EDIH SERVICES

Inspire and make the Czech AI-driven Industry

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List of Abbreviations and Acronyms

5G NSA	5G non-standalone
AI	Artificial Intelligence
AI_MATTERS	AI Manufacturing Testing and experimenTation network For EuROpean industrieS
AGV	Automated Guided Vehicle
CIIRC	Czech Institute of Informatics, Robotics and Cybernetics
CLAIRE	Confederation of Laboratories for Artificial Intelligence Research in Europe
CNC	Computerized Numerical Control
CPS	Cyber-Physical Systems
CTU	Czech Technical University
DX.Y	Deliverable No
EDIH	European Digital Innovation Hub
ELISE	European Network of AI Excellence Centres
ELLIS	European Lab for Learning & Intelligent Systems
EU	European Union
FIT	Faculty of IT
GG	Good Game
GPU	Graphics Processing Unit
HM	Hybrid manufacturing
HMI	Human-Machine Interface
HP	Hewlett Packard
ICT	Information and Communication Technologies
IPRs	Intellectual property rights
IoT	Internet of Things
LAB	Laboratory
LIVS	Laboratory of Intelligent Embedded Systems
LMD	Last Mile Delivery
MES	Manufacturing Execution System
ML	Machine Learning
MoU	Memorandum of Understanding
MQL	Minimum Quantity Lubrication
MS	Milestone
NAIS	National Artificial Intelligence Strategy
NCI4.0	National Centre of Industry 4.0
NETMON	Network Monitoring
NG	Next Generation
NLP	Natural Language Processing
OEE	Overall Equipment Effectiveness
RCMT	Research Center of Manufacturing Technology
R&D	Research and Development
RGBD	Red Green Blue Depth
RTO	Research and Technical Organisation
SME	Small and Medium Enterprise
TAILOR	Trustworthy AI Through The Integration Of Learning, Optimisation And Reasoning
UX	User eXperience
WP	Work Package

1. Introduction

The EDIH CTU project represents services of an ecosystem of artificial intelligence (AI), interconnecting the industry (in particular SMEs), universities, RTOs and public administration in the Czech Republic with the European research and technology transfer networks.

EDIH CTU aims to provide exceptional and practical services in the field of AI/ML for the industry, health and energy sectors as well as transportation to all the SMEs and other companies interested to gain new know-how, technologies, and profits in the future.

The Czech Republic, as an industrialized country with almost 40% share of value added in the economy[1] needs to enhance the uptake of AI in its key sectors (advanced materials, technologies and systems; digitalization and automation; environmentally friendly, technologically advanced and safe transport; advanced medicine; digital economy) and participate in the European ecosystem of excellence and trust.

Therefore, it is essential to use and transfer the knowledge from cutting-edge research into business practice, support automation in companies, especially SMEs, and closely related issues of the qualified and retrained workforce. The Czech Republic can build on its industrial and entrepreneurial tradition and the high technological intelligence of the population in this respect.

The EDIH CTU with its vision "Inspire & Make the Czech AI-driven Industry" is fully aligned with the National Artificial Intelligence Strategy (NAIS) and the Innovation Strategy of the Czech Republic for 2019 - 2030.

The main objectives of the project are:

1. Providing reliable and trusted AI solutions and services in key areas (manufacturing, mobility, healthcare, energy sector, digital economy) following the European direction of human-centred artificial intelligence and AI ethical standard;
   Related WPs/deliverables/milestones: WP3 (D3.1, D3.2, MS6, MS7, MS8), WP4 (D4.1, D4.3).
2. Enlarging the comprehensive ecosystem of Digital Innovation Hub Centres, sharing data, knowledge, know-how and cross-referrals to enhance Europe-wide competitiveness;
   Related WPs/deliverables/milestones: WP5 (MS12, D5.2), WP6 (MS14, MS15, MS16).
3. Promoting digital transformation, technology and innovation transfer from R&D to SMEs and raising awareness about novel digital solutions to public administrative bodies;
   Related WPs/deliverables/milestones: WP6 (MS14, MS15).
4. Supporting the development of new start-ups, spin-offs and further businesses with pan-European and global reach;
   Related WPs/deliverables/milestones: WP3 (D3.1, D3.2, MS6, MS7, MS8), WP4 (D4.1), WP5 (D5.1, D5.2).
5. Providing business consultations to support the financing of high-tech and breakthrough disruptive innovations;
   Related WPs/deliverables/milestones: WP4 (D4.1, MS9, MS10).

[1] National Research and Innovation Strategy for Smart Specialisation of the Czech Republic 2021–2027

6. Enhancing retraining and increasing the level of digital skills of workers in fields with the highest potential for automation thus helping in the development of the innovation-based economy;
   Related WPs/deliverables/milestones: WP4 (D4.1, MS9).

Besides the main objectives focused primarily on the Czech industry, the EDIH CTU has the potential to serve public administration and society in general. The driving force behind digital and AI transformation is the economy which can be strengthened by making available data, completing digital infrastructure, supporting the transformation of enterprises and introducing modern public administration services.

The involvement of public administration and municipalities in the support of AI activities is necessary. Following the NAIS strategy[2], the public administration should implement AI solutions to simplify the lives of citizens and businesses, develop a binding public administration data availability plan for AI use, and generally make the administration more effective, in particular by increasing productivity, improving services, collection of taxes, and fraud detection, with the maximum use of, inter alia, open source technologies, while preserving the protection of IPRs and the conditions for investment and cooperation with private entities.

The EDIH CTU has substantial knowledge of open data handling and data standards, long-term experience in developing AI solutions with high application potential in various sectors, as well as relevant infrastructure to provide services to the public and private sectors.

The core technologies covered by the hub are CPS and IoT, robotics, additive manufacturing, AI, big data and data analytics, and simulation and modelling capabilities. The EDIH CTU also has a strong background in R&D and education.
Within the identified technology areas, the EDIH CTU will provide the following categories of services (further described in the next chapters):

- **Test before Invest;**
- **Advanced Digital Skills and Training;**
- **Support to find investments;**
- **Innovation Ecosystem and Networking.**

To make the following chapters of the document more readable, we are providing sample matrixes (Table 1a and Table 1b) that should help the reader understand the core of EDIH services in the context of AI fields of excellence. The matrixes show specific types of AI usage implemented in examples of business process fields.

It is also relevant to note that AI, in general, can help in business fields of operation, where:

a) Relevant data is so big that it is not processable by standard statistical operations.
b) Recurring operations are set up so well that they allow for robotization.
c) Required speed of operation does not allow for multicriterial decision matrixes.
d) Machine learning algorithms provide better image and data processing decision support.

[2] National Artificial Intelligence Strategy of the Czech Republic

Table 1a Contextual AI excellence field / Business operations matrix

	Healthcare	Finance	Manufacturing	Retail	Marketing
Computer Vision	AI-powered diagnostic tools for the early detection of diseases	Fraud detection using image recognition technology	Quality control and defect detection on production lines	Personalized in-store analysis of customer movement using anonymised facial recognition	Visual search in e-commerce platforms
Natural Language Processing	Sentiment analysis for patient feedback and reviews	Chatbots for customer service and support	Automated customer service for product support	Personalized recommendations and chatbots for online shopping	Text analytics for market research and customer feedback analysis
Robotics	Robotic surgery and rehabilitation	Automated trading algorithms	Autonomous robots for assembly and packaging	Automated inventory management and delivery	Autonomous cleaning robots in retail stores
Machine Learning	Predictive analytics for patient diagnosis and treatment	Fraud detection and risk assessment	Predictive maintenance and optimization of production processes	Inventory management and demand forecasting	Personalized marketing and product recommendations

Table 1b Contextual AI excellence field / Public/Government Services operations matrix

	Healthcare	Public Safety	Transportation	Education	Public Administration
Computer Vision	Monitoring public areas for safety and security, e.g., detecting potential security threats in crowded public spaces	Monitoring traffic flow to optimize traffic patterns and detect accidents or hazards	Identifying students who may be struggling in the classroom or need of additional support	Analysing satellite imagery to track and respond to natural disasters or environmental concerns	Identifying and tracking infrastructure issues such as potholes, road damage, and broken streetlights
Natural Language Processing	Analysing public feedback and sentiment to inform policy decisions and improve citizen satisfaction	Analysing emergency calls to identify potential issues and improve response times	Analysing transportation data to optimize routes and improve public transit accessibility	Analysing student performance and feedback to inform curriculum decisions and identify at-risk students.	Analysing public comments and feedback to identify areas for improvement in government services and infrastructure
Robotics	Providing assistance and	Providing emergency	Providing assistance and	Providing assistance and	Providing assistance and

	Healthcare	Public Safety	Transportation	Education	Public Administration
	support for patients and elderly individuals in healthcare facilities	response support in natural disasters or public safety incidents	support for public transportation riders, e.g., guiding them through stations and onto trains	support for students and educators in the classroom	support for public works and maintenance crews, e.g., automating road repairs and maintenance
Machine Learning	Identifying potential health concerns and predicting health outcomes for at-risk populations	Predicting and detecting potential public safety threats and crime patterns	Analysing transportation data to predict and prevent accidents and congestion	Predicting and identifying students at risk of dropping out or needing additional support	Analysing public feedback and data to predict and prevent service interruptions and improve government efficiency

The purpose of these matrixes is mainly to demonstrate the key types of approaches to problem-solving by using AI. With that in mind, one can easily see below in the descriptions of services that they can be applied in different fields than those described in this document, too.

2. Test before Invest

The EDIH CTU provides many services, such as the design and testing of robotic solution concepts, digital twin-related technologies, computer vision, rapid prototyping and small series production, 3D printing, a cyber-physical machine tool for AI and ML, and prototype production using specific technologies, optimization of production processes, various detection and diagnostic methods, data services – testing concerning transport, validation of AI components dedicated to autonomous vehicles, sensorics, R&D related to mentioned topics and commercially non-available solutions, Circular Economy solutions (waste, heat, electricity), Smart Cities solutions (street network design, identifying behavioural patterns in space), Smart Buildings solutions, etc.

