

The image features a woman with dark, curly hair and glasses, looking off to the right. Her face is overlaid with a complex digital circuit pattern in orange and white. A large, white, stylized arrow points from the top left towards the right side of the frame. The background is dark with blurred, warm-toned lights.

xoriant



**Navigating the
Adoption of
Generative AI**



SUKAMAL BANERJEE

Chief Executive Officer

Preface

Artificial Intelligence (AI) has transformed how enterprises engage with technology and drive organizational efficiencies using machine learning and intelligent automation.

And while traditional AI has augmented human ingenuity for the last few years, generative AI now goes further to aid creative endeavors and foster innovative solutions. Gen AI can transform the way businesses operate, make decisions, and innovate. It can, therefore, enhance productivity and achieve cost efficiencies across enterprise functions.

Gen AI will also significantly transform the way products are engineered and the features integrated into them since it will have a profound impact across the software lifecycle ranging from ideation to development (including the increased adoption of low-code and no-code solutions) to testing and maintenance.

Enterprises – across the industry verticals including BFSI, healthcare, telecom, retail, automotive, hi-tech, et al – are now exploring opportunities to embrace generative AI tools and technologies across the value chain to introduce innovative approaches to research and development, operations, data analysis, and customer experience.

With gen AI's rapid growth and rising customer and stakeholder interest, enterprises find themselves compelled to embrace its adoption at an accelerated pace. However, the adoption of gen AI also presents new complexities and challenges. To unlock the full potential of gen AI as well as to maximize the investments of such transformation initiatives, enterprises need to carefully evaluate and strategize for the successful adoption of gen AI... whether it is for optimizing customer experiences, automating processes, or revolutionizing data analysis.

Recently, Xoriant launched its AI platform – ORIAN – that offers various use cases and models to enable clients to swiftly embrace AI and gen AI in their processes to drive business and operational efficiencies and to remain competitive. The platform brings together turnkey industry solutions, a large partner network, accelerators, and ethical design frameworks for business-ready industry solutions.

This report presents key insights and offers a comprehensive roadmap for enterprises for gen AI adoption to drive meaningful transformation across functions. Given its wide range of use-cases and varying applications across industries, a meticulous adoption strategy will not only enable businesses to fully leverage the benefits of gen AI but also mitigate potential risks and pitfalls.

Right at the start, identifying and prioritizing strategic use-cases to realize downstream value per gen AI relevance and their business impact enables enterprises to assess high-potential opportunities around gen AI. Since data serves as the foundation for an intelligent enterprise, it is also imperative for businesses to ensure data readiness from identification of data sources to data curation to data governance – as well as extensive & expensive resources.

The novelty of gen AI necessitates enterprise to consider significant talent overhaul. However, apart from net new hiring, organizations will also need to upskill existing talent and stakeholders to unlock the potential of gen AI for the organization as well as lay out a detailed view into the technology stack that includes language

models, machine learning frameworks, cloud computing services, data processing solutions, et al.

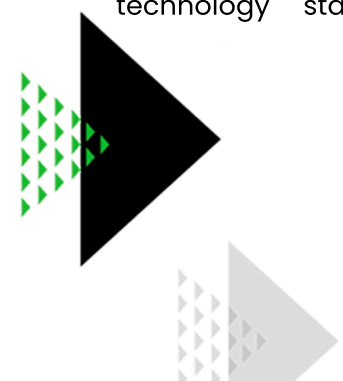
Lastly, organizations must also take cognizance of ethical considerations around datasets and language models as well as proactively stay vigilant about prevalent risks and compliance challenges. This is critical for long-term success.

Gen AI is here and demands our attention. However, given its expanse businesses must, therefore, carefully navigate crucial considerations and prerequisites to ensure successful deployments that drive organizational productivity, operational efficiency, and business growth. An apt strategic analysis should be done to assess if there is a realistic benefit realization at the end of the gen AI journey. Otherwise, such investments – with limited implementation and prohibitive costs through the entire life cycle – might not be a good bet.

Another key dimension which needs to be kept in mind is the speed of gen AI evolution. Would assumptions and conclusions today hold good in six months. There is a fair chance the answer is no.

Therefore, at Xoriant, we create a gen AI strategy in accordance with the organization's business priorities and its current IT posture.

For us, AI forms the center of Xoriant; and we aim to power phenomenal outcomes and drive value for our clients with ORIAN's transformative capabilities, while ensuring responsible practices.





Navigating the Adoption of Generative AI

Key Factors for a Successful Journey



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Contents

Introduction	03
What is generative AI?	04
Impact of gen AI on software engineering functions	05
Use cases of gen AI across industries	06
Gen AI adoption roadmap for enterprises	08
Conclusion	15

Introduction

Artificial Intelligence (AI) has revolutionized our lives, transforming how we interact with technology and accomplish tasks. Its goal is to replicate human intelligence – it can perform complex activities such as speech recognition and language translation that were once the exclusive domain of humans. However, traditional AI has struggled with human creativity, hindering its ability to generate original content in areas such as creative writing, music, and art. The introduction of generative AI (gen AI) marks a significant turning point, bridging the gap and enabling AI to engage in creative endeavors as well.

As enterprises embrace gen AI tools and technologies, its impact on engineering processes is increasingly significant. From idea generation and prototyping to algorithm optimization and design pattern proposals, gen AI is redefining traditional approaches and introducing innovative solutions.

Along with its transformative benefits, the introduction of gen AI in engineering also presents new complexities and challenges for enterprises around use case and technology choices, integration with existing systems, data availability and quality, and more. Decision explainability is also a significant concern. These factors demand meticulous planning and careful navigation by enterprises adopting gen AI.

