



MIMI - MANAGED INTEGRATED MONEY INFORMATION AND THE ULTIMATE FUTURE OF ROBO-ADVICE

With clear vision of a future robo-advisor, wealth managers can today begin building powerful and adaptable solutions that will outperform the best human advisors

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CAPCO

MIMI. A VERY DIFFERENT FINANCIAL ADVISOR

Fast forward to 2025. It is Friday evening in a family home. Mom wants reassurance that the plans for a special Saturday night meal are confirmed. The twelve-year-old is desperate to know that Sunday afternoon screening of the new Star Wars movie is booked. The nineteen-year-old has not stopped talking about arrangements for the Greek island vacation she is taking in the summer with friends – her first without parents. Dad's response to all their questions, as he sits in the study checking his investment portfolio online, is the same: "MIMI is on it!"

"MIMI embodies – in a 'virtual package' – the kind of data-driven, fully personalized customer-centricity that consumers increasingly demand and financial institutions dream of being able to provide."

So, who is MIMI? Dad's PA? A dedicated coordinator from an ultra-high-net-worth private banking service? Neither. MIMI is a machine – albeit a highly advanced one. MIMI stands for Managed Integrated Money Information and her job is making sure every touchpoint between the family's life and their money is optimized. MIMI embodies – in a 'virtual package' – the kind of data-driven, fully personalized customer-centricity that consumers increasingly demand and financial institutions dream of being able to provide.

Fantasy? We do not think so. MIMI is an artificial-intelligence-enabled software program that, at its core, has a user interface (UI) capable of absorbing human financial requirements and leveraging deep machine-based learning. She combines at least five fields of AI research: expert systems, natural language processing, computerized speech recognition, pattern recognition and, of course, machine learning.

MIMI has her 'head in the Cloud' which enables her to perceive, understand and act based on the collection and analysis of all relevant data. Cloud computing provides unlimited access to remote data centers, making MIMI all-knowing and inexhaustible. She is on a mission to continuously improve her owners' portfolio of assets, insurance, loans, deposits – anything from monthly household spend to complex stock movements. And MIMI can search and analyze data 24/7/365.

So, how far are wealth managers today from being able to integrate some or all of MIMI's technology capabilities into their own customer UIs? How feasible would it be to migrate their HNW/UHNW services to a MIMI-style delivery platform? And ultimately, what is the future of robo-advice?

In this paper, we consider robo-advisory's most likely evolutionary path. We also explore an architectural approach for a robo-advisor of the future that meets current needs and accommodates future changes.

THE NATURAL ROBO FUTURE IS (ARTIFICIALLY) INTELLIGENT FINANCIAL ADVICE

Robo-advisors, as we know them today, were launched less than a decade ago. Yet, the robo-advisory space has seen explosive growth both in the number of firms offering the service and the total AUM (assets under management) they manage. According to recent research by Aite Group, digital advice AUM growth is set to reach US\$1 trillion by 2020 in the U.S. alone, with online broker incumbents expected to capture as much as 67% of total robo-client AUM. Globally, robo-advisors are predicted to manage around \$4.6 trillion by 2022¹.

Today's robo-advisors predominantly use algorithmic or rule-based automation to customize client portfolios. Hybrid advisor models have also emerged, which combine the best aspects of both traditional human advice and automated digital platforms.

We believe that in the near future artificial intelligence (AI) will transform robo-advisory along with the broader global wealth management market. With wealth management

relying heavily on trust and human touch, most companies in the industry still think of AI as a marketing gimmick, or at best as a nice-to-have. However, with the advent of cognitive science-based technologies, AI-powered and fully automated personal financial advisors could be the ultimate future state.



FIGURE 1: Robo-advisors across the world

THE RISE OF ARTIFICIAL INTELLIGENCE

While robo-advisory is a major trend in wealth management, most firms are only beginning to assess the potential of artificial intelligence. One of the main reasons for this is the non-linear evolution of AI when it enters any field.

