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Solution Brief

HSBC AI GLOBAL TACTICAL INDEX

An Artificially Intelligent Global
Investment Strategy Powered by AWS

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EXECUTIVE SUMMARY

The HSBC AI Global Tactical Index (AiGT) is a rules-based investment strategy that uses advanced techniques in artificial intelligence (AI) to invest opportunistically across a global portfolio of equities, gold, and bonds. The AI-powered index is developed, hosted, and managed entirely by Boosted.ai as part of their SaaS offering. The solution utilizes Amazon Web Services (AWS) technology to automatically adapt its approach as market dynamics change by learning from thousands of data points to seek an informational advantage over the market. AiGT can dynamically change its portfolio each week to react to changing market conditions without human intervention. The solution is being rolled out within the annuities space.

With HSBC's introduction of AiGT, retirees are offered an opportunity to invest in indices that learn and evolve from changing market conditions. For investors seeking to grow their wealth and ensure a safe and stable retirement, a more active, data-driven approach can be beneficial.

Market Context



An aging population facing retirement

An aging, global population and a wide retirement funding gap are driving demand for retirement products as customer awareness is increasing. The number of aging individuals will bring more customers to the retirement market, but combined with increasing life expectancy and rising healthcare costs, there is growing pressure to fund retirements, particularly in a volatile macro environment.



Investor expectation for transparency

Investors increasingly expect transparency across their investing and wealth management experience. This demand is heightened as we enter a new era of financial services that is built on an unprecedented amount of data generation, aggregation, and dissemination. Regulators and legislation continue to support the demand for transparency related to investment holdings and fee structures; the rise of ESG investing, for example, has highlighted the criticality of identifying objective and transparent data sources.



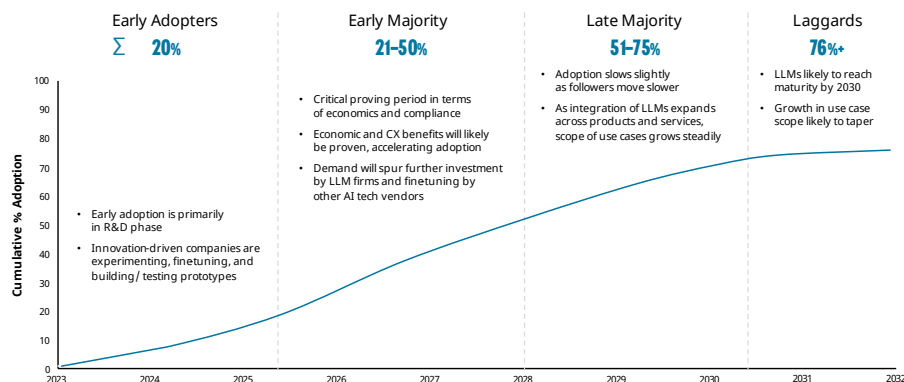
Use cases for generative AI

The dawn of "augmented" or artificial intelligence could have a transformational impact on our world, including the financial services industry. While the path to implementation is a cautious one, there have been an abundance of strategic

responses that center around increasing human productivity, establishing a “co-pilot” for knowledge workers and optimizing cost and operational efficiencies.

Celent anticipates a steady adoption of large language models (LLMs) by wealth managers and their technology vendors over the mid-term, assuming regulatory, risk, and compliance issues are resolved.

