Engineering the Future of Insurance: Exploring Generative AI's Enterprise-Wide Impact

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Introduction

In the past six months, generative AI (GAI) has evolved at such a rapid velocity, companies are grappling with how to make the case for and adopt the technology before falling behind the competitive curve.

GAI will revolutionize the insurance sector's relationship with data and reshape claims, underwriting, pricing, risk management, digital engineering and other critical business functions.

That transformation is already underway. And the pace of change is breathtaking.

Here, we unpack our thinking around GAI as a disruptive force and its impact on the insurance industry. We take a detailed look at how companies can harness this technology, from investigating recent developments and unpacking why insurance companies must act now to uncovering potential quick-win use cases and defining the path to operationalizing and scaling solutions.

Understanding the Current AI Landscape

Whether you're a skeptic or an optimist, there is little doubt that GAI will make an impact on society and business. It's positioned to change the way we live and work forever.

Between the quick maturity of large language models (LLMs) and the exponential adoption of GAI tools in recent months, for example OpenAI's ChatGPT, the market is bracing for its next big disruption: One that's comparable to the arrival of the smartphone or the internet.

This disruption is gearing up to affect existing business models, processes and practices, presenting business leaders with challenges to overcome and new opportunities to exploit. With this shift, there will be clear winners coming out the other side of disruption.

As the insurance sector depends heavily on natural language as its currency of commerce, there is the potential for significant change across the value chain.

At the same time, GAI poses many of the same questions for insurance that other industries are struggling to answer. From **legal and ethical concerns to security considerations and implementation challenges**, companies looking to invest in advanced AI technologies must begin plotting their path forward and developing a roadmap for change and innovation.

ChatGPT is a quintessential illustration of the speed at which LLM technology is progressing, and why insurance companies can't wait around for adoption. While the ChatGPT 3.5 model launched in November 2022, version 4.0 received a soft release in March 2023. In that short period, the model made enormous strides:

INTERACTION

10x

Increase in context window, bringing more opportunities for richer conversational interaction with LLMs

INPUTS

Now accepts images as inputs, opening the door to auto-settlement of simple insurance property damage claims via image-based claim verification
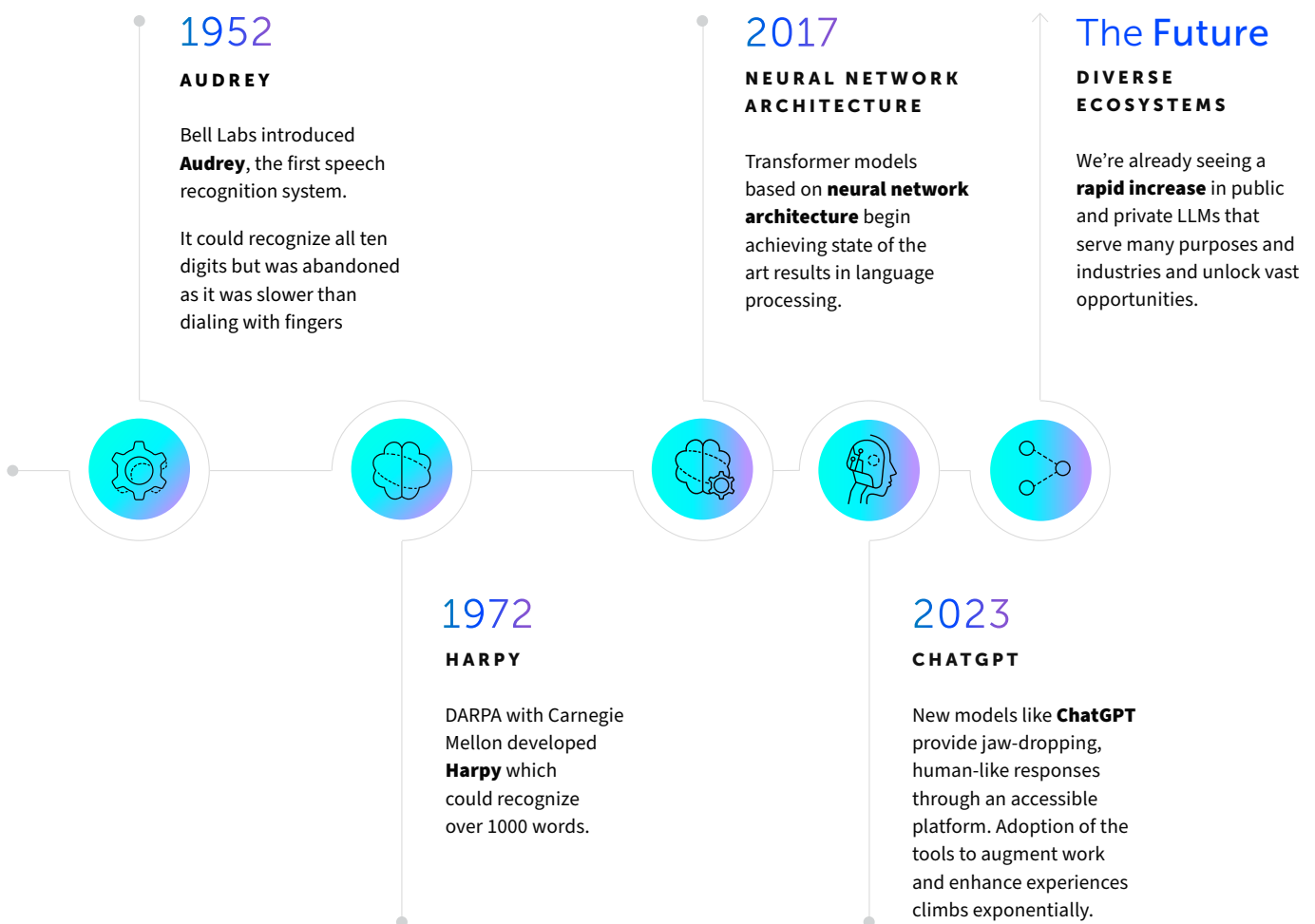
ACCURACY

