Generative AI

What does it take to succeed with implementation?

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What does it take to succeed with Generative AI implementation?

Generative AI offers tremendous opportunities for productivity and innovation gains. But as the initial hype subsides, the costs of implementation and the challenges of operational change become more apparent as well. Business leaders must decide from the outset what role they want generative AI to play in their organizations and develop a coherent AI strategy. Do they want to experiment with out-of-the-box solutions to prepare for AI assistants that will soon be available on all major platforms? Or do they want to add more value by significantly automating business functions, perhaps even including new external customer services? Or could AI even play a role in the development of dynamic knowledge bases, strategic management support and the discovery of new business models? In the following article, we will show what's needed for each implementation level and describe the necessary strategic steps.

1. Generative AI Technology

Few technologies have captured the public's imagination and industry attention as swiftly as generative AI in recent times. This phenomenon began in 2022 when a significant jump in available computing power and the development of large language models (LLMs) made ChatGPT, a chatbot capable of engaging in realistic conversations and generating a diverse array of text-based content, possible. Today, with 1.5 billion daily users, generative AI stands on the cusp of revolutionizing human interaction with artificial intelligence.

The widespread appeal and potency of generative AI can be attributed to three distinct features that set it apart from traditional AI systems. First, it possesses the ability to comprehend natural language, allowing for seamless communication. Second, it can interact with users and generate various types of content on demand, including text, images, songs, code, and video clips. Lastly, generative AI demonstrates the capacity, called emergence, to acquire new skills such as software engineering, that were not explicitly programmed into the model.

2. Opportunities and Challenges

Although public enthusiasm has somewhat subsided, industry investment and experimentation in generative AI are just beginning. The market for this technology is anticipated to experience exponential growth, transitioning from a segment of the AI industry to potentially dominating it. S&P Global predicts that the generative AI market will expand tenfold, from $3.7 billion to $36 billion, within just five years (2023-2028).

In terms of its potential impact, generative AI has been likened to the graphical computer interface, the Internet, and smartphones, each of which spawned entirely new tech industries. Consequently, a recent Salesforce survey on generative AI in IT indicates that nearly 70% of IT leaders plan to prioritize generative AI for their businesses over the next 18 months. As billions of dollars are invested in this technology, businesses expect to see significant gains in innovation acceleration and productivity enhancement. The explosive growth of startup innovations and fast integration into large business applications is already delivering on both sides. Optimistic projections from Goldman Sachs estimate a dramatic increase in productivity, amounting to a $7 trillion, or 7% increase in global GDP within 10 years, as startup innovations and the next generation of business application assistants become widely implemented.

Startups are indeed already unveiling a plethora of applications and services utilizing generative AI. For instance, Stable Diffusion showcases advanced image generation capabilities, Jasper's copywriter assists marketers, and Replit's Ghostwriter aids in software development. Major platform companies such as Microsoft, AWS, Google, Salesforce are integrating generative AI services into their next-generation applications, promising intelligent virtual personal assistants and "copilots" capable of managing schedules, summarizing and composing emails, and providing support across various tasks. New design tools aim to transform passive office applications into interactive content creation platforms, while upgraded chatbots intend to enhance customer service with intent identification, conversation summaries, and resource navigation.

Despite the rapid expansion of generative AI applications, however, business leaders face challenging questions regarding implementation strategies. They must consider which departments to empower for experimentation, ensuring swift adoption of reliable solutions as they emerge. They need to support new skills such as "prompt engineering" and sufficient training for effective implementation. They must lay the foundations for secure AI governance to mitigate risks.

In most cases, they will need to work with their IT departments to identify suitable development partners or prepare their companies for the data integration required for AI-based automation. They will have to develop a clear vision about the costs involved and possible returns on investment. Finally, they will be asked about their potentials for developing new AI-supported knowledge bases and uncover innovative business strategies for future markets.

3. Three Stages of successful generative AI implementation

As companies incorporate generative AI capabilities into their operations and workflows, the productivity gains they achieve will be directly proportional to their success in adopting this new technology. At the first level, workers can utilize the "out-of-the-box" skills of AI without any coding knowledge, thereby enhancing their overall productivity.

Moving beyond "out-of-the-box" applications, the next level involves integrating these powerful models with company-specific datasets and operations to expand and automate existing business functions. For example, conversational models can be trained on a company's customer service records, enabling them to handle customer complaints directly. By automating more business functions, generative AI contributes to increased revenue through enhanced efficiency, speed, and scalability of products and services.

Lastly, at the third stage, generative AI becomes deeply ingrained within the enterprise. Through the use of specialized datasets, custom models, and company-specific fine-tuning, organizations can not only automate and improve nearly every aspect of their operations and products but also discover new knowledge and develop a dynamic knowledge base that directly supports strategic management and business model evolution.