In this report, we provide insights and guidance to enterprises on how to unlock gen AI's potential for transformative outcomes in operations and innovations. We explore gen AI's impact on key industries and engineering processes and offer key measures for enterprises to employ to overcome implementation hurdles and leverage this technology to its full potential.

What is generative AI

Gen AI, a subfield of artificial intelligence, can create new data, content, and designs by learning from existing patterns in large data sets. Through this process, AI models can generate new text, images, audio, and designs, tapping into the underlying structure and relationships within the data. This process unlocks creative potential and fosters innovative solutions.

Gen AI’s ability to generate new content is what differentiates it from discriminative AI, the more common form of AI. In contrast, discriminative AI focuses on classification and prediction tasks, aiming to learn decision functions that distinguish different input classes or make predictions based on observed features.

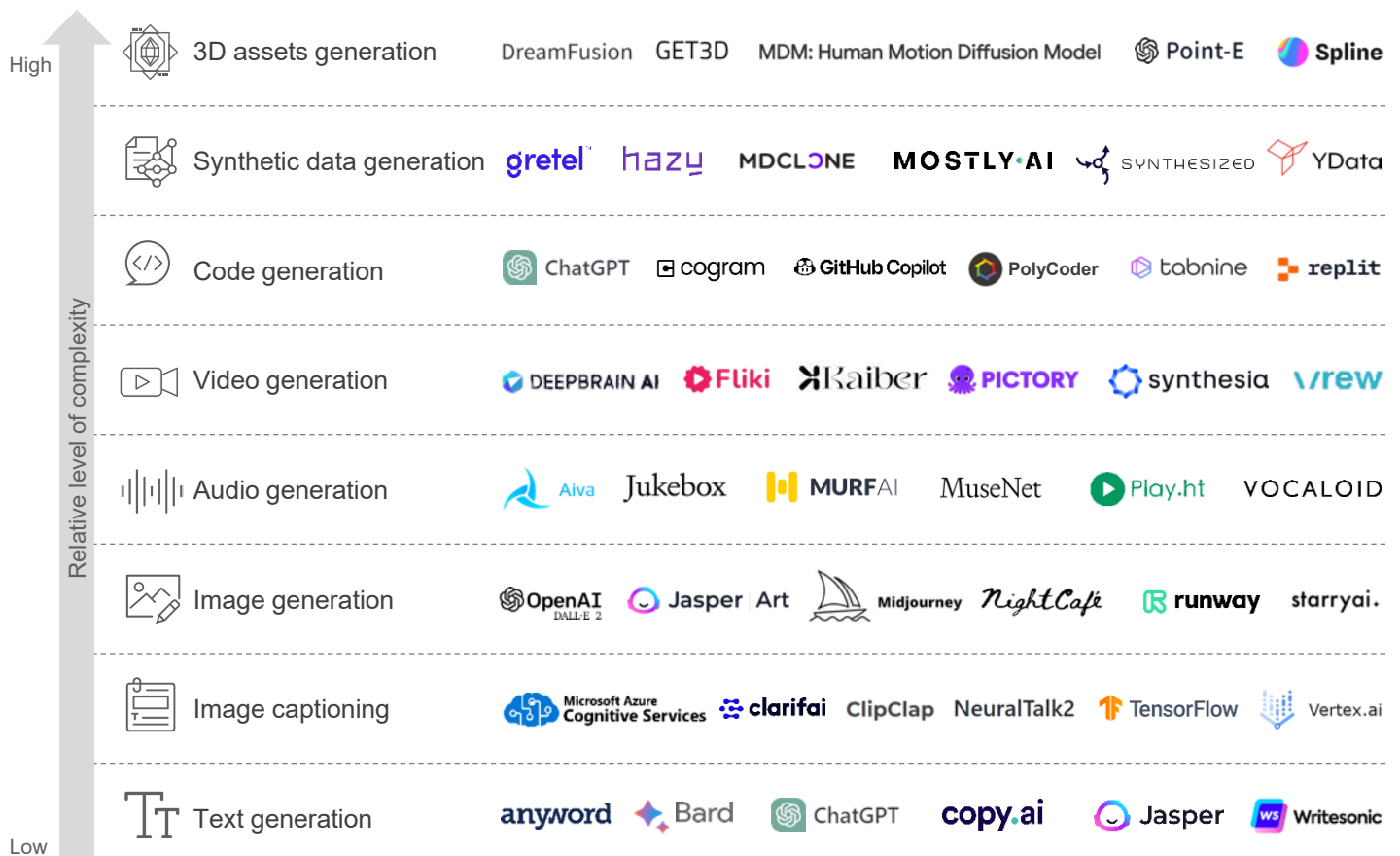
The foundation of gen AI’s abilities lies in Large Language Models (LLMs), which are capable of learning from vast data sets and can understand language and context, leading to human-like outputs.

Exhibit 1 offers a snapshot of some of the top gen AI tools in the market.

EXHIBIT 1

Top gen AI tools by use case

Source: Everest Group (2023)



As enterprises embrace gen AI, the way products are engineered and the features integrated into them will transform significantly, as we discuss in the next two sections.

