

“We can create optimized portfolios of stocks for our customers with a high degree of risk management. Our competitive advantage is that we now base our investment decisions on the most thorough scientific analysis.”

Yoichi Sato
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Certified International Investment Analyst
Director, Head of Investment Management Strategy
MELCO Investments Inc.

How Digital Annealer is pushing the boundaries of financial services.

At a glance

Country: Japan
Industry: Investment Management
Founded: 2014
Website: <https://melcoinvestments.jp/>

Challenge

MELCO Investments previously used conventional approaches such as quadratic programming to determine optimal portfolios. However, these techniques have been increasingly unable to cope with the huge combinations of trading units and target stocks now available to investors. As a result, MELCO Investments had to create portfolios reflecting a degree of tolerance and contingency.

Solution

MELCO Investments deployed Fujitsu's Digital Annealer architecture, which solves combinatorial optimization problems at high speed, to the portfolio optimization calculation. This has significantly increased the accuracy of the calculation results.

Benefit

- Digital Annealer can calculate accurate portfolios of stocks to meet the most demanding requirements of asset management experts.
- The approach has given MELCO Investments a competitive advantage by providing them with more thorough analysis from which to base their investment recommendations.
- MELCO Investments is now able to provide steady growth of client assets based on a thorough risk-return analysis.

MELCO Investments

As the investment management arm of MELCO Holdings Inc, MELCO Investments is focused on contributing to the steady growth of management assets for clients including institutional investors, pension plan sponsors and enterprises. MELCO Investments provides asset management services that offer long-term, stable returns.

Financial Instruments Business Operator: Jurisdiction of Kanto Local Finance Bureau (FIBO) No.2808

Member associations: Japan Investment Advisers Association

Products and Services

- Digital Annealer

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Asset management through mathematical analysis

Current asset management practices use scientific modelling mainly based on finance theory, mathematics and statistics. The diversified investment is one of the basic asset management approaches, based on determining a portfolio that comprises a high volume of individual investments.

Scientific approaches to asset management that began in the middle of the 20th century as “modern portfolio theory” have evolved into economic theories based on sophisticated mathematics and statistics. Computers have of course played an important role in this process. By exploiting high volumes of data and mathematical formulae, computers enable overall risk to be managed by diversifying investment across many different assets. In this way, computer-based mathematical analysis has become an important factor in investment decisions and asset management performance.

Applying quantum computing technology to analysis

While some analysis can be performed on a PC, there are more complex computational problems that cannot be solved by conventional computers. MELCO Investments wanted to take advantage of Fujitsu’s next-generation Digital Annealer architecture to achieve a level of high-quality asset management that was ahead of their competition.

MELCO Investments took advantage of Digital Annealer’s ability to solve combinatorial optimization problems at high speed to help it select the most suitable stock portfolios for its customers. Digital Annealer was also able to help maintain stable returns, specifically in the face of uncertain price fluctuations, by identifying portfolios comprising combinations of stocks with the lowest risk.

The challenges were significant. For example, if you try to optimize 50 stocks within a total of 100, the number of possible combinations is huge (10 to the power of 29), making it impossible to solve through conventional quadratic programming techniques. To use this in a real portfolio management operation, the combinations of more than 100 stocks has to be processed, causing huge complexity. “By using the Digital Annealer, it is possible to obtain a solution for combinatorial optimization with better accuracy, allowing us to analyze more advanced portfolios.” Sato stresses.

Becoming a front-runner among asset management companies

This was the first time that Fujitsu had used Digital Annealer to solve the specific challenge of portfolio optimization. Therefore, the solution was developed gradually, step by step in partnership with MELCO Investments. The result is a solution that can now help to address the most complex asset management challenges. This has given MELCO Investments an important competitive advantage as an asset management company with a genuinely scientific approach to investing stocks based on the most thorough analysis. “The outcome of using this new architecture inspired by quantum computing makes us a front-runner among asset management companies with regards the combinatorial optimization of portfolios.” says Sato.

“By leveraging the innovation and computing power of Digital Annealer to develop a thorough risk-return analysis, we can offer stable, long-term returns for our customers. By leveraging this advantage, we can offer investment products that provide the steady growth of their assets.”

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