Improved understanding of natural languages, bringing more accurate digital ingestion of unstructured insurance documents

Embracing a Historical Moment in Technology

AI and associated technologies have a long history. In 1952, Bell Labs developed **AUDREY**, a speech recognition system. Post-AUDREY, the fledgling discipline of AI flourished. Deep learning was introduced in the 1980s. Deep Blue beat Kasparov in the 1990s. Virtual assistants became **commonplace in the 2010s**.

AI is not new in the insurance sector, either. Over the past few decades, insurers have used neural networks for underwriting rules development and chatbots for quote portals, for example. But GAI puts the power of hyper-scale computing and LLMs in the hands of everyone, therefore bringing a completely new level of technology access.

AI's Innovation Timeline:
Continuous & Exponential Evolution

1952
AUDREY

Bell Labs introduced **Audrey**, the first speech recognition system.

It could recognize all ten digits but was abandoned as it was slower than dialing with fingers

2017
NEURAL NETWORK ARCHITECTURE

Transformer models based on **neural network architecture** begin achieving state of the art results in language processing.

The **Future**
DIVERSE ECOSYSTEMS

We're already seeing a **rapid increase** in public and private LLMs that serve many purposes and industries and unlock vast opportunities.

1972
HARPY

DARPA with Carnegie Mellon developed **Harpy** which could recognize over 1000 words.

2023
CHATGPT

New models like **ChatGPT** provide jaw-dropping, human-like responses through an accessible platform. Adoption of the tools to augment work and enhance experiences climbs exponentially.

This is both awesome and terrifying — much like the early days of the internet. Insurers that have invested in new data platforms, cloud technology and API/microservices architectures are best positioned to take advantage of these new GAI capabilities. Insurers lagging with these critical and foundational technology modernization initiatives must accelerate their transformations but do have an opportunity to leapfrog technology generations.

Right now, most insurers are learning and experimenting with standalone GAI tools for simple user-driven search, summarization and writing assistance, but have not yet deployed in ways that assist insurance professionals in making quick, informed and accurate decisions. Nor has it been utilized to increase the pace at which insurers engineer new technology solutions and migrate from legacy platforms.

These are areas ripe with opportunity, particularly as the insurance sector is heavily dependent on knowledge workers — underwriters, claims adjusters, distribution partners, finance managers and software designers, to name a few — whose expertise could be augmented and complemented by GAI applications. However, GAI has the potential to be the definitive source of knowledge, better than any individual. Differentiation will come from the judgement of the knowledge workers and their ability to review the GAI output.