Figure 1: Estimated Adoption Rate of LLMs



Source: Celent research

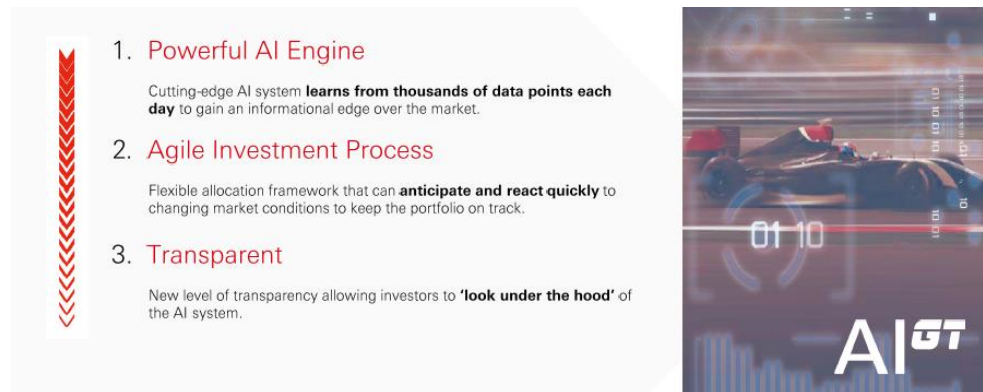
Company and Solution Overview

Founded in 1865 to finance trade between Asia and the West, HSBC is one of the world’s largest banking and financial services organizations. The bank aims to be “where the growth is,” enabling businesses to thrive and economies to prosper. HSBC’s four global businesses serve around 39 million customers worldwide, ranging from individual savers and investors to some of the world’s biggest companies, governments, and international organizations. HSBC has \$3.0 trillion in AuM and operates in 62 countries across APAC, CEEMEA, Americas, and LATAM.

The HSBC AI Global Tactical Index (AiGT) is an AI-powered index that learns from thousands of data points to gain an informational advantage over the market. Leveraging this advantage, AiGT can dynamically change its portfolio each week to react to changing market conditions without human intervention. The portfolio can shift in and out of global equities, gold, and bonds in an attempt to provide a combination of equity capital appreciation, inflation protection, and stable fixed-income returns. The solution is being rolled out within the annuities space. Ibis Life & Annuity Insurance Company (Ibis), a provider of retirement savings products, is the exclusive provider of HSBC AiGT in its suite of fixed indexed annuities.

Based on back-tested performance, AiGT has returned +5.75% per year over the last 15 years, which is +1.50% per year more than the typical index that was previously available to retirees in Fixed Indexed Annuities (FIAs). AiGT has delivered this outperformance while also delivering unprecedented transparency to customers through use of the AI Insights tool on the AiGT website and an extensive marketing package.

Figure 2: Key Features and Capabilities



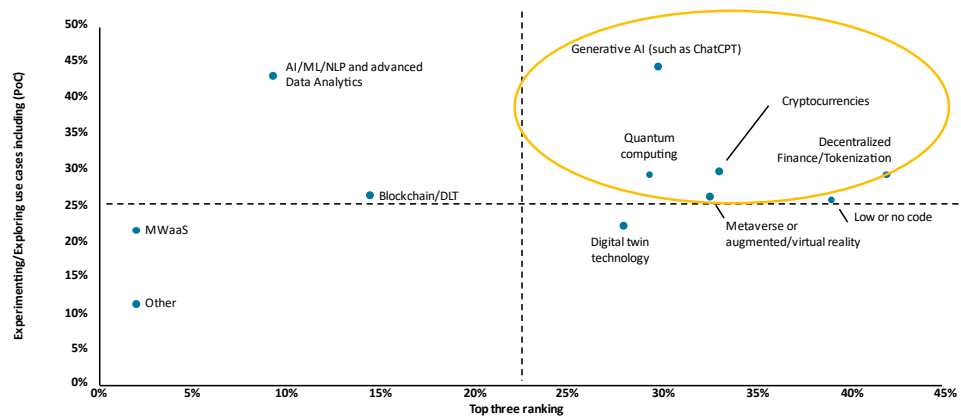
Source: HSBC, Aug 2023

KEY BRIEFING TAKEAWAYS

Retirees face the possible challenge of outliving their retirement income. As such, HSBC has identified a need for an affordable crediting option within an annuity that annuitants can feel comfortable choosing within their retirement plan. With longer life expectancies and rising healthcare costs, there is increasing pressure on individuals to fund retirements, particularly in a volatile macro environment.

Celent’s Wealth Management IT Priorities and Strategy in 2023 report found that despite the challenges posed by the macroeconomic and geo-political environment, wealth management technology spending will grow steadily in 2023. For example, wealth managers are focused on achieving agile enterprises and scalable operations, and implementing newer technologies, including AI, to support personalized client experiences, such as portfolio construction. The survey also found that generative AI tops the list for use cases and importance, as shown in Figure 3.

