

Generative AI: Implications for PE Investors

Operational and Portfolio Overview

June 2023

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Scope of the assessment

1	What is GenAI, why now, and why it matters	Overview of foundation models, the tech stack, why now, what the current capabilities are, and what the expected impact is
2	GenAI's impact on Private Equity	
2a	Impact on Portfolio and new deals	Framework for how to evaluate GenAI's impact on portfolio industries, functions and targets
2b	Impact on PE operations	GenAI use cases in fund mgmt. from fundraising to investing to portfolio mgmt.
3	How to proceed with Gen AI deployment	Immediate next steps; Introduction to GenAI control tower to coordinate fund-wide efforts
4	Why BCG for the GenAI journey	Why BCG is a thought leader in GenAI
5	How to partner going forward	Areas where BCG can support, our approach and commercial offer

Key Messages

1

GenAI is already proving to be a game-changer: Significant productivity increases have already been reported and companies' value propositions are being challenged with significant impact on enterprise value

2

GenAI's impact on an industry basis should be analyzed from two complementary lenses: Productivity gain potential (cost and/or effectiveness improvements) and its Value proposition change (new product & business models) distinctly impact businesses

3

Actions required depend on type of impact: Funds should scan portfolios for horizontal productivity gain potential and PortCo-specific value proposition changes. Productivity gain potential implies org changes, value prop changes require strategic reviews

4

People and process change are the most critical factors to succeed: Whilst data and technology are important, organizational transformation through GenAI is 70% about People, 20% about Processes, and only 10% about Tech

5

As an immediate step, funds need to start assessing impact across its portfolio, in fund operations and its investments strategy; as efforts develop, a GenAI control tower setup can serve as a focal point of efforts and drive coordination

In addition to risks, GenAI presents meaningful investments opportunities across industries. These requires assessments on a sub-sector basis, and will be the focus of upcoming perspectives



