



Generative AI

Handbook

What to know and what actions to take to prepare your business for an era of exponential innovation





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Introduction

Generative AI will reshape every industry. But when?

There's little question that Generative AI has captivated business interest since ChatGPT launched at the end of 2022. Interest has only grown since that announcement and we believe it will transform organizations through new levels of human-machine collaboration. Throughout this guide you'll find statistics, predictions and perspectives to spur thinking on how to pragmatically apply this technology to innovate.

The sense of urgency is understandable given rapid advancements. However, while most companies have actively explored Generative AI's potential through proofs of concept and early-stage experimentation this past year, Cognizant research shows that many leaders (30%) believe meaningful impact is still years away.

For most executives we engage, the question is not "if" but "how and when" Generative AI will transform their business

models and operations. Many are now looking to scale early successes through broader initiatives.

Our own research and client conversations this past year reveal enthusiastic curiosity tempered by thoughtful diligence around these emerging capabilities. As enterprises look to transition experiments into scaled production-grade solutions, understandable caution accompanies the excitement.

A handbook for realizing
Gen AI's potential in
the enterprise

Still, through skills-building and laying responsible foundations in 2023, companies equipped themselves for the next stage of maturity in leveraging AI's generative potential. 2024 is the year to accelerate AI impact through focus and investment.

The rules of engagement continue to rapidly evolve as practical experience refines our thinking on the possible. By working together, we can apply this technology practically and responsibly to increase productivity and deliver superior human-centric experiences.

Let's shape the future together with care, creativity and purpose.



Landscape

The human-like ability of Generative AI to converse, consider and create has captured imaginations. By understanding how we got here – and the decades of thinking that led us to Generative AI – we can better predict what's coming next.

Landscape

How we arrived here

An innovation boom 75 years in the making

In the summer of 2022 – well before Open AI’s ChatGPT exploded into the public discourse – Generative AI began generating media buzz when a recently-fired Google Engineer claimed¹ their LaMDA model might be sentient.

True or not, this wasn’t an entirely surprising claim for artificial intelligence. We’ve been expecting this.

Since Alan Turing’s 1950 “Imitation Game” (Turing Test) proposal, we’ve imagined a future of computers with human-like intelligence, personality and autonomy. Today, we seem to be accelerating towards that disruptive future.

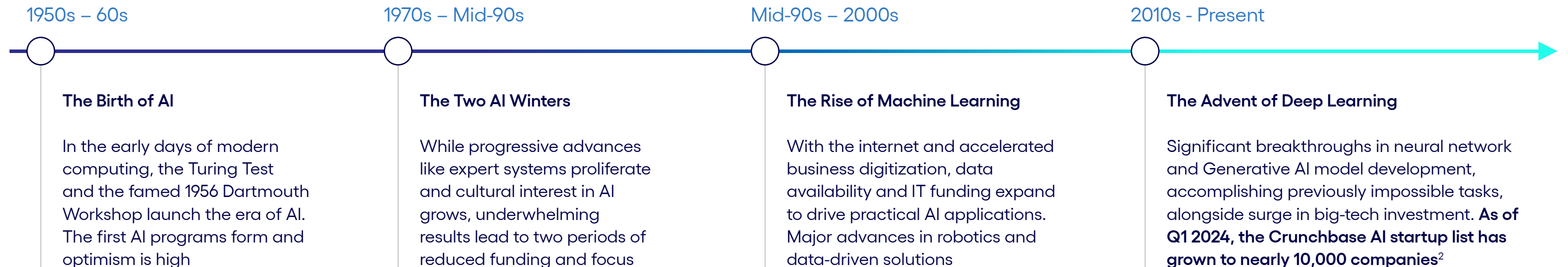
If and when we reach sentient AI is anybody’s guess but Generative AI presents a significant new milestone in this journey, sparking new interest, innovation and discourse. Here’s how we arrived at this moment.

Expert Advice

“Generative AI sits within the context of decades of research into AI. We are now entering the era where this technology will start to fundamentally transform businesses.”



Naveen Sharma
Head of Artificial Intelligence
and Analytics Practice





Landscape

Where we're headed

Change (and more change) ahead

In an April 2023 interview with CBS, Alphabet CEO Sundar Pichai famously commented that today's Generative AI will soon impact "every product across every company."³ With rapid consumer adoption and the increased competitive pressure created by Generative AI across industries, Pichai's predication is sure to hold true.

As Generative AI permeates markets, it's critical that adaptability be built into the technology and cultural fabric of organizations. New, disruptive intra-industry and extra-industry use-cases will arise frequently in the coming years creating continuous change to navigate.

1

A much larger context window

Increasing context windows are critical for many enterprise use-cases and will allow for larger, more comprehensive prompts to be passed to models. This new access to vast contextual datasets will open even more doors for AI

2

New Generative AI models, expanded AI features in enterprise software

Next-gen models are already in development, including open-source models with more flexibility and control. Expect acceleration of new entrants and innovation. Enterprise platforms are adding AI tooling that will drive further proliferation

3

Waves of regulation and standards

World governments will adopt and adapt regulations at lagging pace as they address rapidly evolving ethical, economic and societal concerns. Organizations will formalize AI governance roles with variable risk tolerance for use-cases

4

Generative video and AR/VR renaissance

With significant advancement in AR/VR technology spearheaded by Meta, Apple and Microsoft, compelling new applications backed by Generative AI will launch. With conversational user interfaces (i.e., chat, voice), new visual worlds will be seen

5

War for talent shifts to war for innovation

As 30% of work hours⁴ are expected to be directly impacted by AI and resulting automation capabilities, productivity gains will be felt by all. The war for technology talent will be reshaped as a war for technology innovation as organizations differentiate with data

Meeting the AI natives

The forever digitally young

Operating effectively in the era of Generative AI requires a reconstruction of the now decades-old digital maturity narrative. We're entering a post-digital era where every enterprise is digital and what defines leaders is their adaptability – which extends to their definition of maturity, how they operate and what they sell.

The Generative AI era is one of continuous, perpetual change. The fundamental definition of computation and chip design is changing with AI as rigid, linear and exact computations are swapped for the abstract and inexact logic that underpins neural network thinking. Companies must now operate in similar ways.

So, are there AI natives?

As noted on in our Generative AI timeline, there has been an explosion of AI-centric startups born over the past two years – these might be defined as AI natives. These companies focus on AI and, presumably, they have AI built into their operations and culture as well as their product.

But just as our definition of digital maturity requires a 'continuous change' perspective, so too will our definition of

the "AI-native company".

Being "born into" the Generative AI era is far less important than exploration and adoption. Those organizations who pioneer AI -- and set the rules early to gain competitive market share from it -- will establish what it means to be an AI native. Enterprise organizations, with their robust proprietary data to build upon, have the advantage.

Early pioneers have common traits:

- **Modern operations and architecture:** Delivery and IT infrastructures that leverage data and accelerate change
- **Enabled AI culture:** Definitive policies and governance with access and training for staff to benefit from AI
- **A focus on disruptive propositions:** Already piloting AI experiences to hedge against new entrant threats
- **Engaging suppliers to evolve services:** Addressing Generative AI opportunities for mutual benefit
- **Simplifying not complexifying:** See Generative AI as a way to transform value creation vs. "just new tech"

How are early pioneers applying Generative AI?

- **Expert assistants for professional work**
Generative AI assistants being used in legal software to augment services and accelerate work
- **Media generation**
Entertainment and creative studios using Generative AI to create animation sequences, social reels and more
- **Market insights**
Aggregating customer feedback (reviews, call transcripts, etc.) for Generative AI-driven insights
- **Text to software product generators**
Generative AI using component libraries, design systems and code bases to build POC software "on-demand"
- **Interactive chat-bots**
Transforming the classic chat-bot, Generative AI powering conversational agents to answer and explain

Basics

The fundamental strengths of Generative AI perfectly mirror its unavoidable weaknesses. The fundamental characteristics of the technology provide insight into its disruptive potential – and explain why adoption will impact every part of the enterprise over time.



Known strengths of Generative AI

The blurring boundary between human and machine work

Generative AI presents a fundamental change in our understanding of what practical, immediately-accessible AI can do. Chat-bots, candidate screening tools, summarizers and picture-makers might inspire us today, but soon AI will shape the core of modern business.

It isn't sentient but it sure does behave in human ways – and that's what's so inspiring about this technology. Whether finishing a sentence, writing the code for a component,

ideating on novel molecular structures or animating an entire new movie, this generation of AI composes complex patterns and data to create.

As organizations come to understand the strengths and potential use-cases of Generative AI, they also begin to realize the fundamental requirements within their organization for fully leveraging this technology.

It all starts with data. Combine that data with business processes and logic and Generative AI is transformative.

Expert Advice

“Generative AI provides completely new capabilities to automate and augment knowledge work. It is going to turbo-charge tasks that require creativity and expertise, such as design, engineering and quality assurance”



Pramod Bijani
Head of Digital Experience and Digital Engineering Delivery

1

Complex process automation

Core business processes that, in the past, have not been open to automation due to complexity and variability can now be managed and reshaped by AI

2

Data augmentation and completion

Generative AI systems work with data to provide first-line analysis, classification, sanitization and more, free from human error and at scale

3

Predictive analysis

Generative AI is capable of analysing complex, structured or unstructured data to identify patterns and trends to form actionable recommendations

4

Driving efficiency and supporting knowledge work

AI makes knowledge work more efficiently by accelerating and expanding on ideation, distilling data to find insights, rapidly drafting and more

5

Real time optimization

Generative AI is capable of monitoring processes and outputs to proactively identify opportunities for improvement, prescribe and even implement changes

6

Multimedia generation

Generative AI is capable of both consumption and creation of rich media across text, audio, video and images, unlocking powerful new possibilities

Known weak points of Generative AI

To err is human. For AI, it's by design.

The cyclical evolution of AI over the past 75 years has been marked by periods of waxing enthusiasm and waning pessimism. As new advances promised new opportunities, institutions and businesses have jumped in and invested heavily in the technology. When outcomes haven't met expectations, though, the AI space has experienced disillusionment and stagnation.

By its nature, AI is unpredictable and this is only further highlighted by the Generative AI boom and the human-like creativity of its outputs.

Like humans and on many tasks, Generative AI is capable of working flexibly towards a goal or target output rapidly and creatively. Also, like humans workers, context matters.

Whether its brand values, ethical considerations, situational knowledge, historical learning, consumer needs or anything else, human workers are expected to understand the context of their work and this can impact the output of their efforts. With Generative

AI, contextual understanding is often difficult to achieve “out of the box,” especially with consumer tools like ChatGPT. This has been the source of much of Generative AI's criticism.

