The European market potential for Artificial Intelligence and Machine Learning software development services

Last updated:
21 June 2023

Articial Intelligence and Machine Learning technologies have a high market demand in Europe in all sectors. Developments in generative AI lowered the threshold for using AI and ML software significantly. To enter the European market, you have to comply with different laws and principles and additional requirements of buyers. Tap into different horizontal and vertical market segments by subcontracting through a European service provider or through online platforms.

Contents of this page

1. Product description

AI and ML are both technologies that are used to create intelligent systems. AI creates intelligent systems that can simulate human thinking capability and behaviour. ML is an application (or subset) of AI, and it allows systems to learn from data without being programmed explicitly.

The goal of AI is to make intelligent systems perform tasks like humans would. Machine Learning is about teaching systems (machines) to learn from data, so that they can give accurate output.

You can read blogs such as this one from JavaTpoint if you want to learn more about AI and ML and the differences between them.

2. What makes Europe an interesting market for Artificial Intelligence and Machine Learning software development?

There is a large demand for AI and ML software development services in Europe. This is being driven by a severe skills shortage, an increasing understanding of the possibilities that AI and ML can offer and the desire many companies and governments have to make use of these possibilities.

European companies are becoming more open towards the idea of using AI and ML technologies. Their initial hesitation is decreasing quickly. This is partly because AI and ML technologies can replace a part of the human workforce. Many European companies are finding it difficult to fill their vacancies and they can see that AI and ML technologies could be part of the solution.

In addition to this, Europe does not have enough AI and ML developers to meet the demand. They are therefore looking for outsourcing partners.

The market is growing fast

The European market for AI and ML software is growing fast. Between 2021 and 2028, the North American market for AI software is expected to grow by almost 42% annually. The anticipated growth percentage for the European market is only slightly less: estimates range from a little under 40% to just over 40%. The global market for ML software is growing at almost the same rate. The forecast growth percentage for ML software lies between 33 and 38% annually (from 2021 to 2029).

This growth can be explained by rapid urbanisation, technological advancement, and more investments by developing countries, but also by the increased acceptance of cloud computing and social media platforms.

Source: Eurostat

The figure above shows that, even though growth percentages are high, there are still many opportunities to explore. Only 8% of European enterprises were using AI technology in 2021. Industry experts believe that this percentage had at least doubled by January of 2023. In some industries, as many as 75% of European enterprises are now using AI technology. This is mainly due to the launch of ChatGPT in the autumn of 2022.

Software developers' skills shortage

There is a large gap between the number of software development jobs and the number of available software developers. More than half of European companies that have recruited or have tried to recruit ICT specialists have had difficulties in filling these vacancies*.

* These statistics are scheduled to be updated in June 2023. Clicking here should lead you to the new statistics. Otherwise, you can search for "enterprises with hard to fill vacancies in Europe" in a search engine of your choice.

**of enterprises that have recruited or have tried to recruit ICT specialists.

Source: Eurostat

For example, in 2020, 12% of all companies in the Netherlands were looking for ICT specialists. 70% of the companies hiring had difficulties finding these experts. To fill the gap, many companies in Europe try to hire software developers from abroad. An easier option is to outsource software development tasks to offshore providers like you.

According to the European Software Skills Alliance (ESSA), of all software-related roles, the demand for developers is the highest. The most in-demand programming languages are Java, Javascript, SQL, HTML, PHP, C++, C#, and Python

Tips:

Find the right people. Consider hiring people with the necessary talents who still need to develop the required competencies. You can train them on the job. Also, make sure you have access to the right people to scale up operations and serve clients at short notice.

Specialise in a few programming languages, rather than working with several that you do not fully master.

3. Which European countries offer most opportunities for Artificial Intelligence and Machine Learning software development?

Northern and Western European countries are generally the largest outsourcing markets. Some countries are interesting because of their size. Other countries are interesting because of their openness towards the use of AI and ML technologies. Countries on the eastern borders of Europe are also promising markets for you, as they can enable you to form partnerships with nearshore providers.

When reading statistics about the use of AI in enterprises, keep in mind that those statistics were made before the release of ChatGPT in autumn 2022. The actual percentages are now much higher.

Source: Eurostat

Table 1: Government AI readiness 2021

Global position	Country	Overall Score	Government	Technology Sector	Data and Infrastructure
3	United Kingdom	81.25	85.69	67.26	90.81
4	Finland	79.23	88.45	63.85	85.40
5	The Netherlands	78.23	80.42	66.17	88.92
6	Sweden	78.16	80.76	67.37	86.36
8	Germany	77.26	78.04	67.68	86.07
9	Denmark	76.96	83.50	63.24	84.14

Source: Oxford Insights

Czechia – needs help to fill their many IT vacancies

Czechia is an interesting country to create a subcontracting partnership with. Czechia has high numbers of talented workers but in 2020, 76% of Czech companies with IT vacancies struggled to fill them. This was the highest rate in Europe. This situation is driving Czech companies towards subcontracting.

