

🔗 <https://emerj.com/ai-sector-overviews/ai-at-jp-morgan/>

✍ Niccolo Mejia

⌚ 11 min read

# Artificial Intelligence at JPMorgan – Current Initiatives



According to [Fortune](#), JPMorgan Chase is the [largest bank](#) in the U.S. and controls over \$2 trillion in total assets. In this article, we detail the types of AI research JPMorgan is doing as well as how they are likely to be using their applied AI applications.

JP Morgan's AI research initiatives include:

- Natural Language Processing in Equity Investing

The bank's applied AI initiatives include:

- Anomaly Detection for Recognizing Fraud and Risk Mitigation

- Natural Language Processing (NLP) for Virtual Assistants, Utilizing News, and Client Intelligence
- Predictive Analytics for Smart Documents Intelligent Pricing
- 
- 



We begin our exploration of JP Morgan's use of AI with their research initiatives:

## AI Research Initiatives

### Natural Language Processing in Equity Investing

JPMorgan and APG Asset Management, a dutch pension manager, have worked together to study how data science can improve the ways in which portfolio managers and research analysts take in and utilize information.

They used a dataset consisting of bank statements from the European Central Bank to run tests that would elucidate the implications and limitations of data science. JPMorgan is now purportedly using their findings to explore how they can be used in separate initiatives for their trading and research teams.

Researchers at JPMorgan claim they have found positive results within a relatively short time, and have been able to pinpoint multiple use-cases for this technology in developing new user interfaces. Individual employees, likely from both JPMorgan and APG, collaborated through a single data repository that allowed everyone working to observe each other's progress.

The team was purportedly able to test out various research approaches from within the company's databases and those from outside entities. They also built a prototype AI

application which marked the end of the research project.

Augmenting the experience of important staff, such as portfolio managers, may prove to be an important part of AI transformation within banks. Similar to the customer experience, reducing friction for end users could improve satisfaction and efficiency across many departments.

We spoke with Sebastien de Brouwer, Chief Policy Officer of the European Banking Federation, about this on our podcast, *AI in Banking*. The interview was focused on where business leaders should be focused in terms of AI. When asked about which capabilities will matter in terms of being critical in the future, de Brouwer said:

 We strongly believe that AI will have indeed a transformative effect on the banking industry...The most important aspect is certainly that it will change and hopefully enhance the customer experience. So that's already a very important element I think for the banks who will succeed, and that is of course interactivity with the clients, because this should allow [banks to use interactivity data to create better offerings]...One activity where many banks are looking at is investment advisory or recommendations. I think that is certainly an area where no big players are looking very seriously at AI [as a solution.]...This may also expand the client segments that would have access to those kinds of services.

As de Brouwer observed, investment advisory and recommendations are business areas that stand to benefit from data science and AI-enabled business intelligence. If JPMorgan were to implement a way to use AI to not only help their staff but their customers understand what the most important information means for their stocks, it may raise their customer satisfaction in the future.

For example, consider if a customer's portfolio manager was using an AI-enabled dashboard to view the portfolio and its associated data. JPMorgan could create an interface that displays the most important market trends for the manager to show to their client.

This way, the customer may develop a better understanding of their investment situation as well as a better relationship with the bank's brand.

For JPMorgan, this research project proved that their co-creation model with APG is valid, which may imply success with this project. Whether this means JPMorgan will be adopting this AI application in some form is unclear. While the team found mostly business information, they claim to be continuing to use this project as a way to engage with the greater data science community.

## Applied AI Initiatives

JPMorgan claims to be taking advantage of six applied AI initiatives. That said, the company does not provide much detail about how these initiatives are implemented or in which departments. In order to implement six separate AI initiatives, JPMorgan would need a streamlined method of integrating AI software across their tech stack. This may be possible with a cloud-based system similar to what they use for treasury management.

JPMorgan's purported applied AI initiatives include:

- Virtual Assistants
- Anomaly Detection
- News Analytics
- Quantitative Client Intelligence
- Smart Documents
- Intelligent Pricing

We can infer numerous possible use-cases for each of these AI initiatives, in addition to the ways in which they were developed and implemented. The clearest use case is for their virtual assistant, which is likely a mature version of the pilot chatbot project they worked on with AI firm Kasisto in 2018 and earlier this year.

Kasisto claims to have helped JPMorgan treasury services offer customers a customer service chatbot. The chatbot was purportedly made for the purpose of helping clients navigate JPMorgan's expansive website.

Kasisto's platform, KAI, could be used to develop chatbots which can be deployed across

multiple digital channels, such as employee dashboards and smartphone apps. Kasisto claims to have a deep learning tool for business banking that helps their software analyze data.

Chatbots made using Kasisto's platform are intended to communicate with customers about their financial operations. These can include loan or credit card applications, product discovery, or simply customer support. Some customer requests can be fulfilled within the conversational interface, including applications or sending payments.

Kasisto claims KAI chatbots can recommend users more efficient ways to accomplish routine tasks. One example of this is a banking chatbot that recommends foreign-exchange ACH payments in lieu of numerous repeated payments of small amounts.

The demo below shows how a KAI chatbot can answer questions regarding personal data such as account balances. This particular video shows the chatbot Kasisto made for Mastercard:

## Anomaly Detection

JPMorgan most likely uses anomaly detection to mitigate risk and identify fraudulent banking activities. This type of application would require the company to integrate a machine learning model into their payment processing stack and allow it to analyze a continuous stream of incoming transactions.

This would train the model to recognize a baseline sense of normalcy for the contents of these transactions or new account information should the system be used to track any other banking tasks.

An anomaly detection solution could then notify a human employee of any action which deviates from the normal pattern so they can review it. This employee can choose to accept or reject this alert, which serves as a signal to the machine learning model that its determination is correct or incorrect, respectively.

This helps to train the model to recognize that the type of deviation it detected was either fraud or an acceptable deviation from typical operations. This helps catch money laundering as it happens and may allow JPMorgan's fraud team to stop the attack and reverse any fraudulent transactions.

## Intelligent Pricing and Quantitative Client Intelligence

Both JPMorgan's pricing and client intelligence applications are likely powered by predictive analytics. This is because in order to make accurate predictions about prices and various customer service needs based on large amounts of enterprise data, the company would need a solution that can properly understand and find trends within that data. JPMorgan would likely be able to gauge potential customer satisfaction based on proposed business plans; however, the company makes the exact use case for this initiative unclear.

JPMorgan's website states that their intelligent pricing initiative offers "more accurate prediction and confidence intervals." This is a strong indicator that their solution runs on predictive analytics because predictive analytics in many cases also uses confidence intervals to determine the best prediction to provide to the user.

Additionally, their client intelligence initiative would require predictive analytics at least in part in order to be able to determine if a customer was satisfied using their customer service data.

In order to make this type of solution run properly and intake large amounts of customer service data, it would need to be installed across all customer service channels within the bank's tech stack. We spoke with Nishant Chandra, Sr. Director of Data Products at VISA on AI in Banking about how banking leaders can better handle this type of challenge that comes with AI adoption.

Chandra emphasizes the importance of integrating AI capabilities as opposed to simply layering them on top of current operations. He makes a comparison between this type of layered integration, or in his words, "lasagna," as opposed to the vertically topped "pizza." With regards to his specific approach to integration, Chandra said:

“ Each layer of software when they are talking to each other are intelligent. They have data science capabilities built in, they have AI intelligent ways of detect data fraud built in at every layer as opposed to doing it at the very end. These are intelligent software platforms which will transform or ingrain the AI capabilities in this space. This is a fundamental transformation that is happening.

Layering AI applications into each customer service channel as Chandra recommends may be important for banks, AI startups, or possibly financial institutions that are currently developing solutions that need to be integrated into multiple channels such as JPMorgan's intelligent pricing solution. However, it is unclear at this time if JPMorgan has taken this approach.

It is likely that this solution also includes NLP because JPMorgan claims this initiative draws from client communications to quantify satisfaction. In order to do that, it would need to be able to parse typed, written, or spoken language and translate that into numerical data.

## News Analytics and Smart Documents

Much like their client intelligence initiative, JPMorgan's news analytics solution may be comprised of both NLP and predictive analytics technologies. This is because they claim the

initiative allows them to collect news from multiple sources and then analyze them for sentiment, specific topics, and trading signals.

While analysis of trading signals would require predictive analytics to provide accurate predictions from news data such as articles or blog posts, sentiment analysis would also require NLP.

In order to parse written words and subsequently evaluate the sentiment behind them, a machine learning model would need to be trained on the language they are written in, the business terms present within them, and context. The model must also be trained on sets of individual words labeled according to their usual sentiment.

The sentiments are usually categorized simply as positive or negative, and then these labels are attached to individual words such as “efficient,” or “problematic,” respectively. This allows an NLP application to determine the topic of each paragraph or article as well as how the speaker feels about that topic or how the reader might be supposed to feel.

