

Generative AI in Banking and Financial Services – Opportunities, Challenges, and Approach

Legal and Regulatory Considerations

September 13, 2023

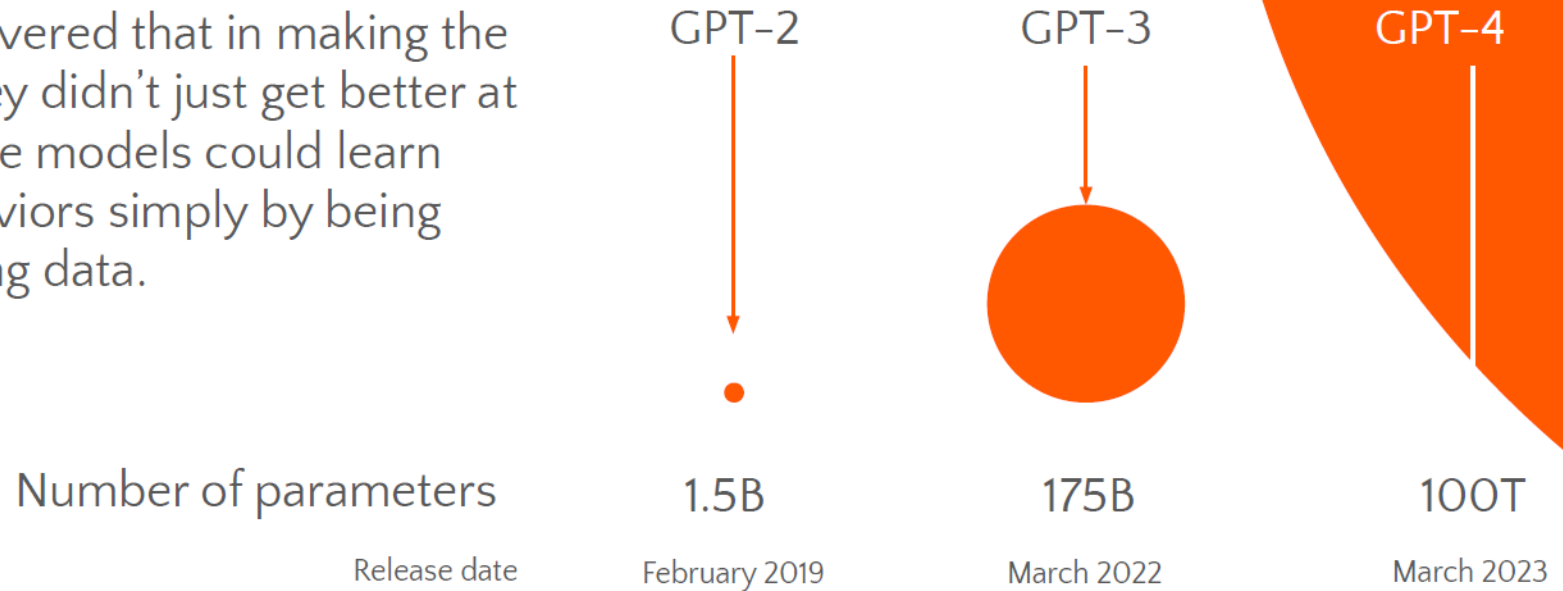
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Why now?

Generative AI has the same “why now” as AI more broadly: better models, more data, more compute

Researchers discovered that in making the models bigger, they didn't just get better at producing text. The models could learn entirely new behaviors simply by being shown new training data.



- Capabilities have already reached maturity levels enabling a larger use and the rhythm is accelerating:
- Uniform bar exam: GPT-4 scored in 90th percentile, versus ChatGPT in the 10th percentile.
 - Biology olympiad: GPT-4 scored in 99th percentile, versus ChatGPT in the 31st percentile.
 - GPT-4 is 82% less likely to respond to requests for disallowed content, and 40% more likely to produce factual responses than GPT-3.5.

How does it work?

