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“Navigating Uncharted Waters: Exploring the Role of ChatGPT in the Excess and Surplus Lines Industry – Risks, Benefits, and The Unknown”

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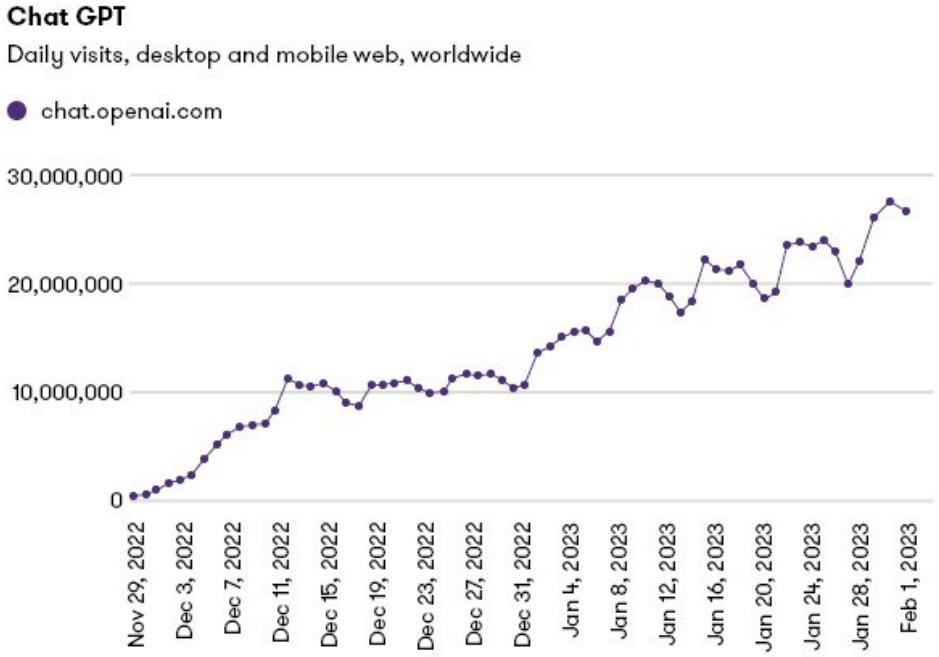
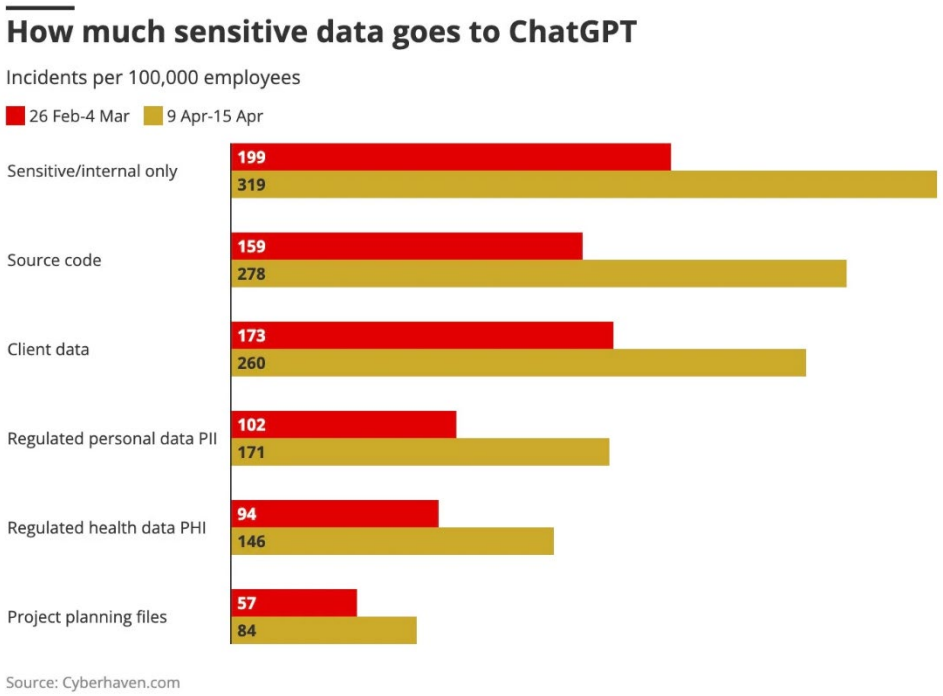
Introduction:

ChatGPT – will it be the demise of companies and human workforces, or will it drastically improve institutions' expense ratios and the efficiency of their employees? Is it just another emerging technology the insurance industry will adapt to like the internet or CAT Modeling? Might it even respond to a prompt assessment of its potential pitfalls in the insurance industry? These are all questions and speculations that the Excess and Surplus Lines industry begs to explore and answer. ChatGPT explains itself as "a conversational artificial intelligence language model developed by OpenAI, capable of generating human-like text responses based on the input it receives." Like existing technologies used in the insurance industry, ChatGPT uses natural language processing (NLP) to understand the context of inputs from the search engine and machine learning (ML) to analyze and adapt to patterns in data without being explicitly programmed to do so. Differentiating it from alternative AI technologies commonly used throughout the insurance sector, ChatGPT is the fastest-growing app to ever hit 100 million users, motivating companies to quickly find new business uses for it, invest in the app like Microsoft's $10B for a 9% stake in OpenAI, or even create their own internal model such as AXA's "AXA Secure GPT". This new AI technology presents significant opportunities and enormous risks not only to companies incorporating ChatGPT into their business operations, but also insurers covering these entities. The E&S market should expect to encounter most of these ominous cyber and liability exposures due to the lack of historical data, uncharted regulatory environments, and unknown premium measure.

Risks Facing Businesses using ChatGPT and Insurance Products to Cover New Exposures



The graph above displays the rapid increase of daily visits to ChatGPT in the first few months following its introduction in November 2022 (Grant Thorton, 2023). The growth of ChatGPT has only accelerated since February, as it recorded 1.7 billion total users on its one-year anniversary (DeVon, 2023). However, this expeditious customer adoption has been somewhat premature, as the unchartered technology possess endless cyber, intellectual property (IP), and various professional liability exposures to businesses and employees that negligently adopt the use of ChatGPT. All data entered into ChatGPT is stored into its data universe for up to 30 days and can be possibly extracted by other users. This poses a substantial cyber risk for companies that have employees inputting internal data into the search engine. In April, the data security firm Cyberhaven tracked the use of ChatGPT amongst several different companies and found 11% of data employees paste into the search engine is confidential (Cyberhaven, 2023).