Three Stages of Generative AI Implementation
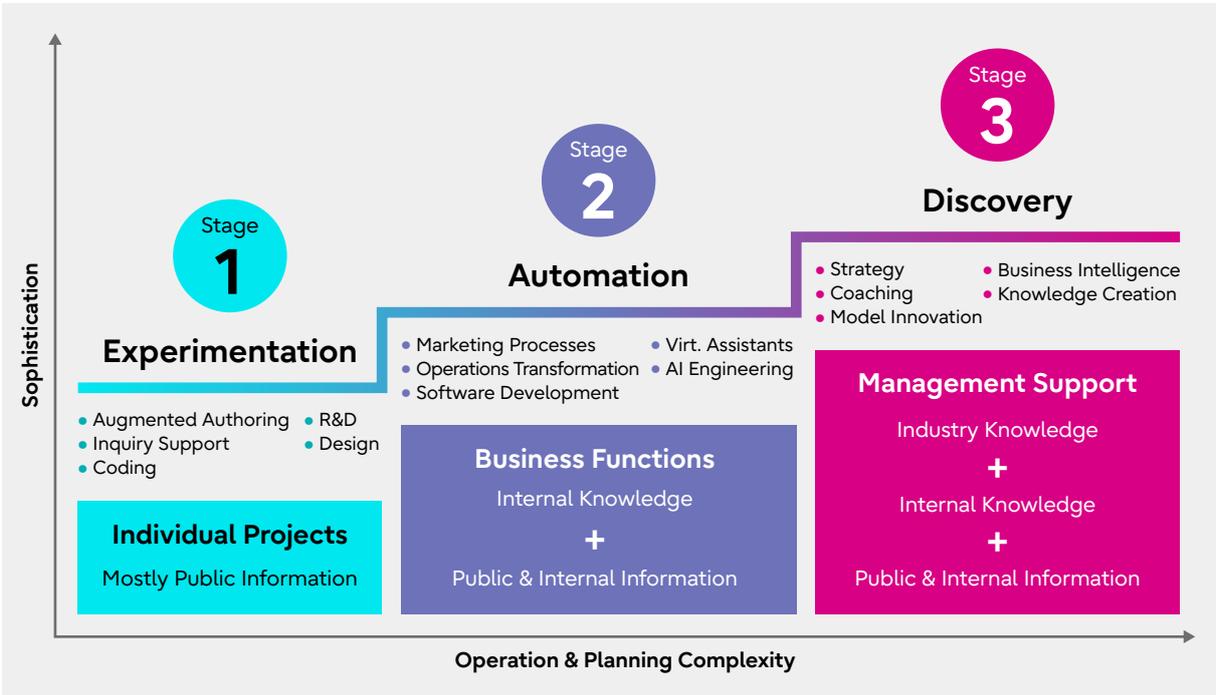
Stage 1 "Out of the box" experimentation and productivity

Generative AI models can effectively function on limited corporate data and learn from user input without requiring additional configuration. For businesses pursuing innovation, it is crucial to ensure secure business versions that protect vital company data while maintaining the confidentiality of inquiry results and training data. However, experimentation can be time-consuming and may lead to increased costs when advancing towards proof of concepts (PoCs), necessitating specific input data and training to guarantee effective input prompts and result presentation.

At the initial stage, the primary focus is on "augmented authoring," which facilitates interactive searching, drafting, and editing of output from external sources. Marketing and sales teams have already reaped the benefits of such assistance. Generative AI's capabilities as a virtual assistant for information retrieval, data analysis, documentation, and idea generation have proven valuable to entire R&D teams. In software development, certain planning and pre-coding tasks that previously took hours can now be accomplished in mere minutes.

However, productive applications are currently limited to a few business functions. According to McKinsey's 2023 research, approximately 75% of all productive uses are concentrated in R&D, software engineering, marketing/sales, and customer operations. Integrating productive AI into broader and more regulated business functions, such as finance, supply chain management, production, and planning, will necessitate carefully planned access to company data and the implementation of both existing and new fact-checking processes.

Stage 2 Advanced business functionality and automation

To support multiple business functions and prepare for automation, seamless access to internal data and applications is essential. For many organizations, this means migrating data to the cloud and building information interfaces between ERP platforms and other applications. In addition, business communication should move from asynchronous, individual email messaging to interactive team communication platforms such as Slack, This is because generative AI models need to be integrated into interactive channels and their analytics benefit from contextual information.

Beyond these basic requirements, expanding company-wide security management may be necessary. At a minimum, users should be identified based on their roles within the company, as model responses could contain sensitive internal information. Ideally, implementing "zero trust" security models, long advocated by security experts, will help authorize and secure each user and device individually.

