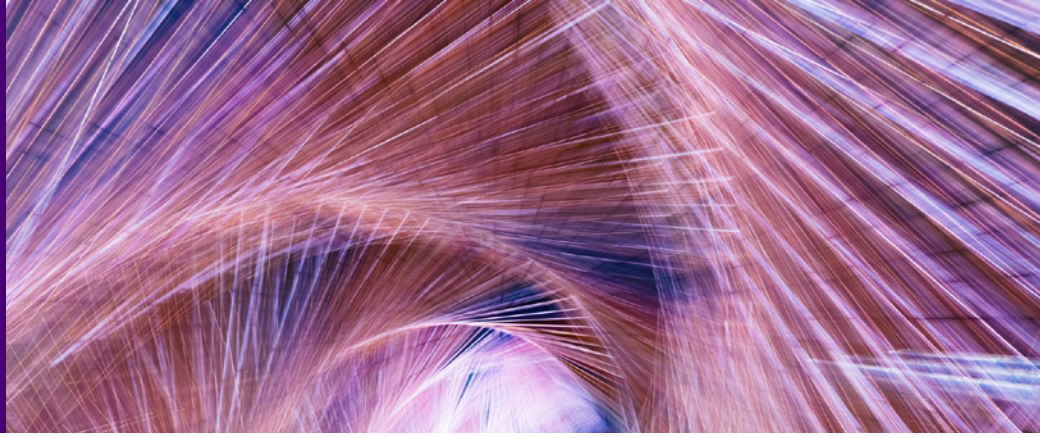
TUM THINK TANK

accenture

Of Pioneers and Potentials

Transformation of the Public Sector with GenAI



Foreword

Generative Artificial Intelligence (GenAI) has rapidly become a technological driver of innovation in business and society. While recent technological developments, such as blockchain, often fell short of the high expectations for their transformative impact,[1] GenAI, exemplified by OpenAI's ChatGPT or Microsoft Copilot, has triggered a disruptive effect akin to an "iPhone moment" through its relatively swift adoption and widespread use, affecting nearly all areas of life.

The public sector is no exception. Here too, the possibilities of GenAI can influence several aspects of daily operations and the exercising of workflows and courses of action — whether through generating new content, summarizing large amounts of text, or facilitating more intuitive communication between humans and machines.

While many of the currently discussed use cases are still hypothetical, some organizations in the public sector worldwide have already pioneered and implemented initial GenAI applications, some of which are already in productive use. These trailblazers are at the center of this study: What experiences have these actors and institutions made in the early phase of concrete testing of GenAI? What lessons, insights, and inspiration can be derived for public administrations?

To answer these questions, the TUM Think Tank and Accenture have joined forces, combining their scientific expertise and extensive consulting skills regarding technology and public administration. The authors of this exploratory study are aware that the adoption of GenAI in public administration is still in its early stages — and that the short-term effects of new technologies are often overestimated, whilst the long-term impacts are underestimated. Nevertheless, a preliminary analysis has been undertaken, in the spirit of an early and provisional assessment, to derive insights from the first use cases.

The questions of whether and how to use GenAI is a debate that will accompany society for a long time, as will the questions of when the use of GenAI is sensible, what consequences it has for various stakeholders and the sovereignty claims of public administrations, what guidelines are needed, and how these must be designed to be effective.

This study contributes to the discussion by examining how selected organizations from the public sector worldwide have addressed some of these questions and what insights or further guiding questions can be derived for public administration. Furthermore, the data collection in the context of this study has fostered an international dialogue. There was significant interest among study participants to engage in mutual exchange and learn from one another. With this study, the authors aim to provide a starting point for an open and future-oriented dialogue involving all relevant stakeholders and invite further reflection and discussion.

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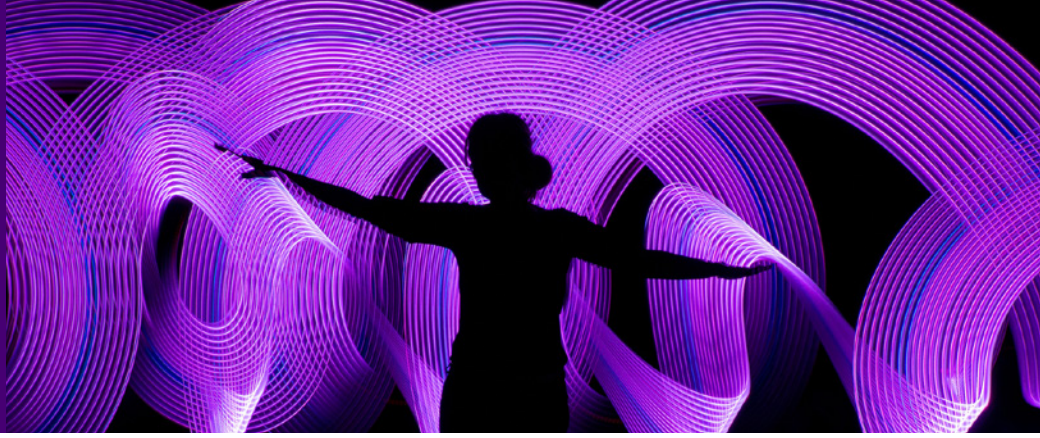

Executive Summary

Generative Artificial Intelligence (GenAI) has sparked significant interest worldwide. The technology is being experimented with in numerous fields across science, business, society, and the public sector. While the latter is under increasing pressure to innovate and modernize, GenAI brings fresh perspectives and new opportunities.

Broad Range of Use Cases

Previous publications predominantly describe GenAI use cases in a hypothetical space, but this study examines the initial exploration and application phase of GenAI in the public sector based on 16 concrete use cases from North America, South America, Europe, Africa, and Asia. These use cases demonstrate a wide range of content: Some organizations use GenAI to automate routine tasks, enhance the efficiency of social work and health services, or optimize their risk management. Others seek ways to make legislative processes more transparent and implement regulations more efficiently. Furthermore, the technology is used to make software development processes less error-prone or to translate official documents into simple language.

Common Formats and Key Factors

Key factors are derived from the concrete use cases that positively influence the implementation of GenAI. These include the strategic selection of use cases, the development of guidelines and governance structures, the creation of protected environments for innovations, the selection of suitable pilot users, and the presence of necessary professional competencies and technical skills. A robust and secure digital infrastructure, high-quality and relevant data, as well as training and empowering employees are also crucial. The study thus provides valuable orientation points for the introduction and use of GenAI in the public sector. These key factors are complemented by the engagement of leaders and openness to technology within organizations.

Lessons for Organizations in the Public Sector

Additionally, five key lessons emerge from the use cases:

01 It is worthwhile to take bold initial steps to recognize the potential of GenAI.

02 GenAI should be used strategically and responsibly, keeping long-term opportunities in mind.

03 Leaders must develop and communicate a clear vision and strategy to provide employees with guidance and security.

04 Employees must be involved and appropriately trained.

05 Networks and partnerships are important for sharing knowledge and resources.

Perspective: Strategic Scaling of GenAI

The research shows that GenAI represents a transformative force in the public sector. GenAI is part of a broader technological change, the profound effects of which are already becoming apparent. The technology enables the automation of complex tasks, increases efficiency and productivity, and could even lead to new organizational forms in the future. However, to fully leverage the potential of GenAI, organizations must scale the technology responsibly and strategically.

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A Special Momentum Through a Special Technology

Technology with the Wow Factor

The ease of use and broad applicability of ChatGPT have placed Generative Artificial Intelligence (GenAI) and its potential at the center of global interest, igniting a wide readiness within society to utilize it. Users from various fields are discovering how GenAI simplifies complex challenges through new forms of information processing, fosters creative processes, and makes communication with technological systems more human, allowing for new forms of interaction to emerge for users. Thus, this innovative technology has the potential to be a turning point for efficiency and usability across various sectors.

Due to the diverse applications of GenAI, there is an interested, open-minded, and at times enthusiastic experimentation occurring in all areas: science, business, administration, and society. Compared to other relevant technologies, such as blockchain or virtual reality, the added value, application potentials, and effectiveness of GenAI are also evident and tangible far beyond expert circles. As GenAI is easily accessible and usable in private contexts, it creates a special "push effect" for the technology in professional settings. Observations from this study indicate: This technology "affects people" and transforms technology resistance into technology openness.

GenAI in a Nutshell

Generative Artificial Intelligence (GenAI) encompasses applications that can generate original content such as text, images, videos, or audio on demand.[2] These applications, known as **Foundation Models,** are trained on large datasets from various sources. A specialized form of these models is **Large Language Models (LLMs),** which are designed to understand and generate human language.[3]

The training process of these models is autonomous, but it is costly and time-consuming, which limits the frequency of repeating this process. Therefore, they have a "**cut-off point**", up to which their "knowledge" extends. They do not store facts, but rather recognize patterns in the data to provide the most likely appropriate response. However, errors such as **hallucinations** or biases can occur, which can be minimized through targeted **prompting** strategies.

LLMs represent a significant advancement, as they enable machines for the first time to seemingly understand language, context, and intentions, and to generate content independently. For public administration, these technologies offer substantial potential, for instance in citizen communication, reporting, or data analysis. Through targeted adjustments, administrative processes can be made more efficient and citizen friendly. However, it remains essential to continuously implement measures for quality assurance and error prevention.

Public Administration Under Pressure to Modernize and Innovate

The public sector faces numerous challenges, with demographic change[4] and the slow progress of digitalization certainly among the most pressing.[5] This puts significant pressure on the public sector to innovate and modernize. By 2030, there will be an estimated personnel gap of nearly 330,000 employees in the public sector in Germany.[6] Additionally, recurring crises such as the COVID-19 pandemic or the current war in Ukraine pose a challenging disruptive influence and increase the pressure on the state's ability for action. Only 25% of citizens in Germany believe that the state is capable of fulfilling its tasks, while a significant majority of 70% have lost faith in the problem-solving competence of politics and administration.[7] In light of these challenges, it is essential to counteract the limited capacity of the state to act, for example, by tapping into efficiency opportunities or rethinking technological processes and applications.

GenAI can make a significant contribution to this, as long as the technology is used purposefully and responsibly.[8] The technology's ability to not only process existing information but also create content based on prompts creates new avenues for a more efficient, accessible, and citizen-oriented public administration. GenAI can play a central role in the (efficient) redesign of both internal (e.g., within an authority organization), as well as external (e.g., in interactions with citizens), administrative processes by reshaping how services are offered and utilized.[9] It is estimated that by 2026, over 100 million people worldwide could be supported in their work by an AI-based "robot colleague".[10] This technology has the potential to optimize or completely automate 42% of public service working hours globally,[11] thereby creating space for other areas of work.

Global Spirit of Innovation: Rapid and Bold Experiments Despite Uncertain Terrain

Consequently, it is unsurprising that the public sector across the world – unlike with other technologies – has quickly begun experimenting with Generative Artificial Intelligence. There was early and significant interest in testing the technology and using it to create added value – a trend that continues to this day. Numerous states are advancing the use of GenAI in administration. Public administrations in 25% of the nation states surveyed by Gartner have already implemented GenAI or plan to do so in the coming year. Another 25% intend to use GenAI within the next two years.[12] There is also increasing experimentation with GenAI at the local level, with a notable interest from mayors worldwide in utilizing the technology.[13]

Thus, public administration is at the forefront of experimentation. This rapid and cross-contextual, cross-cultural experimentation is remarkable – as it has not been observed to this extent with other technologies. In this way, there are already some projects that open up global learning and experience horizons. At the same time, it is currently challenging to get a clear picture of current use cases and to localize them. While the potential is clearly expressed in surveys, concrete use cases are still not widespread globally. Adoption is in an early phase, and scaling to organization-wide use is still pending. There are often individuals who want to make GenAI usable for the public sector but cannot yet enable full institutional adoption. An exploratory 'bottom-up' approach is emerging at various touchpoints within the authorities.

The willingness to experiment is all the more remarkable as the legally relevant framework parameters are still developing, for example, regarding data protection aspects. More fundamental questions about the legitimacy, transparency, and impact of using GenAI in the public sector are only now being discussed for the first time. Europe positions itself as a pioneer in AI regulation with the EU AI Act, which came into force on August 1, 2024, providing initial guidelines for the design of AI systems – including their use in administration. Technological developments are also rapidly evolving, with new milestones being reached regularly. Since the release of ChatGPT by OpenAI in November 2022, for example, the number of foundation models and corresponding offerings has been steadily increasing.[14]

Research Interest: Drawing Lessons from Pioneering Work

Against the backdrop of global experimentation and trialing, the study analytically approaches the use of GenAI in the public sector during a particularly early phase of technology adoption and consciously looks outward to the international community. The aim of this illustrative-exploratory approach is to understand what insights can be derived from the technology's early adopters and to take a first, cautious interim assessment – at a time when GenAI is still in an early phase of exploration and adoption. This is done independent of geographical limitations and regulatory frameworks. The focus is on examining the approaches of individual organizations in the public sector across different continents. Starting with the investigation of examples as diverse as possible, the study seeks to find similarities and commonalities across various use cases (different contexts, similar outcome design).

