Mitja Trampuž

Guide to the Deployment of Artificial Intelligence in Business

Make sure your company is ready for the 21st century

Co-authors:
Dr. Franc Bračun, Mateja Pucihar Baebler, Flavio Fuart, Andreja Lampe

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Introduction

Nenad Šutanovac

Dear entrepreneurs, businesspeople and decision-makers,

We are proud to present the second edition of the Guide to the Deployment of Artificial Intelligence in Business, with updated content and a revised title. In March 2023 we published the Guide to the Deployment of Artificial Intelligence at Small and Medium-Sized Enterprises, the first such venture in Slovenia. It was designed to help companies understand and assess the benefits and savings that artificial intelligence will bring them. It included important guidelines on how to set about introducing and using artificial intelligence in a way that avoided unnecessary risk and enabled companies to circumvent any pitfalls along the way. Although the Guide was published only a short time ago, a great deal has happened in the field of artificial intelligence since then. Generative AI (for example) has greatly increased our understanding of AI generally, and broadened the use of AI both within and beyond the corporate world. These developments have led us to produce a second, updated edition of the Guide.

Artificial intelligence is extremely important for companies, bringing numerous benefits that increase productivity, competitiveness and innovation. It enables processes to be automated, which improves efficiency and reduces costs. Capturing and analysing large quantities of data enables a company to understand its business better, and to make decisions more speedily. AI helps companies to optimise their business operations and create personalised experiences for customers – which in turn increases customer satisfaction – and allows different scenarios to be predicted and simulated. Using computer vision systems, AI can check the quality directly on the production line. Generative AI even stretches to the field of thought processes. One important aspect of the introduction of AI into a business is the opportunity it provides to develop new innovative products and services based on advanced technological solutions and AI concepts. Slovenia can boast highly sophisticated, high-quality practical cases, as demonstrated by the nominees of the GoDigital prize for best digital project of the year, which is awarded each year by the Information Technology and Telecommunications Association and the Chamber of Commerce and Industry. These cases bring clear business benefits and are based on a range of different AI concepts: machine learning, deep learning, computer vision, natural language processing, autonomous systems, digital twins and, of course, generative AI.

As these examples show, **Slovenia is more than capable of developing competitive AI-based solutions**. There are considerable opportunities for Slovenian businesses in a variety of sectors, and in partnership between solution providers and digital decision-makers, to locate those business ideas that can bring breakthrough solutions and products, perhaps even business models, that create strong competitive advantages.

I believe that this **Guide to the Deployment of Artificial Intelligence in Business constitutes an important step towards finding and realising the opportunities that technology, and particularly artificial intelligence, can bring us**.

Slovenia has strong foundations that allow it to forge ahead in this area with speed. We want to make use of them by creating a business ecosystem that encourages and steers companies towards development in this area, and makes AI easier to introduce and use. This will ensure that we have everything we need, including reform of the education system, so that we have sufficient human resources to continue on this path over the long term, at the same time enabling young people to take part in the development of a digital society on an equal footing – an aspect in which we are, unfortunately, some way behind. According to a European Commission report, the status of digital transformation in Slovenia is not optimal – indeed, in some respects it is alarming. According to the Information Technology and Telecommunications Association, Slovenia has fallen from 11th to 17th place in the EU ranking in the last two years alone. The critical areas are the digital transformation of SMEs, digital competencies and a lack of ICT specialists. **We need the government and key ministries to be aware of the situation in Slovenia, and of the importance of digital transformation and the impacts it can have, and to design quick and decisive measures that will accelerate its deployment in Slovenia.**

The Information Technology and Telecommunications Association strongly believes that this is an urgent requirement for Slovenia and the only proper path towards a knowledge-based society. We ourselves are carrying out a great many activities to support the digital transformation of business and the development of the ICT sector. This Guide is part of these activities and of our efforts to achieve the goals set out in the Digital Slovenia 2030 strategy – for example, **the goal of having 75% of companies with at least ten employees using artificial intelligence by 2030**. **We believe that we can achieve this if we work together**.

I would like to thank the team at the Information Technology and Telecommunications Association for contributing their hard work and ideas to this Guide. Special thanks go to the two lead authors, Mitja Trampuž and Dr Franc Bračun.

I very much hope that you find this Guide practical and useful.

Nenad Šutanovac
Director of the Information Technology and Telecommunications Association, Slovenian Chamber of Commerce and Industry

Foreword

Dr Franc Bračun

Artificial intelligence is a key part of a business's digital transformation process. In a range of different fields of business, companies are investing time and effort in exploiting new technologies to increase their revenues or reduce their costs. However, AI is much more than an accelerator that takes them to another level of digital transformation. The reality today is that AI is transforming entire industries, enabling previously impossible levels of scale to be reached through operational efficiency, continuous learning and innovation. It is able to do this by automating the acquisition of useful findings from data and the detection of data patterns in ways that would take human beings weeks, months or even years to do – if at all.

We are witnessing changes that no technology in our lifetime has been able to bring about in such a short space of time. I am talking, of course, about generative AI. This edition of the Guide has been updated with tips on how to prepare your company for the introduction of generative AI. Trying to describe the impacts of generative AI and giving guidance on how to prepare a company for the deployment of this new technology today is a rather thankless one – and a little like trying to saddle a horse at full gallop.

Generative AI differs substantially from previous digital transformation technologies in many respects. Its unique characteristics bring exceptional opportunities, but also complex challenges that heads of companies have to deal with. This book will take you through the main reasons why it is so effective and complex, and explain how you can prepare your company to integrate it successfully.

We should note first of all that the speed of change in the generative AI field is unprecedented. It is developing faster than almost any other technology, which means that companies have to work quickly, at the same time remaining agile enough to adapt to a ceaselessly changing environment. Its evolution is constant and unpredictable, which makes it impossible to forecast with any precision how the technology and its applications will develop.

Second, generative AI has a wide-ranging impact covering every function within a company. In contrast to previous technologies, which were limited to certain areas, generative AI can impact every aspect of your business, from marketing and product development to human resources and customer support. Its universal interface, natural language, enables it to be used by everyone. Access to this powerful technology is therefore democratised and innovation encouraged.

Third, generative AI brings incredible opportunity, but also considerable risk. While it can automate routine tasks and bring completely new business models to life, there are important ethical and legal issues to consider, such as those around security, data privacy and potential abuses of the technology.

Fourth, the future of generative AI is uncertain. In contrast to previous technological transformations, when the final goals were clear, we cannot

be sure what final form this AI transformation will take. Companies have to be prepared to test and to learn constantly; only then will they know what generative AI can do.

The fifth point is that, in the world of generative AI, everyone is a beginner. Even the experts are still learning and developing best practices – which means that companies cannot follow a pre-set path. Success in this new environment requires a culture of curiosity and continuous learning, one in which employees are encouraged to research and test.

Last but not least, generative AI is a strategic imperative for every company. Its ability to thoroughly transform business and increase competitiveness is far from negligible, and enterprises that know how to make best use of its potential will gain a significant advantage on the market.

This Guide will help you understand the key aspects of generative AI, and equip you with the knowledge you need to guide your company successfully through this fast-changing and extremely promising field. It gives answers to the key strategic and operational questions that will help company management and heads at different levels to prepare their company for the future being created by generative AI. You can find details of these questions in the Key Issues Concerning the Introduction of Generative AI supplement, which serves as a guide to designing your own AI deployment strategy.

Dr Franc Bračun
Krško, 14 October 2024

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What does the Guide provide managers, entrepreneurs and owners?

Artificial intelligence is becoming a part of everyday digital services and standard business applications – which means that we are already using it whether we are aware of it or not. However, many companies are still not bolstering their competitive advantages with AI solutions, and are not introducing them in a targeted or systematic way.

As a manager, entrepreneur or company owner who wishes to prepare their company for an AI-based business environment, you are faced with conflicting information about the benefits and dangers of AI. As a manager, should you be focusing on technical matters or on strategy? Is this technology good news or bad news? Perhaps you do not want anything to do with AI because you are afraid of investing in the wrong technologies, or exposing your company to financial risks by making the necessary investments. Even worse, if the initiatives fail, your company will find itself in a challenging position. The ethical dilemma of employees losing their jobs can increase your fears still further.

The first part of this Guide sets out the steps by which a manager, entrepreneur or company owner can begin to introduce AI into their company in a way that minimises unnecessary risk and largely avoids the various pitfalls that can appear along the way.

The second part presents examples of good practice in the deployment of generative AI solutions, which are already entering through the front door of large companies and shaping their competitiveness on the market.

Understanding the importance of AI today is vital to business success.

Dealing successfully with the competition is key to survival for every organisation, particularly those operating on mature markets – and it is at least as important to give thought to how new technologies can help you remain competitive in the years to come. This Guide will help you understand what you have to do to ensure that your company is ready for an AI-driven business environment. We are by now all aware that AI is not a flash in the pan, but a reality that will be with us for a long time, or indeed forever.

At the start of the new millennium, many sectors operated quite a bit differently from the way they do today. We had to visit a video store if we wanted to rent a film for a relaxing night in. Most people could not conceive of something like Netflix or the other streaming services, let alone imagine that they would come into existence. Instead of email, most of us used the regular postal system. We made calls using landline telephones, with only the lucky few having access to a mobile device. Instead of Amazon, we bought and ordered books at bookshops. Microsoft's market position looked unassailable – until Google arrived and began to dominate the internet market. Many companies failed to recognise the potentials (and dangers) of the internet on time, and paid dearly for that failure. They had to watch as their business models fell apart before

their eyes. Only a handful learned how to adapt; the names of those that did not have since passed into oblivion. Can you imagine what it would be like to live and work in a world without the internet and smartphones? It would probably be very difficult.

A similar story is happening today as happened a quarter of a century ago – only this time the role of main player has passed from the internet to artificial intelligence. With one difference: the story is unfolding with significantly greater speed, even though you might not yet have noticed it, and its conclusion will be even more dramatic. Why? AI stretches significantly into every facet of the way we act, operate and do business. It is already accompanying almost every step we take in our lives, not just as an infrastructure service, such as the internet, but as an application or a service provider, a partner in communication, a decision-maker and a content provider. We literally carry AI in our pocket, as smartphones today are full of different AI technologies. Where the internet enabled us to share information quickly and easily, the latest AI technologies release knowledge from data, which enables decision-making to be automated.

AI's presence is not always obvious, as it is built into other software or tools that companies are already using. When you are on the move with your smartphone, an AI-based algorithm will quickly seek out the best route for you by using real-time data from countless other smartphones – that is, it uses data *created* by mobile phones. Many of you will have noticed that modern email tools give you suggestions as to how to organise your time, and are even ready to find you the time for a little peace so that you can make your important decisions. AI is behind that. When you want to watch a film on Netflix, you get recommendations for other films based on your previous selections and those of people similar to you. All that (and a lot more) is already being done by AI today. Many renowned experts in this field believe that we are only at the beginning of an era in which the main driver of economic development will be data-based AI.

Slovenia has big plans in the field of artificial intelligence, and has laid them out in the National Programme for Promoting the Development and Application of Artificial Intelligence. This places it alongside other EU countries that have committed themselves to working together in this field.

The media today is flooded with news about the achievements of artificial intelligence. With all this media buzz and hype around AI, you are most likely already sick of hearing all these promises about what this technology will be able to do. The vast majority of people are simply overwhelmed with information and disinformation about AI. Some people claim that AI is bad for humankind and will lead to its extinction. Others say that it will replace all our jobs, or that, although they use AI, they do not get any benefit from it. And there are those who say that AI will solve all of humankind's problems.

There is a reason why a range of differing stories about AI appear in the media – it is because we live in a time of unlimited access to information. However, most of that information is provided by marketers, sales teams and enthusiasts – essentially, people who have never worked with AI. What about AI researchers and experts? They often talk about the latest techniques, and focus on the incredibly rapid pace at which models learn on large quantities of data, sometimes in real time. However, none of this helps you, as a manager, entrepreneur or company owner, when it comes to deciding how best to introduce AI into your company. Many have tried to emulate successful tech companies such as Google, Amazon or Meta (formerly Facebook). They failed because they thought that purchasing technology and employing data scientists were guarantees of success on their own. Some have tried working

with external partners and academic institutions, only to find that the early promise was not fulfilled. Many companies have not yet begun to think about introducing AI because they do not know where to start or how to prepare. Regardless of where you are coming from with AI, this Guide will get you started.