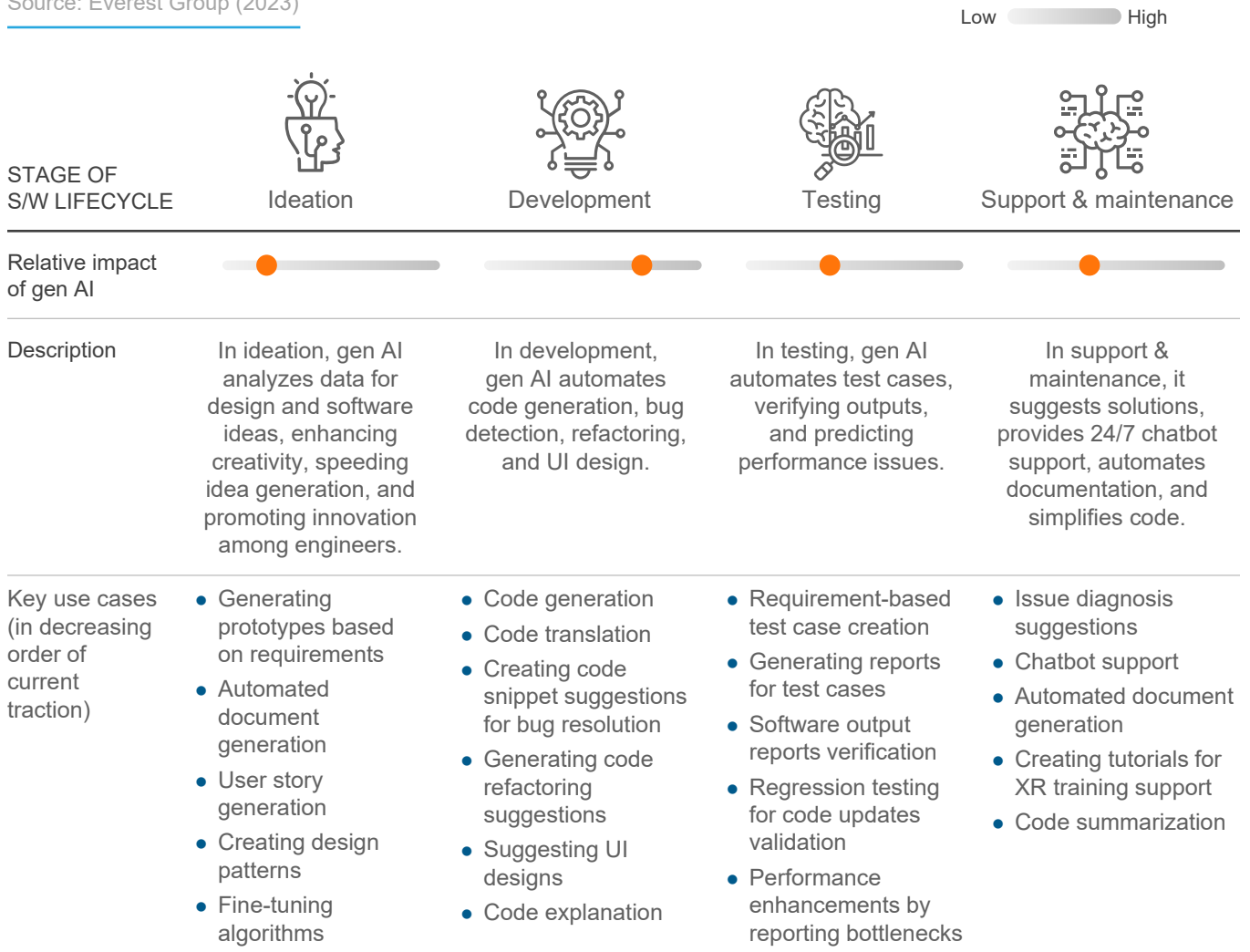
Impact of gen AI on software engineering functions

Gen AI is poised to have a profound impact on software engineering activities ranging from conceptualization and coding to testing and maintenance; exhibit 2 shows top gen AI use cases across the software lifecycle.

EXHIBIT 2

Top use cases of gen AI across the software lifecycle

Source: Everest Group (2023)



It (generative AI) is a super-powered assistant ... more profound than fire, electricity, or anything that we have done in the past.... This is going to impact every product across every company.

– Sundar Pichai

EXHIBIT 3

Key gen AI use cases across industries

Source: Everest Group (2023)