The company’s smart documents initiative is likely impossible without an NLP application to make it work. JPMorgan states that this project allows them to find important information from lengthy text documents in order to allow their staff to focus on projects where humans are more required.

They claim this improves workflow by reducing manual operations, and because of that this solution likely routes the important information to designated project managers or any employee who requests it. It is unclear exactly which types of documents this initiative is used for, but it would be possible to implement in any business department that requires employees to search for relevant information within long financial documents.

*Header Image Credit: The Block*

Generated with Reader Mode

🔗 <https://fortune.com/2023/01/26/jpmorgan-chase-tops-first-of-its-kind-ranking-of-a-i-progres...>

✍️ Jeremy Kahn

⌚ 10 min read

# JPMorgan Chase tops first-of-its-kind ranking of A.I. progress in banking

Hello, and welcome to January's special edition of Eye on A.I.

First off, if you want to learn more about how OpenAI ushered in what just might be A.I.'s Netscape Navigator moment, please read my cover story in the February/March issue of Fortune, which was published online yesterday. The story details how OpenAI co-founder and CEO Sam Altman transformed what was once a nonprofit research lab little known outside the circle of A.I. researchers into Silicon Valley's buzziest startup, with billions in investment from Microsoft and a \$30 billion valuation. And it walks through the potential implications—for both good and ill—of ChatGPT and Microsoft's strategic partnership with OpenAI.

Now, I want to cover two very different but both very significant news items in this special issue. First, how do we measure and benchmark A.I. progress within an industry? Until now, the most common method has been to use self-reported surveys of executives within that industry. That's what a lot of the big consulting and tech advisory firms do currently. And while that can be a good way to get a sense of perceptions of how A.I. adoption is progressing across a sector, surveys are usually not set up to allow ranking or benchmarking between firms within an industry. That's where a new business intelligence firm called Evident, comes in. Evident was co-founded by Alexandra Mousavizadeh, the economist who built Tortoise Media's Global AI Index, which has become a key benchmark of countries' A.I. progress. Now, she is aiming to do the same thing for companies. Evident counts business guru and podcaster Scott Galloway as an advisor.

Evident is starting with the banking sector, releasing its first A.I. index of global banks today. The index ranks the banks on 150 different indicators, divided into four main pillars which it calls Talent, Innovation, Leadership, and Transparency (a metric that includes a company's responsible A.I. policies and governance procedures). The data for the Index comes from publicly-available sources. The Talent and Innovation pillars are also weighted more heavily in the Index's final ranking than the other two pillars, although all of them are important, Mousavizadeh says.

JPMorgan Chase tops the ranking, emerging head and shoulders above the others with the best score across all four of the key pillars. That's not too surprising to those who've been following A.I. developments closely. The bank has been spending what CEO Jamie Dimon has said is "hundreds of millions of dollars per year" on A.I. efforts across the bank, which are in turn part of a broader technology drive on which the bank is spending an astounding \$14 billion per year. It recruited Manuela Veloso, who had headed the prestigious machine learning department at Carnegie Mellon University, in 2018 to head up an in-house R&D lab that was modeled in some ways on Google Brain, Meta's A.I. Research arm, and OpenAI. It has spent heavily to recruit other top A.I. talent too and even more on getting its data and cloud infrastructure in shape to support machine learning. And Dimon has been willing to repeatedly defend such heavy spending to skeptical Wall Street analysts.

What's more surprising is where some of the other banks rank. In the number two slot is the Royal Bank of Canada, which might surprise some people. But again the bank has invested smartly in recruiting talent from Canada's well-respected academic machine learning labs, ranking seventh overall on talent, and it has been able to use that talent efficiently, ranking third on the Evident AI Index's Innovation pillar. In fact, Canada has two banks near the top of the index: Toronto-Dominion Bank is ranked sixth. Rounding out the top five are Citigroup, UBS Group, and Wells Fargo.

Also surprising is that some of the big Wall Street firms, such as Goldman Sachs and Morgan Stanley, only rank in the middle of the Index (11th and 10th respectively). Both banks fall down on Transparency (ranking 19th and 20th) since they are relatively secret about what policies they have in place to govern the use of A.I. within their organizations and ensure responsible use.

Mousavizadeh says that many banks have told her that Evident's index is providing them the first clear look at how they stack up compared to competitors and peers. "We have spoken to almost all the banks in the Index and they have all said that this mosaic of indicators is giving them the most accurate picture they've ever had of where we are as a bank in terms of our A.I. Deployment," she says. She also says that it is already clear from the Index that different banks are taking different approaches in terms of building their own A.I. capabilities versus buying products and services from outside software vendors.

But Mousavizadeh is also quick to point out the limitations of the Index: It can only assess capabilities, not necessarily how successfully those capabilities are being deployed in terms of financial returns on investment. "Right now, build versus buy is evenly weighted in the index, we are not passing judgement," she says. "In terms of impact, the jury is out." But in the future, it might be possible to correlate one particular A.I. development and deployment strategy with greater commercial success, she says.

While the list currently includes just 23 large global banks, Mousavizadeh tells me that Evident is in the process of expanding the Index to include more regional and digital-first banks. And she says that Evident's goal is to expand its indices to other industries, with the goal of having data on 1,000 different companies indexed within four years. It is exactly this kind of benchmarking that companies—and their investors—are hungry for as they try to assess how well they are doing as A.I. enters its "industrialization" phase.

Now, I want to shift gears entirely and bring you another bit of news that shows why generative A.I. may really justify the hype currently surrounding the technology. A new research paper published today in the scientific journal *Nature Biotechnology* shows that a large language model, the same type of A.I. that underpins ChatGPT, can be used to design completely new proteins, directly from natural language instructions about what *function* the scientists want the protein to have. The scientists synthesized and benchmarked the efficacy of these proteins (in this case, they were enzymes) against naturally-occurring enzymes, and found that they were all highly-effective—in many cases even more effective than naturally occurring enzymes. What's more, the A.I. did this straight "out of the box" with no specific fine-tuning for any particular enzyme category or functional requirement.

The research was carried out by [Profluent Bio](#), a tiny San Francisco A.I. startup, working with scientists at the University of California in San Francisco. The researchers trained their system, which takes in about 1 billion different statistical connections between data points, on the 280 million natural proteins that have been genetically sequenced, and then incorporated tags about the function of those proteins. (This is somewhat similar to the way a text-to-image generator like DALL-E or Stable Diffusion learns what captions correspond to which images.)

Ali Madani, the former Salesforce A.I. researcher who is co-founder and CEO of Profluent, told me that the method is exciting because of its potential implications for rapidly advancing drug discovery. Because the system can generate novel proteins that bear little relationship to natural proteins and yet perform the same function, it could be used to find medicines that will be as effective as existing ones but produce fewer side effects. It could also help create new form factors for medicine (think pills rather than injections or IV drips) because researchers could specify in plain language what the desired thermal stability profile the new protein should have. It could also possibly lower drug costs by increasing competition—because companies will be able to find novel proteins that do the same thing as ones that are already protected by patents. Proteins have other uses outside of medicine too and tools such as Profluent's could also be used to create enzymes for industrial customers and consumer products companies.

Profluent, which is also building its own wet lab to carry out protein synthesis and testing, is now looking for industry partners to help it put its techniques into practice, Madani says. And it is not the only company seeking to use generative A.I. models in this way: Cambridge, Mass.-based Generate Biomedicines is pioneering similar techniques in protein design and Absci, which is based in Vancouver, Washington, has produced new antibodies with generative models. And then there's [DeepMind](#) co-founder and CEO Demis Hassabis, who is also now spearheading DeepMind spin-out Isomorphic Labs, which is using AlphaFold's protein structure predictions and other methods, which may include generative A.I. techniques, to improve drug [discovery](#).

And with that, here's a few additional news items in what is becoming a very busy time for A.I.

Jeremy Kahn

[jeremy.kahn@fortune.com](mailto:jeremy.kahn@fortune.com)

@jeremyakahn

**Correction, Jan. 27:** This story has been updated to correct the spelling of the last name of the computer scientist JPMorgan Chase hired to lead its A.I. research lab. An earlier version of this story also misstated the amount JPMorgan Chase is spending on technology annually. The bank is spending \$14 billion per year, not \$12 billion.

## A.I. IN THE NEWS

**DeepMind lays off staff, closes Edmonton office.** Bloomberg [reported](#) that the Alphabet-owned A.I. company is closing its office in Edmonton, Canada, which it opened with great fanfare in 2017. The company later confirmed the news and said that researchers affiliated with the office were being offered the opportunity to relocate to DeepMind's offices elsewhere if they wished, but that support staff was being let go. Bloomberg, citing internal documents it had seen, also reported that some support staff at DeepMind's London headquarters have been laid off. The cuts may be part of broader belt-tightening across Alphabet, including up to 12,000 job cuts at Google. DeepMind's Edmonton office was opened as part of DeepMind's hiring of Richard Sutton, a famed expert in reinforcement learning at the University of Alberta, and its office employed researchers from Sutton's lab who were also experts in reinforcement learning, the A.I. technique that underpinned most of DeepMind's early A.I. breakthroughs. It is not clear if Sutton is remaining at DeepMind or what the lab's closure may signal about DeepMind's future research priorities.