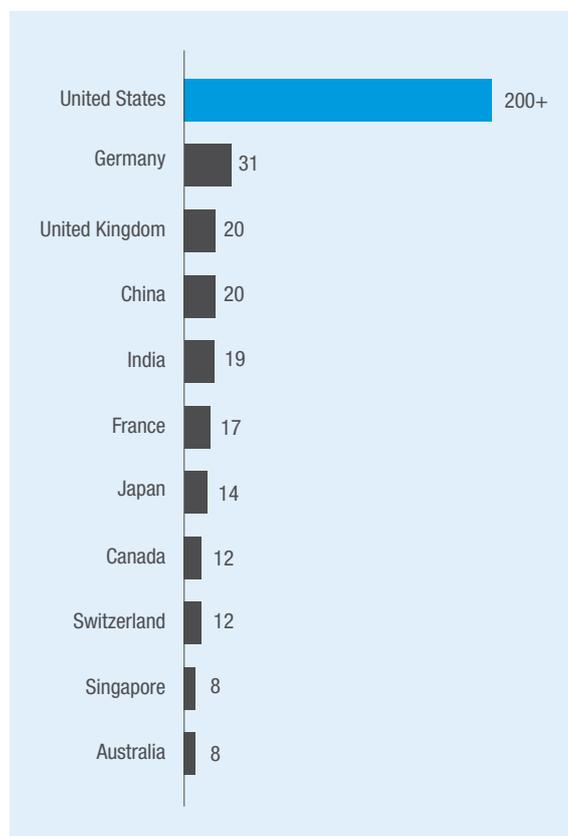


FIGURE 2: Number of robo-advisors, by country, 2017 (Source: BI Intelligence, The Evolution of Robo-Advising, June 2017)

For example, fulfillment centers were a case for AI-based automation in the 2000s. The initial change was imperceptibly slow as it relied on rules-driven systems. However, within a decade, there are thousands of robots working in warehouses around the world. Amazon alone has over 45,000 robots across 20 fulfillment centersⁱ. AI technology that sits at the center of the solution is getting smarter by the day, due to rapid advances in cognitive science.

Another example is driverless cars. Early attempts at building these around the 1980sⁱⁱⁱ used complex rule-based systems which were not practical and did not make it to production. With the advent of AI however, the learning system accumulated millions of kilometers of driving experience within a period of less than ten years^{iv}. Today, driverless cars are nearly ready for the road and are in the transitional phase of gaining people's trust.

These examples are only a small sample of what is happening in the AI space across industries. The most important point to note with AI systems is that the learning aspect keeps growing exponentially. This means that AI not only mimics what a human can do, but it can also perform tasks better and more efficiently than a human. And it continues to improve at similar exponential rates.

EVOLUTION OF ROBO-ADVISORY

In our view, an automated personal financial advisor enabled by artificial intelligence is the ultimate future of robo-advisory. The journey to this future state will not resemble a step-by-step transition but will rather follow an evolutionary process. Although this evolution would be gradual, we can split it into four major stages.