Figure 3: Generative AI and Other Related Technologies Are Leading Areas for WM IT Spending



Base: All Wealth Management respondents (sample: 215)
 Source: [Wealth Management IT Priorities and Strategy in 2023 | Celent](#)

AI Global Tactical Index: A Closer Look

Every day in the US until 2030, approximately 10,000 baby boomers will reach retirement age of 65¹. As they retire, they will seek to roll retirement savings into investments that protect principal, provide market upside, and provide steady retirement income. In recent years, retirees have turned to FIAs to achieve these goals. FIA sales have reached over \$100BN per year and continue to climb, but investment options within FIAs have been limited to broad-based benchmark indexes and fixed-quantitative strategies that cannot change their approach when facing new market conditions.

With the introduction of AI-powered indexes, HSBC provides retirees an opportunity to invest in indices that learn and evolve from changing market conditions and act more like traditional actively managed portfolios rather than passive ones. For investors seeking to grow their wealth and ensure a safe and stable retirement, a more active, data-driven approach can be beneficial.

HSBC briefed Celent in June 2023. David Odenath, Global Head of Quantitative Investment Solutions, led the briefing.

Figure 4: AiGT

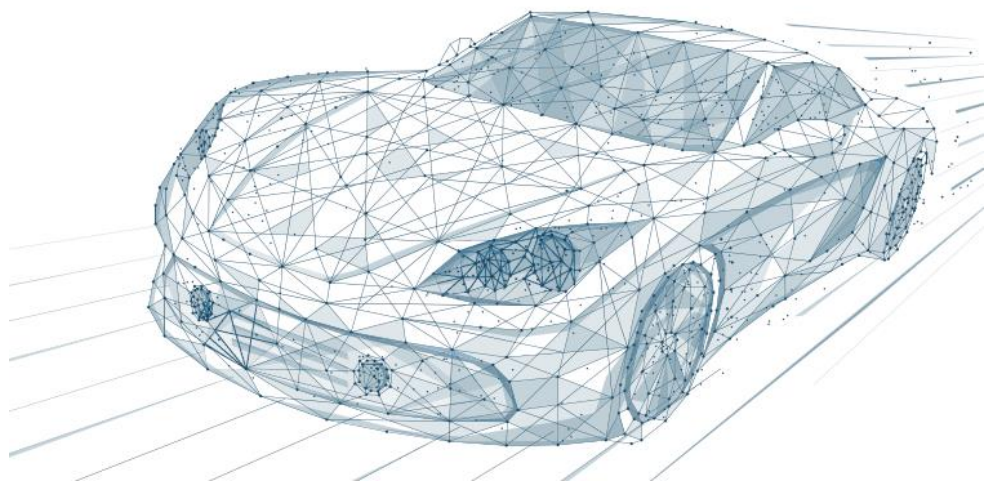
Access State of the Art AI Technology in Your Portfolio

Investing in the global markets can seem like a long and winding road. Recently, navigating this road has become even more complicated with the birth of Big Data.

The sheer volume of data available to investors is staggering, and the gap between what is available and what humans can take in and analyse is wide and will only continue to grow.

This is why HSBC, a global leader in Quantitative Investment and AI Powered Solutions, collaborated with AWS to develop HSBC AI^{GT}.

HSBC AI^{GT} puts the power of an adaptive AI system fuelled by data into a global tactical allocation framework, creating a systematic investment strategy, which is designed to keep up with, and thrive in, increasingly complex markets.



Source: HSBC, Aug 2023

¹ US Census Statement, 2020

Technologies Used

HSBC AiGT is the first index to utilize AWS' AI and cloud computing capabilities to drive an agile investment process and power an AI system that learns from data thousands of times faster than humans in order to gain an informational advantage over the market. Leveraging this informational advantage, HSBC AiGT dynamically shifts in and out of global equities, gold, and bonds in an attempt to provide a combination of equity capital appreciation, inflation protection, and stable fixed-income returns while aiming to achieve a risk target of 7%.

