

# How finance **teams can** **leverage** LLMs

Use cases to apply large language models to your workflows



ALKYMI

# Table of Contents

Introduction

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What are large language models?

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How can LLMs be incorporated into financial services workflows?

---

How do you integrate LLM tools into your business?

---

Conclusion



**G**enerative AI, with its ability to create text, images, sound, and even code, has opened up a new world of opportunities for businesses to adopt AI within their internal and user-facing workflows and applications. That world is also changing quickly—the largest, incumbent companies are launching new or updated machine learning models and applications frequently and getting significant public attention, and smaller, industry-specific AI models and tools are launching on a near daily basis. With the impressive power of the newest generative AI tools built from Large Language Models (LLMs), the question for businesses is quickly becoming not “should we use LLMs?”, but instead, “what do we miss out on if we don’t?”

Successfully deploying AI tools into your business is becoming a competitive advantage, as well as a way to get the most out of your own resources, make your workflows more efficient, and better equip your team to do their jobs. It can be overwhelming, though, to figure out how to effectively and safely integrate generative AI into your systems and processes while staying up-to-date on the latest functionality. In this guide, we’ll provide an overview of how you can incorporate LLMs and other advanced technology into your business and go over use cases specifically for financial services.

# What are Large Language Models?

Generative AI is built on top of foundational Large Language Models—models that are trained on extensive datasets to understand and generate human language, including answering questions, translation, and summarizing text. LLMs are capable of summarizing and synthesizing a user’s text-based input and composing an accurate response. Depending on how a model is prompted (how you ask your question and what data you share with it), it can generate answers from its own dataset or it can draw its response from a singular data source or individual document. Some applications built with LLMs can also search the internet, allowing the model to look for answers within its own dataset or from current data available on the internet to give you a comprehensive response. The most well-known LLMs, like OpenAI’s GPT or Google’s PaLM 2, are capable of increasingly sophisticated tasks. OpenAI’s GPT model is the foundation for their chatbot, ChatGPT. ChatGPT allows end-users to directly engage with the model and has drawn media attention and inspired new products across industries.



# A short history of Large Language Models

## ELIZA

An early chatbot that could simulate limited conversations

1960

## SHRDLU

A natural language processing system able to understand and respond to commands about a simulated world

1970

## Statistical Models

Significant improvements are made in the accuracy of language models

1980

## LSTM/Neural Networks

Long Short-Term Memory and Neural Networks are developed, inspired by the human brain and leading to improved accuracy of language models

1990

## Stanford CoreNLP

An NLP enabling sentiment analysis and named entity recognition

2010

## Google Brain

A deep learning AI research project

2011

## Google Transformer Architecture

A new era of LLMs begins

2017

## GPT-2

OpenAI's large-scale LLM with 1.5 billion parameters

2018

2019

## BERT

Google's 340 million parameter model

2020

## GPT-3

The largest LLM at the time, with 175 billion parameters

2021

## LaMDA

Google's model with 137 billion parameters

## GPT-3 API

OpenAI allows developers to utilize GPT-3 in their own applications

2022

## ChatGPT

OpenAI's chatbot gains widespread public attention

2023

## Google Bard

Google's chatbot searches for answers using both its dataset and by searching the internet

## ChatGPT API

OpenAI allows businesses to build ChatGPT into their products

## GPT-4

Open AI's best performing model, available on ChatGPT Plus and as an API for developers

## How are companies already using LLMs?

With the ability to generate text, images, and sounds with increasing levels of sophistication, there are countless ways that LLMs can be used on a daily basis to facilitate content creation. OpenAI has made their GPT models accessible through the Microsoft Azure OpenAI API, and companies are already launching new tools that utilize LLMs.

Any company with enough resources and technical expertise can now build an application on top of an LLM and take advantage of its ability to create content. LLM-powered chatbots like Salesforce's Einstein GPT can be embedded into business systems and handle customer service enquiries, help write sales emails or targeted marketing campaigns, or write code and documentation. Many companies are using the models largely as-is within their applications, like Microsoft's AI-powered instance of their search engine, Bing, which utilizes OpenAI's GPT model in the same way ChatGPT does.

Companies well-versed in AI, and with existing applications built using LLMs, have quickly adopted the newest generation of LLMs, using them to complete domain-specific tasks focused on their own data with advanced prompt engineering techniques. Additionally, some companies are fine-tuning the foundational LLMs, training them with proprietary data specific to their industry and building apps for particular use cases.

## LLM adoption in financial services

Major financial services institutions and firms are already experimenting with adopting generative AI. Morgan Stanley was one of the first to embrace LLMs, announcing they are building a chatbot powered by GPT to leverage insights from their proprietary research reports. Their financial advisers will be able to ask questions and generate summaries from over 100,000 vetted reports, giving them access to more insights on the fly when working with clients.

Morgan Stanley saw an opportunity to use LLMs to tap into a massive resource—their own data. Financial services firms manage, process, and transmit huge volumes of data every day. It plays a major role in the decisions teams make daily, but data can also be uniquely hard to access and use. Whether it's unstructured data that's coming in through emails or slide decks, or in the form of research reports that are hundreds of pages long, using data to its full potential is an obstacle many firms struggle to overcome—and LLMs are an opportunity to do just that.