**A.I. should be regulated like nuclear weapons, researchers tell U.K. parliament.** A group of researchers from the University of Oxford told British lawmakers that advanced A.I. had the potential to destroy humanity and, as a result, should be as strictly regulated as nuclear weapons technology. The researchers highlighted the possibility that advanced A.I. could alter its own computer code in ways that would make it difficult for humans to control, publication *The Week* [reported](#).

**U.S. government agencies publish guidelines for A.I. in several areas.** The U.S. National Institute of Standards and Technology (NIST) published [a framework](#) for how A.I. risks should be managed and mitigated. The framework will impact how U.S. government agencies, and companies contracting with the U.S. government, assess and manage A.I. risks. Meanwhile,

the Pentagon released an updated set of guidelines for the development and deployment of autonomous weapons systems, making it clear that such weapons were likely to play a major role in any future conflict. The policy says that the humans deploying such weapons will bear ultimate responsibility for the consequences of their use. It also establishes a review process to oversee weapons that have autonomous capabilities, even in cases where those are added to existing weapons systems.

Our mission to make business better is fueled by readers like you. To enjoy unlimited access to our journalism, subscribe today.

Generated with Reader Mode

🔗 <https://www.entrepreneur.com/business-news/jp-morgan-is-developing-ai-to-select-your-investments>

✍ Madeline Garfinkle

⌚ 2 min read

# JP Morgan Chase Is Launching a ChatGPT-Like Service to Help People With Their Investments

Opinions expressed by Entrepreneur contributors are their own.

The widespread popularity of ChatGPT has prompted other big companies like Google to launch their own AI services to compete. However, it's not just tech companies entering the AI race.

JP Morgan Chase is developing a "ChatGPT-like" service that will use artificial intelligence to help customers select investments, CNBC reported.

According to a filing in New York, JP Morgan applied to trademark the product "IndexGPT." The service will use artificial intelligence and cloud computing software to analyze and select securities "tailored to customer needs," the filing states.

**Related:** [Microsoft Revealed Major AI Updates at Its Developer Conference — Here's What You Need to Know](#)

While it's unclear when the product will launch, the trademark could signal that it might be in the near future.

"Companies like JP Morgan don't just file trademarks for the fun of it," Josh Gerben, a trademark attorney in Washington D.C. told CNBC. "The filing includes a sworn statement from a corporate officer essentially saying, 'Yes, we plan on using this trademark.'"

IndexGPT may also only be one of several AI products in development at JP Morgan. During the company's annual investor conference on Monday, Lori Beer, global technology chief at the company, said that the bank is testing "a number of use cases" for AI technology.

**Related:** [Mike Rowe Says the Dirtiest Jobs Are Safe From the AI Revolution: 'I Haven't Seen Any Plumbing Robots'](#)

"We are actively evaluating opportunities with large language models and see great potential in that space," she added.

*Entrepreneur* has reached out to JP Morgan for comment.

Generated with Reader Mode

🔗 <https://www.cnbc.com/2023/10/03/jpmorgan-ceo-jamie-dimon-says-ai-could-bring-a-3-day-workweek.html>

✍️ Jennifer Liu

⌚ 3 min read

# JPMorgan CEO Jamie Dimon says AI could bring a 3½-day workweek

JPMorgan Chase CEO Jamie Dimon is bullish on the benefits of artificial intelligence, which is already being used by thousands of employees at his bank, and he predicts it'll usher in the norm of a shortened workweek.

"Your children are going to live to 100 and not have cancer because of technology," Dimon said Monday in an [interview with Bloomberg TV](#). "And literally they'll probably be working 3½ days a week."

Dimon says the bank's investments in AI "will add huge value" and is being leveraged across the firm's research, trading, customer service and other functions.

When asked if the technology is likely to replace some bank jobs, he responded that "of course" it will, but that "technologies always replace jobs."

He added the bank hires some 30,000 people a year, and that he expects many displaced workers will be transferred to new locations and roles within the company.

As many as [300 million jobs](#) around the world could be affected by AI, according to a recent Goldman Sachs report.

And about [1 in 5 American workers](#) have a job with "high exposure" to artificial intelligence, according to Pew Research Center, though it's unclear if AI would enhance or displace these roles.

Tech innovations also create new jobs and opportunity: AI technology could improve labor productivity and boost global GDP by as much as 7% over time, Goldman Sachs' report noted.

Dimon's comments on a shortened workweek may be more about efficiency than flexibility. He's been a longtime critic of remote and hybrid arrangements.

While Dimon has previously said remote can work for some jobs like coding, those in research, and women in caregiving roles, the arrangement doesn't apply to all roles, especially those in leadership.

JPMorgan Chase began its return-to-office campaign in September 2020 with fits and starts over the next few years. In April 2023, the bank sent a memo asking its managing directors to work from the office for five days a week.

"I don't know how you can be a leader and not be completely accessible to your people. I do not believe you can be a leader and not be accessible to your people," Dimon told The Economist.

**Want to be smarter and more successful with your money, work & life? Sign up for our new newsletter!**

*Want to earn more and land your dream job? Join the free CNBC Make It: Your Money virtual event on Oct. 17 at 1 p.m. ET to learn how to level up your interview and negotiating skills, build your ideal career, boost your income and grow your wealth. Register for free today.*

**Check out: The 40-hour workweek started with autoworkers—now they're trying to make 32 hours the new norm**



Generated with Reader Mode

 Saved

 [https://www.constellationr.com/blog-news/insights/jpmorgan-chase-digital-transformation-ai...](https://www.constellationr.com/blog-news/insights/jpmorgan-chase-digital-transformation-ai-and-data-strategy-sets-generative-ai)

 9 min read

# JPMorgan Chase: Digital transformation, AI and data strategy sets up generative AI

[View full PDF](#)



JULY 6, 2023

## CUSTOMER STORY: JPMORGAN CHASE

### Digital Transformation, AI and Data Strategy Sets Up Generative AI

BY LARRY DIGNAN, CONSTELLATION INSIGHTS

JPMorgan Chase will deliver more than \$1.5 billion in business value from artificial intelligence and machine learning efforts in 2023 as it leverages its 500 petabytes of data across 300 use cases in production.

"We've always been a data driven company," said Larry Feinsmith, Managing Director and  Head of Technology Strategy, Innovation, & Partnerships at JPMorgan Chase. Feinsmith, speaking with Databricks CEO Ali Ghodsi during a keynote at the company's Data + AI Summit, said JPMorgan Chase has been continually investing in data, AI, business intelligence tools and dashboards.

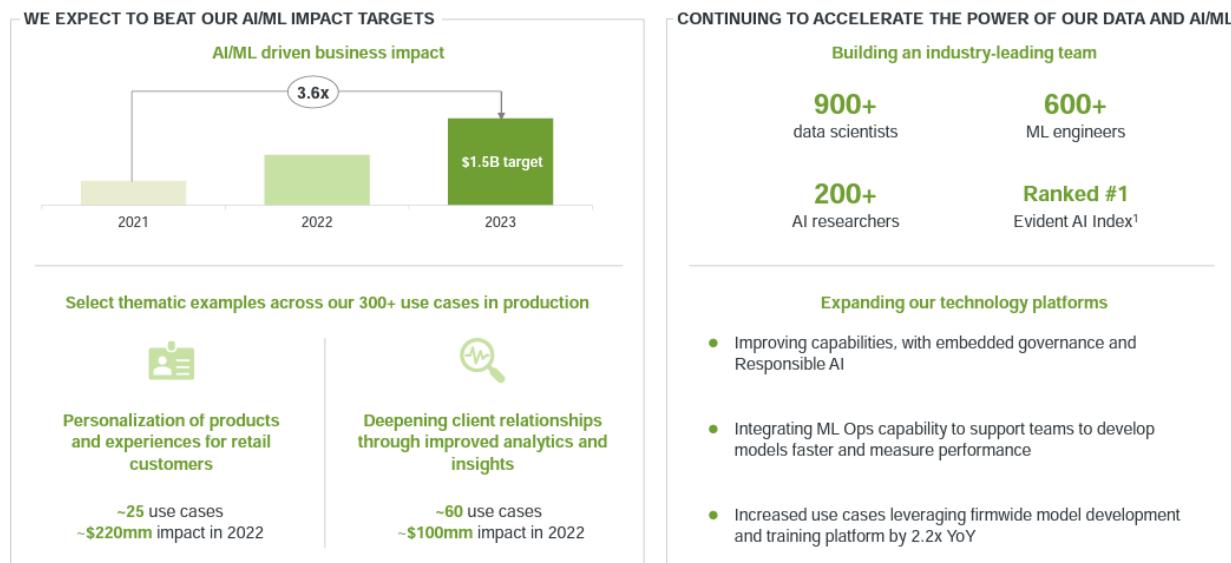
Indeed, JPMorgan Chase said it will spend \$15.3 billion on technology investments in 2023. JPMorgan Chase's technology budget has grown at a 7% compound annual growth rate over the last four years.