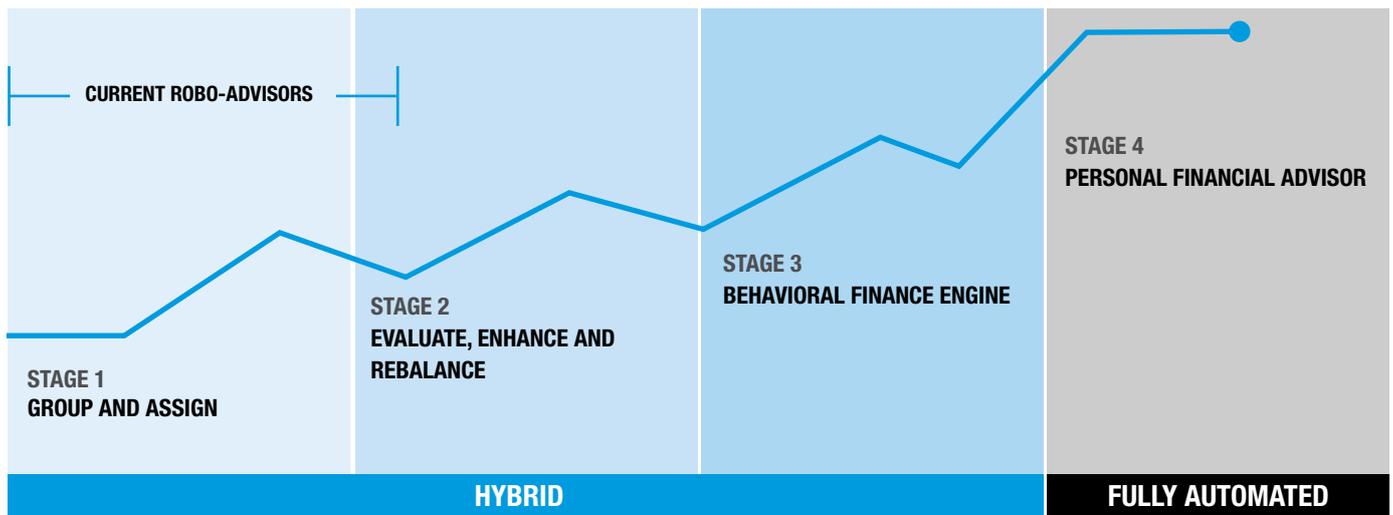


FIGURE 3: Stages in the evolution of robo-advisory

STAGE 1 - GROUP AND ASSIGN

Most robo-advisors today are at this stage. The model here uses a simplistic, business-rules based segmentation of clients, followed by assigning these clients pre-built portfolios from existing inventory. However, for most financial firms, even implementation of this basic model is highly challenging due to inflexible legacy systems.

STAGE 2 - EVALUATE, ENHANCE AND REBALANCE

Some of the more sophisticated robo-advisors have reached this state. They offer services such as auto-rebalancing, cash balance optimization, tax loss harvesting and so on. This involves using business-rules based logic for internal data, to adjust portfolios for changes in market forces or client profiles.

STAGE 3 - BEHAVIORAL FINANCE ENGINE

At the time of writing, no industry player had this capability. A behavioral finance engine would use a broad spectrum of client data sources to build holistic client risk profiles. This would enable automated services such as rebalancing, cash balance optimization and tax loss harvesting to be customized to clients' needs.

STAGE 4 - PERSONAL FINANCIAL ADVISOR

This is the target state where a robo-advisor manages all client's finances, acting as the client's very own, dedicated personal financial advisor. The robo-advisor at this stage would be fully powered by AI. This type of robo-advisor is always on, plugged in, and acts autonomously. It is perpetually learning about the client's life stages and individual preferences, and about market conditions. It uses this learning to continuously chart the best course of action and to secure the most optimal financial future for the client. This ability to continuously acquire and apply knowledge is a key differentiator from a human advisor.

BUILDING THE ROBO-ADVISOR OF THE FUTURE

Capco is developing a robo-advisory accelerator that is powerful enough to meet current needs and flexible enough to accommodate future changes. Our architectural approach is outlined below and is available for demonstration.

We recommend taking a modular approach to building the robo-advisor of the future. This would give wealth management firms flexibility in progressively building robo-advisor functionality and continuously upgrading modules, all with low inter-component dependency. Another reason for taking a modular approach is the fundamental nature of machine learning systems. The inherent feedback loops in any machine learning system can ruthlessly pursue optimization without human intervention*.

Our robo-advisory accelerator app has components for clustering, portfolio allocation, rebalancing, optimization,

behavioral finance, and sophisticated interfaces like chatbots. These components are exposed through a RESTful API interface that allows for a multi-channel, multi-instance implementation.

The accelerator is built to adapt dynamically to structural data changes. It applies machine learning in every component to provide robust and responsive functionality. It is also more advanced compared to existing solutions where data is forced to fit into rigid pre-built models.