Its strengths shape its weaknesses

Generative AI wants to answer us. It's built to respond to our prompts – no matter their complexity – and often provides answers that, in a sense, acknowledge this fact. ChatGPT allows us to refresh responses. Image generators like OpenAI's DALL-E or the popular Midjourney both return multiple images to any single prompt. These tools understand that they may be wrong.

The creative muscle of Generative AI can be striking, but it is definitely not magic. Generative AI's capabilities are fundamentally based on reference data and training.

AI adoption creates new categories of risk that require focused assurance at the enterprise level. Organizations that engage in this transformative technology with this in mind will gain the most from the AI era.

1

Hallucinations

When AI produces unreliable and erroneous outputs, it erodes data-driven strategy, reduces customer trust and limits operational efficiency.

2

Data quality and AI safety

Because data shapes AI's knowledge base, any inadequate data inputs will create bias and limit accuracy, fairness and decision-making.

3

The explainability problem

When AI provides a decision, there is inherent uncertainty in its certainty. The larger and more complex a model, the harder to ascertain.

Expert Advice

“Overcoming GenAI's limitations, we are achieving very strong results in hybrid systems where generative and evolutionary AI models are combined to play to their strengths. This will be a critical foundation for successful adoption.”



Babak Hodjat
AI CTO

Generative AI's open questions

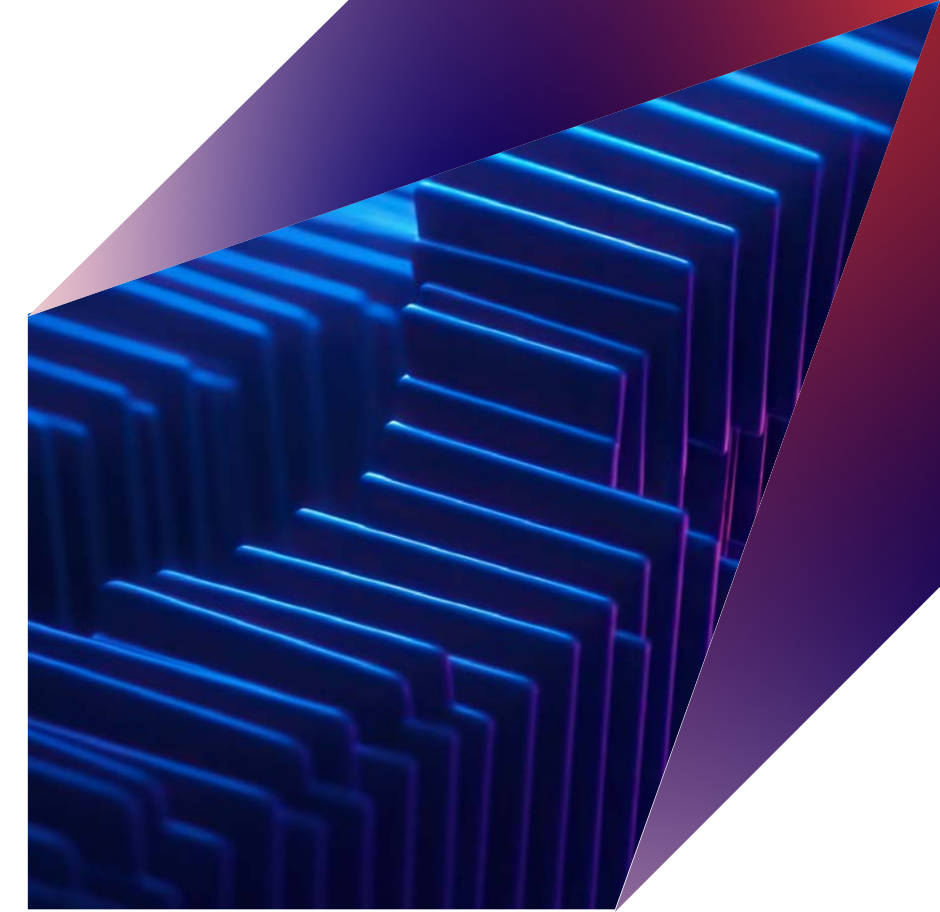
Waiting is not the answer

As enterprise decision-makers consider their paths forward in this new AI-enabled world, questions are being asked that are as complex and difficult to navigate as the technology itself. How do we know our AI isn't hallucinating? What ethical boundaries does this system present? How can we rely on answers, if we can't explain how our systems reached them?

These questions largely mirror the 'weaknesses' discussed earlier and their answers will be shaped through trial and error, learning and time.

What's certain is that readying the organization to navigate this AI-enabled world is critical for future business performance – exploring these questions is a key part of that readiness.

We'll explore near-term steps to take to address these concerns within the Readiness section later in this guide.



How can we ensure ethical usage?

Significant concerns for misuse and harm, bias in poorly trained systems and other negative outcomes of use

Cognizant Answer: AI creates entire new categories of risk that require focused testing, governance and assurance. LLMOps creates a framework for such responsible usage

What legal implications should concern us?

Concerns for copyright, IP infringement and regulatory issues when dealing with protected data, privacy

Cognizant Answer: These concerns are 'native' to digital business. Processes and tooling can help navigate and safeguard here and every business needs a unique plan

How can we ensure predictable output?

Concern over hallucinations, poorly structured or insufficient direction in business-impacting scenarios

Cognizant Answer: Generative AI can never be expected to provide 100% predictability in output. This is why training, tuning and continuous monitoring must be integrated

How will this impact our brand or public perception?

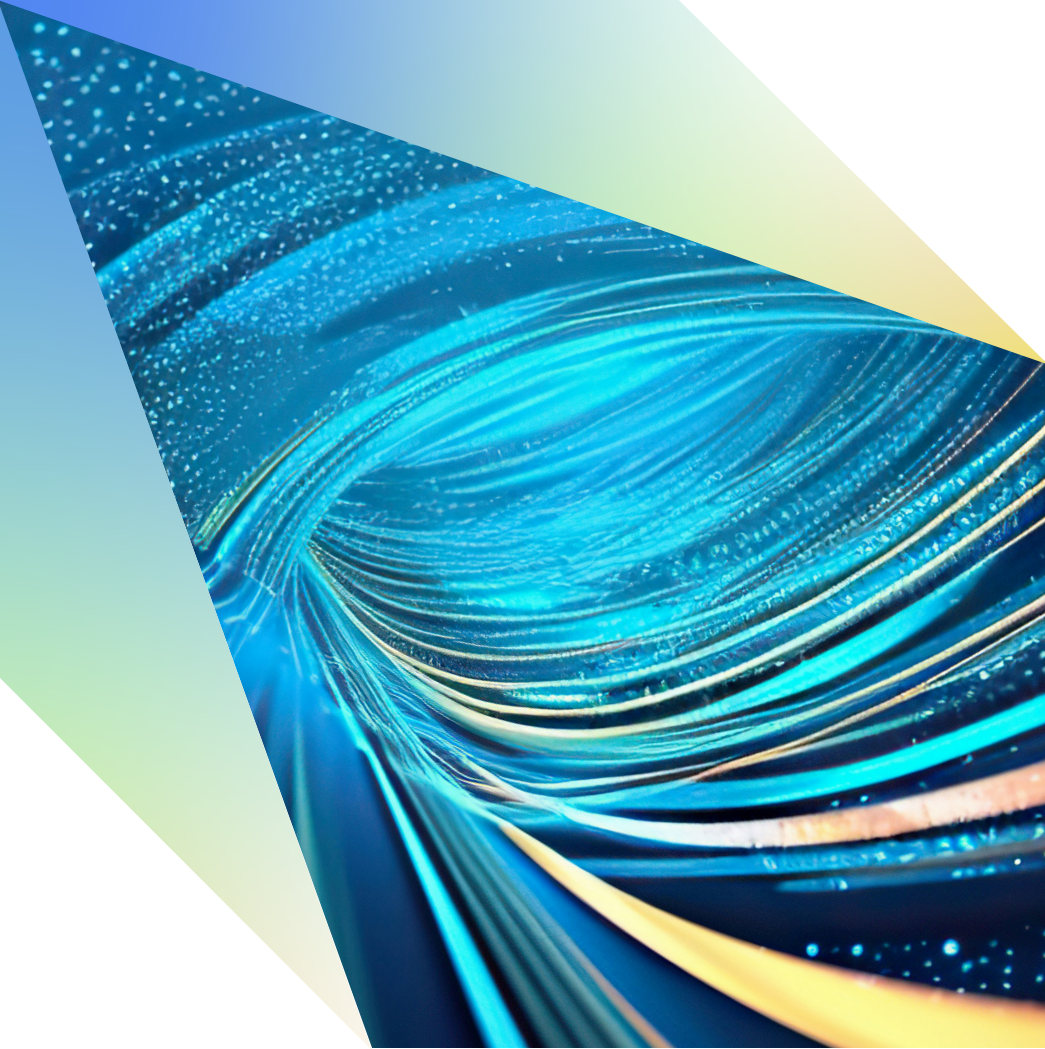
Concern over customer preference against Generative AI in key touchpoints and dilution of brand experience

Cognizant Answer: As with other AI questions, the key is to test and train Generative AI systems well before usage and be selectively transparent with customers about use

Applications

Consider the early plugins available for ChatGPT, or bots on the Poe app, and it's clear that the use-cases of Generative AI are about as vast and varied as software itself – and those are just chat interfaces.





Applications

7 proven use-cases of Generative AI impact

Even at this early stage, the opportunities for Generative AI across the enterprise are countless. With the right foundations, the only limitation of Generative AI solution-building may be a company's imagination.

With so much opportunity and so many questions, it can be hard to know where to start. As you'll find in our discussion of Generative AI readiness later in this guide, what's key is that organizations begin exploring this technology early to identify

their own opportunity spaces, safeguard against disruption and begin building skills.

Fortunately, there's no need to start this journey from scratch. With the following seven example use-cases of Generative AI, we'll highlight just how varied the opportunity can be. Every part of the value chain across every industry stands to be disrupted in unique, differentiating ways as organizations bring their unique data, processes and POV to the discussion. Let's dig in.