What do you have to do to introduce AI into your company successfully? First of all, you have to prepare your company properly. To help you do this, we will detail the path you need to take, and describe the building blocks required to develop a company that is ready to introduce AI. This Guide is based on the practice and experiences of companies that have stayed quietly out of the media limelight (and continue to do so) and that are carefully and systematically preparing for a time when the use of data and AI will be something we take for granted, as we do with the internet today.

Artificial intelligence creates a wide range of opportunities

The functions of AI, such as prediction, automation and the detection of connections between events, offer a wide range of opportunities and use cases. These range from the optimisation of logistics processes to collaboration with customers, and from product and service design to the enhancement of employee skills. AI detects these opportunities so that the models that are the basic building blocks of AI solutions can learn from data. These learned models describe the picture of events in reality that they have deduced from the statistical laws underpinning this data, and can be used in a variety of applications.

In addition to the tasks associated with their core activity, companies are required to carry out a large number of administrative tasks, such as paying invoices, managing stocks and keeping an eye on contract deadlines. AI automates many of these tasks – for example, distributing invoices received, reviewing and classifying documents, and sorting through email. These solutions are suitable for all companies and enable them to lower costs. Of course, the use of AI is quickly expanding to companies' main business activities, from manufacturing and services to trade, including in agriculture, healthcare and security. The main benefits of these solutions are that they increase productivity and income and provide companies with a competitive edge. These things are already happening today, and will only increase in scope in the future.

Examples of AI use are highly dependent on the specific features of the industry or sector of which a company is part. Sectors with intense levels of manual labour, such as farming and construction, will use AI for robotics and automation, which will increase workplace safety. In sectors based on the processing of documents and information, such as accounting and legal services, the opportunities are numerous for AI to support routine tasks, or even take them over entirely. In healthcare, which is a high priority in the EU because of the ageing population and a shortage of health workers, AI has the potential to break new ground, from identifying signs of disease from a blood test to detecting serious diseases from X-rays. This enables patients to be treated better, more effectively and on time, and new procedures to be introduced. This in turn lowers costs and leads to lower mortality rates.

Part 1: Introducing artificial intelligence into companies

Understanding and systematically planning the development of the main pillars of AI

The possibilities offered by AI depend on the needs of the organisation, and on data and connections. Companies can incorporate AI into their business processes and functions, from data-mining to managing customer relations and optimising logistics. AI can also help manage the workforce, and help the environment by reducing orders for and the use of critical raw materials, such as rare earth elements and the substances required in chemical, pharmaceutical and metallurgical industries, or fertilisers and pesticides in agriculture.

As previous good practice has shown, a company must build four basic support pillars if they are to introduce AI successfully.

1. company culture
2. human resources/talent
3. data
4. infrastructure

We can condense the construction of these pillars into six key steps that will steer a company gradually towards a way of working that enables it to exploit the opportunities of AI successfully.

Note: It is important to understand that a company cannot successfully prepare for AI by carrying out all the steps in parallel and at once. A company should build its AI pillars over time, with small, continuous steps and many repetitions. This is because it evolves into a constant circular process and is therefore an activity in itself, or a way of working. A suggestion as to how you might start to build your AI pillars appears at the end of this Guide.

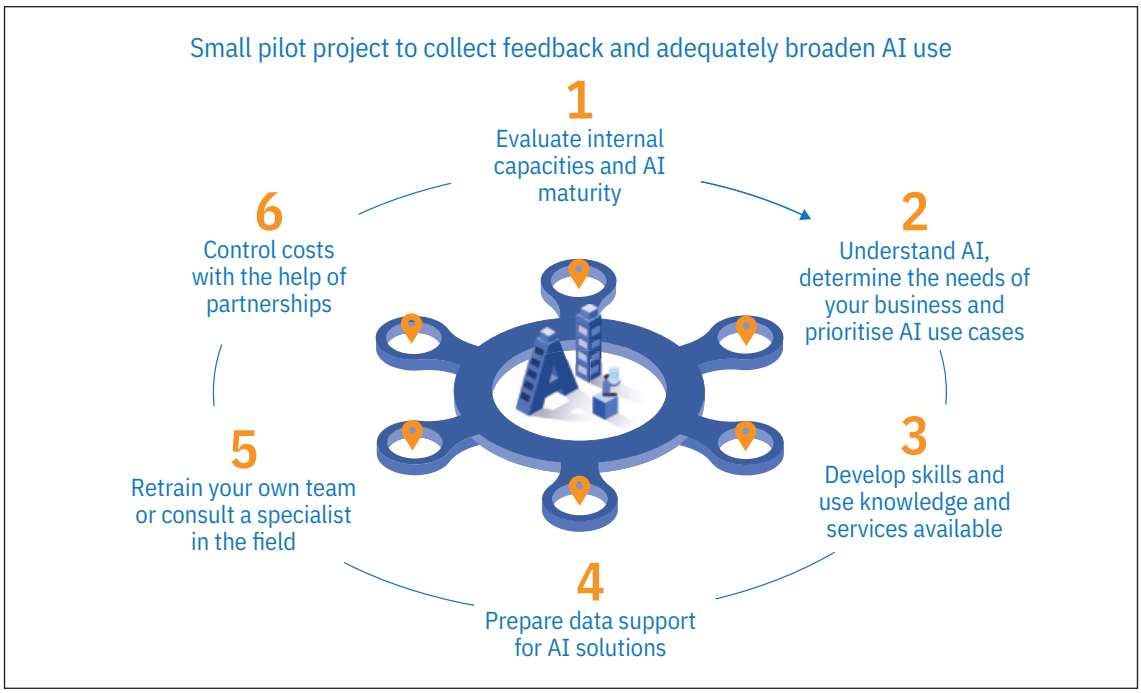


Figure 1: Six key steps in building the four AI support pillars

Step 1 – Evaluating internal capacities and AI maturity

The first step in preparing a company for AI involves an assessment of its internal capacities and AI maturity. This assessment will help you determine your starting point and plan the next steps.

Introducing AI into a company is similar to travelling. The first precondition of successful planning is establishing where you are: how mature is the company today when it comes to its capacity to introduce AI? Companies need to be clear about where they stand and what their current capacities are, and to develop their AI capacities on that maturity baseline.

One way of evaluating a company's readiness is by assessing its current level of AI maturity, as in **AI Business Research: assessment of organizational AI readiness and adoption level**[1], which is a business research study in English developed at the University of Ljubljana's School of Economics and Business. Assessments of this kind are also offered by a number of contact points, such as **AI DIH v Evropi**[2]. A company's AI maturity can also be checked using the **Artificial Intelligence (AI) Maturity Tool**[3].

The assessments given here are based on the expert knowledge and good practices of a range of national and international companies. They evaluate the typical challenges that appear in various dimensions of each level of maturity. By determining its AI maturity level, a company gains an idea of how much catching up it needs to do, and which dimensions should be adjusted or developed if it wants to move up to the next maturity level. It is recommended that companies with no or very little experience of AI acquire experienced partners to draw up the assessment. They will help you understand the current situation and the gaps at the company, and plan the necessary steps for developing the company by increasing its AI maturity. This can save a manager, entrepreneur or company owner a great deal of headache and money. A failure to grasp the importance of this at this step can have far-reaching consequences for the company.

While there are various different methodologies for assessing a company's AI maturity, the dimensions by which a company's readiness is assessed can always be condensed into the four familiar key pillars. Let us remind ourselves what they are:

1. company culture
2. human resources/talent
3. data
4. infrastructure

Each of these four pillars offers a different insight into a company's state of readiness; taken together, they provide a sound basis for the process of readying a company for AI. Of course, it is still the case that the steps you take to strengthen these pillars depend on where you currently stand on your journey towards AI.

[1] https://www.aibusinessresearch.eu/
[2] https://www.dih4ai.eu/
[3] https://eit.aimaturity.vtt.fi/

Step 2 – Understanding AI, determining the needs of your business and prioritising AI use cases

As with any change within a company, the introduction of AI requires a manager tasked with overseeing it at senior level. That manager must understand the opportunities and threats that AI brings. They must have an intuitive understanding of how AI works, although it is by no means necessary for them to be a data scientist. That person is the driver of all the changes the company needs to make to reach the planned level of AI maturity. Therefore, successful companies focus heavily from the outset on ensuring sufficient understanding of AI at senior management level so that they are fully aware of the impact of the technology on their sector and the company, and are able to take the steps required. A wealth of information and courses is available online to help you understand the basics of AI. Some of them are listed below, although only one is in Slovenian (the rest are in English).

Elementi AI[4] – a beginner's course on the basic characteristics of AI (in Slovenian)
Udacity: **Intro to AI**[5]
Stanford University: **Building an AI-Enabled Organization**[6]
MIT: **Implications for Business Strategy**[7]
Coursera: **Generative AI for Everyone**[8]

The range of educational and training content is increasing as AI gathers pace. You should make use of these courses, as well as any other guides that are relevant to your level of knowledge or the level of AI expertise in your company. At the start they can be useful for estimating impact, and therefore the steps necessary for increasing your company's AI readiness. Massive Open Online Courses (MOOCs) in AI, for example through the **Coursera**[9] and **Udemy**[10] platforms, can provide a particularly good starting point, as they are free and can be accessed from anywhere. The **ai4si**[11] initiative's website contains a series of seminars (available in Slovene) covering different areas of AI use, while **DIH Slovenija**[12] offers information, workshops and digital transformation vouchers.

[4] https://ai4si.gzs.si/b/elements-of-ai-tudi-v-slovenscini
[5] https://www.udacity.com/course/intro-to-artificial-intelligence—cs271
[6] https://online.stanford.edu/courses/xdgt224-building-ai-enabled-organization
[7] https://executive.mit.edu/course/artificial-intelligence/a056g00000URaa3AAD.html
[8] https://www.coursera.org/learn/generative-ai-for-everyone
[9] https://www.coursera.org/
[10] https://www.udemy.com/
[11] https://ai4si.gzs.si/knjiznica/seminarji-arhiv
[12] https://dihslovenia.si/en

If your company has very little experience with AI, we recommend that you find a partner who can help you prepare a senior management education and training plan. You will make your investment back quickly, as the knowledge you acquire will have an impact on how you select the building blocks in each development phase. You will also be able to identify those business needs to which AI can be applied.

Companies must clearly determine which of their business needs will be addressed by AI, and prioritise use cases that have clearly defined benefits and a clear idea of the investments required for their deployment. It is not easy deciding what your first AI projects will be, as it depends on a range of factors specific to each company. They have to be aligned with the company's overall AI strategy and then with the strategic decisions on where and for what AI is to be deployed – for example, to automate processes or decision-making, develop smart products and services, and so on.

AI must be deployed to resolve specific business challenges within the company. Ideas about how and where to use AI can come both from demand, for example feedback from customers, and from the technology itself, i.e. in line with the data available and capabilities of AI technologies. Every use case is then assessed in relation to the value that it brings in financial and strategic terms, as well as to the complexity required to implement it. This will involve considerations regarding data, algorithms, processes, systems, knowledge and experience.

The process of deciding where, when and how to use AI is usually a very tough nut to crack, which is why inexperienced companies should seek expert help to assess the value that different types of deployment can bring. An experienced partner can design a suitable methodology for assessing and classifying use cases, and teach the company how to deploy them. The company will then be in a position to carry out that assessment and classification process on its own in the future. It is important for the company to perform this particular task well, as decisions taken at this step can have far-reaching consequences. Whether they are positive or negative depends most on whether this step has been carried out properly.

In an ideal scenario, use cases that bring the company high value and that are easy to develop and introduce should be dealt with first. Your company can approach this in a variety of ways.

1. Start with simple cases that bring immediate benefits so that you have time to build stable internal capacities over time.
2. In parallel with the automation of work processes or decision-making, a start must be made on developing employees' soft skills; this is because they will have a different role within the organisation and the processes to the one they had prior to automation.
3. Seek out local AI pioneers, from early adopters to AI suppliers. You can learn a lot from their experiences – for example, which use cases are best developed at any given level of maturity.