Industry	Use cases	Adoption examples
Banking, Financial Services, and Insurance (BFSI) 	<ul style="list-style-type: none"> • Asset allocation opportunities by analyzing market trends, helping minimize exposure to market risks • Personalized investment recommendations based on individual needs and preferences • Synthetic data for predictive analysis in decision-making to mitigate financial risks 	<ul style="list-style-type: none"> • Swedbank has trained Generative Adversarial Neural Networks (GANs) for fraud and money-laundering prevention • Morgan Stanley's Wealth Management will use OpenAI tech for in-house services • South State Bank has deployed "Tate," a ChatGPT-powered AI chatbot, for customer info, risk analysis, and pricing
Hi-tech 	<ul style="list-style-type: none"> • Innovative semiconductor designs to improve performance and efficiency • Optimizing semiconductor manufacturing through data analysis for better yield, efficiency, and defect reduction suggestions • Analyzing data and new semiconductor materials for experimental investigation 	<ul style="list-style-type: none"> • Cadence's Virtuoso Studio has adopted gen AI for analog, RF, and custom silicon designs • Siemens and Microsoft have collaborated on gen AI to boost innovation and efficiency in industrial companies
Healthcare 	<ul style="list-style-type: none"> • Personalized medicine suggestions by analyzing medical data and identifying patterns • Drug discovery by analyzing data from clinical trials and diverse sources • Generating diagnoses reports by analyzing data sets and patient's condition 	<ul style="list-style-type: none"> • Google Cloud and Mayo Clinic have partnered on gen AI-driven healthcare data search with conversational features • Insilico has used gen AI for each step of the preclinical drug discovery process • Zepp Health has integrated generative AI into wearables to enhance health management
CPG & retail 	<ul style="list-style-type: none"> • Writing product descriptions for a retail platform • Dynamic pricing via competitor analysis, demand prediction, and targeted promotions • Personalized recommendations by analyzing customer purchasing behavior 	<ul style="list-style-type: none"> • Shopify has launched Shopify Magic, which automatically generates product descriptions • Tesco is exploring gen AI for accurate demand predictions, promotions etc. • Nestle has leveraged AI assistants with OpenAI for business intelligence discovery
Automotive 	<ul style="list-style-type: none"> • Innovative design via customer preferences, market trends, and performance analysis • Personalized route predictions and service suggestions enhance user experience • Producing synthetic data for simulations to expedite autonomous vehicle research 	<ul style="list-style-type: none"> • BMW has implemented an AI-based system that incorporates generative design principles • Faraday Future's has created gen AI product stack personalizes driver experiences • Haomo.AI has developed DriveGPT, an autonomous driving support platform
Telecom 	<ul style="list-style-type: none"> • Optimizing network performance through data analysis and pattern-based suggestions • Generating personalized content for customer acquisition campaigns, boosting engagement and loyalty • Personalized customer support through chatbots with issue resolution suggestions 	<ul style="list-style-type: none"> • Amdocs has launched amAlz, a telco gen AI framework with carrier-grade architecture • Verizon has utilized gen AI for lead scoring, personalization, and recommendations • Together, South Korean operator KT and NVIDIA have developed a LLM for smart speakers and call centers

Gen AI has the potential to transform how organizations across industries operate and innovate, whether through personalized customer experiences, optimized pricing strategies, accelerated drug discovery, or enhanced data analysis.

With gen AI's rapid growth, enterprises find themselves compelled to embrace its adoption at an accelerated pace. However, successful adoption requires enterprises to carefully navigate crucial considerations and prerequisites to ensure a fruitful implementation. In the following section, we explore best practices for the successful implementation of gen AI use cases.

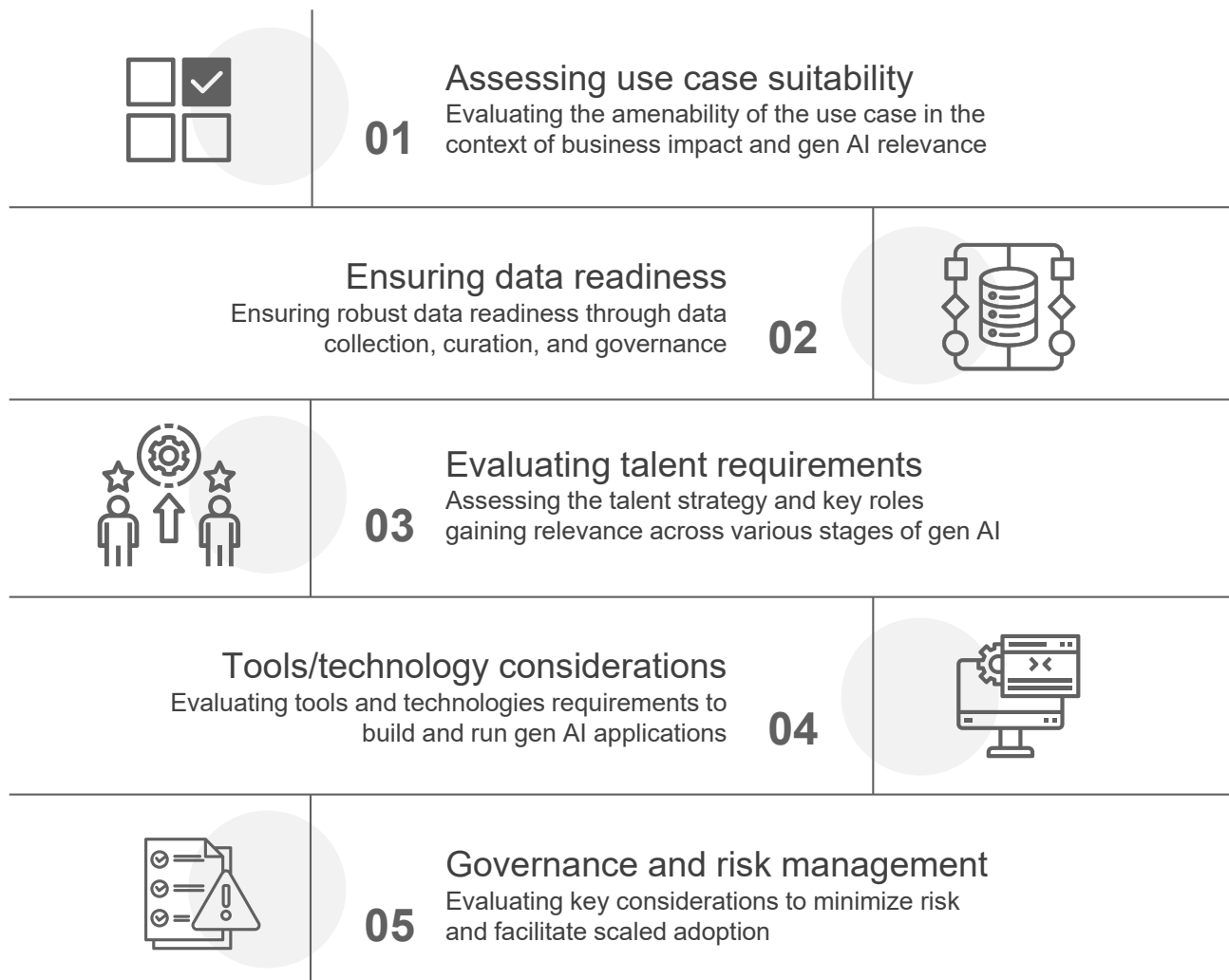
Gen AI adoption roadmap for enterprises

In this section, we present a comprehensive gen AI adoption roadmap for enterprises, offering step-by-step guidance on crucial steps to successful gen AI adoption.