Therefore, the following research question is at the heart of this study:

> What relevant lessons can we draw from the experiences of the first exploration and application phase of GenAI (2023–2024) for the public sector?

Previous publications predominantly describe GenAI use cases in the public sector in a hypothetical sense. This results in concrete experiences from the introduction and use of GenAI in the public sector not being explicitly demonstrated. In this publication, however, specific use cases are placed at the center of attention. This is built on extensive interviews with individuals[I] who were or are directly involved in these initiatives, providing firsthand information. In this way, implicit organizational knowledge can be made explicitly usable. At the same time, the approach of the authors of this study promotes networking and idea transfer between various (potential) users. Even during the writing of the study, interview partners showed great interest in the work of their colleagues from other countries. Nevertheless, the chosen methodology has its limitations. In particular, the illustrative-exploratory nature of the study inevitably comes with restrictions regarding the ability to generalize the results.[II] This illustrative-exploratory study aims to make an analytical contribution to the current discourse surrounding the use of GenAI in the public sector and to stimulate and invite further debate on the opportunities, applications, and concrete use cases.[15]

Structure of the Study

The following section consolidates the use cases in focus, from which common themes and perceived key factors for the successful implementation of GenAI can be distilled. The key factors are presented in detail. Based on the use cases examined, the authors outline ways in which organizations and institutions in the public sector have approached the implementation of these key factors. Subsequently, core learnings for the public sector are derived. Finally, the authors provide an outlook on the potential of GenAI for the public sector. The appendix contains detailed descriptions of all the use cases studied, as well as an explanation of the methodological approach and associated limitations.

[I] In-depth presentation of the methodological approach in the appendix

[II] In-depth presentation of the limitations in the appendix

Global Perspectives on the Public Sector: Insights into the Initial Exploration and Application Phase

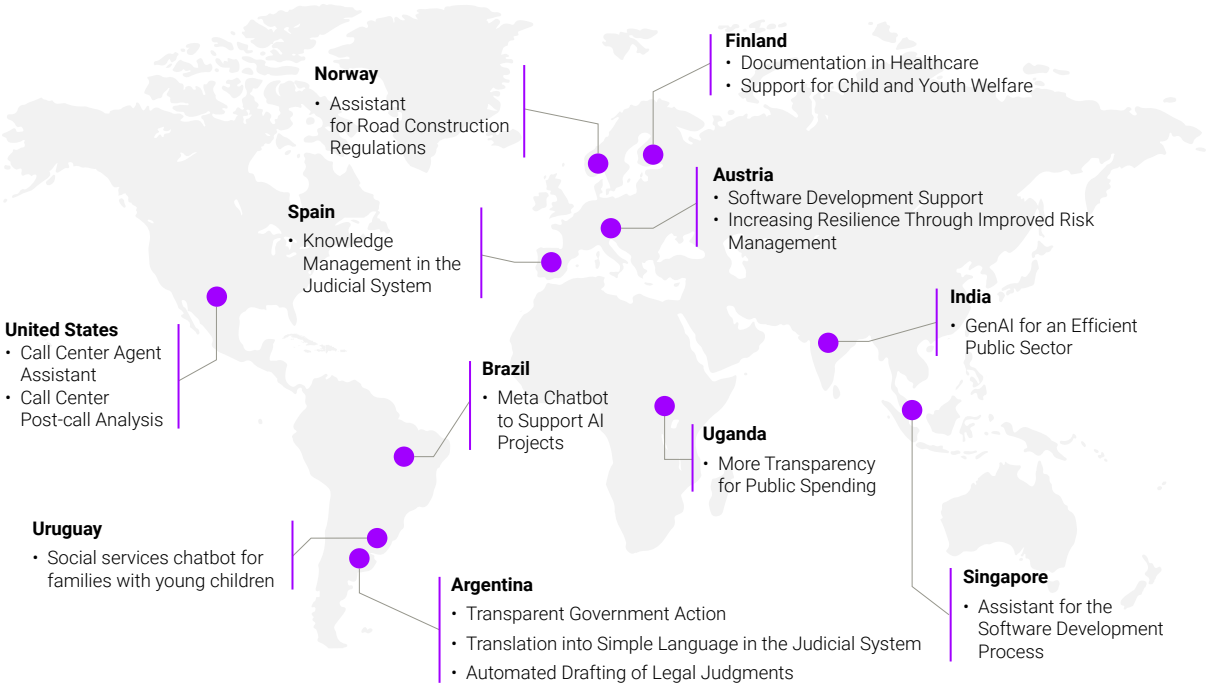

Figure 1: Use Cases Studied from Across the World

The world map (see Figure 1) provides an overview of the 16 GenAI use cases from the public sector across various countries in North America, South America, Europe, Africa, and Asia that were examined in this study.[III] The selection provides an exemplary and global view of the diverse use of GenAI in the public sector, at a relatively early stage in the lifecycle of a new technology.[16]

[III] In-depth presentation of the use cases in the appendix

From the use cases studied, initial insights can be derived regarding the potential of the technology, including, amongst others, how…

> … GenAI can optimize risk management and enhance the resilience of public organizations (use case Austria);
>
> … social and health workers can align their work more closely and efficiently to people thanks to GenAI (use case Finland);
>
> … monotonous and tedious tasks can be handled by GenAI, allowing higher-value tasks to be prioritized (use case USA);
>
> … legislative processes, legal content, and the activities of elected officials can become more transparent, and how impact on the individual can be more easily recognized (use cases Argentina and Uganda);
>
> … the implementation of regulations can be made more efficient (use case Norway);
>
> … software development processes can be made more efficient and less error-prone (use cases Singapore and Austria);
>
> … official documents (regulations, publications, records, etc.) can be summarized and converted into easily understandable language for optimized use (use cases Spain and Argentina);
>
> … GenAI can help create assurances in dealing with AI in public administration (use case Brazil).

The use cases examined are grounded in various contexts and circumstances. These contexts can be described by various characteristics, both internal and external to the organization. The organizational environment is typically characterized by path dependencies and established practices (organizational culture including openness to innovation) and is particularly shaped by how an organization is led, what strategic goals it pursues, what guidelines it sets for itself, and what infrastructure or data is available to it. Additionally, each public sector organization is embedded in an administrative system of regulatory requirements and political dynamics and is influenced by economic, social, technological, and ecological factors. The differences in contextual factors between various organizations are acknowledged, but systematic examination of these is not the focus of this study (see limitations and boundaries of the exploratory methodology in the appendix).

Despite the diverse contexts and circumstances, recurring patterns and commonalities can be observed when studying the use cases and the conducted interviews. The recurring patterns observed primarily relate to the process of introducing GenAI and perceived key factors for a successful GenAI implementation.

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Initial Recurring Patterns in the Phases of GenAI Implementation

The observations clarify that GenAI projects ultimately represent a specific form of IT projects. Therefore, it is not surprising that they go through similar phases as other IT and software development projects. These typically follow a simple logic (see Figure 2): selection of the use case, definition of requirements, development of the application, testing of technical functionality, followed by piloting the application with initial users, before it is rolled out to a broader user base and ultimately put into productive use.

Due to the similarity to IT projects, the extensive experience and known key factors that support the successful execution of such projects can be drawn upon when introducing GenAI. In particular, support, sponsorship, and backing from the leadership level are essential, as with all projects—perhaps even more so in the case of GenAI implementation than in other projects.

Special strategic foresight and technological understanding is required to deploy this technology profitably and sustainably in the long term. Strategic foresight particularly means anticipating technology-driven changes for the organization, and considering these when introducing GenAI. Differences from other IT projects arise mainly from the way GenAI may change work and collaboration.

Figure 2: Phases of GenAI Introduction

Perceived Key Factors for Successful GenAI Implementation

Along the GenAI implementation process, key factors perceived by experts were identified through interviews that contribute to the success of GenAI implementation. Given the character of GenAI projects described at the outset, it is not surprising that there are significant overlaps with other IT and software development projects, not only in the phases, but also in the identified key factors. While these factors do not constitute a complete and ready-made recipe for success, they provide valuable reference points that can help overcome obstacles in projects aimed at introducing GenAI and increase the chances of success.

The following factors have crystallized as key factors for successful implementation during the study of the use cases:

- Matching business needs and technology
- Internal standards and guidelines
- Accessible innovation testbed
- Suitable users for testing and piloting
- Subject matter expertise for development
- Infrastructure and data protection
- Selection, availability, and quality of data
- Knowledge about GenAI

To enable a structured view of the key factors, these were examined from two perspectives: From a procedural perspective, these key factors can be indicatively assigned to the phases of implementation. This assignment is made according to the phase in which the key factors primarily have an impact. However, a cross-phase effect should not be explicitly excluded.

This examination of the factors can be supplemented by a functional perspective. The functional classification specifies the purpose and goal that the key factors are intended to achieve. The focus is on the manner in which the factors affect the process. The following functions can be differentiated:

- Providing security, guidance, and direction
- Enabling development and implementation
- Accompanying change and empowering employees

The perceived key factors and their assignment to the process and functional perspectives are illustrated in Figure 3. The global use cases at the center of this study provide insights into how the key factors can be implemented, both exemplarily and educationally. The following sections offer a deeper anecdotal insight and overview of various approaches.

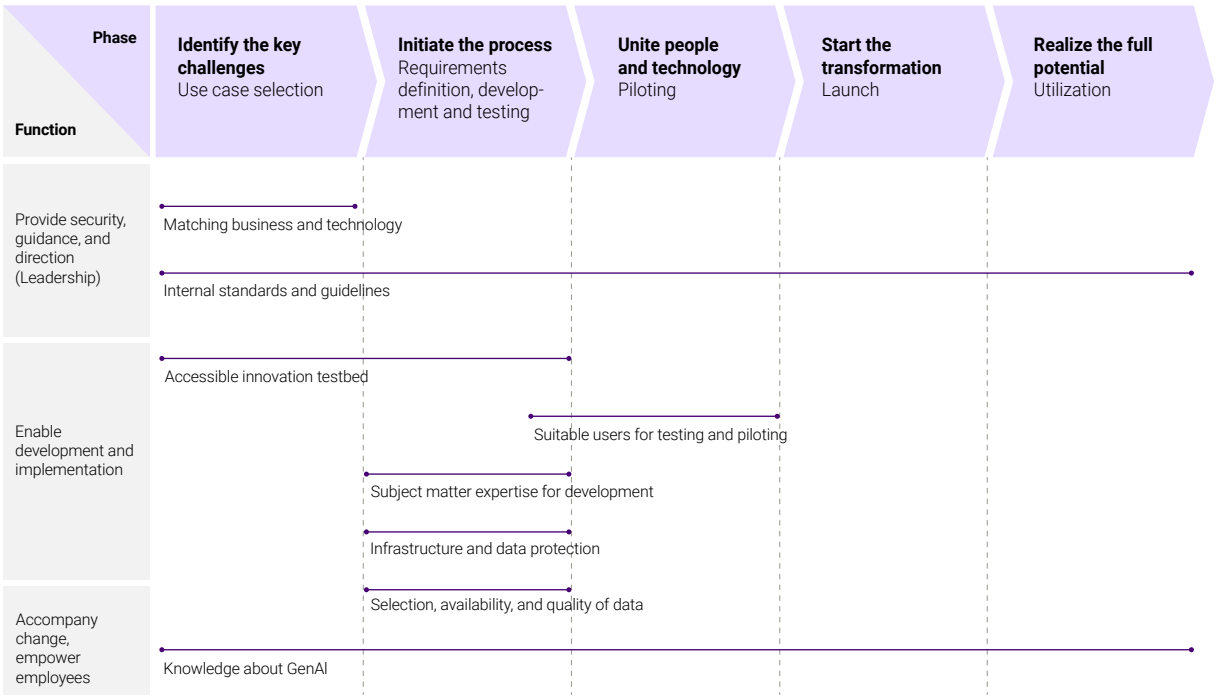


Figure 3: Process Model and Functional View of Key Factors

Modern Digital Core of the Organization as an Essential Foundation for the Effective Use of GenAI

However, GenAI also brings new requirements for the technological foundation of organizations, which often exceed existing capabilities—requirements for infrastructure, data, as well as security and sovereignty, for example. The "digital core," meaning the underlying technological capabilities of the organization, must enable the full potential of GenAI—and future disruptive technologies—to be realized. Nevertheless, this core must not only keep pace with change, but also act as an enabler of transformation.