Step 3 – Developing skills and using knowledge and services available online and from business associations

Companies can gain a lot by using the knowledge and services available online and from business associations. There are AI hubs in many EU countries. They can serve as the first source of information and support when your company is preparing to introduce AI. They usually provide expertise in the form of advisory services, meetings and online seminars, and can pass on tips on the technical aspects of projects or AI infrastructure deployment. They also offer a strong network and community of AI start-ups in a particular region or more widely. Companies can work with these central institutions as they take their first steps on their AI journey, or contact them later, when their expertise is required to help with more complex organisational and product development projects. As you start out, you can use these institutions as a shortcut to building your own knowledge and networks, which is otherwise a fairly complex and demanding task.

Examples of these hubs in the EU are listed below:

- Slovenia: AI4SI – **ai4si.gzs.si**
- Sweden: AI Sweden – **ai.se/en**
- France: Hub France IA – **hub-franceia.fr**
- Germany: KI Bundesverband **ki-verband.de** and appliedAI **appliedai.de**
- Croatia: CroAI – **croai.org**
- Poland: AI Poland – **aipoland.org**
- Finland: First Artificial Intelligence Accelerator – **faia.fi**
- Netherlands: NL AI Coalitie – **nlaic.com**
- Austria: AI Austria – **aiaustria.com**
- Switzerland: Swiss AI – **swissaia.com**

In addition, AI DIHs, or the future EDIHs in the European Union, are selected precisely because of their support activities and because they are a good source of advice. The first **eDIH DIGI-SI**[13] began operating in Slovenia at the end of 2022.

[13] https://digi-si.eu/

Step 4 – Preparing data support for AI solutions

Data is the basis for all modern AI solutions. Machine-learning models, which are the engines of today's AI solutions, learn the rules directly from data. If the data is of insufficiently high quality or if there is not enough of it, the models can learn nothing useful, or else the rules they learn do not match reality. In the best case, the results are unusable; in the worst case, they can be misleading and harmful. Therefore, paying careful attention to data preparation or ensuring a sufficient quantity of high-quality data capable of supporting AI solutions are the milestones that determine whether the AI use case you have selected for your company can get off the ground in the first place.

Data is the basis of AI applications, which is why they must meet at least the requirements set out below.

1. It must be well-organised and of high quality so as to avoid the "garbage in, garbage out" scenario. Poor-quality data can render the models unusable.
2. Data must be designed for a specific context.
3. Inconsistencies must be removed from data.
4. Data must contain all the attributes that the algorithm needs to perform its task.

It often happens that companies that take the first steps towards introducing AI into their business operations have neither the required quantities of data nor sufficiently "rich" data. However, there are several measures that can be taken to bridge these gaps and acquire high-quality AI applications.

One is to use models that have been pre-trained on **synthetic data**[14] or data from open **data spaces**[15]. As their name suggests, pre-trained models are models that have already undergone a learning process. Companies therefore do not need large datasets or a great deal of time to teach these models using specific data.

However, pre-trained models come with risks as well as benefits. The main risk lies in the undetected bias inseparably linked to the data on which the models learned. Synthetic data is artificially generated – in this case, specifically for training AI models. Several **organisations**[16] are involved in generating generic data accessible to companies that currently do not have data of sufficient quality or quantity.

[14] https://www.gdpr-guru.eu/blog/blog-5/post/kaj-so-sinteticni-podatki-7835
[15] https://dataspaces.info/common-european-data-spaces/#page-content
[16] https://aimultiple.com/synthetic-data-generator

The European Commission runs a number of European data space initiatives. Through joint infrastructure, systems and processes, data spaces can help set up trustworthy data exchange. Companies can make use of them to fill in the gaps in their own data, and can also work with AI providers that operate as services (**AIaaS**[17]) or start-ups. These organisations' services usually come with pre-trained models that require the use of a small amount of a company's own data.

Despite its importance, data is merely one component of an AI solution or system. A data pipe through which the data can flow also has to be designed. These pipes require careful planning, development and management, since they already have to comply with EU regulations on data and artificial intelligence, and will have to do so to an even greater extent in the future. These regulations are:

- the Regulation on European data governance and amending the Data Governance Act (**DGA**)
- the General Data Protection Regulation (**GDPR**)
- the **EU Artificial Intelligence Act**

In order to comply with the **legal requirements**, companies need to ensure that their data and models are both managed properly.

Step 5 – Dilemma: Training up your own team or collaborating with AI and data partners?

After laying the foundations for AI, you need people with the right knowledge and skills, not only in AI itself but in data management as well. Recruiting talented new employees versed in AI and data is an extremely difficult task. This is because talent with these profiles is expensive and hard to find, and companies have to compete with large organisations and with local and global ICT companies to recruit them. Demand for talent is huge, and will only increase in the future. For this reason, the knowledge that existing employees possess is vitally important, as is any process you undertake to provide them with further training.

Companies may also decide to develop certain roles themselves and seek out an external partner for others. Whether you build your own in-house talent to carry out these tasks or turn to a strategic partner is one of the key decisions that senior management have to make. This decision depends on the size of the company and on the specifics of the situation in which they find themselves.

Owing to the specific requirements of each role, the company must design an individual learning path for each employee separately. Each role requires a specific set of skills or competencies that the employee can master by taking some of the many online courses on offer. A table of roles is a useful starting point when thinking about the requirements of each role. In any case, it is recommended that you seek out professional assistance, as defining learning paths is no easy task. A simple list of available courses would be insufficient on its own.

[17] https://levity.ai/blog/aiaas-guide

Role	Requirements that a role must meet in the AI age
Senior management	Senior management must understand the opportunities and threats that AI brings. They must have an intuitive understanding of how AI operates and what they can expect. **Recommended courses: See the table in Step 2.**
Employees	Employees must have an understanding of what their work will look like in the future and how they will be using AI in their everyday tasks. They have to become "data-literate", which means that they are able to read, understand, create and transmit data as information. At the same time, if you want to build successful AI applications that bring your company the value it expects, you will need to make use of the expertise that your employees already possess. Recommended courses: **Elementi UI**[22] (course in the Slovenian language).
Data engineer, data solutions developer*	A data engineer collects, links, redesigns and saves data, thereby preparing it for further use. They focus chiefly on merging unprocessed data, and designing it into useful, well-organised and well-structured forms of data. **Recommended courses: There are many courses, with new ones appearing all the time. A good starting point is the Coursera**[23] **Massive Open Online Courses (MOOC) platform.**
Data scientist, machine-learning engineer, modeller*	Data scientists develop the statistical or machine-learning models that are the basis of any AI solution, and analyse big data and data warehouses. They are experts in control statistical models, and analyse past and current data from data warehouses. Based on their analyses, they formulate recommendations and suggestions for optimal decision-making in business situations. **Recommended courses: A good starting point is the Coursera**[24] **Massive Open Online Courses (MOOC) platform. A number of faculties in Slovenia are already educating future data scientists:** the **Faculty of Computer and Information Science (University of Ljubljana)**[25], the **Faculty of Electrical Engineering and Computer Science (University of Maribor)**[26], the **Faculty of Mathematics, Natural Sciences and Information Technologies (University of Primorska)**[27] and the **Faculty of Information Studies (Novo Mesto)**[28].
Data translator, analytics translator*	Although this role is the newest and least well-known, it has emerged as one of the most important roles in ensuring the successful deployment of AI in business. A data translator represents the bridge between data professionals and business users. Their tasks are: • to define those business challenges with a large impact that can be resolved by data science and generate solid business cases around them; • ensure that the data science and engineering team understand a particular business challenge, and are able to come up with a suitable analytical and data plan to deal with it; • help interpret and provide a result that can then be incorporated into the organisation's business and IT landscape. **Recommended courses: There are fewer training and advanced training opportunities for data translators compared to those available for data engineers and data scientists. Two examples of courses are listed below: Connor: Becoming an expert data translator – Developing presentations and slideshows | Coursera**[29] **and The Analytics Translator – Data Science Career | Udemy**[30]**.**

* The process of designating roles differs from organisation to organisation, although in every case the requirements described here must be met.

[22] https://ai4si.gzs.si/b/elements-of-ai-tudi-v-slovenscini

[23] https://www.coursera.org/browse/data-science

[24] https://www.coursera.org/browse/data-science

[25] https://www.fri.uni-lj.si/en/study-programme/data-science

[26] https://feri.um.si/en/study/programmes/first-cycle/un/ipt/

[27] https://www.famnit.upr.si//en/education/master/data-science

[28] https://www.fis.unm.si/studijski-programi/podatkovne-znanosti-mag/?lang=en

[29] https://www.coursera.org/lecture/visualize-data/connor-becoming-an-expert-data-translator-uSisr

[30] https://www.udemy.com/course/the-analytics-translator/?utm_source=adwords&utm_medium=u

Step 6 – Controlling costs with the help of partnerships

At the beginning of this Guide we mentioned that companies have to set about building four basic support pillars if they are to introduce AI successfully. We could add another one, which is basically the basis for the other four. The successful deployment of AI requires a certain amount of investment, for which the company has to provide the funds. The volume of that investment depends on the company's AI maturity level and the method by which the AI support pillars are developed – that is, whether the company opts to develop all the pillars itself or tries to find partners to help.

This is the biggest challenge: while AI prototypes are relatively easy to design, they are considerably more difficult to industrialise. The most common mistake made by companies with no AI experience is that, when planning their AI tasks and budget, they proceed from the resources and tasks used for developing a prototype. A laboratory-based approach most commonly used in science is typical of AI prototype development. In industry, however, this presents a problem, as it is not scaleable and does not enable industrialisation, which is obviously the key to any industrial application of AI. Many companies have learned this from bitter experience.

To control costs, particularly if it wishes to implement specific AI solutions beyond a simple prototype, a company more or less has no choice but to find partners. Experience plays a key role here, as costs can begin to rise beyond all limits, and lead times extend beyond the bounds of even the loosest and most acceptable timetable. A competent partner with experience can help you achieve the same results much more quickly and at substantially lower cost.

In the case of specific needs or niche activities, start-ups that have developed AI to address precisely those needs or activities can be suitable partners. If a company wishes to use AI to support a variety of areas of its business, specialised companies that have already designed successful approaches to AI introduction are more suitable.

Finding the right partner is not easy, particularly in an environment in which large numbers of organisations offer AI. **Various AI landscapes** [31] are available in the EU to help you find high-quality providers. Lists of start-ups are constantly being developed and supplemented.

[31] https://www.ai-startups-europe.eu/

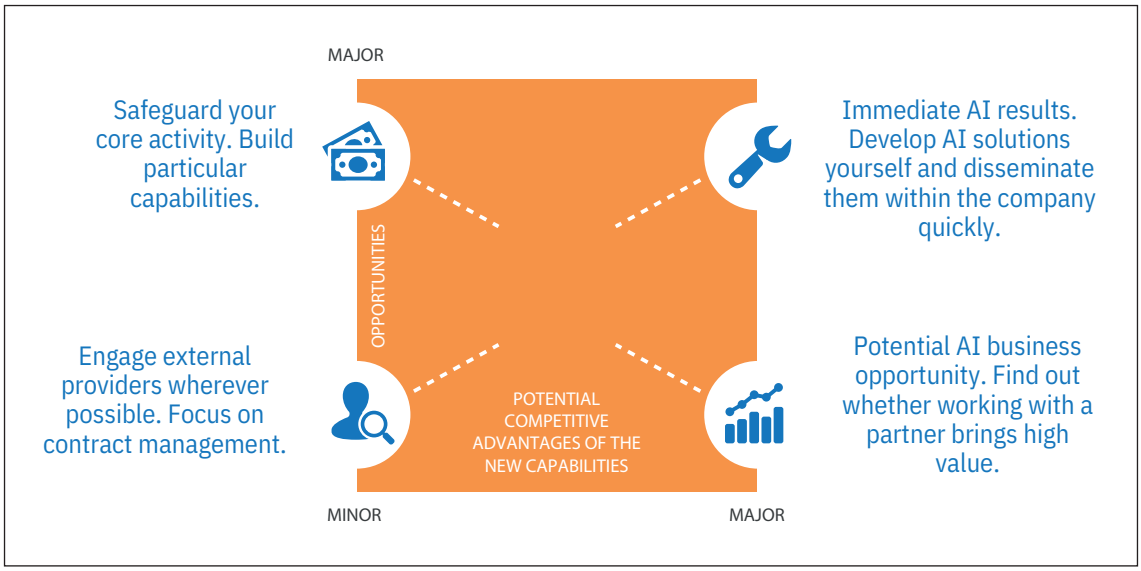


Figure 2: Possible ways in which AI can be introduced into a company

When deciding when to look for an external partner, the matrix in Figure 2 can be of help. A large number of tools and libraries are also available online to help you plan your AI deployment. The **AI4EU**[32] platform, which is supported by the European Commission, brings these resources together and offers them to interested companies. They also provide access to the European AI ecosystem to make it easier for European organisations, from scientific and R&D institutions to enterprises of all sizes, to work together. Slovenian companies can also turn to **ai4si** for help in sourcing a suitable provider or start-up.