EXHIBIT 4

Key steps to gen AI adoption

Source: Everest Group (2023)



Step 1: Assessing use case suitability

With several competing priorities around technology adoption, diligent use case identification and prioritization is an indispensable step in realizing downstream value. To optimize resources and time, organizations must first strategically identify the most impactful use cases that align with their business goals and can deliver tangible benefits. Use case suitability needs to be assessed along two key dimensions:

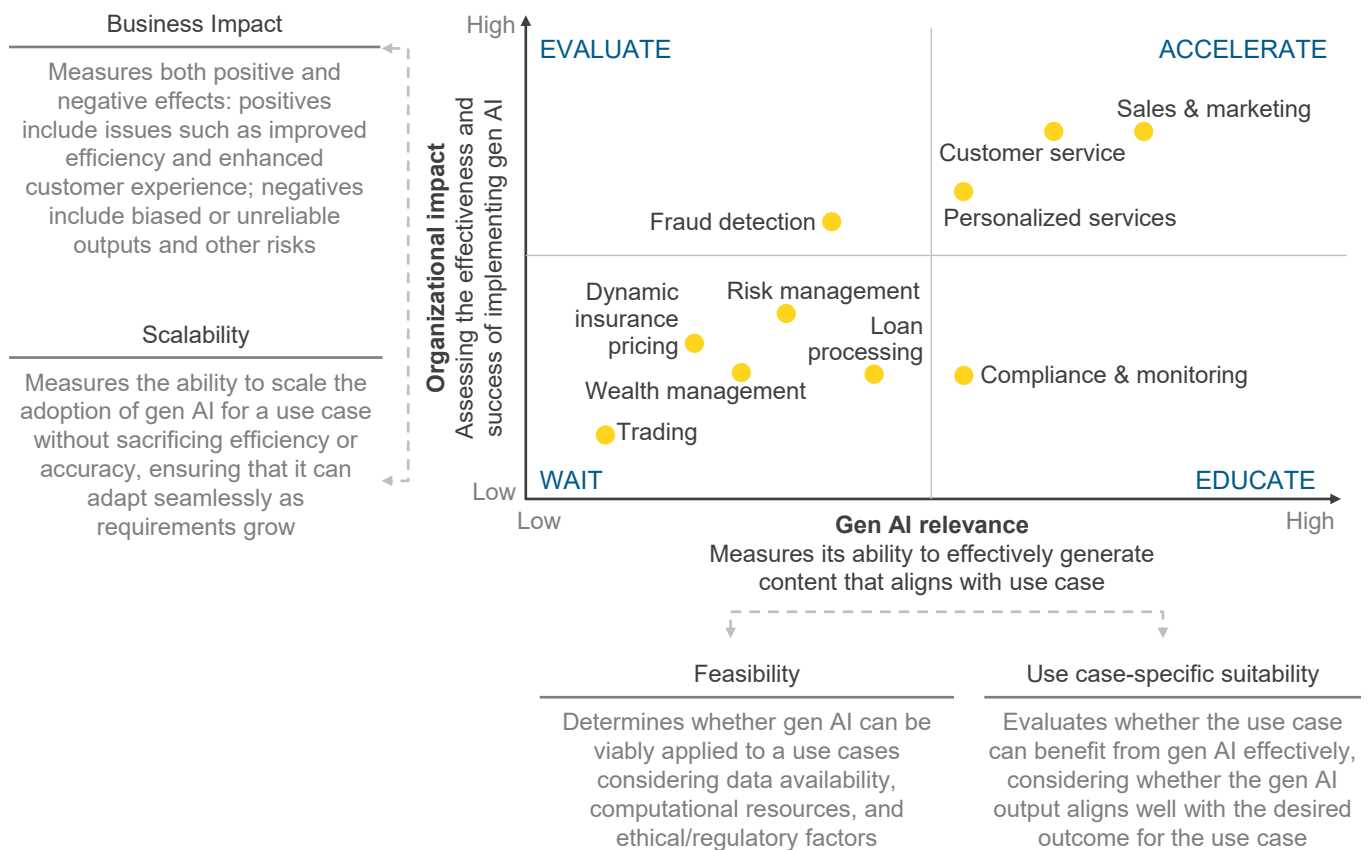
- **Gen AI relevance:** Assessing gen AI's ability to generate content for the intended use case, which involves reviewing the accuracy, relevance, and consistency of the produced content with its intended purpose.
- **Business impact:** Assessing gen AI's impact on various aspects of the organization, including processes and outcomes such as customer engagement, operational efficiency, cost savings, and innovation.

By thoughtfully considering these factors, enterprises can make well-informed decisions when selecting use cases. Exhibit 5 offers an illustrative example of high-potential opportunities around gen AI within the Banking, Financial Services, and Insurance (BFSI) industry.

EXHIBIT 5

Relative amenability of select BFSI industry use cases to gen AI

Source: Everest Group (2023)



OpenAI’s ChatGPT-3 was trained on a massive data set: **45TB** of text and **175 billion parameters**. The latest iteration, ChatGPT-4, has been trained on **over a trillion parameters** and significantly more data.