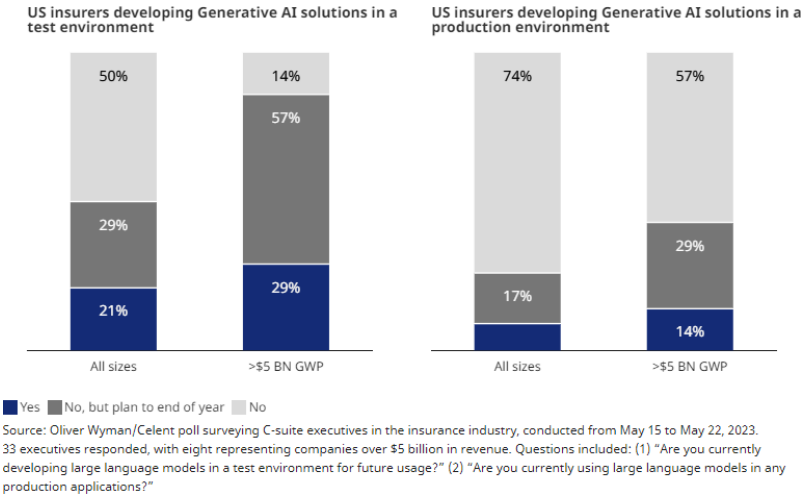
The results above show that per 100,000 employees there are an alarming 6,352 total attempts to paste sensitive corporate information into ChatGPT (Insurance Insider, 2023). In May, three Samsung employees fed confidential data including source code, sensitive information for debugging, and transcripts of internal meetings into ChatGPT for summarization. After the embarrassing news broke, Samsung implemented a companywide ban of ChatGPT, highlighting cyber security risks around this technology. Simultaneously, bad actors are utilizing ChatGPT to learn how to code and improve phishing emails, eliminating previous cost and language barriers to executing ransomware attacks. Rising data security concerns around ChatGPT will increase the demand for cyber insurance as new ChatGPT coverage extensions and products emerge within the cyber sector. More cyber policies may cover loss of IP as well; for example, if a pharmaceutical company was using ChatGPT for the process of creating a new drug, and a cyber breach occurred, the firm would want to further coverage to the intellectual property of the drug.

The recent class-action lawsuits lead by Sarah Silverman and other artists against OpenAI for copyright infringement highlight that ChatGPT trains its model and creates outputs based on copyrighted works. IP insurance would cover these copyright exposures most relevant to companies using ChatGPT to create publications, artwork, or logos. ChatGPT is also prone to 'hallucinations', where the model provides confident but false responses creating misinformation risks that E&O insurance could cover for multiple professions. In June, ChatGPT created a legal submission for two lawyers and confidently cited six non-existent legal cases along with fake quotes and citations. Along with hallucinations, ChatGPT has the potential to base its outputs on information that includes bias, creating risk for discriminatory hiring or lending practices. New York City requires employers to disclose whether AI was used in the hiring process and if so, require their tool to undergo a "bias audit" due to the potential for AI models to use algorithms that reflect discriminatory or biased data such as historical labor statistics favoring specific demographics. The EPL product would cover exposures around biased employment decisions with the use of ChatGPT. The emergence of ChatGPT will increase companies' demand for cyber, IP, and professional liability coverages, forcing insurers to quickly adjust their existing products and coverages by adding exclusions or implementing rate increases, because current pricing does not reflect the true risk exposure businesses face using ChatGPT.

How will insurance companies leverage this new technology to reduce expenses and find competitive advantages?

Exhibit 2: Many insurers are testing generative AI solutions, and 25% plan to have solutions in production by the close of 2023

% of Oliver Wyman/Celent survey respondents (all sizes/> $5 billion gross written premium - GWP)



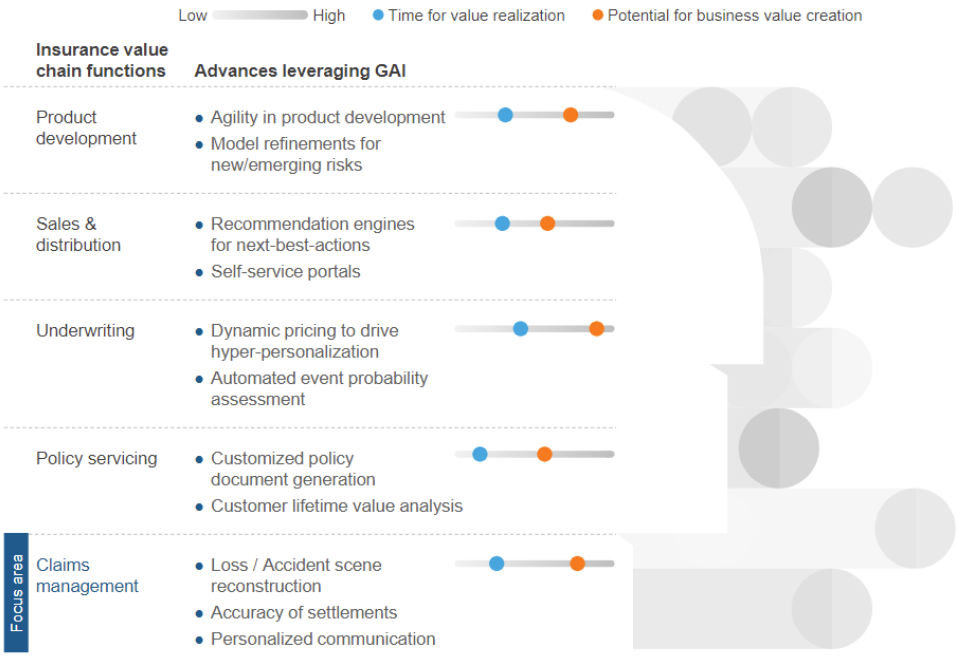
Source: Oliver Wyman/Celent poll surveying C-suite executives in the insurance industry, conducted from May 15 to May 22, 2023. 33 executives responded, with eight representing companies over $5 billion in revenue. Questions included: (1) "Are you currently developing large language models in a test environment for future usage?" (2) "Are you currently using large language models in any production applications?"