How to obtain initial feedback to help you develop the AI pillars properly

The first step on the path towards introducing AI into your company is a small test project. This allows you to collect feedback, demonstrate value added and explore options for future expansion. This first test project should serve chiefly as a way of acquiring experience and knowledge. Although there is usually a good deal of enthusiasm about AI and companies expect immediate results, you should start with small steps and focus first on collecting feedback. Those with limited funds in particular should be developing AI gradually, step by step. You should start with a test project, but should also be aware that such projects must also be industrialised (and plan steadily for that eventuality). Not least, a test project will give you a feel for the development of AI applications that you might want to build in the future. You will need to ensure that the necessary infrastructure is in place, and resolve issues relating to procedures, competencies and responsibilities when making improvements to and further developing the test project towards eventual industrialisation.

When disseminating an AI solution, the value added must be clear. Only then will you be able to proceed with the next steps. The organisation of the company must also be adjusted so that you are able to continuously maintain and further develop your AI solutions. Commitment on the part of senior management is key to achieving this, as it will also be supporting the introduction of AI going forward.

[32] https://www.ai4europe.eu/

Careful construction of the four pillars of AI is key to successful deployment

We have already mentioned several times the four basic support pillars of artificial intelligence: company culture, talent, data and infrastructure. A company can deploy AI in its day-to-day business operations only when it is ready to do so. To be ready for AI means that AI is used consistently and sustainably. This cannot happen overnight.

Being ready for AI is not just a question of finances and budget – it requires investments in the four key pillars, which is something we seldom discuss. These are:

1. company culture
2. human resources and talent
3. data
4. infrastructure

AI pillar	AI readiness
I. Company culture	The process of accepting AI into their business is still a new thing for many companies. Management must take proactive steps to ensure that employees and customers adopt the right attitude to AI. They have to ensure that the cultural changes and changes to mindset are implemented if AI is to be accepted over the long term. These changes can be achieved with the following approaches: **1. Raising AI literacy** Literacy is key to creating a relationship between employees and AI. Every employee should have a basic understanding of AI and know how to answer questions such as: What is AI? How does AI work? What is the company intending to do with AI? How does AI affect job security? (and so on). Data literacy is not intended for data scientists only. Senior management, heads of production functions, HR managers, sales and marketing staff – in fact, anyone who takes business decisions and manages innovations – all have to know how to use and interpret data. It is not only that this will help with data-based strategic decision-making, but will also pave the way for the acceptance of AI, since many decisions on this depend precisely on data. **2. Prepare your company for testing and make it resilient to uncertainty** Testing and gradual improvement are two critical parts of the machine-learning development cycle, which is one of the foundations of AI. Building a culture of testing within a company requires resources to be set aside for multiple rounds of testing and retesting. **3. Create cross-functional teams** Incorporating AI into products and business processes is a team sport. It is imperative that business managers and specialists in specific business functions, data scientists, data engineers and data translators are involved in this process. If you are used to working in separate working groups, your AI initiatives will remain prototypes in the hands of the data scientists. **4. Think broadly and out of the box** If you are serious about using AI, you will have to be open to ideas.
II. Talent	Some employees will need **more specialist knowledge and greater levels of training**, in addition to a basic understanding of what AI is and how it can be deployed within the company. Without this, your ability to plan and implement an AI strategy will be limited. One of the most valuable moves a company can make before developing its first test project is to educate its managers about AI in the business context. The training given to innovators should be similar to the training given to management staff, with an extra emphasis on aspects of operational implementation, and should include an understanding of the technology and control of the development cycle. You will therefore need staff with the proper knowledge if you are to carry out data strategies or new test projects. You can recruit new staff to fill the gaps in knowledge, or retrain the staff you have at the moment. The fact that your employees are already familiar with your infrastructure and processes will probably make it easier for you to plan and implement your AI strategy.

AI pillar	AI readiness
III. Data	Machine learning and deep-learning algorithms require large amounts of data. Providing a data infrastructure is therefore one of the most critical steps in readying a company for AI. Your company is constantly generating data; the question is whether all that data is adequate (if you store it at all). Collecting and storing data does not have to be a highly complex process, particularly if you are just starting out. You first have to ensure that you collect and save the data created in your day-to-day operations. That data may be dispersed across various applications – for example, you might have several places in which customer complaints can appear, such as email, social media, your online store or the CRM system. In that case, you will have to collect and arrange that data before storing it in one place. Collection of this data and easy access to it are the main objectives of data warehousing. When you wish to check the status of the data warehouse, find out whether data from the company's daily business operations, such as customer orders, payments for services performed, error reports, etc., are accessible to key stakeholders within the company. If much of this data is not available, you will need to come up with a better data-warehousing strategy. Many companies still have piles of paper containing valuable data scattered around their offices. Do not ignore these piles of paper: they may contain valuable information useful for analytics and AI. You should therefore design a strategy for digitising your historical paper documents and moving to digital working practices. A high level of digitisation is one of the preconditions for the wide deployment of AI.
IV. Infrastructure	AI business applications without infrastructure support are merely research or side projects. If you want to begin to use AI for different purposes, AI infrastructure is crucial. That requires specialised software, a lot of computing power and, occasionally, special hardware and support staff. Computing infrastructure is now available for lease as a cloud-based service. Cloud-based machine-learning platforms, or machine-learning as a service (MLaaS), enable models to be built, introduced and managed in the cloud. These platforms, which include Amazon Machine Learning, Azure ML and Google Cloud AI, also offer tools that help you build innovative AI solutions. This means that teams no longer have to build their own AI infrastructure from scratch. Instead, they can focus on developing solutions that bring benefits to the company. We should, however, point out some of the limitations of this approach. First of all, the settings and algorithms offered by these platforms might not be suitable for every business use case in your company. You might, for example, want to use a highly customised algorithm. If the platform does not support customised algorithms, you are quite limited in what you can do. Moreover, these platforms also force you to work in specific ways that might not be compatible with your company's development practices. The second point to make is that the services these platforms provide come at a price, and you may find you are charged for things that you will never use. You should therefore seek help from partners who can carry out the infrastructure construction process professionally. You will see a quick return on the money you pay for their services in lower infrastructure costs.

Starting to introduce AI is one of the most important decisions that management can take.

In the previous sections of this Guide we discussed the four pillars of AI and the steps you need to take to introduce them into your company. As each pillar is important in its own right, we do not recommend that you address all four at the same time, particularly if you are at the start of the AI introduction process. Indeed, it can sometimes take several years for a company to complete a specific pillar entirely.

When introducing AI, it is not only the complexity involved in erecting the basic pillars that presents a challenge to company decision-makers, but also the exponential development of the technology itself. Some estimates indicate that, in the last ten years, AI capabilities have doubled every three months on average. Companies employing a multi-year internal development cycle are therefore unable to keep up with this pace of development.

How do you set about introducing AI into your company?

The answer is simple: you just have to start. The secret of a successful start lies in breaking down complex and indigestible tasks into smaller, bite-sized chunks. You can then embark on your first task.

You must employ an approach that enables the company to test the introduction of AI and, at the same time, fill the gaps in the company's AI readiness by carrying out short-term steps. This means that you should introduce AI into the company on a trial-and-error basis. Your testing must be strategy-oriented, which can be achieved through short-term steps performed gradually and repeatedly:

1. identify the gaps in your AI readiness
2. seek out high-impact AI initiatives
3. develop a short-term AI strategy

These three short-term steps enable complex and unmanageable tasks to be broken down into smaller, more manageable tasks.

You are now ready for your first task. Start by putting together an AI team tasked with implementing those three steps. Senior management must set up a system for tracking progress, adjust the strategy where required, and ensure that the steps are consistently repeated. The team must be made up of business managers, innovators, data translators, data scientists, AI specialists and data engineers. This is the team that will be responsible for developing the AI strategy and overseeing its implementation. How the team will be put together depends very much on the size of the company. Only a few companies can afford at the beginning to have a team made up solely of its own employees; it is generally only large companies that have their own AI specialists and data scientists. If you are a small and medium-sized company, it is therefore very important that you seek out external partners that can help you fill AI specialist roles and focus on the data.

1. Identify the gaps in your AI readiness

The first short-term step is to examine the company's current level of AI readiness. Do you have a culture of experimentation "in your blood"? Do you collect data? If so, where do you store it? What is the quality of this data? Do you have an in-house team for identifying gaps in your AI readiness? Where are you technologically? Does your budget contain funds for starting AI introduction? The company must address these and similar questions at the very outset.

Example of questions relating to data and talent:

Identifying data gaps in AI readiness	
Question	Answer
Do we know what data we have in the company?	No
Do we save all the data we generate at the company?	Some
Do we have quick and easy access to all our data?	No
Do we record every interaction between company and customer in an electronic logbook?	Some

Identifying the AI readiness gap in relation to talent	
Question	Answer
Do we have AI specialists at the company?	No
Do we have data specialists at the company?	Yes
Do we have enough data specialists at the company?	No
Does the company organise training for data specialists?	No

At this stage is it best to search for questions and answers in a systematic way. That does not mean that you have to embark on an extensive study. The most straightforward approach is to draw up a list of around five key questions for each of the four AI pillars. With a bit of knowledge, it is possible to produce these questions for all the pillars in one day.

It is important to note that not all the questions can be prepared during the first round. You will be able to formulate additional questions and look for answers when the steps are repeated. The approach we are describing here involves the repetition of steps and is based on strategic testing.

Prepare and discuss the questions for specific AI pillars and give simple "Yes", "No" and "Partly/Some" answers. Highlight the "No" answers in red and the "Partly/Some" answers in orange. By the end you will know precisely where your gaps are. This will be your starting point, and help guide you through the first iteration of the three short-term steps. All "No" and "Partly/Some" answers are gaps that must be filled as quickly as possible.

2. Seek out high-impact AI initiatives

The goal of this short-term step is to identify AI initiatives that will be of greatest benefit to your company, and help managers and the members of your team to develop the appropriate skills.

There are several ways in which you can seek out opportunities for AI deployment. You team can brainstorm to locate those areas in your company where its deployment would be most appropriate. Ideas can come from current knowledge about the company's business functions or as a response to known inefficiencies within the organisation. Another approach is to look at the company's long-term objectives and find out whether there are any problems that could be resolved by AI. You could ask the heads of different functions and departments to define their key problems, and judge yourself whether they could be eliminated or mitigated by AI. Of course, as this also requires the heads to understand those areas where AI could be of assistance, it is important that they are provided with basic knowledge, particularly about what AI can and cannot do. Your team might decide to discuss numerous other ideas and use cases described online, or turn to an external partner to help them find potential use cases in your company.

Now, once you have gathered ideas on the introduction AI at the company, your task is to transform them into concrete initiatives. Put the ideas in list form according to:

- the effects they could have, and
- the investment required (not just money, but also people).

They could be evaluated on a scale of 1 to 10 in terms of impact and also cost-effectiveness (for the latter, initiatives that involve smaller investments should receive a higher mark). You will arrive at the most feasible and impactful initiatives by multiplying one mark by the other. This will help you narrow the items on the list down to those with the highest potential effectiveness. Depending on how far you go with the list of ideas, you should end up by identifying several potential high-impact initiatives. It does not matter how many initiatives you start off with – just begin with one. The important thing, therefore, is to simply get going.

The search for feasible, high-impact ideas might also reveal that you have no challenges that could be tackled by AI. In that case you have two options.

The first is to temporarily suspend your search and your development of AI use cases, but continue to close the gaps in your readiness in all your critical pillars – for example, through data warehousing. This is important because, while AI might not be able to resolve all your problems effectively today, an opportunity to do so might emerge in six months' time. Do not forget that the capabilities of AI double every three to four months, and that the availability of innovative solutions and services keeps on increasing.

The second option is to decide to start developing simple AI use cases simply in order to gain experience. In both cases you will gain knowledge and experience, and prepare data that you can start using immediately, if AI business opportunities emerge for your company in the future. You can define the gaps in your readiness and look for high-impact initiatives in parallel, although it is important to remember that both activities should be completed before any short-term strategy is drawn up.