Agenda

> What is GenAI, Why now, and Why it matters

GenAI's impact on Private Equity

Impact on portfolio and new deals

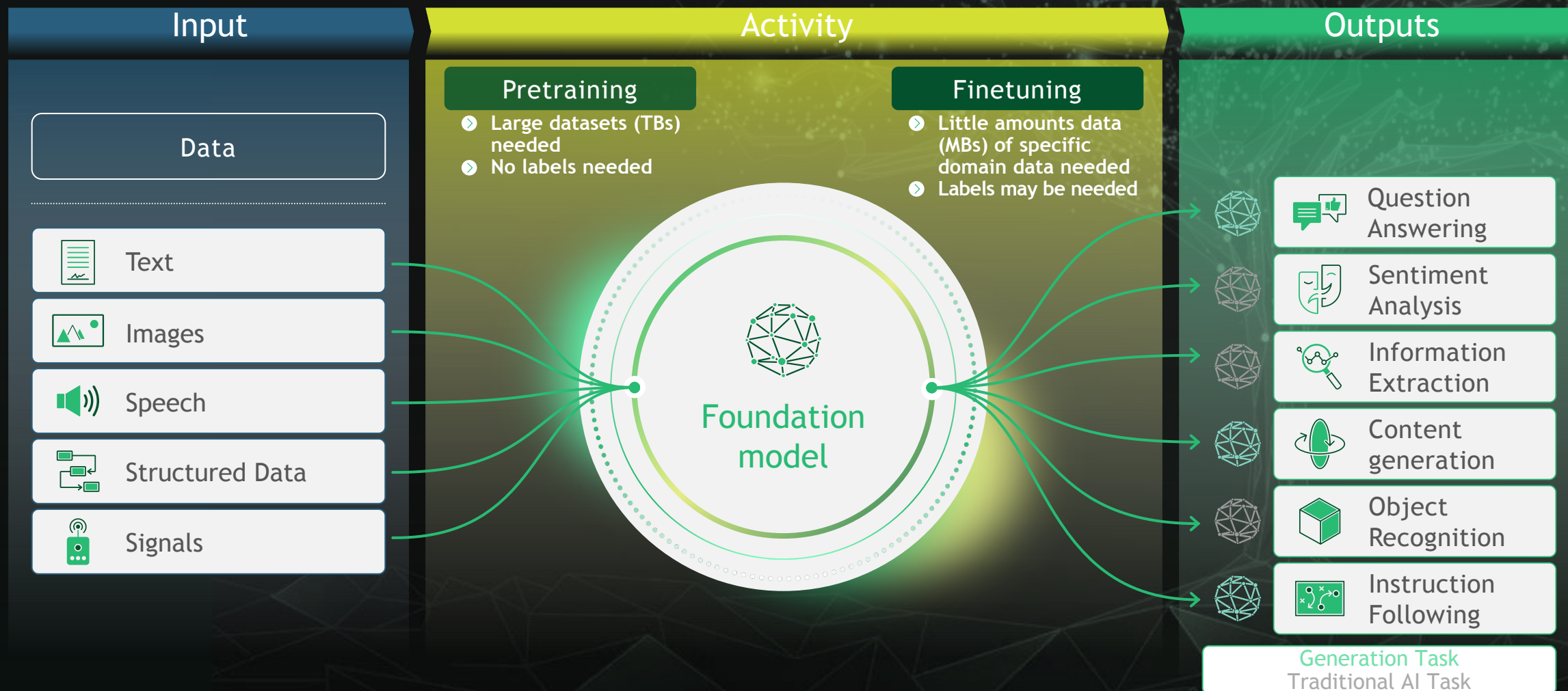
Impact on PE operations

How to proceed with GenAI deployment

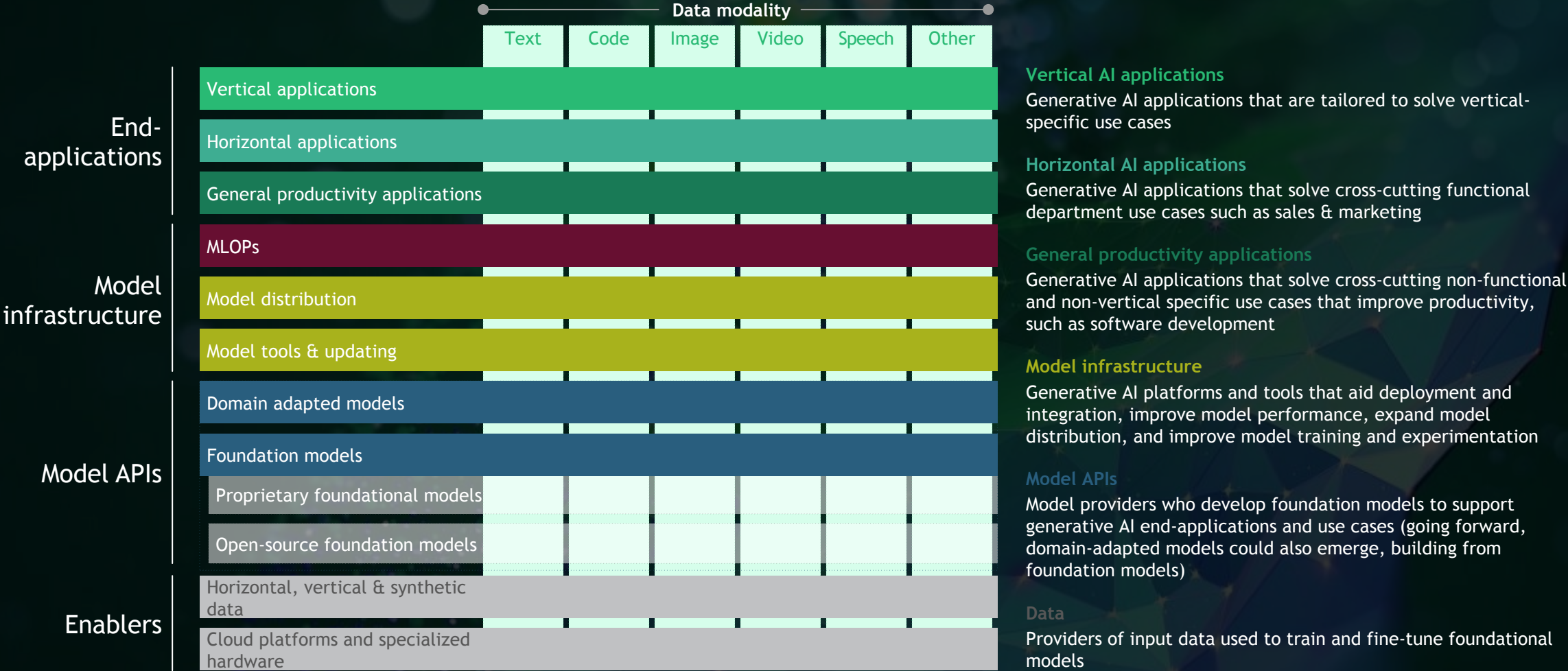
Why BCG for the GenAI journey

How to partner going forward

Generative AI (Gen AI) refers to the application of foundation models in order to create original content across various modalities



The GenAI tech stack builds from data, foundation models, & infrastructure layers to support end-applications



Source: Expert interviews; BCG analysis

GenAI is already proving to be a game-changer

Productivity gains are real and proven

55%

faster completion of coding tasks with higher success rate using **GitHub CoPilot**¹

37%

faster completion of knowledge work with comparable quality results using **OpenAI ChatGPT**²

Companies' value prop are being challenged

-49%

drop in Chegg's stock share price after CEO attributed the slowdown in subscriptions to Chat GPT

Barriers to AI are lower than ever

Conversational UX eases human adoption

Same model can handle **multiple downstream** tasks

Robust against unstructured, unlabeled messy data

2 months

to 100M users for **OpenAI ChatGPT**, the fastest product on record⁴

Widely expected to create outsized value

~\$20B+

of committed VC funding for Generative AI in the last three years alone⁵

1. <https://github.blog/2022-09-07-research-quantifying-github-copilots-impact-on-developer-productivity-and-happiness/>
2. <https://joshbersin.com/2023/03/new-mit-research-shows-spectacular-increase-in-white-collar-productivity-from-chatgpt>
3. <https://www.cnbc.com/2023/05/02/chegg-drops-more-than-40percent-after-saying-chatgpt-is-killing-its-business.html>
4. Reuters, Yahoo! Finance, OpenAI
5. Crunchbase, Pitchbook, BCG Analysis



