NTT DATA

Designed with the power of **GenAI**

Navigating the GenAI revolution

A strategic guide to harnessing the power of generative AI in your organization

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Executive summary

The arrival of AI in the workspace has revolutionized how we work. To remain competitive in a dynamic business environment, organizations need to understand and leverage the capabilities of AI and GenAI.

Generative AI is here to stay

In recent years, the field of AI has been in constant flux, with generative AI (GenAI) emerging as the latest breakthrough. This new paradigm is expected to change current economic and social structures significantly, with a transformative impact similar to major innovations like the internet and electricity. GenAI leverages predictive analytics and other conventional AI methodologies to automate tasks, handle large volumes of information and propel innovation. Keeping up with this transformative trend is essential for organizations seeking to remain competitive and innovative.

The rise of GenAI-driven organizations

While organizations recognize the enormous potential of GenAI for their business endeavors, to successfully adopt this technology into their operations they need to first assess how GenAI can align with their strategic objectives and enhance overall business outcomes. Once this alignment is established, a clear and actionable AI strategy can be developed.

In this guide, we demystify the role of generative AI and outline its components. Delving into the current state of affairs and associated hype, we explore potential pitfalls and give a behind-the-scenes view of GenAI.

We also present NTT DATA's proposed adoption framework, designed to empower organizations to not only keep pace with this fast-moving, groundbreaking field but also to thrive.

Our holistic and comprehensive framework comprises the fundamental building blocks for identifying use cases that will create business value, leveraging the technical backbone to implement them, adapting talent and workforce management, and nurturing a robust business and industry ecosystem – all within a structured governance approach. We help organizations get ready to multitask!

We believe the key to successful adoption lies in asking the right questions. We therefore guide our clients through a maturity assessment and self-reflection inquiries to develop an actionable roadmap for their GenAI strategy.

Chapter 1: Decoding GenAI

Generative AI unraveled: definition and characteristics

Generative AI, also referred to as GenAI, is a type of AI that creates new content, including text, images, audio and video, based on patterns it has learned from existing data.

GenAI is driven by a variety of evolving techniques, with AI foundation models at the forefront. These models are trained on extensive sets of unlabeled data, giving them the versatility to resolve various tasks with additional fine-tuning. Intricate mathematical frameworks and vast computational resources fuel these models, which are still, in essence, prediction algorithms.

Beyond buzzwords: clarifying misconceptions

From fearing that "almighty AI" will dominate the world to dismissing it as little more than a buzzword, there's a great deal of hype (and several myths) about the technology in mainstream media, board meetings and organizations. GenAI innovations hold great potential, but it's also crucial to address some common misconceptions that exist, namely:

1. There is one ultimate model for all

A single comprehensive model cannot cover all potential GenAI use cases. We need to acknowledge the diversity of models and the need to customize them so they align with an organization's preferred language/s and requirements.

2. GenAI will replace human jobs

While it's undeniable that GenAI has the capacity to automate certain tasks across industries, it is anticipated that the technology will complement human abilities rather than completely replace human jobs.

3. GenAI is a threat to human intelligence and creativity

GenAI can create new content based on patterns it has learned from training data, but it lacks the human depth and complexity required to understand human emotions and nuances. GenAI can be a tool to augment human creativity rather than diminish its value – ultimately, human creators are responsible for bringing their unique artistic vision to light.

> "CIOs largely frame AI as a copilot rather than a rival to human employees[1].

Building blocks for GenAI

Every high-rise building has a steadfast foundation

Architecture is moving in a way that supports the democratization of analytics[1]. Organizations therefore need an infrastructure that optimizes the value of data without compromising safety and security, particularly as regulations concerning data protection and AI intensify. To democratize AI effectively, this infrastructure must feature a user-friendly interface so users can query data and execute complex tasks using natural language.

Data lakehouses have emerged as a favored infrastructure solution. A data lakehouse combines the strengths of two traditional approaches: data warehouses and data lakes. This hybrid model provides an open architecture that integrates the flexibility and scalability of data lakes with the quality of data management inherent in warehouses.

