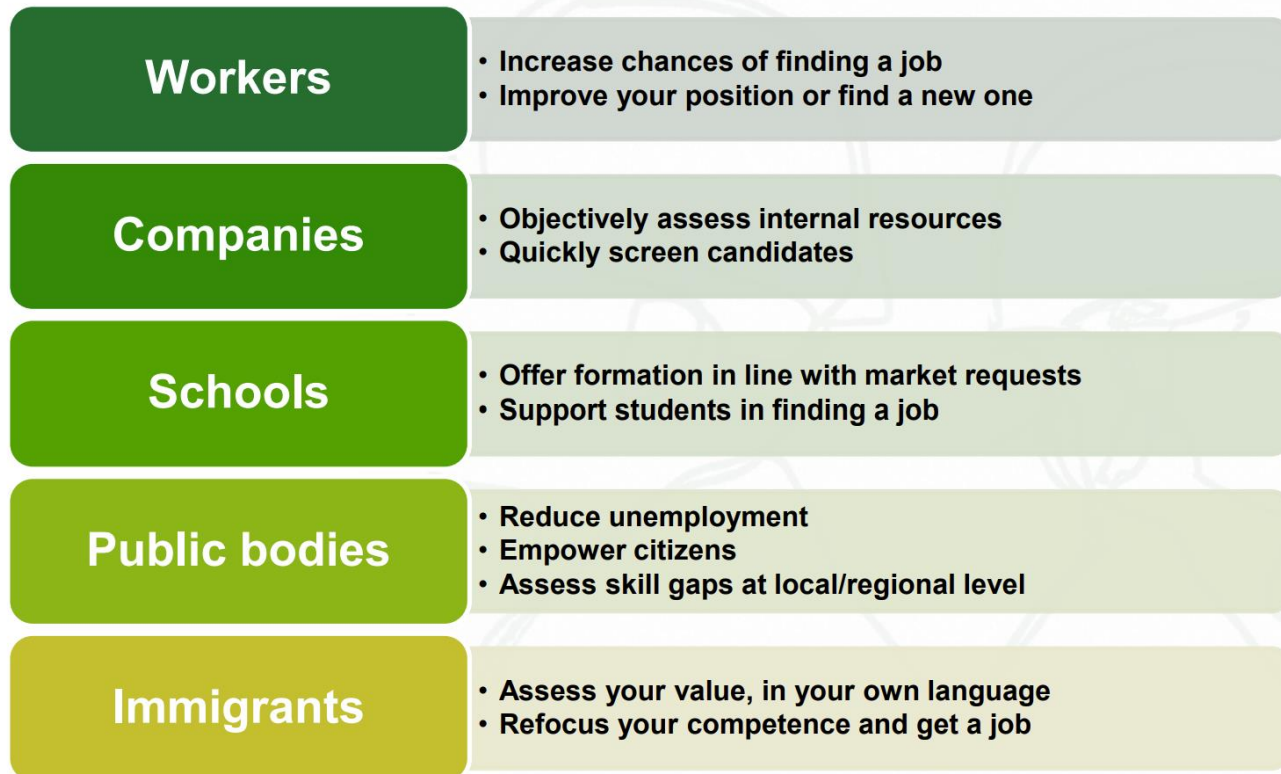
- ▶ ☐ Quality Control Analysis
- ▶ ☐ Reading Comprehension
- ▶ ☐ Systems Analysis
- ▶ ☐ Judgment and Decision Making
- ▶ ☐ Speaking

[more...](#)

Knowledge:



Avanti: Capacity Builder + Skilling methodology



THANK YOU FOR YOUR ATTENTION

Eva Coscia / Rubén Alonso

R2M Solution

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