The consortium provides also testing and simulation in state-of-the-art laboratories using highly specialized software. Moreover, for industrial production simulation, in addition to robotic lines with multi-agent systems, the latest 5G NSA network is also available in the testbed facility.

2.1 Digital Maturity Assessment

DigiAudit is a comprehensive analysis of all production processes in a company according to a map of business activities from the point of view of Industry 4.0, which appropriately combines generalized levels of processes with specific examples of digital technologies. Important findings are the priorities and sources of the company's motivation for innovation, as well as the readiness of management, human resources and organizational structure, and the maturity of the processes together with the technologies used.

Evaluation processing is divided into two parts. Evaluation part and design part. In the evaluation phase, the collection of general information, assessment of motivation and priorities, evaluation of the level of digitization of processes, identification of processes with potential for improvement and thorough mapping of the technology in the identified areas are carried out.

In the design part, there will be a summary of the results, the creation of benchmarking and the design of a roadmap to increase the level. Subsequently, the outputs are presented to the company for comments and approval, after which the phase of implementation of the proposed steps begins.

The resulting feasibility study comprehensively summarizes the findings of the investigation in the company, and proposed solutions and places them in the overall context and conditions in which the given company operates so that our recommendation leads to an increase in its digital level, competitiveness and resilience in the ever-changing conditions of the global market.

The goal is not only to determine the areas of companies to increase their digital level but to identify those areas in which, with the help of "the smallest possible financial and time investment", the "greatest increase in the competitiveness of the company through increasing its digital level" will occur. Provide the company with comprehensible and comprehensive information about the financial complexity of the solution, its return and economic benefit for the future functioning of the company, and further, thanks to the comparison with the industry benchmark, increase its competitiveness.

Table 2.1 Schedule of the service

Services	Description
Evaluation	The collection of general information, assessment of motivation and priorities, evaluation of the level of digitization of processes, identification of processes with potential for improvement and thorough mapping of the technology in the identified areas are carried out.
Design	A summary of the results, the creation of benchmarking and the design of a roadmap to increase the level. Subsequently, the outputs are presented to the company for comments and approval, after which the phase of implementation of the proposed steps begins.
Feasibility Study	Summarizes the findings of the investigation in the company, proposed solutions and places them in the overall context and conditions in which the given company operates so that our recommendation leads to an increase in its digital level, competitiveness and resilience in the ever-changing conditions of the global market.

2.2 LAB and TestBed Tours

This service provides potential customers with the opportunity to get information from our experts about the infrastructure and the possibilities of cooperation it offers. However, these tours are also available for the professional public and contribute to a better understanding of the services offered by EDIH. The laboratories and testbeds, including detailed information about the infrastructure, are described in Deliverable D3.1.

Tours have several options on how they can be provided. Due to the variety of technologies, the area of interest is specified with a client at the beginning so that the tour is precisely targeted to their needs. According to the customer's interest, experts are selected to guide the customer through the entire process. An important part of this is whether the customer is interested in a technology start-up and a practical demonstration or whether it is just a theoretical tour describing the possibilities of cooperation.

Tours managed in this way have a great impact on future cooperation because they are a showcase of the know-how and infrastructure we have in EDIH.

2.3 Equipment and Infrastructure Rental

Table 2.3 Equipment and Infrastructure Summary Table (referenced to relevant chapters of the *Deliverable D3.1 EDIH Infrastructure*)

Infrastructure	Equipment / Infrastructure description
2.1.1 Assembly line for flexible production	The Flexible Assembly Line boasts a multi-agent-based monorail distribution system, a computer vision-enabled warehouse robot, and an on-demand component supply system facilitated by autonomous guided vehicles. Further details are available in D3.1, Chapter 2.1.1.
2.1.2 Automatic loading robotic station	Examples of the station tasks: • Substitution of hard-coded positions with an intelligent vision system and robot control;

Infrastructure	Equipment / Infrastructure description
	• Inbound warehouse parts scanning, detection, identification and bin picking; • Automatic multiple-view camera calibration process; • Parts pose estimation by open-source libraries with a mono-vision system; • Automatic end-effector to camera transformation estimation.
2.1.3 Multi-axis motion system with a delta robot	Delta robots are used for applications where fast operations are required. Researchers designed and fine-tuned a kinematic and dynamic model to compare the behaviour of a real robot with the expected ones and to identify differences through machine learning algorithms. Further details are available in D3.1, Chapter 2.1.3.
2.1.4 Universal robotic cell	Robust and easily deployable pick and place architecture; can sort packets into bins based on their size; Using data from the Intel RealSense RGBD camera, it can detect and classify objects and estimate optimal grip pose using CV methods and point cloud processing.
2.1.5 Automated warehouse with a fleet of mobile robots	The warehouse is equipped with three autonomous trolleys and two mobile collaborative robots for transporting parts between production facilities and collaborating with humans. Further details are available in D3.1, Chapter 2.1.5.
2.1.6 Robotic multi-axis additive manufacturing and measurement	The workplace uses a medium-sized industrial robot and positioning equipment for additive production. The positioning device expands the production possibilities of the workplace with the possibility of printing without the necessity to use material supports. At the same time, the positioner enables the production of even structurally complex parts. Thanks to this, it is possible to save time during production both during the printing of supports and during their subsequent removal. Further details are available in D3.1, Chapter 2.1.6.
2.1.7 Assembly line for flexible fast production	The workplace incorporates several technologies that contribute to flexible production. The conveyor trolleys are controlled independently of each other, allowing their movement to be adapted to the needs of the specific product they are transporting. In addition, it is possible to synchronise the movement of the trolley with that of the robot, allowing the robot to manipulate the part on the trolley without the trolley having to stop. This feature contributes to reducing the length of the production cycle.
2.1.8 Cell for assisted assembly with collaborative robots	It consists of two collaborative robots, five cameras with pose estimation and object detection, a voice assistant, and an HMI. With the help of a voice assistant, a worker can give orders to robots. This workspace helps to push the boundaries in the collaborative and multi-arm robotics field.
2.1.9 Robotic vision cells	The following robots are available at the workstation: • Checkers; • Hand-guided robot; • Robotic cell for screwing bolts using a camera.

Infrastructure	Equipment / Infrastructure description
	Further details are available in D3.1, Chapter 2.1.9.
2.1.10 Robobar	The Robobar uses the functions of other devices, including a liquor conveyor, fruit feeders, an ice feeder and more. It's all connected via a common industrial communication platform. The entire site uses industrial components to provide a stable platform for software implementation and covers several advanced technologies.
2.1.11 Virtual reality	It is possible to explore the Testbed for Industry 4.0 assembly in virtual reality and use features such as teleportation, object measurement, drawing in space and moving objects. When an order is placed, the customer is assigned an order number, which is then displayed on the TV above the robot. This workstation pushes the boundaries in collaborative robotics in food service operations.
2.1.12 CP Factory	CP Factory is a set of standalone modules that can be interconnected to build a demonstration of a production line. Each of the modules has independent control, which is connected to an above-laying Manufacturing Execution System (MES), which orchestrates the whole production. There are various use cases suitable for education starting with the low-level control of individual stations and their peripheries, through robot control to the higher-level production control and configuration. Additionally, we provided a connection to a cloud solution, which extends the existing MES system and shows how data acquisition and further processing and analysis can be one in a cloud environment.
2.2.1 Robotic laser cell	Compact robotic cell with a positioner and linear axis designed for laser heat treatment, laser cutting, LMD-wire, and LMD powder. LMD-wire and LMD-powder are used in the meaning of additive manufacturing. A digital twin is used to generate the robot program. Currently used for mold repair.
2.2.2 Femtosecond and nanosecond laser machine	Laser micro-processing using nano-, pico- and femtosecond laser. The range of applications for this equipment is wide and it is currently used to develop and modify inserts for CNC tools. The laser can be used to sharpen inserts and achieve better properties during the machining process.
2.2.3 Education and training area	The laboratory is managed by researchers and developers who are part of the RCMT (Research Center of Manufacturing Technology) and the Department of Production Machines and Equipment at Czech Technical University. The laboratory includes a teaching room where students work on semester projects and theses.
2.2.4 Metrology laboratory	The metrology laboratory is equipped with a coordinate measuring machine, a microscope and a roughness meter. This equipment is mainly used for R&D activities involving inspection and characterisation of workpieces after additive and subtractive manufacturing.
2.3.1 Hybrid manufacturing technology	Hybrid manufacturing (HM) combines additive and subtractive processes in one working space of the CNC machine. The research focus is on the effective implementation of HM processes. Applications include a solution for the production of