Feinsmith said the bank's AI/ML strategy is one of the big reasons JPMorgan Chase migrated to the public cloud. "If you look at our size and scale, the only way to deploy at scale is to do it through platforms," said Feinsmith. "Everyone has an opinion on data platforms, but you can efficiently move the data once and manage. Once you start moving data around it's highly inefficient and breaks the lineage."

JPMorgan Chase, a customer of Databricks, Snowflake and MongoDB, has multiple platforms, according to Feinsmith. It has an internal platform, JADE (JPMorgan Chase Advanced Data Ecosystem) for moving and managing data and one called Infinite AI for data scientists. "Equally as important as the data is the capabilities that surround that data," said Feinsmith, adding that data discovery, data lineage, governance, compliance and model lifecycle are critical.

**3** **Unlock the power of data**

**Save** We continue to prioritize our investment in Data and AI/ML, and see increasing value in our businesses



<sup>1</sup> JPMC ranked number one in the Evident AI Index (January 2023), the first public benchmark of major banks on their AI maturity

JPMORGAN CHASE & CO.

7

According to Feinsmith, JPMorgan Chase's AI efforts start with a business focus with data scientists and AI/ML experts embedded into each business.

Feinsmith said JPMorgan Chase is leveraging streaming data and said he was a fan of Databricks' Lakehouse architecture and new AI features because it's easier to move and process data in one environment instead of two architectures, a data warehouse for business intelligence and a data lake for AI. JPMorgan deploys a central but federated data strategy and interoperability between data platforms is important. "Data has to be interoperable," Feinsmith told Ghodsi. "Not all of our data will wind up in Databricks. Interoperability is very important."

That comment rhymes with what other enterprise technology buyers have said. Despite a lot of talk about consolidating vendors--mostly from vendors looking to gain share--enterprise buyers want to keep options open. How JPMorgan Chase has approached its tech stack is instructive.

## The digital transformation behind the AI

At [JPMorgan Chase's Investor Day](#) in May, Lori Beer, Global CIO at the bank, gave an overview of the bank's technology strategy. In 2022, JP Morgan launched a plan to deliver

leading technology at scale with its team of 57,000 employees.



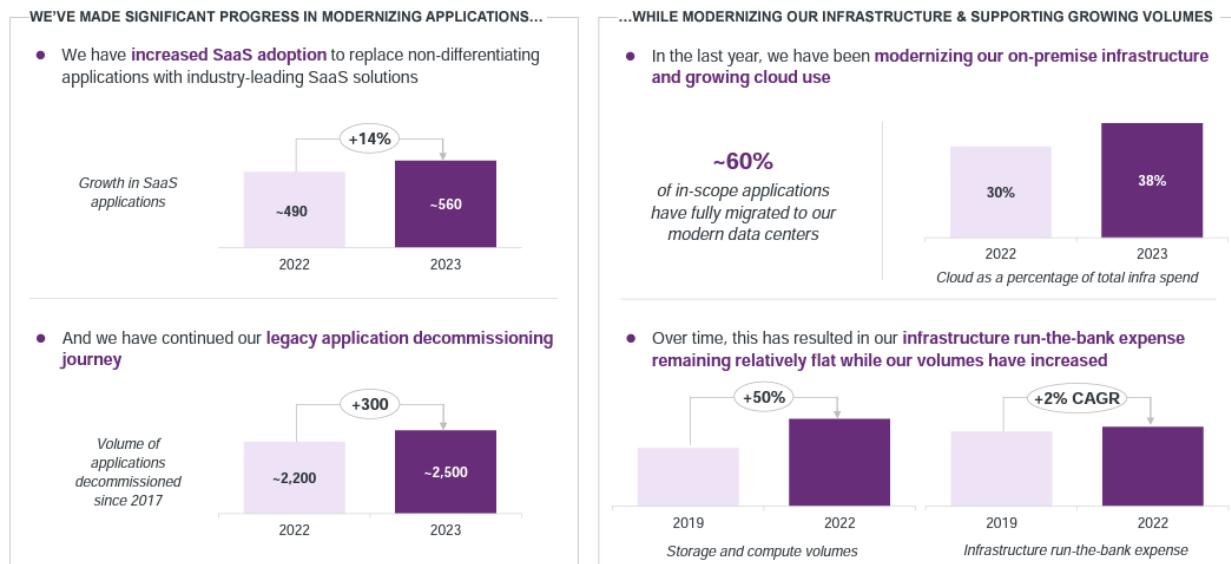
"Products and platforms need a strong foundation to be successful, and ours are underpinned by our mission to modernize our technology and practices," explained Beer. "We are already delivering product features 20% faster than last year, and we continue to modernize our applications, leverage software as a service and retire legacy applications."

JPMorgan Chase is moving to a multi-vendor public cloud approach while optimizing its owned data centers. The company is also embedding data and insights throughout the organization, said Beer. Those efforts will pave the way for large language models (LLMs) and other advances in the future.

"We have driven \$300 million in efficiency through modern engineering practices and labor productivity, and we have developed a framework that enables us to identify further opportunities in the future. Our infrastructure modernization efforts have yielded an additional \$200 million in productivity, driven by improved utilization and vendor rationalization," said Beer.

## 2 Strengthen our software development capabilities and infrastructure

We continue to modernize our technology estate while keeping infrastructure RTB expense relatively flat



Here's a look at the key pillars of JP Morgan Chase's digital transformation.

 **Applications.** Beer said the bank has decommissioned more than 2,500 legacy applications since 2017 and is focusing on modernizing software to deliver products faster. The bank has more than 560 SaaS applications, up 14% from 2022. By using industry-leading SaaS applications, Beer said it will be easier to scale new products to more than 290,000 employees.

**Infrastructure modernization.** Beer said:

"To date, we have moved about 60% of our in-scope applications to new data centers, which are 30% more efficient, and this translates to 16,000 fewer hardware assets. We are also migrating applications to utilize the benefit of public and private cloud. 38% of our infrastructure is now in the cloud, which is up 8 percentage points year-over-year. In total, 56% of our infrastructure spend is modern. Over the next three years, we have line of sight to have nearly 80% on modern infrastructure. Of the remainder, half are mainframes, which are highly efficient and already run in our new data centers."

JPMorgan Chase has been able to maintain infrastructure expenses flat even though compute and storage volumes have increased 50% since 2019, said Beer. One example is Chase.com is now being served through AWS and has an average of 15 releases a week.

**Engineering.** Beer said JPMorgan is equipping its 43,000 engineers with modern tools to boost productivity. JPMorgan Chase has adopted a framework to speed up the move from backlog to production via agile development practices.

**Data and AI.** Beer said:

"We have made tremendous progress building what we believe is a competitive advantage for JPMorgan Chase. We have over 900 data scientists, 600 machine learning engineers and about 1,000 people involved in data management. We also have a 200-person top notch AI research team looking at the hardest problems in the new frontiers of finance."

Specifically, Beer said AI is helping JPMorgan Chase deliver more personalized products and experiences to customers with \$220 million in benefits in the last year. At JPMorganChase's

Commercial Bank, AI provided growth signals and product suggestions for bankers. That move provided \$100 million in benefits, said Beer.

## 2 Strengthen our software development capabilities and infrastructure

Our modernization strategy is enabling us to deliver significant value across the business

 <b>Chase.com</b> <p>Completed <b>migration</b> of internet-facing Chase.com to the <b>public cloud</b> in 4Q22, serving all customers through <b>Amazon Web Services</b></p> <p> <b>15 Chase.com releases weekly, 2 mobile app releases monthly</b></p> <p> <b>22% increase in change volume</b></p> <p> <b>100% customers onboarded (including 63mm+ active digital customers)</b></p>	 <b>Connected Commerce</b> <p>Moving up-funnel to meet customers earlier in their journeys, <b>protecting our core franchise, and disrupting incumbents in Commerce</b></p> <p> <b>Innovative API-driven platform to automate partner onboarding and simplify integration with Chase ecosystem</b></p> <p> <b>35% increase in speed to deliver product features YoY</b></p> <p> Offers and recommendations delivered <b>\$350mm impact over two months</b> in 2023</p>	 <b>JPM Payments Transaction Engine</b> <p>Graphite is a scalable, modern strategic platform for <b>processing payments globally</b>, including real-time payments</p> <p> Each payment capability built with its <b>own independent component architecture</b></p> <p> Reduced time to launch a new real-time payment market from ~18 months to ~3-6 months</p> <p> <b>Third largest payments platform by volume</b></p>	 <b>Markets Regulatory Reporting Platform</b> <p>Regulatory data warehouse responsible for global regulatory reporting for <b>Cash Equities, Futures, and Options</b> in 15+ countries</p> <p> Running on <b>public cloud</b>, enabling <b>real-time audit trail calculation and report generation</b></p> <p> Increased ability to scale to <b>2.5B trades per day on public cloud</b> from 500mm trades per day on-premise</p> <p> Reduced monthly running cost by &gt;50%</p>
--	--	---	--

JPMORGAN CHASE & CO.