1

Market and
Competitor Intel

2

Software
Development

3

Production

4

Marketing
and Sales

5

Expert
Advisors

6

Employee
Engagement

7

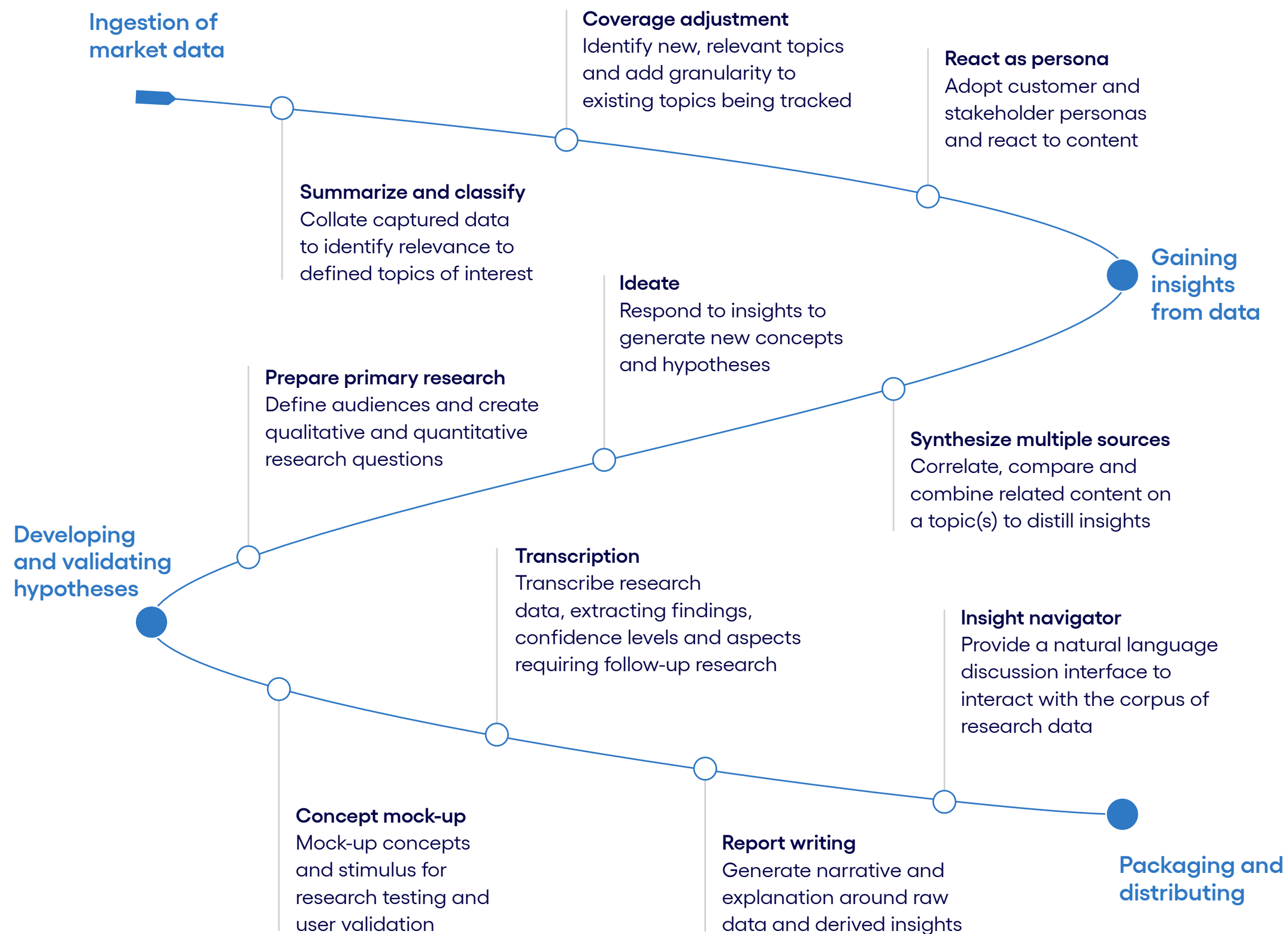
Customer
Experience

1

Applications

Market and Competitive Intel

Turning data into human-readable, actionable and contextualized guidance is a major strength of Generative AI. Generative AI systems can be used to industrialize data collection from a range of sources, including curated market research, real-time customer and competitive behavior, internet scraping and primary user research. Whether structured or unstructured, this data empowers systems to drive a range of automated analysis, summarization and recommendations.

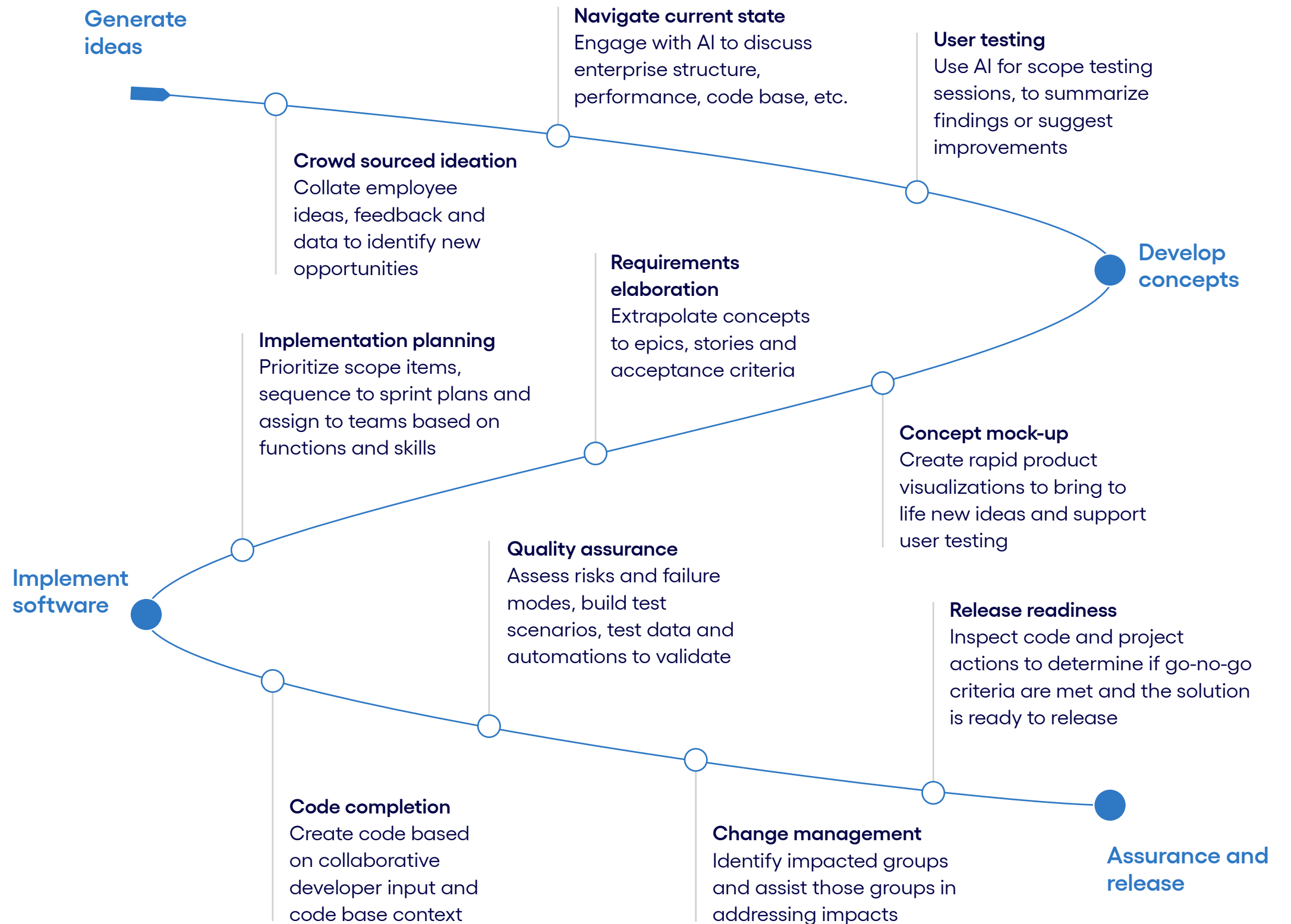


2

Applications

Software Development

Microsoft Visual Studio Code, the wildly popular integrated development environment (IDE), has long-supported GitHub's Copilot product (by some estimates automating 40%-60% of code writing⁵) and now also integrates ChatGPT directly into the developer interface. But the utility of Generative AI during software development goes well beyond writing components. The entire software development process is set to see transformation as this technology impacts creativity, quality, productivity, compliance, utility and more.