Step 2: Ensuring data readiness

Once use case identification is complete, the next task is to identify and prepare relevant data sources, which is fundamental to effectively using gen AI. Data is the foundation for training and improving ML algorithms, enabling them to identify patterns, make precise predictions, and generate valuable content. To increase effectiveness, ML models are shifting from a model-centric to a data-centric approach, where ML models are treated as fixed components and the focus is on continuously improving the data to achieve better outcomes.

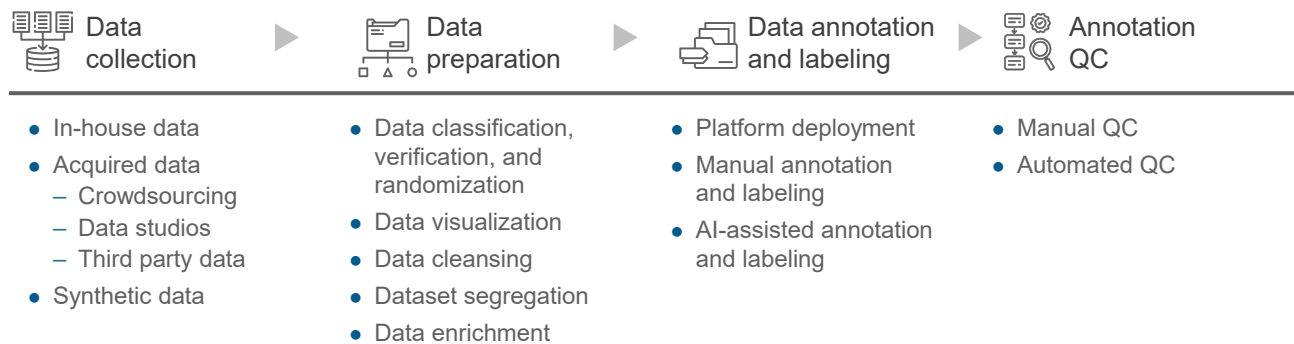
The first step in data preparation is identifying the data requirements for specific use cases, considering structured and unstructured sources such as text, images, audio, and sensors. Understanding use case complexity is crucial to pinpointing relevant data sources, often requiring specialized data sets for optimal results, such as varied text data for language models or extensive annotated sets for visual models.

Data Source identification is followed by data curation, which involves processes such as cleansing, annotating, and ensuring label quality. This step is the most crucial in ensuring data readiness and typically entails over 40% of the overall effort in enabling gen AI adoption. Meticulous data curation helps enterprises to form highly effective data sets, which, in turn, boosts the efficacy of gen AI models. Exhibit 6 shows the key data curation sub-steps.

EXHIBIT 6

Key steps for data curation

Source: Everest Group (2023)



Step 3: Talent considerations for gen AI adoption

The novelty of gen AI necessitates any enterprise setting out to adopt it to consider a significant talent overhaul. While there are several traditional/existing skill sets that will be relevant in enabling gen AI adoption, enterprises will need to hire for or reskill/upskill their existing talent on many net-new skill sets as well.

The talent base of specialists with expertise in algorithms, models, and AI techniques will have to be scaled up, while net-new hiring/training will be required around emerging roles such as prompt engineers, AI trainers, AI data curators, AI deployment specialists, and AI strategy consultants. Exhibit 7 details the key talent requirements at various stages of enabling gen AI.

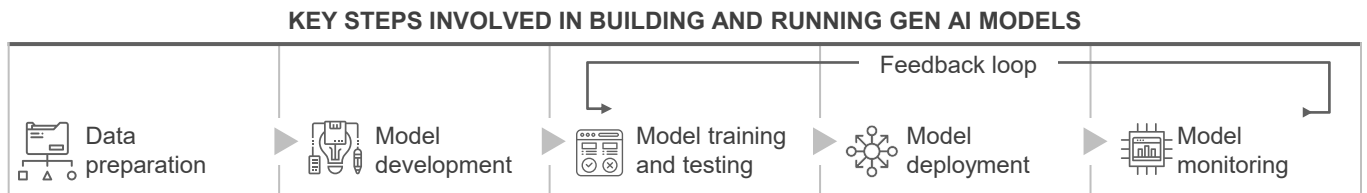
Among all global companies that specialize in building AI-based solutions, less than 1% claim to have a holistic talent base for building gen AI solutions.

EXHIBIT 7

Talent requirements across gen AI adoption stages

Source: Everest Group (2023)

● Traditional skills ● New skills gaining traction



TALENT REQUIREMENTS ACROSS EACH STEP (not exhaustive)

● AI strategist, AI ethicist, AI auditor				
● Data scientist, software engineer				
● AI data curator	● AI research scientist	● AI trainer	● AI deployment specialist	● Security specialist
● Database admin	● NLP specialist	● AI data curator	● Security specialist	
● Data architect	● Prompt engineer	● Data privacy specialist	● Prompt engineer	
● Business analyst	● Cloud architect	● QA engineer	● Cloud architect	
● Data integration specialist	● ML engineer	● ML engineer	● ML engineer	
		● Research scientist	● System administrator	

Net-new hiring around gen AI will be time-consuming and expensive, so enterprises must maximize the use of existing talent to meet gen AI talent requirements by investing in comprehensive training programs across gen AI principles, data engineering, and prompt engineering, among other areas. Big-tech companies such as Google, IBM, AWS, and Microsoft are already providing certification and training programs in gen AI; it will be key to select a certification program that aligns with the enterprise’s gen AI technology choices. In addition, domain-specific certifications from platforms such as DeepLearning.AI will be beneficial for specific industry contexts.