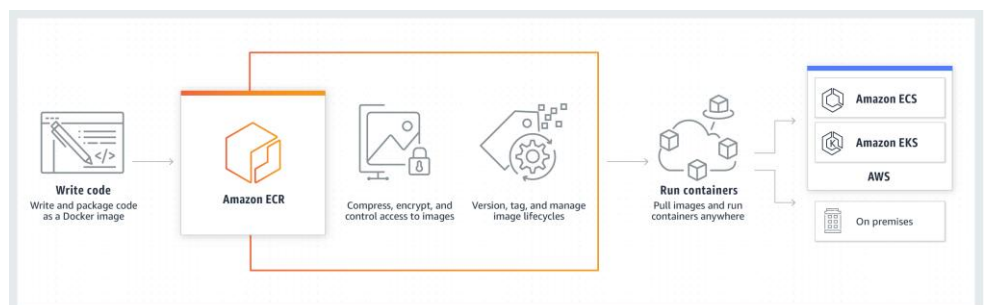
The solution used by HSBC's AiGT index fund is developed, hosted, and managed entirely by Boosted.ai as part of their SaaS offering. It runs on AWS cloud and is primarily based on:

- Amazon SageMaker
 - Build, train, and deploy machine learning (ML) models for any use case with fully managed infrastructure, tools, and workflows.
 - Enable more people to innovate with ML through a choice of tools—IDEs for data scientists and no-code interface for business analysts.
 - Access, label, and process large amounts of structured data (tabular data) and unstructured data (photo, video, geospatial, and audio) for ML.
 - Reduce training time from hours to minutes with optimized infrastructure. Boost team productivity up to 10 times with purpose-built tools.
 - Automate and standardize MLOps practices and governance across your organization to support transparency and auditability.

The solution also leverages AWS's container services:

- Amazon Elastic Container Registry (ECR)
 - A fully managed container registry offering high-performance hosting that can deploy application images and artifacts anywhere.

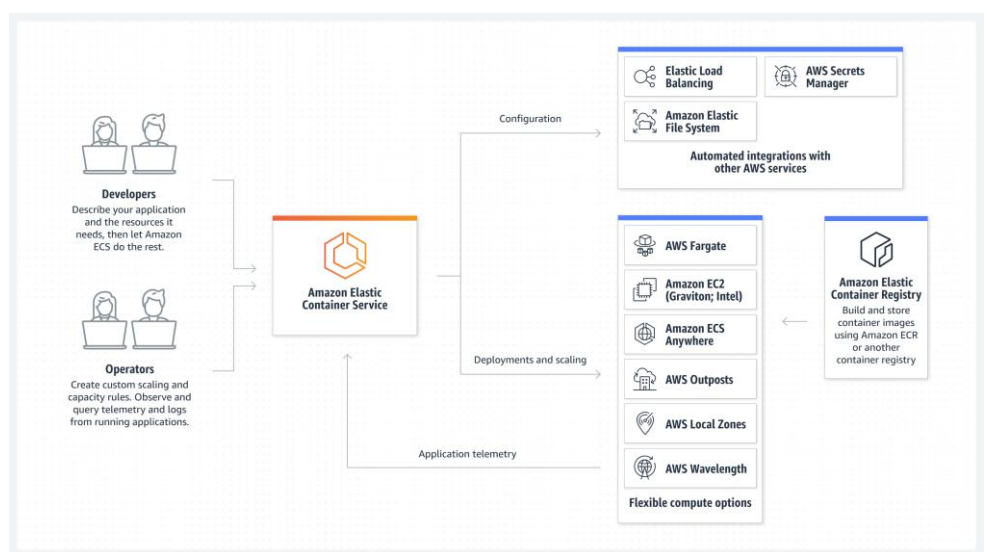
Figure 5: AWS ECR



Source: AWS

- Amazon Elastic Container Service or ECS
 - A fully managed container orchestration service that simplifies deployment, management, and scaling of containerized applications.
 - Developers or operators describe their application and the resources required, and Amazon ECS will launch, monitor, and scale the application across flexible compute options with automatic integrations to other supporting AWS services that the application needs.
 - Perform system operations, such as creating custom scaling and capacity rules, and observe and query data from application logs and telemetry.

Figure 6: AWS ECS



Source: AWS

AiGT is managed by the AWS big data platform:

- Amazon EMR
 - Big data solution for petabyte-scale data processing, interactive analytics, and machine learning using open-source frameworks such as Apache Spark, Apache Hive, and Presto.

Taking its investible universe, AiGT has a straightforward investment process, which is the fastest, most reactive process that HSBC has ever developed. The three-step process ensures that the AWS AI will pick the top holdings, and it also enables HSBC to provide unprecedented transparency to their clients.