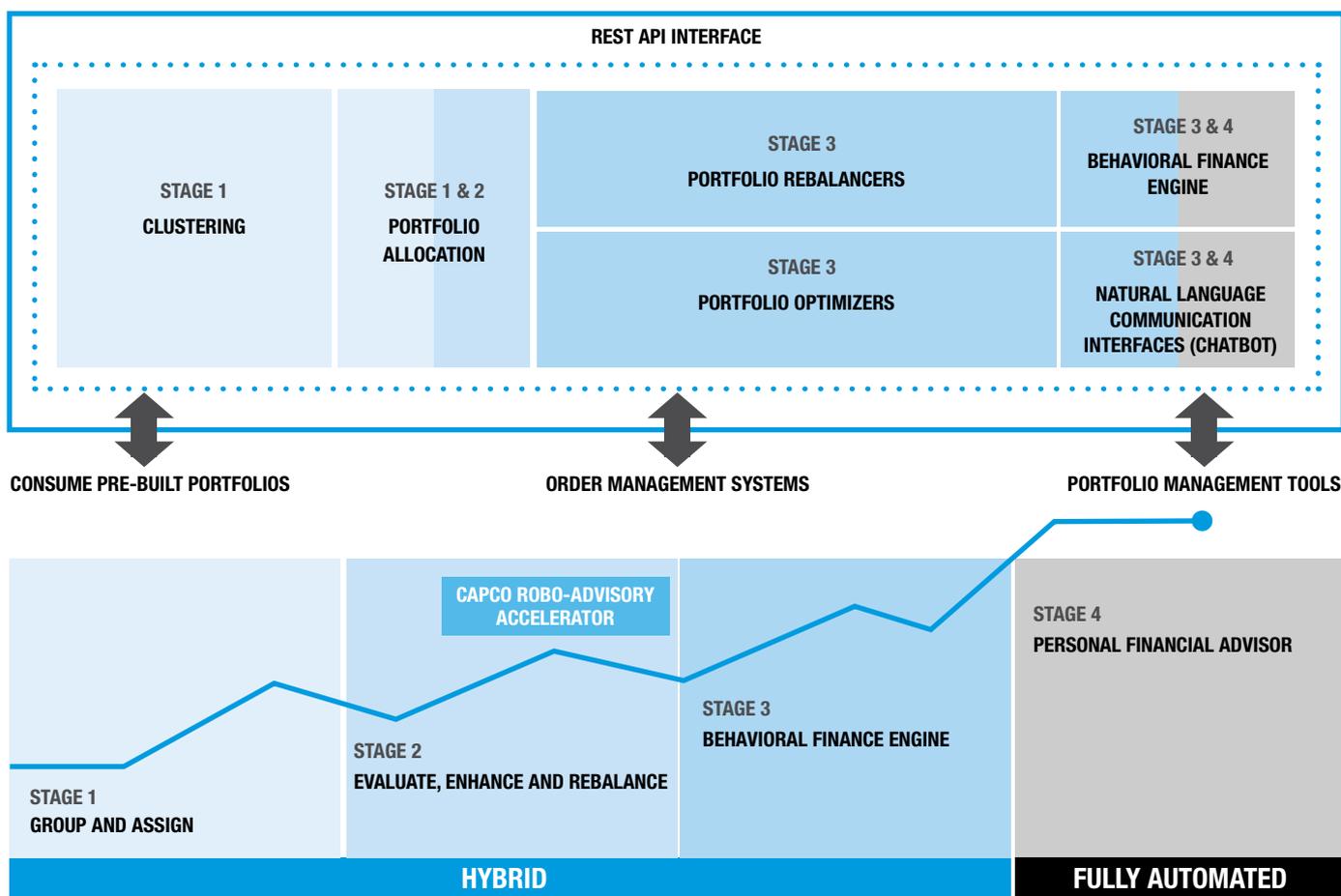


FIGURE 4: A high-level component view of the Capco robo-advisory accelerator architecture

BUILDING THE ROBO-ADVISOR OF THE FUTURE CONTINUED

The current version of our robo-advisory accelerator will help wealth managers establish new or progress existing hybrid robo-advisory towards stage 2 in the evolutionary timeline. The two final stages will also see the development of:

Behavioral finance engine:

This is the most sophisticated component in the proposed architecture. The engine brings the highest level of predictive personalization of AI-powered financial advisory to a client. This component incorporates behavioral finance concepts into an adaptive model for client financial life goals and risk tolerance.