Agenda

What is GenAI, Why now, and Why it matters

➤ **GenAI's impact on Private Equity**

Impact on portfolio and new deals

Impact on PE operations

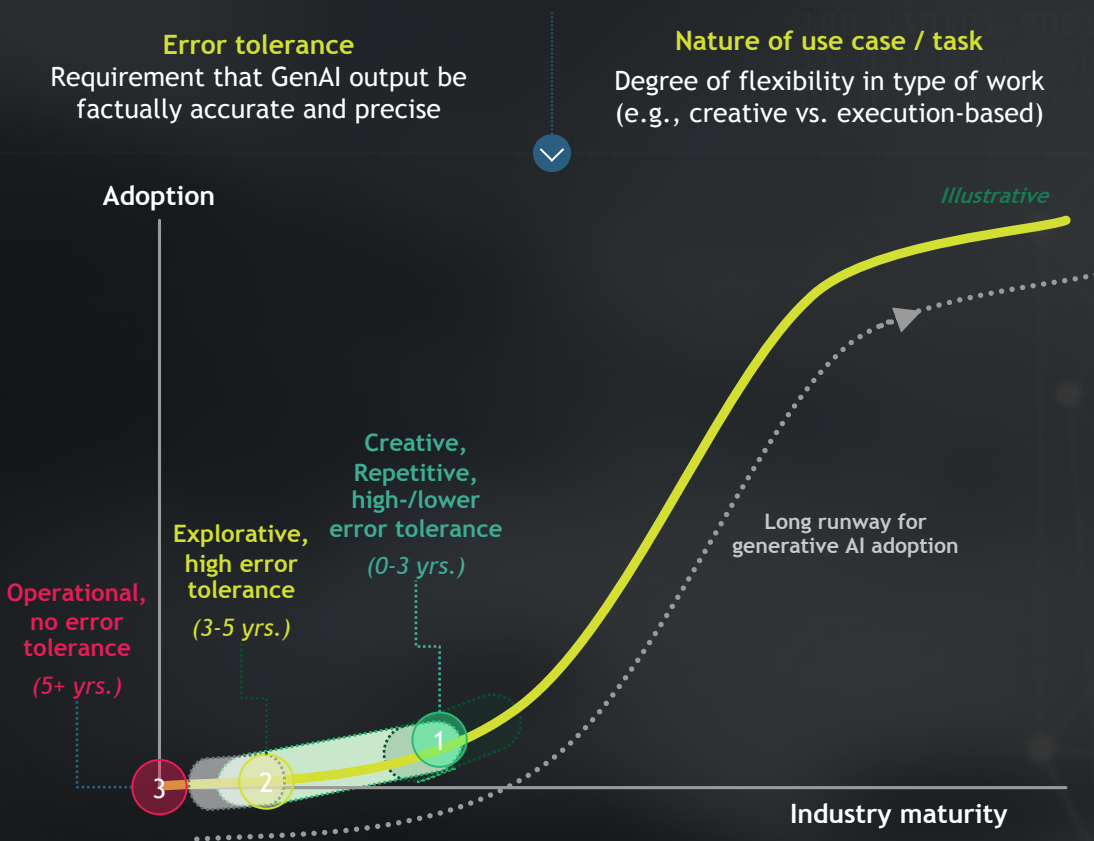
How to proceed with GenAI deployment

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Early adopters and uses cases likely to emerge in more error-tolerant or easily audited use cases

Timing of impact depends on creative requirements and error tolerance...



...with uses cases falling into 3 key categories

- 1 Near-term | Creative, repetitive, highly error-tolerant or easily-audited use cases**
 - Use cases for frequently generating new material, and that do not vary widely between verticals (e.g., draft marketing copy vs. research report)
 - Use cases involving time-consuming, repetitive workflows, and that would create competitive or cost advantages for mature companies
 - Examples:* draft marketing copy, logo creation, ad text/image generation, art media, grading for short-answer questions, audio/video/image correction, product review summarization / aggregation
- 2 Mid-term | Explorative, error-tolerant, moderately auditable use cases**
 - Use cases for more complex, vertical-specific creative tasks, targeting identification of potential new solutions to complex problems
 - Examples:* Biopharma drug discovery; chemical synthesis pathways; CO2 alternative material discovery
- 3 Long-term | Operational, no error tolerance, limited audibility**
 - Use cases for generating, execution, or facilitating complex manual processes with highly specific requirements
 - Examples:* Industrial facility design; Machinery part design and tooling / 3D printing

GenAI has implications on three key dimensions for PEs

Focus of following sections



Impact on portfolio and new investments

GenAI impact on key portfolio industries, impact time horizon and how to prepare



Impact on fund operations

Use cases in fund mgmt. from fundraising to investing to portfolio mgmt.; shortlist 'transformative' use-cases

Focus of upcoming perspectives



Impact on Investment Strategy

Investment themes emerging from GenAI, Competitive landscape and dynamics



Agenda

What is GenAI, Why now, and Why it matters

GenAI's impact on Private Equity

- Impact on portfolio and new deals
- Impact on PE operations

How to proceed with GenAI deployment

Why BCG for the GenAI journey

How to partner going forward

GenAI will impact industries through both improvements in productivity, and fundamental changes to customer value proposition



1 Productivity gains

By automating or augmenting repetitive tasks, GenAI models can unlock cost benefits in back office processes, and/or revenue growth via improvements in service delivery, personalization, or customer experience



Need to urge portfolio companies to understand and adopt available GenAI tools and evolve their org & op model to realize productivity gains

Benefits of GenAI are expected to be two-fold



2 Value proposition change

By synthesizing large volumes of complex data, GenAI models can enable new offerings; while some industries likely to remain unaffected, many will benefit from complementary offerings and others may be exposed to new competition



Need to help portfolio companies to understand potential opportunities and risks and navigate strategic changes

1 Productivity gains | Most impacted corporate roles expected to be within marketing, customer service, legal, SW and knowledge management

Non-exhaustive

Degree of generative AI impact on roles

High impact

Functions that will likely see extensive or eventually full automation, resulting in one or more of cost reductions, demand generation due to via higher quality service, or ability to focus resources on higher-value tasks

- *E.g., GenAI customer service chatbots to support call center efficiency*

Marketing & advertising

Customer service

Legal

Software development

Research services & knowledge management

Medium impact

Functions likely to be benefited by automation of certain tasks, with potential cost reduction or per-head productivity benefits

- *E.g. generation of finance reports*

Finance & Administration

Human resources

Product development

Engineering

Business development & Sales

IT Support

Research

Healthcare Services

Low impact

Functions with less direct impact from GenAI, but likely some benefit from general productivity applications

- *E.g. email generation*

Operations

Management

Community & social services

Manufacturing workers

Construction workers

Transportation

Mining & extraction labor

Maintenance and repair

Key use-cases per role covered ahead

2 Value proposition impact | Most industries will see either competitive shifts from new services, or little change; few expected to be completely automated

Non-exhaustive

Degree of generative AI impact on value proposition

Significant impact

Businesses whose offerings can be entirely replaced with GenAI services, being both undifferentiated / commoditized and not dependent on making or tracking a change in a customer's physical environment

- e.g., translation services, copywriting

Translation services

Personal assistants

Chatbots

Public information aggregators

Fact-based reporting (e.g., sports results)

Industry disruption

Industries where players can gain competitive advantage / customer benefits by automating workflows, but differentiate on existing product, services and non-public data. Fast-adapting incumbents can retain share against new entrants, but could still lose revenue due to GenAI impact on profit pool.

