Mini Review

AI Project Preparation Structuring of the First AI Use Cases

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Many companies are on their way to implement AI solutions as a first step into AI based ecosystems in their organizations. Currently, many initial AI solutions are being developed in companies; this raises the question of the essential steps required to plan these projects in a structured manner. AI will no longer be a topic of discussion in companies; rather, the focus is on identifying the applicability and benefits of potential initial use cases and gradually developing the necessary technologies, expertise, and, if necessary, new business models. Therefore, it is worthwhile to prepare projects well.

Good project preparation, development, and subsequent implementation of AI solutions are based on a number of components. Development is, of course, primarily about technologies and data, but it also involves subsequent work with the systems and the realization of benefits of the selected use cases. An essential component is the development of expertise and knowledge within the company for productive and legally compliant work with the new AI colleagues, as well as finding meaningful use cases and business models. Legal, economic, and organizational framework conditions are also part of project preparation.

AI must be distinguished from normal, algorithmic programs. In addition to older rule-based AI, today's thinking revolves around the potential of generative AI, in particular language models and image generators, which enable a wide range of applications. Generative AI generates new content based on statistical patterns in training data. It can be used for many types of tasks. However, it does not always deliver reliable results and can hallucinate; costs, energy consumption, transparency, data quality, data ownership and vendor dependency are also particular considerations.

Once initial AI ideas have been generated and are being considered for implementation in initial use cases, five steps can help structure the essential project preparation work: "AI goal setting," "detailing requirements," "trust and law," "resources and cost" and "conclusion".

In the first step, "AI goal setting," strategic goals and areas of application for the targeted AI solutions need to be considered, along with the necessary resource development and the required cost-benefit effect, such as more efficient processes, faster response times and information. The benefits and usefulness of the new AI solution are important for employee acceptance and participation; for example, significant labor savings and increased responsiveness thanks to the new AI colleague.

Outlining goals and expected outcomes for AI use cases may help to focus on the data situation and output quality (e.g., correctness, explainability, traceability). With a defined use case, the question of the required human and technical resources project becomes clearer. The technological description and the identified know-how lead to the important question of building up in-house expertise and involving reliable external partners for these pilot projects. It is also essential in the first phase to identify the parties responsible for the project, whether they are employees, system suppliers or data centres. In addition to the development project, however, it is also important to consider your own company employees and the changes to future work processes, process reviews, transparency and legal compliance.

The next step in the "detailed requirements analysis" may include a more specific description of the outlined use case, the required functions, in particular the necessary data basis, the needed quality criteria and IT security requirements. In principle, the potential architecture and technology of the AI solution are designed at this stage. Technical compatibility, performance as well as possible future operating models are also important questions which may be discussed carefully.

A third step is to consider "legal regulations and trust" in detail: correctness, transparency, and traceability of the intended AI

solution, which are very important for the reliability of the future AI solution. Addressing the relevant legal frameworks is important for legal compliance; different legal systems must be taken into account depending on the country and industry. It is advisable to involve relevant legal expertise, especially at the beginning. In EU we focus on GDPR, IP and Eu AI Act. For the subsequent organizational introduction, these basic requirements are very important for quality of the system as well as for the employees who need to assess and control the working methods of the new AI solution. Predefined quality criteria for monitoring purposes and maintenance decisions may be considered here. The company's employees must be able to work with AI solutions with confidence; to do so, they need to build up their skills and receive training in working with AI solutions. Since AI is a solution that will significantly change the way we work and our workplaces, it makes sense to build up skills within the company over the long term with systematic training concepts and AI training & test systems. It is helpful to involve employees in the development and introduction of the AI pilot in order to achieve greater acceptance and productivity in their daily work.

In a fourth step, "resources and costs" will be compiled. Specifically, this concerns the allocation of personnel and technologies, as well as their costs for developing an AI solution, its integration into existing systems, its subsequent deployment, and the ongoing maintenance and refinement phase. Cost items arise for AI experts, data experts, and programming experts, as well as for data structuring, training or retraining of models, additional software licenses. Hardware requirements may vary significantly depending on the specific AI application needs and may make new cooperations relevant. In a final fifth step "conclusion", the use case, benefits, costs, technologies, and know-how development must then be evaluated once again. Since AI technology enables a wide range of applications, it is important to build up its usage in the company over the long term.

These guidelines are learnings from URBAN.KI. Based on the experience gained from initial pilot projects with various AI technologies, URBAN.KI compiled the essential steps for preparing projects for its own initial use cases. URBAN.KI is an award-winning German AI initiative of the Westphalian University of Applied Sciences on behalf of the city of Gelsenkirchen, funded by the Federal Ministry of Housing, Urban Development, and Construction and the KFW. The contents of the project preparation for initial use cases will be published on the URBAN.KI website https://urban-ki.de.

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Conflict of Interest

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