Like Poland, Czechia has relatively high hourly software development rates. This means that there are many ITO providers that would benefit from outsourcing some of their work to you.

Czechia has a good reputation as a software development nearshoring destination in Central and Eastern Europe (CEE). Renowned IT brands such as Avast, AVG, and Socialbakers were founded there. Industry professionals estimated that there were around 150,000 IT specialists in Czechia in 2021. In 2022, around 20,000 Czechs graduated with a degree in computer science.

France is a large country with a large AI and ML market that is growing fast

As the third largest economy in Europe, France is another European market that is particularly interesting because of its size. Also, the French GDP is very solid and is expected to grow at the same speed as the European average of 0.4% in 2023 and 1.5% in 2024.

Use of AI and ML software in France is growing fast. The French market for conversational AI, for example, is expected to grow by a compound annual growth rate (CAGR) of 15.8% between 2021 and 2027. The French government is also very open towards the use of AI and ML technology. 2021 research by Oxford Insights revealed that France ranked 11th in the global Government AI Readiness Index.

To provide AI or ML software development services to French companies, it helps if you are fluent in French. French is the official language in 29 countries worldwide, so for many service providers, this requirement is not a barrier to market entry. In fact, it makes France a particularly interesting target market for providers from African countries such as Senegal. Offering services in French will also allow you to target francophone companies in Belgium and Switzerland.

Germany is Europe's largest economy

Germany is the largest economy in Europe and is home to 19% of the EU's population. Its economy is widely considered to be the stabilising force in the EU. Germany's main industries include the automotive, electrical, and chemical sectors. They are increasingly using AI and ML software techniques to optimise production, improve products and stay competitive.

The German market dominated the 2020 European Conversational AI market. This segment is forecast to reach a value of around €202 million by 2027.

Although its size makes Germany an interesting market, German companies are less open to offshore outsourcing than countries such as the United Kingdom and the Netherlands. However, as German businesses continue to face skills shortages and become more experienced in offshoring, their attitude towards it is improving. In addition, the pandemic may create more opportunities for you, as it has softened Germany's generally stiff corporate culture and shown companies what is possible with remote working and outsourcing.

There could be some language barriers, as German companies generally prefer to work and collaborate in German. Generally, you will need an intermediary in Germany to communicate with current and potential clients for you. If you can do business in German, you can also target German-speaking companies in Austria and Switzerland.

The Netherlands is very open towards outsourcing and welcomes AI and ML developments

In 2021, 13% of Dutch enterprises were using AI technologies. This placed the Netherlands in fifth position in the Eurostat statistics that ranked European countries based on the use of AI technologies in enterprises. The Dutch government is also very open towards the use of AI and ML technology. Research by Oxford Insights in 2021 also ranked the Netherlands fifth in the global Government AI Readiness Index.

Dutch GDP is very solid and expected to grow at the same speed as the European average of 0.6% in 2023 and 1.3% in 2024.

Scandinavia is among the highest adopters of AI and ML technology

Scandinavia is also very familiar with the use of AI and ML. In 2021, Denmark had the highest percentage of enterprises using AI technologies: 24%. Finland ranked third with 16%, Norway seventh with 11% and Sweden eleventh with 10%. Scandinavian governments are also among the highest adopters of AI and ML technology globally. In 2021, Eurostat revealed that 3 out of 4 Scandinavian governments were in the top 10 (Finland was

fourth, Sweden was sixth and Denmark was ninth).

Scandinavian countries (Norway, Sweden, Finland and Denmark) are all in the top 10 of European countries with the highest GDP per capita. Individually, the Scandinavian countries are smaller than other European markets, but they are relatively open to outsourcing. People from these countries are also highly proficient in English, which makes doing business relatively easy.

United Kingdom is an early adopter and has a large market

In 2020, around 15% of business in the UK had adopted at least one AI technology. In the same year, 2% of businesses were piloting AI and 10% were planning to adopt at least one AI technology in the future. The UK market for conversational AI, for example, is expected to grow by a compound annual growth rate (CAGR) of 14.1% between 2021 and 2027.

The UK government is also very open towards the use of AI and ML technology. 2021 research by Oxford Insights revealed that the UK ranked third in the global Government AI Readiness Index.

In 2020, the highest usage was in the area of solutions for data management and analysis (9% of UK companies had adopted these), followed by natural language processing and generation (8%), machine learning (7%), AI hardware (5%), and computer vision and image processing and generation (5%).

The IT and telecommunications (29.5%) and legal (29.2%) sectors currently have the highest rate of adoption, while the sectors with the lowest adoption rates are hospitality (11.9%), health (11.5%), and retail (11.5%).

The UK market is a very large market, both in terms of AI and ML adoption and based on the size of the economy. Of all European markets, the United Kingdom is the most open to offshore outsourcing and the least cautious about doing business with developing countries. This openness is due to the nation's cost-saving business culture and its historical ties with many countries across the globe.