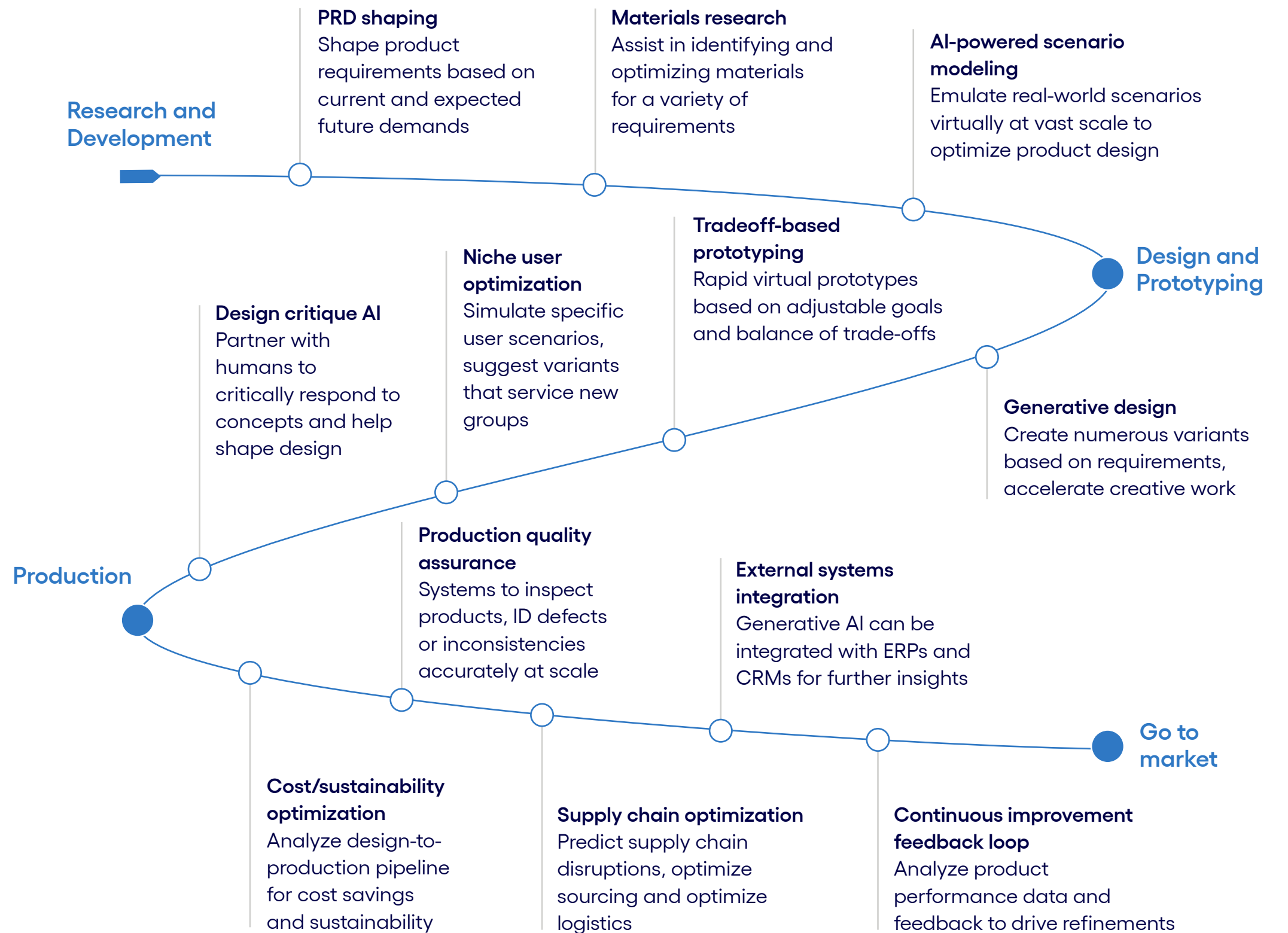


3

Applications

Production

Product research, production and quality control will see significant Generative AI impact in the coming years as organizations across industries seek to unlock transformative new efficiency and product innovation ahead of competition. This zone is highly controlled and data-intensive, making it a perfect early adoption area. The IP established through smartly leveraging Generative AI in this space will reshape industries and establish new leaders.

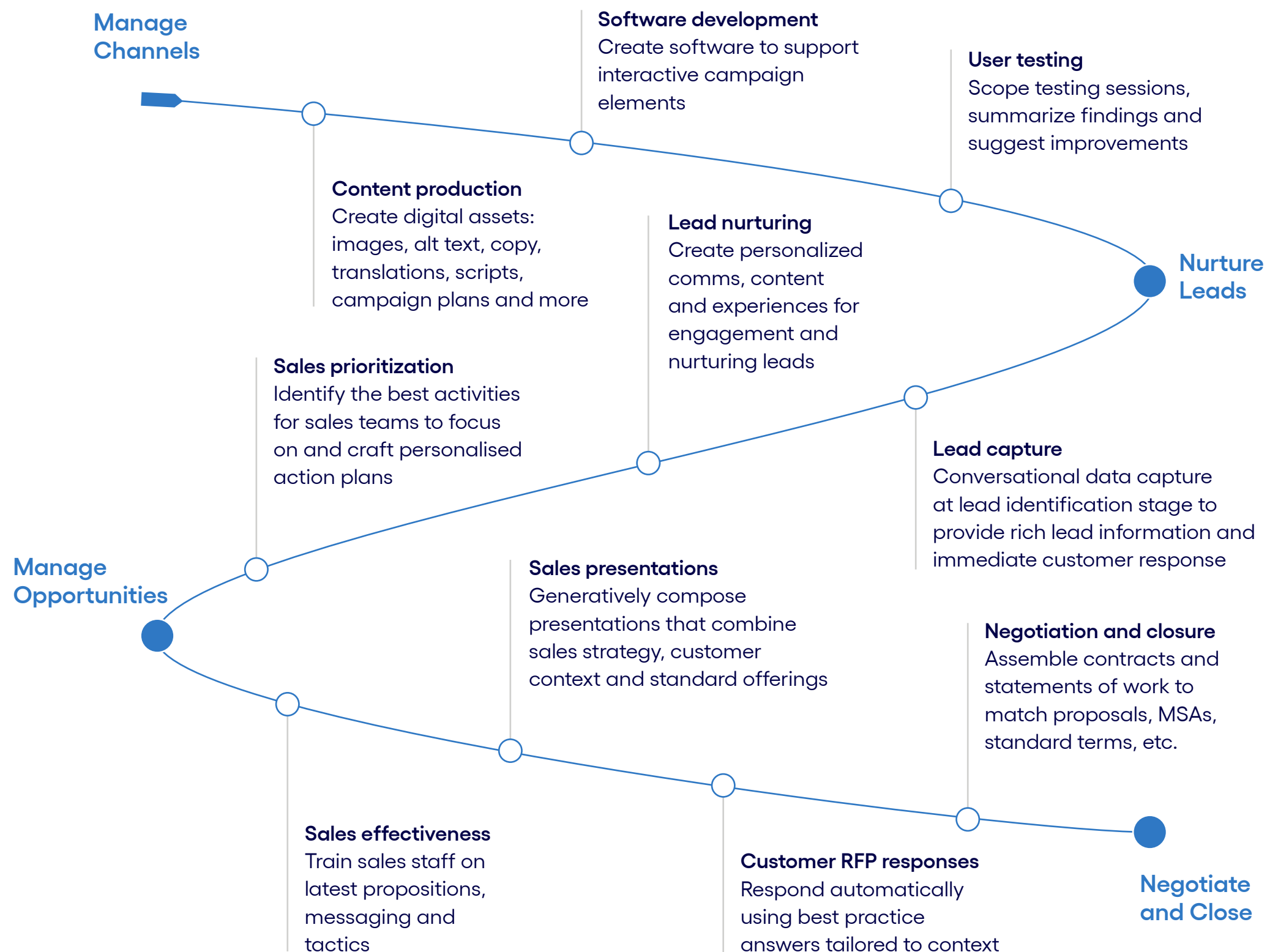


4

Applications

Marketing and Sales

Generative AI improves planning, production efficiency and effectiveness throughout the marketing and sales journey. As the technology gains adoption, asset production cycles will see a marked acceleration with a range of potential new asset types and channel strategies becoming available. Further, self-service channels will become more personalized and impactful while sales staff will increase their productivity and knowledge to focus more time on driving successful customer engagements.

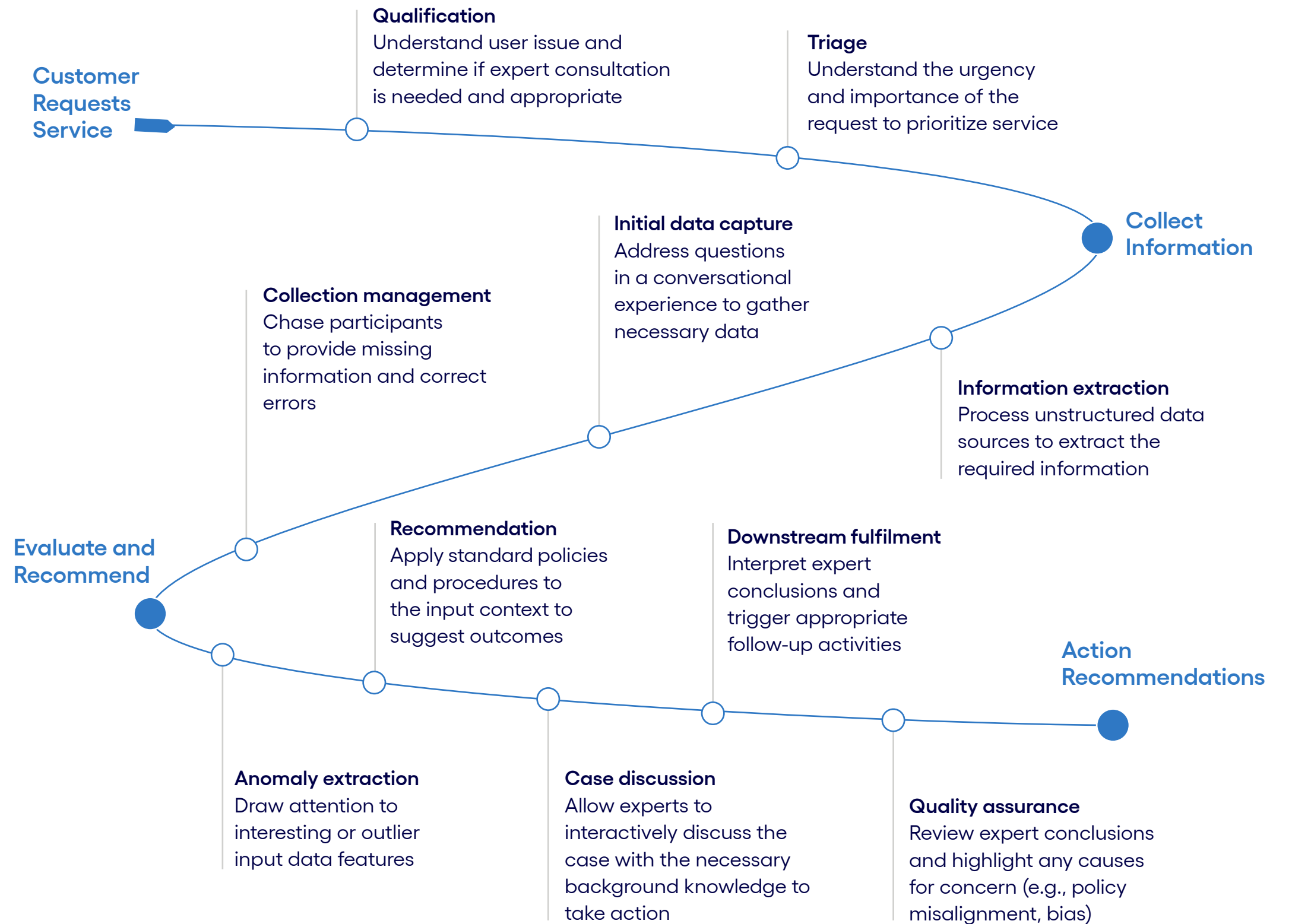


5

Applications

Expert Advisor

Generative AI streamlines and accelerates the provisioning of expert advice to benefit end-users and businesses alike. In many scenarios, Generative AI has the capacity to act in a self-service model to provide expert guidance directly to users. Where complexity is higher or in safety-critical environments, Generative AI can facilitate many stages of the process without acting in a fully autonomous way. With AI-driven pre- and post-processing, experts can more effectively utilize their time and focus on the highest-value or most-critical scenarios.