- e.g., legal services, medical diagnostics

Capital markets and institutions

Media

Software

Biopharma

Healthcare diagnostics

White-collar services

Education

Proprietary data vendors / aggregators

Limited impact

Businesses predominantly revolving around providing or tracking physical goods and services, where the core value proposition relates to a change in the customer's physical environment

- e.g., dentists, food delivery, mining

Consumer and business products

Retail & apparel

Restaurants, hotels, leisure

Tech hardware and networking

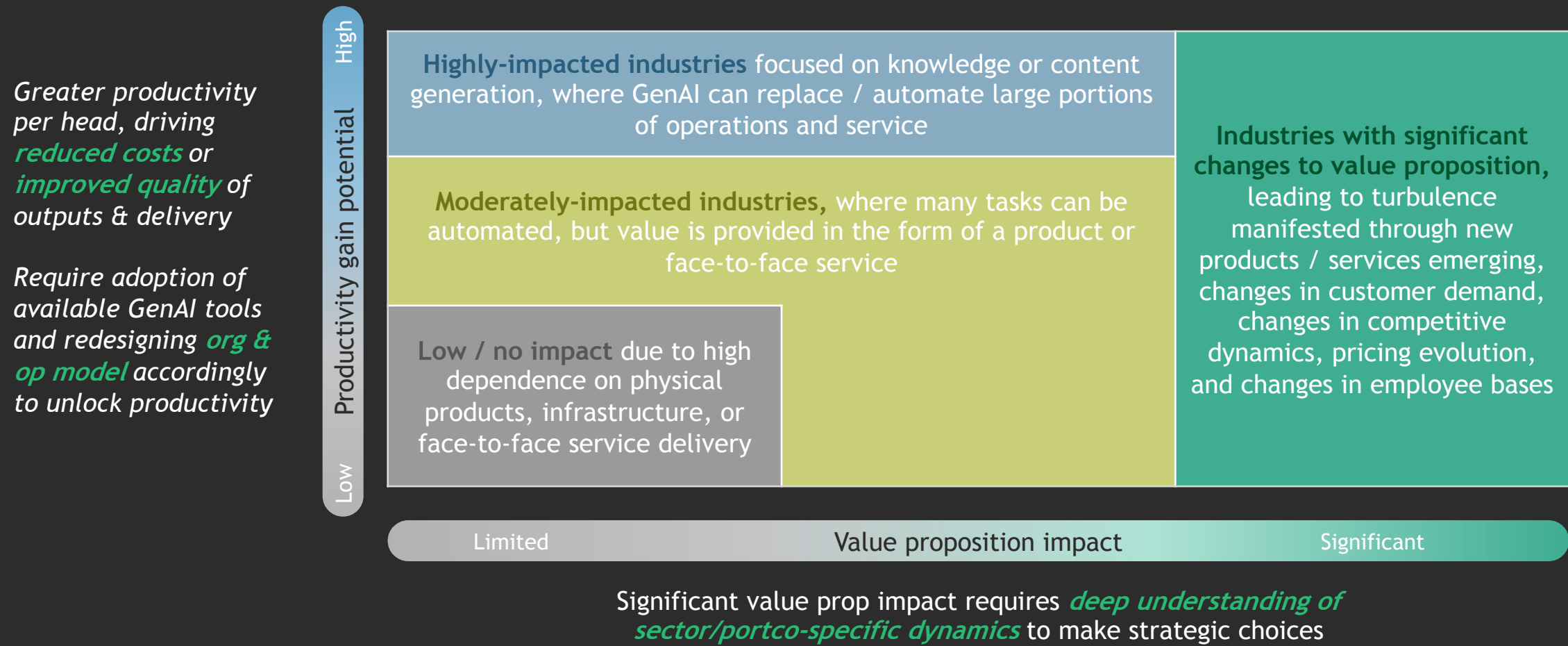
Transportation

Insurance

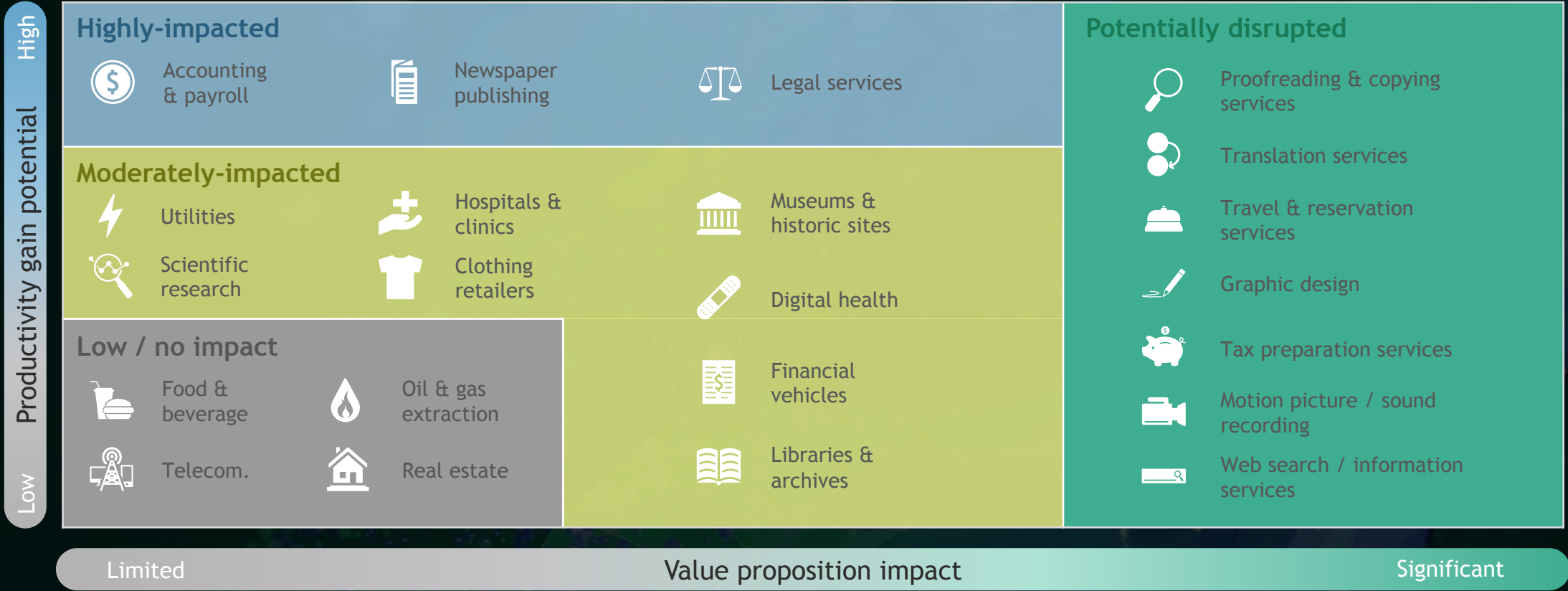
Healthcare delivery

Manufacturing

In aggregate, GenAI's impact on value proposition and productivity will most disrupt knowledge & content industries; less-digital sectors less impacted (1/2)