3. How to develop a short-term AI strategy

When you have uncovered several feasible high-impact ideas that you are able to transform into initiatives, you can start developing your short-term AI strategy. You will therefore draft a plan to fill the gaps identified during the first step, realise some of the initiatives and improve your AI readiness.

Unsurprisingly, it makes sense at this step to begin to define clear long-term objectives. A long-term vision will give meaning and motivation to further efforts to stimulate ideas and initiatives. Be careful not to make your objectives too broad – for example, "We would like to become an AI-driven company". An objective like that is complex and unachievable. Instead, use the results from the second step, when you identified the most effective initiatives. These results will help you design a strategy that suits your company; thinking "generically", on the other hand, will not lead to results with impact.
Answer key questions such as:

1. Where do we see most of the opportunities for introducing AI?
2. Do these opportunities correspond to the company's long-term business objectives?
3. What areas must be focused on when introducing AI, and why?

Your answers to some of these questions will help you formulate long-term objectives that are specific to your company. Once you know your long-term objectives, you can design a short-term strategy. You will essentially be using short-term steps to achieve long-term objectives – a process that lies at the core of strategic experimentation. As you carry out each step, you will obtain new information and findings to which you can adapt your short-term strategy – while remaining focused on your long-term objectives, of course. Depending on what you achieve in the first year, you can change your strategy for the next year. These first steps will lead you closer to realising your vision: building a unique company that will stand out from the competition and win itself a high profile on the market.

Perhaps you will ask yourself the following question: "How can I deploy a short-term strategy to fill the readiness gap and at the same time try AI out?".
There are two approaches to implementing a short-term strategy: developing use cases and filling gaps proactively. Both can be carried out in

Practical example of strategy design

Let us assume that you are a company that services appliances for catering establishments. During the second step you realised that you could achieve a competitive advantage by shortening your response times for fault reports and improve the way you plan service operations at customers' locations. In the next three to five years you would like to create a service for your key customers that distinguishes you from the competition. That is your long-term, AI-related goal. To achieve it, you could set the following short-term objectives: faster response times, better initial contact with customers, improvements to service engineers' productivity, and a reduction in the number of cases of burnout. At the end you want to ensure that your company stands out for customers as the most reliable company on the market and the one that offers the highest quality of service. AI can already help you achieve those objectives today. A one-year objective might be the introduction of at least one AI logistics solution that addresses one or more of the objectives listed above and helps to eliminate 30% of the gap identified in the first step – for example, by establishing a database on service operations performed that contains key information for use in building an AI solution to improve the planning of preventive service interventions.
This is an example of a short-term strategy that can be written on one side of A4 and does not require extensive reports to be drafted.

parallel; the only important thing is that the gaps in the capacities necessary for the development of the selected use cases should be filled first.

How to start developing use cases

Developing use cases will force you to start using AI. Look at your shortlist and find the feasible initiatives or AI use cases with high potential and importance for your long-term objectives, and begin to plan and implement them. As part of this process you will form a development group, take decisions on cooperation with external partners and on purchasing or leasing technological resources in the cloud, explore infrastructure options, and continue to carry out practical tests on the project, on a timeline that stretches from idea to introduction and on to application in products or day-to-day processes. Along the way you will learn, experiment, and formalise your processes and technologies.

You can start by choosing one or two AI use cases that have high potential and match your long-term goals, then start planning activities to bring these initiatives to life. Decide who will develop the models, research the infrastructure options, ensure correct data flow, and so on. At the end of every test project, document the experience and information you have gained, and formalise the processes. You should also update the status of the gap that you wish to fill. Repeat the entire process as many times as you said you would in the short-term strategy.

Proactive gap filling

The proactive method of filling gaps requires you to study all the AI readiness gaps identified in the course of the first step, and try to fill the most pressing gaps (i.e. those you need to fill in order to develop the use cases referred to in the section above, and those that are important for the achievement of the short-term goals). Although some gaps can be filled within an activity that the company carries out to develop use cases, others have to be filled through active planning.

Example of a training plan

AI education and training at company level, the detection and warehousing of data, AI ethics and responsibility – all of these things need careful planning and can be done by managers and AI team members in advance. In addition, the competencies of the team working on developing use cases should be developed in a targeted way so as to ensure that certain processes are formalised. Ethics and responsibility are key requirements under the EU's Artificial Intelligence Act.

The question most commonly asked by companies is: "What gaps should be addressed as a matter of priority?". The order of precedence for filling gaps should make sense in relation to the strategy. A universal rule appears to have emerged in relation to this: that one should start by acquiring the most important technological and business knowledge about AI. Business knowledge is mainly concerned with use value, which capacities the company should secure, how the company should organise itself operationally for the introduction of AI, and so on. A company is taking a big risk if it skips any form of AI education and training and then immediately begins running test projects. The problem with this is that you might not be qualified to recognise the best initiatives or measure success – or worse, you might be using AI to solve the wrong problems. All three invite failure. The following finding by companies that have successfully in-

troduced AI into their operations should perhaps serve as a guide: AI is far too important for key decisions to be left to AI specialists. AI is, first and foremost, a business issue; any key decisions on it should therefore be taken by senior management. Specialists should help with technical implementation.

Designing a timetable for filling gaps

A company can start proactively filling gaps by first studying the gaps from the first step and drafting a plan for filling the first set of gaps, which should be made part of the short-term strategy. Begin by focusing on the basic challenges.

The example of a timetable given below contains good practices on which gaps to close and when. Be aware that some of these gaps can only be filled by using the experience gained from developing use cases.

When determining which gaps to fill, use the guidelines from the timetable. You should, ideally, draw up a list of corrective actions for each gap; this will ease the path towards practical deployment and allow you to track your progress.

Tracking progress, adaptation and repetition

It is crucially important that you track your progress when carrying out short-term AI strategies. When some of the gaps are closed, others will appear. These new gaps also need to be tracked and filled, which is why it is important to carry out several short-term repetitions of the process in three steps. The goals of each repetition must be achievable and measurable over short time intervals.

You will know that your AI strategy is on the right path when you begin to increase the number of use cases introduced and they start to create value. Once you have gained experience and improved your AI readiness, AI implementation will become a smoother process. The number of initiatives brought into use will increase, and the initiatives will progress more quickly and bring benefits.

All these things take time. Depending on the use cases, the real impacts of AI can begin to appear within six months to two years. The actual timetable will also change according to where the company started from. Think about the readiness assessment in order to gain an insight into where you are on your AI maturity journey.

Once your knowledge of how to go about introducing AI into your company has placed you on more solid ground (and the initial enthusiasm has worn off), ask yourself what the consequences will be if the company fails to prepare for the challenges that AI will bring to the sector. Its impact will be incomparably more destructive for latecomers or those companies that are unprepared than digital transformation and, before that, the computerisation of business, ever were.

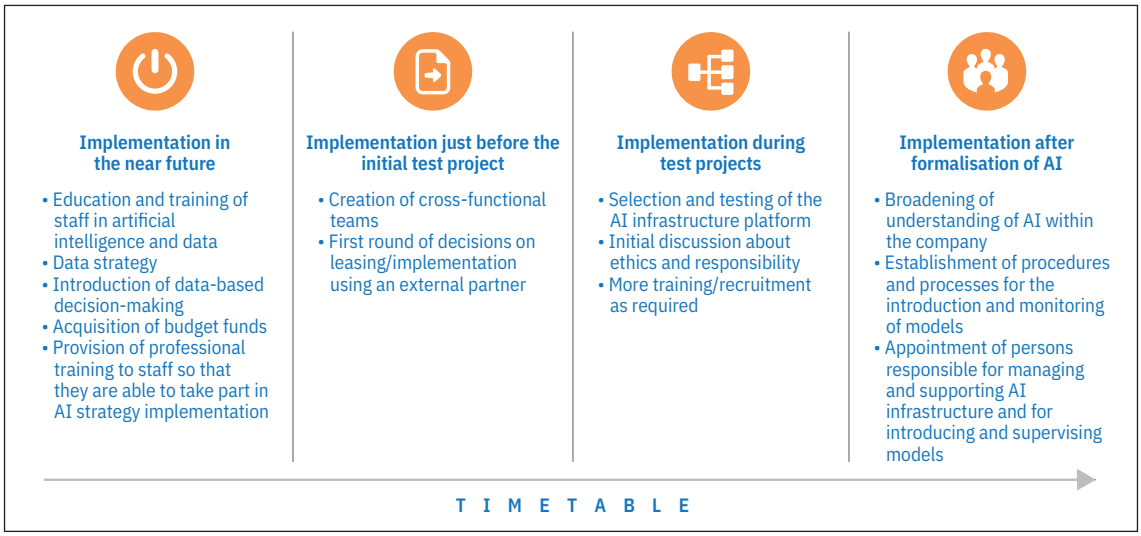


Figure 3: Timetable of the closure of the identified gaps in a company's readiness for AI

Part 2: Preparing a company for generative AI

Generative artificial intelligence is not just a technological advance but a paradigm shift in business – one that signals a new way of working, innovating and remaining competitive.

In contrast to previous waves of digital transformation, generative AI offers unique opportunities for creativity, efficiency and improved interaction with customers. At the same time, it creates unique challenges that call for careful preparation. The **Reducing the Risks of Generative Artificial Intelligence** supplement outlines these challenges in more detail.

Companies, particularly those with limited internal resources and specialist knowledge, must plan and journey along their path to generative AI with great care. This section guides you through the essential steps that companies must take to prepare for the generative AI revolution, with an emphasis on people, processes, data and technology. It involves the transfer of the general approach outlined in the first section to one of the branches of artificial intelligence that is perhaps most easily achievable for companies, managers, employees and other stakeholders. You can read more about this branch of artificial intelligence in the **What Every Manager Needs to Know About Generative Artificial Intelligence** supplement.

Note: *The process of preparing a company for the introduction of generative AI involves the same basic four steps set out in the first section. Nowadays the introduction of generative AI into a specific work process is, for many companies, the first initiative through which they have begun to incorporate AI into their DNA.*

1. People, talent and culture

Immediate steps: Educate and cooperate

A focus on people is the first and most important step in preparing your company for generative AI. Regardless of how advanced the technology is, it is people who will be deciding whether or not it succeeds.

In the first three months, educate yourself and your management team in the fundamentals of generative AI. Understanding what it can do, what its limits are and what impact it could potentially have on your industry will help you make well-considered decisions.

Then bring in external consultants or AI specialists; they will be able to provide you with an initial assessment of your readiness. These professionals can help identify quick wins and sketch a strategic path forward, one that is tailored to your specific needs and limitations. This cooperation does not need to be extensive or expensive. It might only be a few strategic meetings or workshops that equip your team with the basic knowledge. When selecting the people you wish to work with, be sure to engage professionals with several years of practical experience. Far too many self-proclaimed “AI experts” that deal mainly with writing prompts for large language models, such as Chat GPT or Gemini, are appearing on the market these days. This has absolutely nothing to do with strategic AI expertise, or with knowledge and experience of how to incorporate it into business operations and products.

Short-term focus: Creating internal champions

Over the next quarter, create and train a small cross-functional team whose members will act as "internal champions" for AI initiatives. It is not necessary for the team members to have been trained in AI from the beginning, but it is important that they have a strong interest in innovation and a deep understanding of business processes. Provide them with the necessary training, where possible through online courses or partnerships with educational and R&D institutions. This will help them build up their literacy and deepen their AI competencies. They do not need to become top experts in the operation of generative AI systems, but they should gain knowledge about its use, benefits and risks.

The team will be key to managing the generative AI strategy, transforming its capabilities into tangible business results and promoting a culture of innovation. It will operate as a bridge between the technology and its practical application in your company, which will ensure that any AI initiative complies with your strategic objectives.

Long-term vision: Developing specialist knowledge and promoting innovation

As the company progresses, the team's professional AI expertise should be consolidated and their knowledge gradually disseminated throughout the company. In the following year, promote continuous learning and provide opportunities for advanced training. If possible, think about engaging AI specialists capable of managing more complex projects, or developing your own.