The first step in the investment process starts with weekly forecasts from the AWS-powered AI system. By analyzing thousands of current data points across the global markets and comparing them to what it has already learned, the AI system is able to forecast the future expected return of each ETF. Next, these latest forecasts are used to rank the ETFs from highest to lowest forecasted return in order to select only those with the highest AI-forecasted returns for inclusion in the portfolio for that week. Lastly, the portfolio is tactically allocated

across the three ETFs, with 40% going to the ETF forecasted to perform the best and 30% going to the two ETFs forecasted to perform second best. This weekly tactical allocation process ensures that only the AI's top picks make it into the portfolio and allows it to quickly navigate changing market conditions each week.

Value Chain Impact and Benefits



“Successful investment strategies of the future require the ability to analyze and learn from the growing amount of data and react quickly to changing market conditions. HSBC AiGT puts the power of an adaptive AI system fueled by data into a global tactical allocation framework, creating a systematic investment strategy that is designed to keep up with and thrive in increasingly complex markets.”

David Odenath, Global Head of QIS, HSBC Global Banking and Markets
2023

AI-powered strategies allow investors to experience transparent investing with the added benefit of having “portfolio managers” at their fingertips. The Ai Insights tool on the AiGT site gives investors access to the system’s market views and top signals the system is currently analyzing. This unique resource provides transparency about what is happening in the portfolio at any time and why, simulating a human analyst telling investors what they are buying right now and why.

AiGT’s success is measured by performance, delivering potentially superior returns to investors. AiGT allows retirees to enjoy the value of a low-cost investible index with no management fee. Assuming the annuity was held for 10 years, the best annual return for investors would have been 12.89% compared to 7.53% allocated to the S&P500 index in the same product. This outperformance translates into a more comfortable and prosperous retirement for thousands of baby boomers in the US.

Innovation Highlights

HSBC AiGT utilizes advanced AWS AI and ML technology in an attempt to improve performance and automatically adapt its approach as markets change and new information becomes available. AiGT does not perform the same in a bull market as it would in a bear market. For example, the strategy was correctly very bullish at the beginning of 2023, being 40% in QQQ, 30% in SPY, and 30% in European Equities. However, later into the year, AiGT moved out of tech heavy QQQ in favor of Emerging Markets and even into gold as inflation fears pushed GLD over 7% since the beginning of March. This is an instance in which AiGT has shown its ability to learn and evolve. Therefore, retirees who invest in AiGT for the next 7

to 10 years could possibly have peace of mind that their strategy can alter its approach as markets change and new information becomes available. Investors can see this in action on the Ai Insights page as system signals, rankings, and forecasts are automatically updated each week.

Figure 7: AiGT



Signal Word Cloud

This word cloud displays the signals that contributed the most to the AI model's current ranking of each asset.



Source: HSBC, <https://indices.gbm.hsbc.com/insights/feed/aigt-weekly-insights>

Key Factors for Success

Clients of HSBC are able to take advantage of a dynamic passively managed portfolio with the characteristics of an active manager, with access to a "glass box" view of what is going on inside of the AiGT portfolio at any time. Accessible through HSBC's index site, the Ai Insights page features a dynamic word cloud, current rankings of the investible assets, and a historical illustration of each asset's performance. Additionally, investors will be able to recognize why the system prefers one asset versus another, because the Ai Insights page also displays the top positive and negative signals driving the system's decision-making for that week. Most times, clients want to know what they are buying at the time of their initial investment, so instead of being surprised when the next fact sheet is published, they can access this information at any time.