In aggregate, GenAI's impact on value proposition and productivity will most disrupt knowledge & content industries; less-digital sectors less impacted (2/2)



Low / no impact due to high dependence on physical products / services

Moderately-impacted due to task automation, but value provided in product / personal service

Highly-impacted as Gen AI can replace / automate knowledge & content generation

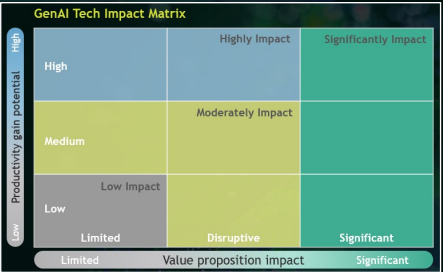
Fundamentally impacted as the value proposition has changed & new products / services have emerged

A set of consideration factors requires assessment to gauge the productivity gain potential and value proposition impact for portfolio and new investments

GenAI impact consideration factors

Illustrative

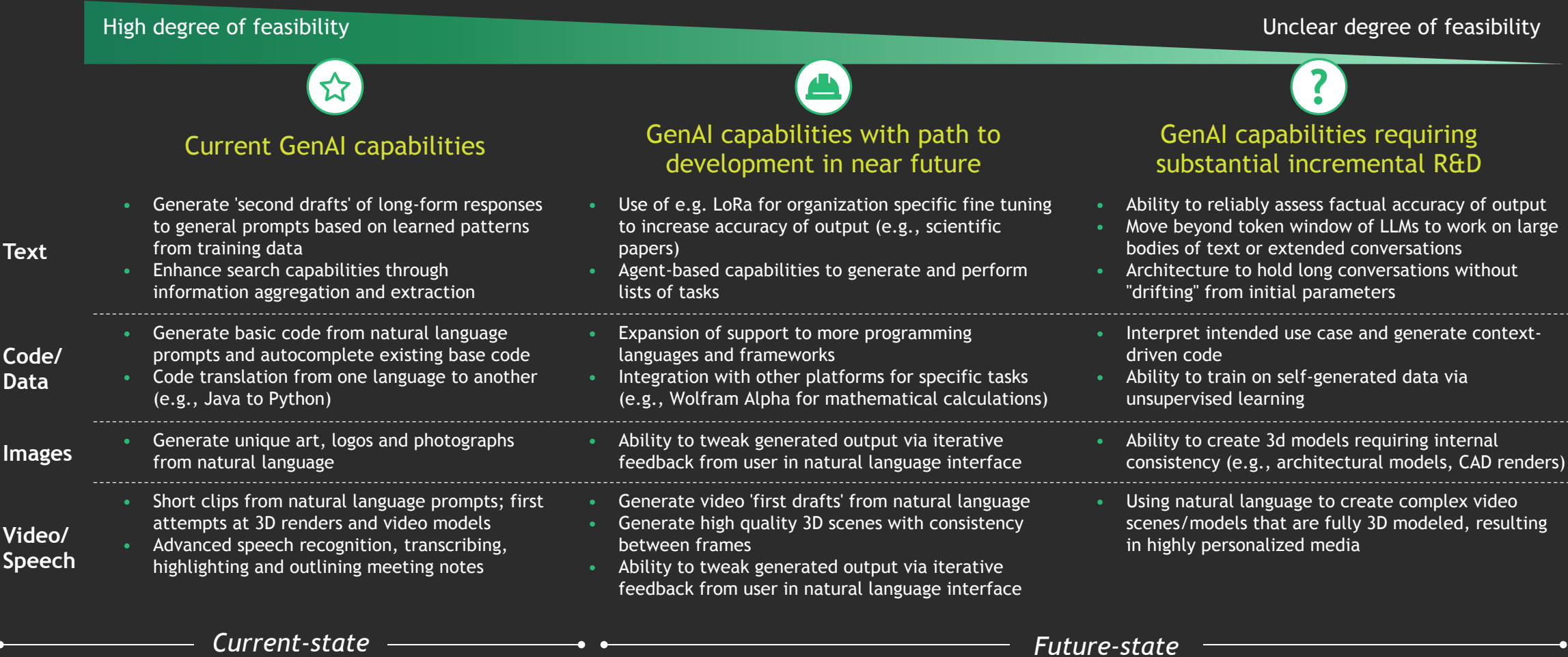
GenAI impact	Consideration factors	Questions to determine GenAI impact
<div>1</div> <div></div> <div>Productivity gain potential</div>	Efficiency gains	How much of companies' total cost basis can be reduced by adopting GenAI-enabled software solutions?
	Effectiveness gains	How can GenAI impact the quality of outputs?
	Operating model shifts	To what degree will companies' operating models (e.g., workforce composition, workflow, job responsibilities) change due to AI?
	Adoption barriers	To what degree do sector-specific barriers exist (e.g., regulation, legal threats) and what is their impact (e.g., require legislation, customer preference shift)?
<div>2</div> <div></div> <div>Value proposition Impact</div>	Competitive impact	To what degree does GenAI enable new product offerings, which may either reset competitive dynamics through substitution or induce greater competitive intensity?
	Demand impact	To what degree will GenAI erode or increase demand? Is the mix shift favorable or unfavorable?
	Price and margin impact	To what degree will GenAI drive a commoditization of prices or margin? Alternatively, would companies be able to improve margin given productivity gain?



