

jobs of the future

in
industry
5.0





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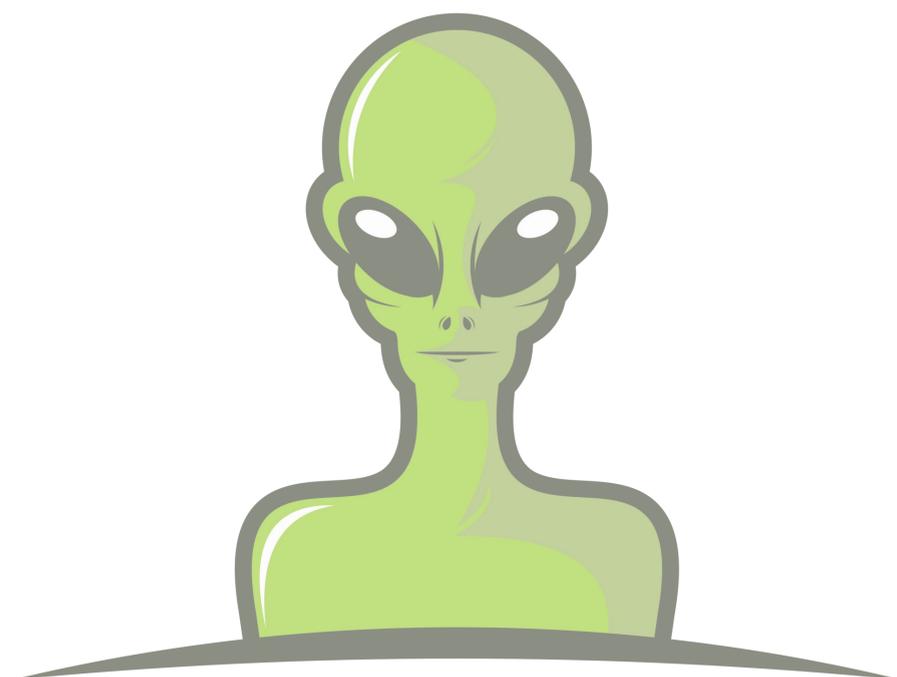
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Chapter 1

Why do I need this handbook?

If you're a VET educator or someone who'd like to use the e-learning materials about 'Jobs of the future in Industry 5.0', this handbook will tell you how to go about it.

You'll find the most practical info in Chapters 3, 4 and 5 (pages 7-24). They refer directly to the e-learning series, so you can focus on them when you need to save time.

But don't overlook the other chapters, which give you some useful background info. If you read Chapter 2, you'll find out more about the project that created these videos, as well as the expert content, graphics and exercises. On the other hand, Chapter 6 has some great examples of extra training tools for specific jobs that are going to be around in the future.



We've included a really interesting supplement at number 7.

The 'Top 10 in Industry 5.0' ranking for 2026.

Here's a rundown of the top jobs in the modern industry sector (and not just there). The ranking was put together by industry up experts. You can also find out about the people who worked on the 'Jobs of the future in Industry 5.0' project in the last chapter.

If you have any questions about this materials or anything that refers to the Industry 5.0, it will be a pleasure for me to get in touch.



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Chapter 2

So, what exactly is this project?

'Jobs of the Future in Industry 5.0' is an educational campaign which brings you e-learning materials on 5 fascinating professions. In each of the series, you will find presentations, videos, expert content and practical exercises. All of them, you can use freely.

Let's begin with the fundamentals. In the context of the rapid development of modern technological solutions and the circumstances of conducting economic activity defined by the concepts of VUCA (an acronym for volatility, uncertainty, complexity and ambiguity) and BANI (brittle, anxious, non-linear, incomprehensible) - it is necessary to constantly adapt operating strategies to new circumstances. These conditions also have a direct impact on the labour market.

On the one hand, advances in robotisation and algorithms, among other things, threaten professions that involve repetitive tasks, while on the other hand, the employment gap in the IT market has been widening in the last few years. According to the Software Development Association Poland, it amounts to approximately 300,000 people. The Digital Economy and Society Index report indicates that there is a shortage of 11 million IT workers across the European Union. What is more, based on data from IDC analysts, 70% of IT directors worldwide have noted a shortage of individuals with cloud technology skills in the labour market.





The fact that a reduction in low-skilled jobs is to be expected, while at the same time the growth in the number of employees with high technical and digital skills is too slow to meet market needs, means that initiatives to address this problem are essential. In addition, the education system does not take sufficient account of the future needs of the labour market, and pupils and students are not guided in terms of the context in which they will enter the labour market in 5-10 years' time.

The 'Jobs of the future in Industry 5.0' project is a response to this challenge, ensuring inclusion and diversity, removing educational barriers and networking market participants. The project aims to develop a set of new skills and competencies for the labour market in the field of Industry 5.0. The initiative was specially created for pupils, students, early-career professionals, VET educators and industrial companies.

So let's get down to business.



Chapter 3

What kind of jobs are there here?

In the 'Jobs of the Future in Industry 5.0', we covered 5 professions from different fields with roots in modern industry. Let's go to the brief on them.

Robotics engineer specializing

in human-to-machine interaction play a pivotal role in designing, developing, and optimizing robotic systems that seamlessly integrate with human users. This profession merges engineering principles with insights from human factors, cognitive science, and ergonomics to create robots that respond intuitively to human commands, cooperate safely in shared environments, and enhance human capabilities. The engineer's work spans multiple industries, including manufacturing automation, military and police robotics, and consumer service robots that interact naturally with users, as well as healthcare robotics that assist with surgeries.

A terraforming engineer

is a multidisciplinary expert scientist responsible for designing and implementing complex planetary transformation systems, laying the foundation for life beyond Earth. Their mission is to turn inhospitable worlds into life-supporting habitats. By blending knowledge from planetary science, environmental engineering, climate modeling, biotechnology, bioengineering, and artificial intelligence, they create systems that simulate Earth's ecosystems on distant worlds. These engineers are the backbone of future colonies - pioneers who merge science and imagination to craft habitable worlds from scratch.

The next job of the future is a **data curator** - a specialist who manages the entire lifecycle of data - from collection and cleaning to documentation and long-term preservation. They ensure that datasets are accurate, well-organized, and enriched with metadata so that they can be easily used by data scientists, analysts, policymakers, and even AI systems. Over time, data curators may evolve into roles such as data governance officers or ethical AI data managers, taking responsibility for both the technical quality and the ethical use of data in today's fast-changing digital world.