6

## The data mesh

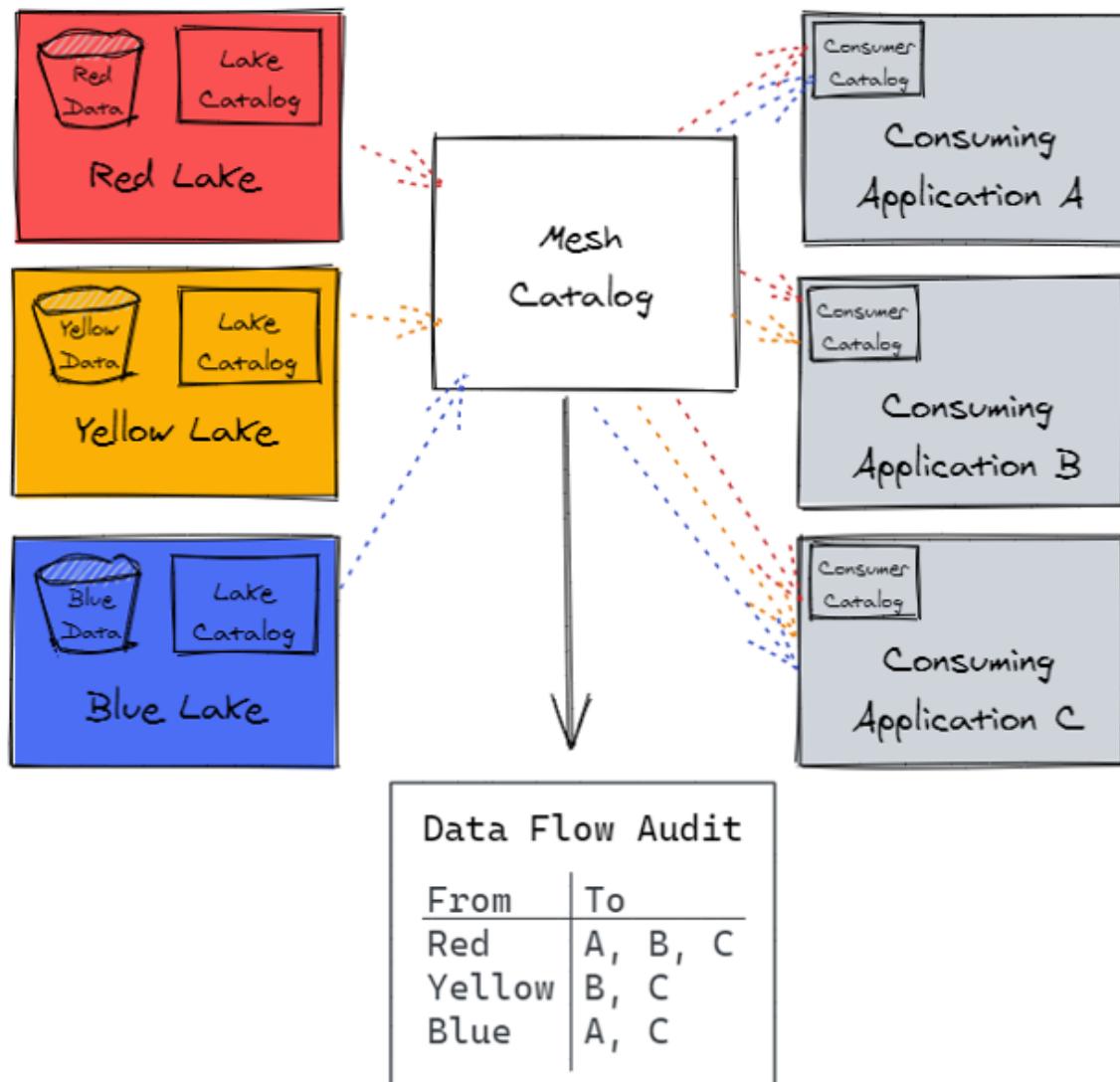
To capitalize on AI, JPMorgan Chase created a data mesh architecture that is designed to ensure data is shareable across the enterprise in a secure and compliant way. The bank outlined its data mesh architecture at a 2021 Data Mesh Learning meetup.

JPMorgan said its data approach is to define data products that are curated by people who understand the data and management requirements. Data products are defined as groups of data from systems that support the business. These data groups are stored in its product specific data lake. Each data lake is separated by its own cloud-based storage layer. JPMorgan Chase catalogs the data in each lake using technologies like AWS S3 and AWS Glue.

Data is then consumed by applications that are separated from each other and the data lakes. JPMorgan Chase said it makes the data lake visible to data users to query it.

At a high level, JPMorgan Chase said its approach will empower data product owners to manage and use data for decisions, share data without copying it and provide visibility into data sharing and lineage.

In a slide, this architecture looks like this.



According to JPMorgan Chase, its architecture keeps data storage bills down and ensures accuracy. Since data doesn't physically leave the data lake, JPMorgan Chase said it's easier to enforce decisions product owners make about their data and ensure proper access controls.

## How JPMorgan Chase will address generative AI

Given JPMorgan Chase's data strategy and architecture, the bank can more easily leverage new technologies like generative AI. Feinsmith at the Databricks conference said JPMorgan Chase was optimistic about generative AI but said it's very early in the game.

"There's a lot of optimism and a lot of excitement about generative AI. Businesses all know about it and generative AI will make us more productive," said Feinsmith. "But we won't roll out generative AI until we can do it in a responsible way. We won't roll it out until it's done in an entirely responsible manner. It's going to take time."

In the meantime, JPMorgan Chase's Feinsmith said the bank is working through the generative AI risks. The promise for JPMorgan Chase is obvious: Take 500 petabytes of data, train it, make it valuable and then add value to open-source models.

Beer outlined the JPMorgan Chase approach during the bank's Investor Day in May.

*"We couldn't discuss AI without mentioning GPT and large language models. We recognize the power and opportunity of these tools and are committed to exploring all the ways they can deliver value for the firm. We are actively configuring our environment and capabilities to enable them. In fact, we have a number of use cases leveraging GPT4 and other open-source models currently under testing and evaluation.tion.t*

With Databricks, MongoDB and Snowflake all adding generative AI and large language model (LLMs) capabilities to the data stack, enterprises will have the tools when ready.

JPMorgan Chase has named Teresa Heitsenrether its chief data and analytics officer, a central role overseeing the adoption of AI across the bank. Heitsenrether oversees data use, governance and controls with the aim of harnessing AI technologies to effectively and responsibly develop new products, improve productivity and enhance risk management.

Heitsenrether is a 35-year veteran at JP Morgan Chase and previously was Global Head of Securities Services from 2015 to 2023.

Beer said explained JPMorgan Chaseyys approach to responsible AI:

 Saved

*>>We take the responsible use of AI very seriously, and we have an interdisciplinary team, including ethicists, data scientists, engineers, AI researchers and risk and control professionals helping us assess the risk and build appropriate controls to prevent unintended misuse, comply with regulation, and promote trust with our customers and communities. We know the industry is making remarkably fast progress, but we have a strong view that successful AI is responsible AI."*

Generated with Reader Mode

🔗 <https://www.cnbc.com/2023/05/25/jpmorgan-develops-ai-investment-advisor.html>

✍ Hugh Son

⌚ 4 min read

# JPMorgan is developing a ChatGPT-like A.I. service that gives investment advice



Jamie Dimon, chief executive officer of JPMorgan Chase, is planning his first visit to mainland China in four years as the American bank prepares to host three conferences in Shanghai at the end of May.

Giulia Marchi | Bloomberg | Getty Images

JPMorgan Chase is developing a ChatGPT-like software service that leans on a disruptive form of artificial intelligence to select investments for customers, CNBC has learned.

The company applied to trademark a product called IndexGPT this month, according to a filing from the New York-based bank.

IndexGPT will tap “cloud computing software using artificial intelligence” for “analyzing and selecting securities tailored to customer needs,” according to the filing.

The viral success of OpenAI’s ChatGPT technology last year has forced entire industries to grapple with the arrival of artificial intelligence. ChatGPT, which uses massive language models to create human-sounding responses to questions, has ignited an arms race among tech giants and chipmakers over what is seen as the next foundational innovation.