As shown above, insurance companies are quickly starting to test Generative AI (GAI), leaving some individuals in the industry terrified that this technology will replace nearly all human workers (Oliver Wyman, 2023); this is not well-founded. While it is true that automating aspects of these processes to reduce labor expenses will render certain human roles obsolete, companies that incorporate this technology correctly can create a competitive advantage by empowering their employees with GAI. These companies can increase worker's efficiency, knowledge, and technical skills with the proper training, compliance to internal policies, and effective ERM processes corresponding to the use of ChatGPT and similar GAI models. As pictured below, GAI offers significantly high potential for business value creation for underwriting and claims management along with moderate potential impact for sales & distribution (EY, 2023).

EXHIBIT 3

Potential impact of GAI across the insurance value chain

Source: Everest Group (2023)



Companies underwriting departments can reduce triage and modeling expenses with ChatGPT's ability to strengthen data collection and analysis by sourcing data from related cases, summarizing large amounts of text from attached documents, predictively model potential risks, identify fraud patterns, and strip personal or sensitive information to comply with regulations. These capabilities create a competitive advantage for companies and their underwriters giving them more bandwidth to review submissions, understand corresponding documents, quickly and accurately price risks, detect fraud or inaccurate submissions, and generate policies.

ChatGPT also can potentially transform claims management into a lightning-quick process for companies by flagging fraudulent claims and creating a better customer experience. Insurer Lemonade has implemented an AI system that assesses the claim, checks the policy conditions, and uses algorithms to detect fraud. After approval, a chatbot sends payment instructions to the bank and notifies the policyholder. With the correct fraud algorithms in place,

claim payouts and the related legal costs can be drastically reduced with ChatGPT. This creates a competitive advantage for the efficiency of claim processing and better customer experience, but also allows employees to focus on more serious claims where authentic empathy and care may be needed.

For sales and distribution, ChatGPT's natural language processing can instantly answer commonly asked customer questions, assist agents on market and coverage solutions for specific accounts, and provide chatbots for their online portals to advise customers on the products and services that best suit them. With ChatGPT's ability to analyze historic data and provide solutions in multiple languages, insurers can reduce marketing costs related to advertisement of their products and services. Digitalization of sales and distribution offers a competitive advantage by yielding greater customer satisfaction which allows agents to focus on higher-level accounts and save valuable time with ChatGPT's summarizations and suggestions of recommended markets, policies, conditions, limits and presentation to their customers. The insurance industry must continue to test the limitless potential of ChatGPT and remember the adoption of this technology will be a marathon, not a sprint. Xceedance's global CEO Arun Balakrishnan says "Let's look for easy goals today and let's not try to boil the ocean or make any big movements. Simple easy ones."

Why might ChatGPT be written in the E&S insurance space versus standard markets?

ChatGPT exposures will be written primarily in the E&S insurance space versus the standard market due to the complexity and lack of historical data around this unprecedented technology, freedom of rate and form, and the requirement for regulatory expertise. Insurance coverage for ChatGPT and similar products will start in the E&S marketplace because the lack of historical data around the exposure restrains regulators in the admitted market to approve

products or policy extensions regarding the technology use. State regulations that require insurers to use standardized professional liability forms or endorsements prevent admitted insurers from including proper exclusions and coverage extensions in response to ChatGPT risks. The absence of history around this risk also restricts state insurance commissioners from establishing a fair price, as rates will drastically fluctuate depending on the insured's business operations and use cases of ChatGPT. The time needed for regulatory approval in the admitted market also prohibits insurers from making necessary policy adjustments for this risk in the scenario a colossal claim payout occurs, putting insurers with similar accounts in extreme danger. The freedom of rate and form in the E&S space will provide insurers with the flexibility to experiment with pricing, policy forms, and development of AI insurance products over time, independent of admitted state insurance regulations, that will eventually serve as a baseline for the admitted market to adopt and administer. E&S distributors will have the best gauge for when AI insurance products will be ready to become standalone products, comparable to the Cyber insurance product's introduction in 2010. The specialized expertise of E&S underwriters and wholesale brokers will be preferred for ChatGPT risks, comparable to surplus line insurer's market share of over 60% of the cyber industry, following a 500% DWP increase from 2020-2021 (A.M. Best, 2023).

The vast complexity of risks around ChatGPT such as global controversies concerning the ethical use of this technology also contribute to it being written in the E&S space. In early November, ChatGPT experienced a DDoS attack by an anonymous Sudan Hacktivist group in retaliation to OpenAI's CEO Sam Altman's visit and investment in Israel midst the war between Israel and Palestine. The group also claims that Israel has been using the technology to oppress Palestinians, develop weapons, and that ChatGPT contains bias algorithms against Palestinians.

Although this anonymous group did not provide evidence around these accusations, this raises a massive concern for any entity using the technology and highlights the vulnerability of ChatGPT's cybersecurity. Finally, the ability for the insurance industry to understand the regulation or lack thereof around ChatGPT is crucial and differs globally. The EU's AI Act adopts a risk-based framework that classifies AI applications into four risk categories and actively bans the use of applications classified as 'unacceptable' across all sectors (excluding military), while the United States' AI Bill of Rights functions as a less extensive blueprint of five core principles to follow when using AI. Insurers that operate globally must understand both regulations and risk assessment will vary depending on the insured's domicile. E&S insurers such as Lloyd's will have more regulatory knowledge and capacity to address these risks on a domestic or global level compared to admitted insurers.

How will insurers establish the right premium to charge for such a new risk?

While it is obvious that a majority of ChatGPT risks will land in the E&S space, how insurers will establish the correct premium to combat these new and unique exposures is less obvious due to a lack of historical data, coverage gaps, and variations of the insured party. Before determining the dollar amount of premium, insurers must classify if the AI risk will be priced as a standalone product, an extension of an existing product or addressed solely in the risk assessment process. Chaucer's Hayley Maynard believes AI will become its own market line that mirrors the trajectory of the cyber market, drawing parallels between current class action lawsuits against OpenAI and Upstart holdings to the worldwide WannaCry and NotPetya cyber-attacks in 2010 that lead to the launch of the standalone cyber product (Insurance Insider, 2023). Standalone cyber coverage now represents 70% of the cyber industry's premiums, increasing 62% in 2022 (Fitch Ratings, 2023). This demonstrates that over time carriers have adjusted

pricing towards the cyber product and eventually a standalone AI product will reflect the most accurate premium for ChatGPT related exposures. However, insurers should not rush into creating this new product, instead introducing AI coverage into existing products until enough claims and underwriting data becomes available to stabilize market pricing. Initially premiums covering ChatGPT risks are going to be steep, reflecting higher end cyber and professional liability rates as the AI is extremely new and insurers must observe the market's reaction. Marsh reports global cyber insurance pricing decreased for the first time since the second half of 2018, demonstrating how difficult it is for insurers to achieve rate accuracy and proper risk management around such unfamiliar risks (Marsh, 2023). However, new technologies like ChatGPT have caused ransomware attacks to increase 95.41% YoY (Corvus, 2023) creating massive pricing concerns in the cyber market.