Infrastructure	Equipment / Infrastructure description
	new parts, partial material addition on the part and workpiece repair applications. Machining of difficult-to-cut materials using cryogenic and MQL cooling.
2.3.2 Smart machine tools	The smart machine tool is equipped with additional sources of input for feedback. The intelligence of the machine tool is based on predefined algorithms and current process data. Autonomous reaction to unexpected situations is a current research goal. Research areas involve physical and virtual sensors; process characterization using machine and process signals; a collaboration of real machine tools with their digital twins.
2.3.3 Digital twin and production process virtualization	Machine tool Digital Twin is an effective instrument for predicting and optimizing the results of the machining process. Workpiece Digital Twin is a result of the complex simulation of the machine tool–process interaction, including the dynamic behaviour of the machine tool and the workpiece and detailed visualization of the manufactured part. Our research goal is to master this concept for everyday practical implementation.
2.3.4 Tool setting area	This area is equipped with the following machines: • CNC tool pre-setter with an integrated printer of pre-set results; • High-performance shrink-fit machine for tools with intelligent NG coil; • Tool dynamic balancing machine for balancing tool holders on 1 and 2 planes; • Automatic tool feed by AGV directly to the machining centres; • Automatic cut-off machine with variable spindle speed and variable automatic feed for metallographic cutting; • Hardness tester.
2.3.5 Collaborative robot area	With the growing demand for collaborative robotics in special applications, where the full potential of this technology is being exploited, use-case solutions are being developed for our industry partners.
2.3.6 Industrial robot area	The laser tracker is used to investigate the accuracy of large industrial robots with a focus on calibrating DH parameters and refining their repeatability. Once sufficient results have been achieved, work will be carried out on large-scale additive manufacturing of plastics. Our industrial robots are equipped with machining spindles and are used to test the machining of aluminium-based materials. Research and development here are carried out about machining process parameters, types of workpiece and tool materials, vibrations transmitted to the robot and the accuracy of the parts produced. The results of this testing can then be transferred to the industry to meet the requirements of our customers.
2.4 Additive manufacturing laboratory	This area is equipped with: • HP Multijet Fusion 4200; • Desktop Metal Studio System; • Stratasys Polyjet J750;

Infrastructure	Equipment / Infrastructure description
	• Stratasys Fortus 450mc; • Trumf TruPrint 1000 and • Robotic multi-axis additive manufacturing.
2.5.1 DATALAB	In the DataLab, we study all the steps that lead to a better understanding and gaining knowledge from data, i.e. from data collection from different systems to data pre-processing and analysis, modelling and visualization to the application of machine learning and artificial intelligence. In addition to basic research, we also support applied research, in which we connect DataLab members with industry partners in different fields. We offer a wide range of interesting topics that need to be explored, either in research projects or course projects and theses.
2.5.2 GPU-LAB	The GPU lab is equipped with the most up-to-date GPU cards, ready to be used for testing a solution you are looking into.
2.5.3 GGLAB	The GGLAB has all you need to test the gamification effects of your AI-based solution. Lidar sensors, double projection facilities and the necessary computing power.
2.5.4 LIVS-LAB	The LIVS LAB is equipped with humanoid robots ready to be uploaded with your AI-based solution and validated in real-life situations.
2.5.5 NETMON-LAB	The NETMON LAB focuses on using AI algorithms to identify and actively manage potential risks within the network flow in your network. There are several specific solutions focused on risk mitigation and the LAB is also piloting process-based solutions targeted to maximize the security of the network whilst sustaining its throughput.
2.5.6 UX-LAB	The laboratory of user experience is equipped with eye-tracking sensors and connected infrastructure which is needed to assess the UX aspects of your AI-based solutions.
2.5.7 SAFETY-LAB	Focuses on product safety and can imply its infrastructure and expertise to support your efforts in the search for a safe and reliable AI-based solution.
2.5.8 Image Processing Lab	The IMPROLAB - Image Processing Laboratory combines academic expertise with applications from practice and it provides solutions to problems not only for students but first for companies. The laboratory has technical equipment for research projects and teaching in the field of capturing visual information. We aim to improve the quality of teaching in the field of data processing and create an environment for the application of theoretical knowledge in practice. The laboratory has a wide range of equipment for machine vision. This includes industrial camera sensors, high-speed cameras, line scan cameras, depth sensors, thermographic cameras and laser and ultra-light distance meters. In addition to classical computers – PCs, we also use mini-PCs, single-board computers, and microcontrollers. More details are provided in D3.1, Chapter 2.5.8.

Infrastructure	Equipment / Infrastructure description
2.6.1 Application Cloud Solutions Testing	Our ICT infrastructure enables transparent, dynamic, and scalable creation of SAAS virtual machines where piloting of individual solutions can be provided for costs comparable to Amazon Web Services and Azure cloud, however with better access to administering tools and services.
2.6.2 Computing Cluster	The FIT SuperNode computer is a specific device with optimized equipment. Among large RAM storage, there are 16 GPU cards with enough power to run AI-specific algorithms available which can be used simultaneously if needed.
2.6.3 Data Storage Cloud	Key ICT infrastructure components are different sizes/latency storage services. These are provided as hot connections to virtual servers on demand in most capacities an SME AI-based solution should ever require.
2.6.4 Planning AI Supporting Architecture Design	Consultations on ICT infrastructure design, planning and sustainable financing that express our experience from the past 5 years developing scalable and sustainable infrastructure are available on request.

2.4 Consulting and Technology Services

Every successful implementation of an EDIH service will benefit from Consulting and Technology Services pre-assessment process, which will mostly use the Digital Maturity Assessment tools available (see Chapter 2.1).

Table 2.4 Summary of the Consulting and Technology Services

Service	Description
Pre-assessment	Services focused on providing Digital Maturity Assessment, as described in Chapter 2.1.
Project cross-check	Services focused on project assessment while the project is already running.
Project auditing	Services focused on project assessment while the project has been already implemented.
Post-assessment	Services focused on the evaluation of the project in terms of used technology, feasibility and possible further development.

Pre-assessment

Our service is designed to help SMEs navigate the complex world of AI technologies and determine which ones will have the greatest impact on their business operations. We understand that implementing AI can be a daunting task for SMEs, especially those with limited resources and expertise. For this reason, we have developed a tailored approach to help our clients identify the most relevant AI technologies for their business needs and determine the best way to implement them.

Our service begins with an initial consultation to understand our client's business operations, challenges, and goals. We then conduct a comprehensive assessment of their current

technological capabilities and identify areas where AI can have the greatest impact. This assessment is based on a thorough analysis of the client's data, processes, and workflows.

Next, we work with our clients to make a prioritized list of potential AI technologies to implement. This list is based on a thorough analysis of the potential benefits, risks, and costs of each technology, as well as the client's specific business goals and resources. We provide our clients with clear and actionable recommendations on which AI technologies to prioritize and how to implement them.

Throughout the implementation process, we provide ongoing support and guidance to ensure that our clients' AI initiatives are successful. We work closely with our clients to ensure that they have the necessary infrastructure, resources, and expertise to fully leverage the benefits of AI technologies.

At the end of the process, we provide our clients with a comprehensive report detailing our findings, recommendations, and implementation plan. Our goal is to enable SMEs to make informed decisions about implementing AI technologies and to help them unlock the full potential of these technologies to drive business growth and innovation.

Project cross-check

Our Consulting and Technology service provides a comprehensive assessment of the current implementation of AI technologies in small and medium-sized enterprises (SMEs). Our team of experts will evaluate your current AI system, and analyse its performance, reliability, and efficiency. We will also assess your system's ability to meet your business objectives, evaluate the impact of the AI system on your business processes and workflows, and identify any areas where improvements can be made.

Our assessment service includes a thorough review of your existing data infrastructure, data quality, and data governance practices. We will evaluate the data inputs, model training, and outputs of your AI system to identify any gaps or areas for improvement. Additionally, our experts will assess the technical capabilities of your system, including its architecture, code quality, and scalability.

Based on our assessment, we will provide you with a detailed report that highlights the strengths and weaknesses of your current AI implementation and provides specific recommendations on how to improve the system. Our report will include a comprehensive roadmap for optimizing your AI implementation, which will outline the specific steps and resources needed to achieve your business objectives.

Our Consulting and Technology service is designed to help SMEs fully leverage the benefits of AI technologies while minimizing risks and maximizing returns on investment. With our expert guidance, you can ensure that your AI implementation is running optimally, delivering value to your business, and positioning you for future growth and success.

Project auditing

We understand that implementing AI technologies can be a complex and challenging process, especially for SMEs with limited resources and expertise. Our team of experienced consultants and technology experts will work closely with your organization to conduct a thorough audit of your AI project, considering the specific needs and objectives of your business.

Our AI project auditing service covers the following key areas:

- Business Strategy: We will review your current business strategy and assess how your AI implementation aligns with your overall business goals. We will help you identify any

gaps or areas for improvement in your strategy and provide recommendations for optimizing your AI project.

- Technology Infrastructure: We will evaluate the technical infrastructure supporting your AI implementation, including hardware, software, and data storage systems. We will help you identify any technical issues or limitations that may be hindering your AI project's performance and provide guidance on how to address them.
- Data Management: We will assess your data management processes, including data collection, storage, and analysis. We will help you identify any issues with data quality, security, or privacy and provide recommendations for improving your data management practices.
- Performance Evaluation: We will analyse the performance of your AI implementation, including its accuracy, efficiency, and effectiveness. We will help you identify any performance issues or bottlenecks and provide guidance on how to improve your AI project's performance.
- Risk Assessment: We will evaluate the potential risks associated with your AI implementation, including legal, ethical, and reputational risks. We will help you identify any potential risks and provide recommendations for mitigating them.

At the end of our AI project auditing service, you will receive a detailed report outlining our findings and recommendations for optimizing your AI implementation. Our team will work closely with you to implement these recommendations, helping you to achieve better results and maximize the value of your AI investment.

Post project assessment

Our Consulting and Technology service provides post-assessment evaluations for small and medium-sized enterprises (SMEs) that have recently implemented AI technologies in their business operations. Our team of experienced consultants and technology experts work closely with clients to evaluate the success of the AI implementation project and identify areas for improvement.

Our post-assessment evaluation process involves a thorough analysis of the AI system's performance, its impact on business operations and customer experience, as well as the client's return on investment (ROI). We use a range of tools and techniques, including data analytics, user surveys, and expert interviews, to gather and analyse relevant data.

The evaluation results are presented to the client in a comprehensive report that highlights the project's strengths, weaknesses, and potential areas for improvement. Our team then works collaboratively with the client to develop a plan for addressing any identified issues and optimizing the AI system's performance.