A secure, AI-capable digital core that leverages the capabilities of cloud technologies and prioritizes the interoperability of systems is essential.[17] This also includes a comprehensive data foundation and breaking down functional silos, as well as networking and combining existing data to provide GenAI initiatives with high-quality inputs.[18]

In addition to technological aspects, it is also important to change work practices with regards to technology and adapt to digital transformation.[19] Leading organizations prioritize the digital core as an essential foundation to efficiently deploy and scale GenAI.[20]

Key Factors Providing Security, Guidance, and Direction

Matching Business Needs and Technology: Deriving Successful Use Cases from Specific Business Needs

Aligning a specific business need with a newly implemented technology like GenAI is a crucial key factor for profitable use. Studies have shown that aligning business needs and technology positively impacts the performance and outcomes of companies, whether in terms of profitability or sustainability metrics; as demonstrated by 21% of companies that have fully integrated technology into their strategy and continuously incorporate technology into strategic planning.[21] This avoids a new technology from being introduced merely as a prestige project or for its own sake, without generating significant added value for the organization.

This approach is based on a strategic selection of problems to be solved or other beneficial applications. Strategically selecting specific GenAI use cases means either realizing significant efficiencies in the short term, or gaining a strategic advantage in the medium to long term.[22] It must be clearly articulated which user problem the technology is intended to solve, and how it should be integrated into existing business processes. A simple “We need to apply GenAI!” is not sufficient.

The business need can arise from daily work or be actively sought out. What is crucial is that it is considered from the outset and serves as the starting point for the introduction of the technology.

How this can be successfully achieved is illustrated by the following use cases.

Use Case

Translation into Simple Language in the Judicial System (Argentina)

Specialized legal texts and publications are often difficult for ordinary citizens to access and understand. At the same time, they can have an immediate impact on people’s lives, e.g. in the form of laws and administrative decisions. The Judicial Statistics Office of the Justice Department of the Autonomous City of Buenos Aires was already aware of the need to convert specialized legal texts for publications into a language that is understandable to a broad audience. However, a corresponding tool was still missing.

With GenAI, there now exists the possibility to effectively address this problem. As a result, the authority developed an application that can translate legal texts into simple language with little effort, making them more understandable for citizens. As a result, this can fulfill the professional requirements and optimize the capabilities of the technology.

Use Case

Support for Child and Youth Welfare (Finland)

The Wellbeing Services County of Pirkanmaa in Finland faced increasing cases of child welfare endangerment. These cases must be processed within a legally mandated timeframe of 90 days and require extensive documentation to meet the requirements, posing a significant challenge for the organization. The Wellbeing Services aimed to address this challenge through two hackathons that were organized by external service providers.

Starting with the business need, the challenge was initially narrowed down to a specific problem (children with issues in school), the complexity of which was appropriate for the scope of a six-week hackathon. Through the hackathon, an innovative solution was developed using GenAI to address this specific issue. This solution supports social workers in child and youth welfare by automatically generating an initial draft of the case summary based on the reported data. As a result, documentation efforts were significantly reduced.

Use Case

Support for Software Development (Austria)

An Austrian public IT service provider was fascinated by the technology's potential and wanted to identify possible application areas in the context of software development. Therefore, in collaboration with an external service provider, a workshop was held to outline the professional challenges in this field that could potentially be addressed with GenAI. The external partner provided expertise in evaluating and prioritizing the possible application areas. This led to the identification of several use cases, some of which could be addressed with solutions already available on the market. Beyond this, a solution was designed and developed in collaboration with the external service provider. The solution assists in defining requirements and creating test cases within the software development process. As a result, the effort required to create test cases was estimated to have been halved.

Internal Standards and Guidelines: Safety and Clarity for All Involved

Internal standards and guidelines are defined internally within authorities or administrations and must be considered alongside external standards such as legislation. They play a crucial role in the implementation of GenAI in the public sector. They ensure that the technology is introduced and used in a manner that aligns with the strategic goals, ethical considerations, and operational requirements of the organization.[23]

Standards serve as blueprints that answer and summarize various fundamental questions regarding GenAI implementations in accordance with organizational expectations, making them reusable for future projects. Important areas that should be covered by standards and guidelines include governance, architecture, security, data, supplier selection, quality assurance, and sustainability. In particular, the ethical and responsible use of AI plays a crucial role in ensuring the trust of citizens and employees.[24]

The standards may vary depending on the potential risk posed by the GenAI applications. In cases of high risk, for example, manual or automated reviews may be required. To mitigate risks, special attention can be given to aspects such as explainability, transparency, and data security (see also the key factors "Infrastructure and Data Protection" and "Selection, Availability, and Quality of Data").

The form of standards and guidelines can vary, ranging from simple guidelines to comprehensive AI strategies. These can either apply to individual organizations or have cross-organizational applicability within the administration. Measures from simple reporting processes up to central units for coordinating GenAI activities (such as Centers of Excellence) can also be important to promote synergies and efficient action and develop or update standards for the organization. In light of the significant potential of GenAI and the desire to leverage this for one's own organization, the discussions conducted as part of this study repeatedly articulated the need for standards and guidelines.

The following use cases demonstrate how internal standards and guidelines can support the introduction of GenAI.

Use Case

Assistant for Road Construction Regulations (Norway)

The introduction of a GenAI assistant for road construction regulations at Norway's Public Road Administration demonstrates that internal standards and guidelines can facilitate the adoption of GenAI applications – but at the same time, these must be combined with corresponding expert knowledge. On one hand, the authority provides its employees with a guideline on the responsible use of AI in road administration, as well as specific guidelines for the use of GenAI. At the same time, the authority has established internal guidelines concerning software development, deployment, and the use and processing of data. These guidelines have supported the GenAI implementation, given its nature as a software development project.

Furthermore, a technical architect assisted the project team in applying the guidelines, particularly those concerning data, and helped secure approval from the legal department for the planned data processing. Ultimately, the combination of written guidelines – both broad, and specifically related GenAI – and the experience of subject matter experts led to success.

Use Case

Meta Chatbot to Support AI Projects (Brazil)

Standards and guidelines for AI projects are not available everywhere. In Brazil, this applies to the entire public administration: While there are regulations regarding data protection, there is no dedicated AI regulation. As a result, the implementation of AI projects in the administration often involves uncertainties, ambiguities, and concerns about ethical flaws in the applications and some municipal chatbots are biased.

To enable the realization of AI projects in the administration and ensure the ethical and responsible use of the technology, the Brazilian NGO Oficina Municipal, in collaboration with the Konrad-Adenauer-Stiftung, had an interesting idea: Why not use GenAI to achieve this and support public sector employees in the development and implementation of AI projects? Thus, the idea of the meta chatbot Assis was born, which supports public sector employees in the planning and implementation of AI projects. Project participants can ask the GenAI chatbot questions and request assistance during each phase of the project. The chatbot helps to appropriately consider the responsible use of AI, for example, in terms of fairness, transparency, and verifiability of results.

Key Factors Enabling Development and Implementation

Accessible Innovation Testbed: Promoting Innovation in a Protected Environment

To promote innovations in a structural manner, it is essential to create a fertile ground for them within the organization through suitable framework conditions. This also applies to the adoption of new technologies. Providing innovation testbeds can help simplify the development and testing of GenAI applications and accelerate the implementation of the technology.[25]

Innovation testbeds should be understood as deliberately designed conditions that promote innovation. These conditions must be structured in such a way that they allow for low-threshold and easily accessible experimentation, enabling the generation of useful ideas and allowing them to mature in a protected environment.[26] Such innovation testbeds can include both a human and a technical component.

With reference to the social nature of the innovation phenomenon, hackathons or crowdsourcing events are noted as essential mechanisms.[27] Providing necessary resources such as internal budgets or dedicated working time are also recognized as an innovation-promoting framework condition.[28] From a technical perspective, an innovation testbed offers the opportunity to test GenAI in a controlled environment with low barriers—without having to engage intensively beforehand with setting up suitable infrastructure or addressing issues of security and data protection.[29] Corresponding platforms, such as innovation sandboxes, are suitable for such technical testing.

The following example from Finland illustrates how such innovation testbeds were successfully utilized.

Use Case

Support for Child and Youth Welfare (Finland)

As described under "Matching Business Needs and Technology," the GenAI application to support case documentation for the Wellbeing Services County of Pirkanmaa in Finland was developed during a hackathon. The goal was to develop a working prototype. Through collaboration with external partners who organized the hackathon, the Wellbeing Services County's business perspective was complemented by an external viewpoint and the necessary technical expertise. As a synthesis of the business challenge and innovative technical means, the idea for the GenAI application was born, which was gradually developed in close collaboration between the partners in this protected environment. Moreover, the partner organizations provided the necessary cloud-based infrastructure for the prototypical development.

Suitable Users for Testing and Piloting: The Basis for Targeted Further Development

To ensure the quality of the GenAI application, intensive testing and piloting are crucial. Both the technical functionality of the application and the quality of the outputs are checked (testing), as well as their practical applicability in real scenarios (piloting). This ensures that the application both meets the requirements and expectations, and functions smoothly. This is particularly important for GenAI applications, as they do not operate deterministically, meaning that repeated execution with the same input data can produce different results.

The selection of testers and pilot users is not trivial: on one hand, they must bring in-depth professional expertise to qualitatively assess the results. On the other hand, they need to be able to use the application technically, which means they must also have the necessary foundational knowledge. Additionally, the application comes into contact with a larger user base in the organization for the first time during the pilot phase. Therefore, pilot users play the important role of acting as advocates for the innovation and addressing any reservations. They thus function as so-called "Change Agents," ideally communicating the potential of the GenAI solution positively within the organization. Pilot users must consequently possess a particular openness to the technology.

The selection of pilot users can steer the further implementation in the right direction and significantly accelerate the adoption process. Compared to other IT projects, this selection holds particular significance in GenAI projects.

Examples from the USA (testing), Austria (piloting), and Spain (piloting) illustrate how this can be implemented in practice.

Use Case

Call Center Agent Assistant (USA)

A health and social services authority in New Mexico planned to introduce a GenAI-powered assistant for their call center agents. This assistant directly impacts the work of the agents, as it takes over tasks previously handled by the agents by automatically generating summaries of conversations once the call has finished. Additionally, the GenAI-powered assistant provides knowledge articles from an existing knowledge base during phone calls, providing agents with relevant information to address callers' questions.

Therefore, it was essential to involve the agents from the very beginning of the design and development process, as well as the testing phase. The agents' participation during the testing phase was crucial, to understand the success of the product and the changes that needed to be made when things were not working as expected. The testers included team leads, subject matter experts, and training leads for the agents.

The selection of the testers was primarily based on experience and availability considerations: The experience of the users was important to test the GenAI application in unusual conversation situations ("confusing scripts") and thus minimize bias and misinformation. The availability of the testers was relevant because intensive testing was necessary for the application, requiring 2-3 hours daily over a period of 5-6 weeks.

The selection criteria explain why team leads, amongst others, were chosen, as they bring the necessary experience and a certain degree of flexibility, conducting fewer calls than regular agents. Moreover, the team leads were involved in the process design from the beginning to make it as user-centered and user-friendly as possible. Initially, the product went live as a small pilot, where 30 agents were selected as pilot users, taking real calls while using the GenAI-powered assistant (out of a total of 450-500 agents in the call center). Since then, this number of users has increased to over 100.

Use Case

Software Development Support (Austria)

An Austrian public IT service provider systematically selected pilot users for its GenAI application to support software development. Various aspects were considered in this process; they should have an individual willingness and openness towards the technology and an intrinsic motivation to further develop the application. The quality of the solution hinges on this, as input is essential. Furthermore, pilot users should be granted the necessary time to actively test the application and provide feedback. Finally, the specific professional context was also significant; a use case was deliberately chosen that would not burden the innovation efforts with additional complexity and thus complicate it.