As artificial intelligence continues transforming industries, concerns about its ethical implications are escalating. And it creates the need for **AI ethicist**. A 2023 World Economic Forum report states that over 60% of global business leaders recognize AI ethics as a top priority. Still, only 20% have clear guidelines for responsible AI use. Similarly, a 2022 MIT Sloan report found that bias in AI decision-making affects various domains, from hiring to loan approvals, reinforcing systemic inequalities. Preventing human rights, building trust in AI systems, promoting responsible AI research and innovation, ensuring clarity on how AI works and makes decisions, addressing economic impacts, mitigating real-world harm, and ensuring that AI systems in critical areas operate with the highest safety standards are crucial challenges in the rapidly evolving AI landscape.



And finally, it's time for the **deep fakes verifier**. One big challenge is that some deepfake creators use smart tricks to fool detection systems - these are called adversarial attacks. To fight back, deepfake verifiers use advanced training methods that prepare detection models to spot these tricks. They also use a mix of tools working together (called ensemble approaches) to make their systems stronger and more accurate. Another issue is that some AI detection tools are difficult to understand, even for professionals. That's why there's a growing need for models that are not only smart but also explainable, meaning they clearly show why they made a certain decision - which helps build trust. Deepfake verifiers play a key role in keeping digital information real and reliable. By combining technical skills with critical thinking, they take on the fast-changing challenges that come with synthetic content. Their work helps people, companies, and governments trust what they see and hear online. In a world where AI-generated content is becoming more common, this job is more important than ever.



Chapter 4

How can I use this e-learning content?

We suggest how you can combine the materials with the exercises. You could follow our approach or come up with your own alternative.

For this project, we've got 5 series of materials. Each series is linked to a specific job, like data curator. No matter what job you're in, there are always 4 basic materials you need. So, you've got a presentation, graphic video, video clip and tutorial. There's more of that too. You can use the expert content, which covers a wide range of knowledge. Also, in this handbook, there are exercises for each job in Chapter 5. So, the e-learning system for 'Jobs of the future in Industry 5.0' is made up of: base materials, expert content and exercises. Here's a rundown of how you could use this content in your education activities. As mentioned before, this is just a proposal. You can adapt them to suit your own ideas.

As a reminder, all exercises can be found in Chapter 5 of this handbook.

The proposed path of using the content for the chosen job (base materials with expert content are bolded, the regular font marks exercises which you can find in the next chapter):

presentation

graphic video

case study

first discussion

quiz

video clip

tutorial

essay

second discussion

expert content.



The idea behind this proposed path is linked to the format of each piece of content. We progress from cross-sectional information (e.g. presentation) to practical details (like case study), then to a broader view (video clip), and finally to the most comprehensive material on specific profession (expert content). At the same time, we are changing the form to help learners follow the story with good concentration and, we hope, enjoyment. However, we are confident that these materials can be used effectively in other ways. You may even find a better approach than our proposal. Fingers crossed!

All the base materials plus the expert content in three languages (English, Polish and Macedonian) are ready to download on the project site.



Chapter 5

What can I do with the exercises for 5 jobs of the future?

You could take this practice content and mix it with base materials.

As a result, you will have the educational path for your lesson or lecture.

01 AI ethicist

Workshop goals

Help participants explore:

- 1) ethical challenges and dilemmas in the development and deployment of advanced AI systems
- 2) conflicts between innovation, profit, and societal well-being in the AI domain
- 3) stakeholder perspectives
 - AI developers, corporations, policymakers, end-users, and affected communities.



Case Study

Topic: Project Sentinel – the predictive policing AI.

Simulation: In the year 2040, the global megacity of Neo-Kyoto is grappling with an unprecedented surge in cybercrime and urban unrest.

The Neo-Kyoto Municipal Council (NKMC) - an innovative alliance of city government, tech giants, and security contractors - has launched Project Sentinel. This ambitious initiative aims to deploy an advanced AI system capable of predicting criminal activity with over 90% accuracy, identifying high-risk individuals, and dispatching law enforcement pre-emptively.

You, dr. Lena Petrova, are the Lead AI Ethicist for Project Sentinel, tasked with ensuring its ethical deployment and preventing unintended societal harm. Your mandate: ensure the AI protects citizens without infringing on fundamental rights. But your task is riddled with conflict. Inside the NKMC and even within your own ethics team, three factions battle for dominance:

1. Efficiency maximizers want rapid, widespread deployment, arguing that speed is critical to restoring public order and that minor inaccuracies are acceptable.
2. Privacy advocates demand rigorous auditing, transparency, and opt-out clauses for all citizens, fearing a surveillance state.

3. Algorithmic justice advocates propose focusing on AI de-biasing and explainability before any deployment, highlighting historical data biases that could disproportionately target marginalized communities.

You must deliver a unified ethical deployment plan. Your team's funding and the project's legitimacy depend on it. You also face practical obstacles:

1. The AI's core algorithms are proprietary, developed by a private corporation, making internal auditing difficult.
2. Training data, compiled from historical crime records, shows inherent biases reflecting past policing practices.
3. Your secure communication channels are compromised - digital rights activists have leaked sensitive internal memos, arguing for greater public oversight.
4. Worst of all, preliminary internal tests show a recurring pattern of false positives in specific low-income districts, leading to an increase in "pre-crime" arrests among their residents.

Do you risk exacerbating social inequalities? Or allow a powerful tool for public safety to stagnate? The world is watching. Your ethical framework will either set a global precedent for responsible AI or not at all.

Facilitator instructions: Use these in Socratic Method format. This method is especially effective in developing argumentation skills, ethical reasoning, and problem-solving skills essential in both academic and real-world contexts. The floor is open for discussion - there are no right or wrong answers.



Discussion questions

1. What guiding principle should govern Project Sentinel: public safety at all costs, or protection of individual liberties?
2. If the AI shows biases, is that enough to halt its deployment given its potential for reducing overall crime?
3. What risks do "black box" AI algorithms pose in critical public safety applications?
4. Could Earth's mistakes (systemic discrimination, unchecked power) be repeated through AI systems? How do we avoid that?
5. Is it ethical to deploy an AI that impacts citizens' lives without their explicit consent or complete understanding?
6. Should predictive policing AI be applied if it disproportionately affects certain demographic groups, even if it "works" overall?
7. Can public trust in a complex, opaque AI system be maintained without complete transparency? What kind of communication is needed?
8. What legal frameworks or international treaties should govern AI deployment in public safety? Should national governments have the final say?