Our Consulting and Technology service is designed to help SMEs maximize the benefits of AI technologies and achieve their business goals. We offer tailored solutions that are customized to meet the specific needs and requirements of each client. With our expert guidance and support, clients can ensure that their AI implementation projects are successful and deliver the expected ROI.

2.5 R&D Projects

One of the key benefits of the EDIH CTU is the ability to follow up on research and development projects, not only in the R&D process itself, but also in the definition of the focus of the project, the definition of the synergic connected fields, identification of key research capacities needed and, mainly, to identify possible funding resources (in connection with Chapter 4).

These R&D Services are available to both SMEs and Public and Government Bodies.

Table 2.5 Summary of Implementation Fields (see also the matrixes in the Introduction chapter)

Implementation field	Description
Energy Savings	Our team of AI experts will work closely with your SME to develop a customized AI model that will analyse your energy usage patterns and identify areas where energy savings can be achieved. This model will be trained on your historical energy usage data, as well as real-time data from sensors and other monitoring systems. Our AI solution will provide you with real-time insights into your energy usage, allowing you to identify energy-saving opportunities and make informed decisions about how to optimize your energy usage. The system will also provide you with personalized recommendations on energy-saving measures, such as adjusting temperature and lighting settings, optimizing equipment usage, and implementing energy-efficient technologies.
Movement Optimization	Our R&D project aims to develop an innovative AI-driven solution for optimizing movement in [industry/niche], with the ultimate goal of increasing efficiency, reducing costs, and improving overall performance. The solution will leverage the latest advancements in AI and machine learning to provide real-time optimization and analysis of movement patterns, allowing [industry/niche] professionals to make informed decisions based on data-driven insights. Objectives: • Develop a custom AI platform for analysing and optimizing movement patterns in [industry/niche]. • Integrate the platform with existing [industry/niche] systems and processes to provide real-time insights and recommendations. • Implement a user-friendly interface for [industry/niche] professionals to access and interact with the platform. • Conduct rigorous testing and evaluation of the platform to ensure accuracy and effectiveness. Methodology: Our team of experienced AI and machine learning experts will work closely with [industry/niche] professionals to understand their specific needs and challenges. We will then design and develop a custom AI platform that leverages cutting-edge algorithms and techniques to analyse and optimize movement patterns. The platform will be integrated with existing [industry/niche] systems and processes, and a user-friendly interface will be developed to allow [industry/niche] professionals to access and interact with the platform.
Fraud Detection	Our AI system will be highly flexible and customizable, allowing SMEs to tailor it to their specific needs and fraud detection requirements. The system will be integrated seamlessly into

Implementation field	Description
	existing fraud detection processes and workflows, minimizing disruption to daily operations. Key features of our AI system include: • Real-time monitoring: Our AI system will be able to analyse transactional data in real time, providing early detection of potentially fraudulent activity. • Customizable alert system: SMEs can customize alerts to their specific fraud detection needs, reducing false positives and ensuring that high-priority alerts are flagged quickly. • Multi-channel integration: Our AI system will integrate seamlessly with multiple data sources and communication channels, allowing for streamlined data collection and analysis. • Continuous learning: The AI system will be able to continuously learn from new data and adapt to changing fraud patterns, ensuring that the system stays up-to-date and effective in the long term. Overall, our AI system will provide SMEs with a powerful tool to protect against fraud, minimizing the risk of financial losses and reputational damage. Our R&D project will focus on developing and refining this system, ensuring that it meets the unique needs of SMEs and delivers highly accurate and reliable fraud detection capabilities.
Recommendation Systems	Our project will involve working closely with SMEs to understand their specific needs and requirements and developing customized recommendation systems that are tailored to their business models and target markets. We will leverage state-of-the-art AI algorithms and techniques, such as deep learning and natural language processing, to build recommendation models that can effectively learn from customer data and make accurate predictions. In addition to developing the recommendation systems, we will also provide support for integration and deployment, to ensure that the systems can be seamlessly integrated into the SMEs' existing IT infrastructure and workflows. We will also provide training and education for the SMEs' staff, to ensure that they can effectively operate and maintain the systems over time. Overall, our R&D project will provide SMEs with the cutting-edge AI technology and expertise they need to stay competitive in today's rapidly-evolving e-commerce landscape. By implementing effective recommendation systems, SMEs can improve customer engagement and retention, increase sales revenue, and ultimately achieve long-term success.
Monitoring and Analysis	Our R&D project aims to develop and implement AI-enabled monitoring and analysis solutions for SMEs across various industries. The project will focus on designing and building AI models that can collect, process, and analyse data in real-time to provide insights and alerts on key metrics and trends.

Implementation field	Description
	Objectives: • Develop AI models for real-time monitoring and analysis of critical business processes, such as supply chain management, production line performance, and customer feedback. • Implement AI-powered solutions that can help SMEs identify and address issues quickly, minimize downtime, and optimize operations. • Provide SMEs with actionable insights and data visualizations to make informed decisions and improve business outcomes. Scope: The project will involve a thorough analysis of the specific monitoring and analysis needs of SMEs across various industries, including manufacturing, healthcare, finance, and retail. Our team will work closely with SMEs to understand their unique challenges and requirements and design customized AI solutions that can address their specific needs. Deliverables: • AI models for real-time monitoring and analysis of critical business processes. • AI-powered solutions for SMEs that can be integrated with their existing systems and infrastructure. • Actionable insights and data visualizations that SMEs can use to make informed decisions and optimize business outcomes. • Comprehensive documentation and training materials to ensure smooth adoption and usage of AI solutions. Timeline: The project is expected to be completed within 12 months, with the following milestones: • Month 1-2: Requirements gathering and analysis. • Month 3-6: Design and development of AI models and solutions. • Month 7-9: Testing and optimization of AI solutions. • Month 10-12: Deployment and training of SMEs on AI solutions. Expected Outcome: The project is expected to provide SMEs with cutting-edge AI solutions that can help them monitor and analyse their business processes more effectively and efficiently. By providing real-time insights and alerts, AI solutions can help SMEs optimize operations, reduce downtime, and improve customer satisfaction. Ultimately, the project aims to empower SMEs with the latest AI technologies and help them compete more effectively in today's dynamic business landscape.

Implementation field	Description
Data-Driven Decision Making	This R&D project aims to develop and implement an AI-powered data-driven decision-making system that is specifically designed for SMEs. The system will enable SMEs to make more informed decisions by leveraging advanced AI techniques to analyse large datasets and generate actionable insights. Objectives: • Develop an AI-powered decision-making system that is tailored to the needs of SMEs. • Create a user-friendly interface that allows SMEs to easily input and analyse data. • Implement a range of AI techniques to analyse data and generate insights, including machine learning, natural language processing, and computer vision. • Train the AI algorithms on a range of relevant datasets to improve their accuracy and effectiveness. • Evaluate the performance of the system through pilot testing with a range of SMEs. Benefits: • Increased efficiency: The AI-powered system will enable SMEs to quickly and accurately analyse large datasets, saving time and resources. • Improved decision-making: The system will generate actionable insights that can help SMEs make better-informed decisions. • Competitive advantage: By leveraging advanced AI techniques, SMEs can gain a competitive edge in their industry. • Scalability: The system can be scaled up or down to meet the needs of SMEs of different sizes and in different industries. • Accessible pricing: The system will be designed to be affordable for SMEs, with flexible pricing options. Methodology: • Research: Conduct a thorough review of existing AI-powered decision-making systems and best practices in data analysis. • Design: Develop a system architecture and user interface that is tailored to the needs of SMEs. • Development: Develop and implement the AI algorithms and integrate them into the system. • Testing: Conduct pilot testing with a range of SMEs to evaluate the system's performance and gather feedback. • Refinement: Use feedback from pilot testing to refine and improve the system. • Deployment: Launch the system for commercial use and provide ongoing support and maintenance. Deliverables:

Implementation field	Description
	• AI-powered decision-making system tailored to the needs of SMEs. • User interface and documentation. • Training materials for SMEs. • Technical support and maintenance. Timeline: The project will take approximately 12-18 months to complete, depending on the scope and complexity of the system.
Compliance Monitoring	Our AI-based compliance monitoring system will enable you to detect potential compliance issues and risks in real-time, allowing you to take proactive measures to address them before they become significant problems. Our system will use advanced machine learning algorithms to analyse large volumes of data from multiple sources, including financial statements, regulatory filings, news articles, and social media, to identify potential compliance violations. Our system will provide you with actionable insights and recommendations based on the analysis of the data, allowing you to make informed decisions and take appropriate actions to mitigate risks. Our system will also provide you with an intuitive user interface that will enable you to monitor and track compliance issues, trends, and risks in real time, ensuring that you are always up-to-date with the latest information. Our R&D service includes the following steps: • Initial consultation: We will work closely with you to understand your compliance monitoring needs and requirements. • Data analysis and system design: We will analyse your existing data sources and design a customized AI-based compliance monitoring system that meets your specific needs and requirements. • System development and testing: We will develop and test the AI-based compliance monitoring system, ensuring that it is robust, reliable, and accurate. • System implementation and training: We will implement the system and provide comprehensive training to your staff, ensuring that they can use the system effectively. • Ongoing support and maintenance: We will provide ongoing support and maintenance to ensure that the system continues to meet your needs and requirements. Our AI-based compliance monitoring system will enable you to stay ahead of compliance risks and issues, providing you with the tools and insights you need to ensure that your business is always compliant with relevant regulations and laws. With our R&D service, you can be confident that you have a cutting-edge compliance monitoring system that meets the highest standards of accuracy, reliability, and effectiveness.