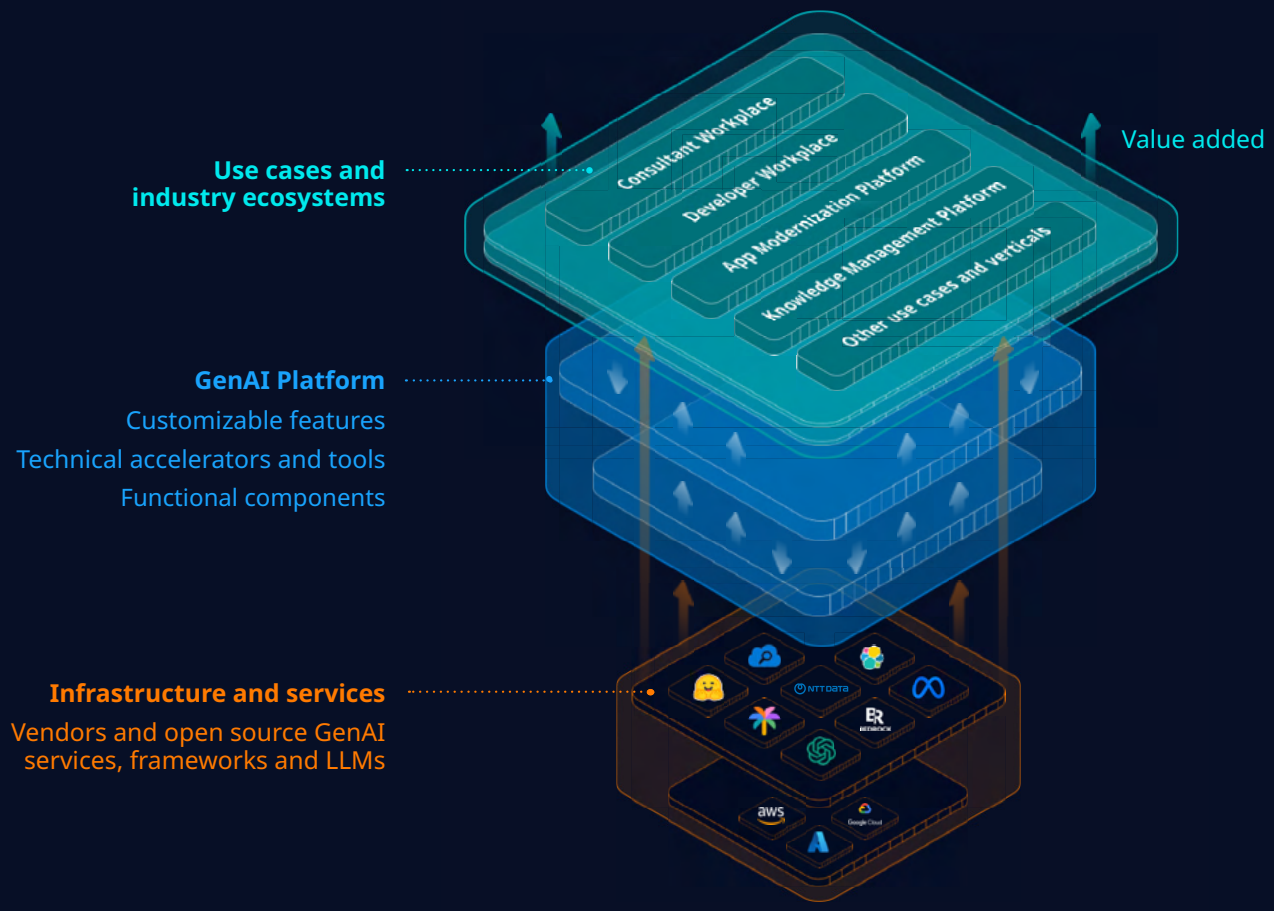
GenAI and LLMs

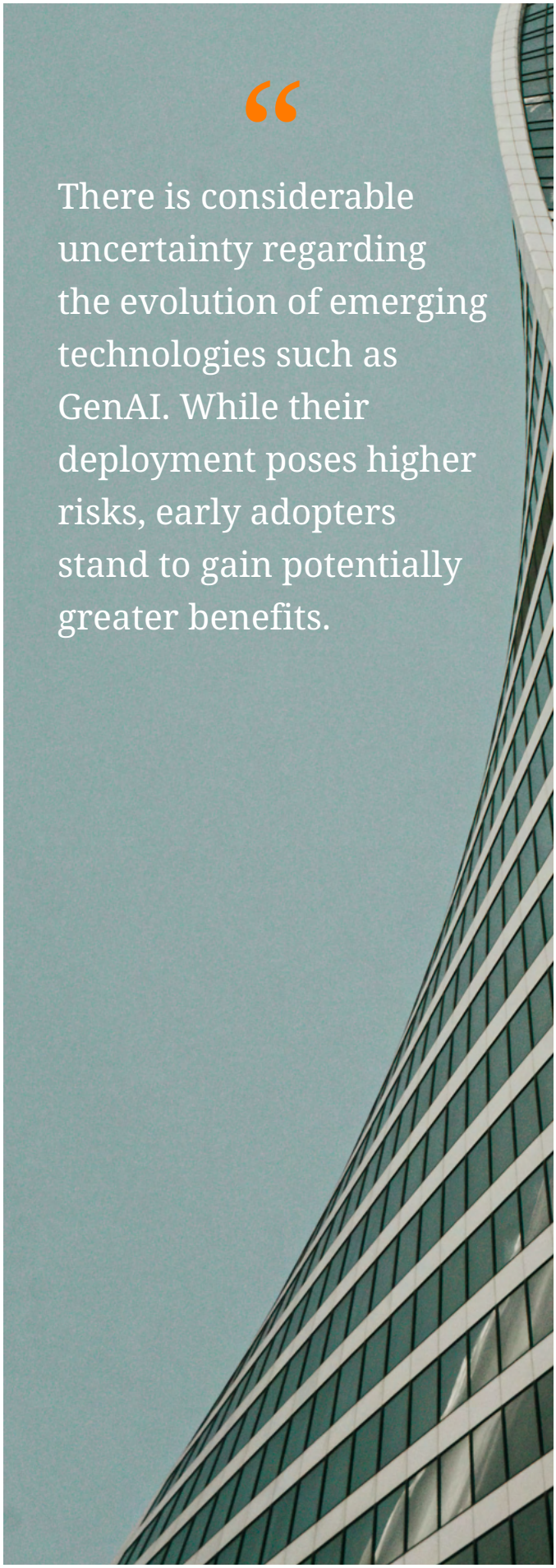
GenAI and large language models (LLMs) often create confusion. While GenAI focuses on content generation, LLMs are integral to language-related systems. Both rely on massive machine learning models, often referred to as foundational models. LLMs are a subset of foundational models. They are trained on vast multilingual datasets and use natural language processing (NLP) to understand and generate human-like text-based content. These models can engage in interactive conversations and support diverse language-related applications; ChatGPT's ability to deliver uncannily human-sounding new content probably comes to mind.

