Reinvention with Gen AI:

Ethical Considerations for the Use of AI in Public Health

May 2024

Economic Impact of Generative AI

Ecosystem Investment

Technology companies are investing in AI more than any other technology

$130B

Economic Impact

Generative AI could increase global GDP by

$7T

Generative AI could increase annual US GDP by

Up to **1.5%**

Catapulted by advances in gen AI, Technology is the no. 1 cause of change

76% of executives saw gen AI as more of an opportunity than a threat

Only **27%** of executives claim their organizations are ready to scale up gen AI.

95% of executives believe gen AI will compel their organization to modernize its tech architecture

(Accenture research)

Gen AI has become a top priority for the Executives
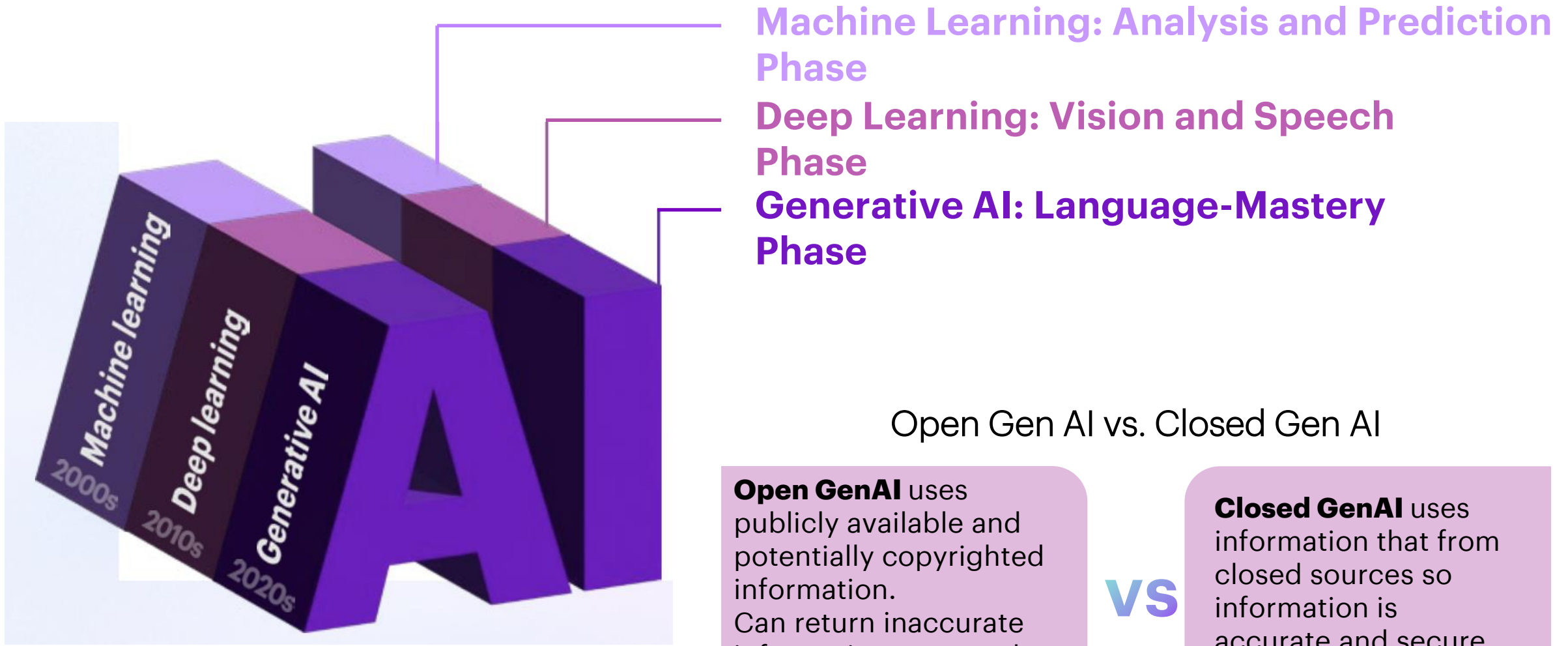
80% of conversational AI offerings will have gen AI embedded by 2025, up from 20% in 2023.