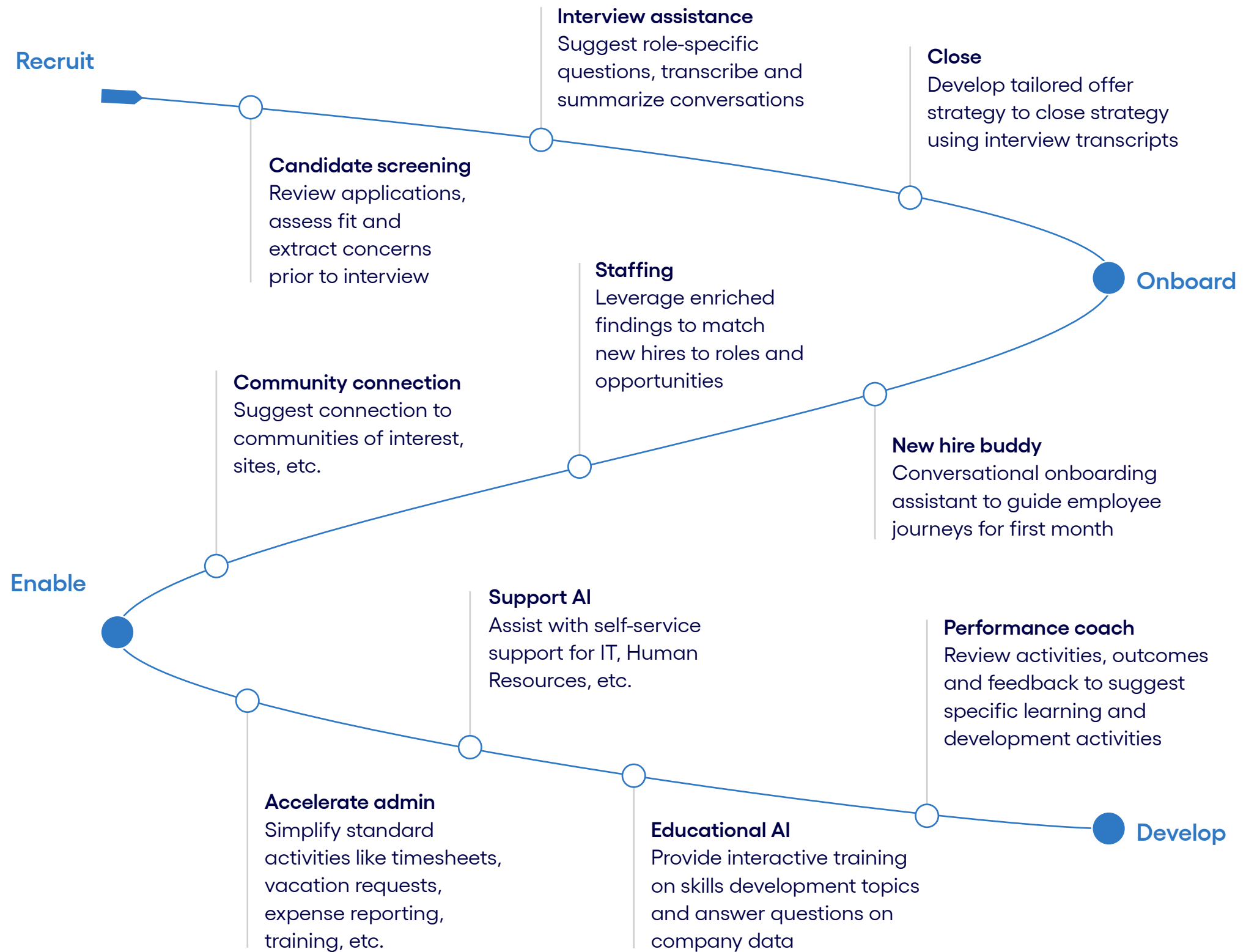


6

Applications

Employee Engagement

Companies that adopt Generative AI at a cultural level, going beyond asset production and chat interactions to elevate all common touch-points for customers and employees alike, will see the biggest gains in the coming years. Employee engagement is an exciting space for Generative AI with the potential to impact recruiting, onboarding, team-building, performance management, support and more. The efficiency gains here will empower innovation across the business as Generative AI permeates the market.

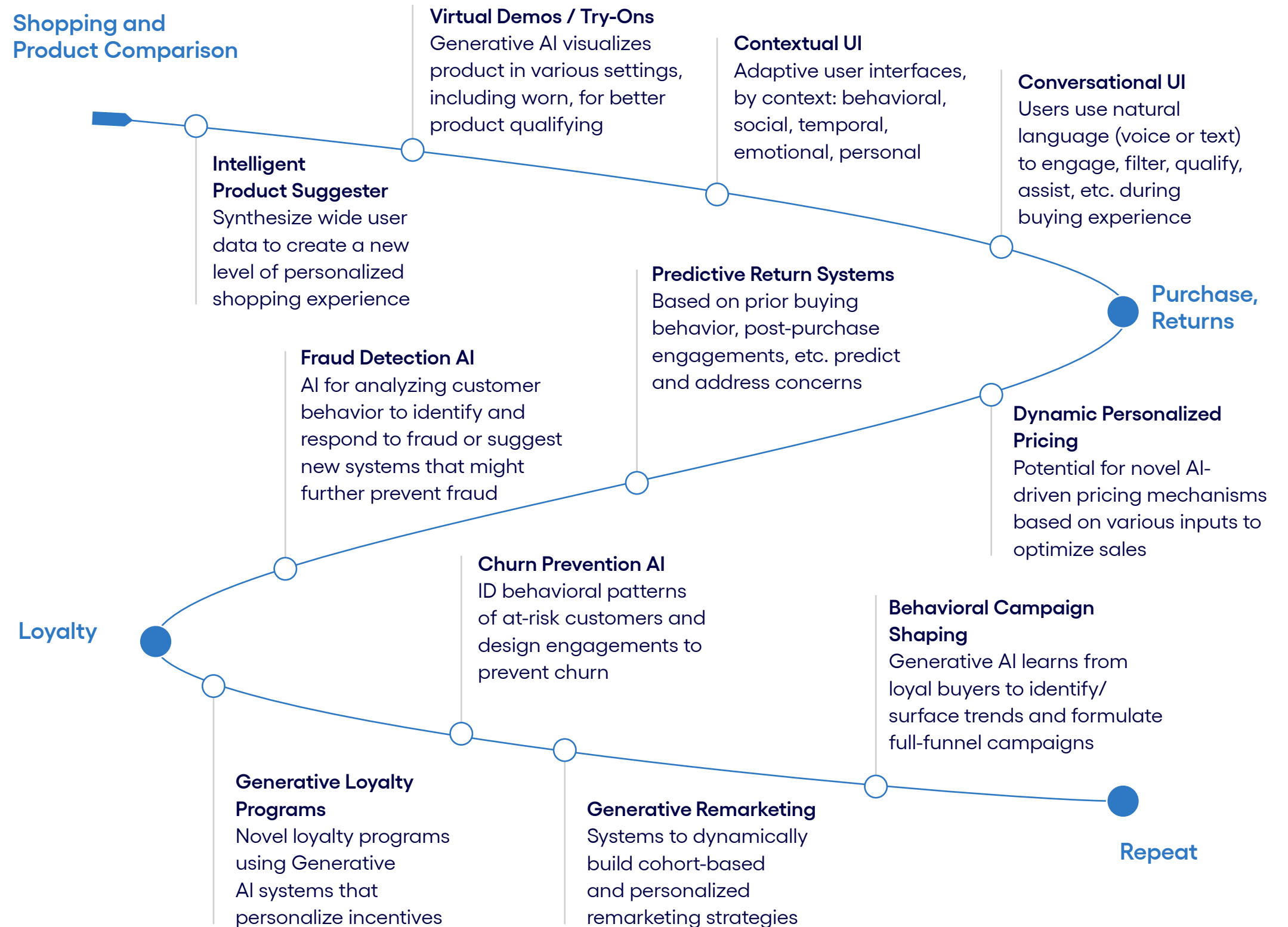


7

Applications

Customer Experience

Whether they're "just browsing" or already a loyal customer, the way that people engage with brands throughout the shopping and post-purchase experience is set to dramatically evolve with Generative AI. With answers becoming more seamless and appetite for content noise decreasing, customers will expect personal, intuitive, adaptive touch-points that understand and serve their needs. It's time to put more you into UX.



A man with glasses and a beard is shown in profile, working at a computer in a server room. He is wearing a grey hoodie and is looking at a monitor displaying data. The room is dimly lit with blue and purple light from the screens. The image is partially obscured by a large white triangle on the left and a large purple triangle on the right.

Responsible AI

Unlike the software solutions of the pre-Generative AI world, generative solutions cannot be built, tested, and released into an ecosystem without continuous oversight. Continuous governance is mandatory, and it's cultural.

Deploying Generative AI in a responsible and effective way

With all of the compelling use-cases for Generative AI and the immediate accessibility of public tools in the market today, it can be easy to get carried away in the AI hype. That same consumer availability of basic AI tooling can trivialize the complexity and downplay the policy, process, partnership and skill required to build tailored, production-grade solutions.

Enterprise AI and machine-learning (ML) applications require automation engineering, data management, feature engineering, resource management, QA, and testing teams, IT operations and more; all aligned with coherent, shared accountability in order to effectively deliver solutions. In the following pages, we will explore how LLMOps expands our view of DevOps and how an updated view of Quality Engineering can safeguard AI solutions with holistic automated testing.

It all starts with setting strong, enforceable principles for Responsible AI development.

Guiding Principles for Responsible AI Development

Tactical principles for developing Generative AI solutions in efficient, safe and value-oriented ways

Be Robust, Be Safe

AI systems should perform reliably and safely. By building and deploying AI in accordance with best practices where we robustly test before deployment then monitor and improve operations regularly, we can reduce the risk of harm or unintended outcomes.

Benefit People and Communities

Build a more sustainable and inclusive world through AI innovation. AI outcomes must incorporate human benefit and environmental sustainability in order to deliver impact and value to shareholders, users, customers, employees and society at large

Protect Privacy and Respect Boundaries

AI systems must be secure, compliant and respectful of people. Affirmative consent and a human-centered, privacy-first approach ensures sensitive data is never used unethically. A variety of auditing systems and safeguards are key within Generative AI systems.

Design for Transparency

AI systems should be understandable. Build trust and drive understanding through silo-breaking collaboration and rich communication across users and stakeholders, allowing them to understand AI systems and system outputs within their own, personal context.

Promote Inclusivity and Minimize Bias

Bias exists in our data, models and our world; responsible AI systems seek to ensure AI is fair, unbiased and representative end to end and full-context. AI systems should treat people fairly and AI should be produced and reviewed by diverse teams.

Drive Accountability and Enable Participation

People should be accountable and in control of AI systems. Clear processes and incentives for engagement create a culture where every individual is empowered to protect people, minimize risk and discover spaces of humane value.