The GenAI iceberg

To truly understand the intricacies of GenAI, we need to go beneath the surface to examine the three core components that sustain its functionality.

The analogy of an iceberg captures the layers of technical architecture for GenAI we use at NTT DATA: the visible application layer, the customization and tuning layer, and the concealed powerhouse – the foundation model layer.





Chapter 2: Evolution of (Gen)AI in organizations

The risk of ignoring strategy: avoiding hasty AI deployments

When used wisely, AI can be a valuable innovation. But to exaggerate or “hype” the capabilities of AI poses significant risks to businesses.

The fear of missing out

The swift advances in AI, particularly the seemingly overnight surge of GenAI, has instilled a sense of urgency within organizations, resulting in a race to develop this type of AI. The rush to develop AI applications has led to substantial investments in projects associated with AI, even though both the short-term and long-term business prospects of AI are not yet fully understood. Even Sam Altman, the CEO of OpenAI, has acknowledged that AI is “wildly overhyped in the short term[2]”.

Sometimes we can’t see the forest for the trees

To do more than simply keep pace with GenAI advancements, business leaders need to adapt their strategies, organizational structures and talent-management approaches to build a GenAI-driven organization that will thrive and lead in the era of GenAI.

Hype continues as AI projects increase

The Gartner® Hype Cycle™ for Artificial Intelligence, 2024 states that “Generative AI (GenAI) has passed the Peak of Inflated Expectations, although hype about it continues. In 2024, more value will derive from projects based on other AI techniques, either stand-alone or in combination with GenAI, that have standardized processes to aid implementation.”[3]

Data management blind spots: the overlooked element in AI implementation

Understanding the crucial relationship between data management and AI is pivotal to becoming a successful GenAI-driven organization.

One of the most common missteps in AI implementation is forgetting about data management.

Just as humans rely on food for sustenance, AI relies on data. Ensuring that the collection, storage, processing, maintenance and democratization of data align with the needs of AI applications is essential for their ongoing development.

The development of GenAI is commonly associated with specific solutions supported by a preexisting foundational model, removing the need for manual training. While this approach may prove useful for certain use cases, for others, leveraging proprietary data can yield better results. For the model to use proprietary data effectively, advanced training capability is required, along with extensive, diverse and high-quality data.

Providing optimal data pipelines and workflows creates several challenges. Two of the most common are data quality, and concerns about data acquisition and privacy.

Data quality

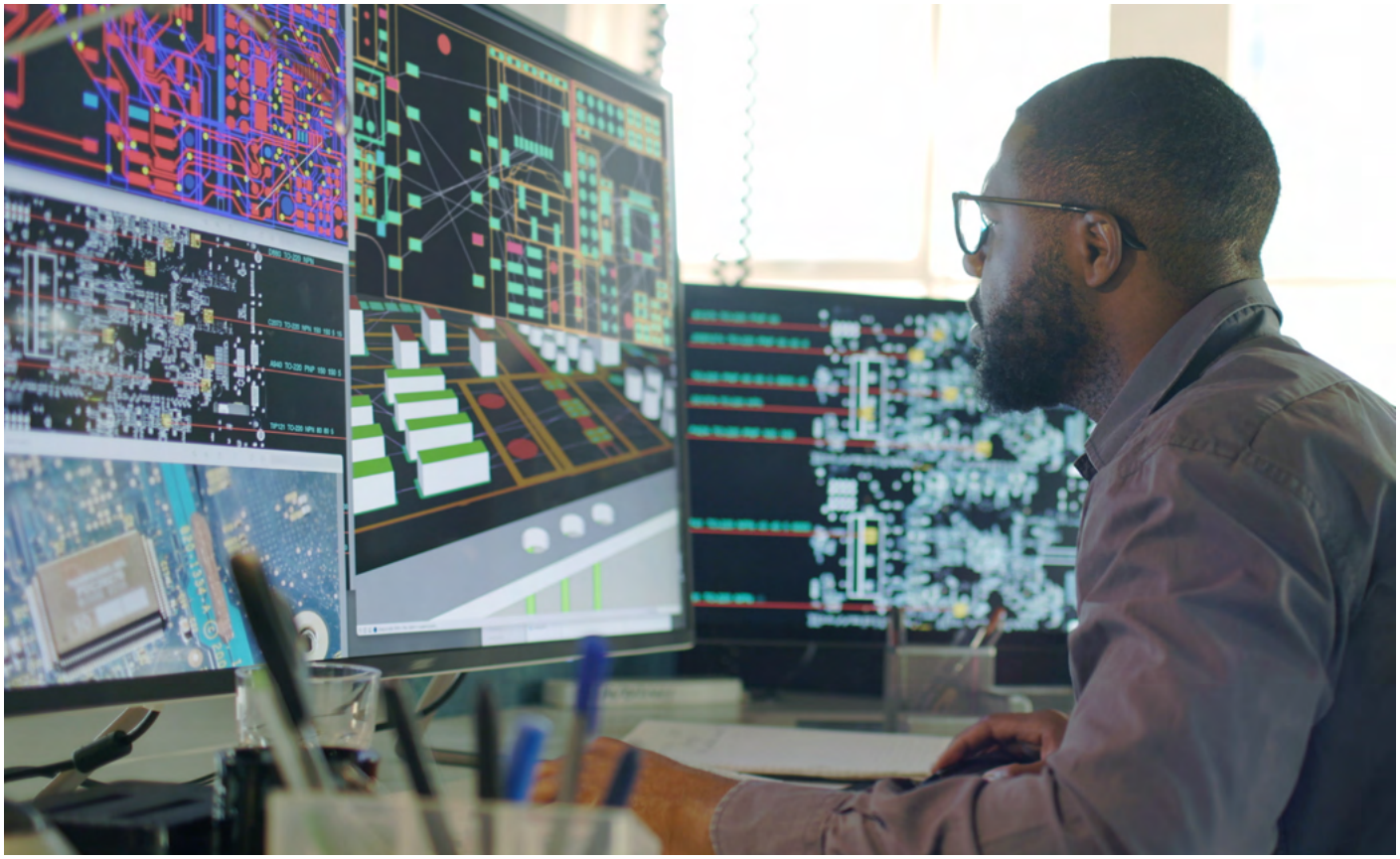
The saying, “garbage in, garbage out” holds true for GenAI. A well-defined approach to ensure the ongoing integrity and quality of the data feeding into GenAI systems is crucial. Unlike with other AI or analytics applications, there is a unique phenomenon relating to data quality in the context of GenAI known as “hallucination”. Hallucination occurs when the model generates plausible yet incorrect or nonsensical responses. These deviations could stem from inaccurate input data.