In the following two years, try to build a special AI team to oversee strategy and strategy implementation, and ensure that their skills continuously improve. This team, which may comprise your own employees and external specialists, should be tasked with ensuring that AI is written into the company's DNA. This will stimulate innovation and give you a competitive advantage. Cultivate a culture of experimentation that encourages employees to put forward ideas, research and test. This kind of culture will be vitally important because AI technologies, solutions and services will continue to develop and open up new opportunities.

2. Streamlining business processes

Immediate measures: Identify the key business challenges

To prepare your company for generative AI, start by defining one or two critical business processes in which immediate impacts can be achieved. These may be areas where automation reduces the amount of manual work, data analysis brings valuable insights or AI improves interaction with customers.

It is important that you focus on those processes that are of vital importance to your company and that could bring tangible benefits quickly. Collect contributions from working groups from various areas and document the processes; this will help you understand the current situation "in the round" and identify any potential areas for improvement. This step will also lay the foundations for your first successful generative AI test project, which should be your immediate goal.

Short-term focus: Optimising and documenting processes

In the next quarter, try to optimise the processes you have identified and ensure that they are ready for AI integration. This could cover the streamlining of workflows and the standardisation of data-collection methods. The aim is to create a process that is not only effective but also well-documented. This will make integration with AI technologies easier going forward.

Develop a short-term change-management plan that addresses how generative AI will be introduced into the company, how employees will be trained and how the transition will be managed.

This plan should address any resistance, ensure clear communication about its benefits, and ensure that employees understand how it will enhance and not replace their work.

Long-term vision: Incorporating generative AI into basic processes

In the following year you should focus on standardising the process of integrating generative AI into business functions and activities. In order to employ a consistent and flexible approach to deployment, develop templates, workflows and best practices that can be used across a variety of functions.

Over the next two years, aim for full integration of generative AI into your basic business processes. It should become the basic component of your company, foster efficiency and innovation, and improve decision-making. At this point it is also important to improve the AI management framework and ensure that ethical aspects, a data-use policy and risk-management practices are fully incorporated into your business.

Difference between automation and augmentation

Generative AI can be used in two main ways: to automate and augment work processes. Understanding the difference between these two methods of use is important for senior management, as it affects how they integrate generative AI strategically into the company.

AUTOMATION: IMPROVING EFFICIENCY

Automation involves the use of AI to carry out tasks that used to be done manually by human beings. The goal of automation is to increase efficiency, reduce costs and minimise human error, with machines taking over repetitive and routine tasks.

Examples of automation using AI

- **Customer services**: Using AI-driven chatbots to deal with routine customer queries, which releases human agents for more complex tasks.
- **Content creation**: The automated creation of content, such as social media announcements, product descriptions or promotional articles, which saves time and effort for writers of copy in marketing and PR departments.
- **Data analysis**: Automation of the analysis of large databases for the production of reports or identifying trends, which is time-consuming and prone to error when done manually by a member of staff.

Benefits of automation

- **Increased efficiency**: Generative AI can perform tasks more quickly and precisely than human beings, which saves considerable time.
- **Cost reduction**: By automating routine tasks, the company can reduce labour costs and redirect human resources to more strategic activities with higher value added.
- **Adaptability**: Generative AI enables companies to increase the scope of their operations more easily because automated processes can control larger quantities of business events and tasks without a corresponding increase in labour costs.

Risks and considerations

- **Job losses**: Automation does raise concerns about job losses, which has a negative impact on staff morale and the work climate, and gives rise to resistance.
- **Loss of human contact**: Excessive dependence on automation, particularly in customer-facing roles, could lead to a reduction in the personalisation of services and, consequently, to a worsening in customer relations and satisfaction.

AUGMENTATION: ENHANCING HUMAN CAPABILITIES

AI is employed to enhance human capabilities, not replace them. With this approach, generative AI collaborates with people, and provides them with tools, insights and capacities that improve their performance, creativity and decision-making.

Examples of augmentation with generative AI

- **Creative collaboration**: It helps designers, copywriters and artists explore ideas, prepare drafts or produce visual elements.
- **Support for decision-making**: In complex decision-making environments, generative AI can impartially analyse large quantities of data and produce insights that help managers make better-informed decisions.
- **Personalised marketing**: Generative AI can augment marketing teams by providing detailed insights into customers' characteristics and activities, and create customised content that resonates with target groups.

Advantages of augmentation

- **Improved productivity**: By providing creative tools and insights, generative AI helps employees work more efficiently and productively, as it frees them up to focus on tasks with higher value added.
- **Innovation and creativity**: Generative AI can create new ideas and offer insights that might not be obvious to human beings, thereby simplifying testing and encouraging innovation.
- **Improved decision-making**: Generative AI's ability to process and analyse massive quantities of data facilitates better-informed and more accurate decision-making.

Risks and considerations

- **Overdependence**: There is a risk that people come to rely too heavily on generative AI for decision-making, potentially leading to a reduction in critical thinking. More especially, there is a danger that, because generative AI learns on the results of previous enquiries or instructions, the independence and creativity of created content will fall.
- **Complex introduction**: Augmentation often requires more nuanced introduction into current work processes, which can be complex, time-consuming and expensive.

3. Data is the lifeblood of artificial intelligence

Immediate measures: Assess data readiness

Data is the fuel that drives AI, which is why it is vital to assess data readiness very early on in the process. Perform a quick review of your current data assets, and assess their quality, structure and accessibility. Identify any immediate gaps that could impede the introduction of AI, such as isolated data silos, inconsistent record-keeping formats or poor-quality data.

This initial assessment will help you grasp the volume of work that will be required to ready the data for AI, and will help you decide where to start your journey.

Short-term focus: Organising and managing data

Over the following three months, start organising and centralising the data required for your generative AI test project. Make sure that all the data is clean, well-structured and easily accessible to the groups that will be responsible for the AI initiative. If the data is not at the level required for

AI, you will have to make additional investments in basic tools and in data-management processes; you should also formulate your basic data-management practices. Define the standards that will apply to data quality, establish data access and security protocols, and determine the roles and responsibilities for the management of those protocols. These practices will be of key importance when you step up your AI efforts.

Long-term vision: Building an AI-based company

Over the next year, focus on improving your data-management capacities. Invest in tools and processes that improve your ability to manage, analyse and make use of data across the whole company. This might include advanced data-storage solutions, analytical platforms or improved data-management tools.

Over the following two years, aim to build a data-led culture in which data has pride of place in decision-making procedures. Encourage all groups to use data and the insights provided by AI to steer their strategies and operations. Also think about investing in advanced data capacities, such as AI-driven big data or analytics platforms. These will provide support to more advanced AI applications.

4. Tools and infrastructure – Invest in the right technology

It is already possible today to lease all the technological support you need for generative AI almost immediately, releasing companies from the need to build their own information infrastructure. This reduces the volume of investments considerably, not only in terms of money but also in terms of competencies and the number of specialists required to set up and maintain that infrastructure.

Immediate measures: Researching and identifying tools for the rapid acquisition of AI capabilities

In the initial phases, focus on identifying the generative AI tools that will produce quick wins with minimal adjustment. Look for standard generative solutions that support specific business challenges, such as customer-support chatbots, content-creation tools or advanced analytics platforms. These tools can produce immediate value without requiring substantial initial investments in infrastructure or customised development.

Short-term focus: Starting your first AI initiative

Use the first three months to select one high-impact business case for your AI test project. This project must have clear objectives, such as improving cooperation with customers, automating repetitive tasks, reducing risk or improving decision-making. To reduce costs and acquire the necessary capabilities quickly, use generative AI services and, if necessary, adjust the scope of the project.

The test project will serve as proof of concept that tests the technologies, measures their impact, and identifies any challenges or limitations. You can use the results to refine your approach and plan the wider deployment of AI across the company.

Long-term vision: Expanding and disseminating AI technology

Over the next year, expand your AI initiatives to other parts of the business on the basis of the results of the test project. Invest in scaleable AI infrastructure, such as cloud-based services or advanced data-management platforms, to support wider deployment. This investment must accord with your general AI strategy and business objectives.

Over the next two years, consider developing customised AI solutions tailored to your specific business needs. These solutions might include more complex applications, such as advanced personalisation of customer offers, predictive analytics or AI-driven product development. Make sure that your investments in the technology are scaleable, secure and capable of supporting your long-term AI vision.

Conclusion: Accepting the future with confidence

Preparing a company for generative artificial intelligence is a journey that requires careful planning, strategic investments and a commitment to continuous learning. If you focus at the outset on building the right skills and organisational readiness, streamlining processes, managing data effectively and making well-informed investments in technology, you will be able to prepare your company for an AI-driven future.

Although the path toward the introduction of generative AI is not without its obstacles, you can exploit its exceptional potential with a careful and well-considered approach. Generative AI has the ability to transform your business, promote innovation, increase efficiency and sharpen your competitive edge. The steps set out above offer a practical plan to help you navigate the world of generative AI.

Key Issues Concerning the Introduction of Generative AI

At the start of your generative AI journey, you should have at least some idea of what you wish to achieve. The field is developing incredibly quickly, which means that the goals of introducing it are increasingly being replaced by a vision of how it may be used. As we learned in the first section, you need to start with long-term and strategic objectives that are then supported by short-term, operational objectives. We arrive at both sets of objectives by asking ourselves the following questions.

Strategic questions:

1 What are the potential long-term impacts of generative AI on our sector and how can we use this technology to gain a competitive advantage?
2 How can we incorporate generative AI into our basic business strategy to stimulate innovation and increase value for customers?
3 What are the ethical aspects that we need to consider when deploying AI, and how can we ensure that AI practices are carried out responsibly across the whole company?
4 What investments in AI infrastructure, talent and partnerships are necessary for the effective deployment of generative AI, and what return on those investments can we expect?
5 How can a culture of AI readiness be created within the company, and how can we ensure that our management and employees are on board with our AI-driven vision?

Operational questions:

1 What specific business processes or functions should be prioritised when introducing generative AI, and what are the measurable results we should be focusing on?
2 What new skills and abilities are required across the whole organisation for the effective deployment and management of generative AI, and how can we develop or obtain the talent required?
3 What data management, security and compliance measures need to be put in place to ensure that generative AI solutions are deployed safely and effectively?
4 How can we ensure that our AI models are accurate, reliable and in line with our business objectives, and what mechanisms should be put in place to secure continuous improvement?
5 What is our plan for disseminating AI solutions through different departments and ensuring that these technologies are incorporated into existing workflows?

What Every Manager Needs to Know About Generative Artificial Intelligence

1. Basics of generative artificial intelligence

Generative artificial intelligence is an important leap forward in the field of artificial intelligence. It is able to create new content, ideas and solutions by learning from large datasets. In contrast to traditional AI, which deals mainly with data analysis and prediction, generative AI is capable of generating new results, such as text, images, music or even programming code, by understanding and imitating the patterns found in the data on which it has been trained.

Key elements of generative artificial intelligence:

- **Machine learning (ML)**: This is the basis of generative AI, where algorithms learn patterns from data in order to generate new, original results without being explicitly programmed for every task.
- **Neural networks**: This is a type of machine-learning model inspired by the human brain. It enables AI to process complex data and create sophisticated content.
- **Large language models**: These are advanced AI models, such as GPT (Generative Pre-Trained Transformer), that can understand and create human text based on the large datasets on which they are trained.

Generative AI is therefore a branch of AI focused on developing models and systems capable of creating new content, such as images, text, music, videos and diagrams. Although it is not a new concept, the importance of this field has grown considerably in recent years. The early foundations were laid in the 1990s with probabilistic models, such as latent variable and graphics models that aimed to capture and distribute data. The latest advances in deep learning, particularly through generative adversarial networks (GAN) and variational autoencoders (VAE), have propelled generative AI to the forefront of academic and industrial innovation.

Generative AI has received a great deal of attention because researchers, companies and practitioners are in the midst of exploring its potential to create realistic and creative results. This technology is being used across a wide spectrum of areas today, including image synthesis, text generation and music. Generative capability is seen as an extension of existing AI technologies, which have traditionally been focused on describing, predicting, prescribing data patterns or optimising specific scenarios. Advanced AI technologies, including operations research (OR) and generative AI, enable the user to make the transition from generating insights to taking automated decisions and steps.

Technically, generative AI models work differently to traditional predictive models. Instead of simply predicting a specific outcome based on data input (e.g. predicting the ideal insurance premium for a customer), generative AI creates multiple outcomes based on prompts. Interaction with these models usually takes place in the forms of questions and answers. This involves both direct human instruction (transmitted via natural language) and automated measures.