Implementation field	Description
Precision Farming	Our R&D project for SMEs focuses on implementing artificial intelligence (AI) in the field of precision farming. The goal of the project is to develop an AI-based platform that helps farmers optimize their crop yields while minimizing their use of resources such as water, fertilizer, and pesticides. The platform will leverage AI algorithms to analyse data from various sources, such as weather forecasts, soil sensors, and satellite imagery, to generate personalized recommendations for each farm. These recommendations will include information on when to plant and harvest crops, how much water and fertilizer to use, and when to apply pesticides, among other things. The platform will also be designed to be user-friendly and accessible to farmers of all sizes, with a user interface that is simple and easy to navigate. To ensure that the platform is effective and meets the needs of farmers, we will be conducting extensive testing and feedback sessions with farmers throughout the development process. Overall, our AI-based precision farming platform has the potential to revolutionize the way farmers manage their crops, by helping them to optimize their yields, reduce their environmental impact, and increase their profits.
Predictive Maintenance	We offer our services to small and medium-sized enterprises (SMEs) looking to implement AI-powered predictive maintenance solutions. Our research and development (R&D) project will help SMEs leverage the power of AI to optimize maintenance schedules, reduce downtime, and improve overall equipment effectiveness (OEE). Our team of experienced data scientists and engineers will work closely with your SME to understand your specific maintenance needs and develop custom AI models that can accurately predict equipment failures before they occur. We will use advanced machine learning algorithms to analyse historical data, identify patterns, and create predictive models that can detect and diagnose potential issues with high accuracy. Our predictive maintenance solutions will provide real-time alerts and recommendations to help you optimize maintenance schedules and reduce downtime. By predicting equipment failures before they occur, our AI models will help you proactively address potential issues and avoid costly repairs. Our solutions can also help you improve your OEE by reducing unplanned downtime and maximizing equipment performance. Throughout the project, we will work closely with your team to ensure that our solutions align with your business goals and technical requirements. We will provide training and support to ensure that your team can fully utilize our AI-powered predictive maintenance solutions. With our R&D project for AI-powered predictive maintenance, SMEs can take advantage of cutting-edge technology to

Implementation field	Description
	optimize their maintenance processes, reduce downtime, and improve equipment performance. Contact us today to learn more about how we can help your SME implement AI in the field of predictive maintenance.

2.6 Testing, Validation, Demonstration

Before investing in a specific technology, it pays off to gather good knowledge about the possible benefits of any project. Our services include supporting activities, which are available at your disposal to be used just for this purpose. They can be used, i.a., for selecting a specific solution, creating a pilot project using your company data, testing the solution in a sandbox parallel to your live company systems to validate the benefits promised by the project designers, and demonstrating the usefulness of the chosen technology.

These services can also be used to compare two or more potential solutions to validate their feasibilities and demonstrate which one should be chosen for the real application in the company.

Table 2.6 Summary of Testing, Validation and Demonstration Services

Service	Description
Testing	As small and medium-sized enterprises (SMEs) increasingly incorporate AI technologies into their businesses, ensuring the accuracy, reliability, and performance of these AI-powered projects becomes critical to their success. Our AI Project Testing and Validation service provides SMEs with a comprehensive testing and validation framework to ensure that their AI-powered projects meet their functional requirements, perform as expected, and are reliable and secure. Key Features and Benefits: • Comprehensive Testing and Validation Framework: Our service provides SMEs with a comprehensive framework for testing and validation of AI-powered projects, covering all aspects of the AI lifecycle, from data preparation and model training to deployment and ongoing monitoring. • Performance and Quality Assurance: Our testing and validation process ensures that your AI-powered projects meet your functional requirements, perform as expected, and deliver reliable and accurate results. • Security and Compliance: We help SMEs ensure that their AI-powered projects comply with relevant security and privacy regulations and standards and that they are protected against potential threats such as data breaches and cyber-attacks. • Expert Support: Our team of AI experts will work closely with you throughout the testing and validation process, providing expert guidance and support to help you ensure that your AI-powered projects are optimized for success. • Cost-effective and Efficient: Our service is designed to be cost-effective and efficient, minimizing the time and

Service	Description
	resources required to test and validate your AI-powered projects, while ensuring that you achieve the highest quality and performance. Service Scope: Our AI Project Testing and Validation service covers the following areas: • Data Preparation: We ensure that your data is properly prepared and validated for use in your AI-powered projects. • Model Training: We test and validate the accuracy and reliability of your AI models, and ensure that they meet your functional requirements. • Deployment and Integration: We test and validate the deployment and integration of your AI models into your business processes, ensuring that they perform as expected and are reliable and secure. • Ongoing Monitoring: We provide ongoing monitoring and validation of your AI-powered projects to ensure that they continue to perform as expected over time. Deliverables: Our AI Project Testing and Validation service delivers the following: • Comprehensive Testing and Validation Report: A detailed report outlining the results of our testing and validation process, including recommendations for optimization and improvement. • Expert Guidance and Support: Our team of AI experts will provide expert guidance and support throughout the testing and validation process, helping you optimize your AI-powered projects for success. • Training and Knowledge Transfer: We provide training and knowledge transfer to ensure that your team is equipped with the skills and knowledge needed to maintain and optimize your AI-powered projects over time.
Validation	As an SME, you understand the potential benefits of AI-powered projects. However, you also know that not all AI projects are created equal, and some may not deliver the expected results. That is where our AI Project Validation Service comes in. We offer a comprehensive and objective evaluation of AI projects to ensure that they meet your business needs and deliver the promised results. Our service is tailored to the unique needs of SMEs, and our team of AI experts has extensive experience in evaluating and validating AI projects across various industries. We use a structured and rigorous evaluation process that includes the following steps:

Service	Description
	• Requirements gathering: We work with you to identify your business needs and requirements for the AI project. This includes understanding your goals, objectives, and expected outcomes. • Project evaluation: We evaluate the AI project to ensure that it meets your requirements and delivers the expected results. This includes assessing the accuracy, reliability, and performance of the AI model, as well as identifying any potential limitations or risks. • Reporting: We provide a detailed report of our findings and recommendations for improvement, if necessary. Our report includes a comprehensive analysis of the AI project, including its strengths and weaknesses, and actionable insights to help you make informed decisions about the project. Our AI Project Validation Service helps you to minimize the risks and costs associated with AI projects by ensuring that they meet your business needs and deliver the promised results. Whether you are considering a new AI project or have already implemented one, our service can help you to achieve success with AI. Benefits: • Objective and unbiased evaluation of AI projects • Comprehensive analysis of AI project strengths and weaknesses • Actionable insights to improve AI project performance and effectiveness • Minimized risks and costs associated with AI projects • Improved ROI and business outcomes from AI projects
Demonstration	Our team of AI experts will work closely with your SME to identify and showcase your AI-powered projects. We will provide a comprehensive demonstration of your projects, highlighting their key features and benefits, and showcasing their real-world applications. We can help you create engaging and visually compelling demonstrations that communicate the value of your AI projects and make them stand out from the competition. Our service includes: • Project analysis: We will analyse your AI-powered projects to identify their key features, benefits, and applications. • Design and development: We will work with you to design and develop visually engaging and effective demonstrations of your projects. • Testing and optimization: We will test and optimize your demonstrations to ensure they are effective and impactful.

Service	Description
	• Delivery and support: We will deliver your demonstrations and provide ongoing support to ensure their continued effectiveness and impact. With our AI-powered project demonstration service, you can effectively showcase your AI capabilities to potential clients, investors, or stakeholders, helping you to attract new business and secure funding. Our service is customizable to meet the unique needs of your SME, and our team of AI experts has the knowledge and expertise to help you succeed in today's competitive business environment.

3. Advanced Digital Skills and Training

The EDIH CTU offers services in the areas of organizing educational courses on digitalization and AI technologies (speech and language processing, machine learning, simulation, automated deduction, data science, computer vision, robotics, machine perception, distributed systems, planning and scheduling), various training programmes on technical and soft skills focused on AI, and specific technology courses to enhance company employees´ qualifications.

By offering these services, we respond to one of the most pressing problems of Czech companies, which is the lack of skilled workers and appropriate technology-related knowledge. Companies thus have the opportunity to use training that is tailor-made for them and which would be inaccessible to them without the existence of EDIH.

3.1 Educational Courses on Digitalization and AI Technologies

A key aspect in selecting EDIH support is knowing basic factors about the fields of operations, i.e., where, and how AI can be beneficial. We have summarized our knowledge bases and have decided to provide our courses in several levels of detail so that each interested person can find appropriate information to assess the possibilities of AI applications in favour of their businesses.

Table 3.1. Summary of Educational Courses

Course Name	Description
Elements of AI	The "Elements of AI" course is designed specifically for SMEs that are trying to build their knowledge and skills in the field of AI. This course is ideal for business owners, managers, and employees who are interested in understanding the fundamentals of AI and how it can be applied to their business. The course is designed to be accessible and easy to understand even for those who have little or no prior knowledge of AI. It covers a range of topics, including the history of AI, machine learning, deep learning, natural language processing, and robotics. The course is delivered through a combination of online lectures, interactive exercises, and practical examples, which are designed

Course Name	Description
	to help you understand the key concepts and techniques involved in AI. Some of the topics covered in the course include: • Introduction to AI: This section provides an overview of AI and its various applications, including how it can be used to improve business operations and decision-making. • Machine Learning: This section covers the basic principles of machine learning, including supervised and unsupervised learning, and how it can be applied in business. • Deep Learning: This section introduces the concepts of deep learning and neural networks, and how they can be used for image and speech recognition, natural language processing, and other applications. • Robotics: This section covers the basics of robotics and how AI can be used to automate tasks and improve productivity. At the end of the course, you will have a solid understanding of the fundamentals of AI and how it can be applied to your business. You will gain the knowledge and skills necessary to identify opportunities for implementing AI solutions in your business and to work effectively with AI professionals and vendors. Whether you are seeking to explore AI for the first time, or you want to build on your existing knowledge and skills, our "Elements of AI" course is the perfect starting point for SMEs.
Benefits of AI	Our course "Benefits of AI for the ones who completed Elements of AI" is designed for SMEs that have already completed the introductory "Elements of AI" course and are seeking to take their understanding of AI to the next level. This course is perfect for SME owners, managers, and employees who want to learn about the practical applications and benefits of AI in the business world. During this course, you will learn how AI can help SMEs optimize their operations, increase efficiency, and drive business growth. We will explore the various applications of AI in different business domains, including marketing, customer service, supply chain management, and more. We will also discuss the potential risks and challenges of implementing AI in an SME context, and how to mitigate them. Our experienced instructors will guide you through case studies and real-world examples of successful AI implementations in SMEs, helping you to gain a deep understanding of the benefits and opportunities that AI can offer. By the end of the course, you will have a clear understanding of how AI can help your SME grow and succeed in today's competitive business environment. The course is delivered online and can be completed at your own pace. It consists of a series of modules that cover different topics related to the benefits of AI for SMEs, including: • Optimizing business operations with AI • Leveraging AI for customer service and engagement • Enhancing supply chain management with AI