There's multiple essential layers below the surface of Generative AI applications



Essential elements to increase your intelligence index

● Applications	e.g., ChatGPT; Generative AI chatbots built on foundation models
● Fine-Tuning	Reinforcement learning from human feedback
● Foundation Model	e.g., GPT-3, DALL-E 2; continually grow to make business more responsive to signals of change
● Data	internet text, including websites, books and articles

U.S. Legal and Regulatory Landscape – Legal Framework... as Described by GAI

- Open AI prompt¹: “In 100 words or less, please describe how the United States regulates generative artificial intelligence in the financial services industry.”
- Open AI response: “[T]he United States primarily regulates generative artificial intelligence in the financial services industry through existing financial, data privacy, and consumer protection regulations. These regulations ensure that AI systems used in finance comply with data security, fair lending, anti-discrimination, consumer protection, AML, and KYC standards. Additionally, risk management and ethical considerations play a role in governance....”

U.S. Legal and Regulatory Landscape – Stakeholders and Key Themes

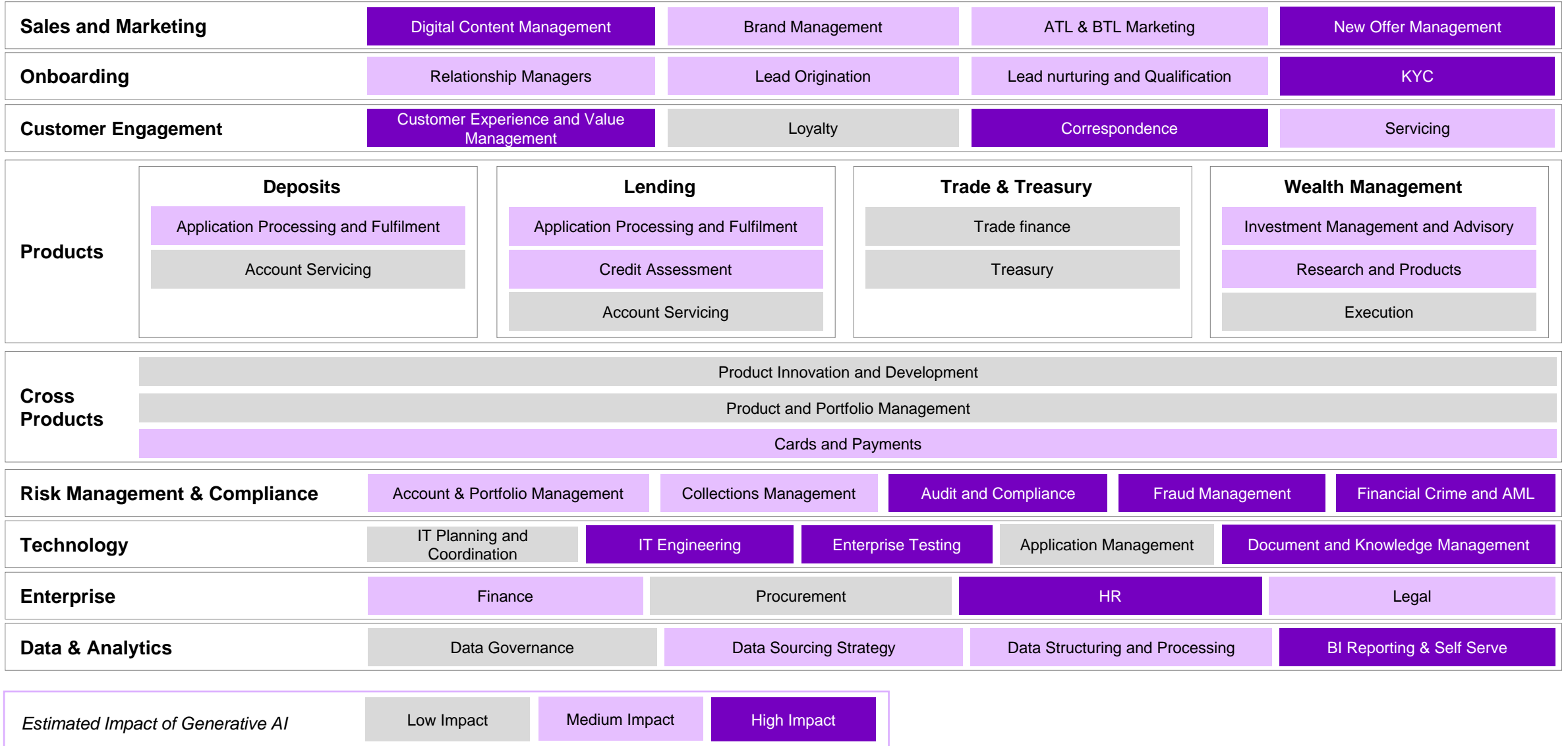
- Stakeholders: CFPB, DOJ, EEOC, Federal Reserve, FDIC, FTC, NCUA, OCC¹
- Use cases discussed in RFI:² (1) Flagging unusual transactions; (2) Personalization of customer services; (3) Credit decisions; (4) Risk management; and (5) Textual analysis
- Benefits: “AI has the potential to offer improved efficiency, enhanced performance, and cost reduction for financial institutions, as well as benefits to consumers and businesses.”
- Risks: (1) Explainability; (2) Broader or more intensive data usage; and (3) Dynamic updating