The key concept in this interaction is prompt engineering, which is a term that emerged from NLP (natural language processing) and the development of language models. Although the term has no precise origin, it has become a popular way of describing the process of designing and perfecting prompts so that the desired answers are obtained from language models or a given task completed.

Prompt engineering includes the careful input of instructions sent to the language model in order to achieve the desired result. This process includes selecting the right text, structure and context to steer the model towards generating the desired response or completing a specific task. Constant efforts are under way to develop systematic approaches to formulating effective prompts, fine-tuning model settings for specific tasks, and addressing bias or undesirable behaviours in text generation.

Generative AI represents a new milestone in artificial intelligence. Its biggest advantage is the ability to ease communication between users and AI models **by using natural-language prompts and completions**. This is a breakthrough because it offers a more intuitive and accessible way for users to connect to complex AI systems.

2. Types of generative AI and how they are applied

Generative AI covers a variety of model types, each with their own capabilities and use cases.

- **Text-generation models**: Models such as Chat GPT and Gemini can create human text for various applications, including content creation, customer support and automated reporting.
- **Image-generation models**: Models such as DALL-E can create original pictures from word prompts. They are used in design, marketing and the creative industries to produce unique visual elements.
- **Sound- and music-generation models**: Generative AI can create new musical compositions or change existing sound files. This technology is used in the entertainment industry, marketing and interactive media.
- **Code-generation models**: Models such as Codex can create or help to write and review programming code, streamline the development process and aid the rapid production of prototypes.

3. Strategic impacts of generative AI

Generative AI is not just a technological tool but a strategic resource that can transform your business and competitive dynamics. Understanding its strategic impacts is crucial if you wish to exploit the potential of AI to its fullest.

- **Innovation and creativity**: Generative AI enables companies to innovate by creating new ideas, products and services that were previously unimaginable. This capability can lead to the creation of completely new business models and revenue streams, propelling companies to the front of their sector.
- **Improved user experience**: By adapting interactions and creating content tailored to individual requirements, generative AI can considerably enhance customer engagement and satisfaction. AI-driven personalisation can lead to greater customer loyalty and a stronger competitive advantage.
- **Operational efficiency**: Generative AI can optimise business processes by automating routine tasks, reducing running costs and increasing efficiency. It can, for example, generate reports, analyse large datasets or create marketable content, thereby freeing up human resources for activities with higher value added.
- **Decision-making support**: The ability of artificial intelligence to analyse massive quantities of data and provide useful overviews improves decision-making processes. Management staff can make use of the insights generated by AI to take better-informed and strategic decisions, and improve their business results.

4. Human considerations: Roles and skills

How successful the deployment of generative AI is does not depend merely on the technology but also on the people who use it. It is changing the nature of work, and requires new knowledge, new roles and new approaches to workforce management.

- **Transformation of the workforce**: Generative AI will increase human capabilities and enable employees to work more efficiently and creatively. While this means that some roles will become obsolete, new roles will also emerge: AI trainers, for example, or data scientists and AI ethics officers. Prompt engineers are very sought-after today. This is a profession that did not exist at all a few years ago. Preparing your workforce for these changes is hugely important.
- **Skills development**: Generative AI is becoming more integrated into business operations and driving the increased demand for AI skills. Employees will have to develop knowledge of AI tools, data analysis and AI ethics in order to become involved effectively in AI systems.
- **Collaboration between people and artificial intelligence**: Generative AI is strongest when it augments human creativity and decision-making. Companies must foster a culture in which artificial intelligence is treated as a tool that improves human labour rather than replacing it. This collaboration can produce new levels of productivity and innovation.

5. Ethical and legal aspects

As with any transformative technology, generative AI also brings with it numerous ethical and legal questions that a company must address in order to ensure that it is used responsibly.

- **Bias and equity**: Generative AI models can inherit bias from the data they are trained on, leading to biased or unfair results. Ensuring that AI systems are designed and overseen in such a way as to reduce bias is crucially important if we wish to maintain equity and strengthen the trust of customers and other stakeholders.
- **Transparency and accountability**: Decisions on AI must be transparent and explicable, particularly in critical areas such as healthcare, finance and employment. Companies must put in place frameworks of accountability that explain who is responsible for AI-driven decisions, and ensure that these decisions can be revised and understood.
- **Data privacy**: Generative AI often relies on large datasets, which raises concerns about privacy and data security. Companies must ensure that AI initiatives comply with data protection regulations, such as the GDPR, and that data is handled ethically and securely.
- **Intellectual property**: Regardless of whether we are talking about text, images or code, AI-created content raises complex questions regarding intellectual property rights. Companies must set clear policies on the ownership and allocation of AI-created content in order to avoid legal disputes and ensure that rights are respected by all sides.

6. Building customer trust

Customer trust is a key component in successful AI deployment. AI will become an ever-greater part of customer interaction. Preserving transparency and adhering to ethical standards are therefore vital to building and maintaining trust. Companies are also bound to these requirements by the EU Artificial Intelligence Act. You can read more about the Act in the **Key Concepts of the EU Artificial Intelligence Act** supplement.

- **Transparency in the use of artificial intelligence**: Customers must be informed of any interaction they have with AI systems, particularly in the context of customer service, content creation and decision-making. Clear communication about the role of AI in these interactions helps build trust and ensures that customers feel respected and valued.
- **Ethical AI practices**: It is very important to adopt and report on ethical AI practices, such as reducing bias, protecting privacy and ensuring accountability. Only in this way can customer trust be retained. Companies that prioritise the ethical use of AI will gain and retain the trust of customers over the long term.
- **Continuous monitoring and feedback**: In order to retain trust, companies must monitor their AI systems continuously to check for fairness, accuracy and compliance with ethical standards. Encouraging and acting on feedback from customers on their interactions with AI can help identify problems early and, over time, improve the effectiveness of AI systems.

7. Key components of the generative AI technology stack

Generative AI requires robust technology infrastructure. Understanding the key components of AI systems is very important if we want to make well-considered decisions on technology investments.

- **Data infrastructure**: A strong data infrastructure is the basis of every AI system. It includes storage, processing and data-management tools that can process large quantities of data efficiently. To be effective, AI models need to be trained on high-quality and accessible data.
- **AI models and algorithms**: Models and algorithms that process data and generate results are at the heart of generative AI. They include machine-learning models, neural networks and special algorithms tailored to different types of generative task, such as text, image or video creation. A large majority of companies today do not build these models themselves. Instead, they lease them, which reduces deployment costs considerably.
- **Computing resources**: Generative AI models often require considerable amounts of computing power, particularly when learning. Access to scaleable computing resources, such as cloud-based AI platforms, is vital to managing the demands of extensive AI operations. Today, small companies, sole traders and even individuals can afford to lease these platforms.
- **Integration and deployment tools**: To deploy AI in production, companies need tools that make it easier to integrate AI models into existing systems and workflows. These tools make it easier to deploy AI solutions effectively, monitor their performance and ensure that they work reliably at large scale.

8. Options for introducing and implementing AI

A number of approaches are available to companies when they decide to introduce generative AI into their business.
The **"do-it-yourself"** approach, which involves the internal production of an AI solution using the company's own resources and specialist knowledge. It offers the highest level of customisation and control, but requires considerable investments in talent, infrastructure and time.

- **Advantages**: Complete control of AI development, adaptation to the company's specific business requirements and potential long-term cost savings.
- **Challenges**: High initial costs, longer lead times for development, and the need to acquire specialist talent and infrastructure.

Point solutions are standard AI tools designed to resolve specific business problems. These solutions are easy to implement and require minimal adaptation.

- **Advantages**: Rapid deployment, lower costs and immediate impact on the target areas.
- **Challenges**: Limited adaptability, potential problems with integration into existing systems and reliance on other providers.

Comprehensive solutions involve the full capacity of artificial intelligence, from data management to the deployment of models. These platforms offer a comprehensive set of tools designed to simplify AI implementation across the whole company. Companies usually lease them in the cloud.

- **Advantages**: Simplified integration, scaleability and support for a wide range of AI applications.
- **Challenges**: Higher costs, possible requirement to be tied to the provider, and a need for constant support and maintenance.

Navigating the future with generative AI

Generative AI is becoming a revolutionary force in the business world, one that brings exceptional opportunities for innovation, increases in efficiency and improvements in customer interaction. However, successful deployment requires a deep understanding of the technology, a strategic vision, and a commitment to ethical and responsible use.
Companies can grapple with the challenges associated with AI deployment successfully if they understand its key components, strategic impacts, the personnel adjustments necessary, and the ethical and legal aspects. Only then will they be able to exploit AI's potential to the full, and insert themselves into a future designed by smart and creative technologies.

Reducing the Risks of Generative Artificial Intelligence

Given the ever-increasing use of generative AI in business processes, it is vital that companies are aware of and adequately address the specific risks attached to this advanced technology. This supplement sets out the approach to identifying, managing and mitigating the risks that come with generative AI. It provides companies with feasible strategies for ensuring that they adopt AI in a responsible and ethical manner.

1. Understanding the risks of generative artificial intelligence

Generative AI offers huge potential, but also introduces a number of risks that have to be carefully managed.

- **Business model risks**: The introduction of AI can disrupt traditional business models by changing the dynamics of competition, customer expectations and operational efficiency. Companies have to anticipate these shifts, and develop strategies to adapt and be successful in this changing environment.
- **Data security and privacy risks**: As generative AI systems rely heavily on large quantities of data, it is hugely important to guarantee the security and privacy of this data. The sensitivity and value of data are increased, which makes it the main target for infringement and abuse. Companies must introduce robust data-management frameworks to safeguard against these risks.
- **Ethical and legal risks**: Issues around the ethical use of AI are subject to increasing concern, particularly as they relate to bias, transparency and accountability. The legal frameworks are also developing fast, with regulations differing between jurisdictions. Companies must remain well-informed of and compliant with these regulations so as to mitigate legal risks and maintain public trust.
- **Intellectual property risks**: The use of generative AI models that are often trained on extensive datasets raises concerns about intellectual property rights. Companies must navigate the complexities of intellectual property law in order to avoid any violations, and ensure that their AI results are grounded in law.
- **Employment and social impact**: Generative AI has a major impact on the workforce by automating tasks and changing roles. Companies have an ethical responsibility to manage this transition, provide retraining opportunities and support those employees affected by the transition.

2. Risk-reduction strategies

In order to reduce the risks associated with generative AI, companies should take a multi-layered approach that includes the following strategies:

2.1 Carrying out robust measures to secure data and data privacy

- **Improve your data management**: Ensure that your data-handling practices are strict, and that all employees understand the importance of data integrity and security. This involves setting clear guidelines for the use, retention and joint use of data.
- **Use AI to improve security**: Make use of AI-driven security tools to protect against emerging threats. These tools can help you identify and respond to cyber threats in real time, and protect sensitive data from potential misuse.

2.2 Developing and enforcing ethical AI practices

- **Establish an AI ethics policy**: Create a set of ethical guidelines governing AI use at your company. These policies must address issues such as bias, transparency and the ethical consequences of deploying AI.
- **Incorporate responsible AI principles**: Align your AI practices with established ethical frameworks, and ensure that your AI is developed and deployed responsibly. This requires the principles to be regularly reviewed and updated as the technology progresses.

2.3 Ensuring compliance with the law

- **Monitor the legal environment**: Keep abreast of the fast-changing legal environment as it relates to generative AI. This involves understanding the regional differences in AI legislation, and ensuring that all AI applications comply with the relevant laws.
- **Work with experts in law and ethics**: Work closely with legal advisers and ethics officers so that you are able to deal with complex regulatory requirements and ensure that your deployment of AI does not unintentionally breach laws or ethical norms.

2.4 Dealing with intellectual property concerns

- **Assess the data sources used to train AI models**: Examine the data you use to train AI models and ensure that it does not infringe any intellectual property rights. This involves obtaining the necessary licences, and providing full and proper attribution for data sources.
- **Consider the consequences of AI results**: Realise the possibility that content created by AI infringes intellectual property rights, and take steps to mitigate this risk, such as by using content verification procedures and taking legal advice when necessary.

2.5 Mitigating employment-related and social risks

- **Provide employees with training and retraining**: Develop retraining programmes for employees whose roles will be impacted by AI. This not only mitigates the negative impact on individuals, but ensures that the company retains a well-qualified workforce capable of maximising AI technologies.
- **Monitor and manage the social impact**: Make regular evaluations of the wider social implications of AI deployment, including any biases and inequities, and take proactive steps to eliminate any negative outcomes.