Course Name	Description
	• Using AI for marketing and sales • Mitigating risks and challenges associated with AI implementation in SMEs Upon completion of the course, you will receive a certificate of completion, which you can add to your resume or LinkedIn profile to showcase your knowledge and skills in the field of AI for SMEs. Join us today and unlock the full potential of AI for your SME!
Fields of AI	Our advanced AI course, "Fields of Efficient and Excellent AI," is designed for SMEs that have completed the "Elements of AI" course and want to take their AI skills and knowledge to the next level. In this course, we will explore the most innovative and cutting-edge AI fields that are transforming the business world and explore their practical applications for SMEs. The course will cover a range of topics, including: • Machine learning: This will cover the basics of machine learning, including the different types of algorithms, supervised and unsupervised learning, and how to train and test models. • Natural language processing (NLP): We will explore how NLP can be used to analyse and understand human language and its applications in customer service, sentiment analysis, and chatbots. • Computer vision: This will cover the basics of computer vision, including object recognition, image classification, and face recognition, and their practical applications in manufacturing, retail, and security. • Robotics: We will explore the latest trends in robotics, including autonomous robots, and collaborative robots, and how SMEs can use them to streamline their operations. • Deep learning: This will cover the latest developments in deep learning, including convolutional neural networks, recurrent neural networks, and their practical applications in speech recognition, image processing, and predictive analytics. Throughout the course, we will provide practical examples and case studies to help SMEs understand how to apply these concepts in their businesses. We will also offer hands-on exercises and projects to help SMEs gain practical experience in using these AI technologies. By completing this course, SMEs will be equipped with the latest knowledge and skills in AI and will be better positioned to take advantage of the opportunities offered by these cutting-edge technologies.
Challenges for AI	Our "Challenges of AI" course is designed for SMEs that have completed the "Elements of AI" course and are looking to deepen their understanding of the challenges and opportunities presented by AI in today's business environment. This course is ideal for SMEs who have already started exploring AI applications in their business but are seeking to take their AI strategy to the next level.

Course Name	Description
	Through a series of interactive modules, our course will help SMEs understand the challenges and opportunities presented by AI, and provide them with the tools and knowledge they need to successfully navigate these challenges. We will cover a range of topics, including: • Understanding the ethical implications of AI: We will explore the ethical considerations that arise when working with AI, including issues of bias, privacy, and accountability. • Leveraging AI to drive business success: We will examine real-world examples of successful AI implementations in SMEs, and provide practical advice on how to leverage AI to drive business success. • Managing risk and uncertainty: We will discuss the risks and uncertainties associated with AI, and provide strategies for managing these risks effectively. • Navigating regulatory and legal frameworks: We will explore the regulatory and legal frameworks that apply to AI, and guide how to navigate these frameworks effectively. Our course is led by experienced AI experts with deep expertise in both the technical and business aspects of AI. We use a range of interactive and engaging teaching methods, including case studies, discussions, and hands-on exercises, to ensure that SMEs come away with a practical understanding of the challenges and opportunities presented by AI. By completing our "Challenges of AI" course, SMEs will be better equipped to navigate the complex and rapidly changing landscape of AI and will be better positioned to leverage AI to drive business success.
Decision Support with AI	Our “Decision Support with AI” course is designed specifically for SMEs that have completed the Elements of AI course and are looking to deepen their knowledge of how AI can support decision-making in their business. In this course, we will explore advanced techniques for using AI to make informed decisions and drive business growth. The course will cover the following topics: • AI for decision support: We will explore how AI can be used to support decision-making in various areas of business, including finance, marketing, operations, and human resources. • Advanced AI techniques: We will dive deeper into advanced AI techniques, such as machine learning, deep learning, and natural language processing, and learn how they can be used to support decision-making. • Data analysis and visualization: We will cover techniques for data analysis and visualization, including data mining, data cleaning, and data visualization, to help you make informed decisions based on the insights gained from your data.

Course Name	Description
	• Ethics and bias in decision-making with AI: We will discuss ethical considerations and the potential biases that can arise when using AI for decision-making, and explore ways to mitigate these issues. • Practical applications and case studies: We will provide practical applications of AI for decision support, including case studies from real-world business scenarios. By the end of this course, you will have a deeper understanding of how AI can be used to support decision-making in your business, as well as practical skills for applying these techniques in your day-to-day operations. You will also have a greater awareness of ethical considerations and potential biases that can arise when using AI, which will help you to make informed decisions and avoid potential pitfalls.
Management with AI	Our "Management with AI" course is designed specifically for SMEs that have completed the Elements of AI course and are looking to take their AI knowledge and skills to the next level. This course will provide you with the tools and knowledge you need to effectively manage AI projects and initiatives within your organization. The course covers a range of topics related to AI project management, including: • AI project planning and execution: You will learn how to effectively plan and execute AI projects, from scoping and defining project requirements to selecting appropriate AI technologies and managing project timelines. • AI data management: You will learn how to effectively manage AI data, including data collection, preparation, and analysis, and how to ensure data privacy and security. • AI project evaluation: You will learn how to effectively evaluate the success of AI projects, including measuring project performance and ROI. • AI ethics and governance: You will learn about the ethical considerations surrounding AI, including bias and fairness, and how to ensure the responsible use of AI technologies within your organization. Throughout the course, you will have access to a range of resources and tools, including case studies and best practices from successful AI projects within SMEs. You will also have the opportunity to work on real-world AI project scenarios, giving you hands-on experience in applying the knowledge and skills you learn in the course. By completing the "Management with AI" course, you will gain the knowledge and skills you need to effectively manage AI projects and initiatives within your organization. You will be able to apply best practices and avoid common pitfalls, ensuring the success of your AI projects and helping your SME to stay competitive in today's rapidly evolving business environment.

3.2 Courses of Human/Soft Skills

Even though the development of AI takes speed, there are still threats fed by the press that may hinder successful AI applications in businesses. Our training in human and soft skills enables the participant to uncover the hidden blocks within organizations and can free up team capacities for the success of AI project implementations.

Table 3.2 Summary of Training on Human and Soft Skills

Name	Description
Decision-making with AI support	Our soft skills training programme, "Decision Making with AI," is designed specifically for SMEs that are aiming to improve their decision-making processes through the use of AI technologies. Our programme will provide SME employees with the skills and knowledge they need to make informed decisions with the help of AI technologies. We will cover a range of topics, including: • Introduction to AI: We will provide an overview of AI technologies and their applications, as well as the benefits and challenges of using AI in decision-making processes. • AI tools for decision-making: We will introduce SME employees to a range of AI tools and technologies that can be used to support decision-making processes, including machine learning, natural language processing, and predictive analytics. • Data analysis and interpretation: We will provide training on how to effectively collect, analyse, and interpret data using AI technologies, enabling SME employees to make data-driven decisions with confidence. • Ethical considerations: We will cover the ethical considerations involved in using AI technologies for decision-making, including issues related to bias, privacy, and transparency. • Practical applications: We will provide real-world examples of how AI technologies have been used to support decision-making in a range of industries, including healthcare, finance, and marketing. The programme is delivered by experienced trainers with expertise in both AI and business and can be customized to meet the specific needs of your SME. By improving your employees' decision-making processes with AI, you can gain a competitive advantage in today's rapidly evolving business environment.
AI-based leadership	Our “AI-based leadership” soft skills training programme is designed specifically for SMEs that are seeking to improve the leadership capabilities of their workforce. We understand that effective leadership is critical to the success of any business and that the ability to lead in the age of AI is becoming increasingly important. Our programme is based on the latest research and insights into the intersection of AI and leadership and is designed to help SME leaders develop the skills they need to lead effectively in today's fast-paced and technology-driven business environment. Our AI-

Name	Description
	powered platform uses cutting-edge machine learning algorithms to provide personalized leadership training that is tailored to the unique needs of each participant. The training programme includes the following components: • AI-powered assessment: Participants will complete an AI-powered assessment that measures their leadership skills and identifies areas for improvement. • Personalized learning plan: Based on the assessment results, participants will receive a personalized learning plan that outlines the skills and competencies they need to develop. • Interactive modules: Participants will engage in a range of interactive modules, including videos, simulations, and case studies, that are designed to build their leadership skills and knowledge. • Coaching and support: Participants will have access to coaching and support from experienced leadership experts, who will help them to apply their new skills and knowledge in real-world situations. By completing our “AI-based leadership” training programme, SME leaders will be better equipped to lead their organizations in the age of AI and to drive innovation and growth in a rapidly changing business environment. They will have the skills and knowledge they need to build high-performing teams, inspire and motivate employees, and make effective decisions that drive business success.
Accountable AI?	"Accountable AI" is a soft skills training programme designed specifically for SMEs seeking to foster a culture of accountability and responsibility around AI development and deployment. We understand that SMEs may have limited resources to dedicate to ethical AI practices, but we believe that it is essential for all businesses to prioritize responsible AI development to protect their brand reputation and maintain customer trust. Our training programme focuses on developing the soft skills required to ensure that AI development and deployment are done responsibly and ethically. We cover topics such as: • Understanding AI and its potential impact on society; • Identifying ethical considerations when developing and deploying AI; • Building an AI ethics framework for your organization; • Establishing accountability for AI-related decisions; • Communicating AI developments to stakeholders; • Responding to ethical concerns around AI; • Implementing continuous monitoring and improvement of AI systems. Our training programme is delivered by experienced lecturers who have a deep understanding of AI ethics and responsible AI practices. We use a combination of interactive workshops, case