The technology has a range of possible uses in finance. Banks including Goldman Sachs and Morgan Stanley have already begun testing it for internal use. That includes ways to help Goldman engineers create code or answer Morgan Stanley financial advisors’ queries.

## First mover?

But JPMorgan may be the first financial incumbent aiming to release a GPT-like product directly to its customers, according to Washington D.C.-based trademark attorney Josh Gerben.

“This is a real indication they might have a potential product to launch in the near future,” Gerben said.

“Companies like JPMorgan don’t just file trademarks for the fun of it,” he said. The filing includes “a sworn statement from a corporate officer essentially saying, ‘Yes, we plan on using this trademark.’”

JPMorgan must launch IndexGPT within about three years of approval to secure the trademark, according to the lawyer. Trademarks typically take nearly a year to be approved, thanks to backlogs at the U.S. Patent and Trademark Office, he said.

The applications are typically vaguely written to give companies the broadest possible protections, Gerben said.

But JPMorgan's filing does specify that IndexGPT uses the same flavor of A.I. popularized by ChatGPT; the bank plans to use A.I. powered by "Generative Pre-trained Transformer (GPT) models."

"It's an A.I. program to select financial securities," Gerben said. "This sounds to me like they're trying to put my financial advisor out of business."

JPMorgan declined to comment for this article.

## Middlemen fears

Financial advisors have long feared the arrival of technology good enough to displace their role in markets. Those fears have largely yet to materialize.

Wealth management firms, including Morgan Stanley and Bank of America's Merrill, offer simple roboadvisor services, but that hasn't stopped their human advisors from gathering billions of dollars more in assets.

Earlier this week, executives at JPMorgan touted their progress in applying A.I. across operations at the company's annual investor conference.

The bank, which employs 1,500 data scientists and machine-learning engineers, is testing "a number of use cases" for GPT technology, said global tech chief Lori Beer.

"We couldn't discuss A.I. without mentioning GPT and large language models," Beer said. "We've recognized the power and opportunity of these tools and are committed to exploring all the ways they can deliver value for the firm."



Generated with Reader Mode

🔗 <https://www.bnnbloomberg.ca/jpmorgan-is-working-with-us-regulators-on-generative-ai-pilot-projects-1.1996342>

✍ Saritha Rai

⌚ 4 min read

# JPMorgan is Working With US Regulators on Generative AI Pilot Projects - BNN Bloomberg

(Bloomberg) -- JPMorgan Chase & Co. is working with US regulators and walking them through its first set of generative AI pilot projects to ensure all controls are in place, as the bank attempts to bound ahead of rivals in deploying artificial intelligence in the highly-regulated industry.

"It's about helping regulators understand how we build the generative AI models, how we control them, what are the new vectors of risk," Lori Beer, JPMorgan's global chief information officer, said in an interview. "It's not only what we need to think about, but what they should think about," she said, adding that it's critical to engage early. "As we learn, we share those learnings."

The release of ChatGPT a year ago prompted banks to hire for AI-related positions and begin testing uses for generative AI, which can summarize documents, write emails and churn out clever responses to users. JPMorgan is hiring and moving more aggressively than most. Chief Executive Officer Jamie Dimon called AI "extraordinary and groundbreaking" in his annual shareholder letter, and said it could be integrated into "every single process" of the firm's operations.

JPMorgan is currently testing AI applications that can generate earnings summaries for every company that the bank tracks, as well as a helpdesk service that provides precise problem-

solving steps instead of merely sending customers links to related articles to address an issue, according to Beer.

"We're piloting, we're learning, we're figuring out," Beer said in an interview from a conference room named Innovation Lab in a sprawling office park located on the Outer Ring Road stretch in the suburbs of Bangalore, India's technology hub. "Based on what we learn, it's going to be the first half of next year at the earliest before we're ready to say anything is in production." JPMorgan has applied to trademark IndexGPT, described in the application as a product offering investment advice to customers, but Beer said it was merely an application and not a product in development. "It's not a tomorrow thing, it's one of the spaces in which we've been working, and we want to protect our IP," she said. JPMorgan also created a tool that scans speeches by Federal Reserve officials to detect policy shifts and glean signals for trading. Beer, based in New York, oversees all of the bank's technology operations and manages the firm's 57,000-person tech workforce with a \$15 billion annual budget. She was on a weeklong visit to India, which houses a third of the bank's technologists. Her exuberance for AI came through in the conversation, which she peppered with words like "accelerate," "transformative" and "new paradigm."

AI systems have been widely used for years, with banks spending billions to automate functions like trading, risk management, fraud detection and investment research. But the rise of generative AI tools has pushed banks to develop new offerings. Generative AI is expected to deliver up to \$340 billion in annual value in the banking industry, including through productivity gains, according to McKinsey & Co Inc.

Morgan Stanley has deployed an AI tool that allows its financial advisors access to its database of around 100,000 reports during client conversations. Goldman Sachs Group Inc. is using generative AI to assist its developers in writing software code. And Citigroup Inc. turned to AI to read through 1,089 pages of new capital rules on the US banking sector. While it's easier to "build things quickly" with generative AI, Beer said "the harder part is the validation and the controls." JPMorgan was one of the first companies to restrict employee access to ChatGPT and is now working to ensure that its pilot projects have tight protections for the confidential data it deals with. The industry is also investing "a lot of R&D" to address the problem of generative AI systems making up, or hallucinating, details, Beer said. And it's

working with regulators early in the process."On this one, you have to see guardrails from regulators to drive the right outcomes," Beer said. "The controls will be different for a globally systemically important bank versus what you might see for a startup."

(Updates with additional comment in second paragraph. Company clarifies in tenth paragraph that the industry is investing in R&D.)

©2023 Bloomberg L.P.

Generated with Reader Mode

- 🔗 [https://www.bnnbloomberg.ca/jpmorgan-says-ai-technology-is-starting-to-generate-revenue...](https://www.bnnbloomberg.ca/jpmorgan-says-ai-technology-is-starting-to-generate-revenue-1.2005002)
- ✍️ Katherine Doherty
- ⌚ 3 min read

# JPMorgan Says AI Technology Is Starting to Generate Revenue - BNN Bloomberg

(Bloomberg) -- JPMorgan Chase & Co. said artificial intelligence tools are starting to generate revenue for the bank, with future advances in AI likely to produce even more benefits.

“In addition to efficiency and potential cost avoidance, we are seeing revenue-generating activity, and that’s really encouraging,” Teresa Heitsenrether, the bank’s chief data and analytics officer, said at the Evident AI Symposium on Wednesday.

JPMorgan set a target last year of \$1 billion in “business value” generated by AI in 2023, and the firm increased that goal to \$1.5 billion at its investor day in May. The gains come from benefits including personalized recommendations to clients in the card businesses and providing insights to client-coverage teams, according to Heitsenrether.

The world’s biggest banks have been experimenting more with artificial intelligence in recent months, spurred by the promise that it will help them boost staffers’ productivity and cut costs. JPMorgan has thousands of open roles tied to artificial intelligence, and Chief Executive Officer Jamie Dimon has said the technology could eventually allow employers to shrink the workweek to just 3.5 days.

Read More: Wall Street Fights for AI Talent as Banks Raid From Rivals

Heitsenrether has been in her role for six months, taking on new responsibilities after Dimon made AI technology a priority at the bank.

The release of ChatGPT a year ago prompted banks to hire for AI-related positions and begin testing uses for generative AI, which can summarize documents, write emails and churn out clever responses to users. Dimon called AI “extraordinary and groundbreaking” in his annual shareholder letter, and said it could be integrated into “every single process” of the firm’s operations.

The bank sees “tremendous potential” for the use of generative AI to service clients in a secure way, Heitsenrether said. “We have hundreds of use cases in progress at the moment, some of which are somewhat close to coming to fruition.”

Still Heitsenrether acknowledges the risks associated with the emerging technology.

“It’s about making sure we are staying safe, well controlled, and focusing on the things that add the impact we hope to have,” she said. It also has the potential for significant dislocation of talent. Technological innovation is normal, and the industry will adjust, Heitsenrether said.

JPMorgan is using AI to augment work done by humans, rather than seeing it as a way to replace them, Heitsenrether said. The bank can continue to grow using AI without necessarily increasing headcount to support that growth, she said. Still, it’s focused on attracting talent across the globe.

“There is a keen desire to be competitive here, to be on the forefront,” she said.

--With assistance from Hannah Levitt.

©2023 Bloomberg L.P.

Generated with Reader Mode

🔗 <https://www.pymnts.com/artificial-intelligence-2/2023/jpmorgan-works-with-us-regulators-while-building-ai-projects/>

PYMNTS

6 min read

# JPMorgan Works With US Regulators on Building AI Projects

By [PYMNTS](#) | February 21, 2024

|

In Europe, a central bank digital currency (CBDC) has inched closer to reality, by virtue of a vote.