The insurance sector has traditionally been slow to adopt new technology. This is partly because it is an industry that is generally risk averse as well as highly regulated and therefore conservative with its emerging technology investments. However, GAI is a major step change from earlier forms of AI, which is driving a more compelling proposition for its use in both engineering and business enablement. As such, its posing an urgency that insurance providers can't ignore, compelling companies to quickly assess how it will fundamentally impact business as they know it.

GAI promises to change both business operations and personal lives, permeating everyday user experiences, enhancing service fulfillment at speed and enabling better decision-making — and will quickly become an expectation among insurance buyers and employees alike. While insurers pump investments in technology across the value chain, GAI as an 'everything enabler' can't be an afterthought.

Generative AI is Here & the Time to Act is Now

While we're in the early days of understanding this class of technology and its implications for insurance, every executive must invest now to determine the business opportunities, challenges and roadmap for change.

GAI promises to reinvent how the insurance sector makes decisions, communicates, supports customers, trains and guides insurance professionals, and executes many processes central to its business operations.
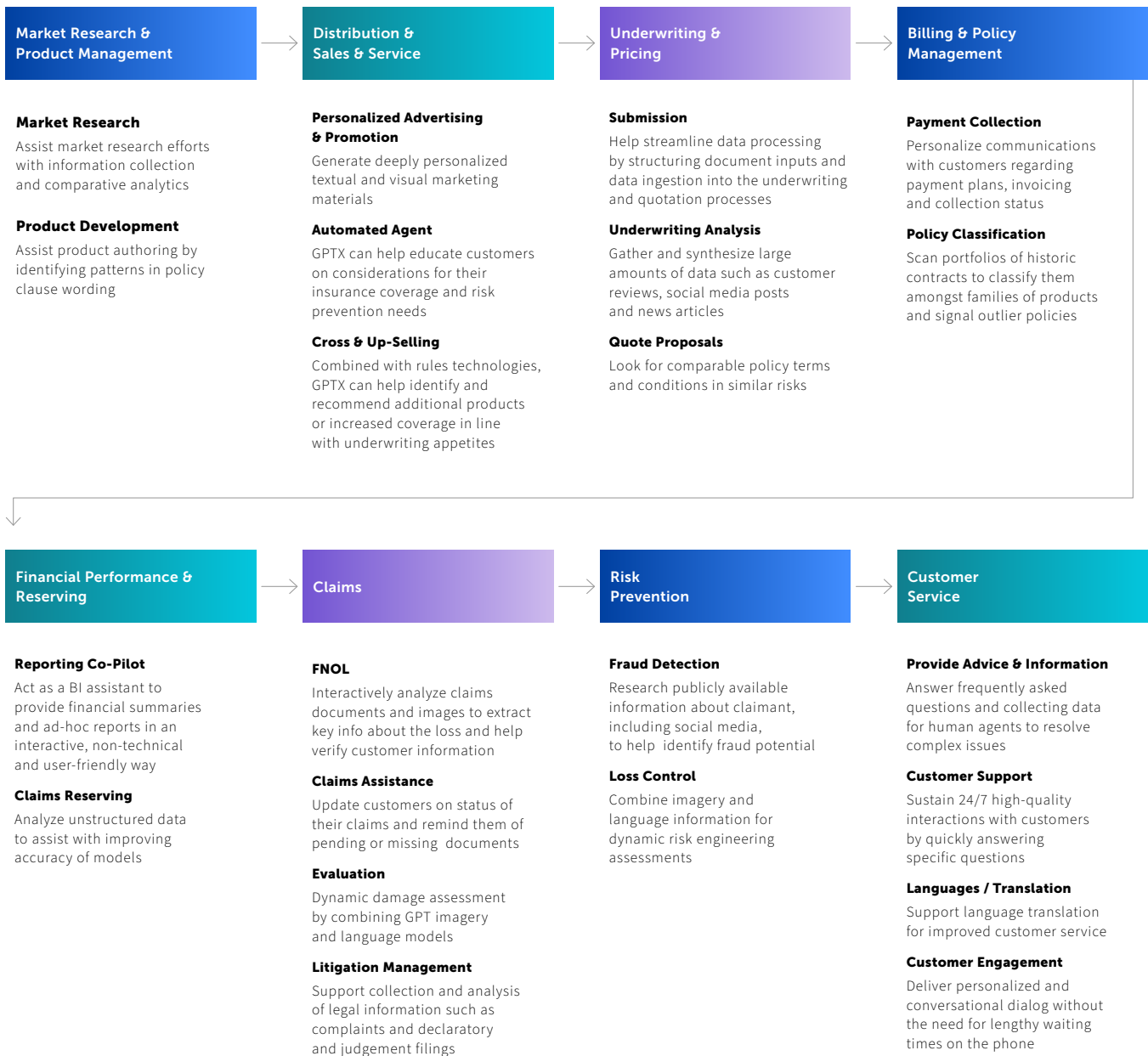
Exploring GAI's Impact & Quick-Win Use Cases for Insurance