Name	Description
	studies, and group discussions to ensure that participants are fully engaged and able to apply their learnings in their organizations. By participating in our "Accountable AI" training programme, SMEs can develop the soft skills needed to ensure that their AI development and deployment practices are ethical, responsible, and transparent. This can help to maintain their brand reputation, build customer trust, and differentiate them from competitors who may not prioritize ethical AI practices.
Converting repetitive work for the robotics workforce	"Converting Repetitive Work for the Robotics Workforce" is a soft skills training programme designed specifically for SMEs seeking to develop the skills needed to successfully transition repetitive tasks to a robotic workforce. The training is focused on enhancing the soft skills of employees, such as communication, collaboration, problem-solving, and adaptability, which are crucial for the effective integration of the robotic workforce. It aims to help SMEs in reducing the workload of their employees and improve the efficiency of their operations by automating repetitive tasks. The training is delivered by experienced trainers who have in-depth knowledge of robotic workforce integration and soft skills development. They use a combination of interactive workshops, hands-on training, and real-world case studies to create an engaging and effective learning experience. The programme covers various topics, including an introduction to the robotic workforce, the benefits and challenges of automating repetitive tasks, the importance of soft skills in integrating the robotic workforce, and how to effectively communicate and collaborate with robotic systems. Participants will also learn about the various tools and technologies available for robotic workforce integration and the best practices for implementing them in their operations. Upon completing the training, participants will have a deep understanding of how to effectively transition repetitive tasks to a robotic workforce and the soft skills necessary for successful integration. They will be equipped with the knowledge and skills needed to communicate, collaborate and work effectively with robotic systems. Overall, "Converting Repetitive Work for Robotics Workforce" is an essential soft skills training programme for SMEs looking to optimize their operations by automating repetitive tasks and embracing the benefits of robotic workforce integration.
AI-based risk management in human resources	Our “AI-based risk management in human resources” soft skills training is designed specifically for SMEs seeking to enhance their HR risk management capabilities by leveraging the power of AI. We understand that managing risk in HR can be challenging, especially for SMEs with limited resources and expertise. That is why we have developed a training programme that focuses on helping SMEs identify and mitigate HR risks using AI-based tools and techniques.

Name	Description
	Our training programme includes the following: • Understanding HR risks: We will help SMEs understand the different types of HR risks they may encounter, including legal compliance, data privacy, and employee relations issues. • Introduction to AI-based risk management: We will introduce SMEs to the benefits of using AI-based tools and techniques to manage HR risks, including increased efficiency, accuracy, and scalability. • AI-based risk management tools and techniques: We will provide SMEs with practical guidance on how to use AI-based tools and techniques to identify, monitor, and mitigate HR risks. • Soft skills training: We will provide SMEs with training on soft skills, such as communication, collaboration, and problem-solving, that are essential for effective HR risk management. • Case studies and examples: We will use real-world case studies and examples to illustrate how AI-based risk management can be applied in HR, and the benefits it can provide. By the end of the training programme, SMEs will have a better understanding of the different types of HR risks they may encounter, as well as the benefits of using AI-based tools and techniques to manage these risks. They will have the skills and knowledge needed to effectively use AI-based risk management tools and techniques in their HR operations, helping them to mitigate risks and avoid costly mistakes. With our AI-based risk management in human resources training, SMEs can enhance their HR risk management capabilities and build a more resilient and sustainable business.

3.3 Technology Courses and Consultations

There are several fields of operation where AI projects can bring benefits to businesses and organizations. In each field, similar AI-based technologies can be used to provide these benefits. These Technology Courses allow businesses to discover application examples of technologies and decide on the next steps, mostly using the 2 (Test before Invest) facilities of the EDIH.

Table 3.3 Summary of Technology Courses and Consultations

Technology	Description
Computer Vision	Our computer vision courses are designed to provide a comprehensive introduction to the field, covering topics such as image processing, feature extraction, object recognition, and more. Our courses are taught by experienced instructors who have a deep understanding of the technology and its applications, and who are committed to helping your SME succeed.

Technology	Description
	In addition to our courses, we also offer customized consultations to help your SME develop effective computer vision solutions. Our team of experts will work with you to identify your specific needs and challenges and to develop tailored solutions that meet your requirements. We can guide everything from hardware and software selection to algorithm development and implementation, helping you to leverage the power of computer vision to drive your business forward.
Natural Language Processing	Our team of NLP experts will work closely with your SME to provide customized training and consultations that meet your unique business needs. We understand that SMEs often lack the resources and expertise to implement and utilize advanced NLP technologies effectively. That is why we offer a range of flexible training options to help you get up to speed quickly and effectively. Training courses: We offer a range of training courses that cover • the basics of NLP, as well as more advanced topics such as • sentiment analysis, • topic modelling, and • named entity recognition. Our courses are tailored to your specific business needs and can be delivered in person or online.
Robotics	Our technology courses and consultations for SMEs in the robotics field are designed to provide practical knowledge and expert guidance to small and medium-sized enterprises looking to leverage robotics technologies for their business needs. Our team of experienced robotics experts will work closely with your SME to understand your unique requirements and provide tailored training and consultation services that are specifically tailored to meet your needs. Our technology courses cover a range of robotics-related topics, including: • Introduction to robotics: Understanding the basics of robotics and its applications in various industries. • Robot programming: Learning how to programme robots to perform specific tasks. • Robotics sensors and control: Understanding how to use sensors and control systems to improve the functionality and efficiency of robotics. • Robotics integration: Learning how to integrate robots with other systems and processes to improve productivity and streamline operations. Our consultations, on the other hand, provide a personalized approach to addressing your specific business challenges and opportunities. We will work with you to understand your unique needs and provide expert guidance on: • Robotics technology selection: Helping you choose the right robotics technology for your business needs.

Technology	Description
	• Implementation strategy: Developing an implementation strategy that aligns with your business objectives. • Training and support: Providing training and ongoing support to ensure successful implementation and adoption of robotics technologies.
Machine Learning	Our Machine Learning courses are designed to provide SMEs with the knowledge and skills needed to develop and deploy machine-learning solutions in their businesses. We offer courses that cover a range of topics, from the fundamentals of machine learning to advanced techniques and applications. Our courses are tailored to the specific needs of your SME and can be delivered in person or online, depending on your preference.

4. Support to find investments

The EDIH CTU provides consultancy on funding options, identifies grant opportunities, helps in the development of project proposals, and facilitates access to different funding sources (EU, national, regional, and private).

The EDIH CTU supports the search for funding to address SMEs´ issues via the National Center for Industry 4.0 (NCI4.0). Furthermore, the EDIH CTU consortium partners have great experience in finding investments, providing financial and business consultations to companies, as well as supporting start-ups and newly established innovative companies.

4.1 Investment Consulting

Our support and investment service is designed to help SMEs overcome the challenges they face when trying to adopt AI technology and compete in the fast-paced and highly competitive market. Our team of experienced experts and funding professionals is dedicated to providing personalized support to each SME, ensuring they find the resources they need to succeed. With our support and investment service, SMEs can leverage the power of AI to unlock new opportunities, drive innovation, and achieve their business goals.

Table 4.1 Investment Consulting

Title	Description
Investment Consulting	Our service includes: Investment facilitation: • We help SMEs secure investment by connecting them with potential investors who are interested in funding AI projects. Networking opportunities: • We facilitate networking opportunities for SMEs in the AI field to help them establish valuable connections and partnerships with prospective financing partners.

4.2 Grant Consulting and Support Services

Our Grant Consulting and Support Service is designed to help EDIH CTU beneficiaries navigate the complex world of grants and funding opportunities. We understand that our beneficiaries often face significant challenges when it comes to accessing grants, including a lack of resources, expertise, and knowledge of the funding landscape. Our experts have years of hands-on experience in grant management from finding the right call through writing the proposal to administering the grant successfully.

Our team of grant consulting experts will work closely with you to identify and evaluate funding opportunities that align with your business goals and needs. We will provide comprehensive consulting and support services to help you develop winning grant proposals, from identifying the right funding sources and partners to developing a compelling case for your project.

Table 4.2 Grant Consulting and Support Services

Title	Description
Grant Consulting and support services	Our Grant Consulting and Support Service includes: Needs Assessment: • We will work with the beneficiary to understand their business goals and funding needs and identify the most promising grant opportunities. Grant Proposal Development: • We will develop a compelling grant proposal that outlines the scope of your project, the expected outcomes and benefits, and the budget. Grant Application Support: • We will provide support in completing and submitting the grant application, including assistance in addressing any feedback or questions from the funding agency. Grant Management Support: • We will also provide ongoing support in managing and reporting on the grant, ensuring compliance with grant requirements, and optimizing outcomes.

4.3 Access to Communication and Meeting Infrastructure

The university campus in Dejvice, Prague 6, offers almost unlimited capacities for communication infrastructure (see Deliverable D3.1 Infrastructure) and spaces designed and devoted to meetings. Below is a sample of such infrastructure.