LLMOps brings speed, support and safeguards to solution development

The following two pages provide an introduction to LLMOps but remain too high-level to sufficiently detail the orchestration of people, tooling and processes required to operationalize these practices. To explore more, engage with Cognizant's Generative AI team.

Generative AI solutions can be surprisingly seamless. The ability to understand users, act on their needs and provide human-like creative responses is what makes Generative AI such a compelling solution today. Behind the scenes, though, Generative AI solution development adds layers of complexity to the work of digital teams that go well beyond API keys and prompts. Orchestration is critical.

Consider the following difficulties:

- Generative AI systems are difficult to test and unpredictable by nature – they cannot be validated and deployed in a "set and forget" fashion
- Generative AI development requires many skills and teams must rely on each other – this takes coherent organization and alignment programs
- Generative AI systems must be at once predictable but flexible – this takes training and continuous monitoring
- Generative AI development requires too many skills and processes to manage with manpower alone

- Generative AI often leads to scenarios where privacy, regulatory compliance and data leakage are concerns – systems must be secure
- Manual review of issues, anomalies and experience is untenable and might remove any ROI or advantage of these systems – automation is needed

Due to these conditions, new ways of working are required. Building on the popular concept of DevOps, LLMOps provides a path forward.

LLMOps defined: LLMOps aligns data engineering, agent development, software engineering and IT Operations to enable continuous integration, continuous delivery and continuous model training with an emphasis on automation and monitoring at all steps.

As organizations seek to develop effective Generative AI-enabled solutions for internal and external users, defining and enforcing their own LLMOps approach is imperative.

This often starts with defining the KPIs of Generative AI solutions (aligned to Responsible AI principles) and ensuring that processes, governance and tooling are in place – made possible by LLMOps -- to monitor and influence those KPIs.

These LLMOps KPIs can include:

- **Cycle Time:** Duration from initiation to deployment of Generative AI-based solutions
- **Deploy Frequency:** How often updates or new Generative AI solutions are pushed to production
- **Review Time:** Time taken to review and validate solution (model) outputs and performance
- **Automated Solution Ratio:** The proportion of tasks handled autonomously by the system
- **Data and Model Drift:** Discrepancies in solution (model) outputs or incoming data from the training scenario

LLMOps and AIOps are often confused but they describe entirely different disciplines: LLMOps standardizes machine learning model deployment while AIOps automates IT operations.

Transparency and automation at the heart of LLMOps

As organizations tip-toe into Generative AI, linear solution development processes will be favorable for proof-of-concept development at speed. The belief is that model training is something done early within a process and that a trained model can be utilized endlessly. This can work for testing the waters but is not a sustainable solution.

Mature LLMOps processes are iterative in nature with observability and automation at their heart. As a continuous cycle, LLMOps allows data-intake and learning to regularly impact the solution while automating as much as possible and keeping humans in the loop. This feedback loop is key to responsible AI development. By ensuring that model behavior, application performance, data protection and system changes are controlled through a technology-driven workflow, organizations can operate more effectively.

Expert Advice

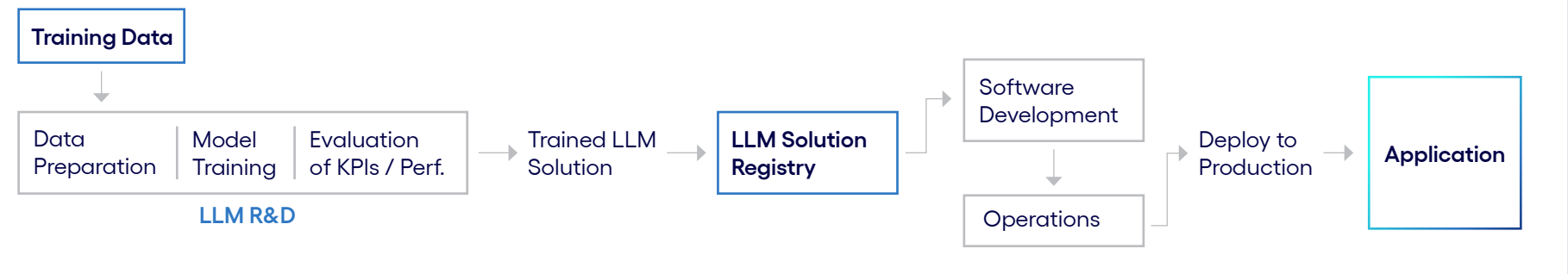
“ We must build quality and control into AI solutions to manage their continuous evolution. Due to their broad capabilities and emergent behaviour, management is needed across the entire lifecycle. ”



Andreas Golze
Head of Quality Engineering & Assurance Practice

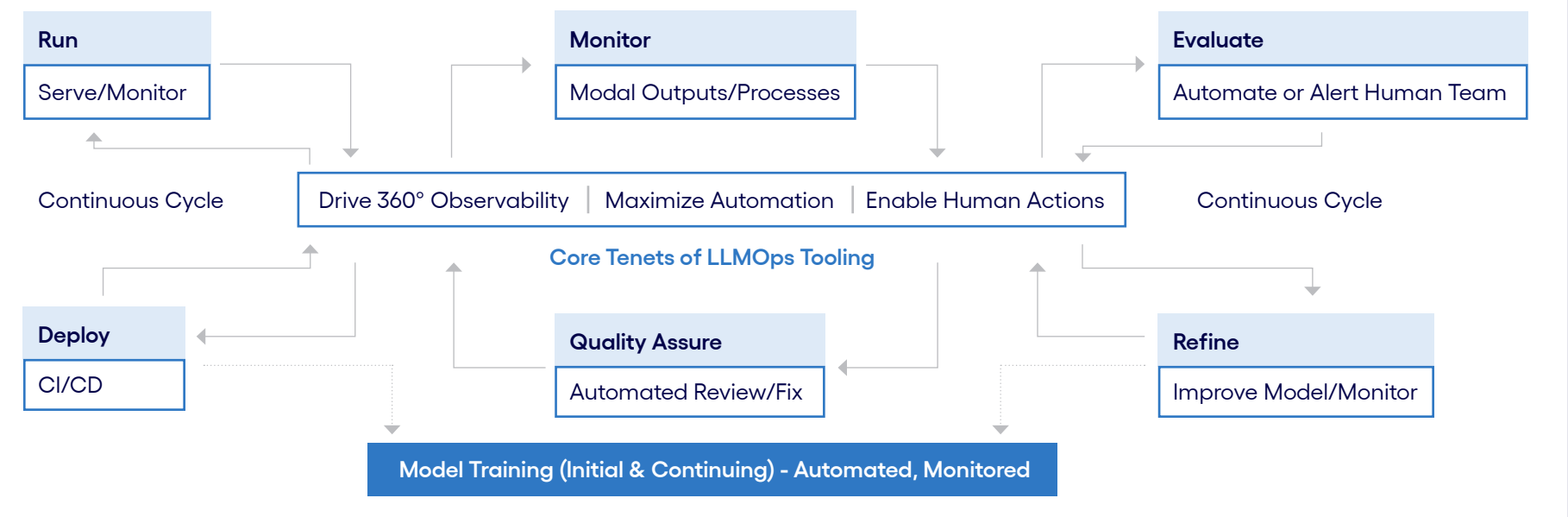
Immature LLMOps

Linear in nature, siloed Data Science, ML/AI, Engineering and Operations functions. Fine for POC development and lab environments, lacks required automation, CI/CD, feedback loops and monitoring for enterprise Generative AI solutions.



Mature LLMOps

Cyclical in nature, integrates disparate workflow functions through automation and observability. This system is heavily reliant on coherent workflows, culture and LLMOps tooling.



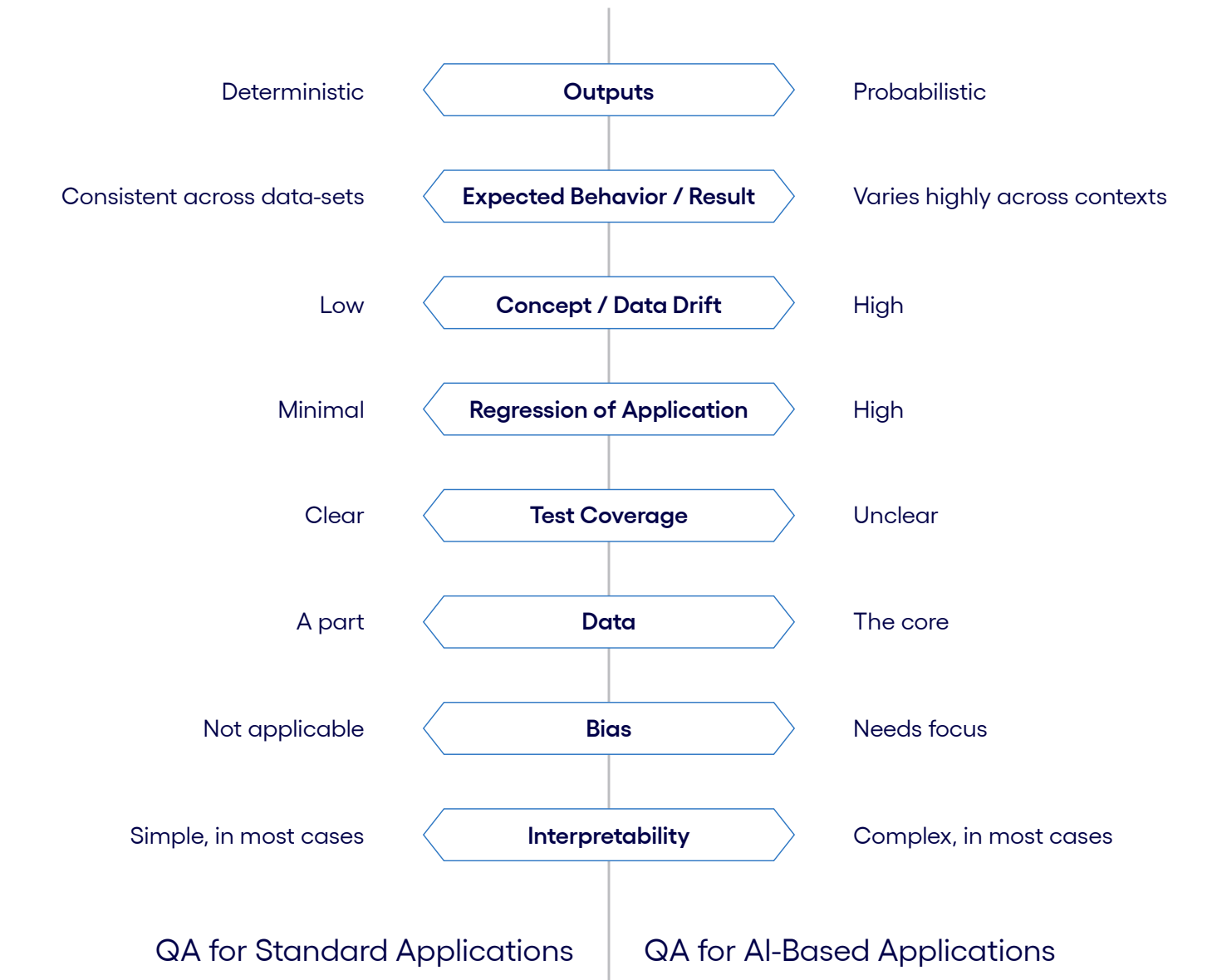
Quality Assurance and testing systems in a Generative AI world

The evolved role of Quality Assurance's (QA) teams and tooling within the delivery process will be a critical focus area for organizations seeking to deploy LLMOps.