The effect of Brexit on software development are not entirely clear but Brexit has certainly made it harder for UK companies to attract talent from other countries. In turn, this makes the existing IT skills shortage in the UK even more severe. Offshore ITO suppliers like you could benefit from this.

4. Which trends in the European market for Artificial Intelligence and Machine Learning software development offer opportunities or pose threats?

The most significant trend in AI/ML is the release of generative AI to the public (read more about this in the market development section of this document). Other important trends are AI ethics, conscious sourcing practices and the fast-changing AI and ML landscape in general.

Opportunity: Generative AI like ChatGPT and Bard open up the market

The recent launch of ChatGPT (in November 2022) shook up the AI/ML market. It made AI/ML more mainstream in a period of just a few weeks. There are no recent statistics on the use of ChatGPT by European companies, but experts believe it might be close to 50%. This is significantly higher than the percentages shown in figure 1 about the use of AI in 2021.

Generative AI is a type of artificial intelligence that can create new content or information, such as images, text or music, without being specifically programmed to do so. This type of AI uses complex algorithms and machine learning to learn from patterns in data and then generate new content that is similar to the patterns it has learned. Essentially, it allows computers to create something new, instead of just analysing or processing data.

ChatGPT has made the threshold to using AI/ML much lower. This will lead to a higher demand for AI/ML

software and so a higher demand for AI/ML software developers.

Another disruptive aspect of this development is that Microsoft is planning to use ChatGPT in their search engines. This means that AI will come directly to the users. In February, Google launched Bard AI, but Bard does not seem to be as advanced as ChatGPT. This means that Microsoft might be able to turn the search engine market around.

What could this mean for the outsourcing sector?

The technology used by ChatGPT has the potential to disrupt a wide range of industries by enabling organisations to automate customer service, content creation, and other tasks that previously required human expertise.

Examples:

- In customer service, ChatGPT can be used to provide instant, 24/7 support to customers through virtual assistants. This can help companies improve the customer experience, reduce response times, and save costs compared to traditional call centre-based support.
- In content creation, ChatGPT can be used to generate articles, summaries, and other types of text with a high level of accuracy and consistency. This can help organisations produce more content in less time, without sacrificing quality.
- ChatGPT has the potential to impact other areas such as finance, healthcare, and education. For example, it can be used to generate financial reports and assist in medical diagnoses.

Threat and opportunity: AI ethics are increasingly important

Ethics are important in human society. They are equally (if not more) important in the world of AI. To prevent AI from escaping our control, we need to implement ethics into the code.

Artificial Intelligence brings with it complex ethical issues. The three main concerns are:

- privacy and surveillance;
- bias and discrimination;
- deception and manipulation.

The AI market is evolving extremely fast. European buyers will expect you to keep informed of the developments so that you can deliver an ethical AI product to them.

Opportunity: energy efficiency is important

Doing business with an eco-conscious supplier is becoming more and more important to European buyers. AI and ML software generally use a lot of energy. And technical developments usually mean better functioning software, but also higher energy use. Producing energy-efficient software will help you to find buyers.

Example:

Researchers trained an AI model to classify flowers using a small, publicly available dataset of iris flowers. The AI model achieved an accuracy of 96.17% in classifying the flowers' different species with only 964 joules of energy. But to achieve higher accuracy, the system consumed significantly more energy. To gain a 1.74% percent increase in accuracy, energy consumption increased about three times to 2,815 joules. Further increases in accuracy demanded even greater increases in energy consumption. This wasteful approach of throwing more computing power at a problem to get better results than necessary is also called *Red AI,* which is the opposite of Green AI.

When you are developing software, keep in mind how much energy it will cost to use it. And consider developing software that is more energy efficient. This will make you an eco-conscious sourcing provider, which will give

you a competitive advantage over other providers. Read more about this in the documents 'tips on how to become a socially responsible outsourcing provider' and 'tips on how to become a green outsourcing provider'.

Opportunity: Fast-growing possibilities of the AI/ML market - now is the time to do business

The AI/ML software development market is changing fast. Current trends in the market include Natural Language Processing (NLP), advances in Deep Learning, development of autonomous systems, growth in AI generated content, AI-powered healthcare and medical science, AI risk assessment, more AI-human collaboration (cobots), and low-code and no-code AI systems.

Tips:

Stay up to date on the topic of Ethics in AI. The council of Europe and the Ethical Guidelines for trustworthy AI by the European Commission are good sources.

For more information about eco-conscious sourcing practices, please also read our documents 'Tips to go green' and 'Tips to become a socially responsible supplier' .

Keep your skills up to date. If possible, obtain certification and clearly communicate in your marketing and client interactions that you are certified. As a software developer, it is more rewarding to specialise in a few programming languages than to work with several languages you do not fully master.

This study was carried out on behalf of CBI by Globally Cool B.V. in collaboration with Laszlo Klucs.