At this stage, IT departments face challenges in effectively implementing generative AI. They must provide user and application interfaces with all necessary data and information across an expanding range of business functions. This involves training users in "prompt engineering" to design the best inputs and queries for specific results. Subsequently, the model's responses must be carefully filtered for sensitive issues and verified for accuracy. To ensure data and functions comply with company regulations, additional AI management and human oversight layers are necessary.

For instance, in the manufacturing industry, analyzing product quality data alongside internal and external customer feedback requires data generation, structuring, and anonymization. In the retail industry, customer behavior analysis can be combined with chatbot responses. However, to maximize value from in-person analysis and in-store information distribution via tablets, entire processes must be redesigned. In software development, coding assistants can enable business analysts without coding expertise to participate in the innovation process, significantly enhancing new application development across various sectors. However, this requires integrating current internal and external code databases for quality checks, reviews, and testing.

In practice, only IT departments of large companies with AI experience can develop "smart" user interfaces for generic AI services. Most companies will need professional assistance from service providers with access to a constantly evolving ecosystem of AI model development, data preparation, interface design, and training support. While implementing these requirements may seem daunting initially, they represent crucial steps towards an ever-evolving digital transformation. Generative AI acts as a catalyst for change, rapidly accelerating data integration and transforming communication within and between business functions and users.

Are the costs justified? Quite likely, considering the current benefits of advanced internal and external cloud integration. Expanding the range of knowledge services and possibilities for "hyper automation" only adds to the opportunities. To gain a clear understanding of the costs and challenges involved, the Fujitsu Group and its Ridgelinez consulting subsidiary are offering AI services, PoCs and a broad range of use cases that support a proper assessment of AI-based automation initiatives.

Stage 3   # Custom industry intelligence and discovery

Beyond automation, generative AI can also play a powerful role in the discovery of new knowledge and strategic support of management. This requires the addition of an extra layer of "intelligence" to general LLMs ("fine-tuning") or the additional development and training of specialized AI models on sector-specific data. The difference to the second stage runs deeper than it seems. At this stage, companies need to plan a transformation of their business models and creative capabilities as part of a new man-machine knowledge process. Its success will not only depend on an internal transformation but on an evolving ecosystems of AI developers and coaching partners.

Fortunately, organizations need not build such models themselves. Domain-specific solutions are already being developed by industry service providers. For example, Bloomberg, a financial services company, has created its own financial market model using an open-source LLM and trained it on their extensive financial database. Salesforce is refining their Einstein GPT for use in CRM services, while Harvey is training "legal" LLMs specifically for major law firms.

As a result, AI has the potential to significantly benefit advanced management functions like strategy, planning, and business model development for the first time. At this stage, deep integration into business applications in specialized and regulated industries, such as manufacturing, finance, and healthcare, which require the integration of industry-specific knowledge and regulations, also becomes far more effective.

Equipped with emerging intelligence, organizations can innovate across numerous business functions, including analytics (forecasting), development (product discovery), production (hyper-automation), and customer experience (interactive products and services). Ultimately, executives who can coordinate AI-enhanced business functions will be well-positioned to lead the next generation of "knowledge-creating" companies.

4. Implementation Strategy

The surge of interest in generative AI, coupled with easy, free access to tools and services, as well as the increasing inclusion of AI features in popular business applications, has led to widespread AI adoption in organizations, often without a coherent, high-level generative AI strategy. To maximize benefits, return on investment, and avoid potential issues, companies need to determine which of the three "stages" they plan to prepare their organizations for, and implement the necessary policies, safeguards, and training.

For most mid to large-sized organizations, the first stage of "out of the box" generative AI solutions may not provide optimal benefits or return on investment beyond some experimentation gains. To advance to higher-level and automation functions, they need to do significant steps towards data, cloud and communication integration, which, at the second stage, will likely require the support from AI partners for implementation. The third level of AI-aided knowledge discovery and management transformation, offers the strongest value propositions to the increasingly digitally driven knowledge industries, such as IT, pharmaceutics and advanced manufacturing.

At the same time, companies need to keep a close eye on costs and organizational challenges. Robust risk management and proper training are critical for the safe and effective deployment of generative AI. Before leveraging generative AI for automating corporate tasks that demand reliable results, user prompt engineering and training, AI trust and ethics tools, and output filtering must be integrated into a wide range of business applications.

5. Governance and AI risks

A crucial starting point for developing an effective generative AI strategy at any level is data security and integrity. An immediate security concern is the potential for data leaks of confidential information at various levels. Since generative AI models learn from company data and employee interactions, they may inadvertently expose sensitive information in unexpected ways. To prevent unauthorized access to confidential data, employee access to these models must be carefully managed according to their roles and functions within the company. Additionally, as models are vulnerable to revealing valuable information and protected data when presented with clever, confusing prompts ("prompt injections") by hackers, constant monitoring is essential.