As a result, the United States may have to play a bit of catch-up. In addition, per the European Union's inclinations, the CBDC would be best suited as a payment vehicle, not as an investment holding — perhaps setting the stage for CBDCs to muscle stablecoins and cryptocurrencies off the stage as any real means of commerce.

The parliamentary [European Committee on Civil Liberties and Justice](#) voted to support [draft legislation](#) that, with the committee's suggested amendments, would make a digital euro legal tender. Separately, in a [blog post](#) from earlier in the week, a trio of European Central Bank advisers and directors urged that a digital euro be used as a payment method, and not be held for investment.

"To preserve the economic function of commercial banks, individual digital euro holdings would be limited," they said in the post. "Merchants would be able to receive and process digital euro but would not be able to hold them at all — protecting the corporate deposit base of the banking system. Moreover, digital euro holdings would not accrue interest."

They posited that “a holding limit and no remuneration” would “reduce incentives to keep” CBDCs in a digital wallet — and by extension pose risks to bank funding.

A more cautious tone was struck in the blog regarding stablecoins: “Stablecoins, eMoney institutions and other narrow bank constructs, some sponsored by Big Tech companies with huge customer bases, do not care about the role of banks in the economy. Nonbanks have no obvious incentive to limit the use of their stablecoins or the services they offer, and the use of stablecoins could become significant.”

## US to Make More Moves?

The regulatory path toward a digital euro will likely be a long and winding one. But the most recent developments may hasten at least some movement in the U.S. to accelerate exploration and development of a digital dollar.

A posting on the [Federal Reserve](#) website last week said: “If one or more large countries were to introduce an internationally accessible [CBDC](#) that were appealing across several dimensions — such as cost, speed and user experience — then the appeal of these currencies might gain on the margin, at least as a transaction medium, at the expense of the dollar if there were not an equivalent dollar option.”

Call it the equivalent of the digital central banking arms race.

The casualties of that arms race might be stablecoins and cryptos (which are not backed by, well, anything). Various regulators have said that [stablecoins](#) might cause bank runs by virtue of volatility despite the promise (although not the reality) of holding onto pegs. Separately, [Coinbase](#) decided last week to drop support for [native bitcoin payments](#) from its merchant platform, [Coinbase Commerce](#).

PYMNTS Intelligence revealed that only about 5% of [credit unions](#) offer crypto investing services, and only another 5% plan to offer investing services tied to these digital holdings in the current year. Meanwhile, just 1% of banks offer cryptocurrency, and another 1% plan to do so this year.

*For all PYMNTS crypto coverage, subscribe to the daily [Crypto Newsletter](#).*

See More In: [Bitcoin](#), [Blockchain](#), [CBDC](#), [cryptocurrency](#), [digital currency](#), [Digital Payments](#), [EMEA](#), [EU](#), [europe](#), [Government](#), [international](#), [Legislation](#), [News](#), [PYMNTS News](#), [stablecoins](#)

Generated with Reader Mode

🔗 <https://www.jpmorgan.com/technology/news/omni-ai>

⌚ 3 min read

## Omni Means “All”

The platform, named OmniAI, is a major in-house innovation. Developed in the firm’s Chief Technology Office, it is now receiving industry recognition. In 2020, the platform **won the CIO 100 Technology Award** and was **named Most Cutting-Edge IT Initiative at Waters Technology’s American Financial Technology Awards** (AFTAs). The solution’s Latin name (omni means “all” or “in all ways”) communicates its ability to serve the needs across all our businesses and accelerates the speed at which the firm deploys AI/ML applications. It’s now used by software engineers and data scientists across the firm.

OmniAI’s work begins with solving problems for the firm’s data scientists — in finding and making ready the data they need, providing access to the compute environments to test and train their models and avoiding duplication of effort in different parts of the enterprise. OmniAI makes it possible for the firm to deploy AI at scale by standardizing processes and providing the security and controls needed for working with highly confidential information. Developers partnering with data science teams can use the platform to work faster and deliver more AI-powered applications to the firm’s businesses. And because OmniAI was built in the cloud, it’s inherently more flexible.

OmniAI brings benefits to clients and customers -- and to the technology, sales and operations teams who serve them — in the form of faster, more accurate insights. The platform reduces the time it takes for the firm’s data scientists to extract these insights from the vast amount of data the firm has access to. In addition to decreasing “time to insight,” OmniAI also enables us to perform deeper, more comprehensive, and more thorough analysis of the data at a much lower operational cost, while enabling the firm’s businesses to better serve customers and clients.

OmniAI has proved a powerful accelerator. “Just a year ago, OmniAI released its very first capability, single-node model training into production — and only a handful of projects were using the product as early testers,” said Apoorv Saxena, JPMorgan Chase’s Global Head of AI Technology. “Fast forward to today, and engineers and data scientists driving hundreds of projects across every line of business are using the platform for end-to-end capabilities, from discovery and model training through production serving on ML models.”

A few examples of how AI/ML is making a difference across the firm:

- **Assisting employees:** AI is being used to proactively offer technical help in the form of knowledge articles and other resources in real time.
- **Speeding the ability to respond to customers:** During the pandemic, the firm has been able to analyze data and retain models in days to focus effectively on COVID-specific concerns.
- **Helping clients:** Portfolio managers can analyze investment data with easy to use tools that include a simple point-and-click interface.

Like the firm’s investments in emerging technologies such as blockchain and quantum computing, OmniAI — a product of the firm’s unique culture of innovation and partnership — represents a major step forward in our technology journey.

Generated with Reader Mode

🔗 <https://www.jpmorgan.com/insights/global-research/artificial-intelligence/generative-ai>

⌚ 21 min read

# The Rise of Generative AI | J.P. Morgan Research



## Key takeaways

- Generative AI tools reduce the money and time needed for content creation, boosting productivity and profitability.
- However, they could also lead to copyright infringement and increase data security risks.

- Overall, J.P. Morgan Research estimates generative AI could increase global GDP by \$7–10 trillion, or by as much as 10%.
- The technology could result in a massive workforce productivity boom over the next one to three years, which could affect the shape of the economic cycle.

***Disclaimer:*** This article was not written using generative AI.

Generative AI — a category of artificial intelligence algorithms that can generate new content based on existing data — has been hailed as the next frontier for various industries, from tech to banking and media. Indeed, it is already being used for tasks such as content creation and data analysis, with widespread implications for the future of work.

“The advent of generative AI is a seminal moment in tech, more so than the Internet or the iPhone,” said Mark Murphy, Head of U.S. Enterprise Software Research at J.P. Morgan. “We see the potential for a massive workforce productivity boom over the next one to three years, which could affect the shape of the economic cycle. There could also be mass-scale white-collar job realignment four to eight years from now.”

At J.P. Morgan’s 5th Annual Global Machine Learning Conference, which took place in Paris in October 2023, investors were asked about their views on generative AI. Overall, investors believe that the uptake of the technology will be most prevalent in marketing (28%), followed by legal services and insurance (21%), media (20%), data analytics (18%) and then consumer technology (13%) — suggesting that sweeping changes lie ahead for these industries.

“We see the potential for a massive workforce productivity boom over the next one to three years, which could affect the shape of the economic cycle.”

Mark Murphy

Head of U.S. Enterprise Software Research, J.P. Morgan

“Fundamentally, generative AI reduces the money and time needed for content creation — across text, code, audio, images, video and combinations thereof,” said Gokul Hariharan, Co-

Head of Asia Pacific Technology, Media and Telecom Research at J.P. Morgan. Businesses can produce more content at speed and at scale, boosting productivity and profitability.

The rise of generative AI could also breed innovation, paving the way for new business models and applications. While tools like ChatGPT are trained on generic data, companies are now creating generative AI systems designed for specific verticals and datasets.

“ChatGPT is putting the wind in the sails of other companies, and hundreds of new startups are rushing to develop foundation models, build AI-native apps and stand up infrastructure,” Hariharan said. “Because of the potentially very large impact, a positive sentiment cycle here could well lead to a valuation bubble in related names.”

Generative AI’s output across text, code, images and video is expected to improve exponentially through 2030, surpassing what human workers can produce.

On the flip side, generative AI tools are not 100% accurate. ChatGPT is prone to “hallucinations,” or output that deviates from its training data. “Because of this, generative AI will not yet replace jobs entirely. Instead, it will augment existing jobs by automating repetitive tasks,” Hariharan said.

Generative AI tools also run the risk of plagiarism and copyright infringement, as they often repeat or paraphrase data sourced from elsewhere on the Internet. Then there are the data

security risks involved, especially where client confidentiality is concerned. When new information is inputted into a generative AI system, it becomes part of its data repository and is made publicly available to other users. “Companies will understandably be guarded about this, so generative AI providers will need to create tools that are ringfenced — ensuring that all information is self-contained to each organization and isn’t commingled with the rest of the world,” Murphy said.