When pricing ChatGPT exposures the insureds business operations must be considered. There will be a coverage gap between professions using ChatGPT such as a doctor versus a portfolio analyst. For example, if ChatGPT gave each incorrect advice, worst case scenario could result in the loss of a human life versus loss of an entire financial portfolio. The severity of loss and exposure differs drastically, therefore risk assessment and pricing around ChatGPT must be extremely specific to the individual exposure. Finally, pricing must be determined for companies insuring the use of their own or a third parties' AI model. Munich Re offers aiSelf and AiSure products to insurer the underperformance of an AI model as ChatGPT has inspired internal models like "AXA Secure GPT" and third-party models like Roots Automation's "InsurGPT". As other reinsurers follow in Munich Re's footsteps, it is safe to say as more internal and third-party GAI models emerge, more losses will occur, driving up the price of these new products.

Conclusion

The insurance industry must quickly respond to the boundless number of risks ChatGPT and similar AI technologies present while also displaying innovation around the adoption of emerging AI tools. In the distant future, the industry should expect to see emerging AI technologies result in the creation of new insurance products, extensions of existing products, sizable losses, coverage gaps, variable regulatory environments, and a new approach towards traditional operations in the industry. The E&S industry must be the first to address ChatGPT, providing innovative risk assessment, pricing, and coverage as the extensive knowledge and experience within the E&S space is needed to address developing AI risks. Finally, the insurance industry has a responsibility to respond to existing risks, adapt to rapidly changing environments, and most importantly serve its fiduciary responsibility to the insured in the instance of a loss. ChatGPT is the next risk that the industry is prepared to undertake.

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ChatGPT: Risks, Remedies, and Insuring Tomorrow

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09 Dec 2023

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1. Introduction

While ChatGPT has taken center stage in the landscape of Artificial Intelligence (AI), its impact on the insurance industry is yet to be fully realized. Amidst the exploration of emerging technologies and their novel risks, the human component often takes a back seat. As the most widely accessible versions of ChatGPT provide no guarantees against the collection of inputs for further training and refinement of OpenAI's GPT models, two recurring themes could expose businesses to legal liability risks, or constitute regulatory noncompliance:

- Individuals input sensitive information, and
- Users rely on outputs without diligent factchecking.

While the human risk factors associated with ChatGPT are extensive, they potentially present a cost-effective and strategically advantageous focal point for the application of mitigation techniques. Further, as insurance products already exist to cover mistakes and decisions made by people, incorporating ChatGPT into these products could benefit both carriers and insureds.

In competitive industries where evolution is rapid, companies that cannot effectively embrace ChatGPT may find themselves falling behind competitors. Insurance carriers that adeptly harness the capabilities of ChatGPT position themselves for rapid advancement ahead of their competitors. The strategic integration of OpenAI's model could streamline operations, enhance decision-making, and open avenues for innovation.

1.1 Understanding OpenAI's GPT

In every corner of industry, ChatGPT is making headlines. These headlines often fall into one of two categories: heralding the latest advancements of OpenAI's innovative technology or citing its latest unfortunate misuse. Utilizing ChatGPT in line with its intended capabilities begins with a thorough understanding of what it is and where it stands in the spectrum of AI. Large

Language Models (LLM) are nestled at the intersection of Deep Learning (DL) and Natural Language Processing (NLP) and ChatGPT belongs to a specific subclass of LLM known as Generative Pretrained Transformers (GPT). GPTs excel at learning relationships between data and can generate new data without necessarily referring to their training data (Perrigo, 2023).

Generally, GPT models are trained to predict the next word based on the context of the input and the sequence of words the model has already generated (OpenAI, 2023b). When prompted, ChatGPT does not strive to provide the most factual, rational, or reliable response: to better emulate natural language, it instead chooses from a generated sequence of tokens with the highest probability of being next, given the context of the information currently in its memory. This system of generative response, if not thoroughly understood and properly controlled, introduces novel risks at every user level. Additionally, it is important to understand that ChatGPT is a chatbot application based on OpenAI's GPT architecture, the latest of which being GPT-4. Though GPT-3.5 is still in use with the free version of ChatGPT, its successor, GPT-4, is likely to be the dominant model used in business applications due to its increased performance and advanced data analytics features. If ChatGPT were the vehicle, then GPT-4 would be the engine. As with cars, the GPT-4 engine could be used in many different applications, from chatbots to advanced data analytics. Recognizing both the capabilities and limitations of GPT-4 is thus crucial for assessing associated risks, implementing effective mitigation strategies, and unlocking the advantages of this emerging technology.

2. Risks to businesses relying on ChatGPT

The risks tied to GPT-4 remain largely uncharted territory for insurance carriers and the businesses they serve, with uncertainties surrounding its use yet to be evaluated. While the full extent of risk remains elusive, OpenAI (2023b) has identified several risks inherent in the launch

edition of GPT-4, outlining potential pitfalls and challenges (pp. 44-60). Businesses integrating GPT-4 into their operations encounter concerns primarily in two critical areas:

- Misinformation and erroneous data and
- Overreliance and other human factors.

Exploring these dimensions of risk aims to illuminate the complex landscape that businesses navigate when adopting ChatGPT, providing insights into potential vulnerabilities and considerations for insurance coverage in this rapidly evolving technological paradigm.

2.1 Misinformation and erroneous data

GPT models, owing to their generative pre-trained nature, exhibit a phenomenon termed as "hallucination" (OpenAI, 2023b, p.46). OpenAI emphasizes this term is not intended to anthropomorphize the model, as it might lead to misconceptions about the model's learning process. Nevertheless, "hallucination" aptly characterizes the model's behavior under certain conditions. Hallucinations, broadly defined, involve the fabrication of content, and OpenAI has identified two categories:

- *Closed domain:* "instances in which the model is instructed to use only information provided in a given context, but then makes up extra information that was not in that context" (OpenAI, 2023b, p.46).
- *Open domain:* "when the model confidently provides false information about the world without reference to any particular input context" (OpenAI, 2023b, p.46).