Use Case

Knowledge Management in the Judicial System (Spain)

In the Spanish Ministry of Justice, the pilot users of the GenAI search engine were specifically selected. The application was initially tested with users who approached innovation and technology with a fundamental openness and demonstrated a willingness to change. Therefore, employees were identified who had previously collaborated with the IT department on various projects. Care was taken to ensure that the respective managers would support their employees' participation in the pilot. This ensured that the pilot users also had the necessary capacity in terms of time.

Subject Matter Expertise for Development: Close Integration of it and Subject Matter Experts with Specialized Skills

The willingness to experiment is present in many areas due to the 'wow factor'. However, when GenAI projects should move beyond the idea stage and into technical implementation, specific expertise is required.

Specialized skills are necessary, such as practical prompting experience. Knowledge about the limitations of GenAI (such as hallucinations, biases, time series understanding, or limited attention spans) and ways to address these is also critical. Due to the non-deterministic behavior of GenAI applications, other testing approaches must be pursued, and it should be internalized that humans are ultimately responsible for the use of the technology and must fulfill this responsibility. Additionally, general skills in software development, AI solutions, and cloud solutions operations are required.

However, these technical skills alone are not sufficient to leverage GenAI effectively. As previously described, business needs must be systematically combined with technical skills. This is also reflected in the skill requirements. Just as business requirements and technology must be aligned, close collaboration between departments with relevant domain knowledge and IT with technical expertise is essential. These high skill requirements pose a greater challenge for public administration, especially in light of the shortage of skilled workers.[30]

The beneficial interplay of the necessary expertise is illustrated by the following use case.

Use Case

Meta Chatbot to Support AI Projects (Brazil)

The Brazilian NGO Oficina Municipal aims to promote the responsible use of AI in public administration and support employees in implementing AI projects. The result is a GenAI-based meta chatbot that fulfills this function and supports employees in the realization of AI projects. To ensure the success of the project, Oficina Municipal, in collaboration with a funding partner, has assembled a team that combines expertise from various fields. The focus was specifically on external IT experts and experts with a deep understanding of the public sector. Following this approach, a specialist joined the project, who – through his work in the Brazilian House of Representatives – contributed deep expertise regarding the Brazilian administration, its culture, and challenges, and supported operational questions in particular.

Use Case

Further Use Cases

Since GenAI is a relatively new technology, many organizations still lack their own specialized skills and cannot build these in the short term. However, to avoid losing momentum and falling too far behind in testing the technology, some organizations have chosen to bridge this skills gap by collaborating with external service providers with extensive subject matter expertise. These partnerships enable organizations to benefit from the experience and knowledge of external experts while gradually developing their own capabilities in working with GenAI. This way, they can ensure that they remain technologically up to date and can effectively leverage the benefits of GenAI early on.

Infrastructure and Data Protection: A Secure Foundation for GenAI

The implementation of GenAI requires a robust infrastructure and strict data protection measures. The computational intensity of these applications is significant,[31] as both the training and execution of the models demand substantial computing power and specialized hardware such as GPUs (Graphics Processing Units) and TPUs (Tensor Processing Units). In particular, leveraging cloud technologies allows for the efficient and scalable provision of the necessary resources. Therefore, using cloud technologies as a foundation for utilizing GenAI is essential,[32] but it can also raise data protection-related issues that need to be addressed. The public sector, in particular, has a special duty of care in this regard. Additionally, other infrastructure-related topics are relevant when introducing GenAI applications, such as sovereignty, legal, and ethical aspects – however, these are not the focus of this study.

Use Case

Knowledge Management in the Judicial System (Spain)

To extract information about specific processes from a document base of several million complex legal documents, an LLM-based search engine was developed for the Spanish Ministry of Justice. Employees were therefore enabled to interact with documents using natural language. The Ministry established its own private infrastructure to operate the solution. This step was considered necessary to meet strict data protection requirements. However, new challenges consequently arose, as the responsible IT service provider had to first build the corresponding infrastructure.

Use Case

Increasing Resilience Through Improved Risk Management (Austria)

ÖBB-Infrastruktur AG, an Austrian railway infrastructure company, relied on the capabilities and infrastructure of an external service provider for the use of GenAI in the identification and assessment of business risks. The service provider used its own GenAI platform for risk identification and assessment, in coordination with the requirements of ÖBB-Infrastruktur AG. In particular, a dedicated, isolated tenant was established to ensure data security. This "GenAI-as-a-Service" approach allowed the potential of the technology to be harnessed without ÖBB-Infrastruktur AG needing to build its own capabilities or infrastructure.

Use Case

Further Use Cases

In contrast, cloud resources were used in many of the other studied use cases. In those, it was important to take into account the applicable regulations, especially data protection regulations, data boundaries, AI regulations such as the EU AI Act, and of course all internal agency regulations. This enabled the provision of flexible, scalable, and cost-efficient infrastructures that optimally support the specific requirements of GenAI applications.

Selection, Availability, and Quality of Data: Fuel for GenAI

While the use of GenAI is still in its early stages, the effectiveness of GenAI technology itself largely depends on how data is available and can be utilized.[33] Adapting foundation models to application-specific requirements calls for high-quality and relevant domain- and organization-specific data, which often poses a significant challenge.[34] 'Garbage in, garbage out' is a well-known dictum in the world of programming, which also applies here: the quality of the data used directly affects the performance and accuracy of the GenAI model. The targeted selection of data also allows GenAI applications to be tailored to specific needs, thereby increasing their utility within the organization. The sensitivity of the data plays a crucial role, as it determines the requirements for data protection and security measures, and therefore even the possible usage. Identifying the right training data, as well as its internal organization and provision, is consequently of essential importance.

Use Case

Increasing Resilience Through Improved Risk Management (Austria)

In the course of using GenAI to identify and assess business risks at ÖBB-Infrastruktur AG, the subject matter experts were closely involved in selecting the data foundations. Using a standardized search methodology, relevant sources for the project were identified and stored in a knowledge library. Only publicly and freely available data were used, such as reports from security authorities, scientific publications, or media articles. To ensure the relevance of the identified data, it was closely mirrored and validated in a weekly exchange with the subject matter experts. This way, the necessary datasets could be identified to derive relevant risks for the company.

Use Case

Call Center Agent Assistant (USA)

A health and social services authority in New Mexico, USA, introduced a GenAI assistant for their call center agents, which generates conversation summaries and provides knowledge articles with relevant information regarding callers' inquiries during phone calls. The underlying knowledge database is continuously maintained and updated by a dedicated team through a defined process. Amended content-specific circumstances, such as modified processes or new government support programs, are reflected in existing knowledge articles or supplemented with new ones as required.

The GenAI application seamlessly integrates into this existing process of maintaining the knowledge database: every two weeks, the knowledge database is scanned and the data set of the GenAI application is updated. Thus, the agents always have access to the most current information through the assistant system to address citizens' concerns.

Key Factors for Supporting Change and Empowering Employees

Knowledge About GenAI: Artificial Intelligence Needs Human Skills

To fully leverage the potential of GenAI, new skills and knowledge are necessary. It must be recognized that the changes the technology brings regarding work methods must also be accompanied by changes in skill profiles.[35]

This involves both fundamental knowledge about the technology, its opportunities, as well as the limitations of technical possibilities. The long-term success of GenAI applications hinges on users and their openness to change. Often, misconceptions and uncertainties regarding GenAI have been observed, ranging from one end of the spectrum ("Will the technology replace my job?") to the other ("The technology will solve all our problems").

On the other hand, it is about the correct operation of the GenAI applications themselves. Particularly, prompting, or the targeted design of instructions to GenAI models, is likely one of the most important new skills. The quality of the results significantly depends on the prompt. The applications must be designed according to the technical capabilities of the users to ensure usability.

Therefore, it is essential to inform and empower, to involve employees early on to reduce resistance, and to responsibly provide them with the powerful tool that GenAI represents. Despite its importance, there is a significant gap regarding GenAI competencies: while 97% of public sector employees want to build corresponding skills, only 7% of organizations provide training for their employees in this area.[36]

How the empowerment of employees and users can succeed is exemplified by the use cases from Norway, Singapore, the USA, Austria, and Uganda.

Use Case

Assistant for Road Construction Regulations (Norway)

The opportunities of GenAI are fascinating and offer great potential, but also contain uncertainties. This was the case at Norway's Public Road Administration, which participated in a GenAI-focused hackathon to better understand the technology. During the hackathon, the participants learned the areas in which GenAI is particularly useful, and that a user-centered selection of the use case is crucial.

The idea of a GenAI assistant for road construction regulations, which supports officials in searching for relevant information, emerged during the hackathon. The implementation was carried out in close collaboration between an external development team and the authority. What's more, case workers were closely involved in the development from the outset. In addition to the technical implementation, it was important for employees to learn how to use the application and interpret the generated answers correctly. A central portal was developed, providing information on the application, specific pages for users and software developers, as well as training materials, which all employees have access to promote the use of the technology. Furthermore, information and warnings have been integrated into the user interface of the application to make it more intuitive to use. Additionally, the authority plans to carry out GenAI training sessions to further deepen the understanding of the technology.

Use Case

Assistant for the Software Development Process (Singapore)

In the context of developing a GenAI platform for a Singaporean public service agency, great emphasis was placed on minimizing the need for specialized skills. This was achieved by providing applications that offer pre-configured prompts through a graphical user interface. Users can thus operate the applications via a web-based interface tailored to their work processes, rather than having to develop prompts themselves. As a result, prompt engineering largely "disappears" into the background and becomes part of the development activity, meaning users are not required to do any.

In cases where custom prompts still need to be developed, prompt templates were provided. These templates can be used by the users and adapted to their specific needs. During the platform's introduction, significant emphasis was placed on explaining how it functions. Employees were made aware of how prompts and input data directly influence the quality of the output. Access to the underlying technical settings and instructions is restricted to a few employees designated as platform administrators. These administrators received appropriate training to manage the platform effectively.

Use Case

Call Center Agent Assistant (USA)

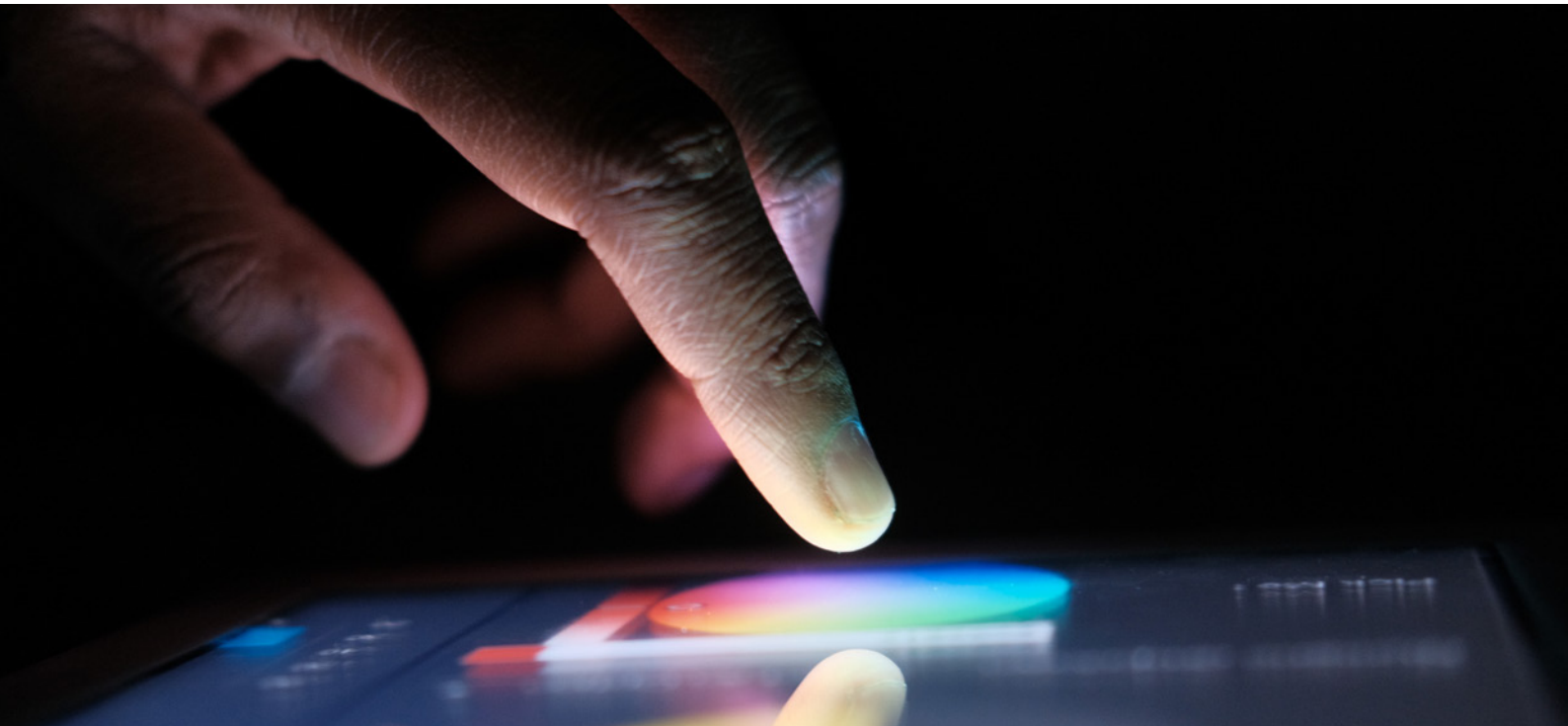
The call center employees of a health and social services authority in New Mexico were accustomed to writing their conversation summaries in bullet points and using acronyms. The introduction of a GenAI assistant, which took over the task of generating conversation summaries, disrupted this norm. The new GenAI-based summaries comprised full sentences and no longer included specific abbreviations (unless specified in the transcript of the call). This initially confused the agents and was met with some resistance. "The GenAI output wasn't wrong; it was just different," said a person involved in the project.