90% of service providers will use gen AI for software development services by 2027
(Gartner)

Generative AI is a **step change** in the evolution of AI.

Machine Learning: Analysis and Prediction Phase

Deep Learning: Vision and Speech Phase

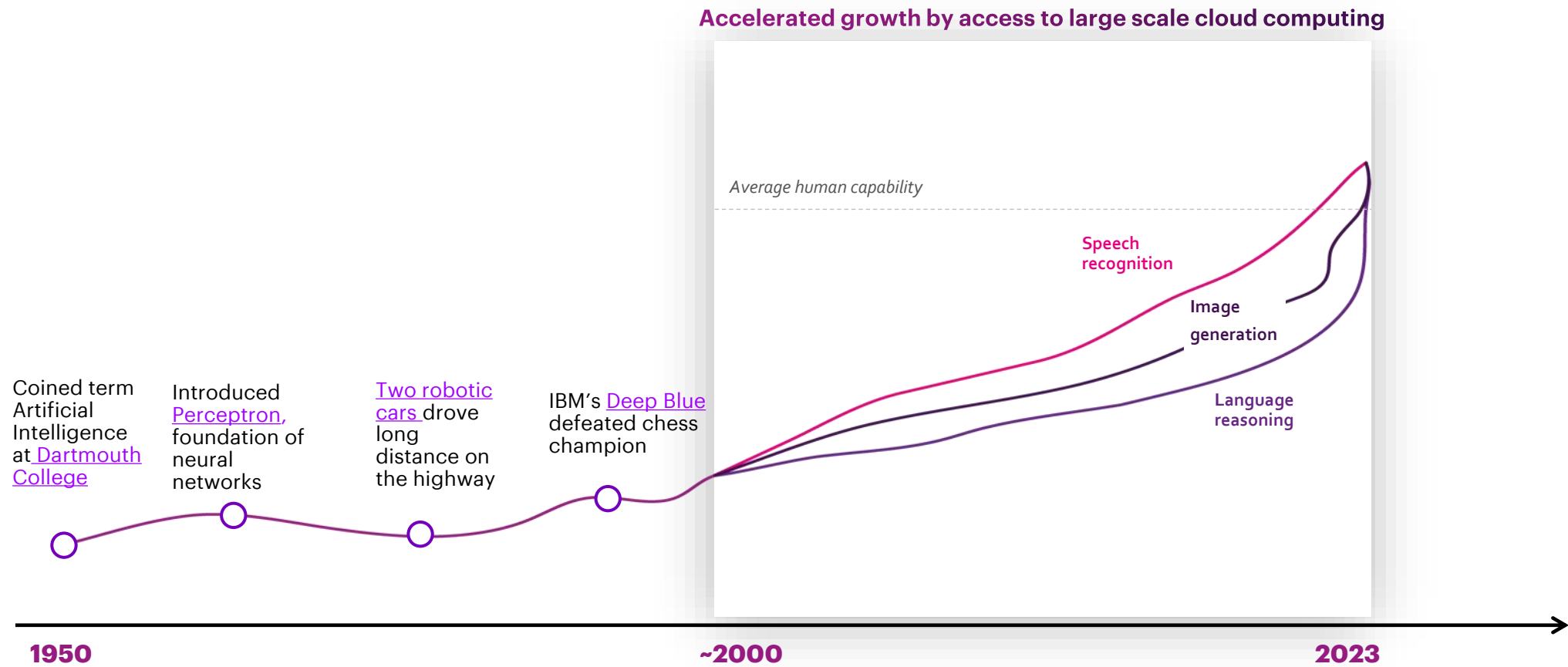**Generative AI: Language-Mastery Phase**

Open Gen AI vs. Closed Gen AI

Open GenAI uses publicly available and potentially copyrighted information.
Can return inaccurate information as a result.

VS

Closed GenAI uses information that from closed sources so information is accurate and secure.