Data acquisition and privacy concerns

Training and operating GenAI models relies on accessing large amounts of data. This creates challenges in sourcing and maintaining data pipelines of such scale.

Moreover, this data often includes personal and potentially sensitive information from individuals or organizations, which raises concerns regarding misuse. Establishing rigid privacy policies and controls is key. At the same time, transparency and openness about the purpose of data and how it benefits the data provider can help to build trust.

Alternatives to this type of data are leveraging third-party or synthetic data for model training.



Opportunities for and benefits of GenAI integration

The advantages of GenAI are reflected both **externally**, through accelerated product development and enhanced customer experience, and **internally**, through improved employee productivity, empowered managers, optimized talent management practices and even revolutionized decision-making and leadership dynamics.

"In a recent Gartner webinar poll of more than 2,500 executives, 38% indicated that customer experience and retention is the primary purpose of their generative AI investments. This was followed by revenue growth (26%), cost optimization (17%) and business continuity (7%)."[4]

Boost productivity

GenAI can enhance our capacity to create and refine text, images and various forms of media as well as optimize tasks for managing large volumes of documents. It can also generate, translate and validate software code: a McKinsey study found that software engineers completed their coding tasks up to twice as fast when using GenAI and reported more satisfaction with the process[5].

Revenue prospects

GenAI enables organizations to create more products or upgrade existing ones more efficiently. AI is now integrated into creative applications such as Adobe's Firefly. The energy and chemical industries are also applying AI in domains that had previously been inaccessible[4].

Cost continuity

GenAI can help organizations streamline operations, reduce costs and maintain financial stability by automating tasks, optimizing resource allocation and improving decision-making processes. For example, GenAI-enabled technology can streamline health insurance before authorization and claims processing, two time-intensive and costly tasks for private payers.

The importance of traditional AI: why skipping foundational steps could lead to pitfalls

As the field of AI continues to evolve, it is diverging into two distinct paths: one characterized by the analytical precision of traditional AI, and the other marked by the boundless creativity of generative AI. Recognizing the optimal application for each type of model is paramount, as it avoids being overwhelmed by the hype surrounding GenAI and overlooking situations where traditional AI may be more appropriate. However, it is equally valuable to use the complementary power of both.

The strengths of analytical AI

Traditional analytical AI focuses on analyzing data to detect patterns, make predictions and optimize decisions. This makes it the best candidate for specific analytical tasks like fraud detection, predictive analysis, data classification and automating mundane tasks that follow predefined systematic rules. For certain use cases, analytical AI performs better and, above all, more efficiently, delivering higher performance while helping to reduce costs and environmental impact.

The creative strengths of GenAI

In contrast to traditional AI's analytical traits, GenAI stands out with its ability to create novel, creative content that is uncannily human-like, creating the potential for AI-driven invention and customization across organizations. Major applications include marketing, creative-media creation, software development and drug discovery.

Combined strengths for innovation

A technique gaining popularity involves leveraging GenAI to augment training data by generating vast synthetic datasets which are then analyzed using traditional AI methods to find patterns. This approach is particularly useful in fields such as healthcare, where access to large amounts of high-quality data is essential.

