

Quant Magic

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Executive Summary

Quant Magic is a production-ready, customized suite of bespoke AI-driven solutions that deliver end-to-end financial analytics using modern tools and natural language query capabilities, reducing time-to-insight from hours to minutes while ensuring governance, security, and scalability.

It can be used by JPMC CFO Office and F&BM analysts as well as by customers of JPMC CIB Treasury Services to run complex and comprehensive financial analysis.

Quant Magic was developed by Ascension¹ for a global financial institution and has been deployed in production since January 2025. Once built and customized by Ascension and deployed in JPMC, Quant Magic's IP will stay with JPMC.

Background / Problem Statement

Complex financial data from diverse sources slows analysts and limits decision-making. Manual workflows and SQL queries constrain scalability, while siloed tools and compliance requirements create operational inefficiencies. Additionally, regulatory compliance and governance requirements introduce further friction to operations.

For example, if someone from the CFO Office needs to run a complex, comprehensive analysis of two different portfolios or an analysis across sectors, they would have to work with a Data Engineer to look up for the right data sources and run various SQL/NoSQL queries to fetch the data from the database, and then work with a Data Analyst to put the results into a visual form (PowerBI, Tableau, or some other Business Intelligent tool). This process can take days.

Here are a more specific examples of complex financial analysis:

1. Show Return on Equity trends for major Financial Services companies during the COVID years (2020-2024) and identify which companies showed highest volatility versus stability.
2. Analyze long-term financial outperformance patterns across S&P 500 sectors from 2020-2024 by measuring ROE, profit margins, and growth trends. Which sectors demonstrate the most consistent financial sustainability and which companies within those sectors show superior operational efficiency?
3. Which Technology companies have shown the most consistent profitability improvement between 2019-2023? Compare Apple, Microsoft, NVIDIA, Adobe, and Salesforce across profit margins, ROE, and growth consistency. Identify which companies demonstrate stable margin expansion versus high-growth volatility patterns.
4. Analyze the free cash flow generation trends for Energy sector companies between 2020-2023, highlighting the impact of oil price volatility.

¹ Ascension is an AI-powered software engineering leader and a Preferred Supplier to JPMC since 2023 as part of its IT Professional Services (ITPS) program. For more info about us see page 10 or visit www.ascension.com/who-we-are/.

Proposed Solution

Quant Magic reduces the time needed to produce such analysis by removing the need for a data engineer or analyst. The CFO Office or F&BM user can use Quant Magic to ask a question in natural language and Quant Magic will understand their language and lingo, ask clarifying questions, pull up the right data sources, put together a query, run the query, fetch the data, prepare a visual if the analysis needs it, and present it back to the user – all done in the span of just a few minutes. If the user wants to keep this for future usage, they can bookmark the analysis output. If the user needs to share the analysis, a PDF or Word report with the organization-specific template can be prepared.

As mentioned, Quant Magic can be consumed within the organization to improve financial analysis efficiencies and can also be commercialized and sold to corporate clients. A proposed implementation roadmap is outlined in the [Pilot Proposition](#) section below.

Business ROI & Benefits

- Quant Magic eliminates manual effort and fragmented tools, significantly reducing time-to-insight from hours to minutes. It delivers minutes-to-insight for analysts, reduces total cost of ownership (TCO) by 50–60%, and drives measurable productivity gains by replacing manual processes with AI-driven automation.
- Governance, security, and compliance are built in, and can be built to scale seamlessly with Role-based Access Controls (RBAC) and data lineage tracking.
- Quant Magic provides exceptional financial insights and supports both strategic and tactical Q&A capabilities. A semantic layer ensures business-ready answers, making data actionable across the organization.
- Bespoke customization, accuracy, sub-second latency, and modern tech stack.
- Quant Magic can be sold as a financial product to corporate clients of JPMC.

Differentiators & Innovation

Proprietary Azure Native Solution

- Domain-specific financial intelligence trained on U.S. SEC EDGAR² data with 21,450+ financial metrics for S&P 500 companies. This dataset was chosen for demo because it is in the public domain. A bespoke implementation would be done on your own custom data.
- Institutional-grade accuracy with >90% evaluation pass rate across 129 comprehensive test scenarios.
- Advanced AI reasoning capabilities with GPT-5³ integration and transparent cost tracking.

Proven Expertise

- Production-ready system with 100% test coverage rate on complex financial queries.
- Financial domain expertise covering XBRL standards⁴, GAAP compliance, and regulatory requirements.
- Memory-optimized architecture handling enterprise workloads with <4GB peak usage.

Speed To Value

- Template-based fast path delivering sub-second responses for 70%+ of common queries.
- Pre-built financial ratio calculations covering all major investment analysis scenarios.
- Immediate deployment with existing CLI tools and evaluation framework.

Future Ready Capabilities

- Modular architecture supporting web interface expansion and API integration.
- Batch processing capabilities for large-scale institutional analysis workflows.
- Continuous learning system that improves accuracy and coverage over time.