Embracing continuous learning and collaboration by participating in events and engaging in online communities will also be crucial to stay up to date on the gen AI advances.

Last, it will be important for enterprises to identify suitable partners – technology vendors, academia, and/or service providers– that can help them scale up their gen AI capabilities rapidly, keep the skill sets updated, and optimize the costs incurred for scaling up and training.

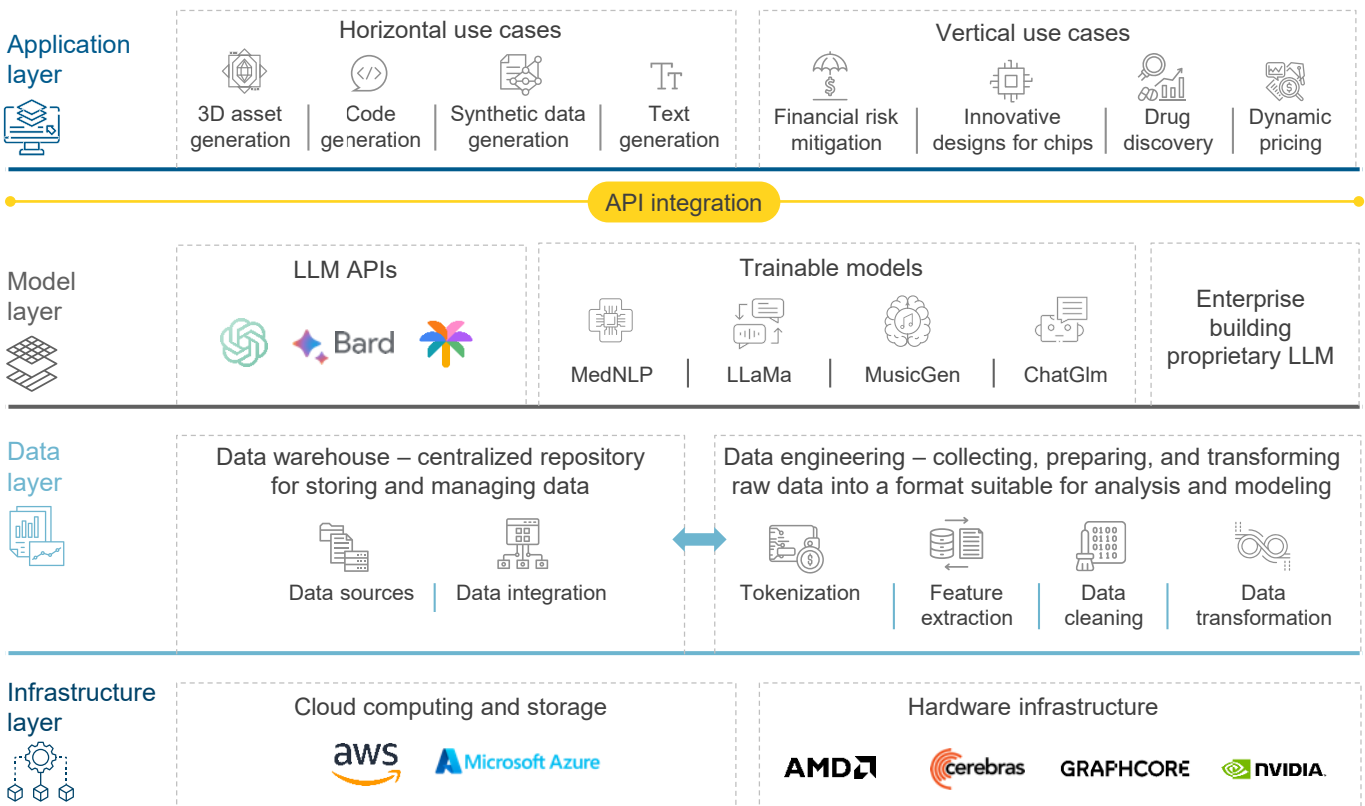
Step 4: Tool and technology requirements for gen AI

Gen AI adoption needs a comprehensive toolkit for model development, training, and deployment. A complete toolkit includes cutting-edge machine learning frameworks, cloud computing services, data processing tools, test environments, and underlying hardware that come together and enable AI models to understand and generate human-like content. Exhibit 8 depicts the technology stack for gen AI.

EXHIBIT 8

Technology stack for gen AI

Source: Everest Group (2023)



As enterprises assess their gen AI tool and technology requirements, they need to make a few significant choices in the context of their prioritized use cases, which can have a significant bearing on the costs and effort involved in enabling the overall technology stack. We describe several examples below.

Build vs. buy vs. partner

Building a gen AI solution from scratch offers advantages such as bespoke customization and undisputed control over development, integration, and intellectual property ownership. However, it demands extensive investments in infrastructure and talent, and calls for availability of abundant proprietary data to be able to train the gen AI models. In addition, the need for periodic retraining of models will also need ongoing investments. This approach may not be required by most enterprises unless they are considering building a dedicated offering/business around gen AI.

Opting to buy and integrate existing gen AI models can prove advantageous for businesses lacking extensive technical knowledge or resources and will be a suitable approach for most use cases. This approach enables rapid introduction of new digital solutions to the market and allows allocation of resources toward distinct innovation endeavors. Enterprises can still invest in fine-tuning the third-party gen AI models using their proprietary data to better fit their business context.

We also expect enterprises to take a partnership route (with technology companies and even competitors). The ecosystem will facilitate sharing of insights, skill sets, best practices, and most importantly, data, for accelerating the time-to-market for gen AI solutions. However, thorough diligence around common objectives and complementing capabilities will be vital for the success of any such partnership.