Bespoke assessments of consideration factors conducted to determine 1. Productivity gain potential and 2. Value prop. impact for a given sector or company driven by GenAI technology

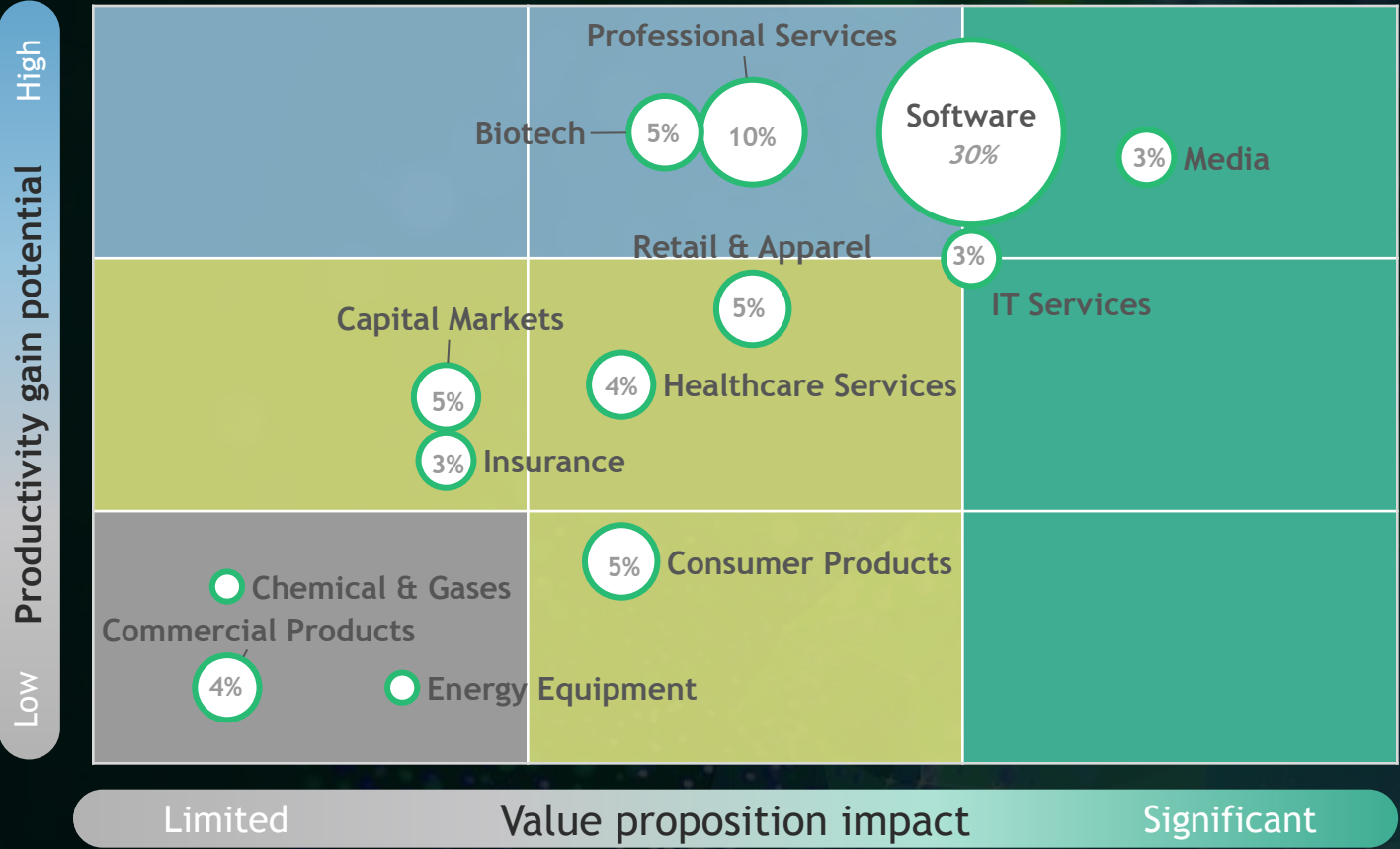
Assessment of each criteria includes evaluation of current GenAI technology, and how it is expected to evolve

GenAI capabilities are continuously developing; as such, assessing GenAI's impact requires considering current as well as potential future capabilities



40-50% of avg PE portfolio within industries expected to have high impact from GenAI - though sub-sector & company specific analyses are warranted

Example of Industries¹ - Average global top 20 PE funds portfolio (% of total)



Whilst general patterns exists, GenAI's impact will be vastly different for sub-sectors and companies within industries



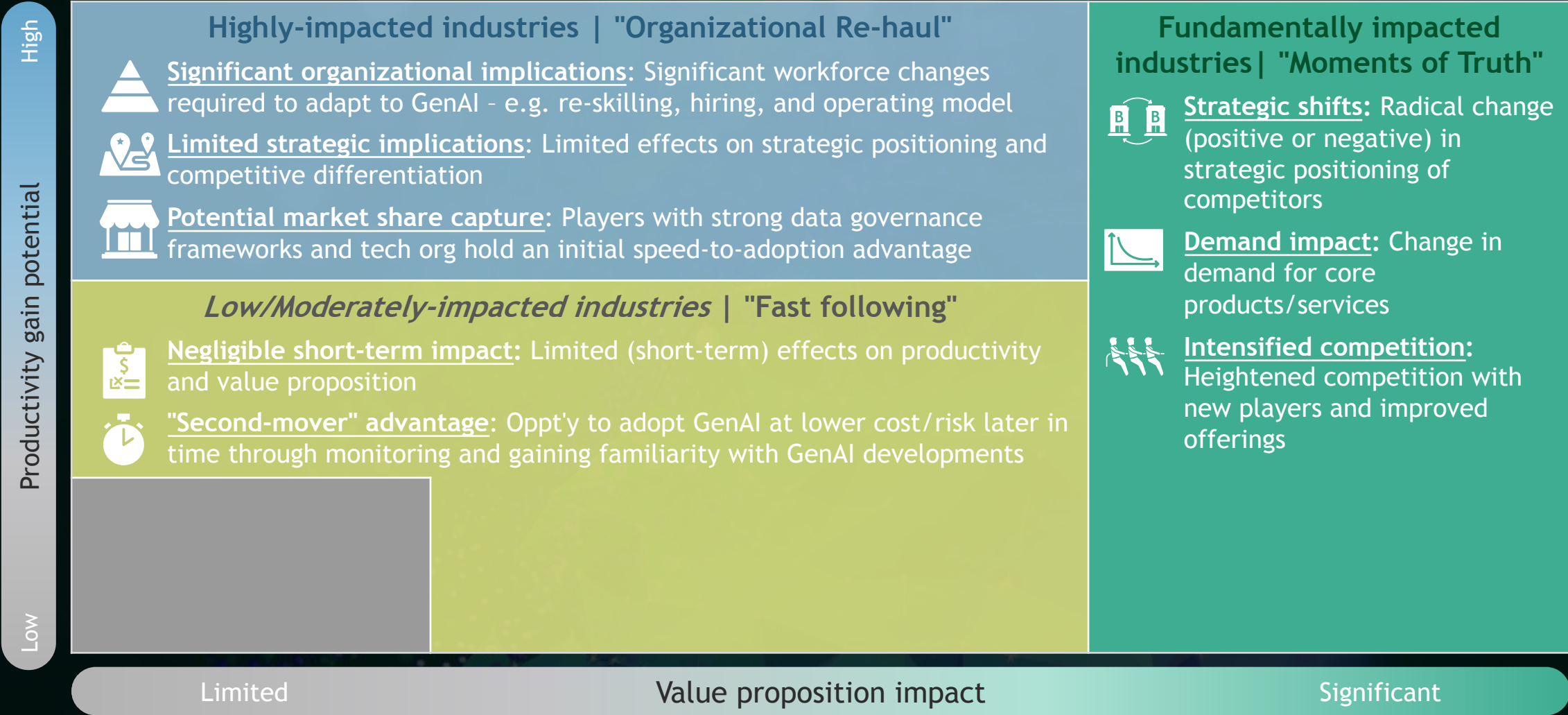
Size of bubble = Approx. portfolio share of PE funds