The reservations were mitigated in various ways. Through a co-creative approach, the users were part of the development process from the beginning. Requirements were gathered and validated in detail in close coordination with the operational leads and subject matter experts: initially twice a week, later once a week.

Furthermore, the application was extensively tested, including simulations of real calls. Before the pilot went live, there were a number of thorough training sessions with content put together by the GenAI assistant team and the agent training team. The introduction was also accompanied by a user support offering (via a Teams channel) and short, daily feedback surveys.

Lastly, the security of the application and the adherence to important aspects of responsible AI[IV] were demonstrated. Thanks to these measures, the employees gradually recognized the benefits of the GenAI application (e.g., more informative summaries), which enhanced acceptance. An important factor was that there was no disruption to the regular operations of the call center during the process.

[IV] Responsible AI means that organizations act consciously to design and use artificial intelligence in a safe and trustworthy manner and to protect against AI-related risks. Mitigating these risks is particularly relevant for public administration, as its actions directly affect citizens.[37] This starts with the following clear principles for dealing with AI: transparency, explainability and accuracy; compliance, data privacy and cybersecurity; accountability; human by design; fairness; safety; sustainability.[38]



Use Case

Increasing Resilience Through Improved Risk Management (Austria)

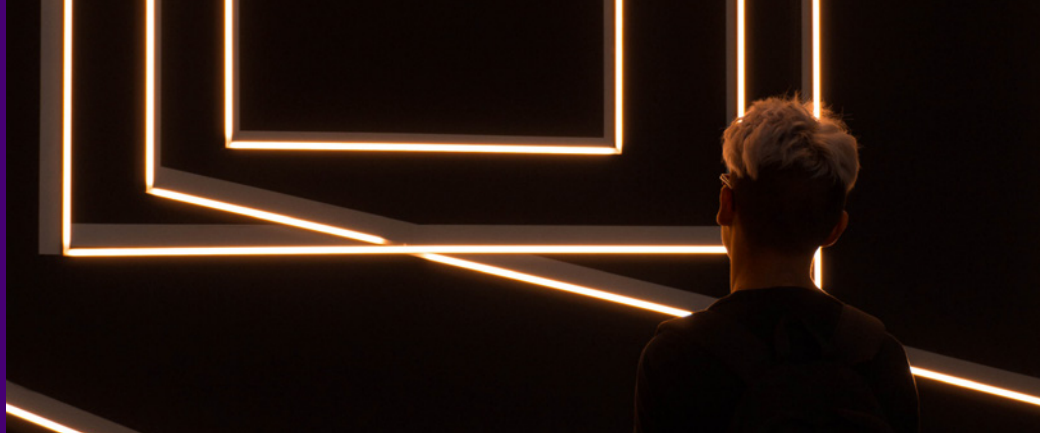
ÖBB-Infrastruktur AG relied on close involvement of employees as well as continuity when introducing a GenAI-based application for risk identification and assessment. Regular meetings and joint validations of results with stakeholders took place. This direct experience and individual engagement further strengthened trust in the technology. At the same time, the Austrian approach was characterized by radical transparency. For instance, technology and functionality were explained in detail and even illustrated with screenshots from various components like the front or backend. Throughout the project, existing processes were maintained to avoid overwhelming employees.

Use Case

More Transparency for Public Spending (Uganda)

The Office of the Auditor General (OAG) is responsible for auditing public expenditure in Uganda. To improve this audit, a GenAI application is being developed on completion of this study: It summarizes the OAG's audit reports, highlights key findings, and quantifies improvement measures addressed in the audit reports and directed to the parliament. The aim of the application is to create transparency regarding individual audit reports and to facilitate access to them and the contained recommendations – for the OAG itself, civil society, and the general public.

The group of involved stakeholders therefore also includes representatives of civil society organizations who have been closely involved in the development process from an early stage – for example, in workshops where requirements for the application were identified. To ensure sustainable use of the application, training sessions are also planned to build the relevant skills to use the tool. These are particularly targeted at users within the OAG and the civil society organizations using the tool. The ability to use prompts effectively is a focus of the trainings, as this enables users to search documents more effectively. At the same time, great emphasis is placed on the sustainable dissemination and integration of the necessary skills among the users. Therefore, a 'train the trainer' approach is intended to ensure that the training participants subsequently become trainers themselves and can conduct appropriate training sessions.



Five Lessons Learned for the GenAI Transformation

The use cases of GenAI pioneers demonstrate that the technology offers significant potential for the public sector worldwide. At the same time, the study of these use cases provides valuable insights for successfully implementing and utilizing GenAI. Each of these global use cases offered specific insights that allowed for overarching lessons learned to be derived. These are the result of synthesizing practical experiences and shared observations from various contexts and frameworks. They reflect both the successes and challenges observed in the different use cases. The lessons learned should therefore be understood as recommendations for action, providing guidance for organizations to unlock and sustainably utilize the potential of GenAI.

01 It's Worth Trying: Taking the First Steps and Moving Forward Boldly

Through proofs of concept and initial use cases that clearly demonstrate the potential for change, employee enthusiasm for the technology can be sparked, and its immense potential can be highlighted. These early successes provide important learning opportunities and serve as a catalyst for the acceptance and further adoption of GenAI. At the same time, it is crucial to evaluate carefully and identify potential risks early on to address challenges effectively.

Despite uncertainties and open questions, organizations should pursue their GenAI journey with determination. Therefore, a proactive approach is essential to realize the benefits of GenAI in a timely manner. The potential of the technology is too great to be deterred by challenges.

02 Think Holistically: Strategically Utilizing GenAI

The (transformation) possibilities of, and through, GenAI extend far beyond individual applications. Despite the enthusiasm and potential, it should not be overlooked: the technology can be part of the solution, but it is not a panacea, and carries risks.

Therefore, it is crucial to view the introduction of GenAI applications from the outset in a broad, holistic context. This means keeping the long-term and transformative potential of the technology in mind and aligning GenAI initiatives with the business strategy. At the same time, it is important to realistically assess the opportunities available and to deploy the technology only where it genuinely promises added value and where the respective risk profile allows for its use.

This can succeed especially when a holistic approach is also reflected in stakeholder involvement: Close collaboration between business and IT is essential to ensure that the selected use cases are both technically feasible and strategically sensible. Organizations should also decide from the outset how they want to use GenAI and how they can responsibly shape its use, while considering sovereignty claims. In all strategic foresight, however, a healthy pragmatism should not be lost: Organizations must find

a productive balance between strategic alignment and low-threshold experimentation. Because to increase the acceptance of the application and the GenAI technology as a whole, even short-term successes can be an effective means and ultimately support the strategic use of GenAI.

03 Providing Security in Uncertain Times: Strong Leadership for a Successful Path

Developments around GenAI are still in an early phase. To provide employees with security and orientation during this time, strong leadership is essential. Leaders have the task of developing a clear, business strategy-aligned vision for the use of GenAI and communicating it within the organization to convince employees of the technology's benefits. This vision must be translated into a concrete strategy that provides employees with a clear path for the organization's ambitions. Clear decisions are necessary for this.

Another important aspect is fostering a culture of courageous experimentation. This includes a positive error culture, a continuous learning culture, an open discussion culture, the active sharing of success stories, and openness to ideas from employees, recognizing these as opportunities. Leaders should position themselves as promoters and advocates, leading by example by actively using GenAI. This clarifies the benefits and necessity of the technology, provides legitimacy, and shows that the topic is taken seriously. Last but not least, leadership is also responsible for ensuring that GenAI is viewed holistically to realize the full potential of the technology. This means that GenAI is strategically utilized to create sustainable benefits for the organization.

04 Putting People at the Center: Engaging Employees and Utilizing Potentials Effectively

The possibilities of GenAI can only be fully realized when people are placed at the center of the technology-driven transformation. There are various levers to consider.

On one hand, it is about building trust amongst employees regarding the GenAI application. As is often the case with change, the introduction of GenAI can initially trigger uncertainty and skepticism. Resistance and reservations can be reduced, among other things, by developing applications in close coordination with users from the outset. Employees become better acquainted with the technology, can actively shape it, and know what to expect.

On the other hand, employees must be adequately trained to use the GenAI application. GenAI supports human activities but does not replace them. Decision-making is not taken over by the technology, and the "human in the loop" continues to play a central role in the process. The skills and knowledge needed to work effectively with GenAI should therefore be part of the standard repertoire of all users. Appropriate training measures must be offered to equip employees with the necessary tools.

Finally, the use of GenAI frees up capacity, which should be thoughtfully planned for targeted use. When tasks are eliminated through automation, the job profiles of employees change, and new tasks related to GenAI arise. This requires supporting employees and building skills for the changed job profile – skills that are not only technical but also professional in nature. Ultimately, it is about viewing the individual with all their potential and discussing how this can be enhanced and better realized through the use of GenAI.

05 Daring to Look Outward with a Learning Perspective: Creating Value Through Partnerships and Ecosystems

The path of GenAI transformation must and should not be undertaken alone. Engaging with partners as well as national and international colleagues is beneficial to enrich the organization's own experience with valuable insights and best practices.

This exchange provides valuable insights and solutions that facilitate and accelerate the implementation and sustainable use of GenAI. This was already demonstrated by the strong interest of interview partners during the creation of this study and their desire to network with other study participants. Networks also serve the purpose of temporarily compensating for missing skills by enabling flexible and quick access to external expertise. Through strategic partnerships, required resources and knowledge can be provided on short notice, allowing for the rapid and efficient implementation of GenAI projects. It is therefore important to promote and institutionalize networks, partnerships, and a continuous, inter-level dialogue to maximize knowledge transfer, and facilitate and accelerate the implementation of GenAI.