¹ See Appendices A-B

² Federal financial institutions regulatory agencies’ Request for Information and Comment (Mar. 31, 2023), available at https://www.govinfo.gov/content/pkg/FR-2021-03-31/pdf/2021-06607.pdf?utm_campaign=subscription+mailing+list&utm_source=federalregister.gov&utm_medium=email

Generative AI can drive value across the Bank

with the greatest value in Sales & Marketing, Customer Engagement, Technology, Risk & Compliance and HR/Legal



Banking and Capital Markets GenAI Use Case Examples

Banking

Contract Review

A large bank is using generative AI to automate the review and analysis of legal contracts. The technology helps to improve the speed and accuracy of contract reviews and reduces the risk of errors or oversights.

Virtual Assistant

A large bank is using AI-powered virtual assistant which has surpassed seven million users and 50 million client requests.

Risk Management

A multinational bank is using generative AI to improve risk management by analyzing customer data and financial history to predict the likelihood of default. The technology helps to improve the accuracy of lending decisions and reduce the risk of loan defaults.

Financial Modelling

A multinational investment bank is using generative AI to improve the accuracy and speed of financial modeling. The technology is used to automate the process of creating and updating financial models, which helps to improve the bank's forecasting capabilities and inform business decisions.

Content Creation and Personalization

A large retail bank is using large language models to transform the bank's approach to content creation and personalization.

Cap Markets

Knowledge Management Chatbot

A financial services company has launched a GenAI powered tool that allows its 16,000 financial advisors and call center agents to easily utilize its massive collection of research, data and internal procedures.

GenAI Chatbot

A financial services company is rolling out a chatbot powered by Generative AI to assist customers, 70% of which did not require further support. Chatbot can answer questions about loans and financial topics.

Prospect Emails

A financial services corporation aims to use GenAI to prospect profiles to draft personalized emails that the advisor can then send or re-generate based on their objectives.

GenAI for Software Development

A multinational investment bank and financial services company is experimenting with generative artificial intelligence technologies to assist its developers in autonomously creating and testing code.

GenAI for Stock Picking

A multinational financial services firm is developing an artificial intelligence chatbot available for financial advisors to help select investments for customers.

U.S. Legal and Regulatory Landscape – Legal Framework

- Existing regulatory framework sufficiently flexible?
- E.U. contrast: Comprehensive, tailored legislation
- Voluntary risk management¹
- A U.S. legislative push?
 - State laboratories²
 - Federal activity?

¹ NIST AI Risk Management Framework, available at: <https://www.nist.gov/itl/ai-risk-management-framework>

² See Appendix C

U.S. Legal and Regulatory Landscape – AI → GAI

- “Generative AI, which can produce voices, images, and videos that are designed to simulate real-life human interactions are raising the question of whether we are ready to deal with the wide range of potential harms – from consumer fraud to privacy to fair competition.” (Dir. Chopra, April 2, 2023).¹
- “[G]enerative AI *is* regulated.” (Comm. Bedoya, April 5, 2023).²

¹ Director Chopra’s Prepared Remarks on the Interagency Enforcement Policy Statement on “Artificial Intelligence,” available at <https://www.consumerfinance.gov/about-us/newsroom/director-chopra-prepared-remarks-on-interagency-enforcement-policy-statement-artificial-intelligence/>

² “Early Thoughts on Generative AI,” prepared remarks by Comm. Bedoya, April 5, 2023, available at: https://www.ftc.gov/system/files/ftc_gov/pdf/Early-Thoughts-on-Generative-AI-FINAL-WITH-IMAGES.pdf