# How can LLMs be incorporated into financial services workflows?

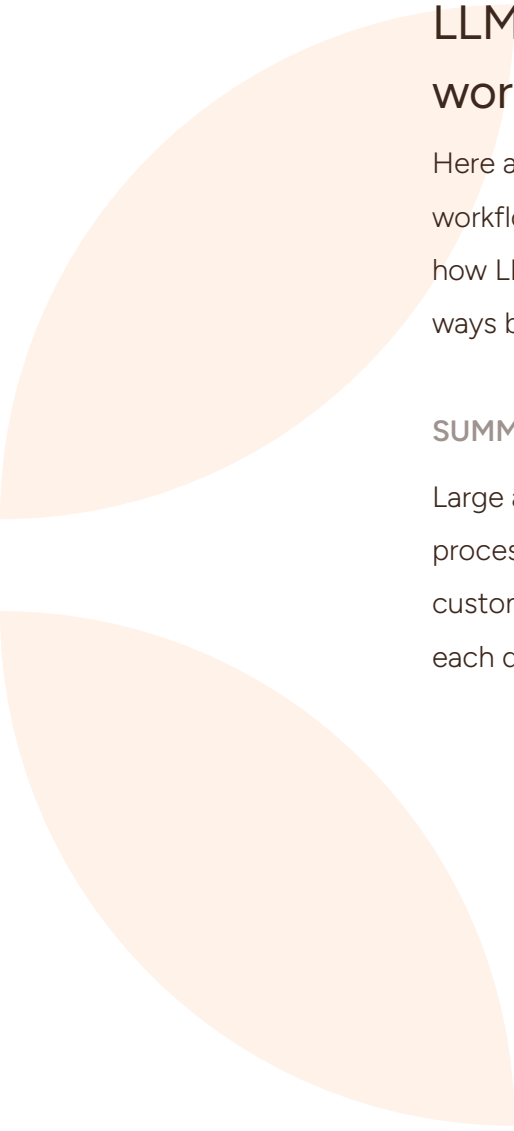
Before the latest generation of LLMs like GPT, only some data workflows justified the investment in automation; significant investment has been put into unlocking document data from high volume document types in recent years, like account statements, capital calls, and invoices. Now, LLMs unlock virtually all data use cases, including more strategic, less well-defined data, and have introduced a completely new set of impactful applications.

Both investment and operations teams can now benefit from tools that can synthesize, classify, and organize data, instantly identifying and pulling out the most pivotal information and generating new insights. How can using LLMs to optimize your data processes help your firm and your staff?

- Better, more in-depth data and faster access to that data leads to more informed investment decisions and stronger analysis from your team.
- A clearer view of your portfolio gives you a better view of your risks and of new opportunities.
- Cleaner and more accurate reporting means more transparency with your clients.
- Less manual data entry means less employee burnout and more efficient, strategic work.
- For technology providers in financial services, offering more machine learning capabilities means better support for clients and staying ahead of the competition.

In a recent survey of their investors, Morgan Stanley found that 72% agreed that AI could be a game changer for investors and traders, and a further 74% agreed that financial advisors would be better able to serve their clients using this kind of AI. LLMs present a unique opportunity to give your teams a better understanding of your data more quickly, helping them to make more informed decisions.





## LLM-powered tools that can transform your data workflows

Here are some of the ways that LLMs can start to be embedded into your workflows to power your business and empower your team. The possibilities for how LLMs can be used are still evolving, and this is only the beginning for the ways businesses will be transformed with generative AI.

### SUMMARIZATION AND ANALYSIS

Large amounts of data flow through financial services firms each day, through processes like due diligence, investment reporting and management, and new customer onboarding, and it takes time and staff resources to properly review each document. When integrated into these processes, LLMs can:

- Summarize research reports, statements, and financial information to generate quick ideas, understand complex concepts, or make faster determinations on an investment or investor
- Analyze trends across multiple data points and documents
- Ask specific questions to quickly find the data you're looking for
- Determine the overall sentiment of a document, i.e. "Is the analyst's view positive?"
- Create a reporting template to ask the same questions of multiple documents, i.e., "Does this report mention China?"

You can adapt an LLM to focus only on the data you're providing it, to get better, more accurate responses.

## DATA ENRICHMENT AND FLOW

The data coming into your firm may need context to be useful, or may have gaps or missing details that need to be manually addressed before the data can be inputted into your systems. You can use an LLM to:

- Find information from designated third-party sources to supplement your data, i.e. add a company's stock ticker symbol or share price, define terms, or add relevant information about a company or individual
- Add in context related to the document, like additional news or points of interest that can make a more rounded picture, by searching on the internet or from other documents within its dataset
- Automatically generate a response when a document is received or write and send a notification when a document has been processed

## DUE DILIGENCE AND RESEARCH

Due diligence and research on your investments is another area that takes considerable time and manual review. An LLM can:

- Proactively identify outliers, anomalies, abnormal trends, or missing or unusual data in documents
- Supplement data with research on a category or geography affecting an investment, pulling in relevant information from the internet or across a document set
- Gather additional information to identify conflicts of interest or bias by accessing more information on companies and investors from the internet or its dataset
- Analyze across documents to confirm whether any gaps exist and ensure you've received all required data

In addition to generating insights, enriching your data, or assisting with due diligence, LLMs can also help boost your team's productivity by helping you prioritize documents to review, spotting anomalies in data, or automatically classifying documents by type.