3. Creating a culture that prioritises responsible AI

Companies must foster a culture that prioritises the responsible use of artificial intelligence. This involves:

- **Encouraging open dialogue**: Encourage discussions on the ethical implications of AI at the company. Create channels for employees to express their concerns and help shape AI policies.
- **Incorporate AI principles into business processes**: Ensure that ethical AI practices are built into every phase of AI development and deployment, from design to implementation.
- **Continuous education and awareness-raising**: Continuously educate employees on AI-related risks and responsibilities, and ensure that they are equipped to take informed decisions.

By adopting these strategies, companies can make the most of generative AI's power and reduce the risks at the same time. This will lead to more sustainable and ethical AI-driven transformations.

Supplement: Key Concepts in the EU Artificial Intelligence Act

The **EU Artificial Intelligence Act** is one of the most comprehensive regulatory frameworks for AI in the world. It is designed to ensure that AI systems used in the EU are safe and transparent, and that they respect fundamental human rights. Listed below are the key concepts that every manager and AI systems administrator is required to understand.

1. Classification system based on risk

- **High-risk AI systems** The AI Act classifies AI systems according to their potential risk to security or fundamental human rights. High-risk AI systems, such as those used in critical infrastructure, education, training, employment, criminal prosecution and biometric identification, are subject to the most stringent legal requirements.
- **Limited-risk AI systems** AI systems that present a limited risk, such as those used in customer services or chatbots, must meet particular obligations regarding transparency. Users must be made aware that they are interacting with AI.
- **Minimal-risk AI systems** AI applications with minimal risk, such as email spam filters or video games, are largely exempt from the regulation, although they must still comply with existing legislation.

2. Mandatory requirements for high-risk AI

- **Data management** High-risk AI systems must use high-quality and impartial datasets to reduce the risk of harmful results and ensure fairness.
- **Transparency and interpretability** AI systems must be transparent, with clear documentation on how decisions are taken. This includes providing information to users on the capabilities and limits of AI.
- **Human oversight** High-risk AI systems must have human oversight mechanisms to ensure that they operate within the relevant ethical and legal frameworks.
- **Robustness and accuracy** Systems must be robust and secure, with measures in place to ensure accuracy, reliability and protection against cyber attacks.

3. Prohibited AI practices

The Artificial Intelligence Act prohibits certain practices regarded as unacceptable, such as systems that distort human behaviour to the detriment of users, exploit vulnerable groups or engage in mass surveillance. AI systems that involve social scoring, similar to practices in other countries, are also prohibited.

4. Compliance and enforcement

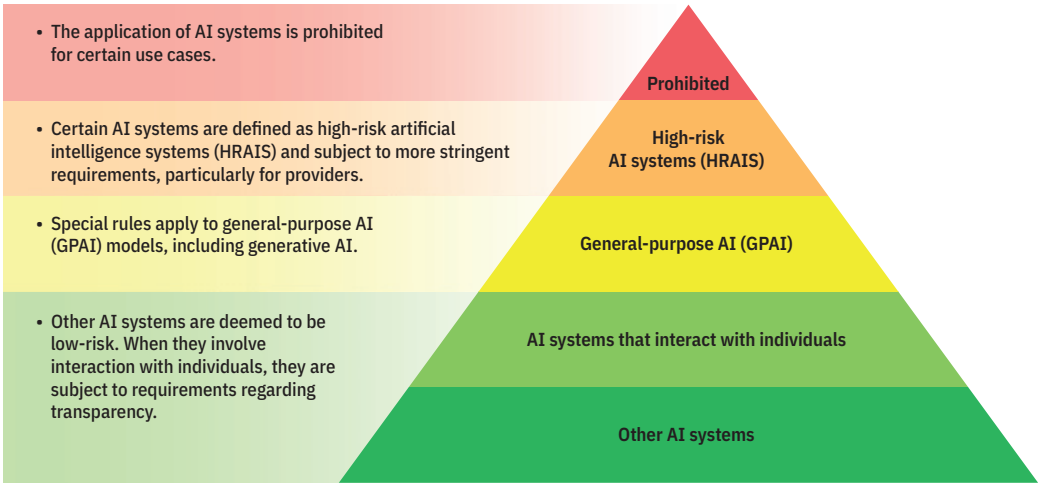
- **Conformity assessment** Companies that use high-risk AI systems must undertake a conformity assessment procedure to confirm their legal compliance. This includes reviews by third parties or internal reviews.
- **Market surveillance and penalties** EU Member States will enforce the Artificial Intelligence Act through their authorised bodies. Failure to comply with the obligations can lead to substantial fines of up to EUR 35 million or 7% of worldwide annual income, whichever is greater. For less serious offences, fines can amount to EUR 15 million or 3% of worldwide annual income, whichever is greater.

5. Innovation sandboxes

To encourage innovation and ensure compliance at the same time, the Artificial Intelligence Act introduces the concept of the "regulatory sandbox". These are controlled environments in which companies can test AI technologies under the supervision of authorised bodies. They enable AI systems testing to be carried out that takes security and ethical standards into account.

6. Impact on companies outside the EU

The AI Act applies to all companies that offer AI systems in the EU regardless of where the company is established. This extra-territorial application means that companies based outside the EU are also required to comply with the Act whenever their AI systems are used in the EU.



It is vital that every company that does business with or sells AI products in the EU understands the EU Artificial Intelligence Act. Compliance requires careful planning, investments in infrastructure and potential major changes in AI development processes. Companies must adapt their AI strategies to the requirements of the Act, thereby minimising risk and exploiting the opportunities that a well-regulated AI market can bring.

Publishers of the Guide

ai4si (Umetna inteligenca za Slovenijo/Artificial Intelligence for Slovenia)
Artificial intelligence is making increasing inroads into people's daily lives and having an ever more significant impact on business as well. Slovenia has a well-developed AI research sphere. We need to take a step forward in our use of AI in business, in terms of support for business and production processes as well as in the upgrading of products and services themselves and the bolstering of skills and competencies. Slovenia is internationally recognised for its AI research and development efforts, although we should note that the deployment of AI in business processes in industry and state administration is still not properly up and running. With the aim of accelerating the deployment of AI in practice, the ai4si (UI za Slovenijo) initiative was established by the ICT Association of Slovenia at the Chamber of Commerce and Industry of Slovenia (CCIS) and the SRIP GoDigital, in collaboration with other stakeholders in Slovenia.
For more on the initiative, visit **ai4si**

SRIP GoDigital – Digital Innovations in Focus
SRIP GoDigital is designed to serve as a platform for bolstering the ICT sector. It brings together leading representatives of the sector with the aim of encouraging them to think about the future and help create a more interconnected and innovative business environment within the ICT sector. The GoDigital strategic development-innovation partnership (SRIP) constitutes a new development step towards the strengthening of the ICT sector, and an opportunity to provide better support to members of the Information Technology and Telecommunications Association in their efforts to develop innovative digital services and products. GoDigital's mission is to focus on research and innovation capacities and on investments in the development and marketing of more complex, comprehensive and integrated digital services and products/solutions, in dialogue with members and policymakers. It bolsters research, development and innovation collaboration in the ICT sector between small, medium-sized and large companies, knowledge institutions, other stakeholders in the RDI ecosystem and policymakers as part of Slovenia's sustainable smart specialisation strategy.
For more visit **SRIP GoDigital**

ICT Association of Slovenia
ICT Association of Slovenia is a central and recognised representative sectoral association that operates under the auspices of the CCIS, supports the interests of the ICT sector, and is an active member of the support environment working towards the successful digital transformation of Slovenian society and industry. We aim to bring the state and ICT companies together, and take part in the marketing and deployment of ICT solutions at home, in Europe and beyond. The association works in the interests of its members, represents the Slovenian ICT industry to key stakeholders at home and abroad, and is engaged in the joint creation of a business ecosystem that helps ICT companies and end-users make the most of the benefits of ICT in their everyday business and private lives.

AIDAS – Sector for Data Science and Artificial Intelligence
The mission of the Sector is to promote cooperation, development and the introduction of products, solutions and services in the field of data science and AI, and to address problems encountered by members. Its goal is to support the needs of its members, respond to key trends in the industry and to the legislation that is expected to have a strong impact on the ICT sector, help create initiatives and regulations, and ensure that the sector is ready to adapt to change.

Supporters of the Guide

Gospodarska zbornica Slovenije

Strategic Business Council for Digital Transformation at the CCIS

The Strategic Business Council for Digital Transformation was set up at the CCIS on 20 April 2022 following an initiative put forward by the Information Technology and Telecommunications Association. The council operates as an advisory body for CCIS organisations for the creation of background material and policy proposals in the field of the digital transformation of Slovenian business. Under its current mandate, the Strategic Council is comprised of 23 business figures nominated by sectoral and regional CCIS chambers and associations. It is chaired by Igor Zorko, vice-president of the CCIS for small business and digital transformation. The goals of the Strategic Council include: (1) to support the digital transformation of business and the business environment, thereby raising the productivity and competitiveness of business and increasing Slovenian prosperity; (2) to develop digital competencies and new jobs with high value added; (3) to place the CCIS at the centre of the digital transformation of Slovenian business, with an emphasis on services for small and medium-sized enterprises.

As this guide is aimed specifically at the Slovenian market, we have also prepared a print version in Slovenian.

Printing of the Guide was made possible by

We would like to thank CREAPLUS, d. o. o., BE-terna d.o.o., Alpineon d.o.o. and the HIGHFIVE project for supporting AI4SI and for making the printing of the Slovenian version of this Guide possible, and helping to raise awareness of the use of artificial intelligence, which is playing a key role in creating business value.

CREAPLUS

BE-terna Part of Telefónica Tech

alpineon

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Sofinancira Evropska unija

The aim of the HIGHFIVE project, which specifically addresses the green and digital transformation of the food-processing industry, is to resolve the challenges being faced by companies in that industry in today's global value chains. Those challenges include strong international competition, marketing and innovation obstacles, and the urgent need for a fast digital and green transition. The project is an inter-regional innovation and investment initiative aimed at supporting the European value chain in the food-processing industry and contributing to a more digital, sustainable and resilient sector in Europe, including through deployment of the latest technologies, such as AI, in production and manufacturing processes.

Introducing artificial intelligence safely and reliably with the help of Slovenian experts

Artificial intelligence is making increasing inroads into people's daily lives and having an ever more significant impact on business as well. This Guide sets out the initial steps that companies should take to introduce AI into their day-to-day business. The most important thing is to start by taking the first step. This will help you understand and assess, at the right time, the benefits and savings that this technology can bring you.

The experts from the world of business and academia who have come together to form the ai4si initiative guarantee that you will then be able to embark on the introduction of AI safely, reliably and with success.

If you would like further help and advice from an expert, get in touch by writing to **ai4si@gzs.si**.

ai4si webinars

If you would like to extend your reading, consider looking at the following ai4si online seminars. The webinars are available in Slovene

- **Ready for the Artificial Intelligence Act**
- **How can large language models boost your productivity without security risks?**
- **Guide to the Deployment of Artificial Intelligence at Small and Medium-Sized Enterprises**
- **Technology platforms for developing AI solutions**
- **Impact on AI entrepreneurs of the coming legislative package in the field of data and artificial intelligence**
- **Artificial intelligence in healthcare and medicine**
- **Understanding and creating language using artificial intelligence**
- **How to locate AI benefits in your company**
- **Applied artificial intelligence as an accelerator for the Slovenian economy**

Information Technology and Telecommunications Association

Mitja Trampuž

Guide to the Deployment of Artificial Intelligence in Business

Ensure that your company is ready for the 21st century.

About the author

Mitja Trampuž has been involved in the digital transformation of business in a variety of organisations for several decades. One of his first projects was the pioneering introduction of electronic banking in Slovenia in the 1990s. He is active in the field of IT security at home and abroad. In recent years he has also focused on accelerating the deployment of AI in organisations, as support for business processes and for the upgrading of products and services themselves. He also helps to develop, promote and support the wider use of AI in business and industry. He is the director of CREAPLUS and the first chair of the AI4SI Umetna Inteligenca za Slovenijo initiative, which operates under the auspices of the ICT Association of Slovenia at the Chamber of Commerce and Industry of Slovenia.