Outlook: Sustainable Potential for Change

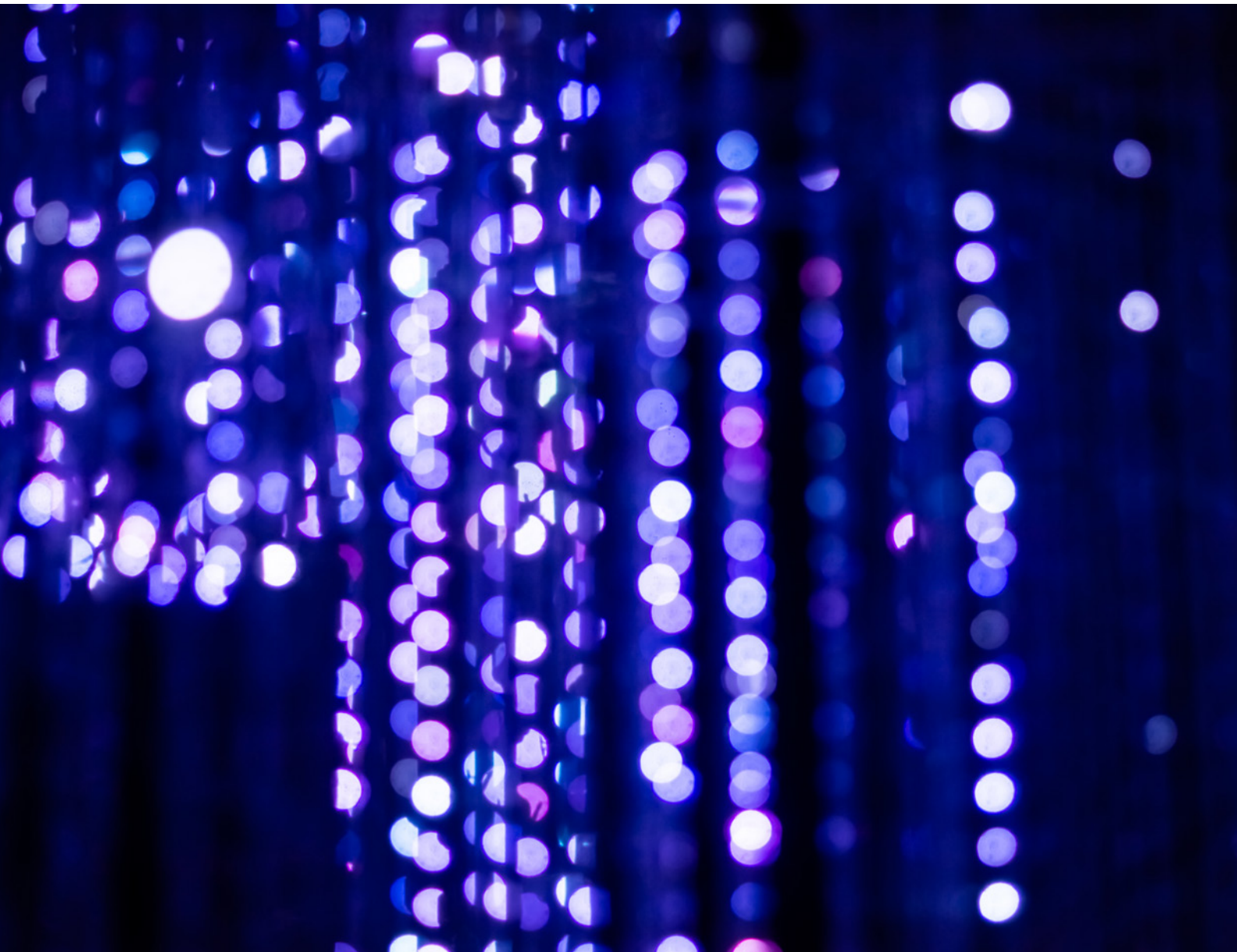
The investigation of 16 global use cases aimed at generating insights from the first worldwide exploration and application phase of GenAI pioneering work in the public sector has impressively demonstrated that GenAI represents a transformative force in the public sector. It shows that GenAI can be successfully deployed in various contexts and under different framework parameters to improve efficiency and citizen centricity. Despite the diversity of the use cases and the varying geographical and regulatory frameworks, a cautious initial assessment could be made, and key factors for GenAI projects as well as overarching lessons learned could be derived – with full awareness that, in light of the early stage of technology application and the exemplary case selection, no universally valid conclusions can be drawn. Furthermore, the limitations mentioned in the appendix apply to the research project (point-in-time assessment, limited generalizability, chosen methodology, descriptive approach).

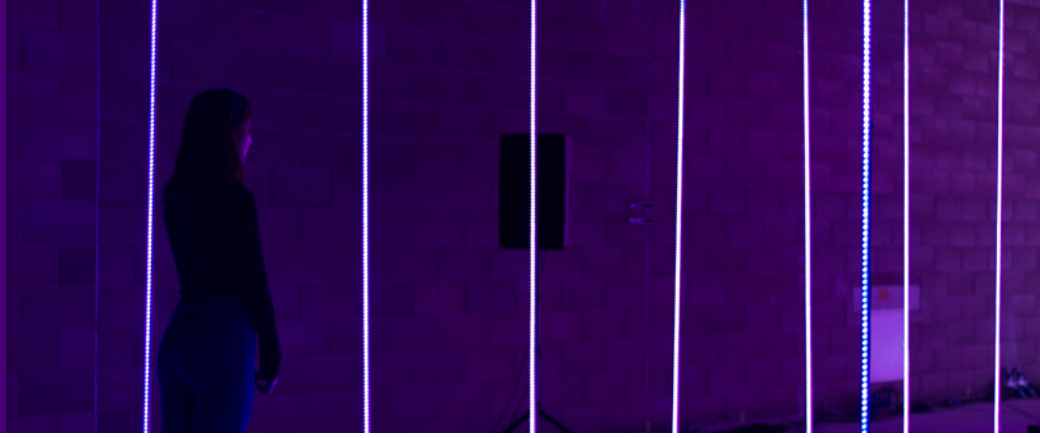
Developments surrounding GenAI are part of a larger dynamic of change and a broader technological transformation that has the potential to alter organizations in both the public sector and across industries. It is clear that internal structures, such as processes, roles, working methods, or the nature of human-machine interaction, can be affected, as can the service offerings and the business model itself.[39] In practical applications, the technology opens up opportunities that allow for the automation of significantly more demanding and complex tasks.

Efficiency, productivity, and satisfaction could be increased, as repetitive and time-consuming tasks can be completed more quickly and accurately by GenAI, thereby freeing up capacity for more challenging and fulfilling activities. At the same time, employees are empowered by the easily deployable technology to independently innovate and to experiment with GenAI use cases within their own areas of influence, thus initiating changes on their own.

More broadly, digital innovations can also lead to new organizational forms. These are characterized by their substance being significantly determined by new digital applications, practices, structures, and values.[40] For public administration, this means that new technologies could have profound impacts on organizational structure and processes, as well as on work itself. Technology is identified as a central factor for the "reinvention" of nearly all organizations. GenAI is considered one of the main levers, but it is not the answer to all challenges.[41] However, there is still a path to be taken, which, like all transformations, begins with the first steps. To fully leverage the potential of GenAI, an organization-wide scaling of GenAI is required.[42]

It is undisputed that public administrations are typically characterized by stability-oriented thought patterns and can be challenged by dynamic changes. Nevertheless, it is worthwhile to courageously allow changes despite open questions and to seek ways to scale GenAI – in a responsible manner, with people and innovation at the center.[43]





Appendix

Use Cases Studied

Translation Into Simple Language in the Judicial System (Argentina)

Judicial Statistics Office of the Justice Department of the Autonomous City of Buenos Aires

Initial Situation

Legal texts such as laws or judicial decisions often contain formulations that are difficult to understand. This can be a barrier for citizens to comprehend these texts and to evaluate or accept their implications. Translating such specialized texts into simple and understandable language can provide a solution, but it represents a significant effort for administrative staff. Therefore, the Judicial Statistics Office of the Justice Department of the Autonomous City of Buenos Aires was looking for an effective way to carry out this translation service with minimal effort for the administration.

Solution

As a result, the Judicial Statistics Office of the Justice Department of the Autonomous City of Buenos Aires developed an AI-based application that can convert specialized legal texts into simple language. The application is a tool for administrative staff that can create an initial draft of a translation. Subsequently, the administrative staff are obliged to check the output for technical accuracy (human in the loop). It is therefore not a complete automation of the activity, but a supportive application. The administrative staff remain responsible for the results; however, the tool significantly reduces the effort for the administrative staff.

Challenges

- Review necessary, not full automation
- Lack of support and guidance from the leadership
- Insufficient infrastructure for compute-intensive applications
- Lack of skills and personnel (both technical and subject matter experts)

Success Factors

- Perceived benefit for users and good user experience
- Individual commitment of certain individuals

Transparent Government Action (Argentina)

DeQuéSeTrata

Initial Situation

Laws and regulations are often difficult to understand due to their complex regulatory subjects and demanding technical language, making it difficult to derive specific implications for individual concerns. Therefore, the organization DeQuéSeTrata has been working on tools since 2013 that enable the tracking of parliamentary processes, but also make government action and its results more transparent and comprehensible based on summaries of laws and bot-based interactions.

Solution

An LLM-based GenAI application developed by the organization DeQuéSeTrata offers citizens and businesses the ability to access summaries of new draft laws and ask questions about the effects of laws through prompts. Additionally, the application can create individual reports for users and notify them when they are affected by a new law. The individual impact is also explained. The application is used in the Argentine government, as well as by journalists and businesses, to analyze draft laws. However, the core goal of the organization is to strengthen civil society and promote transparency in governmental action.

Challenges

- Avoiding the inclusion of information beyond the explicit input data (draft laws)
- Training users in prompting (civil and governmental)
- Concerns in the administration about job loss due to the application
- Securing funding

Success Factors

- Perseverance and individual commitment from stakeholders during development
- High learning curve in dealing with GenAI due to early and rapid implementation
- Clear vision for which the technology is being developed

Automated Drafting of Legal Judgments (Argentina)

AI Lab at the University of Buenos Aires

Initial Situation

An effectively functioning judiciary can not only counteract potential staff shortages but also strengthen trust in the legal system. Efficiently drafting legal rulings is an important factor in this context. However, the staff of the Public Prosecutor's office and the Attorney General of the Autonomous City of Buenos Aires require approximately two hours to manually create a single legal ruling. Since similar cases in Latin America are often resolved by adapting existing templates, GenAI is well-suited to significantly reduce the processing effort.

Solution

As a solution, "Prometea" and its next iteration "Prometea 2.0" were created. The original version of Prometea is a machine learning-based prediction system for legal rulings developed by the AI Lab of the University of Buenos Aires. In contrast, the latest version, Prometea 2.0, automates the creation of legal judgments for analogous (in the sense of similar) cases based on GenAI. The methodology is as follows: Once a document related to a new legal case is received in the Public Prosecutor's office or Attorney General's office, it is uploaded to the paid-for version of ChatGPT. Then, an optimized prompt is used to query which existing case the document corresponds to, and to what extent. A second prompt checks for potential hallucinations. Subsequently, legal rulings are generated based on template patterns or catalogs created from existing cases. The AI Lab has developed an entire repository of prompts that can be used for each corresponding case. In this way, a comprehensive collection of prompts tailored to the needs of the court has been created. With the Prometea 2.0 methodology, the time taken by users from the public prosecutor's office and the Attorney General's office of the Autonomous City of Buenos Aires to draft a legal ruling has been significantly reduced.

Challenges

- Hallucinations from the model
- Data protection
- Intellectual property

Success Factors

- Conducting comprehensive tests in the AI Lab of the University of Buenos Aires to address the mentioned challenges
- Creating transparency about the training process and traceability of the training process
- Actively involving users in the training process of GenAI
- Continuous human oversight

Meta-Chatbot to Support AI Projects (Brazil)

Oficina Municipal (NGO)

Current Situation

In Brazil, some organizations and public administration institutions are already using AI applications such as chatbots. However, there are often uncertainties and ambiguities during the implementation of AI projects. For example, there are concerns that AI applications may contradict ethical standards (especially regarding fairness, transparency, and verifiability of results), errors may occur during the implementation process, or actions may conflict with legal foundations. These uncertainties have led to a cautious and reserved approach regarding the use of AI.

Solution

The organization Oficina Municipal has addressed this issue and developed a meta chatbot: Assis. Assis supports project participants during the planning and implementation of AI projects. Project participants can ask questions to the chatbot and request assistance at any stage of the project, such as, for example, regarding the responsible use of AI or compliance with regulatory requirements. This guidance that is always available helps improve applications for citizens and ensures that Assis appropriately considers fairness, transparency, and verifiability of results in the design of AI applications.

Challenges

- Reservations within public administration towards innovation
- Increasing awareness of the application, especially in Brazilian municipalities, and disseminating the project to the entire public sector workforce in Brazil
- Building trust of the Assis application among users
- Ensuring high data quality
- Preventing the application from generating flawed answers, for example through ChatGPT (hallucinations)

Success Factors

- Composition of the team, including a public sector expert, someone with a vision for the overarching goal, as well as IT and communication experts
- Adequate financial resources
- Networks of mayors and interested employees from public administration supporting the use of Assis

Documentation in Healthcare (Finland)

Wellbeing Services County of Kanta-Häme

Current Situation

Finland is facing a shortage of skilled doctors. This issue is further exacerbated by the high demands of documenting patient consultations. The Wellbeing Services County of Kanta-Häme, responsible for health, social, and rescue services in the Kanta-Häme region, has addressed this challenge with their own innovation and research department. The goal is for doctors to spend less time on documentation and have more time to attend to the needs of their patients.

Solution

The Wellbeing Services County of Kanta-Häme developed an application to assist with the documentation of patient consultations. The conversation is recorded and temporarily stored in a network-isolated cloud for processing. Subsequently, the conversation is transcribed using speech recognition software in the cloud and summarized by the GenAI component of the application. The generated summary then includes the patient data, the reason for the doctor's visit, the medical history including any medication, the health condition described by the patient, the diagnosis, and a medication plan. The data is deleted from the cloud after processing and is not retained further.