We already see GAI impacting the entire value chain through simple user-driven use of browser-based GAI tools such as ChatGPT.

User Driven
Generative AI can bring immediate benefit across the value chain:

Market Research & Product Management	Distribution & Sales & Service	Underwriting & Pricing	Billing & Policy Management
Market Research Assist market research efforts with information collection and comparative analytics	**Personalized Advertising & Promotion** Generate deeply personalized textual and visual marketing materials	**Submission** Help streamline data processing by structuring document inputs and data ingestion into the underwriting and quotation processes	**Payment Collection** Personalize communications with customers regarding payment plans, invoicing and collection status
Product Development Assist product authoring by identifying patterns in policy clause wording	**Automated Agent** GPTX can help educate customers on considerations for their insurance coverage and risk prevention needs	**Underwriting Analysis** Gather and synthesize large amounts of data such as customer reviews, social media posts and news articles	**Policy Classification** Scan portfolios of historic contracts to classify them amongst families of products and signal outlier policies
	Cross & Up-Selling Combined with rules technologies, GPTX can help identify and recommend additional products or increased coverage in line with underwriting appetites	**Quote Proposals** Look for comparable policy terms and conditions in similar risks	

Financial Performance & Reserving	Claims	Risk Prevention	Customer Service
Reporting Co-Pilot Act as a BI assistant to provide financial summaries and ad-hoc reports in an interactive, non-technical and user-friendly way	**FNOL** Interactively analyze claims documents and images to extract key info about the loss and help verify customer information	**Fraud Detection** Research publicly available information about claimant, including social media, to help identify fraud potential	**Provide Advice & Information** Answer frequently asked questions and collecting data for human agents to resolve complex issues
Claims Reserving Analyze unstructured data to assist with improving accuracy of models	**Claims Assistance** Update customers on status of their claims and remind them of pending or missing documents	**Loss Control** Combine imagery and language information for dynamic risk engineering assessments	**Customer Support** Sustain 24/7 high-quality interactions with customers by quickly answering specific questions
	Evaluation Dynamic damage assessment by combining GPT imagery and language models		**Languages / Translation** Support language translation for improved customer service
	Litigation Management Support collection and analysis of legal information such as complaints and declaratory and judgement filings		**Customer Engagement** Deliver personalized and conversational dialog without the need for lengthy waiting times on the phone

The most significant benefits, however, will be achieved as GAI is fully integrated into core business processes and platforms as well as technology operations, including:

01
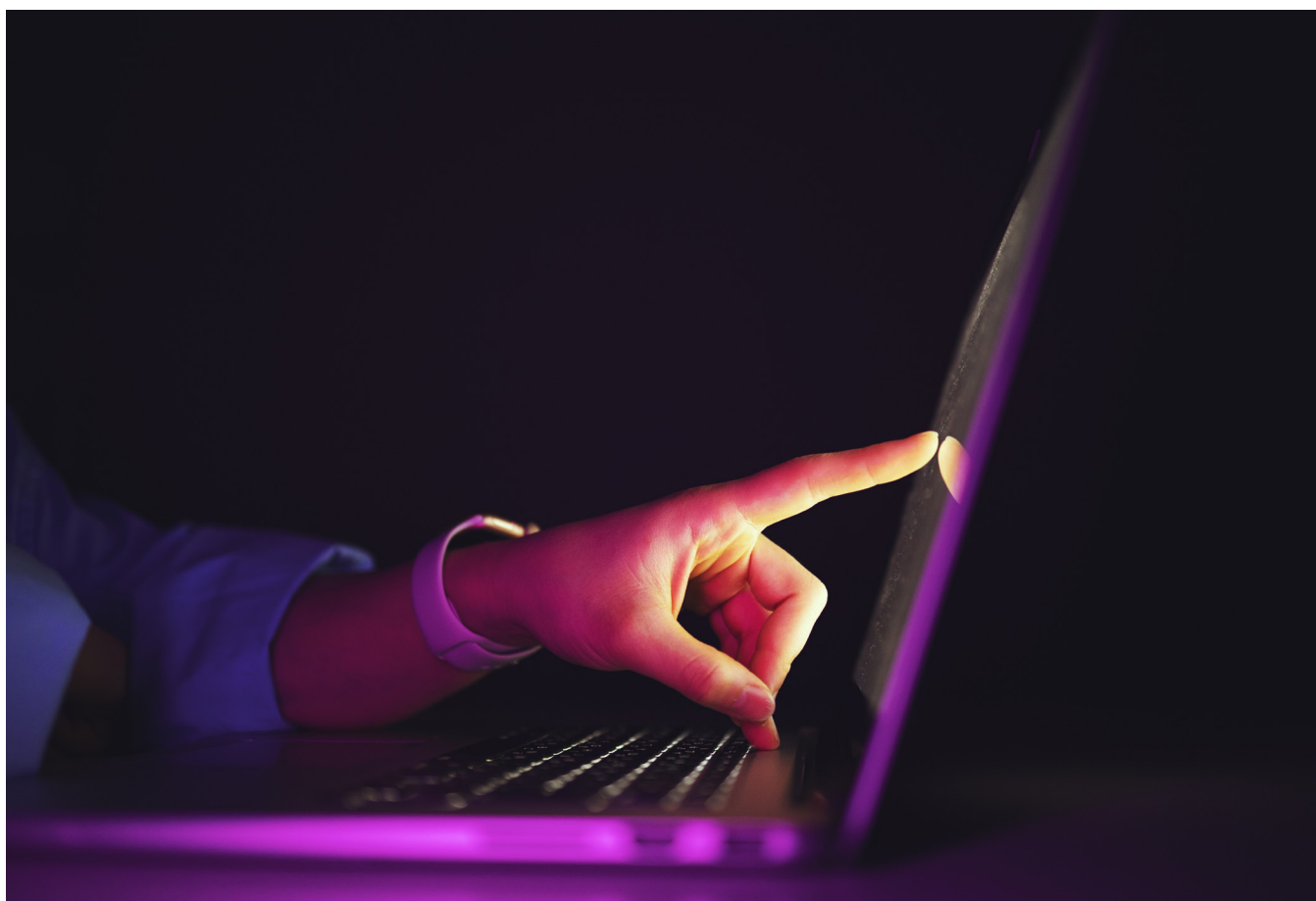**CUSTOMER ENGAGEMENT & SERVICING**

02
INSIGHT-DRIVEN UNDERWRITING & CLAIMS

03
FINANCIAL PERFORMANCE OPTIMIZATION

04
TECHNOLOGY SOLUTION ENGINEERING & DELIVERY

01
Customer Engagement & Servicing

At the front end, GAI will play a significant role in refining and improving the customer experience through call center and self-service portal interactions by delivering a more personalized and intuitive customer experience.

Today, every customer conversation and interaction is fed into the organization's CRM system manually. In a next-gen process, GAI could generate an entire transcript, identify the essential information and relevant details and update the CRM automatically.

Insurers can leverage GAI, along with other technologies such as machine learning, to determine why one touchpoint was more effective than another, then use these lessons to train other AI applications, such as chatbots. In the future, an LLM may advise the call center agent what to say in real time based on customer responses. Insurers will also implement responsive web pages that adapt to customer searches and inputs.

This ability to drive a more personalized, context-sensitive and customer-centric approach is critical, particularly as digitization in the insurance industry has typically been hampered by an inability to deliver a seamless digital experience.

GAI has the potential to simplify what is often perceived as a complex buying process, driving digital efficiencies, reducing costs, and creating a more satisfying and effective customer journey. GAI will facilitate this shift by enabling insurers to move past data-entry oriented buying processes and embrace more conversational, needs-identification interactions.

02
Insight-driven Underwriting & Claims

In terms of underwriting, price-setting, risk mitigation and claims management, GAI is set to play a more advisory role, augmenting and enhancing existing decision-making processes.

In commercial and specialty insurance, GAI will enable more accurate digital ingestion for new business submissions, and augment information collection and synthesis to assist underwriters with risk analysis.