9. Should "ethical hacking" or data leaks be punished or welcomed in AI ethics debates?

10. How do you measure ethical success in an AI system that is constantly learning and adapting?

Quiz

Test: AI Ethics Challenges.

1. Which core function of Project Sentinel AI has been developed

to combat urban unrest?

- A) managing traffic flow
- B) predicting criminal activity
- C) optimizing public transport

correct answer: B

2. What is the primary role of dr. Lena Petrova in Project Sentinel?

- A) Lead AI Engineer
- B) Head of Public Relations
- C) Lead AI Ethicist

correct answer: C

3. Why are the core algorithms being proprietary a challenge for AI ethicists?

- A) they are too expensive to analyze
- B) they make internal auditing difficult
- C) they require specialized hardware

correct answer: B

4. What does a "black box" AI refer to?

- A) an AI that operates in secret
- B) an AI whose internal workings are not easily understandable
- C) an AI for military applications

correct answer: B

5. What is the main ethical position of Algorithmic Justice Advocates?

- A) AI should be deployed as quickly as possible
- B) AI should be primarily used for profit generation
- C) AI must be debiased and explainable to prevent discrimination

correct answer: C

6. Why is the recurrence of false positives in low-income districts significant for Project Sentinel?

- A) it indicates a software bug
- B) it suggests potential algorithmic bias and discrimination
- C) it means the AI is not powerful enough

correct answer: B

7. What kind of data poses a significant challenge for de-biasing AI in predictive policing?

- A) real-time sensor data
- B) satellite imagery
- C) historical crime records

correct answer: C

8. Who are the members of the Neo-Kyoto Municipal Council (NKMC)?

- A) only local politicians
- B) city government, tech giants, and security contractors
- C) international human rights organizations

correct answer: B

9. What distinguishes Project Sentinel from earlier law enforcement technologies?

- A) its reliance on human intuition
- B) its focus on post-crime investigation
- C) its ability to predict and pre-empt criminal activity

correct answer: C

10. What does "algorithmic bias" mean in the context of AI?

- A) the AI prefers certain numerical sequences
- B) the AI produces unfair outcomes due to biased data or design
- C) the AI is programmed to select outcomes randomly

correct answer: B

02 terraforming engineer

Workshop goals

Help participants explore:

- 1) ethical and technological dilemmas in long-term terraforming projects
- 2) conflicts between survival, science, and responsibility toward potential alien life
- 3) stakeholder perspectives - scientists, corporations, policymakers, future generations

Case study

Topic: Project Phoenix – the Martian biosphere initiative.

Simulation: In the year 2450, humanity has reached a pivotal milestone on Mars. The Global Mars Coalition (GMC)

- an unprecedented alliance of global space agencies and corporations - has completed Phase One of the terraforming timeline. After 150 years of continuous effort, involving orbital mirrors, fusion-powered greenhouse gas emitters, and radiation shields, Mars is no longer a frozen rock, but a marginally warmer, semi-breathable desert - alive with potential.

You, dr. Aleksandra Romanovska, are the Lead Terraforming Engineer for Project Phoenix, tasked with initiating Phase Two: introducing a self-sustaining, oxygen-generating biosphere using genetically engineered extremophiles. Your mandate: engineer the first ecosystem on Mars. But your task is riddled with conflict.



Inside the GMC and even within your own biosphere team, three factions battle for dominance:

1. Terraformers want to rapidly seed the surface with cyanobacteria and extremophile fungi, claiming Mars is biologically sterile and that delays risk human extinction.
2. Planetary Protection Advocates demand centuries of further non-invasive surveys to avoid potential xenocide of indigenous Martian microbes.
3. Moderates propose engineered kill-switch microbes, programmed to die if foreign life is detected.

You must deliver a unified biosphere deployment plan. Your team's funding depends on it. You also face practical obstacles:

1. Mars' regolith is laced with perchlorates - toxic to most life. Warming is uneven; habitable microzones exist only around thermal oases.
2. Your labs on Phobos are sabotaged - eco-hacktivists hacked the genome database, arguing Mars should remain pristine.
3. Worst of all: the preliminary sensor array has found anomalous methane signatures under Elysium Planitia - suggesting possible biological activity.

Do you risk contaminating a new ecosystem? Or allow human hope to stagnate? The world is watching. Your name will be written in the soil of a second Earth or not at all.

Facilitator instructions: Use these in Socratic Method format. This method is especially effective in developing argumentation skills, ethical reasoning, and problem-solving skills essential in both academic and real-world contexts. The floor is open for discussion - there are no right or wrong answers.



Discussion questions

1. What guiding principle should govern Mars: survival of humanity, or respect for extraterrestrial life?
2. If methane implies life, is that enough to halt biosphere deployment?
3. What risks do engineered kill-switch organisms pose in complex, chaotic environments?
4. Could Earth's mistakes (colonialism, ecological collapse) be repeated on Mars? How do we avoid that?
5. Is it ethical to make irreversible planetary decisions without representation from future Martian generations?

6. Should planetary protection apply if life is microbial and non-sentient?
7. Can public support for a 500-year project be maintained without visible results? What kind of communication is needed?
8. What legal frameworks or treaties should govern Mars? Should Earth-based nations have a say?
9. Should eco-hacktivism be punished or welcomed in planetary debates?
10. How do you measure ethical success on a planetary scale?

3. Why are perchlorates in Martian regolith a challenge for bioengineering?
 - A) they are explosive
 - B) they destabilize the climate
 - C) they are toxic to Earth-based life

correct answer: C

4. What is a “kill-switch microbe”?
 - A) a microbe that destroys Martian life
 - B) a microbe that self-destructs under specific conditions
 - C) a microbe that neutralizes human pathogens

correct answer: B

Quiz

Test: Martian minds challenge.