While risks stemming from misinformation are not novel, businesses unaware of the potential for GPT model hallucinations expose themselves to a new avenue of risk. This stark reality was exemplified by Steven Schwartz, a New York lawyer now facing sanctions (Weiser & Schweber, 2023). Schwartz submitted a legal brief filled with fictitious case law generated by

ChatGPT's hallucinations. During his court hearing, Schwartz repeatedly cited ignorance as the primary explanation for allowing the submission of a brief with fabricated legal precedent. Schwartz's lack of understanding about the nature of ChatGPT and the associated risks highlights a situation that businesses across industries could expose themselves to. This new type of risk also presents a dilemma for both insurance carriers and insureds—are hallucination cases covered by current insurance products? Assuming the insurance market is willing to insure this new type of risk, current products would likely need to be amended to include hallucination related perils.

Not all information risks associated with GPT-4 based tools, like ChatGPT, stem from the tool itself but rather from its impact on the speed of information dissemination (Burke, 2023). Businesses engaged in gathering and providing information face the potential for errors in the data they handle and errors resulting from the use of that data to make decisions or products. Using GPT-4 could allow them to process significantly more information, especially if they use public data extensively. While increasing processing capabilities doesn't necessarily increase the probability of erroneous information, increasing the total volume of information likewise increases the volume of errors. When assessing risk exposure to errors and omissions, the use of ChatGPT could serve as a multiplier, amplifying risk in proportion to the expansion of data handling capabilities (Burke, 2023).

2.2 Overreliance and other human factors

In the wake of recent high-profile misuses, companies are rightfully adopting a cautious stance regarding outputs generated by ChatGPT. Paradoxically, as GPT models advance, the risks tied to hallucinations and overreliance may intensify (OpenAI, 2023b, pp. 42, 59). The model's improved content generation escalates the already rising difficulty in distinguishing factual from fictitious outputs because it does not decrease the potential for hallucinations. This heightened

difficulty of discernment necessitates prudent examination and greater technical expertise on behalf of the user. However, as OpenAI (2023b, pp. 59-60) warns, overconfidence and overreliance on the model could lead to less vigilant behaviors, a failure to adhere to best practices, and a potential decline in the development and maintenance of critical skills—outcomes which increase business risk and reduce productive GPT-4 use.

In March 2023, Samsung witnessed data breaches on three separate occasions, where employees unintentionally released sensitive company information to OpenAI through ChatGPT (Hodge, 2023). Importantly, these breaches were not malicious but stemmed from a lack of training and familiarity with an emerging technology. Samsung's response was immediate and decisive: instituting company-wide restrictions on ChatGPT use, a sentiment echoed by other large corporations across various industries.

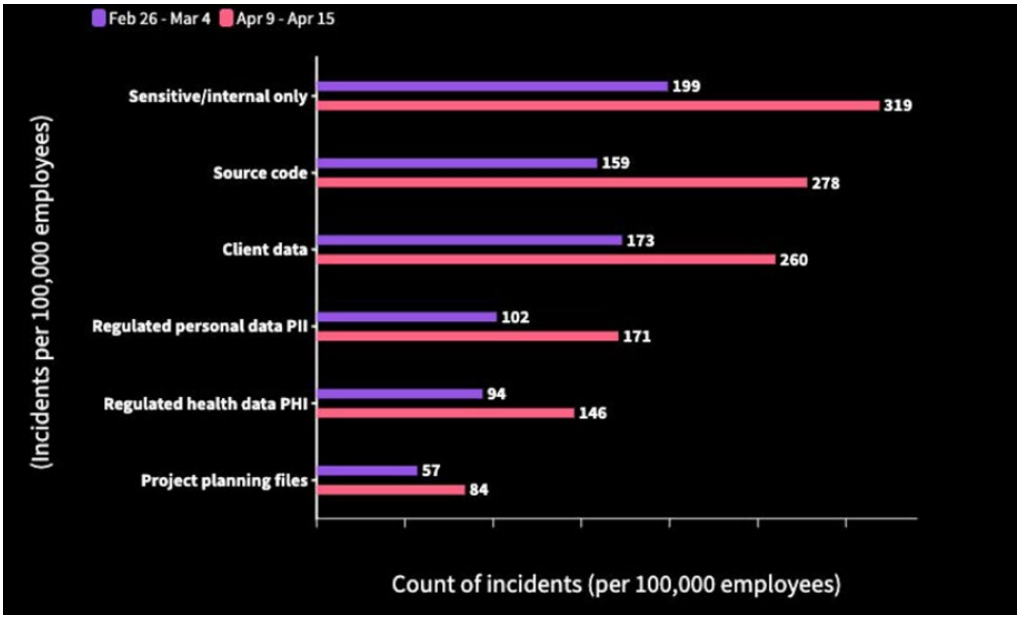

Figure 1: How much sensitive data goes to ChatGPT (Cyberhaven, 2023, p. 3)

Figure 1 highlights the dramatic rise in frequency of incidents involving sensitive data mishandling while using ChatGPT. Cyberhaven (2023, p. 3) shows a significant increase in incidents of more than 60%, in only a couple of months, with the third highest number of offenses

involving client data. Client data given to ChatGPT could expose businesses to legal liability risks or constitute regulatory noncompliance since the most widely accessible versions of ChatGPT provide no guarantees against the use of input data for the further training and refinement of OpenAI's GPT models. The potential consequences of overreliance or negligence with ChatGPT, both in terms of legal repercussions and data breaches, necessitate a balanced and informed approach.

3. Mitigation through infrastructure and the E&S market

Despite the existing coverage for various enterprise risks, the current lack of knowledge regarding the root cause and frequency of GPT hallucinations may render their risk uninsurable in the admitted market and excessively costly in the E&S market. Moreover, frequent occurrences of data mishandling incidents associated with ChatGPT pose a potential threat to insurance carriers offering liability products, escalating potential losses. Such situations could negatively affect insurance customers and the broader market, leading to a surge in the cost of GPT insurance products, making them unaffordable or unsustainable. Businesses can take an initial step to address this issue by leveraging their infrastructure to promote responsible GPT use and could subsequently lower their risk profile and create insurance options in the E&S market.