Despite these hurdles, generative AI could well be a game changer for business, dramatically redefining the way companies work. “Generative AI is the most important technological development of the last several decades. It is rapidly enabling use cases and scenarios that people once said would be impossible to achieve, and it’s only going to get smarter,” Murphy said. “It’s critical that generative AI is used responsibly and governed properly, so that it can amplify human potential instead of becoming too disruptive.”

Overall, J.P. Morgan Research estimates generative AI could increase global GDP by \$7–10 trillion, or by as much as 10%. “We affirm our extreme bullish outlier view, established over a year ago, on the importance of generative AI. The technology is driving a powerful tech investment wave, with co-pilots and other generative AI product cycles launching in the near term,” Murphy said. “Indeed, VC investments are pivoting rapidly from cloud and crypto to generative AI, and a material percentage of Y Combinator companies are also in this space.”

While generative AI is undoubtedly a massive boon for the software industry, hardware companies also stand to benefit from the uptake of the technology. “The AI-related supply chain is buoyant, with continued strong demand for AI training hardware and emerging demand for various AI inference solutions — both likely to sustain AI demand into 2024 and beyond,” Hariharan noted. This will boost the global semiconductor market, which is forecast to see a 16% growth in revenue in 2024 and increased demand into 2025.

Investments in other AI infrastructure will also continue to grow, particularly for servers, switches and optics, according to Samik Chatterjee, Head of the IT Hardware and Networking Equipment research team at J.P. Morgan. “The leverage to AI for certain sections of our broader hardware coverage is likely to be a windfall moment,” Chatterjee said.

AI end-point devices such as smartphones and PCs will also likely see a pick-up in product launches in the second half of 2024, with more material adoption in 2025. “These will focus on local inferencing to enable low latency and personalized experiences, while also leveraging more complex audio and visual interactions such as gesture and facial recognition,” Chatterjee added.

The generative AI adoption lifecycle consists of three stages. Stage 1 is largely focused on training demand for large language models; stage 2 sees organizations bringing co-pilot applications to the market; and stage 3 involves client devices carrying dedicated inference engines.

### Related insights



- Leveraging cutting-edge technology and innovative tools to bring clients industry-leading analysis and investment advice.



- Global Research

## The future of Big Tech

December 23, 2022

What challenges and opportunities lie ahead for Big Tech? J.P. Morgan Research explores the 2023 outlook.



- Technology

## Technology at our firm

This communication is provided for information purposes only. Please read J.P. Morgan research reports related to its contents for more information, including important disclosures. JPMorgan Chase & Co. or its affiliates and/or subsidiaries (collectively, J.P. Morgan) normally make a market and trade as principal in securities, other financial products and other asset classes that may be discussed in this communication.

This communication has been prepared based upon information, including market prices, data and other information, from sources believed to be reliable, but J.P. Morgan does not warrant its completeness or accuracy except with respect to any disclosures relative to J.P. Morgan and/or its affiliates and an analyst's involvement with any company (or security, other financial product or other asset class) that may be the subject of this communication. Any opinions and estimates constitute our judgment as of the date of this material and are subject to change without notice. Past performance is not indicative of future results. This communication is not intended as an offer or solicitation for the purchase or sale of any financial instrument. J.P. Morgan Research does not provide individually tailored investment advice. Any opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients. You must make your own independent decisions regarding any securities, financial instruments or strategies mentioned or related to the information herein. Periodic updates may be provided on companies, issuers or industries based on specific developments or announcements, market conditions or any other publicly available information. However, J.P. Morgan may be restricted from updating information contained in this communication for regulatory or other

reasons. Clients should contact analysts and execute transactions through a J.P. Morgan subsidiary or affiliate in their home jurisdiction unless governing law permits otherwise.

This communication may not be redistributed or retransmitted, in whole or in part, or in any form or manner, without the express written consent of J.P. Morgan. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute or retransmit the contents and information contained in this communication without first obtaining express permission from an authorized officer of J.P. Morgan.

Generated with Reader Mode

🔗 <https://www.jpmorganchase.com/news-stories/tech-investment-could-disrupt-banking>

⌚ 8 min read

# This \$12 Billion Tech Investment Could Disrupt Banking

*JPMorgan Chase invests \$12 billion per year on technology. Here's why.*

There are two kinds of corporations emerging from today's technology revolution: the disrupted and the disruptor. JPMorgan Chase is in the midst of a once-in-a-generation transformation into the latter.

Silicon Valley may dominate the headlines, but it isn't the only player in the emerging technology game. Being large and well established can be a burden for many companies, especially in industries swarming with nimble tech startups. But in the world of financial technology, it's a blessing. Because developing cutting-edge technology is one thing; building a critical mass of loyal customers, and enough scale to fine-tune best-in-class products is quite another.

JPMorgan Chase is already there, with more than 60 million retail customers whose preferences help the company drive innovation and accelerate transformation.

"We have a tremendous amount of opportunity here," says Larry Feinsmith, Managing Director and Head of Global Tech Strategy, Innovation & Partnerships at JPMorgan Chase. "While other tech companies have a narrower scope of things they do very well, what differentiates JPMorgan Chase is our ability to invest \$12 billion dollars in a broad number of technologies simultaneously. Our size and scale are simply unparalleled."

Feinsmith is referring to the \$12 billion investment JPMorgan Chase spends a year to fuel a team of 50,000 technologists.

Perhaps the most surprising aspect of this seismic shift is that it is not new at all—it is part of a continuous business evolution. Customers have become accustomed to the fast pace of innovation and as such, banks such as JPMorgan Chase continue to push the limits in tech applications."



### Machine Learning Is Not Just a Buzzword

As consumers become accustomed to personalized applications, they are beginning to expect similar tailored services in other parts of their lives. Large companies, such as JPMorgan Chase, are learning from their data to surface the content, application, or services most relevant to their clients.

For example, J.P. Morgan's Corporate & Investment Bank uses machine learning to personalize the digital experience of its research platform, J.P. Morgan Markets. The platform produces over 10,000 pieces of research a year, but until recently, clients did not always know the reports existed. Machine learning techniques solved the issue, and now each client logs into a customized portal that provides unique and relevant research, personalized to their needs.



## Artificial Intelligence Is Here to Stay

You can't be a leader in any industry without engaging customers, clients, and employees in new and unexpected ways—and artificial intelligence is one of the most powerful tools companies are using to harness this enthusiasm.

JPMorgan Chase is the first major bank to roll out an AI-powered virtual assistant that will make it easier for corporate clients to move money around the world, whether it's for routine payroll or multi-million-dollar mergers and acquisitions. AI allows for a multi-channel, consistent customer service experience that gives consumers the power to ask the virtual assistant for information, such as balances, on demand. Machine learning allows the AI-powered assistant to adapt to the clients' behavior over time and make insightful recommendations. If a customer authorizes multiple wires in a given period of time, the virtual assistant could say: "Looks like you have sent 100 U.S. dollar wires to Singapore. Do you know you can send a foreign exchange ACH payment instead? Click here to sign up."

Eventually, AI-powered virtual assistants will be integrated into all areas of the bank to deliver value to customers. They can also streamline internal operations to save employees' time by answering routine questions such as "Did my trade go through?" and "How can I reset my password?"



## Staying Ahead of the Blockchain Revolution

For several years blockchain has been at the forefront of technologists' minds. But could it also change the way we interact beyond payments?

"We're actively exploring applications of blockchain technology across all of our lines of business," says Feinsmith. "We believe blockchain technology can be a game changer in terms of process optimization, improved client experience, and the creation of new revenue streams."

Feinsmith and JPMorgan Chase have been working on a number of blockchain projects that explore concepts beyond cryptocurrency. One of those projects is Quorum, an ethereum-based, enterprise-focused platform built with open-source code. The platform combines enterprise-strength software with high-level compliance for the processing of private transactions. Its rapid adoption by developers has solidified the significance of players like JPMorgan Chase in the blockchain ecosystem.

## The Future of Tech is Calling

Technology, especially in consumer-facing businesses like banking, is changing quickly to meet consumer demands and market trends. Large corporations are on a never-ending cycle of iteration to rollout of smarter, faster, and easier to use apps, virtual assistants, cybersecurity systems, digital platforms and distributed ledger technologies.

JPMorgan Chase has a clear view of the future, which is why its technologists work on a variety of other solutions, including mobile and electronic payments, big data, cybersecurity and cloud computing. As a result, the company is now competing with top-tier tech giants for consumer attention and employee talent.

"We are an unexpected disruptor in banking and in the technology industry," said Feinsmith. "Because technology changes so quickly we are not only developing technology for today, but we are also anticipating the technology needs of our consumers 5-10 years down the road."

---

Interested in helping JPMorgan Chase develop solutions to real-world problems? Learn more about the variety of technology career opportunities at JPMorgan Chase & Co.

Generated with Reader Mode