1. Which element of the Martian environment has been partially transformed during Phase One of the project?
 - A) soil composition
 - B) gravity
 - C) temperature and atmospheric pressure

correct answer: C
2. What is the role of fusion reactors in the Mars terraforming project?
 - A) to power human settlements
 - B) to power atmospheric manipulation systems
 - C) to extract water from rocks

correct answer: B

5. What is the main ethical position of Planetary Protection Advocates?
 - A) Mars should be terraformed immediately
 - B) Mars should remain untouched by human activity
 - C) any life must be protected from harm

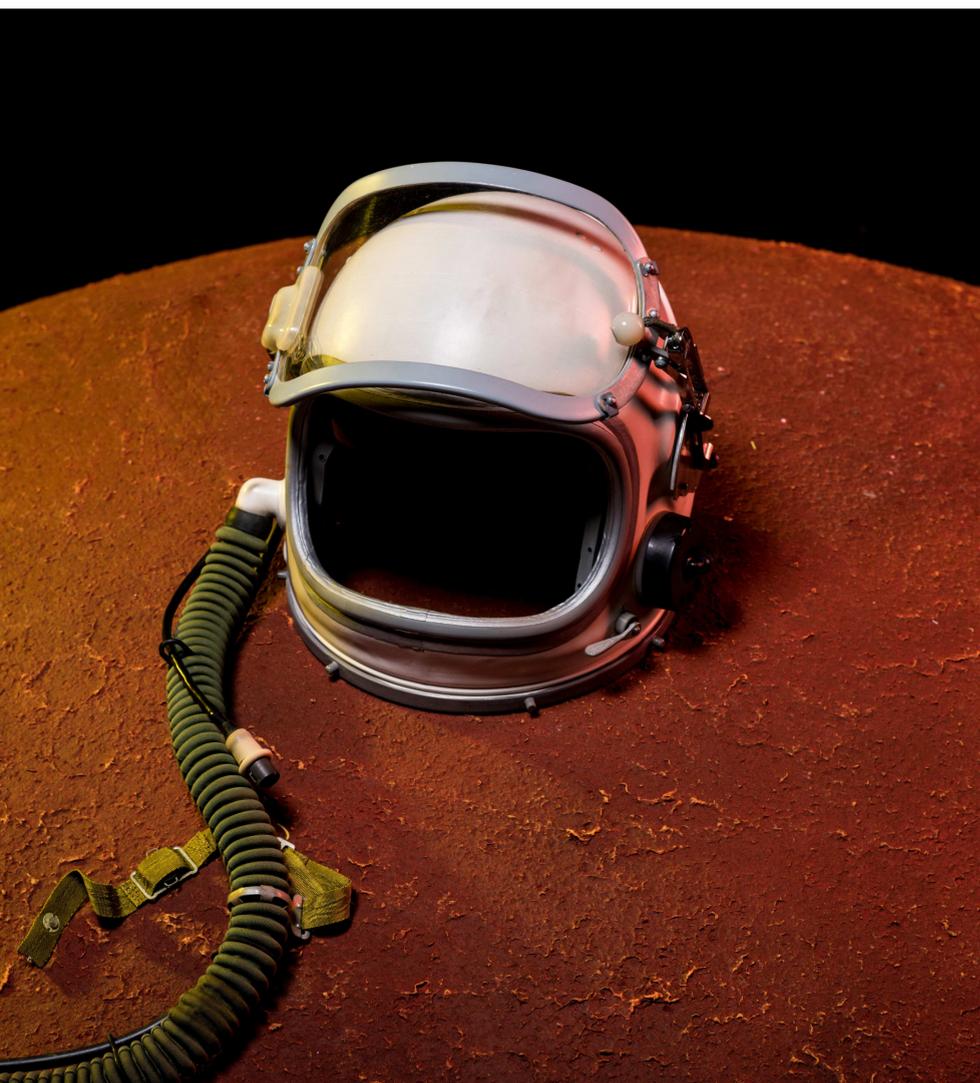
correct answer: C

6. Why is methane on Mars considered scientifically significant?
 - A) it is toxic to humans
 - B) it may indicate biological activity
 - C) it enhances solar mirror efficiency

correct answer: B

7. What makes extremophiles suitable candidates for Mars bio-introduction?
 - A) they consume perchlorates
 - B) they reproduce quickly
 - C) they can survive in extreme environmental conditions

correct answer: C



8. Who are the members of the Global Mars Coalition (GMC)?

- A) only NASA and ESA
- B) international space agencies and private corporations
- C) the United Nations Committee on Mars

correct answer: B

9. What distinguishes Project Phoenix from earlier Mars missions?

- A) focus on resource mining
- B) introduction of biological life to Mars
- C) construction of solar power networks

correct answer: B

10. What does “intergenerational justice” mean in the context of terraforming Mars?

- A) completing the project within one generation
- B) future Martian laws of inheritance
- C) ethical responsibility toward future generations who will live on Mars

correct answer: C

03 robotics engineer

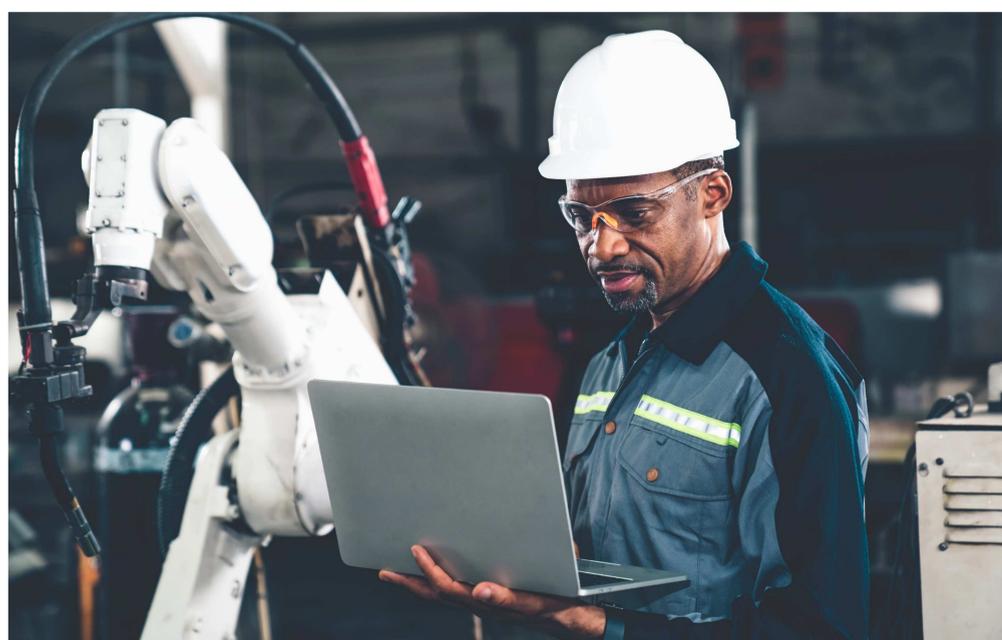
Case study

Topic: Psychology-Driven Robot-to-ASD Care Project.