Source: BCG analysis; Notes: (1) example set and not exhaustive of all industries; penetration is estimation

What does this mean for PE?



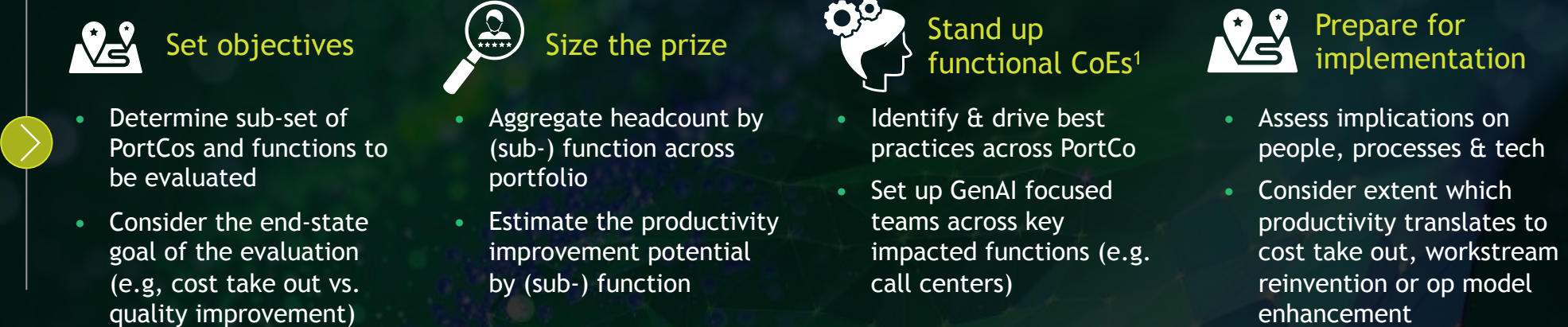
PortCo implications | Org. changes required in PortCos exposed to high productivity gain potential, whilst value prop changes require strategic review



Fund actions | Identify cross-portfolio productivity gain potential and assess strategic implications of value proposition changes for impacted PortCos

Productivity gain potential:

Identify and implement operational best practices across portfolio, function by function



Value proposition impact:

Screen for highly impacted industries and assess strategic implications PortCo-by-PortCo



1. Center of excellence



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GenAI's impact on Private Equity

Impact on portfolio and new deals

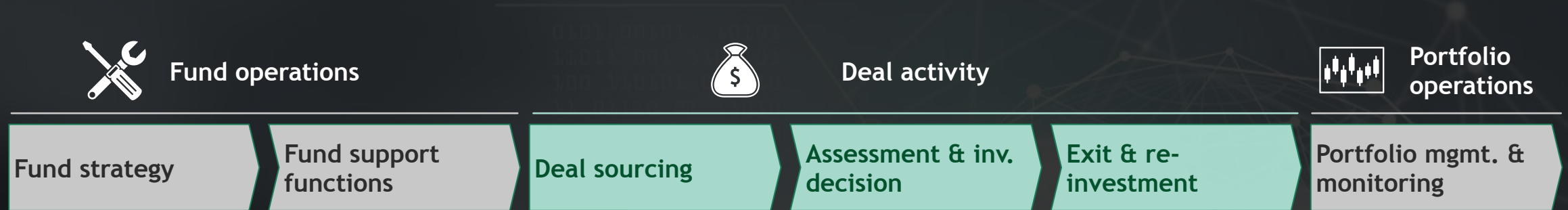
➤ Impact on PE operations

How to proceed with GenAI deployment

Why BCG for the GenAI journey

How to partner going forward

Four main GenAI capabilities that can be leveraged across PE operations













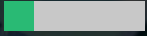



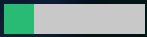

Automating/Assisting analysis: e.g, Sentiment analysis, data cleaning, market dynamics and trends, areas of concern / uncertainty

Content summarization & synthesis: e.g., summarization of expert interviews, long documents, publications,. (IR updates/ portfolio developments)

Knowledge mgmt. & access: Increased self-service / access to internal data, policies, training and advanced applications

Content creation: E.g., presentations (pitch decks etc.) and documents (emails, marketing material, legal contract drafting, etc.)