3.1 Infrastructure strategies to manage ChatGPT risk

In the realm of emerging technologies like ChatGPT, both employers and employees will need to possess the skills to identify anomalies, inconsistencies, and factual inaccuracies produced by AI. A prudent approach could be to restrict the use of ChatGPT to instances where users possess the technical competence to supervise and verify its outputs (Hodge, 2023). This strategy represents a nuanced alternative to outright restrictions, often enacted hastily in response to concerns about ChatGPT's safety and security. Reinforcing user intervention as a mitigation

strategy, companies could develop AI-specific policies and training programs. These initiatives would educate employees on specific risks such as hallucinations and data breaches potentially reducing the frequency of negative incidents. Despite the initial perceived challenges of creating new programs and policies, Hodge (2023) suggests that "many companies likely already possess governance and control infrastructure that can address key emerging AI risks—they may simply be unaware of it" (p. 21).

For instance, existing rules governing data storage, handling, cybersecurity, and due diligence architectures within companies could be expanded to encompass the use of ChatGPT and other AI tools. This expansion not only aligns with existing security measures but also enhances security awareness. As Greg Brockman, President, and C-Founder of OpenAI, emphasizes, "think of [GPT-4] as an augmenting tool—it makes you much more productive, but it's still important that you are in the driver's seat and are the manager and knows what's going on" (OpenAI, 2023a). This human-centric approach, coupled with thoughtful infrastructure, forms a robust foundation for mitigating risks associated with AI integration in company processes by reducing both the frequency of data mishandling incidents and the impact of GPT hallucinations.

3.2 E&S insurance coverage of ChatGPT risk

Infrastructure changes primarily focus on reducing the frequency of incidents to reduce risk and set the foundation for insurance coverage, which stands as an effective tool for companies to mitigate the severity of potential losses arising from ChatGPT use. The innovative nature and rapid advancement of ChatGPT imply that associated risks may outpace regulatory intervention in the standard market, making the E&S market uniquely suited to address ChatGPT-related risks due to its freedom from rate and forms constraints. For example, cyber liability insurance in the

E&S market, free from rate filings, possesses the inherent flexibility to swiftly adapt to the evolving landscape introduced by ChatGPT, far outpacing similar products in the standard market.

Despite the risks of hallucinations and other inaccurate information, ChatGPT use in the workplace continues to grow at an alarmingly exponential rate with workers copying data from ChatGPT less than 1,000 times per 100,000 employees in January of 2023 to nearly 10,000 times per 100,000 employees by April of 2023. (Cyberhaven, 2023, p. 2). Strict regulatory requirements in the admitted market could make it difficult for carriers to keep pace with ChatGPT's growing use rate. E&S carriers provide a level of adaptability unparalleled in the admitted market and have the flexibility to appropriately address growing ChatGPT liability risks while remaining solvent.

When coupled with other mitigation strategies aimed at reducing the frequency of losses, companies can find a strategic ally in the E&S market, where adaptable and tailored insurance solutions offer a crucial layer of protection. This proactive approach would not only safeguard against potential losses but also positions businesses to harness the advantages of ChatGPT with confidence and resilience.

4. Advantages of ChatGPT use within the E&S industry

Understanding and effectively managing the capabilities and limitations of OpenAI's GPT models unlocks a realm of competitive advantages for operational success. A noteworthy example is Morgan Stanley's strategic partnership with OpenAI. Leveraging GPT-4's access to Morgan Stanley's internal document repository, the model transforms into not just an assistant but a technically savvy advisor, amalgamating the collective experience of the entire firm (OpenAI, 2023c). With widespread access to such a profound source of information and knowledge, quicker, more sound decisions could be made at every organizational level.

In the E&S insurance space, there exists the potential to train GPT-4 on sector-specific documentation and state-specific nuances. ChatGPT's strength in understanding natural language could also assist underwriters in processing, analyzing, and understanding unstructured data available in the public domain such as customer reviews, news articles, and social media posts. These applications could empower carriers to enter new markets with unprecedented familiarity. GPT-4's advanced data analytics features could revolutionize tasks like data structuring and visualization, freeing up valuable time for data analysts to tackle practical challenges and innovate processes. This would not only maximize staff efficiency but also provide less technically diverse employees with an accessible avenue for interdisciplinary exploration.

5. Conclusion

Ultimately, as ChatGPT grows in popularity insurance carriers and businesses need to understand the capabilities and limitations of OpenAI's cutting-edge technology to recognize and mitigate its associated risks. While ChatGPT is undeniably a highly advanced tool, it is important to recognize that it is just a tool. Challenges in information security, human factors, and the potential for overreliance call for a combination of user interventions and comprehensive insurance products when employing ChatGPT.

The E&S market stands as a pivotal player, poised to both benefit from ChatGPT's potential as an efficiency multiplier and to provide bespoke insurance coverage that effectively minimizes the severity of potential losses that could result from its misuse. Navigating these challenges strategically positions businesses to not only safeguard against risk, but also confidently harness the transformative power of ChatGPT.

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CHATGPT IN THE E&S SPACE

Analyzing Emerging Risk

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Introduction

The Excess and Surplus (E&S) insurance market commonly consists of unconventional risks that are typically uninsurable in the primary market. This can be made up of coverage for unique, large exposure, or emerging risks. Generative AI, different than common cyber exposures, proves to be one of these emergent risks that should be scrutinized from the E&S market perspective. Meanwhile, ChatGPT is becoming the most popular form of Generative AI, and its relevance to the insurance market must be analyzed.

ChatGPT itself is a Large Language Model (LLM) that uses an extremely large training data set to be able to replicate human conversation. It can be utilized in its public domain (by opening the free chat.openai.com), or by a private access API. This analysis will assume the utilization of the latter, as it jumps privacy hurdles, also allowing the user to input their own training data into the system on top of its already extensive training data.

ChatGPT Utilization

First, many organizations are starting to utilize LLMs like ChatGPT into their internal systems. According to leaders in this space, technological innovation should be based on the following pillars: decreased expenses, increased profits, and increased customer/user satisfaction. ChatGPT proves to check these boxes, as for example it is able to autonomously complete tedious tasks, which effectively allows employees to focus on more important work. This increases profit for the organization, while decreasing expenses as it eliminates the need for

human labor to complete the monotonous tasks. Another example is its use case as a highly capable chat bot. Given this was its original use case, it provides extremely human-like responses to an enormous array of domains.