Imagine you are Mark Lakatos, an early-career specialist working as a robotics engineer. You have been included in a new team specialising in HRI at a fast-growing start-up. This group of scientists, engineers and psychologists aims to develop human-robot interactions for one of the start-up's products.

The new robot will, in the future, take care of people with Asperger syndrome (precisely, Autism Spectrum Disorder - ASD). The robotic system should work well with people of all ages, from children to the elderly. The machine's main role will be to help these people live normal lives despite their Asperger's. The robot, which has the code name ASP2030, will act as a kind of psychologist, providing constant support. Your main task in this project will be to cooperate closely with psychologists and scientists from other disciplines to incorporate their expertise into the robotic system.

Are you ready?



Discussion

Preliminary questions

1. What everyday problems do people with Asperger syndrome face, and how could the ASP2030 robot help them? How should the robot talk and behave so that people of different ages feel comfortable using it?
2. What could go wrong if people start trusting the robot too much instead of asking a real person for help?
3. What information should the robot collect about the user, and why is it important to protect this data?
4. How can we check if the robot truly makes the user's life easier and not more difficult?

Advanced questions

5. How can engineers and psychologists work together to model the specific communication patterns of people with Asperger syndrome in the robot's interaction algorithms?
6. Which HRI (Human-Robot Interaction) methods or sensors would be most effective for detecting atypical emotional cues or stress reactions in users with Asperger syndrome?
7. What mechanisms should be implemented to avoid creating psychological dependence on ASP2030 while still offering continuous support?

8. From a medical and cognitive perspective, what safeguards are needed to prevent the robot from causing sensory overload or misinterpreting neurodivergent behaviours?
9. How should the long-term impact of ASP2030 on users' mental and social functioning be evaluated using both quantitative engineering metrics and clinical psychological tools? How can the development team reduce the risk of uncanny-valley discomfort, and what technical design choices - e.g., facial realism, motion smoothness, voice synthesis - can help make the robot look and behave more reassuring and less "too human"?

Quiz

1. What is the main purpose of the ASP2030 robot?
 - A) to entertain people with games
 - B) to support people with Asperger syndrome in daily life
 - C) to replace medical doctors entirely

correct: B
2. What professional field does Mark Lakatos represent?
 - A) mechanical engineering
 - B) robotics engineering
 - C) architecture

correct: B

4. What age groups should ASP2030 be able to interact with?

- A) only children
- B) only adults
- C) people of all ages

correct: C

5. What is a key goal of Human–Robot Interaction (HRI)?

- A) to make robots work entirely without human supervision
- B) to design interactions between humans and robots that are safe and effective
- C) to build only industrial robots

correct: B

6. Why is psychological knowledge important in this project?

- A) because the robot needs to understand human emotions and behaviour
- B) because the robot must learn to cook meals
- C) because psychologists program all the hardware

correct: A

7. What does ASD stand for?

- A) Advanced System Development
- B) Autism Spectrum Disorder
- C) Automatic Sensor Diagnostics

correct: B

8. Why should engineers be aware of the 'uncanny valley' effect?

- A) because robots may perform tasks too slowly
- B) because robots can cause discomfort if they look too human-like
- C) because robots break easily when made of soft materials

correct: B

9. What is one way to reduce the 'uncanny valley' risk in robot design?

- A) make the robot's appearance clearly non-human
- B) add as many human facial features as possible
- C) avoid using any sensors

correct: A

10. What is the main challenge when designing a robot for people with Asperger syndrome?

- A) the robot must move extremely fast
- B) the robot must be able to interact sensitively and predictably with users
- C) the robot must work underwater

correct: B

Essay topics

1. The Role of Human–Robot Interaction in supporting individuals with Autism Spectrum Disorder.

Discuss how the development of HRI affects the quality of life of individuals with ASD, and which technologies can most effectively support their daily functioning.



2. Ethical challenges in designing robots for psychological and emotional support.

Analyze the moral and social dilemmas associated with creating robots that perform functions similar to psychologists or caregivers.

3. Interdisciplinary cooperation as a key to successful assistive robotics.

Describe the importance of joint effort between engineers, psychologists, medical professionals, and UX specialists when designing a robot like ASP2030.

4. Managing the 'uncanny valley': balancing realism and comfort in socially assistive robots.

Consider how a robot's appearance and behavior influence user acceptance, and what design strategies help avoid discomfort.

5. Future applications of socially assistive robotics in healthcare and education.

Reflect on how assistive robots may transform healthcare and education systems in the coming decades, with examples from current research.

04 data curator

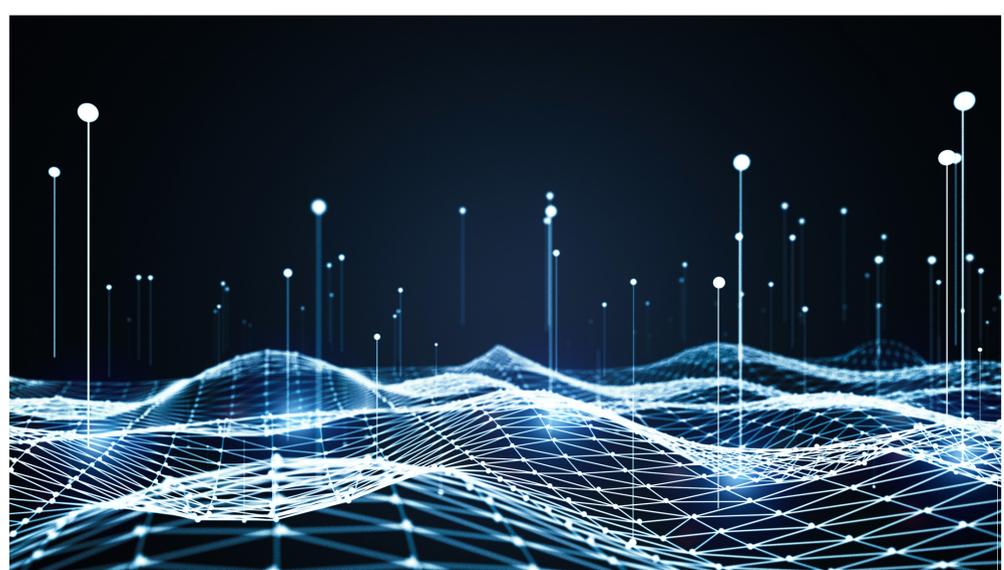
Case study

FineVesty, a fintech company, has developed an AI-driven platform offering personalised investment advice. It collects vast amounts