We are also seeing considerable interest in the application of GAI to improve claims fraud detection. AI models will make it easier to understand behaviors, identify anomalies, verify genuine claims and reject fraudulent ones.

GAI could very well support the first notice of loss, which is heavily dependent on information sourcing unstructured data such as pictures, PDFs and so on. It can also play a supporting role in damage evaluations by converging images with text to enhance the speed and quality of the claim adjuster's decision making.
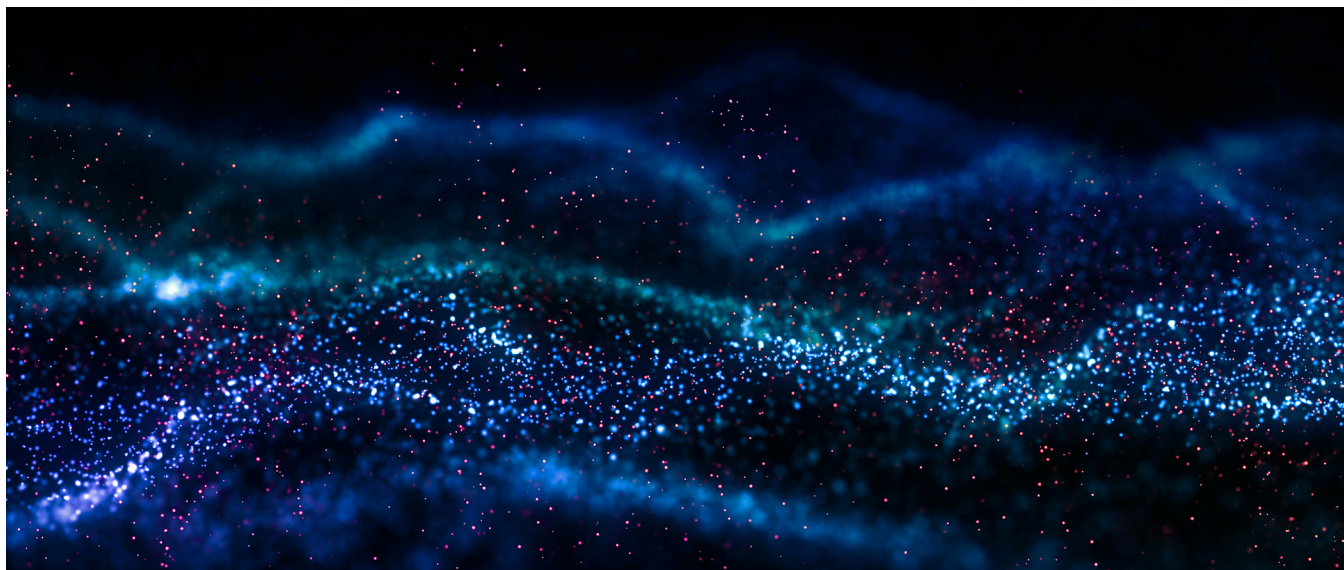
03
Finance Performance Optimization

Insurers will be able to leverage GAI to improve finance process execution, improve business insights and elevate the finance team member analytical capabilities.

GAI will be used to streamline the end-to-end financial processes (order to cash, record to report, etc.) by augmenting and summarizing data delivery. This will speed the financial close process, reduce the need for multiple manual reconciliations, and automate the production and delivery of financial, statutory and management reporting. Better speed and accuracy will facilitate deeper analytics and interpretation. The end result will be a finance function that provides valuable insights about firm performance, understands industry trends and developments, and sets up the ability to redirect marketplace activity as business conditions change.

Ultimately, GAI will be integrated seamlessly into the core finance, accounting, and actuarial processes and systems.

04
Technology Solution Engineering & Delivery

Engineering is arguably the area undergoing the most rapid change. Insurers can use GAI to define, write and refactor code. It can add commentary detailing what the code is capable of, it can write and automate unit testing, and even automate legacy code conversion. GAI can also be used to enhance the security stack, making threat monitoring, detection and response continuous and more streamlined. This means faster, more secure and more iterative development at greater scale without compromising product quality.

As in other areas, GAI is being used to complement developers' abilities and enhance their productivity. This "co-piloting" model involves making smart developers smarter, reducing development time, and accelerating technological growth and innovation.

Fully Integrating GAI to Support Business Processes & Engineering

Before diving into full-scale GAI adoption, insurers must understand the impact that it will have on the entire business. There are three core principles we believe are critical to successful execution of the GAI journey.