In order to utilize ChatGPT, and similar generative AI models, some of its limitations and weaknesses must be addressed. The biggest weakness in this space is known as AI hallucination. This risk states that ChatGPT has the capability to produce incorrect information, and on top of that it also does not have the capability to tell the user that it does not know the answer to a given question. This can then lead to the spread of misinformation. This phenomenon originated by Google developer and SVP Prabhakar Raghavan, who said AI models like ChatGPT has the ability to "provide a convincing but completely made-up answer" (Small, 2023). Further, one way to combat this limitation is to make sure there is still a human throughout this utilization process. With both AI hallucination and overall human error in writing ChatGPT inputs in mind, all model responses should be scrutinized. This is the best way to ensure that ChatGPT is coming up with logical responses, even if it requires a quick fact check to confirm. Even with this brief step in mind, overall productivity of the employee using the model can still be increased.

Another limitation in this space is regarding its training data. ChatGPT is trained on a massive corpus of public information, which leads to biases in its outputs, as well as a finite limit on its general knowledge base. And while ChatGPT is trained on the text probability and correlations itself rather than the knowledge of its sources (see Figure 1 for an example of these text correlations), it is still intuitive to understand how flawed training sources can lead to a "skew" of these probabilities when outputting information.

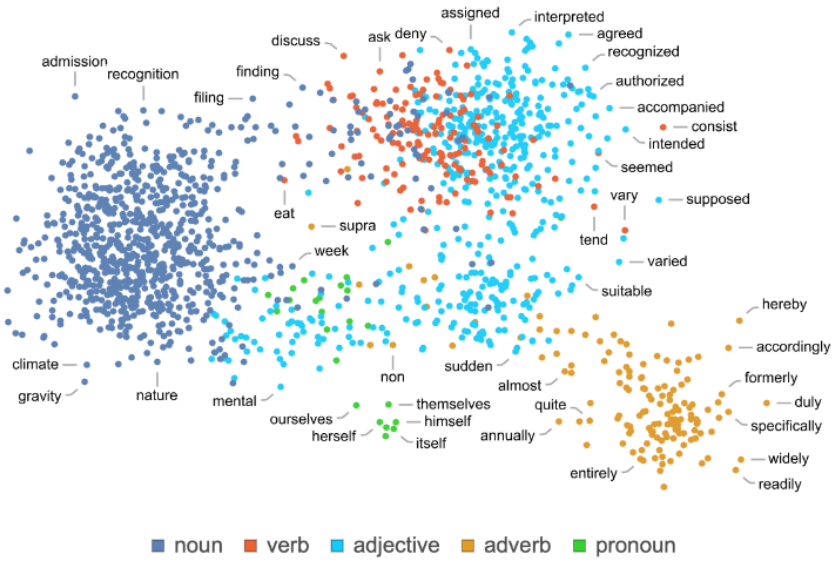

Figure 1: *Text Correlations*

While that provides a high-level overview of its effectiveness and functionality, some specific examples highlight the competitive advantages that ChatGPT presents in the broker and underwriting spaces. The biggest example is eliminating the tedious tasks that take the broker and underwriter away from more pressing work. For example, in the broker space, they may see daily questions from clients and underwriters that go outside the scope of what they are aiming to achieve on a weekly basis. In an effort to help speed up the more mundane tasks, the broker can utilize ChatGPT to come up with immediate answers in an email-ready structure to be sent out. This example also assumes that these questions are within the scope of the training data. Also, it is essential to note that ChatGPT outputs must be analyzed and edited, as mentioned earlier in this section. Overall, the firms that integrate AI into their daily work are the ones that create a more efficient workflow, where efficiency on the tedious end leads to the employee's focus of using their specialized skills to generate profit.

Inherent Risks

With proper risk management techniques, these extreme benefits of an increased competitive advantage are not too good to be true. This begins with risk identification in the Generative AI space, in other words, what risks does ChatGPT pose? This can be identified from both internal and external perspectives.

The first set of risks that ChatGPT create relate to the internal practices of utilizing this model. Essentially, these risks include anything that produces any kind of ineffective or inefficient business practices through the implementation of the model. These types of risks can be best illustrated on a consequential spectrum. Consider ChatGPT giving incomplete or incorrect information, as per one of the weaknesses of the model itself. If this information is for low-level tedious tasks, it would only require more work from the employee utilizing the model. Hence the consequence of this example of model inefficiency is an overall inefficiency of the model user, and ultimately the company employing that user. Yet realistically, the company as a whole would not see much of any financial consequences from this type of risk. However, where consequences start to get serious is when the AI model is being used at higher decision-making levels. While that may be intuitive, now consider the introduction of model bias. This states that through the incorrect or incomplete responses that these models can give, it may also show biases that are apparent in its training data (Croxton, 2023). This is especially apparent in ChatGPT, which is trained on a massive corpus of public data, from sources that can include Wikipedia, politically skewed blogs, and other possibly controversial sources. Then, as an executive uses ChatGPT for decision-making purposes, they are exposed to massive litigation from the uncovering of these biases.

However, this type of exposure may actually be covered by existing insurance products. For this example, again consider ChatGPT biases being used in the decisions of executives. Technology Errors and Omissions ("Tech E&O") is the coverage where this exposure will fit, as Tech E&O covers losses associated with failed executive decisions as a result of failed technology (The Hartford, 2023). Traditionally, however, this coverage is generally only offered to technology companies, since their operations surround the decision-making of related technology. Thus, it does not typically apply to the use of ChatGPT at high levels. However, this coverage could easily expand, as more companies (outside of just the technology space) are starting to integrate AI technology at these higher levels.

Next, ChatGPT risks can be identified from the perspective of outside the company. This is when Generative AI as a whole gets into the hands of bad actors (such as hackers). This leads to tremendous cyber breach exposure, through examples that will be touched upon in more detail, like vishing and ransomware. First, it is no secret that ransomware is on the rise (See Figure 2 below for this trend). This type of cyber event is where a bad actor gets into the internal systems of an organization, takes all of the personal and private information, and threatens to release this information if not paid a certain ransom amount.