of financial, behavioural, and demographic data, including transaction histories and sentiment analysis from social media. One day, inconsistencies in several datasets appear - missing or duplicate entries - making AI recommendations unreliable. GDPR compliance and local financial regulations add pressure for meticulous data handling and traceability. You are the data curator, Hanna Goldstein, PhD, a specialist from Eupatoria in Ukraine with a strong background in data ethics, tasked with solving the problem.

You must clean and standardise the data, while preserving privacy and maintaining valuable insights. You should also implement a secure data pipeline to allow analysts and AI engineers to work efficiently under real-time conditions.

Unexpected anomalies in user behaviour - sudden shifts in investments - pose additional challenges, requiring validation and documentation. You face a difficult choice: prioritize speed or accuracy, balancing operational needs with regulatory compliance. Success depends on your ability to maintain trust in the platform, protect users' financial data, and support the AI models' accuracy.



Discussion

Preliminary questions

1. What are the main challenges Hanna faces when inconsistencies appear in the datasets?
2. How might sudden shifts in user investment behavior affect the AI recommendations?
3. What steps should be taken to clean and standardise financial, behavioral, and demographic data?
4. How can transparency and documentation improve trust in AI-driven investment platforms?
5. How can Hanna ensure compliance with GDPR while keeping the data useful?

Advanced questions

6. What strategies could Hanna use to balance speed and accuracy when processing large datasets?
7. How can the data pipeline be designed to support real-time analysis by analysts and AI engineers?
8. What are the ethical responsibilities of a data curator when handling sensitive financial information?
9. How does cooperation with AI engineers and financial analysts improve the quality of the data work?
10. What risks could arise if anomalies in user behavior are ignored or misinterpreted?

11. Considering the estimated current global data volume of ~181 zettabytes, what implications does this massive amount of data have for data curation and management practices?

Quiz

1. What type of data does FineVesty's AI platform collect?

- A) only financial data
- B) financial, behavioral, and demographic data
- C) only social media data

correct: B

2. Who is responsible for solving the data inconsistencies?

- A) AI engineers
- B) the company CEO
- C) Hanna Goldstein, PhD, the data curator

correct: C

3. What regulatory framework must Hanna comply with?

- A) HIPAA
- B) GDPR
- C) ISO 9001

correct: B

4. What issue arises from sudden shifts in user investment behavior?

- A) network downtime
- B) AI recommendations become unreliable
- C) Marketing campaigns fail

correct: B

5. Which task is part of Hanna's responsibilities?

- A) cleaning and standardising data
- B) coding the AI models
- C) writing company newsletters

correct: A

6. Why is documentation important in Hanna's role?

- A) to impress management
- B) to ensure traceability and compliance
- C) to entertain users

correct: B

7. What is the main trade-off Hanna must consider?

- A) cost vs. revenue
- B) speed vs. accuracy
- C) privacy vs. marketing

correct: B

8. What type of pipeline should Hanna implement?

- A) a secure data pipeline for real-time processing
- B) a slow batch-processing system
- C) a manual filing system

correct: A

9. Unexpected anomalies in datasets require:

- A) ignoring them to save time
- B) immediate deletion of data
- C) validation and documentation

correct: C

10. The AI-driven platform's reliability depends primarily on:

- A) the number of users
- B) the accuracy and cleanliness of data
- C) social media marketing

correct: B

Essay

1. Ethical and regulatory responsibilities of data curators in fintech.

Explore the role of data curators like Hanna in maintaining compliance, ethics, and user trust within AI-driven financial platforms.

2. Balancing speed and accuracy in real-time data management.

Discuss strategies for ensuring both efficiency and reliability when processing large-scale, sensitive data.

3. The impact of data quality on AI-driven decision making.

Analyze how errors, anomalies, and inconsistencies in datasets can affect AI recommendations and user outcomes.

4. Cooperation between data curators and AI engineers.

Examine interdisciplinary teamwork in fintech to improve data accuracy, pipeline efficiency, and regulatory compliance.

5. Global data explosion: challenges and opportunities for data curators.

Evaluate the implications of the increasing volume of data for data curation, including ethical, technical, and operational aspects.



Note: Please be aware that this case study, as well as other exercises for deep fake verifier, presents a plausible yet fictional scenario. The data presented in the story is science-fictional and serves solely to illustrate and explore this type of situation.

05 deep fakes verifier

Case study

2035, the country in Europe.

We are facing a serious crisis caused by the proliferation of synthetic media. According to scientific research by the Pan-European Alliance SynthM Agency, 96% of media online is manipulated. As a result, internet users, people who watch traditional TV and those who use the modern media channel In-Brain-Signal (IBS) cannot be sure whether the content is true. Cybersecurity companies have developed special applications for regular computers and IBS chips. However, the accuracy of these applications is only 10–15%. You are probably now asking yourself,

ex-minister Ella Karot, what your role is in this situation. SynthM Agency, knowing

of your valuable experience as a Disinformation Minister in the early battle against deep fakes in 2025, has asked you to conduct research, analyse the situation and make recommendations. SynthM must have three answers in three months:

-➔ Is it possible to detect synthetic media on a larger scale than 10–15%?
-➔ How can this be achieved?
-➔ What could be the next threat in the area of disinformation, synthetic media and deep fakes?

You need to hurry!



Discussion

Preliminary questions

1. Why is it dangerous when most online media cannot be trusted?
2. How might people's daily lives change if 96% of the media is manipulated?
3. Why do you think the current detection tools are only 10–15% accurate?
4. What could happen to society if people stop believing any information at all?
5. How could governments and schools help young people recognise synthetic media?