Experimentation as an Imperative

GAI implementation must be specific — to business functions, service areas, teams and goals. As there are still many unknowns with this nascent technology, creating a test and learn environment is foundational. Use cases should be defined but also tested for veracity and expected outcomes. Understanding how LLMs complement other forms of data collection and business rule technologies is critical to GAI solution design. Experimenting with different LLMs and layers of LLMs is important for fine tuning prompt engineering. Learning about data behavior across structures and unstructured sources — both public and private — helps clarify areas of security risk and GAI performance risk.

This experimentation must be carefully managed with appropriate guardrails and controls established. Pilot programs and proofs-of-concept (PoCs) should form part of a longer-term strategic plan and target state solution architecture, and there should be a clear process for advancing from use case experimentation to operationalizing and then scaling GAI solutions.

Transparency, Responsibility & Trustworthiness

There are many regulatory bodies, like the European Committee, that are concerned about the design and operations of AI systems, and for good reason. Just as GDPR, CCPA, GLB, NYDFS and others made a profound impact on how organizations handle data, regulations like the EU's recently proposed AI Act aim to create laws for the development and use of AI with strict rules and requirements for both developers and users of AI.

Creating **ethical, transparent and trustworthy AI, or responsible AI**, is central to any AI strategy to ensure AI advice, information and decisions are not based on discriminatory assumptions or factors.

All organizations need to consider how they can unlock business value while operating in a responsible manner that reflects the current regulatory landscape as well as considerations for customers and other stakeholders. It is an opportunity to shape the discourse surrounding AI in insurance and ingrain responsible practices in the transformation process.
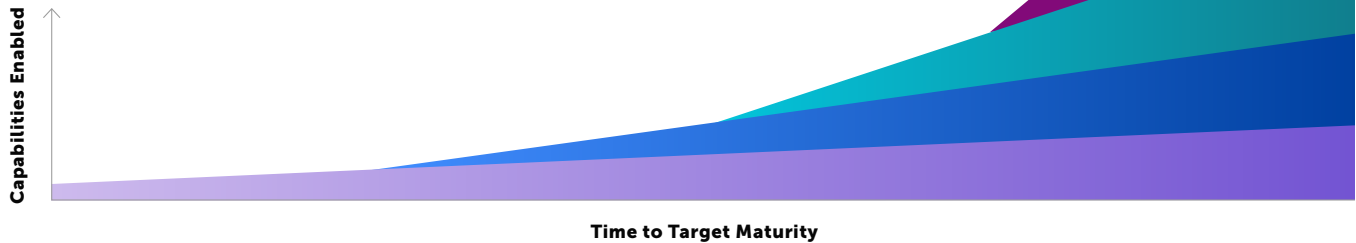
Governance as a Driving Mechanism

It's been historically challenging to plan and manage organizational change around new technologies in the insurance industry. With GAI impacting the entire insurance value chain, it becomes even more complex. This necessitates an organization-wide shift in culture, the establishment of cross-functional governance, and the deployment of processes that emphasize risk mitigation and prevention. It is **an enterprise-wide imperative** to ensure clear governance and accountability is defined for GAI usage.

Gen-AI Maturity Trajectory

Advancing on the GenAI Maturity, enterprises can harness the power of AI by incorporating it into their core business and IT process

ACCELERATED LEARNING & DEVELOPMENT

Y-axis: Capabilities Enabled
X-axis: Time to Target Maturity

Stand Up CoE • Establish an AI center of excellence, assess enterprise impact and prioritize PoCs • Stand up orchestration platform and use case portal • Identify priority engineering/IT and business use cases • Establish GAI governance, including business KPIs	• Define new skills required and opportunities to upskill • Assess software development lifecycle (SDLC) impact • Identify GAI-enabled SDLC best practices and tools • Adopt GAI for SDLC across pilot teams	• Define decision architecture, including integrated rules and models taxonomy • Continue to identify opportunities to upskill • Augment AI center of excellence capabilities	• Establish design authority • Formalize IT and business operating model • Update enterprise architecture with GAI • Implement performance and KPI measurements • Continue to augment AI center of excellence capabilities
Build & Test High Priority Use Cases	• Engage business stakeholders • Identify point solutions that solve for high-priority use cases • Finalize requirements and design of in-scope use cases • Build and test use cases • Confirm business case value • Define path to operationalize	• Continue to identify engineering/IT and business use cases, including integration sources • Identify how GAI results are used for business outcomes (decisions, documentation, authoring, etc.)	• Continue to identify engineering/IT and business use cases • Incorporate lessons learned
Operationalize Point Solution Use Cases		• Define GAI architecture blueprints • Establish data pipelines and vectorize target datasets • Define orchestration framework to support integration of GAI and non-GAI sources • Define and monitor KPIs	• Understand traceability and lineage of LLMs and multi-model use • Understand compounded effect of LLMs with other business rules and models • Refine target AI architecture and orchestration framework
Scale Integrated Solutions & Gen AI Operations Across Business and IT			• Refine target AI architecture across package and custom systems (including API/microservices) • Build, test and deploy integrated GAI solutions