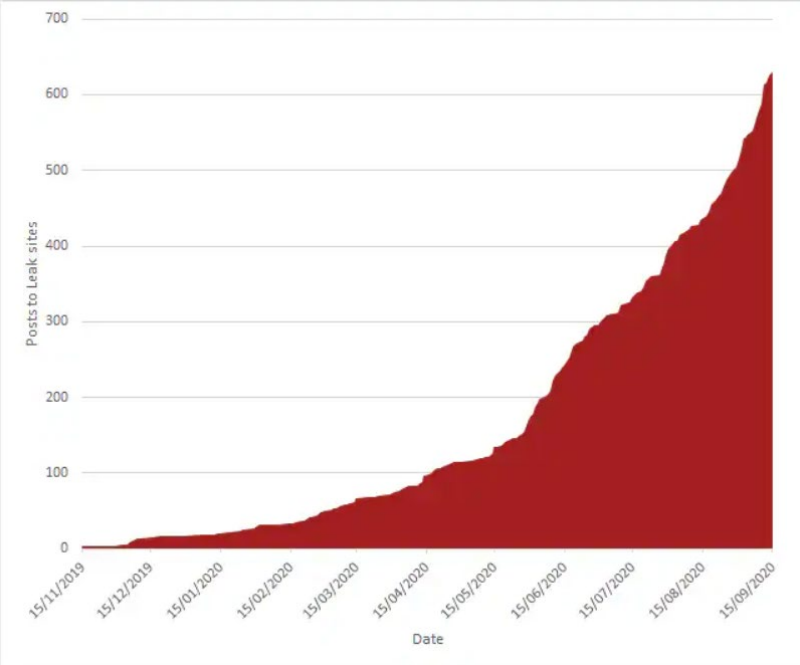

Figure 2: Volume of Cyber Breaches by Ransomware

However, generative AI such as ChatGPT, can create a more complex cyber-attack in this process. One consequential example, to follow the same ransomware methodology, is by means of "vishing" (voice phishing). Essentially, the bad actor will use AI to replicate the voice of a certain manager, and then call an employee telling them to open a corresponding link, in which that link gets the bad actor into the system. Now how does ChatGPT specifically fit into this type of attack? That is to be able to hold a real conversation, where an outdated vishing attack would only be a voice memo (such as a voicemail).

It is then important to identify how existing policies may cover this type of loss as well. Specifically, cyber liability coverage explicitly covers any loss triggered by breach of data (Burke, 2023). Due to the emergent nature of this risk, many organizations are buying this type of coverage. However, the means of the breach of data is starting to be highly scrutinized, as social engineering sublimits or even exclusions are being added to these policies. Social

engineering, for the highest level and most trivial definition, is human hacking (IBM, 2023). The best example for this scenario is that vishing scam, which again persuades the employee to open the faulty link leading to the breach of data.

Lastly, there are some risks that ChatGPT pose that are simply uninsurable both in the traditional and even excess and surplus market. The biggest example in this space is job loss. The reality of ChatGPT is that it is very capable of completing the mundane tasks that many entry-level positions require. Thus if anything, those jobs will be restructured to fit the capabilities of AI, or may eventually be deleted as a whole. Yet the risk (from a macro-level) of unemployment cannot be transferred to any kind of financial vehicle such as insurance. However, if employers were to engage in reducing their workforce to bring in AI, they must be extremely careful in the way they terminate employees. If there is even a hint of bias in these terminations, they could face litigation that would be insurable under a typical errors and omissions policy.

Another type of uninsurable loss in this space is reputation. Intuitively, this coverage makes sense, as it would cover any additional losses a company may find due to a loss event. While this is a debate larger than just within the AI space, reputational losses are almost impossible to insure because they are not specifically measurable. Meaning, it is extremely difficult to isolate losses from the event itself against losses from decreased reputation. This is a form of coverage that exists in small volumes, as many insurers are testing out this possibility. Therefore, in the realm of starting coverage in Artificial Intelligence, it would make no sense to add reputational losses to this coverage, which is in its own infancy in the insurance industry.

ChatGPT in the E&S Space

The Excess and Surplus market, at a high level, is designed for the coverage of unique risks that are not typically covered in the traditional market. While traditional insurers are constrained to write business within the regulations of the state, the E&S market has much more freedom. This can be in terms of policy language and premiums, as both do not need to comply with the standard insurance forms and corresponding language for each line of business and can thus price these higher risks accordingly. Therefore, the issue the traditional market faces with AI is that it does not fit into the tolerance of existing insurance policies. Again, recall how tech E&O policies are reluctant to cover general AI usage, and how cyber policies are just as reluctant to cover social engineering through AI means.

While the E&S market, given its freedom, is more likely to be the origin of AI coverage, the next step is to determine adequate pricing for this new insurance product. Using a "textbook" definition, insurance rates (the basis of premium pricing) are based on loss history. Thus, the following paradox arises: how can a line of coverage start if it has no insurance-based loss history? The solution is through sublimit testing. At a high level, creating a very small sublimit on a policy has a very small implication on total losses on that policy with correspondingly small increase to the premium. For example, if a Tech E&O policy were to add a sublimit of "loss due to negligence of Artificial Intelligence" of say $25,000, compared to the policy's total limit of say $1 million, it would see essentially no premium change. Now the question becomes: what's the point in creating such a small sublimit? Creating loss data! Losses that would be tracked in this space are those attributable to Artificial Intelligence, which is a very clear and measurable cause of loss. While it may exceed the sublimit easily (or not), the insurer would still be able to

track all losses that would fall under that sublimit. Then, since the premium increase is also so small, a high volume of these policies could be marketed to gain a further understanding of this risk (we can thank the Law of Large Numbers for that). Once loss history is developed over time of utilizing these sublimits, a full understanding of these losses could be transferred to its own Artificial Intelligence insurance product. This process should then be repeated for the consideration of AI in cyber-attacks, and its role in the cyber liability policy. Eventually, this AI insurance product would cover both of these internal and external risks, as evaluated over the course of this discussion.

Combining all of these points proves why this coverage should start in the E&S space. The freedom in policy language can allow for the manipulation of these policy sublimits to gauge the financial implications of these types of losses. These can and should be as specific as possible to ensure the collection of information is as pointed towards these risks as possible. Again, this is something that the traditional market simply cannot do. Then, as these losses are transferred to more accurate rate making, staying in the E&S market for full AI coverage will allow for a faster turnaround time in transferring these sublimit data into a full policy. Plus, these emergent risks will be more unique in nature to the traditional market, and would require extreme buy-in from these traditional insurers that will not happen as fast as buy-in would occur in the E&S market.

Conclusion

Artificial Intelligence is the future. The rush and trend of ChatGPT has proven this. However, with any type of large-scale innovative emergence, comes the parallel emergence of its

corresponding risks. The excess and surplus insurance market, however, has the best chance of financially mitigating these risks through gaining loss history and eventually putting out AI-related insurance products. Meanwhile, a risk of this complexity cannot initially be insured by a traditional insurer. Thus, the E&S market has the power to not change, but *create* the landscape of how Artificial Intelligence insurance is perceived.

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