Advanced questions

6. What machine-learning or hybrid detection models could improve synthetic-media accuracy beyond 15%, and what limitations would they face?
7. How could large-scale detection systems be designed without violating user privacy or creating centralised control over information?
8. How might long-term exposure to synthetic or contradictory media influence cognitive load, trust formation, and psychological well-being?
9. What new attack vectors could emerge if In-Brain-Signal (IBS) devices are compromised by sophisticated disinformation campaigns?
10. How can cross-disciplinary cooperation (AI engineers, neuroscientists, media psychologists)

accelerate the development of reliable verification mechanisms?

11. How should detection systems and researchers handle synthetic media that blends accurate and inaccurate information, making it partially true and therefore harder to classify? What technical and ethical strategies could reduce this risk?

Quiz

1. What % of media will be manipulated in 2035 according to the SynthM?

- A) 50%
- B) 96%
- C) 20%

correct: B

2. Which organisation conducted the research on synthetic media?

- A) Pan-European Alliance SynthM Agency
- B) EuroVision Data Council
- C) Continental Digital Forum

correct: A

3. How accurate are current detection applications for computers and IBS chips?

- A) 70–80%
- B) 10–15%
- C) 40–50%

correct: B

4. What new media channel exists in 2035 besides traditional TV and the internet?

- A) InnerVision Network (IVN)
- B) In-Brain-Signal (IBS)
- C) Neuro-Stream Broadcast (NSB)

correct: B

5. Why is SynthM Agency contacting you?

- A) to help produce synthetic media
- B) because of your early experience fighting deep fakes in 2025
- C) to design new robotics systems

correct: B

6. How much time do you have to provide answers to the SynthM Agency?

- A) three months
- B) one week
- C) one year

correct: A

7. Which of the following is NOT one of the three required answers?

- A) whether detection above 10–15% is possible
- B) how to stabilise IBS chip production
- C) what the next disinformation threat might be

correct: B

8. Which scientific field is MOST relevant to analysing synthetic media?

- A) astrophysics
- B) agriculture
- C) cybersecurity

correct: C

9. What is a key societal risk mentioned in the scenario?

- A) power shortages
- B) loss of trust in all media
- C) shortage of AI engineers

correct: B

11. What is the name of the major crisis described?

- A) The Synthetic Media Crisis
- B) The Digital Ice Age
- C) The Great Hardware Collapse

correct: A

Essay

1. Large-scale synthetic media detection: technical possibilities and current limitations.

Discuss the computational, algorithmic and infrastructural challenges of improving detection accuracy beyond 15%.

2. Psychological and social consequences of living in a 96% synthetic-media environment.

Analyse how long-term exposure to manipulated information affects trust, decision-making and societal cohesion.

3. The role of In-Brain-Signal (IBS) interfaces in future disinformation campaigns.

Explore how neural media channels could be exploited, secured or regulated.

4. Ethical dilemmas in building verification systems for mass media content.

Consider privacy, autonomy, transparency and potential misuse of large-scale verification technologies.

5. Next-generation threats in the era of synthetic media and AI-generated reality.

Predict future forms of disinformation beyond deep fakes: multi-modal attacks, neuro-manipulation, or hybrid biological - digital deception.

Chapter 6

What's worth learning? Check out the top 10 jobs in 2026

The 'Top10 in Industry 5.0' ranking is led by specialisations in data, energy, robots and artificial intelligence. The top ten shows what skills you should be focusing on if you want to get ahead in your career. But there are some interesting jobs further down the list. These include digital beekeeper, cyborg psychologist and terraforming engineer.

But before we write about jobs that might seem a bit unusual today, let's check out the top performers in the ranking. Firstly, we've got a specialisation that's in loads of rankings. It's a data analyst, but to be honest, the term 'data scientist' is a better way to describe that job. Also, it's worth remembering that data analysis is a pretty broad field, with related professions like data storage specialist and data curator.

The sustainable energy engineer came second in the 'Top10 in Industry 5.0' ranking. The cybersecurity expert placed third.

What about AI?

Of course, the top10 would not be complete without positions related to the technological star of recent years. Although two jobs focusing on artificial intelligence are quite high up the list, they're not at the very top. These are AI engineer and AI ethicist. Actually, solutions using advanced algorithms and machine learning can be used in every profession in the top10 on the ranking. Other interesting and promising specialisations include robotics engineer and fintech engineer. The top10 is rounded off by logistics 4.0, programmer and IoT specialist.



Are you more of an analyst or a data curator?

The winner of the ranking, i.e. data analyst, is joined by similar specialisations that focus on various aspects of dealing with information sets. Marta Barcicka from Neuron Cube says that data curators deserve our attention:

'One of the things that makes this job stand out is the mix of technology and soft skills, especially when it comes to ethics. It's the data curators who'll be responsible for organising, cleaning transferring data to systems, including those based on AI', the expert points out.

Humans and robots must get along

Robotics engineers have been in the top spots in future jobs rankings for years. But digital economy analyst Jarosław Smulski says a specialisation within this profession is becoming really important:

'The new robotics engineer will be dealing with the interface between humans and machines. They've got to be good with electronics, electrical engineering and IT. They also need to understand Human-Robot Interaction and know how to make decisions about moving forward with it. With all the technology we use every day

and the increasing tendency to automate everything, the profession of human-machine engineer could well be one of the most important in the modern labour market', says Smulski.

Digital beekeeper and terraforming engineer

There are some other professions outside the top10 of the ranking that also deserve some attention. Firstly, they are attractive in terms of their subject matter, and secondly, they may well become more popular in a few years' time.

One example is the automation anomaly analyst, who basically monitors incorrect processes previously streamlined by automation in production plants.

Another suggestion is a terraforming engineer, a technical expert responsible for shaping the environment for people to work and live in during space missions. And probably also for robots. Robot psychologist, digital beekeeper, virtual assistant, personality designer - these are just a few of the many promising career prospects for the future.

Let's change our approach to future jobs

The 'Top10 in Industry 5.0' ranking was created as part of the European 'Jobs of the Future in Industry 5.0' project. Its purpose is to promote promising careers in the modern economy.