Cloud-base AI engines are surpassing human capabilities

Accelerated growth by access to large scale cloud computing

Average human capability

Speech recognition

Image generation

Language reasoning

Coined term Artificial Intelligence at Dartmouth College

Introduced Perceptron, foundation of neural networks

Two robotic cars drove long distance on the highway

IBM's Deep Blue defeated chess champion

1950

~2000

2023

We are at an inflection point where AI capabilities are reaching and driving beyond human capabilities at generalized skills

Generative AI is pushing creative expression forward by giving people tools to create content and can optimize organizations

Code

For developers who enabled it, 40% of their code is written by CoPilot, GitHub's AI assistant or AWS Codewhisperer. This will make the creative use of code more accessible to non-developers

Text

The most advanced domain, which has already passed Medical, Law, and Business exams. As models improve, we will see higher-quality outputs and longer-form content.
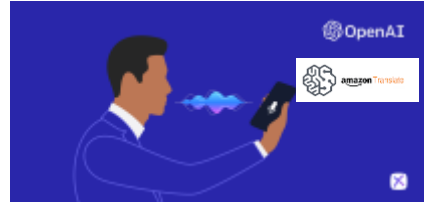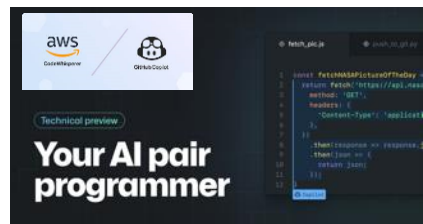
Video

The Crow, an AI movie, won the 2022 Cannes festival in the category of short films
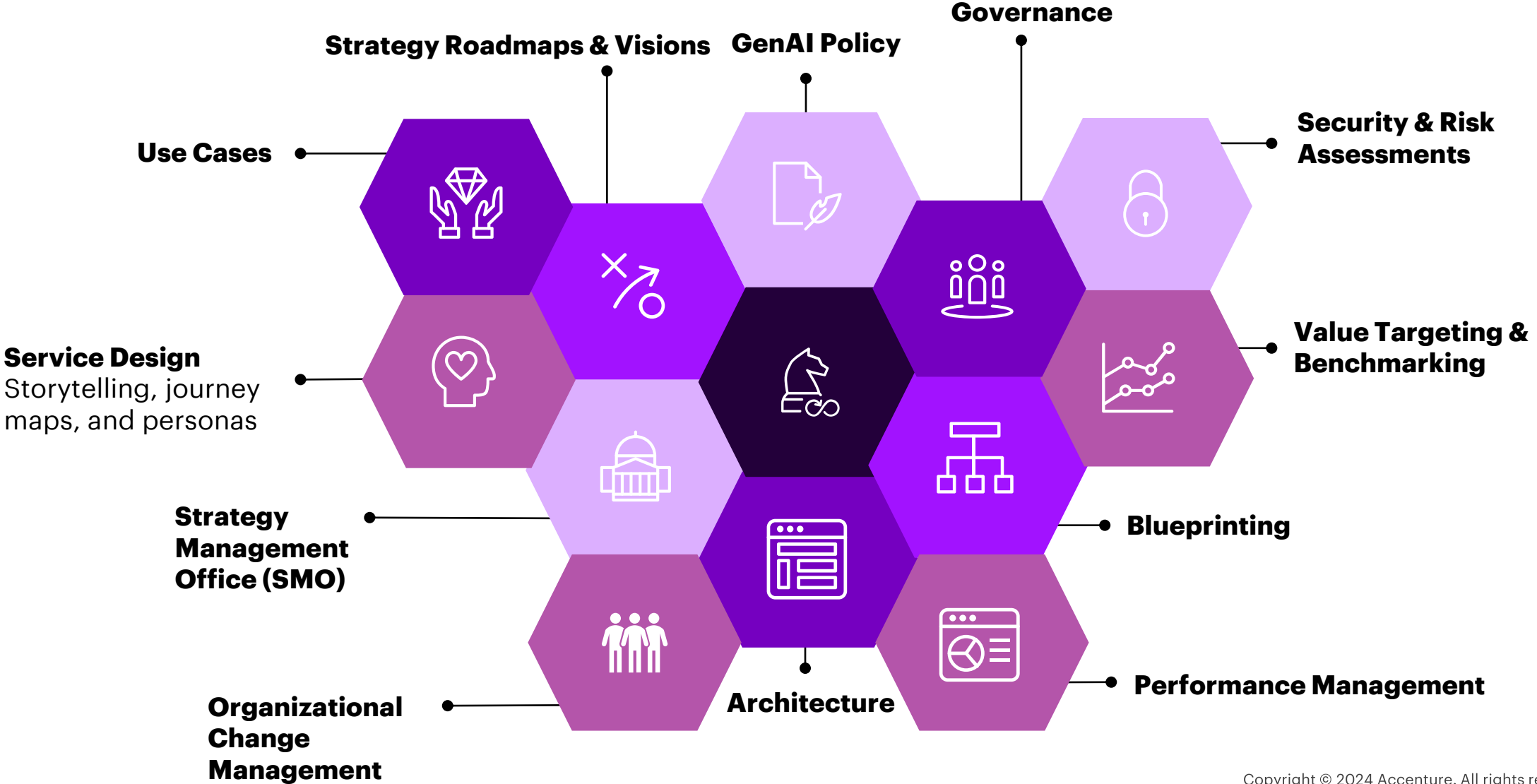
Images