Challenges

- Achieving the desired output quality
- Extending the LLM with domain-specific terminology
- Uncertainty regarding data protection
- Inability to collect historical data for training purposes due to data protection regulations
- Bureaucratic hurdles between developers and users, resulting in a lack of direct interaction

Success Factors

- Utilizing an OpenAI model to achieve quick results
- Rapid initial successes in setting up the application, leading to user satisfaction
- Existing cloud platform on which the application could be deployed
- Holistic vision of a data platform that includes, for example, a prompt library

Support for Child and Youth Welfare (Finland)

Wellbeing Services County of Pirkanmaa

Current Situation

The Wellbeing Services County of Pirkanmaa, responsible for health, social, and rescue services in the Pirkanmaa region in Finland, offers support for children, adolescents, and families. They are responsible for child and youth welfare in cases of school challenges, alcohol or drug use, and mental health issues. Social workers are often notified by those in the children's and adolescents' surroundings. Notifications and reports can be made via a public homepage of the Wellbeing Services, with no restrictions on who can make a report. Teachers, friends, parents, or acquaintances can all submit notifications. Following a notification, there is a legal obligation to contact the affected individuals within 90 days. All conversations must be adequately documented. However, the number of child welfare endangerment cases has significantly increased in recent years—every tenth child in Finland is affected. The high documentation requirements pose challenges for social workers to meet the strict legal deadlines while ensuring good care for the children and adolescents.

Solution

As a solution, the Wellbeing Services County of Pirkanmaa developed an application that addresses the documentation workload and reduces the time required to prepare documentation by converting digital notes into a structured format. Social workers input their written case notes (for example, from phone or written reports) into the application and receive a case assessment with summarized text and an action plan in a standardized and structured form. This output is reviewed by the social workers to ensure its accuracy. The application handles 78% of the sections that need to be filled out, allowing for a greater focus on individual care.

Challenges

- Ensuring the accuracy of the results, particularly:
  - Retaining the language style from the input data in the output
  - Preventing hallucinations

Success Factors

- High willingness to cooperate and enthusiasm for the application
- Awareness and clarity about the significant value the technology brings to the work of social workers – no fear of job loss but perceived as an opportunity to facilitate work and increase focus on client work
- Experienced technology partner for the development and deployment of the application

Assistant for Road Construction Regulations (Norway)

Public Road Administration (Statens Vegvesen)

Initial Situation

The Norwegian Public Road Administration (Statens Vegvesen) is responsible for constructing and maintaining national roads, as well as monitoring vehicles and road users. One of the agency's tasks is to define the standards and regulations for how the Norwegian roads are to be constructed. Due to the complexity of the regulatory subject matter and the large number of regulations, it is usually associated with a high level of effort for the case workers to find the necessary information in the manuals for processing individual cases. There is also the risk that incorrect conclusions may be drawn during the processing of cases.

Solution

To overcome these challenges, a GenAI assistant was developed over the course of four months using a Retrieval-Augmented Generation (RAG) architecture and chat interface. Its aim was to support the agency's case workers in searching through numerous manuals and regulations for relevant information. Due to the complex nature of the documents, the team introduced several innovative features to ensure the correct documentation was found based on the query. The final product operates as follows: Case workers submit a request through the chat interface, the solution finds the most relevant documents based on the query and passes this information along with the question to a Large Language Model (LLM), which generates a response based on specific agency information. The use of this tool has led to improvements in efficiency, accuracy, and compliance in the interpretation and application of regulations.

Challenges

- Ensuring the solution effectively addresses issues faced by case workers
- Navigating bureaucratic processes in public administration
- Raising awareness of GenAI's capabilities and the environment required for its implementation
- Ensuring the solution could handle the complex nature of the documents

Success Factors

- Openness to technology within the organization and support from leadership
- Conducting a hackathon at the beginning to demystify GenAI
- Implementing an extensive test suite, including both automated and human tests
- Active usage of the application by case workers throughout the development process, ensuring a short feedback loop
- Training employees to create awareness of the specific characteristics of GenAI solutions and how to utilize them effectively

Software Development Support (Austria)

Public IT Service Provider

Initial Situation

The public IT service provider, with around 600 employees, ensures smooth IT operations for its clients. In addition to pure infrastructure operations, the provider's portfolio also includes the execution of IT projects and the development of applications. In light of growing demand for (public) IT services and the accompanying increasing requirements for public IT organizations, this IT service provider regularly seeks solutions to enhance its efficiency. The company is characterized by a high affinity for innovation and has therefore sought to identify application possibilities for GenAI in the services offered. In particular, the area of software development was identified as a high-potential area.

Solution

In collaboration with an external service provider, a GenAI-based application was developed to assist in defining requirements and creating test cases within software development. The goal in both cases was to increase software quality while simultaneously reducing effort – and this was achieved. For example, the effort required to create test cases was estimated to be halved. This allows employees to focus more on higher-value activities. Additionally, the application can contribute to process standardization by unifying results.

Challenges

- Raising awareness and sharpening expectations regarding the possibilities and limitations of using GenAI
- Heterogeneous working methods of the involved teams with individual requirements
- Security requirements

Success Factors

- A project sponsor within the organization
- High willingness to innovate within the organization
- Active expectation management regarding the capabilities of the technology
- Continuous collection of user feedback on result quality

Increasing Resilience Through Improved Risk Management (Austria)

ÖBB-Infrastruktur AG

Initial Situation

In light of polycrises, the risk management of ÖBB-Infrastruktur AG is becoming increasingly important to maintain critical infrastructure in crisis situations. The company wanted to gain greater clarity on whether smooth operations could be ensured during economic fluctuations, geopolitical unrest, and specific security threats, thereby guaranteeing the operation of critical infrastructure even in times of crisis. Emerging crises should be prospectively identifiable to mitigate their impacts on ÖBB in case of emergency. This would require an expansion of the risk management function, which would come with high personnel and cost intensity. The complexity of potential threats makes collecting, analyzing, and evaluating relevant data labor-intensive.

Solution

ÖBB-Infrastruktur AG transformed its strategic risk management to support risk identification and assessment through the use of GenAI. The burden onemployees was significantly relieved by complementing human decision-making with advanced and predictive data analysis. Publicly available data was specifically used to derive risks for the company. The use of GenAI enabled targeted, company-specific, and accelerated evaluation of large volumes of data, allowing new patterns and potential impacts to be identified with significantly less effort than before. Thus, the time to identify and assess risks was reduced from 18 to 3 months. In this way, ÖBB-Infrastruktur AG was able to increase the resilience of its operations.

Challenges

- Identification and selection of relevant data sources in close coordination with specialists
- Ensuring data protection
- Targeted and context-specific development of prompts

Success Factors

- Radical transparency regarding the use of technology (transparency about project procedures, data used, feedback loops, adjustments, etc.)
- Making the technology tangible to overcome skepticism
- Using GenAI in existing processes while avoiding process changes to ensure smooth integration into existing operational workflows
- Openness to innovation, general willingness to experiment, and technology affinity within the organization

Assistant for the Software Development Process (Singapore)

Public Service Agency

Initial Situation

As part of an extensive modernization project for a Singaporean public service agency, a legacy application based on the COBOL programming language was to be migrated to a custom framework. This resulted in significant development and testing efforts for various application modules. Additionally, the agency faced the challenge of frequent staff turnover in different application areas. This made it necessary to secure the accumulated expert knowledge, making it reusable for subsequent personnel, and thereby minimizing recurring onboarding efforts.

Solution

To address the described challenges, a scalable GenAI platform was developed. This platform allowed for the successive development of multiple applications that address specific challenges across the entire Technology Development Lifecycle (TDLC).[v] For instance, a tool was developed to perform automatic code porting from COBOL to Java. Additionally, code generation is possible through the input of business requirements or based on pseudocode. Extensive test cases can also be generated based on defined business requirements. To ensure code quality, tools for automatic code refactoring – restructuring and improving existing source code – and for compliance with industry standards were developed. As a result, efforts across the TDLC could be significantly reduced, and a standardized workflow can be maintained, even with frequent staff changes.

Challenges

- Generally there were few challenges due to high acceptance and endorsement of the technology, but occasional fears of job loss among employees
- Need for a local infrastructure endpoint to prevent data transfer across national borders

Success Factors

- Innovation-friendly environment
- Leadership support and provision of necessary resources
- Demonstration of value with a simple use case, thus raising awareness of the benefits within the organization
- Provision of necessary infrastructure by the Singaporean public administration
- Experienced technology partner for application development
- Accompanying enablement and change management measures for employees
- Involvement of users

[v] Technology Development Life Cycle (TDLC: Requirements gathering, analysis, design, build, test, deployment & Go-Live)

Knowledge Management in theJudicial System (Spain)

Ministry of Justice

Initial Situation

As in many ministries, the Spanish Ministry of Justice (Ministerio de Justicia) needs to process, analyze, and handle a large amount of data and documents in its work processes. The data is mostly unstructured, and the documents include different types of content, such as court judgments, regulations, and provisions. Processing is therefore time-consuming and resource-intensive, and the development of automatic processing processes is challenging.

Solution

With external support, the Ministry of Justice developed an internal search engine based on LLM, which allows employees to extract information they need for specific processes from a variety of internal documents. This results in a significant improvement when employees search the document base. Originally, the application was developed in a cloud infrastructure. However, due to data security concerns, it was subsequently relocated to its own data center operated by a contracted service provider.

Challenges

- Data security and data sharing
- Resistance and skepticism of users
- Lack of product offering from the IT service provider
- Bureaucratic obstacles in technical decisions

Success Factors

- Support from the ministry's leadership
- Quick demonstration of the benefits of GenAI through active use
- Involvement of positively inclined users

More Transparency for Public Spending (Uganda)

Office of the Auditor General

Initial Situation

The review of public expenditure is an important control mechanism for states to prevent excessive and inefficient government spending. In Uganda, it is the Office of the Auditor General's (OAG) task to audit all public expenditures and accounts, and report to the parliament how public funds are used by the government. Each year, thousands of audit reports are submitted to the parliamentary audit committees, containing a variety of findings and recommendations.

However, a significant number of these reports remain unaudited, and many findings and recommendations are unaddressed or unimplemented, whether in the parliament, ministries, agencies, at the local government level, or in the general public. This has, among other things, led to a very low implementation rate of audit recommendations.

In addition, not all audit reports are publicly accessible and/or digitally available. This makes it difficult to quantify the results recorded in the reports, and thus to track them. In this light, the work of the OAG has also been called into question.

Solution

A GenAI application is being developed to summarize the OAG's audit reports and highlight key findings (as of the completion of the study). Furthermore, the application aims to make the audit objects and improvement measures quantifiable and analyzable, for example, how often an improvement measure has been issued. To achieve this goal, the audit reports will be digitized and fed into the application. As the GenAI assistant will also be publicly available, it can provide civil society with better access to the content of the audit reports. The tool is operated by using prompt-based question and answer interaction.

Challenges

- Dealing with unrealistic and inflated expectations
- Creating 'ownership' in the political space

Success Factors

- 'Aha effect' through increased efficiency
- Early involvement of relevant stakeholders from the outset to identify and address various needs
- Alignment of the application with professional needs and requirements
- Clear translation of the added values of the application
- Support from civil society organizations to increase the acceptance of the application

Social Services Chatbot for Families with Young Children (Uruguay)

Agencia de Monitoreo y Evaluación de Políticas Públicas (AMEPP)

Initial Situation

Uruguay is implementing a comprehensive strategy to enhance its social services. While the government has already established programs to assist the elderly, there is a notable deficiency in support for families, particularly those with young children. This use case represents a crucial element of the government's overarching initiative to address the multifaceted challenges associated with early childhood. To effectively address these challenges, it is imperative that the application be also accessible to parents, even to those who may face literacy and social barriers.

Solution

The Agencia de Monitoreo y Evaluación de Políticas Públicas with the support of the Agencia para el Gobinero Electrónico has developed a chatbot based on ChatGPT, which is accessible via WhatsApp. The application was designed with the objective of facilitating access to social services for parents of children between the ages of zero and five. It allows parents to get to know the full range of services offered by social services to young parents. The choice of GenAI was made to enable a more human-like interaction and a more accessible and personalized offer. The application itself is not yet in use. However, a test run with people from difficult social backgrounds (e.g. literacy barriers, drug abuse, homelessness) was successful.