Table 4.3 Communication and Meeting Infrastructure

Topic	Description
Balling hall	Named in honour of Karl Balling, a famous nineteenth-century chemist, the hall offers 196 auditorium seats (182 of them with access to 230V power for notebooks and phones) with an additional 50 balcony seats. Fourteen seats are accessible to visitors with special needs. Equipment: • Two flat image projectors (173x300 cm; projection has two display options and laptop ports) • Full audio except for audio input connected to a video source; wired and wireless microphones and mics • Touch screen control from the podium • Simultaneous translation possible via wireless headphones

	• Fully wheelchair accessible, with outlets for electric vehicles • Audio induction loop for the hearing impaired • Catering space available in the rear of the hall, with tables and comfy sofas • Wi-Fi
Respirium Conference Hall	For conferences, workshops and seminars, coworking space. Located in CIIRC CTU Building. Capacity of up to 200 people. Equipment: • AV technology • 2x TV on telescopic stands • Piano brand Bohemia • Variable stage • Wireless microphones
Penthouse Conference Room	For conferences, workshops and seminars, coworking space. Located in CIIRC CTU Building. 60 seats, up to 80 people. Possibility to use • Projector • Screen • HDMI & VGA cables • Wireless microphones • Small kitchen for catering
Classrooms	For conferences, workshops and seminars, coworking space. Located in CIIRC CTU Building. Capacity: • 1x classroom with 120 seats • 2x classroom with 99 seats • 1x classroom with 60 seats • 1x classroom with 54 seats Equipment: • Projector • Screen • Blackboard
Large & Small Meeting Room	For conferences, workshops and seminars, coworking space. Located in CIIRC CTU Building. Capacity: • 30 seats (Large Meeting Room) & • 14 seats (Small Meeting Room) Equipment: • Projector • Screen • Ceramic board • Wi-Fi connection

5. Innovation Ecosystem and Networking

5.1 Matchmaking, Networking, Best Practice Sharing

The EDIH CTU provides services in community and partnership building mainly through partner associations and the industrial platform NCI 4.0. Thanks to the knowledge of the industrial ecosystem, regional targeting, and specific focus, the relevant target audiences can be successfully addressed, especially from the area of manufacturing companies.

The EDIH CTU offers connection to all members of the innovation ecosystem through the organization of thematically focused round tables, information days, hackathons, workshops, and events focused on pitching technology ideas, matchmaking services, and best practices sharing. The services also include updates on information on the trends in the market, assessment of the market potential consultations of suitable business models, and technology scouting for companies looking for innovative technologies.

The networking activities are built also upon strategic partnerships of the coordinator within key European organizations in AI - CLAIRE and ELLIS, participation of in 3 EU projects - Centers of Excellence in AI (TAILOR, ELISE, VISION) and SME digitization projects (DIH-World, DIH4AI).

The EDIH CTU foresees close collaboration with the successful project “AI Manufacturing Testing and experimenTation network For EuROpean industrieS” (AI-MATTERS) supported in the DIGITAL-2022-CLOUD-AI-02 call of the Digital Europe Programme. The Czech Institute of Robotics, Informatics, and Cybernetics (CIIRC) CTU Prague, together with two prominent technical universities in the country – the Brno University of Technology and Technical University in Ostrava - represent the Czech node of this AI Testing and Experimental Facility. Moreover, the EDIH CTU received MoU from CLAIRE supporting the project by 1) access to expertise via the CLAIRE community, 2) exchange and information sharing between EDIH & CLAIRE events, and 3) organisation of the yearly EDIH Matchmaking event in Brussels with support of CLAIRE´s Innovation Network, The Belgian CLAIRE Office and the SustAIn.brussels EDIH.

5.2 Business and Technology Consultations

These services focus on finding the “lowest hanging fruits”. This means, using available expertise, we can predict not only the costs of the planned projects but also their financial and non-financial benefits. Setting up a feasibility study based on Maturity assessment can then prioritize the projects so, that the earnings of the first batch cover costs for the next batches.

The Business and Technology Consultations can also be used to find:

- Appropriate model of cooperation between the beneficiary and the EDIH CTU
- Adaptable services to be used based on described in this document

Consultations are contracted in man-days according to valid service conditions.

For more detailed information, see web page edihctu.eu.

Annexe

Success Story	Description
Hand Gestures Recognition	In places where traditional communication is not possible, implement solutions based on hand gesture recognition. Business value: • Less cost for equipment and labour • Monitoring of processes Relevant contacts: Institute of Molecular Genetics CAS (CZ), Institute of Computer Science CAS (CZ) Responsible person: Mr Jakub Novák
Car Licence Plates Recognition	As you may have seen in shopping centres. Business value: • Cost savings Relevant contact: Cebia s.r.o. (CZ) Responsible person: Mr Jakub Novák
Production Line Optical Checkpoints	Optical recognition of irregularities within production lines. Business value: • Identification of wear of equipment • Prediction of production capacities • Decrease in the number of trashed product components Relevant contacts: ATG s.r.o. (CZ), AGC Flat Glass Czech a.s. (CZ), NetRex s.r.o. (CZ), VDS STEP s.r.o. (CZ) Responsible person: Mr Jakub Novák Relevant contacts: AIRS s.r.o., PTSW s.r.o Responsible person: Mr. Matouš Cejnek
Heavy Industries Production Line Management	Management of production lines with the support of optical recognition and machine learning. Business value: • Automating the management of production lines using smart monitoring Relevant contacts: AIRS s.r.o., PTSW s.r.o Responsible person: Mr. Matouš Cejnek
Prediction of Movement	Multiple sources of data which we can blend help in the prediction of movement in (not only) traffic management. Business value: • Optimization of loading/unloading times for logistic management

Success Story	Description
	• Optimization of route planning Responsible person: Mr Petr Šimánek
Predictive Maintenance for Machinery	Predictive maintenance allows for continuous diagnostics and maintenance signalling which prevents machine breakouts and production process outages. Business value: • Saving costs of machine repair • Eliminating production line outage Responsible person: Mr Ivo Bukovský, Mr. Jiří Švéda
Predictive Maintenance for Production Tools	Tools in machinery have an optimal lifecycle. Predictive Maintenance for Production Tools enables you to choose the proper time for a replacement. Business value: • Optimizing tool costs (replacing tools just in time) Responsible person: Mr Petr Kolář
Product Fatigue Life Prediction	Predicting Product Fatigue Life. Business value: • Savings in the product lifecycle Responsible Person: Mr Michal Bartošák
Optimization of Pressure Vessel Production Design	Pressure Vessel design and production is a complicated process which is greatly improved by applying AI algorithms. Business value: • Savings on the production line • Improved lifetime of final products • Improved qualities of final products Relevant SME contact: ACO Industries Tábor s.r.o. Responsible person: Mr Zdeněk Padovec
Storm Nowcasting	Predicting the movement of the storm based on combined meteo/satellite data Business value: • Validation of damages • Just-in-time logistics operation management Relevant SME contact: METEOPRESS Responsible person: Mr Petr Šimánek
Crop identification	Classification of crops on fields using satellite image data Business value: • Validation of farmer grant requests

Success Story	Description
	Relevant project: RAINCOAT Responsible person: Mr Petr Šimánek, Mr Ondřej Pešek
Monitoring anomalies in consumption of water, energy, gas, measurable substances	AI is thanks to ML algorithms able to learn the patterns of daily consumption of any resource you can measure. Provided service sends a triggering alert to be cross-checked when any abnormalities in the consumption are detected. Business value: • Prevents losses of resources when leaks occur and detects processes that can be altered to adjust consumption and save financial resources Responsible person: Mr Petr Kadera
Increasing Large Production Lines Stability	Management of complex product lines is due to too many variables and thus many states of the system are better manageable using models with AI components. Business value: • Improved stability of complex product lines Relevant SME contacts: PTSW s.r.o, AIRS s.r.o. Responsible person: Mr Matouš Cejnek
AI Implementation Feasibility Study	Using AI is a perfect solution, but not for all business processes. We evaluate the feasibility of applying AI methods in your business so that you can prioritise, or, chose a better solution. Business value: • Saving costs in the decision-making process • Saving resources due to prioritised planning Responsible person: Mr Ivo Bukovský
Improvement of efficiency of local and community heat sources	Management of a complex thermodynamic network with the help of neural networks Business value: • Minimizing energy consumption Relevant contacts: Teplárna Strakonice, a.s., DFH Haus CZ, s.r.o., Zbirovia, a.s. Responsible person: Mr Pavel Sláma
Adapting Water Intake Object to Optimise Sludge Setting	Analysing sewage water flow and its content allows for a specific setup of water intake objects that optimizes sludge setting Business value: • Saving costs for cleaning the sewage plant Responsible person: Mr Jaroslav Pollert
AI Chatbot	Replacing robotic repeatable work by a Chatbot using NLP

Success Story	Description
	Business value: • Saves the cost of labour Responsible person: Mr Stanislav Kuznetsov
AI Voicebot	Replacing repeatable work by a Voicebot in situations where there is no keyboard around. Business value: • Saves labour costs Responsible person: Mr Martin Nykodém
Fraud Detection	Monitoring of financial flows to detect fraud Business value: • Saving costs of potential damage by early recognition Responsible person: Mr Daniel Vašata
Recommender Systems	Recommending products/services that similar people have purchased Business value: • Increased revenue • Happier returning customers Responsible person: Mr Pavel Kordík
Optimization of Storage Management	Minimizing movement in the storage using AI-supported planning and management Business value: • Saved labour and material costs Responsible person: Mr Pavel Surynek
Smart IoT	Implementing AI into IoT-embedded devices Business value: • Saved management costs Responsible person: Ms Iveta Šáfryová
AI-Based Material Design for Civil Engineering	Designing materials for architects at the table with a computer instead of a lab Business value: • Saved costs of material and labour costs Responsible person: Mr Bořek Patzák
AI in Waterflow Analysis	Using AI to predict water flow in the country Business value: • Saved costs for improper crops planted Responsible person: Mr Tomáš Dostál