This is one of the most famous applications as the images AI can create are incredible and even won the top prize in a painting competition

Speech synthesis and translation

Whisper understands speech better than humans, even with background noise, and can translate between virtually any language.
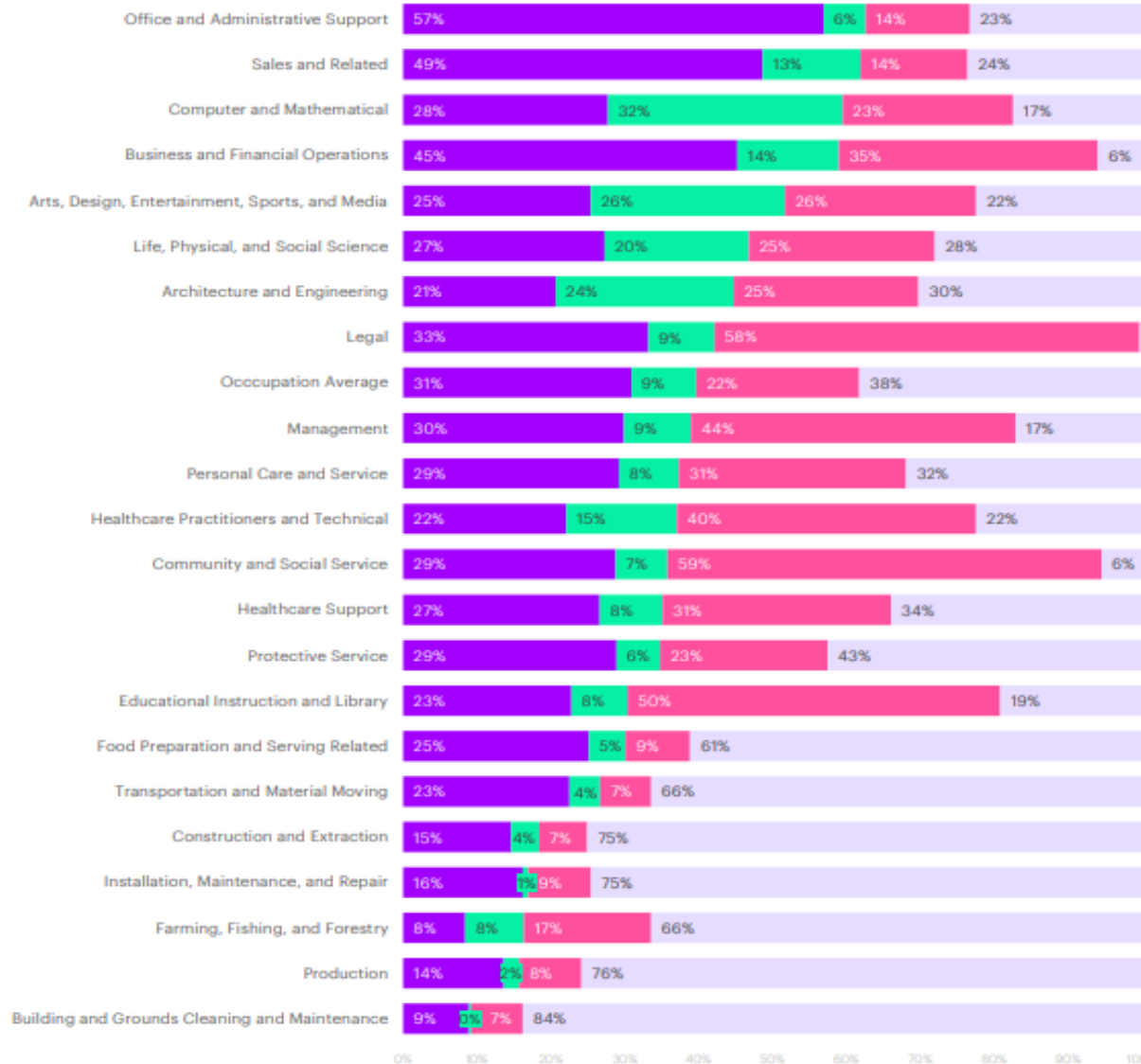
Core building blocks for an organization's GenAI strategy