Chapter 3: A blueprint for organizational transformation

Balancing act: integrating generative AI within a comprehensive organizational framework

In the current dynamic environment, organizations must strive for more than "keeping up". In this section, we delve into pivotal strategies, structures and talent-management methodologies that business leaders should adopt to ready their organizations for GenAI adoption.

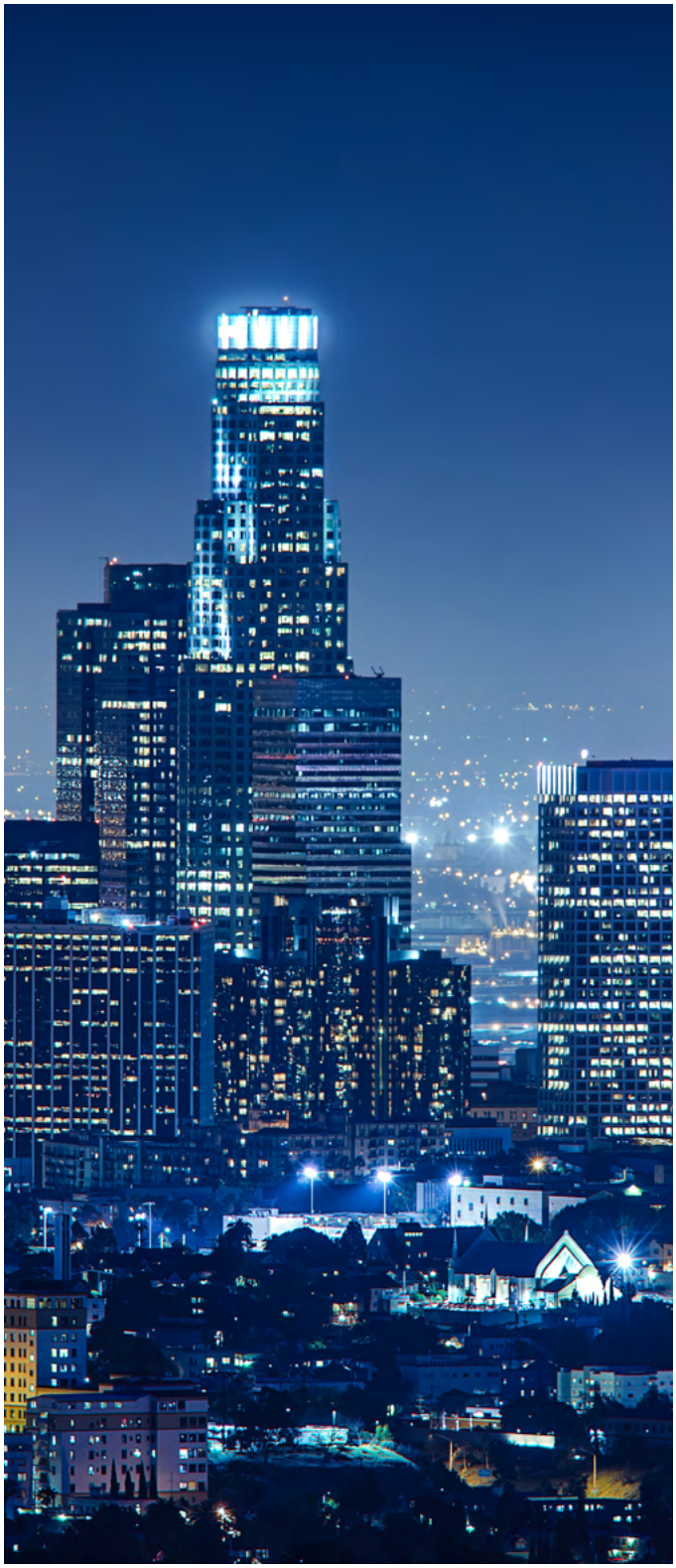
Although there is no one right answer for how to successfully integrate GenAI in organizations, a comprehensive, orderly approach that's guided by the business context should be followed.

To begin with, business leaders should step back and take a broad view of the organization's current maturity and the implications of using GenAI in the business. Rather than diving into identifying specific use cases, they should contemplate GenAI's broader impact on the organization. They need to consider GenAI's strengths and weaknesses, how its adoption aligns with the organization's strategic objectives, and the associated risks and opportunities for their industry and business model.

In parallel, they need to demystify GenAI for others, emphasizing its capacity to significantly enhance the employee experience, in order to alleviate concerns about job displacement.

Business leaders can showcase the organization's GenAI capabilities by identifying a few high-impact use cases and streamlining the rapid scaling of GenAI prototypes.

It will require effort and dedication to build the required roles, skills and capabilities for the future GenAI-driven organization to stay competitive. Given the complexity and breadth of tasks involved, a structured approach is critical to manage these efforts efficiently and effectively.



Our approach to building a Gen AI–driven organization

NTT DATA's end-to-end data and intelligence framework covers the full cycle of practices and services required to deliver the data and intelligence (D&I) capabilities our clients need for creating and scaling their GenAI strategy.

NTT DATA's GenAI framework

Business value

To transform business objectives such as growth, profit, innovation and sustainability into real business value, organizations need to design an ethical and trustworthy GenAI strategy. This involves identifying value-adding GenAI use cases, then developing a standardized and prioritized portfolio for strategic implementation.