Challenges

- Varying outputs for the same input
- Currently 28% of the answers are still incorrect, and only experts (not users) can tell the difference between a valid or an invalid answer
- Officials have high expectations of the application's answers
- Lack of digital sovereignty since the servers are not hosted in Uruguay
- No control over the technology provided by tech companies
- Uncertainties regarding data protection

Success Factors

- Direct cooperation between developers and public officials, which made it easier to check the quality of the answers
- Test of the application on potential users from precarious backgrounds
- Excellent accessibility, especially through the possibility to verbally interact with the tool, thus no concrete literacy is needed

Call Center Post-Call Analysis (USA)

State Government Department in the Health and Human Services Sector

Initial Situation

The state government department in the health and human services sector operates a health benefit exchange where consumers can purchase qualified health plans with the assistance of federal and state subsidies. Facing challenges such as a tight job market in the state, the department wanted to understand how GenAI could improve its customer service experience and other processes.

Solution

Together with an external partner, a proof of concept for the department's customer service call center was developed. Furthermore, other potential GenAI use cases were explored leveraging design-thinking methodology.

This proof of concept leveraged the capabilities of Microsoft Azure's Open AI Service as part of the solution. It focused on three key areas:

- Speech to Text transcription and diarization of calls
- Summarizing the call recording
- Post-Call Analysis to understand the sentiment of the call

The proof of concept demonstrated the potential to support agents by automating labor-intensive tasks.

Challenges

- Initial skepticism and resistance of employees towards the technology, as well as fear of impact on job and potential job loss
- Need for anonymized data for testing the application
- Introduction of an executive order pausing GenAI efforts pending further guidance from the State

Success Factors

- (External) support in identifying and prioritizing potential use cases
- Accompanying measures (translation of benefits, visioning, communication, expectation management) to resolve initial reservations
- Perceived benefit of the application for the users

Call Center Agent Assistant (USA)

Health and Social Services Authority

Initial Situation

The call center of a health and social services authority in New Mexico, USA, with approximately 500 agents faced the challenge that callers, even with urgent inquiries, were confronted with long wait times. One reason for this was that the agents were burdened with a lot of manual work. Therefore, there was a desire to increase their efficiency and thus reduce wait times for callers.

Solution

A GenAI application was developed to support the call center agents by providing automated real-time transcription and summaries of conversations, replacing the need for call center agents to manually type out their notes (during or after the call). Additionally, the application was integrated with the call center's existing knowledge database. This allows relevant knowledge articles to be recommended to the employees based on the recognized intentions of the callers, aiding them in their conversations.

This enables the employees to focus more on the callers' concerns, as they no longer need to document conversations and search for knowledge articles simultaneously. Furthermore, an increase in efficiency is observed due to reduced post-call documentation efforts. Additionally, the use of this technology lead to an unanticipated standardization of conversation documentation. These effects ultimately manifest in shorter wait and call times, as well as an improved customer experience.

Challenges

- Regulatory uncertainties
- Internal reservations, amongst others because of application requirements (security, responsibility)
- Employee adaptation to the application's outputs
- Filtering out sensitive health or personal data

Success Factors

- In-depth process analysis and integration of the application into existing processes
- Involvement of users from the very beginning
- Utilization of existing technical infrastructure
- Extensive testing of the application, including challenging cases
- Commitment from the leadership level
  - Ensuring funding
  - Continuous support to prevent abandonment before go-live
- Application support for users after go-live

An Overview of the Country's GenAI Activities (India)

Several GenAI initiatives and use cases have also been identified in India, which are presented below. The insights gained from this analysis have also been incorporated into the key findings and recommendations of this study.

Framework Conditions

Interview partners described generally good initial conditions in India due to a stable foundation of expert knowledge, particularly through technical expertise. In the development and implementation of AI projects, flexible partnerships often arise, which frequently do not allow for a sharp separation of public, private, and foundation-like structures. Public documents and announcements indicate that, for example, Google, the Bill & Melinda Gates Foundation, as well as national foundations and other states (including German development cooperation) can all be close partners of the government. Initiatives often also involve implementation partners from academia, such as the Indian Institute of Science, the Indian Institute of Technology Madras, the International Institute of Information Technology Hyderabad, or Ashoka University. However, this can lead to AI projects becoming heavily dependent on the funding and commitment of individual partner organizations and institutions.

There are also significant differences from a technological and cultural perspective compared to Europe. AI is often seen in India as a means of empowerment. A large majority of the Indian population has a positive attitude towards AI technology and believes that AI will make the future better rather than worse – a view that contrasts sharply with that in European countries,[44] where the risks of technology use are often the focus.[45]

The active discussion of GenAI in political circles was also described by the interviewees. The initiative "INDIAai" from the Indian Ministry of Electronics and Information Technology aims, among other things, to raise awareness of the technology, establish an AI ecosystem, and promote the adoption of AI.[46] Through the Bhashini initiative, the government supports open and free access to language technologies to make information available to all citizens in various Indian languages. The initiative relies on open-source data and open-source AI models. A think tank appointed by the government, consisting of leading figures from industry, academia, the startup ecosystem, and investors, is developing an AI strategy along with corresponding implementation plans.[47] Various core initiatives are part of the strategy: the goal is to build a technical infrastructure that is accessible to all who need it. Additionally, programs to raise awareness of the technology are to be established, for example, in the form of educational initiatives in schools or specialized training for government officials and representatives. Startups are also supported in addressing specific challenges. At the same time, initiatives exist to establish "AI Cities" as AI hubs for science, research, and industry, which aim to strengthen ecosystems, offer further training, and attract startups.[48]

Key Challenges

- Difficulties in operationalizing the strategy, leading to initiatives being announced from political circles that often encounter problems during implementation.
- Lack of personnel skills to translate the strategy into actionable measures.
- Ethical challenges such as bias and hallucinations in the applications.
- Dependence of success on individual persons who drive the projects forward.

Three GenAI Use Cases from Different Areas

Jugalbandi as a Multilingual Assistant

A cultural peculiarity in India is the multilingualism in the country – there are 22 languages enshrined in the Indian constitution alone. A pattern that is reflected in many GenAI use cases in the country is the overcoming of these language barriers using technology. This aims to make information more accessible and usable, regardless of language skills.

Jugalbandi is an open-source platform jointly developed by several private and public organizations. It combines GenAI and Indian language translation models and integrates them into a domain-agnostic chatbot application. The application utilizes, among other things, speech recognition and translation models developed with public funds. Thus, Jugalbandi can be used by organizations to enable conversational interactions with their services.

The platform is therefore used by the Indian administration to simplify citizens' navigation through complex government services – either chat-based or voice-based, and in their local languages. For example, students can find out via WhatsApp chat which scholarships they can apply for. Farmers can learn about which insurances or subsidies they are entitled to from the government.

Intelligent Advisors in Agriculture

Farmers regularly have to make important decisions: the timing of sowing and harvesting is as crucial for harvest success as the use of pesticides. To support them in these decisions, provide access to expert knowledge, and ultimately stabilize agricultural production, a team from the International Institute of Information Technology Hyderabad (IIIT-H) developed an agricultural advisory system as part of the "eSagu" project using GenAI, which provides recommendations for the cultivation of crops.

Farmers take pictures of crops on-site and upload them to the application. The application then offers recommendations for optimal plant care and provides guidance on recognizing and treating diseases and pest infestations. This allows farmers to take targeted measures to maximize their yields while promoting sustainable farming methods. The application operates based on historical data and expert opinions. Farmers can interact with the application in their local language, both in writing and verbally.

Automated Creation of Medical Letters

The content of medical letters is often difficult for patients to understand due to technical language, lack of detail, or unclear medication plans. Additionally, the reports are often not written in the local language of the patients. To counter this, IIIT-H, in collaboration with an Indian hospital, is developing an application that automates medical letters, creating them with a higher level of detail and in the local language of the users. The goal is to provide detailed and comprehensible patient information, with the doctor only needing to review and adjust the generated reports if necessary. In the future, discharge reports should also be personalized based on the demographic data of the patients.

Methodology

Specific GenAI Use Cases Clearly Demonstrated

Previous publications predominantly describe GenAI use cases in a hypothetical manner, so concrete experiences with the introduction and use of the technology have not yet been explicitly presented. To close this research gap, this study focuses on specific use cases and builds on an illustrative-exploratory knowledge acquisition that takes into account the still limited understanding of concrete empirical examples.[49] The knowledge acquisition is based on an interdisciplinary approach that unites various research perspectives (administrative, political, and social sciences combined with empirical-operational experience horizons). Due to the novelty of the technology, a broad analysis and research approach was chosen.

Needs and Challenges of the Public Sector Derived from Focus Group Interviews

This publication operates on the assumption that overarching insights can be derived from global experiences of the first application phase of GenAI. These should also provide insightful impulses for the public sector in Germany.

To achieve this as effectively as possible, qualitative, guideline-based, and semi-structured focus group interviews were conducted in a first step with interview partners from the German administration (municipal, state, and federal level) and the private sector. The selected representatives from the private sector have extensive experience in collaborating with the public sector.

This approach made it possible to identify current needs and challenges surrounding the topic of GenAI in the public sector. The goal was to gain a broad understanding of the research subject and to specify the research questions.

Use Cases Selected Based on Access to Criteria and Interview Partners

In a second step, specific use cases of Generative Artificial Intelligence were selected in the context of the research project that:

• are already being applied in the public sector, or;

• are at such a stage of development that publicly accessible information is available.

Areas funded with public money were considered: in addition to classic administrative organizations, these also include institutions of public safety, education, healthcare, etc.[50] The selection was specified during the research process. The focus was on ensuring access to interview partners who could provide the necessary insights to answer the research question.

These were either employees in the public sector or experts for the public sector who are directly affected by the GenAI use cases being considered or closely relate to them, thus sharing their factual and experiential knowledge.[51]

Alongside the selection of use cases, a comprehensive and systematic analysis of publicly available sources on the use cases was conducted.

Guideline-Based, Semi-Structured Expert Interviews Conducted

In addition to systematic document analysis, the information gathering is significantly based on the further phase of conducting qualitative, guideline-based, semi-structured expert interviews. These lasted between 30-60 minutes each. In semi-structured interviews, the questions do not need to be completely identical among different interview partners; rather, the experts should share their knowledge in a situation-specific manner.[52]

This allowed for a certain flexibility during the discussions and was the best possible way to gain deep insights into the use cases necessary for answering the research question. If needed, multiple interviews were conducted with the same experts, for example, to detail specific aspects that emerged as particularly relevant during the course of the study and to close any knowledge gaps from initial interviews.

Expert Interviews Evaluated, Lessons Learned Derived

The evaluation of the expert interviews was based on notes taken during the interviews, which are not verbatim transcriptions (with the exception of individual quotes). The chosen method (subject-oriented, qualitative, content-analytical) aimed to make the insights usable in a way that allows for an assessment of the use cases and the derivation of overarching insights. The evaluation was based on a predefined, yet open category scheme (coding) that emerged from the interview content and resembled the semi-structured interview guidelines.[53]

From the results of the interviews, lessons learned regarding the implementation and use of GenAI in the public sector were derived. These lessons and impulses are the result of regular discourse within the interdisciplinary study team, including a continuous critical assessment of the interview and, if applicable, supplementary materials.

Limitations and Boundaries of the Exploratory Approach

Due to its illustrative-exploratory nature, the study and its results are inherently limited in scope, significance, and generalizability. First, it is a snapshot taken at an early stage of GenAI adoption in the public sector. This provides initial indications but is not a solid basis for general statements about the long-term effects or consequences of using GenAI in the public sector.

Second, the study is based on a limited but deliberately diverse selection of use cases that are heterogeneous in their application context and organizational conditions. This diversity allows for a broad spectrum of applications to be illuminated, but it also restricts the generalizability of the findings.

Further limitations arise from the chosen methodology. The interviewed individuals typically came from the immediate environment of the initiators of the GenAI implementation or were directly involved in the projects. External interest groups, particularly vulnerable groups, were not included, so their perspectives could not be represented in this study.

The study also does not provide a comprehensive discussion of the important but highly contextual questions of Responsible AI or compliance with existing or emerging laws, such as the EU AI Act. Ultimately, the guiding interest of the study is primarily descriptive and neither explanatory (causal) nor evaluative (normative). For example, it does not answer the question of whether the use of GenAI in the examined use cases is even sensible, or what impacts arise for various stakeholders.

Despite these limitations, the study makes an important contribution by providing initial orientation points and practical insights that can serve as a basis for further research and discussions.

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