While QA automation has become an area of strength for many mature engineering organizations, traditional approaches are insufficient for Generative AI. The scope of QA and test automation has changed, with new driving factors to consider for AI-based applications.

Updated QA automation capabilities must cover:

- **Systemic Data Assurance:** Supports operations and decisions across process
Ex. Feature selection analysis, input data augmentation, data fitment analysis
- **Systemic Model Assurance:** Automation for monitoring model behaviors
Ex. Model fairness analyzer, model validator, model interpreter, adversarial robustness tools
- **Generative Output Assurance:** Automation to monitor outputs of Generative AI
Ex. Naturalness, Toxicity, Coherence, Demo Polarity, Clarity, Truthfulness, Relevance, etc.
- **Low data scientist QA efforts:** Services and tooling to reduce specialist effort
Ex. Low-Code / No-Code solutions, customizable observability UI, etc.
- **Deep insights:** Automation of insights from AI solutions / workflows
Ex. Generative AI tooling to explain solutions, model outputs, live data, etc.



Readiness

Preparing an organization for the Generative AI world doesn't mean moonshots and risk, it means foundation laying and learning. Setting up governance now will pay dividends near and long term.



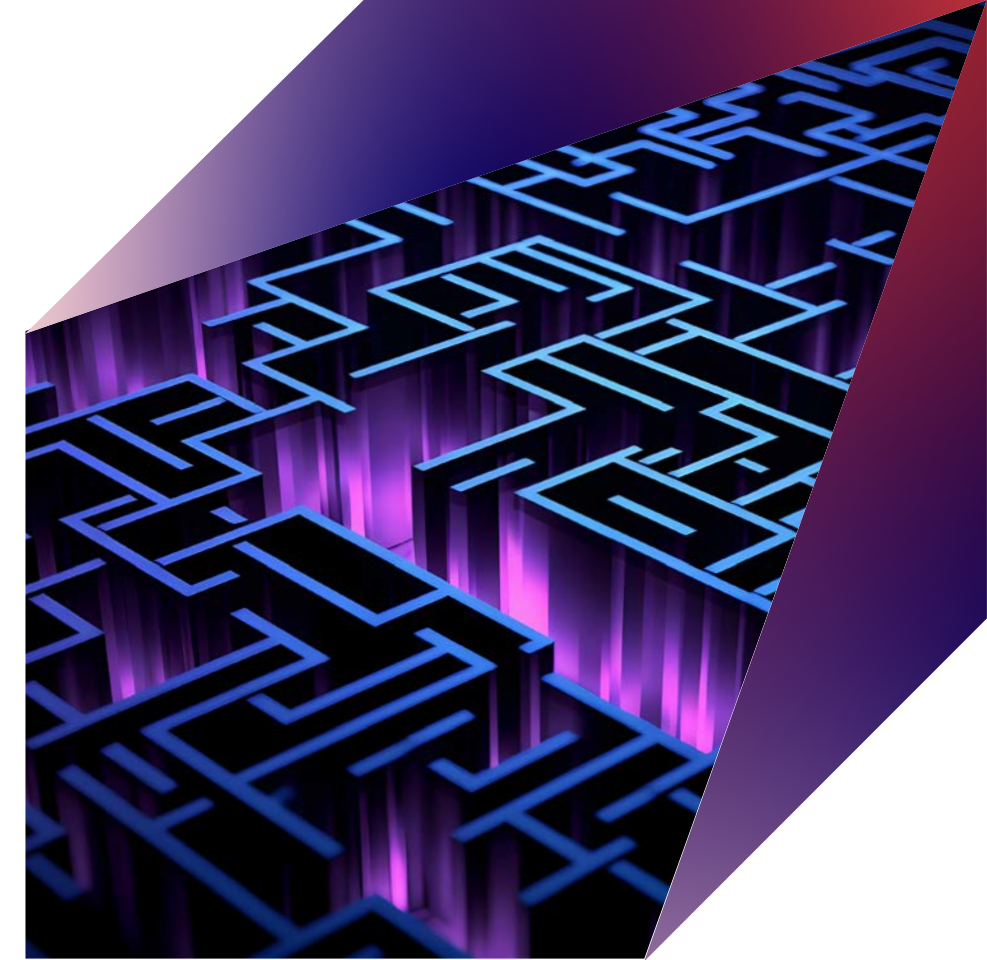
Readiness

Practical guidance to reap the benefits of Generative AI

Despite the hype around Generative AI, we're still in the early days of the AI-driven business. It's a certainty that AI will transform every corner of our digital universe and yet we're continuing to learn how. With new applications conceived daily and development of next-gen Generative AI models underway, innovators are fast at work reshaping the future of work. Adaptability in such a rapidly changing landscape is critical.

With so much hype and a sea of noise to cut through, many organizations are asking more tactical questions. What must be navigated to move forward?

To get practical about Generative AI, start with these questions. In the following pages, we'll double-click into each as we explore a path forward.



“To get practical about Generative AI, have we:”

1

Provisioned initial access to enterprise-grade Generative AI tools?

2

Designed a path to scale successful POCs?

3

Introduced AI to the development process?

4

Modernized and significantly automated core business operations?

5

Set new expectations with our suppliers?



Provisioning initial access to enterprise-grade Generative AI tools

In the wake of ChatGPT's emergence, it's safe to say that every enterprise was abuzz with cautious excitement about the potential of this new technology.

At the individual team-member level, workers around the world began testing Generative AI for their own use-cases. A recent survey from The Conference Board found that 56 percent of workers are using generative AI on the job, with nearly 1 in 10 employing the technology on a daily basis. Yet just 26 percent of respondents said their organization has a policy related to the use of generative AI, with another 23 percent reporting such a policy was under development.⁶

Organizations have been relatively quick to respond to these risks. Amazon, notably, found⁷ indication of proprietary data in public model usage and responded with a ban.

This isn't Luddite behavior, it's just good practice. At this early stage, it's unclear exactly how customer data, proprietary business data and other protected data is either being exposed to the operators of public LLMs or used to train the models themselves. Couple this with the simpler

considerations of Privacy Policy adherence, Terms of Service, regulatory considerations and more bans are surely on the horizon.

But still, the advantages...

As new products go, any amount of friction (cost, risk, etc.) can have a chilling effect on adoption. But Generative AI isn't simply a new product; it's a transformative technology that can change the world in striking, progressive ways.

Early adopters will have the advantage in this new world. Beyond the obvious cultural and process execution benefits of Generative AI, we expect a patent boom in the coming years as organizations invent novel uses of Generative AI-based tools within their business.

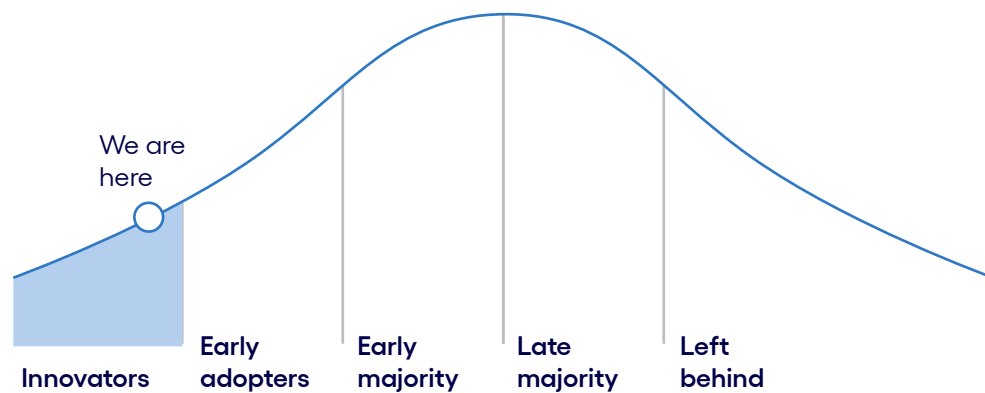
Preparing the business for Generative AI means getting serious about near-term, safe-guarded adoption with well-integrated monitors and control of usage. Gain advantage while minimizing risk and learn as you go.

Steps to take

- **Update policies and governance**
A blocker for many orgs today, set clear policies and governance for a generative AI world
- **Educate employees actively, communicate often**
Clear communication to associates around access, policy leadership, support and appropriate usage
- **Set governance over approved services**
Clarify approved GenAI solutions and establish ownership for access provisioning and support
- **Identify and supervise adoption**
Maintain observability over approved AI services, monitor who is using them and for what purposes
- **Learn and capture best-practices**
Source insights and best practices within an organizational context, communicate learning

Design a path to scale successful POCs

We're quite early in Generative AI's Diffusion of Innovation bell-curve. Early adopters are establishing and quantifying basic use-cases – gaining earned media as a result – and most would-be digital leaders are watching with curiosity.



In an August 2023 report by Bain and Company⁸, only 6% of surveyed health systems executives have a clear Generative AI strategy in place, yet 75% believe that the technology can reshape their industries. The reasons are the same that we've already discussed: uncertainty, risk, lack of inside knowledge and indecision. This lull in early adoption is where the advantage lies.

Quietly building a boom

To ready themselves for the road ahead, it is imperative that organizations go beyond provisioning access to public tooling and begin developing their own inside use-cases to drive a business case, spark thinking and lay a foundation for future development. This can be done in phased, controlled and protective ways.

We suggest two complimentary approaches:

1. Establish and run pilot projects

Pilot projects build a 'light house' for future innovation and expansion. By establishing specific initial goals for a cross-functional pilot project team to pursue, organizations can create disruptive proofs of concept and establish an internal POV.