# How do you integrate LLM tools into your business?

## Start with security

LLMs have the potential to unlock new ways for companies to do business and create value, but they also raise new questions around how they can fit into enterprise technology architectures while maintaining information security.

Before incorporating LLMs into your business workflows, it's crucial to understand how your data and your customer data is being handled with these new tools. ChatGPT, for example, is free to use but, in return, its default setting is to learn from your input, storing your conversations and training itself with your data to better answer others' questions in the future (this setting can be manually toggled off by the user). As a result, some companies (and countries) have banned ChatGPT on corporate devices.

Tools and products built using the GPT models from enterprise APIs like Azure's, however, give companies and end users the opportunity to utilize GPT to power their applications without putting their data at risk. Microsoft's enterprise-level Azure OpenAI API allows companies to use GPT models while ensuring their data is encrypted, only stored temporarily, and not used for training the model.

If you partner with an AI company, you may have additional options to keep your data secure, including utilizing a private cloud deployment for your data, agreeing on how your data can be used to train any of the company's in-house models, and using specific prompting to ensure the model is only looking at your document or dataset to find an answer.

It's also important to create guidance and set policies for your own teams. If they'll be using publicly available chatbots like ChatGPT to interact with LLMs, open source tools, or direct integrations with LLMs, train your team on how their data is being used and set clear rules for which tools can be used with company data and on company devices.

# Integration strategies

## DIRECTLY INTEGRATE WITH AN LLM

Companies and institutions looking to use LLMs need to get past several barriers to entry, including figuring out how to integrate new tools with their existing systems, training or finding staff that know how to work with AI, and identifying how to best modify their operations to take advantage of these new technologies.

Financial services firms with the resources to manage these challenges or to hire teams specifically focused on AI can utilize an API, like the Microsoft Azure OpenAI API, to build their own LLM-based tools or integrations in-house. Using an enterprise API to access foundational LLMs will allow you to build your own solution using the LLM as-is or to fine-tune a model for your specific use case.

## PARTNER WITH AN AI COMPANY

Many companies will need to utilize a partner that can help them utilize LLM tools for their specific business needs. For financial services firms, partnering with an AI company can help you overcome any barriers to integration with your existing operations. Many platforms built with AI have pre-built integrations with major business systems, or can connect to your systems through an API or workflow automation tools.

An experienced AI company well-versed in LLMs can advise you on how best to integrate LLMs into your workflow. They'll also understand your security needs and can work with you to meet them while still utilizing the latest technology. As your partner in leveraging LLMs for your use case, an AI company can act as a layer between you and the model—optimizing processing times, providing structure around responses, and helping you get the results you want.



## Top things to consider before using an LLM in your workflow

- How will new LLM tools integrate with your legacy systems?
- Will you need to train or hire staff to work with AI?
- How will you need to modify your operations and processes to incorporate AI?
- How will your data be stored and used?
- Do you need to fine-tune a model, or can you accomplish what you need with effective prompting of an existing model?
- What kinds of prompts will be most effective for getting more out of your data?
- Is there a company you can partner with, with expertise in AI and LLMs?
- If working with an outside company, how are they keeping your data secure?

# Conclusion

Large language models and the tools that have been and will be created from them are a disruptor across industries. Their ability to generate insights and tap into large datasets is more advanced than any technology available before. They have the potential to become the backbone of how companies tap into the power of data, including in financial services, where firms rely on unstructured data that they currently struggle to access efficiently. LLMs can unlock that data, supercharge your workflows and give your teams more impact and deeper insights, making your front office workflows more efficient and giving your operations teams more impact on investment decisions.

Utilizing LLMs to arm your staff with better, more accurate data, faster, can mean better investment decisions, but it can be difficult to seamlessly integrate the latest AI into your business and stay up to date on future developments. For most firms, partnering with an AI company to incorporate LLMs into your business will help you overcome the barriers to entry and take advantage of this new technology faster. Generative AI can seem overwhelming and hard to keep up with, but harnessing it can give your firm an advantage and be transformative for your business.

# About Alkymi

Alkymi, the leading data acceleration platform, is the action layer between all of the data that flows into your business and the systems that support it. We help teams unlock data in any form, process and route it with tools built specifically for business users.

Valuable data flows into your business in all forms — email, PDFs, images, etc. These sources of information are not always easy to access and can slow down operations, leading to delays in your critical business functions. Liberating this data in real time, transforming it and sending it directly into your business systems accelerates your ability to make decisions.

Alkymi has built an intuitive solution that enables any business user to create end-to-end automated workflows without needing any technical expertise. We are delivering the first self-service, no-code automation tool that helps you accelerate decision-making and maintain agility.

[alkymi.io](https://alkymi.io)