Responsible governance

Navigating the inherent complexity of the GenAI landscape requires a collaborative approach. A robust and adaptable governance model that covers all actors, data, AI models and tools involved and sets common standards is therefore a fundamental requirement for successful GenAI operations.

Core technology and next-generation operations

Technology enablement is a pivotal factor for success. Organizations need strategies and methods for adopting, managing and scaling cutting-edge technologies in way that allows them to take full advantage of the potential these technologies offer.

Ecosystem and innovation

Organizations must be able to leverage market-ready, commoditized developments from the partner ecosystem to strengthen their technological capabilities, create joint offerings and accelerate innovation. This strategic approach is complemented by implementing a prototyping methodology to accelerate the creation of proofs of concept (PoCs).

Culture and change management

Organizations must upskill employees and raise awareness of novel GenAI tools and guidelines to augment their workforce and ensure the responsible use of the technology. Simultaneously, they must strategically design a future organization that will effectively respond to the talent challenges posed by GenAI.

Identifying business value in GenAI

After understanding the organization's strategic goals and ongoing initiatives, we need to consider where GenAI can be a lever for change. What specific AI solutions can we identify to address specific challenges?

Identify a few high-impact use cases to kickstart GenAI expansion

Leaders should carefully identify GenAI use cases that have the potential for sustainable business value while remaining economically viable. This process begins with analyzing and understanding the organization's strategic objectives, then drilling down into the challenges and needs of business units. The result is a portfolio of GenAI use cases with priorities and timelines. In creating this portfolio, two key aspects must be considered: the potential **impact** of the initiative and its **feasibility**.

NTT DATA's comprehensive approach to guiding organizations through this process includes **workshops** for identifying and evaluating GenAI initiatives. We provide a comprehensive analysis of top contenders in the market and give insights into market trends, innovations and emerging technologies to help organizations define new use cases and open pathways to collaboration.

Once initiatives have been outlined, we use our **Solutions Design Methodology** to develop end-to-end solutions that align with the organization's needs and goals. Focusing on a human-centered experience, we explore business and technical levers, informed by market insights and competitive analysis, to find the right tools for development.

Take an ethical approach to use-case discovery.

Establishing an **ethical GenAI strategy** to govern the end-to-end identification and definition of novel GenAI solutions is crucial. This entails establishing principles, standards and best practices for privacy, fairness, transparency and accountability in GenAI-related projects. It is also imperative to comply with regulations such as the EU's AI Act throughout all stages of the data and model lifecycle.

Integrating responsible data and AI governance across the board

Balanced governance approaches for decentralized business decision-making

By clearly defining roles and responsibilities and fostering collaboration, organizations can optimize the implementation of an AI strategy across the enterprise. This approach highlights the need to assign accountability to new roles that emerge with the adoption of GenAI.

We should never forget that data is AI's fuel. A clear and comprehensive **data management strategy** is therefore essential to guarantee access to clean, complete and trustworthy data, removing barriers to the democratization of data. In tandem, **AI model governance** is essential for understanding, stabilizing and managing operations throughout the AI model lifecycle. Its primary goal is to maintain adherence to established standards and best practices by continuously monitoring, updating and refining algorithms. Machine learning operations (MLOps) practices automate this entire process, ensuring seamless integration and orchestration of model governance across the model lifecycle.

Furthermore, integrating **risk management** is crucial for building resilience against unforeseen challenges. It protects the integrity and reliability of data management practices and addresses potential risks associated with AI models, ensuring robust and secure operations.

Core technology and next-generation operations

One of the key requirements of organizational adaptability is to align GenAI solutions with digital platform ecosystems that can seamlessly integrate this technology into products and services, and orchestrate the complex dataflows associated with LLMs.

NTT DATA's global **Intelligent Platform** is the evolution of traditional monolithic data platforms to a highly customizable platform driven by technological enablers. It includes hyperscalers such as AWS, Azure and Google, hyperautomation approaches like MLOps, AIOps, LLMOps, and disruptive concepts like data mesh, data fabric and GenAI.

Beyond monolithic data platforms to a data-value and intelligence-oriented architecture

Our Intelligent Platform is founded on approaches like data mesh and data fabric. These enable organizations to overcome the limitations of a centralized architecture by means of a product-centric approach, integrating the cutting-edge capabilities of modern data platforms to support previously defined strategic use cases.

The substantial resource demands associated with GenAI highlight the urgency of sustainable practices. The development, use and maintenance of these systems is hugely energy-intensive[6]. Our Intelligent Platform optimizes processes, scales solutions efficiently and promotes shared responsibility for an organization's cloud computing infrastructure and costs.

Becoming a GenAI-driven organization requires automating and managing numerous processes to guarantee the quality, stability, reliability and governance of diverse AI models and practices like machine learning, deep learning and LLMs. NTT DATA's **Data and MLOps** framework ensures this end-to-end harmonization of the AI lifecycle.

Fostering the alignment between ecosystem and innovation

Unlocking the value behind the right partnership

Leveraging a transformative and dynamic technology like GenAI often requires more than just in-house capabilities. It also demands strategic **partnerships and alliances**.

Collaborating with key vendors and suppliers, hyperscalers, consortiums and niche companies is key to understanding and adopting market-ready services and accelerating time to market with minimal risk. These alliances also play an important role in establishing responsible and sustainable business practices in line with AI policies and guidelines.