Implementation Considerations

The journey with GAI solutions will require a new level of cooperation between business and IT teams within the organization. Most insurers are teaming with GAI experts that bring both deep insurance business skills and use case experience and deep GAI technology experience.

MANY ARE STARTING BY…

Working with partners to identify:

- Key business functions with significant data and document dependencies across a range of processes
- The role and task impact of AI-embedded processes by function and transaction
- Decision topology including data access and usage for critical business functions; for instance, new business submissions, underwriting and pricing, customer policy servicing and FNOL processing
- Critical service delivery points, whether to customers, distribution partners or other external stakeholders, where additional insights, education and communication could improve delivery efficiency and effectiveness

Working with partners to define:

- High-potential business and engineering use cases that include both quick-win PoCs and long-term strategic initiatives
- The role of Microsoft 365 Copilot software in terms of its desktop dominance and potential impact to ways of working and integration with other LLMs
- Solution architecture that integrates GAI technologies with other core processing platforms and technology components across public and private data sources enabling layers of LLMs

By working with partners to develop:

- A roadmap for implementing GAI-driven automation that aligns with impactful business outcomes for growth, loss ratio improvement and cost savings
- Processes for the integrated business and IT operating model, including the potential for improved solution delivery velocity and output
- Considerations for governance, security, role mandates, data privacy, data authenticity, and decision traceability and explainability
- An engineering platform to curate prompts and orchestrate APIs across LLMs and other data sources
- Engineered solutions that vectorize priority databases and integrate both headless and browser-based interactions with key business processes

Considering the above, it's critically important to begin with a **rapid enterprise assessment** to identify the high priority roles, tasks and use cases where GAI can be applied — while aligning to business goals, such as cost reduction, growth and loss ratio. Solution delivery success will also depend on the development partners' ability to plug into insurers' overall transformation and innovation journey quickly and effectively. Partners should be expected to not only share insights gained from client PoCs, but also bring assets, accelerators and strategic advisory services to help shape a path forward that is both practical and well aligned with the overall IT strategy — and can be implemented at scale.

This becomes increasingly important as insurers' focus switches from GAI quick wins to long-term, business-wide transformation.

AI in Insurance — A Tipping Point

The story of AI is long, stretching back several decades. But that story has reached a tipping point. GAI technology specifically has evolved so rapidly in such a short time, bringing the power of hyper-scale computing to everyday activities.

The pace of change is such that new developments are occurring on a weekly basis, further cementing the fact that the insurance sector should prepare now for this historic disruption and a new reality. As an industry that has traditionally been slow to embrace innovation, insurance cannot afford to wait and watch for signs of adoption and success of their peers and then act as a fast follower. GAI is already here and accessible to everyone. The burning question is not 'should GAI be used?' but rather 'how can it be leveraged for meaningful business and IT benefit while managing risk and costs?'

GAI will require an organization-wide culture shift in how business and IT work together, as it promises to disrupt current processes, roles, responsibilities, behaviors and norms. It's mission critical to learn quickly, develop a strategy and target architecture, embrace a continuous test-and-learn approach and partner with trusted engineering and advisory partners to build the right GAI solutions for your business.

Leading insurers are beginning to send clear signals that they intend to shape their GAI futures rather than reacting to the inevitable wave of GAI change underway. If you don't start strategizing your journey, there's no guarantee that you'll be able to catch up to your competition — **the time to start standing up your GAI capabilities is now.**

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Global

41 University Drive, Suite 202
Newtown, PA 18940, USA

P: +1-267-759-9000
F: +1-267-759-8989