U.S. Legal and Regulatory Landscape – GAI Swords and Shields

- “Generative A.I. risks turbocharging fraud” (Chair Khan, May 3, 2023)¹
- “AI has taken over imaginations. It’s also taking over fraud.” (American Banker, January 3, 2023)²
- “Voice Deepfakes Are Coming For Your Bank Balance” (New York Times, August 30, 2023)³

1 Chair Khan, “We Must Regulate A.I. Here’s How,” New York Times, May 3, 2023, available at <https://www.nytimes.com/2023/05/03/opinion/ai-lina-khan-ftc-technology.html>

2 Carter Pape, “AI has taken over imaginations. It’s also taking over fraud.” American Banker, January 11, 2023, available at <https://www.americanbanker.com/news/ai-has-taken-over-imaginations-its-also-taking-over-fraud>

3 Emily Flitter and Stacy Cowley, “Voice Deepfakes Are Coming for Your Bank Balance,” New York Times, August 30 2023, available at: <https://www.nytimes.com/2023/08/30/business/voice-deepfakes-bank-scams.html>

Foundation models present challenges that need to be addressed for Enterprise use

Challenges to FM Adoption

Your Obstacles

Cost

Foundation models require significant computational resources to develop, train, and deploy, leading to an expected fivefold cost increase.¹

Legal and Ethical

Businesses must ensure that their models are developed and deployed in a legal, responsible and ethical manner, which may require additional oversight, testing, and validation.

Privacy and Security

Foundation models often require access to sensitive data, such as customer information or proprietary business data.

Accuracy

Out-of-the-box, FMs often fall short of the required accuracy rate for a production application. A business may struggle to justify the time and cost required to do so.

Interpretability

The AI is not explainable. This can make it challenging for businesses to explain or justify their decisions to customers or regulators.

Environmental

Training is 10% of ML energy, serving 90%. Yet, training GPT-3 led to emissions equivalent to 550 roundtrips from NYC to SF.² Careful choices can reduce your carbon footprint.

What's Needed To Adapt

Be Enterprise-Ready

Cost-effective Use

Foundation models are expensive to run. Instead of using large foundation models, companies may instead use them to help train smaller, more focused models that can achieve the same (or better) performance for a fraction of the price.

Secure Deployment

For most enterprise use cases, using a foundation model via API is not an option. Moreover, open-sourced models incorporate user data into their model training, prohibiting use where proprietary data is involved.

Fine-tuning

Out-of-the-box foundation models trained on general knowledge will struggle with domain-specific tasks. To improve the model's performance data scientists will have to gather and prepare data for fine-tuning.

Establish certain boundaries

Concerns facing life science companies can be mitigated with proper governance

Keep It In House

No real-time authoring of market-facing content.
MLR/PRC/IRB approval needed before distribution

Keep It Private

No use of Patient Health Information and proprietary data in open-source models

Test for Bias

Establish a mechanism for a methodical assessment of the potential bias or improper context in data and output



Appendix A: CFPB Publications and Statements on AI

- [9.14.2017: Upstart No-Action Letter](#)
- [8.17.2019: Update on No-Action Letter](#)
- [7.7.2020: AANs and AI/ML models](#)
- [11.30.2020: New Upstart NAL](#)
- [12.15.2021: Whistleblowers in AI](#)
- [5.26.2022: AANs and complex algorithms](#)
- [4.25.2023: Dir. Chopra Remarks on AI](#)
- [6.1.2023: AI and Fairness in Appraisals](#)
- [6.6.2023: Chatbots in Consumer Finance](#)

Appendix B: Other Federal Guidance on AI

- DOJ
 - [1.9.2023: FHA Applies to Algo-Based Tenant Screening](#)
- FTC
 - [4.8.2020: Using AI and Algorithms](#)
 - [4.5.2023: “Early Thoughts on Generative AI”](#)
- Joint Task Force(s)
 - [April 2023 Statement on Bias in Automated Systems](#)
- OCC
 - [6.26.2023 Hsu on AI in Banking](#)
- White House
 - [AI Bill of Rights](#)

Appendix C: State Laws Regarding AI

- California S 398
- Colorado S 32
- Connecticut S 1103
- Illinois H 3563
- Massachusetts H 64, S 33
- Maryland H 1034, H 1068
- Minnesota H 2890, S 2909
- Missouri H 311, H317
- North Carolina S 460
- Nevada S 165
- New Mexico Hm 75, SM 63
- New York A 4969
- Rhode Island S 117
- Texas H 2060, H 3633