Beyond collaborative research and development, uniting with strategic partners in the cocreation of AI solutions tailored to specific industries or use cases enhances the ethical development of AI systems and contributes to their social acceptability.

This collaborative approach should prioritize empowering stakeholders by giving them a real influence over decisions that impact them. Using tools and methodologies that facilitate effective participation is crucial for success, ensuring that even those without a technical background can be included.

Stay ahead by gaining insight through observation

The landscape of GenAI is constantly changing. By closely monitoring market trends and technological developments, organizations can gain the technical acumen needed to identify the business value of the technology and leverage its full potential effectively. This approach requires regularly reassessing business goals and exploring opportunities for optimization and growth.

"I'll believe it when I see it": GenAI prototyping

With a tangible prototype, the technical viability of a use case can be rapidly validated, and its business value can be showcased to stakeholders during the early stages of experimentation.

Business leaders should carefully identify GenAI use cases that show the greatest potential for scalability and long-term value, considering the associated business or industry risks and opportunities. They should also consider the challenges involved in moving these pilots into production and integrating them into employees' day-to-day workflows.

Following this evaluation, leaders should allocate resources strategically and ensure the diligent monitoring and assessment of pilot outputs. While some initiatives may provide immediate results, others may take years to fully realize their investment. The goal is to establish a framework that rapidly upskills employees and scales AI capabilities.

NTT DATA has two engagement models for prototyping:

- **Smaller-scale PoCs** to expedite the end-to-end conception and development of PoCs embedding AI.
- **AI prototyping lab:** an innovative approach that accelerates an organization's AI experimentation, ideation, testing and validation processes, ultimately resulting in the development of larger prototypes.

By implementing prototypes, designs and products can be refined and validated so that only the right products are released. We first identify areas with the greatest potential for the application of AI, then move to experimentation with agile processes and AI cloud capabilities that allow us to accelerate the creation of prototypes.

We measure the value of the prototype to develop an in-depth business case that evaluates its potential to scale in a production environment. Our approach is based on an **LLM prototyping framework** and technology stack to expedite the end-to-end LLM prototyping process, allowing our clients to test, validate and adopt these models confidently.

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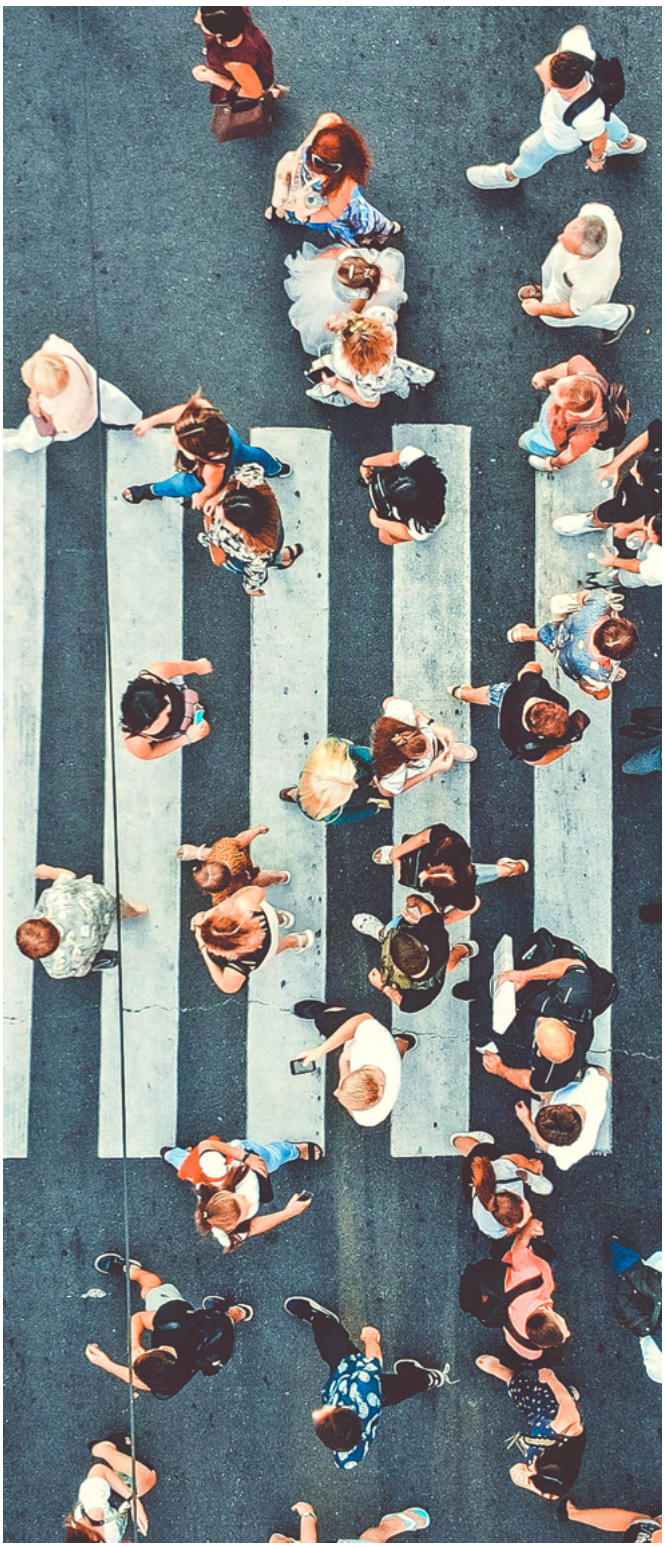
By 2027, data science organizations will cut AI technical debt by 70% by using simulation platforms and technologies to manage complexity of AI systems[9].