AI & Data

- In-Context Learning (ICL): Two knowledge bases are created — *Domain Knowledge* and *Instruction Set*. Both knowledge bases are used for ICL with parameterized, grounded definitions (e.g., definition of FY, BU mappings) and few-shot examples (e.g., calculating the cash conversion cycle using a given formula and example).
- LLMs are used selectively because they are good for language, Q&A, and semantic understanding, but context retrieval, math, and financial calculations are handled separately. This ensures precision in numerical analysis and contextual accuracy (e.g., understanding fiscal years across companies).
- Quant Magic balances AI-driven insights with data privacy and customizability.

² U.S. Securities and Exchange Commission's (SEC) Electronic Data Gathering, Analysis and Retrieval (EDGAR) system can be accessed via: <https://www.sec.gov/edgar/searchedgar/companysearch.html>

³ Quant Magic can use other LLMs besides GPT-5 such as Anthropic, Gemini, among others.

⁴ XBRL International is a global nonprofit consortium responsible for developing, maintaining, and promoting the XBRL specifications and ensuring interoperability across countries and regulators. For more info, visit: <https://www.xbrl.org/>



Security

- Quant Magic can be deployed on any Hyperscale Cloud provider approved by JPMC or on JPMC private Cloud, thus adhering to JPMC's cybersecurity requirements.
- All JPMC Data and PII remain inside JPMC environment, thus adhering to JPMC's Data Security requirements.

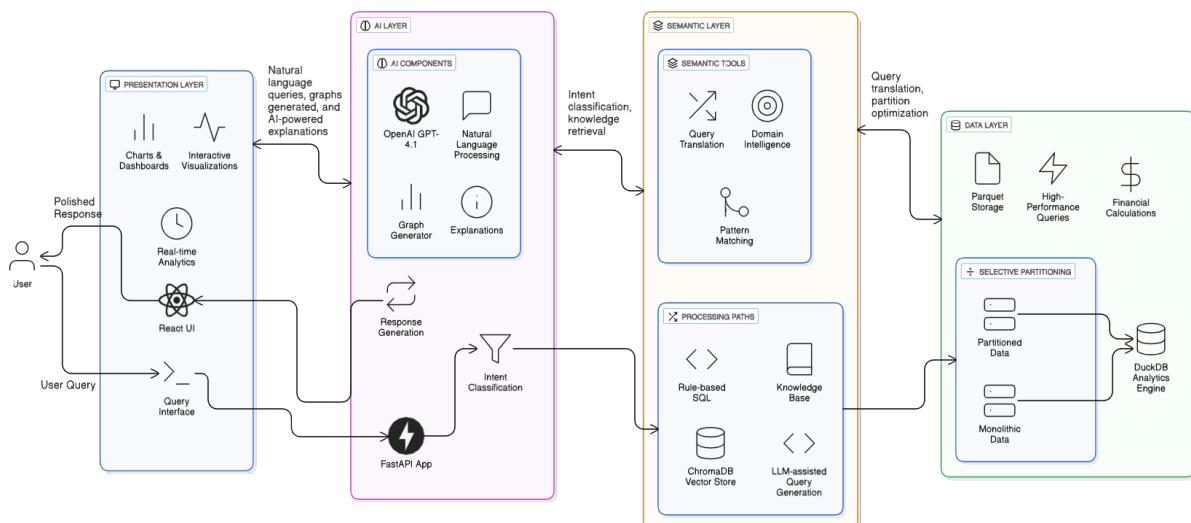
Commercial Potential

- Quant Magic can be sold as a financial product to corporate customers of JPMC.
- We have already deployed Quant Magic as a commercial product in 3 major corporates that are customers of our existing client (the global financial institution we built Quant Magic for).
- Those deployments are handled via a stand-alone Deployment Statement of Work (SOW) with defined milestones, while a Core SOW is in place for us to build new, common features and functionality that can be deployed across all clients. All SOWs will be executed between Ascension and JPMC.

Tech Stack

Quant Magic is built on an Azure-native pipeline that combines an OLAP database with a Parquet-based Lakehouse. Natural language query, powered by Azure OpenAI, allows analysts to “talk to data” for faster insights. The solution provides secure, end-to-end analytics fully within Azure, embedding governance, RBAC, and data lineage. By eliminating tool silos and automating workflows, it delivers insights in minutes, improving efficiency and scalability.

Reference Architecture⁵



⁵ More detailed reference architecture can be provided upon request.

Demo Video

Click [here](#) for a video demoing Quant Magic. The video is 17:32 minute-long and is stored on Vimeo. It's a password-protected video and the password is: Demo2025. The video is for demo purposes and uses low-level UI. The production version can use JPMC's UI/UX frameworks and design libraries.