We envisage that such an engine would analyze financial and non-financial data, such as social media interactions, lifestyle choices, etc. This component ensures that the AI-enabled robo-advisor is always on and continuously evaluating investment opportunities against risks, while monitoring clients' changing needs and preferences.

Natural language communication interface (chatbot):

This is an emerging trend currently used by platforms such as Amazon's Alexa and Google's Google Home. This would be one of the many possible interfaces leveraging the intelligence that sits behind it to interact with clients. A natural language communication interface, either messaging-based or voice-activated, can help humanize the interaction between the robo-advisor and client, and increase adoption.

In summary, this approach lays the foundation for moving wealth management towards fully AI-enabled robo-advisory. As it is today, our accelerator can already provide consistently faster and more efficient digitized processes to wealth managers as well as faster and more user-friendly services to their clients.



WHAT IS THE FUTURE FOR FULLY AUTOMATED AI ROBO-ADVISORS?

We anticipate that the AI-enabled robo-advisors would start by underperforming some of the better and experienced financial advisors in the short run (with performance measured on a risk adjusted return basis). However, it would only be a matter of time before the non-linear learning kicks in, resulting in robo-advisors outperforming the best human financial advisor.

This forecast comes with caveats. Firstly, the unpredictability of pace makes it difficult to estimate the timeline of robo's evolution. Based on the AI related transformation in other industries however, it is likely that the number of traditional advisors will reduce and the few remaining will have larger books of business. They will manage these books of business with smaller teams, as advisors will focus more than ever on asset gathering rather than portfolio management. AI will drive most portfolio-related functions and client data analysis. It is also possible that financial advisory services provided by humans could carve out a niche for themselves as one of the exotic asset classes to diversify tail-risk.

The second caveat is regulation. There may be adverse regulation that blocks the AI freedom in the financial

advisory space. Regulators will potentially need to rewrite rules, clearly defining what a robo-advisor can or cannot do with a client's portfolio, before allowing AI to truly take over investors' financial decisions. While the market for regtech (AI for regulation) has been growing, we have yet to see who will regulate AI capabilities in wealth management. Will machines regulate other machines? This conundrum might slow the advent of AI robo-advisors, but we do not believe that it will prevent it.

As with other industries, within a decade, fully automated AI robos could become a genuine wealth management trend.

THE QUESTION WEALTH MANAGERS MUST ASK: “WHAT ARE WE GOING TO DO ABOUT MIMI?”

Now, put all this into the context of our family's Friday night. Thanks to MIMI, Junior knows he can get priority movie tickets from his starter savings account. The longed-for vacation in Greece is insured for nothing and the flights are complimentary, courtesy of some nifty student loan selection – nice one, MIMI. That romantic dinner includes champagne on the house, since MIMI selected 'dining' as a special interest when she updated Mom's credit card reward preferences. And Dad (an electrical engineer not a professional analyst) manages the family's investment portfolio – more effectively than ever with expert input from, you've guessed it, MIMI.

MIMI embodies true customer-centricity and personalized service, and for millions of consumers she can be their potential 'unfair advantage'. This advantage will not be lost on 'amateur' investors. Nor can it go unremarked by wealth managers. Ignoring the prospect of MIMI leaves the burning question of what exactly financial services providers can do to remain relevant to consumers.

Wealth management is at a time of enormous change, disruption, and unknowns. It is not enough for firms to just monitor trends and emerging technologies. A key goal should be to have a clear target state vision of their entity. This vision is what will help firms overcome strategic, structural, and cultural challenges.

In the end, the choice for financial institutions comes down to the following - become a positively disruptive service delivery and market leader, or risk joining the disintermediated victims of the digital age. What choice should – must – financial firms make? Perhaps they should ask MIMI!

Contact Capco today to arrange a demo of our robo-advisory accelerator.

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