2. Enable and accelerate with AI innovation "Labs"

We have supported multiple organizations on establishing their own innovation lab environments where governance, collaboration and technology enablement are high. These environments become particularly powerful when formed in collaboration with hyperscalers who might provide innovative organizations with access to advanced models, education and specialized tooling.

Outcomes in focus

- **Build a business case for expanded focus**
Give enterprise context to Generative AI use-cases by showing viability and capability against revenue-driving focus areas, expand on success.
- **Gain edge, protection from disruption**
Leverage Generative AI early for disruptive use-cases that drive business value, safeguard the business and accelerate future projects.
- **Develop early internal SMEs and insight**
Begin establishing subject matter expertise within core internal teams by capturing and sharing knowledge during practical application.
- **Build internal and external reputation**
Establish industry point of view on Generative AI, attract business and talent attention and set a cultural foundation for an AI enterprise.

Identify opportunities to add AI to the development process

As covered in our section on LLMOps, Generative AI development implies systemic changes to the way that software is delivered and supported within organizations. Zooming in, the same goes for software product engineering processes.

Here are just some ways that Generative AI might impact product development.

Idea Generation

The ability of Generative AI applications to work with trained models while evolving those models (and the application's outputs) with the consumption of real-time data can unlock compelling use-cases for product idea-generation. Rather than relying on surveys and user reviews for qualitative data, Generative AI agents might deliver new concepts frequently based on real-time analytics. Product managers can then link these ideas to business goals and set a path forward.

Product Design

As multi-modal models (capable of intaking and outputting images, text, audio, etc.) mature and see enterprise adoption, "clickable prototype" design will become less

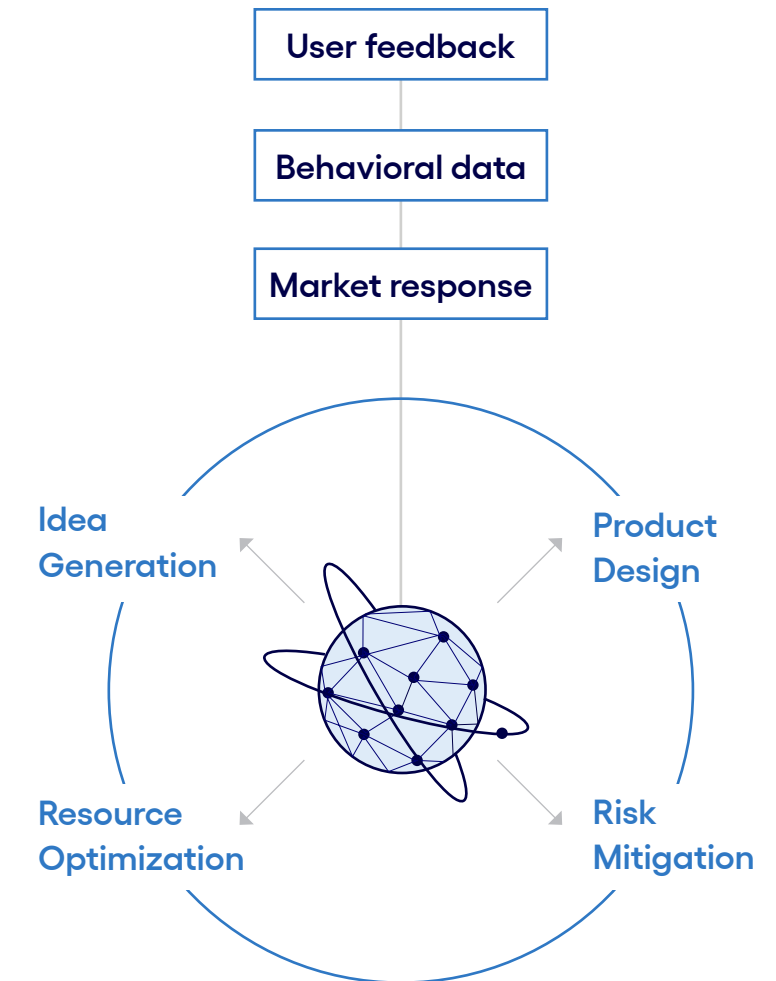
a job for designers and instead be handled by Generative AI tools. Fed with design principles, systems and reference designs, these prototype design tools will produce unbiased prototypes best fitting the market data available. The job of designers will be to identify the most promising solutions and refine them.

Risk Mitigation

A core responsibility in product management is to manage and mitigate risk. With its predictive analytics capabilities, AI tooling can help in identifying potential risks and roadblocks early on in the prototyping phase. Quality, market readiness and future success can all be gauged by having algorithms analyse historic data, user preferences and even real-time market trends.

Resource Optimization

Sustainability is the challenge of this generation of business. Generative AI can support sustainability efforts by optimising resources and material mix for minimized waste and environmental friendliness. It can take regulatory processes into account, report on data and even affect subsequent production processes for both software and physical goods.



GenAI-enhanced product development



Modernize and significantly automate core business operations

There is no doubt that Generative AI will revolutionize how we work. Process automation has long been a popular use-case in our digital world and AI is going to open entire new opportunity spaces here. The debate around automation will continue to be more focused on how regulators will impose limitations on the technology instead of how much potential the technology affords us.

Like media streaming, ride-sharing and other tech-driven economic catalysts that regulators have tried to stay in front of, resistance is a bit futile. Technology will be squeezed for as much juice as it can offer in a free market.

In our opening section of this document covering the future of Generative AI, we touched on a shift from a war for talent (commonly discussed in the 2010s and pandemic era) towards a war for innovation as all businesses use Generative AI to gain efficiency. AI-enabled automation of core business processes will drive this shift. Savings must be reallocated to accelerating business value.

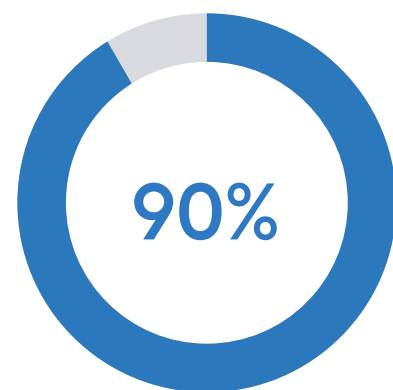
1. Target core functions for AI-driven augmentation
Explore areas for generative AI to support knowledge work and accelerate creativity

2. Assess and expand on existing process automation
Apply Generative AI solutions to existing process automations to further streamline for efficiency

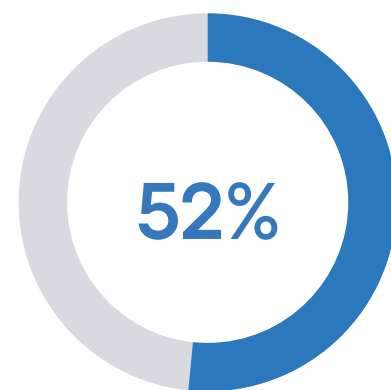
3. ID opportunities to pre-process data
Utilize Generative AI to reduce or replace human data processing, gaining speed and accuracy

4. Deploy generative assurance
Apply Generative AI to business processes to continuously and completely audit quality, regulatory compliance and more

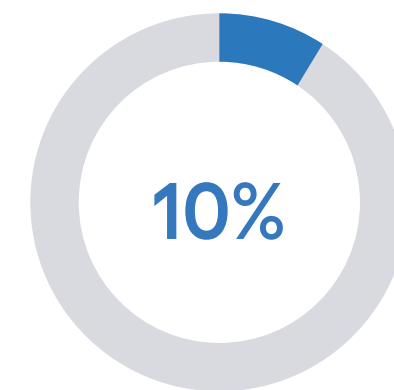
By 2032, few jobs could go untouched by generative AI



Some impact:
Exposure scores of at least 5%



Greatly impacted:
Exposure scores of at least 25%



Little impact:
Exposure scores of 5% or lower

Most jobs will see some change from gen AI, and over half could be greatly impacted.

Source: Oxford Economics and Cognizant⁹.



Set new expectations with your suppliers

It's every company's job to evolve

The early big press-makers of Generative AI have been the expected parties. Hyperscalers have introduced new or evolved platforms for building AI solutions within their ecosystems. Myriad ultra-specialized startups have announced compelling new solutions to old problems (ex: Hyfe's¹⁰ cough sound monitoring for illness diagnosis). And service providers, like us, are launching new accelerators and labs for Generative AI development.

But Generative AI is coming for every product, in every market. That goes well beyond the early adopters and it includes you, your competition and your suppliers.

As you seek to leverage Generative AI to unlock new efficiency, differentiate experiences, maximize quality, find cost-savings and evolve the business model, don't discount the role your suppliers will play in these improvements.

Whether a service provider, a manufacture or raw goods provider, a logistics service or any other company that plays a role in your operations, there is an advantage to engaging early in a dialogue about Generative AI.

Every one of your suppliers will be at a different stage of this journey. As they navigate use-cases, seek to answer questions about risks and control and otherwise dive into Generative AI, join them.

Why engage now?


- **You stand to gain from their improvements**
Suppliers are critical to your bottom line. Ask how they plan to improve SLAs, decrease total cost of ownership, operate faster and otherwise drive more business value for you and other customers.
- **You will learn from one another**
As all companies are learning, work with suppliers to understand their own findings, partnerships and interest areas. Formalize shared learning between strategic teams and capture insight.
- **Open the door to more data**
As you engage with your suppliers, consider internal solution opportunities and how supplier data might improve model training and solution delivery. Bring predictability, new product ideas, streamlined operations and more to life.

From supplier to partner

As the innovation potential of Generative AI becomes clear to more organizations, the opportunity to create wholly new experiences, services and processes by partnering with suppliers on a joint journey will become compelling for many businesses.

Going well beyond the cost savings of a joint investment, with enriched data, access to more skills and beyond, these partnerships might benefit both parties in dramatic ways when executed well. Consider the role of each key supplier within your service or product delivery and move the discussion beyond what they can do with AI for you.





To learn more about Cognizant's
Generative AI solutions:

[https://www.cognizant.com/us/en/
services/ai/generative-ai](https://www.cognizant.com/us/en/services/ai/generative-ai)

Dive deeper into this topic and learn
about the kinds of Generative AI work
Cognizant is doing with our clients:

[https://www.cognizant.com/us/en/
insights/tech-to-watch/generative-ai](https://www.cognizant.com/us/en/insights/tech-to-watch/generative-ai)

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About Cognizant

Cognizant (Nasdaq-100: CTSI) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the US, Cognizant is ranked 185 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at [cognizant.com](https://www.cognizant.com) or follow us @Cognizant.

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