Potential products for private equity operations enabled by GenAI (1/2)

Product	Description	Adoption timeline	Value & impact
Investment themes identification	Early identification of emerging investment themes based on e.g. social media, news discussions, market publications and developments, investments and/or expert interviews		
Investment success factor identification	Identifying and detailing investment criteria for target screening based on past successful investments, market developments and desired investment themes to invest behind		
Investor relations (Fundraising analytics, relationships)	Identifying new potential investors across data sources and internet outside of traditional databases, and based on their lifecycle tailor products and timing to their emerging needs		
Product development assistant (e.g. coding)	General product development, incl. e.g., code writing assistance for IT department to accelerate IT developments and data science efforts across the company		
Risk monitoring (LP financing, and compliance)	Risk and compliance monitoring across support functions, incl. KYC/AML, invoicing and expense compliance, LP agreement and regulatory / legal compliance monitoring		
Talent mgmt. (marketing, interview assessment, recruiting)	Create job descriptions and personalized outreach, and by analyzing missing team capabilities using employee data, such as performance reviews and job history, it can help suggest applicants to target or review, as well as to help interview process		
Landscape assessment (dynamics in particular segments)	Analyze large volumes of data from various sources and generate insights that aid landscape assessment ahead of specific target identification		
Target identification, filtering and comparison	Identify potential targets based on investment criteria, competitive environment and investment thesis		

Note: Adoption and impact quantification is to be considered relative to one another (what will be the first, middle and last group of applications emerging)

Source: Desktop research; BCG analysis

Short-term



Long-term



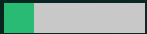



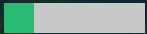








Degree of impact

Wide adoption in:

Short-term <3yrs

Long-term >5yrs

Potential products for private equity operations enabled by GenAI (2/2)

Product	Description	Adoption timeline	Value & impact
Due diligence assistance	Generative AI creates research and outline content of (pre-) due diligence (incl. market dynamics, landscaping etc.) in addition to identifying key analysis questions		
Deal structuring tool	Tool to draft deal structure and align incentives efficiently across stakeholders to create customized offer to decision makers		
Market survey creation and analysis	Creation of market survey questions in research process, e.g., customer sentiment or customer KSC, and preliminary analysis of survey results		
VDD & Sales material assistance	Draft first version of VDD and sales prospectus including company profile, historical financial information etc., and facilitate data collection, research as part of prospectus		
Automated exit assistant (process mgmt.)	Generative AI powered assistant to manage and co-ordinate process stakeholders with scheduling, automated responses and transaction marketing to potential buyers		
Portfolio monitoring (risks and performance etc.)	Continuous portfolio monitoring of emerging risks and performance based on updating market conditions and developments with potential to synthesize data for outlook and sensitivity assessments		
Value creation plans and assistance	Creating creative value creation plans and ideas through analysis of current events and market dynamics, to best help portfolio companies grow their business		Variable
In addition, range of horizontal applications non-PE specific	Range of horizontal GenAI applications for HR processes (recruiting, interviewing, etc), legal (contracting, compliance reviewing, etc.), finance (invoicing, expensing), marketing (Variable	Variable

Note: Adoption and impact quantification is to be considered relative to one another (what will be the first, middle and last group of applications emerging)

Source: Desktop research; BCG analysis

Short-term



Long-term



Degree of impact

Wide adoption in:

Short-term <3yrs

Long-term >5yrs



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Impact on portfolio and new deals

Impact on PE operations

➤ How to proceed with GenAI deployment

Why BCG for the GenAI journey

How to partner going forward

Several immediate steps for your GenAI roadmap

Portfolio Actions

- **Assess entire portfolio** and identify opportunities, efficiencies and risks arising from GenAI, analyzing its impact on productivity and value proposition
- **Start identifying 'transformative use cases'** for internal operations, partner up to experiment with technology
- **Start evaluating 'Responsible AI' policies** for the organization to manage potential risks

Investment Actions

- **Review investment strategy**, including identifying investment themes in GenAI

Setup GenAI control tower to coordinate efforts across the organization and within the portfolio

Generative AI does still come with risks...



Intellectual property and copyright infringement



Biased outputs



Cybersecurity and data privacy



Hallucination / confidently wrong answers

... but many of these can eventually be mitigated with the right Responsible AI approach



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What makes BCG unique in this space?

1

Cross-functional teams with specialized skillsets across the AI/ML stack with proven track record of enabling applications in GenAI

2

Deep understanding of how investors are assessing the GenAI landscape globally

3

Prioritized access to the underlying tech and a firsthand experience in enterprise-grade & data security key topics

4

Strong reputation of success with proven experience in enterprise-grade topic

BCG X

3,000+

tech build & design team

Advisor to
world leading PE Funds
and Software Investors



1750+

AI Engagements in 2022

600+

GenAI Practitioners

BCG's collaborations can help accelerate Generative AI journey with our clients



Potential usage

- Versatile, numerous use cases across text, image & code generation



Benefits

- Priority access & experienced teams
- Capabilities to scale solutions
- Bespoke solutions
- Low entry cost, easy set-up



- Supports full range of use cases across text, image, code, spoken dialogue, audio and music, and video
- Create chatbots and search applications in minutes without code

- Enterprise-ready to deploy at scale on Google Cloud
- Ensures control of client data to prevent leakage
- Cost optimized and manageable at scale
- Grounded in factuality
- Leverages Google's deep history of AI expertise



- Clients who require ownership of custom private model
- For proprietary, IP-driven use cases (e.g. Knowledge Management)
- Full-stack, full-service enterprise apps with production requirements

- Domain and customer specificity, trained on full client dataset
- Ready for deployment at scale
- Integrated teaming with Intel experts
- Flexible hosting options (cloud, on-prem)
- Full-service enterprise offering with 8x260 L3 support



- Various use cases across text, image & code generation

- EU hosting capabilities
- Seamless set-up (tech and contractual) for enterprises using Azure stack
- Strong capacity for joint GTM and customer support (including engineering support)



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➤ How to partner going forward

BCG is already supporting clients on their GenAI journey in several ways

- Best next steps to identify and strategize on how to address GenAI opportunities and risks



Portfolio scan: Productivity gains

Identify (sub-)functions and processes with high productivity gain potential across the portfolio

Develop plan for how to capitalize on opportunity and roll out in organizations



Portfolio scan: Value proposition changes

Identify portfolio companies most likely to experience industry turbulence (positive or negative)

Strategize on how to mitigate risks and capture opportunities



PortCo deep-dives

Conduct a detailed, customized assessment on GenAI's impact on businesses

Determine highest ROI actions (e.g., productivity gain or value proposition initiatives)

Deep-dives on following pages



Use Case development and & deployment

Explore and prioritize use-cases based on potential impact, feasibility and fit

Build, test deploy and GenAI at scale

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