Pain Points Addressed

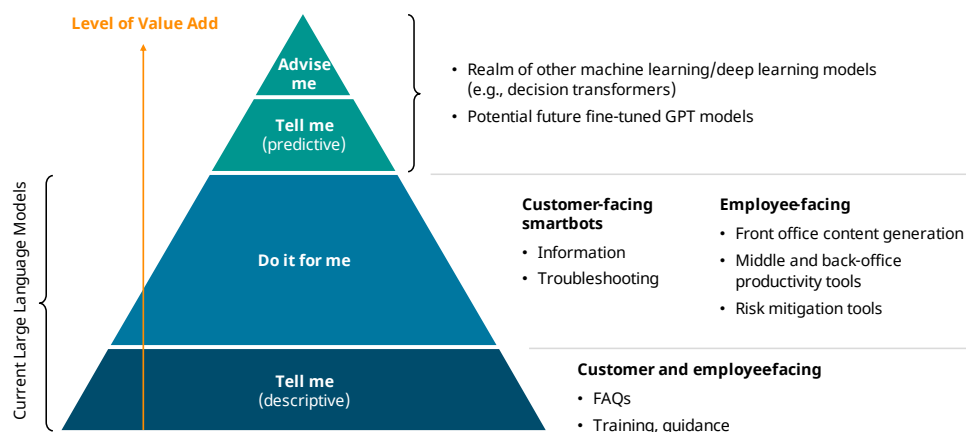
With the concept of artificial intelligence replacing humans receiving more coverage and attention, many individuals can be skeptical of the technology. This is because traditionally, machine learning models are considered to be a "black box," offering no rationale behind a system's outputs. However, HSBC's AI-powered index provides clients with the transparency they need to fully adapt to this new wave of technology. The suite of index transparency tools associated with AiGT allows HSBC to provide clients with the "glass box" view of what the AI

is thinking and why, providing them with explainability of AI and a sense of comfort with its application.

TO CONSIDER

Generative AI, including large language models, will shift competitive landscapes. The HSBC AiGlobal Tactical Index powered by AWS is a unique solution in the market. It utilizes new technologies to facilitate portfolio construction for a large segment of the retail investor market, while achieving a level of operational efficiency within HSBC. The successful use of generative AI will determine competitive advantages for wealth managers over the next several years. While opportunities for the application of generative AI seem to be unlimited, they come with significant risks and costs.

Figure 8: Myriad Use Cases Exist: Value-Add Pyramid for End Users



Source: Celent research, interviews, and analysis

Guardrails are needed when it comes to investment research, investment advice, and product selection. The legal liability for wealth managers is staggering; however, some leading wealth managers are incorporating compliance-approved language and/or compliance systems as part of their AI tools. In the case of an AI-generated index, several key risks need to be considered²:

- **Interpretation Bias**

² ChatGPT and Other Large Language Models (Part 2 of 2): Wealth Management Edition | Celent

- LLMs (and the associated bots) may be trained on subjective data which can lead to biased predictions.
- **Lack of Transparency**
 - Without an audit trail that also provides regulatory analysis, asset allocation rationale, etc., it may be difficult for a customer to understand why a particular option is presented as the best or in the best interest of the client.
- **Hallucination**
 - Hallucination exists in the form of inaccurate information. It means that LLMs may produce seemingly accurate information which is incorrect.
- **Inefficient or Unreliable Sources**
 - LLMs use vast amounts of data to derive responses that might be inaccurate, unreliable, or even intentionally misleading.
- **Reputational Risk**
 - LLMs up the risk ante when the products or services offered are non-tangible, as it becomes difficult to understand what is real.
- **Regulatory and Compliance Risk.**
 - There are compliance challenges concerning LLM and AI-generated products based on the issue of “Who wrote this? A robot or a human?”

Given that LLMs get smarter with time and fine-tuning, early movers that fine-tune models with their data could develop a lead in model accuracy and utility that is hard to close. HSBC and AWS have the advantage of utilizing advanced technologies to contextualize data points which will continually reshape the model.

While some large wealth managers are leading the exploration of conversational AI, others are approaching it with caution. Many wealth managers and advisors already view AI as the most disruptive technology trend facing the financial services industry.

PATH FORWARD

The financial industry is in an AI arms race, where the use cases for wealth management are in its early days. The HSBC AI Global Tactical Index powered by AWS is a unique solution in the market that brings personalization, scalability, and transparency to a large retail investor segment.

HSBC plans to keep investing in innovative products within the AI technology space. Their goal is to continue adapting to new developments and changes that are being made available for consumer use. HSBC will directly apply the technology to their products to continue providing clients with an informational advantage.

The future of generative AI within wealth management depends on model improvements (e.g., accuracy and costs), elimination or minimization of risks, explainability and transparency, and regulatory approval. Additionally, the partnership between HSBC and AWS is a strong example of how traditional financial institutions can benefit from the innovation and agility of fintech, while bringing scalability to the bank and ultimately expanding the reach of financial services across a larger pool of clients.

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