The screenshot shows the Ascension Quant Magic AI interface. At the top, there are navigation buttons for 'New Chat', 'Search Chat', and 'Bookmarks'. A search bar contains the query: 'What is the budget achievement rate for each business unit's operating profit on a QTD basis for the month of December 2023? Also draw the graphs for the same.' Below the search bar is a section titled 'Budget Achievement Rate for Each Business Unit's Operating Profit (QTD Basis) - December 2023'. This section includes a table and a bar chart.

Business Unit	Total Actual (in millions)	Total Budget (in millions)	Achievement Percentage (%)
Graphic Business (GA)	65.0	10.78	602.82
Medical Business (ME)	1455.0	423.61	343.48
Materials (Mat Gr)	46.0	25.08	183.43
Imaging Solution (In Gr)	650.0	467.52	139.03
CHI Business (LS)	-16.0	3.40	-471.03

The bar chart is titled 'Budget Achievement Rate by Business Unit (Dec 2023)' and shows the achievement percentage for each business unit. A legend indicates that green bars represent achievement rates above 100% and red bars represent achievement rates below 100%. The chart has a vertical axis labeled 'Achievement Percentage (%)' ranging from -2000 to 0.

Pilot Proposition

As JPMC's preferred IT Professional Services Supplier, Ascension offers a co-engineering approach to build Quant Magic and tailor it to your specific requirements and needs. We will outline an implementation scope and acceptance criteria, followed by drafting a Fixed-price Statement of Work (SOW) with defined outcomes (milestones) and timelines.

Implementation Roadmap

The implementation begins with data ingestion, collecting, and centralizing diverse sources. Next, a structured OLAP/Parquet-based Lakehouse is built. Analysts can then use the "Talk to Data" interface to query data naturally. Finally, the solution is deployed with full governance, security, and scalability.

Week 1: Assessment and Scoping

- Evaluate the client's existing financial analysis workflows and pain points.
- Use Case Definition: Identify high-impact scenarios for immediate ROI demonstration.
- Technical Requirements: Assess infrastructure needs and integration requirements.
- Success Metrics Definition: Establish clear KPIs for pilot success measurement.

Week 2 & 3: Ingestion and Proof of Concept (PoC)

- System Deployment: Deploy production-ready Command-Line Interface (CLI) tools in the client environment.
- Data Ingestion: Connect to the client's financial data sources and ingest into custom OLAP schema.

- Custom Template Development: Create client-specific query templates for their key use cases.
- Domain specific run book: High level capabilities in Q&A form that the solution can support.

Week 4: Build and Demo

- Fine-tune with domain knowledge and custom instruction set to ensure answers deliver as per expectation.
- Demo playbook: Showcase capability of solution to deliver exceptional insights on financial queries.

Week 4: Deliverables

- Pilot Results Analysis: Measure performance against defined success metrics.
- ROI Demonstration: Quantify time savings, accuracy improvements, and cost reductions.
- User Training & Onboarding: Train key stakeholders on system capabilities and usage.
- Commercial Framework: Finalize pricing model and service level agreements (SLAs).

Week 5: Outcomes

- Immediate Value: 70%+ reduction in financial analysis time with improved accuracy.
- Proven ROI: Documented cost savings through automated insights and reduced manual research.
- Strategic Advantage: Enhanced decision-making capabilities with AI-powered financial intelligence.
- Scalable Foundation: Ready-to-expand platform supporting growing analytical needs.

Conclusion

Quant Magic represents a transformative leap in financial analytics, combining AI-driven automation with enterprise-grade precision and scalability. Developed by Ascension, the solution enables natural language queries, streamlines complex workflows, and delivers insights in minutes. With proven deployments, customizable architecture, and strong commercial potential, Quant Magic can empower JPMC teams and clients to make faster, smarter decisions. It's not just a tool—it's a strategic asset for future-ready financial intelligence.



Quant Magic Cheat Sheet

What Is It?

- Instant Financial Analysis: Ask Questions in plain English and get professional insights in seconds.
- Complete S&P 500 Coverage: 15.5m+ data points across 589 companies and 11 sectors.
- Enterprise-Grade Quality: Institutional investment-grade analysis.
- Zero Learning Curve: No training required – natural language interface.
- Cost-Effective Alternative: Reduces expensive data engineering and research teams.

How It Works

- Layered multi agent architecture: bespoke semantic layer to enrich data, isolated AI layer for text-sql-text workflow.
- Smart AI routing automatically selects the fastest processing path for optimal speed.
- Lightning-fast results: sub-second responses for common queries, <30 seconds for complex analysis.
- Business-ready outputs: professional reports with data sources and confidence scoring.
- Continuous learning: system improves accuracy through user interactions.

Key Features

- Real-Time Analysis: Calculate ratios, compare companies, analyse trends instantly.
- Industry Intelligence: Comprehensive sector benchmarking and competitive analysis.
- Strategic Decision Support: Multi-factor analysis for investment and risk assessment.
- Audit-Ready Documentation: Complete methodology transparency for compliance.
- 50% Cost Savings: Intelligent batch processing for large-scale analysis.
- Enterprise Security: Multi-layer validation ensures data safety and query protection.

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