On-cloud vs. on-premises solutions

The choice between on-premises and cloud depends on an enterprise's specific needs, data privacy concerns, and available resources. In many scenarios, on-premises models may struggle to compete with cloud solutions due to the cost and technological advantages offered by the cloud. Cloud platforms now also offer the additional benefit of access to the latest pre-trained LLMs, offering easy deployment and scalability.

The benefits of on-premises solutions around greater control over data and infrastructure may be beneficial in highly regulated industries such as BFSI and healthcare. However, running LLMs locally comes with operational overhead and maintenance challenges. Thus, for these regulated use cases, a hybrid approach – wherein, the data is stored and processed in-house and the cloud is leveraged for computational purposes – will be suitable.

Step 5: Governance and risk management





To reduce challenges in gen AI adoption, organizations must address ethical considerations and comply with relevant regulations, in addition to navigating the technical complexities. By proactively addressing these issues, businesses can fully leverage the benefits of gen AI while mitigating potential risks. Exhibit 9 offers a framework to identify and assess key risks involved AI in adoption.

EXHIBIT 9

Gen AI risk assessment framework

Source: Everest Group (2023)

● Low ● Medium ● High

		Trigger stage	Impact on business continuity	Magnitude of Impact
01 Data security and privacy 	Confidentiality – using confidential data for model training			
	Data leakage – exposure of private information	Data collection and storage	Existential threat	<ul style="list-style-type: none"> Financial loss Legal implications Reputational damage
	Data reliability – incorrect output			
02 Explainability 	Trustworthiness – creating and spreading misinformation			
	Hallucinations – false content due to limited training data set	Model development and deployment	Product/service level threat	<ul style="list-style-type: none"> Social impact Reputational damage
	Deepfakes – AI-generated content of people doing or saying things that not real			
03 Ownership and responsibility 	Copyright ownership – protecting IP generated by gen AI			
	Accountability – legal issues arising due to incorrect output or IP infringement	Post deployment	Product/service level threat	<ul style="list-style-type: none"> Legal implications Reputational damage
04 Bias and ethical considerations 	Biased output			
	Unethical responses	Training data and model training	Limited/no impact	Social impact

As the field of gen AI continues to evolve, organizations must stay vigilant and proactive in their risk and compliance efforts. By effectively addressing these challenges, organizations can confidently embrace gen AI while ensuring responsible and ethical use.

The successful adoption and integration of gen AI also requires well-structured enterprise governance that enables ongoing innovation and scaled adoption of gen AI initiatives across the enterprise.

Effective governance programs include items such as:

- A **core team / steering committee** that includes C-suite stakeholder(s) and representatives from various relevant departments including IT, operations, finance, and legal, to centralize decision-making and resource allocation, ensure alignment with business strategies, provide clear accountability, and disseminate gen AI initiatives to the broader enterprise audience.
- **Change management**, which is crucial to ensure smooth adoption of gen AI given its potentially significant impact on workflows, roles, and processes. Organizations need to institutionalize robust processes to service specific aspects of communication, piloting, training, and feedback.
- **Tracking impact** of gen AI is challenging, as benefits and returns may manifest in a variety of forms, including increased efficiency, improved decision-making, and enhanced user experience, among others. Organizations need to identify use case-specific Key Performance Indicators (KPIs) to measure the impact of gen AI implementation on various aspects of the business.

Conclusion

Gen AI has the potential to deliver significant benefits for enterprises – be they building robust software, enhancing the features of product/service offerings, or delivering seamless customer experiences. These potential benefits have made it imperative for enterprises across industries to experiment with, and eventually scale up, gen AI adoption to stay competitive.

At the same time, scaling gen AI will be a gradual process requiring enterprises to make choices that will have long-term implications on their businesses. Gen AI's diverse applications, every one of which presents unique benefits along with associated requirements and challenges, necessitate a thoughtful customized selection of applications where gen AI capabilities best align with the business needs. Each also requires careful consideration around data, infrastructure, skilled talent, and risks mitigation and resolution.

For enterprises to have access to all required gen AI skill sets and technological knowledge at scale, partnerships with technology vendors, service providers, and regulatory bodies, among others, will be inevitable. These collaborations will enable enterprises to navigate integration complexities, access cutting-edge technologies, leverage expertise for effective deployment, and stay abreast of data protection and ethical standards. Knowledge sharing and best practices from industry peers will further accelerate gen AI initiatives. By fostering stakeholder partnerships, enterprises will be able to establish a strong foundation for successful gen AI adoption, maximizing benefits while mitigating risks.

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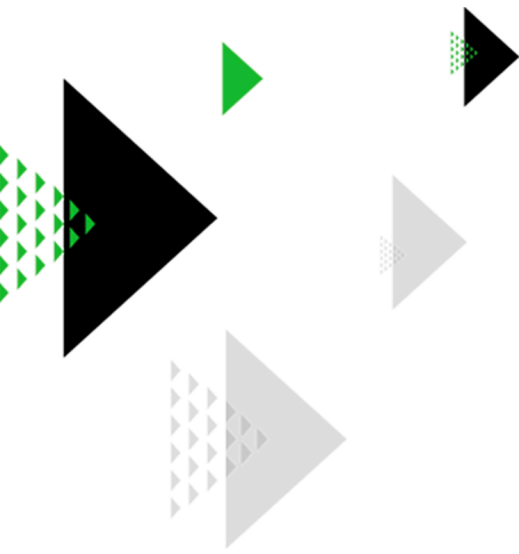
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