

## Artificial intelligence in project management

The application of artificial intelligence in project management primarily helps in the planning and continuous control of daily events within projects. At its core, this involves two main areas of application - the automation of monotonous routine activities of a project and insights into project performance in real time. By analyzing the development process, the work and behavior patterns within the project team are revealed. Thus, it becomes possible for each team member to select for himself the work package that best suits his own skills and personal work pace. At the same time, the use of artificial intelligence enables team members to learn quickly from mistakes they have made and thus makes it possible to establish sustainable knowledge management in the company.

The use of artificial intelligence to automate processes opens up enormous potential for the factors of time and quality management of projects as well as the application of change and a transformation of operational processes. So-called bots - small computer applications - assist in the automation of repetitive tasks, contributing to increased efficiency. Typical examples include data entry and data analysis. Creating schedules and documentation for projects, as well as establishing workflows and quality controls, can also be automated. In addition, analytics generated by artificial intelligence can help project managers respond to changes more quickly and flexibly.

Especially when it comes to data analysis, automation through the use of artificial intelligence also brings additional security. After all, computers process even complex project data faster and more reliably than project managers. This means that trends and patterns can be identified more quickly and project managers are provided with all the relevant information they need to organize project planning in the best possible way. At the same time, problems can be identified from the analyses, so that bottlenecks or misjudgements are uncovered at an early stage. Project managers can thus take countermeasures at an early stage and anticipate problems. The use of artificial intelligence facilitates data-driven decision making. It also awakens an understanding of project performance, schedules, and resources.

## Artificial intelligence offers economic potential

The use of artificial intelligence applications in project management for analyses and assessments achieves a time saving of 50 percent. In addition, an improved quality of decisions made can be achieved. A survey of project management experts has shown that 90 percent see their work strengthened by the use of special AI solutions. As artificial intelligence continues to evolve, learning systems are digging deeper and deeper into pattern recognition methodology. In this way, it becomes possible to optimize and adapt the creation of project plans in an automated manner. In this way, trends for the future can also be identified, so that artificial intelligence can also help the company to gain a competitive advantage.

Due to the high economic potential in terms of cost savings and quality management, more and more companies are turning to integrating AI applications into their project workflows. They are designed to help support employees in their work and thus contribute to greater efficiency. In addition, analytics are achieving greater certainty for project managers when it comes to planning and forecasting projects. This is mainly due to the high data processing frequency of AI applications, which are then evaluated according to different variables and criteria. Such variables include the performance of the project team, the speed with which activities are implemented, and supply chain linkages and analysis of comparative data from similar projects.

## Development of Machine Learning Models in AI Projects

The typical sequence of AI-supported projects serves as a guide for determining the required roles within the project team and the skillset of the individual employees. Four phases are distinguished during implementation, which will be explained in more detail here:

### **Phase 1 - Problem identification by the data expert.**

First of all, it is necessary to obtain an overview of all the requirements for the data material needed. This determines whether the project will be implemented using artificial intelligence or whether software development will suffice. The technical expert defines the nature of the required data as well as its trivial dependencies and the distinction between trivial and numerical data. The metrics for the AI application also need to be defined early on. The size of the data set also plays an important role.

### **Phase 2 - Data pre-processing and function development.**

During data preparation and function development, the data expert sifts and cleans the existing data. It is necessary to check whether all input data are available and plausible. Now it has to be clarified which functions have to be embedded, whereby it is necessary to focus on the relevant functions. At the same time, it must be determined whether there are obvious dependencies between existing functions and whether new functions have been added.

### **Phase 3 - Selection, training and evaluation of the data model**

The selected model must fit both the problem and the nature of the data. Appropriate models help to identify the extent to which the smart model correctly analyzes the data and whether it is suitable for the activities to be performed. At the same time, this phase determines whether the AI-powered application has learned the right data patterns. Important factors here are whether the analyses are performed expertly and whether the assessments performed by the AI-powered application produce the right results.

### **Phase 4 - Application in operation.**

The AI model developed in the third phase is now integrated into a company's operations. In this process, the technician in charge of AI tunes the model to the specific use case. Particular attention must be paid here to scalability and ease of use, as well as simple transfer to subsequent models. For an efficient application and subsequent use of machine learning models, a data platform for Big Data is absolutely necessary so that the data is and remains secure.

In order to make strategic decisions for the successful implementation of AI projects, a team of experts must be assembled. Important roles here are played by data experts, data analysts, innovation managers and software developers.

## Limits of the use of artificial intelligence in project management

However, the use of artificial intelligence in projects or business processes will never be able to completely replace human work. Instead, it is needed to meaningfully supplement the work of project teams and thus achieve higher quality in project implementation. There are still things that humans have ahead of technology. These primarily include so-called soft skills such as empathy, creativity and flexibility.

While predictable, constantly recurring tasks in the project can certainly be taken over by AI, the participants in a project team must strive to develop creative solutions, discover innovation potential

and promote it in a targeted manner, and realize innovations. The use of artificial intelligence also supports the resolution of conflicts within the team and forward-looking action.

Another important factor that can never be taken over by artificial intelligence is communication within the team. It is especially important for monitoring the progress of the project, discussing changes, adjustments or further developments with the team members and distributing tasks within the team. Artificial intelligence will also never be able to take over employee management itself.

## The future of AI for the project manager profession

The combination of project management and the use of artificial intelligence applications will continue to be characterized by a work symbiosis in the future, which will make offered projects faster, better, more powerful and thus more interesting for customers. However, the integration of applications based on artificial intelligence is changing the job description, as additional technical and analytical skills will be required in the future. But artificial intelligence makes a significant contribution to making the tasks at hand more efficient. In addition, automated processes help to avoid human errors.

While AI applications take care of data, reports and spreadsheets, project managers and their teams can focus on strategic design and flexible and creative implementation of the project. This also brings in a competitive advantage at the same time. Therefore, it is necessary to assemble interdisciplinary teams and give special training to the social skills in the team. At the same time, there must be an openness to the integration of new technologies and always integrate new technical approaches to improve project implementation.