Governance

Strategy Roadmaps & Visions

GenAI Policy

Security & Risk Assessments

Use Cases

Service Design
Storytelling, journey maps, and personas

Value Targeting & Benchmarking

Strategy Management Office (SMO)

Blueprinting

Organizational Change Management

Architecture

Performance Management

Generative AI Will transform work across every job category

Take a people-first approach

Success with generative AI requires an equal attention on people and training as it does on technology. Companies should therefore dramatically ramp up investment in talent to address two distinct challenges: creating AI and using AI. This means both building talent in technical competencies like AI engineering and enterprise architecture and training people across the organization to work effectively with AI-infused processes. In our analysis across 22 job categories, for example, we found that LLMs will impact every category, ranging from 9% of a workday at the low end to 63% at the high end. More than half of working hours in 5 of the 22 occupations can be transformed by LLMs.

Occupation	Higher potential for automation	Higher potential for augmentation	Lower potential for augmentation or automation	Non-language tasks
Office and Administrative Support	57%	6%	14%	23%
Sales and Related	49%	13%	14%	24%
Computer and Mathematical	28%	32%	23%	17%
Business and Financial Operations	45%	14%	35%	6%
Arts, Design, Entertainment, Sports, and Media	25%	26%	26%	22%
Life, Physical, and Social Science	27%	20%	25%	28%
Architecture and Engineering	21%	24%	25%	30%
Legal	33%	9%	58%	
Occupation Average	31%	9%	22%	38%
Management	30%	9%	44%	17%
Personal Care and Service	29%	8%	31%	32%
Healthcare Practitioners and Technical	22%	15%	40%	22%
Community and Social Service	29%	7%	59%	6%
Healthcare Support	27%	8%	31%	34%
Protective Service	29%	6%	23%	43%
Educational Instruction and Library	23%	8%	50%	19%
Food Preparation and Serving Related	25%	5%	9%	61%
Transportation and Material Moving	23%	4%	7%	66%
Construction and Extraction	15%	4%	7%	75%
Installation, Maintenance, and Repair	16%	1%	9%	75%
Farming, Fishing, and Forestry	8%	8%	17%	66%
Production	14%	2%	8%	76%
Building and Grounds Cleaning and Maintenance	9%	0%	7%	84%

Work time distribution by major occupation and potential AI impact

Based on their employment levels in the US in 2021

Higher potential for automation	Higher potential for augmentation	Lower potential for augmentation or automation	Non-language tasks

In 5 out of 22 occupation groups, Generative AI can affect more than half of all hours worked

Source: Accenture research "A new Era of generative AI for Everyone", 22 March

Generative AI Disruption Index

Public Service/Higher Education – Level 0 + 1

Integrated Eligibility
- Public Outreach/Digital Interactions
- Contact Center
- Eligibility/Case Management
- Benefit Distribution
- Forms and Notices
- Back Office
- Reporting/Analytics
- Licensing