Getting ready for culture and change management

Maximize the value delivered by human employees by establishing a supportive environment that optimizes the use of intelligent technology, workforce analytics and skills augmentation to rapidly and effectively develop talent at scale.



Workforce change is unavoidable with the rise of GenAI

As AI continues to evolve, organizations must adjust their strategy to address shifts in talent identification, attraction and selection processes as well as employee engagement practices. To do so, they need to ask key questions about **the potential impact of GenAI on the talent model and workforce planning,** such as:

- "How will GenAI redefine job roles and skill requirements within the organization?"
- "What are the long-term implications of GenAI adoption on workforce dynamics?"
- "How can we proactively prepare for these changes?"

The impact of GenAI on organizational and operational models also calls for effective **change management** strategies. This involves identifying new roles, profiles and digital competencies, addressing requirements for reskilling and upskilling, and adapting processes such as performance appraisals.

Demystifying GenAI to build an augmented workforce

GenAI can create value by boosting workforce productivity. It can process large amounts of data, find and summarize information rapidly, and reveal insights that can enhance worker knowledge. To unlock this value, it is essential to educate employes about AI, its applications and its importance. GenAI-oriented literacy plans that include workshops, training programs and targeted communications will prepare your workforce to identify and design business-oriented use cases that exploit the benefits of this technology, while following ethical and sustainability principles.

> "Through 2027, 25% of CIOs will use augmented-connected workforce initiatives to reduce time to competency by 50% for key roles[8].

Chapter 4: Getting started

All organizations are facing the need to measure and analyze their business performance. The challenge extends to understanding how to handle GenAI capabilities to achieve greater maturity and market success.

Assessing organizational readiness for GenAI

The adoption of GenAI has become a key strategic interest for many organizations. In response, NTT DATA now includes an evaluation of GenAI in our **Fast Assessment** to assess the maturity of our clients in this area.

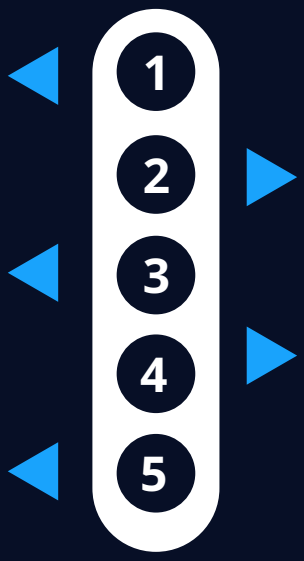
The Fast Assessment allows us to follow a standardized identification of our clients' current maturity in all domains related to our **Data & Intelligence Journey** and deliver tailored recommendations for determining the next steps in scaling D&I efforts.

To standardize the response levels and collect the best insights from organizations, we establish the following **five-level maturity criteria:**

Unaware
There is little or no awareness of the relevance of D&I across the organization.

Tactical
D&I processes are starting to be promoted in certain areas or teams in a tactical way.

Elevated
D&I is the driving force behind the organization, helping it to stay ahead of the market and up to date with new developments.



Opportunistic
The value of D&I is starting to be acknowledged, but the organization is unsure about where to begin the journey.

Standardized
D&I is a standard practice across the organization and a driving force in reaching corporate goals.

This assessment serves as the initial step in pinpointing the needs and priorities of the business, which is essential for making short-, medium- and long-term decisions. It also raises awareness and facilitates the planning of projects by fostering alignment between different units to effectively address challenges posed by GenAI.

Conclusions

Here to stay?

Is GenAI merely hype or a lasting opportunity for businesses? ChatGPT has swiftly democratized AI, making diverse applications accessible to anyone with internet connectivity. This accessibility is facilitated by foundation models – intricate neural networks trained on extensive, unlabeled data in various formats, such as text and audio. These models empower a broad spectrum of tasks, promising significant potential for innovation and value creation.

A responsible and cross-cutting uptake of GenAI

The responsible integration of GenAI requires us to consider traditional AI alongside a comprehensive governance framework that aligns the workforce and ensures ethical and effective implementation. Given the broad scope of GenAI and its associated risks, a deliberate and coordinated approach is essential, and should be a key component of cross-functional management strategies.

Initiating momentum: leveraging early wins to expand new horizons

GenAI not only opens doors to innovative applications for businesses but also accelerates, scales or enhances existing ones. However, organizations must evaluate their technical, data, operational and skills readiness to address the challenges inherent in its adoption. Leaders can experiment with select use cases before committing to substantial investments.

Our objective is to guide leaders and their teams in identifying relevant use cases and initiating their GenAI journey confidently so they can be active participants in the evolving AI ecosystem.

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> In the dynamic landscape of generative AI, marked by escalating competition, rapid digitalization and swift technological advancements, companies must swiftly innovate and embrace novel strategies and technologies across all sectors, guided by a multidisciplinary vision encompassing all business arenas.

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