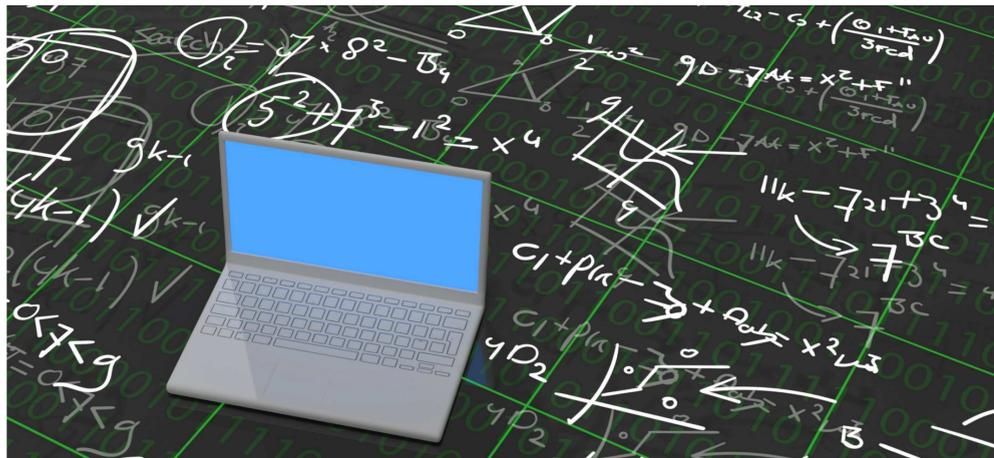
The organisations involved in the project - industry up from Poland and Futurama from Macedonia - are creating e-learning materials on a number of new specialisms.

'E-learning is the practical core of our initiative. We provide vocational educators, pupils, students, and early career professionals with the knowledge and tools to acquire new, specialised skills', explains Damian Kwiek from industry up. 'But the idea behind the 'Jobs of the future in Industry 5.0' project is even more important.

We want to initiate widespread change in how decisions about education are made in terms of future employment.

The point is that we should not refer to today's situation, but to the most likely state of the labour market in 5-10 years' time. This is when today's pupils and students will actually enter the labour market', sums up the project originator and coordinator.

The educational project 'Jobs of the future in Industry 5.0' has been co-financed by the European Union. All e-learning tools developed as part of the project are available free of charge to anyone who is interested.



- 1 data analyst
- 2 sustainable energy engineer
- 3 cybersecurity expert
- 4 AI engineer
- 5 robotics engineer
- 6 fintech engineer
- 7 AI ethicist
- 8 logistics 4.0 specialist
- 9 software developer
- 10 IoT specialist

2026

Top10
in Industry 5.0

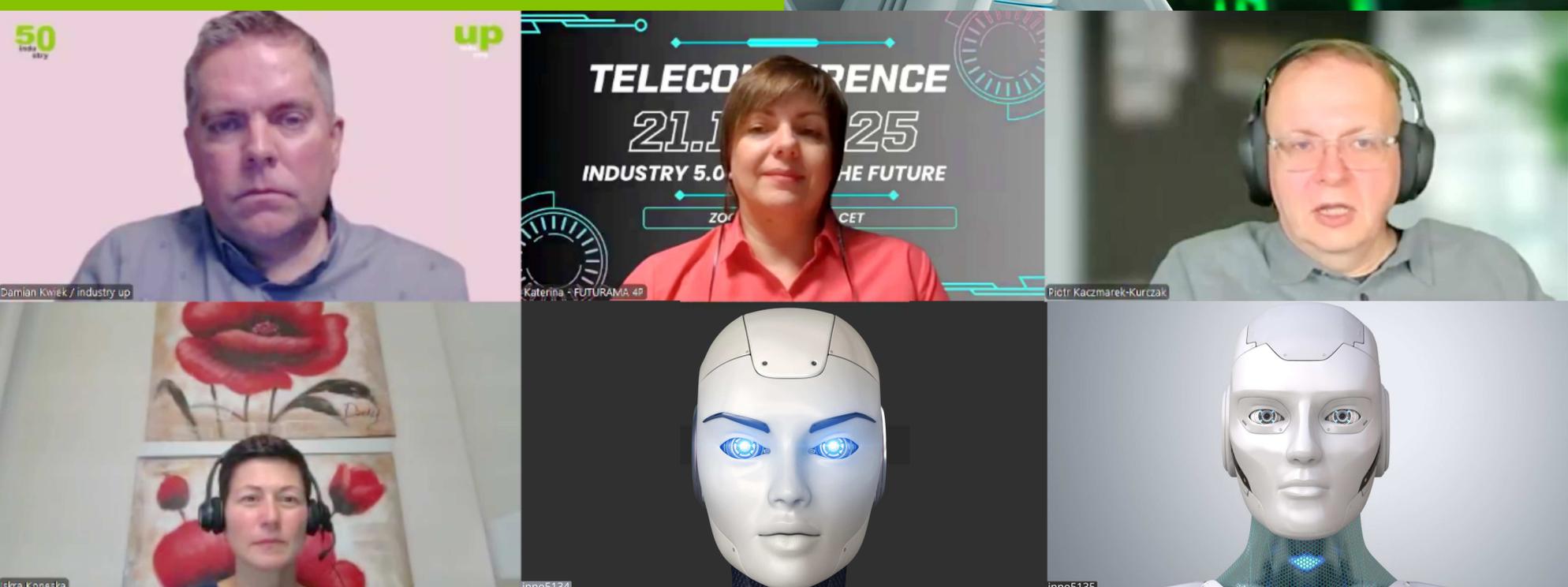
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Chapter 7

Who is who?

Here you can find all the beings involved in the project 'Jobs of the future in Industry 5.0'.



The initiative was designed at the beginning of 2024 and, in the middle of the same year, was approved and launched by the European Union and the Foundation for the Development of the Education System. The project was completed at the end of 2025.

On Futurama's side, the project was carried out by: Katerina Zlatanovska Popova, Toni Popov, Iskra Koneska, Monika Rizovska Tanevska and Marek Ostafil.

On the industry up side, the team included: Marta Barcicka, Aleksandra Żychska, Ewa Zborowska, Jarosław Smulski, Piotr Kaczmarek-Kurczak, Dominik Markowski, Michał Proszowski, Damian Kwiek and beyond.

We would also like to express our gratitude to the experts from the Foundation for the Development of the Education System for their crucial support at every stage of the project. Our thanks go to: Iwona Fus, Agata Woźnicka, Agnieszka Włodarczyk and Agata Certa.

See you again in Industry 5.0!



Co-funded by
the European Union



Co-financed by the EU. The views and opinions expressed are solely those of the author(s) and do not necessarily reflect the views and opinions of the European Union or the Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System are responsible for them.

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