Child Welfare
- Identifying Protective Factors
- Interpreting history
- Access to Policy/Practice

Child Support
- Custodial Parents
- Non-Custodial Parents
- Employers

Parks, Recreation and Culture
- Citizen Engagement / Contact Center
- Facilitates Management
- Grants Management

Tax and Revenue
- Customer Interaction
- Return Processing
- Collection
- Audit / Case Management
- Tax Agents / Advisors

Post and Parcel
- Customer Engagement
- Sales Support
- Postal Operations
- Back Office

Workforce Development
- Contact Center
- Unemployment Insurance/ benefits administration
- Job placement and career services
- Training and skill development
- Labor market information and analysis
- Employer Engagement and Business Services

Transportation & Infrastructure
- Transportation
- Infrastructure

Borders
- Customs and International Trade
- Immigration, Asylum, Citizenship
- Biometrics and Digital Identity at the border
- Ports Transformation

Public Safety
- Police and Law Enforcement
- Fire and Emergency Management
- Courts ad Justice
- Prisons / Correction
- Probation

Pensions
- Pension Member Engagement/Contact Center
- Benefit Administration
- Investment/Fund Management

Public Health
- Experience/ Engagement
- Enterprise System Transformation
- Back Office
- Middle Office
- Security

Defense
- Force Management
- Force Development
- Force Generation
- Force Employment
- Force Support

General Services / Administration & Budget
- HCM
- Procurement
- CIO / Technology
- Finance
- Payroll
- Case/Service Management

Nonprofit
- Fundraising
- Grants Management
- Enterprise Functions
- Program Delivery

Education
- Student Experience
- Growth Strategy
- Learning Experience
- Operation Optimization
- Security and Data Management

Agriculture
- Citizen Engagement / Contact Center
- Benefit / Payment Administration
- Land Management

Elections
- Elections Management
- Election Security
- Registration / Citizen Engagement

Business and Economic Development / Commerce
- Small Business Affairs
- Industry Affairs
- Disaster Recovery & Resilience

Consumer and Housing
- Community Planning and Development
- Citizen Engagement / Contact Center
- Housing

Environment and Natural Resources
- Forestry
- Water Management
- Mining, Oil, and Gas
- Citizen Engagement / Contact Center

Disruption Index | High | Medium | Low

Generative AI: Top Use Cases & Example Stories by Priority Area

Priority Area	Objective	Top Use Cases	Example Client Story
Citizen Services General Services & Education	**Changing the quality and value of citizen experience**	• Virtual Agent to Optimize Call Center performance • Case Management processing • Chat bots to accelerate citizen experience and access to data	**US State Tax Department:** Working with AWS to replace the existing machine learning algorithms with an LLM for incoming call intent Discovery. This will be available in August 2023.
Workforce	**Transforming workforce operations through automation and augmentation**	• Worker Co-pilot to reduce backlog and prioritize social service claims • Enhanced analytics to optimize decision making • Training and onboarding support	**UK Social Services:** Working with AWS building a worker co-pilot to help social services analyze and respond to 35k citizen communications and eliminate a 4 week backlog.
Enterprise	**Enabling end-to-end data led transformations at scale**	• LLMs deployed at enterprise scale to radically optimize complex workflows and document processing • Automated Benefit administration • Identity and security mgmt – addressing online threats to cyber security, improved response to non-emergency calls, etc	**Federal Agency:** Working with Google deployed LLM for a federal agency with 10,000 workers. Significantly reduced processing and submission time and estimated annual savings of $150M.
Mission Safety, Security (Cyber), and Defense	**Transforming our readiness protocol to keep people and the nation safe**	• Open-Source Intelligence, Discovery across large volumes of enterprise data	**Intelligence Agency:** Working on Azure to prototype a solution for analyzing large volumes of unstructured field reports to enable link and entity analysis.