At the second stage, advanced, cloud-based data integration is becoming a must of AI application. Since user identification becomes critical, companies should consider stepping up efforts towards "zero trust" security implementation, which allows to monitor and secure not only users, but any device in the organization.

Furthermore, AI models can be biased and inaccurate if they rely solely on their data sources without incorporating additional ethical and fact-checking layers. Generative AI models amplify these risks, as they often generate unchecked responses from a vast array of unstructured internet content. Continuous development is crucial to mitigate even the most severe errors and "hallucinations." As organizations move towards implementing AI across various business functions and process automation, they must ensure that false and misleading information is being identified and actions remain aligned with existing company information, knowledge, and policies.

As generative AI models advance towards supporting an integrated knowledge base and higher management functions, smart AI-based fact checking, and regulatory compliance become as important as flagging irregularities and new opportunities. Management teams must train models and users on industry-specific data, frameworks and market developments. This requires the orchestration of ecosystems of internal and external data provider, model developers, and new man-machine knowledge training.

6. Training for implementation success

For all functions and stages, user training becomes essential for the effective use of generative AI. Although it is easy to use for experimentation at stage one, maximizing its potential requires "prompt engineering" to teach users how to make targeted requests and provide relevant data for optimal responses at stage two. Organizations must also ensure that appropriate training on policies and compliance risks is provided for effective model oversight. At the final stage, in order to discover new knowledge and staying ahead of the competition, employees, models, and machines need to be trained together. By mastering this new dimension of AI-based learning and knowledge management, a new type of "knowledge-creating" companies will find opportunities that are yet unknown.

While such preparation might appear daunting at any level, the adoption of generative AI is set to become a driving force in business transformation, offering significant opportunities for agile organizations to excel. Cloud-based internal and external data integration has already proven its worth, "hyper-automation" of business processes will become hard to avoid, and investing into training along with generative AI integration opens new opportunities for coaching across business functions.

To demonstrate solutions with concrete use cases, the Fujitsu Group has developed its advanced Kozuchi (codename) AI platform, which integrates generative AI with a wide range of "AI Innovation Components" and proven applications for partners to try and experiment (see the box below). It also offers consulting and implementation services for customers who want to move beyond the initial experimentation stage.

Fujitsu Kozuchi (code name) – Generative and Advanced AI Platform

Driven by the growing interest in generative AI, Fujitsu has developed an AI Platform that enables seamless experimentation, integration, and rapid testing of innovative AI technologies. Utilizing Fujitsu's extensive computing capabilities, this platform offers a secure environment for testing generative AI models using company data. It assists in generating data and models while providing additional "AI Core Engines" such as "AutoML" for quickly developing highly accurate AI models for specific tasks, and "Actlyzer" for analyzing human behavior based on camera data. AI Ethics technologies add an extra layer to address governance challenges. The platform's "AI Innovation Components" help tackle customer business challenges on a use case basis and facilitate swift integration of projects from the open-source community and external partners. The use cases range from smart stores and factories to entire cities.

Fujitsu Kozuchi (code name) - Fujitsu AI Platform : Fujitsu Global

https://www.fujitsu.com/global/about/resources/news/press-releases/2023/0802-01.html

7. Implementation strategy recommendations

Fujitsu and its consulting subsidiary Ridgelinez have developed an implementation strategy that clearly shows the necessary steps for personal, internal and external generative AI uses. Depending on which final stage should be achieved, it demonstrates use cases and the operational changes that would be required. In general, all companies should keep the following recommendations in mind.

- Selection: Determine the specific Generative AI stage and solutions you need to transform your business.
- Policies: Develop a set of Generative AI use policies. Different departments, teams and individuals may need different policies, depending on the work they do and information they access.
- Training: Invest in training for Generative AI users to maximize the benefit the organization gets from Generative AI. This training will quickly pay for itself in terms of increased personal productivity and capability.
- Controls: Ensure you have the necessary IT controls in place to prevent the unauthorized use of Generative AI. However, this should be done with care to ensure the organization can still maximize the business benefits of Generative AI, in terms of increased productivity and enhanced personal capability.
- Keep innovating: Generative AI needs to be part of an innovation process that includes additional AI technologies and knowledge services to increase competitiveness and offer new AI-powered customer services.

The potential of the application of generative AI in a wide range of business functions seems well worth the risks and challenges. They open the door to the next level of automation and knowledge-driven innovation processes. It also becomes increasingly likely that organizations that fail to capitalize on these opportunities will find themselves at a growing competitive disadvantage.

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• Green Deals Go Digital – How Can Companies Gain from Sustainable Digitalization? 2023
• What is necessary for a "hybrid digital" work model to succeed in the next normal? 2022
• How has the COVID-19 Pandemic Changed the Future? 2021

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