Generative AI: Sample Use Case by Priority Area

Priority Areas

Sample Generative AI Use Cases

Citizen Services

Personalized Citizen Engagement	GenAI-Powered Citizen Service Chatbot	Citizen Intent Summarization	Sentiment Analysis	
Interactive Citizen Services	Scheduling Coordinator	Citizen Counseling/Coaching		

Workforce

Augmented Call Center	Live AI Assisted Agent	Post-Call Analysis/Summarization	Call Center Agent Compliance Review	On-Demand Digital Translator
Accelerated Workforce Efficiency	Employee-Facing Chatbot	Citizen Outreach Material Drafting	Enterprise Knowledge Management	Automated FAQ Creation and Curation
Training & Onboarding Support	Case Compliance Review and Monitoring	Training Material Generation	Needs-Based Upskilling Content	New Employee Onboarding Coach

Enterprise

Benefit Administration	Process Documentation Harvesting	Benefit Determination & Appeals Review	Legacy Modernization Documentation	
Trend Analysis & Recommendations	Public Health Trend Surveillance	Automated Policy/Legislation Review	Policy Development Support	
Augmented ERP Functions	RFI/RFP Generation	Code Assist For Developers	Performance Evaluation and Planning	Requirement to Test Script Co-Pilot

Mission

Low Latency Mission Analysis	Mission and Operational Analysis	Open-Source Intelligence Event Simulation	Soldier and Mission Readiness	
Augmented OODA loop (observe, orient, decide, act)	Mission and Decision Support	Strategic Supply Chain	Deep Fake Detection and Response	

# Generative AI introduces some unique risks and challenges

Workforce Displacement

- Gen AI's impact viewed as more possible and direct for roles that were initially viewed as outside of AI's immediate reach (creatives, lawyers, etc.)

Unreliable Outputs

- Hallucinations
- Explainability and traceability
- Quality, accuracy, interpretability
- Relevancy / consistency
- Disclosure & transparency
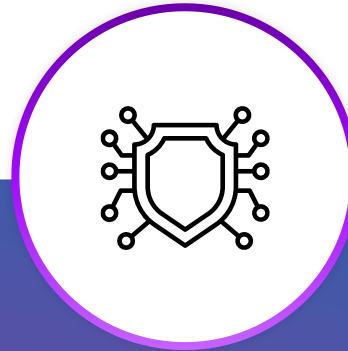
Confidentiality & Security

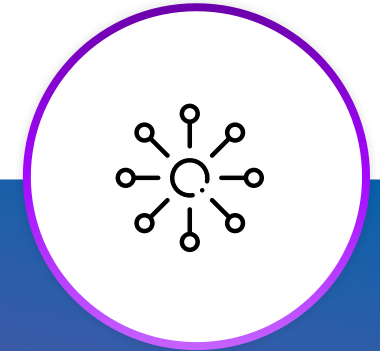- Unauthorized disclosure of confidential information
- Security vulnerabilities

Liability & Compliance

- Copyright, IP, and content ownership
- Regulatory compliance
- Contractual liability
- Product liability
- Consumer protection concerns

Bias and Harm

- Representational harm
- Misinformation
- Toxicity
- Fraudulent attacks
- Disinformation spread
- Harmful content generation at scale

Responsible AI Framework Augmentations for Generative AI

Principles & Governance

Uplift Responsible AI **Principles, Policy, Standards** and **governance** to **account for risks amplified by generative AI** and its democratized usage.

Establish **clear roles and responsibilities** and ensure and end-to-end framework for oversight and compliance.

Implement mechanisms for **accountability and transparency** and establish defined access and authorization protocols to **safeguard sensitive information**.

Risks, Policy, & Control

Adapt **current risk assessment, controls, & reporting/escalation paths** to incorporate new questions specific to risks posed by generative AI systems, including **human-in-the-loop reviews**.

Ensure Legal agrees **terms of use for foundation models and managed services**.

Consider **firmwide restrictions** on submitting confidential, proprietary, or personal data / information.
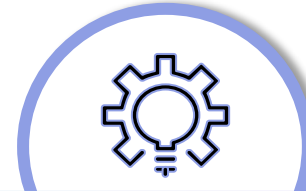
Technology Enablers

Ensure **transparency** for end users of the applications.

Apply **bias** and **data quality** checks to fine tune data and **mitigate hallucinations**.

Embed technical approaches for **accuracy, robustness, safety** and **explainability into prompts and fine tuning**.

Set up a **monitoring system** to review AI outputs & corresponding inputs. Check for **identifiable infringement** (eg, brands, personal data) or **problematic content** (e.g., offensive statements).

Culture & Training

Provide **firmwide guidance** and **training** on appropriate usage and risks of generative AI, and on **avoiding overstating its capabilities**.

Produce **technical guidance** and **standards** for risk mitigation when developing generative AI solutions.

Responsible AI mitigates Generative AI challenges and risks

	Unreliable Outputs	Confidentiality & Security	Bias & Harm	Liability & Compliance	Workforce Displacement
Organizational Capabilities	Create Benchmarks & Set Policies	Employee & Agency Guidelines	Risk Assessment Framework & Holistic Use Case Evaluation	IP Rights Management & Review	Firmwide Guidance & Training on Gen AI Capabilities & Usage
	Regular Audits and Monitoring Processes	Access & Authorization Protocols	Ethical Guidelines & Guardrails	Vendor Assessment & Disclosure of Copyrighted Data	DEI Initiatives & Assessments
		Risk Assessment Framework	DEI Initiatives & Assessments	Risk Assessment Framework for Gen AI Use Cases	Building Employee Trust
		User "Right to be Forgotten"	Regular Audits and Monitoring Processes	Align Oversight & Define Reporting & Escalation	Workforce Reskilling
Technical Solutions	Information Retrieval from External Sources	Integrity Checks to Detect Data Poisoning	Red Teaming & Human-in-the-loop	Policies on Gen AI Use and Disclosure	Gen AI Acculturation Methods & Techniques
	Trust Scoring & Knowledge Validation	Data Leak & Jailbreak Protection	Diverse, Representative, Balanced Data	Terms of Use Legal & RAI Review	
	Accurate, reliable, diverse training data	Robust Prompt Design Preventing Injections	Guardrails & Output Scoring	Limitation & Warning Notices	
	Fine-tuning & Customization	Privacy Enhancing Technologies	Content Moderation & Prompt Management	Control Monitoring & Analysis (eg, watermarks, AI content detectors)	
	Ground Truth Embedding & Vector Search			Proper Data Storage & Management Techniques	
	Prompt Engineering				
	Human Feedback				
	Self Improvement Methods & Techniques				

Example: Contact Center End-to-End Generative AI Impacts

Citizen and Resident Experience

Citizen calls call center about public services (Revenue Services) or visit scheduling for services

CITIZEN/RESIDENT NEEDS HELP

Call
Asks a question

RESOLVING THE QUESTION

Require Additional Documentation?
citizen uploads documents to provide to agent

2 Advanced Document Intelligence
Reads documentation using AI to identify the relevant information

RESOLVED

NOT RESOLVED

1 AI Virtual Concierge
Solution provides relevant voice or text to resolve the question, using the following:
- GPT
- Semantic Search

Citizen Question Resolved?
Agent asks citizen if the question has been resolved

Live AI Assisted Agent
giving chat & phone assistance and leveraging tools to resolve directly, such as:
- Q&A Assist
- Live Sentiment
- **5 AI-Powered Trust**

Matter Resolved

POST CALL

Post-call Analysis
to analyze the call data & transcript with following solutions:

3 SME Document Summarization

4 AI Generated Content

5 AI Powered Trust

6 Compliance Intelligence

7 Contextual Intelligence

8 Prompt Engineering

Applies to both Live AI Assisted Agent and in Post-Call Analysis (#5)

Feedback loops to train models

CHAT

Chat
Asks a question

Citizen chats with Amelia about available public services (Revenue Services) or visit scheduling

Five most Important Questions for Reinvention with AI

1

_____

How do I prioritize investments?

2

_____

Is my data & tech ready for AI?

3

_____

How do I make the right ecosystem decisions?

4

_____

Are my people ready?

5

_____

Where is AI being used? Am I balancing the value and risks?