GUROBI
OPTIMIZATION

55ip

55ip provides financial advisors with a tax-smart investment strategy engine that enhances portfolio design and delivery, helping to drive better outcomes for investors.

Location: Global
Use Cases: Portfolio Optimization
Website: 55-ip.com

Results

- Over 100,000 optimizations in production each month

- More than $60B in assets under management, up from $1.7B four years ago

Driving Innovation in Tax-Smart Investment Solutions

With Gurobi, 55ip can support rapid customization and compliance across a diverse range of accounts to deliver optimal post-tax outcomes.

As the provider of an automated tax-smart investment strategy engine, 55ip helps financial advisors optimize client portfolios by incorporating features like tax-loss harvesting and trading and rebalancing for model portfolios and separately managed accounts, including direct indexing solutions.

Since its founding, 55ip—a subsidiary of JP Morgan—has focused on managing taxable outcomes for investors, regardless of the specific investment strategies they use.

As 55ip's client base has grown, so has their need for a scalable and flexible optimization solution capable of handling a wide variety of accounts and investment objectives.

In Search of a Scalable Solution

55ip's engine requires precise management of constraints related to risk, tracking error, and client-specific preferences, such as ESG criteria. With accounts ranging from tens of thousands of dollars to hundreds of millions, 55ip needs a solver that can efficiently handle diverse account sizes, complex regulatory requirements, and changing market conditions.

Initially, 55ip relied on open-source software for their optimization problems. This worked well for a variety of use cases—but when it came to building out solutions for specific indices that were both maintainable and scalable, they realized the need for a more robust solver.

"In our earlier attempts with open-source solvers, we needed to do a lot of work on the inputs to make sure the problems were not infeasible, followed by a lot of post-processing to get the output," explained Ravi Pagaria, Investment Director at 55ip. "We wanted to make our approach more scalable and have all our products in a single solution architecture."

The company's Chief Investment Scientist, who had used Gurobi as a professor, introduced the solver to 55ip's Quantitative Research & Development (R&D) team.

Whereas the open-source solvers lacked support for key capabilities like integer constraints, quadratic objectives, and multi-objective optimization, 55ip has found that Gurobi provides all the features needed for efficient portfolio customization for their growing client base.

"Gurobi is definitely much faster and more flexible than the open-source options, especially when it comes to solving multi-threaded problems. I'm not sure other tools are leveraging that in such a sophisticated way as Gurobi."

Silvio DeVincentis
Managing Director, Head of Quantitative Research and Development, 55ip

> "With Gurobi, we can clearly lay out the hierarchy we are following. We have a single source of truth, and that also makes it easier for us internally."

Ravi Pagaria
Investment Director, 55ip

A Flexible and Transparent Approach

Gurobi's support for integer constraints, quadratic constraints, and hierarchical multi-objective optimization allow 55ip to implement complex, account-specific strategies. The solver's flexibility proves critical, as 55ip often needs to quickly iterate and adapt to new client requirements (such as customizing portfolios based on ESG factors or integrating proprietary risk models).

"Gurobi is definitely much faster and more flexible than the open-source options, especially when it comes to solving multi-threaded problems," says Silvio DeVincentis, Managing Director, Head of Quantitative Research and Development at 55ip. "I'm not sure other tools are leveraging that in such a sophisticated way as Gurobi."

Gurobi's parallelization capabilities and efficient handling of large datasets helped 55ip scale operations while maintaining fast response times, even for on-demand optimizations.

Moreover, Gurobi lends itself to enhanced explainability—something that is crucial in the financial services industry.

"Gurobi's multi-objective analysis and hierarchical optimization help us to achieve better explainability for our users and end customers," says Pagaria. "We have teams dedicated to explaining to clients why we did a certain trade. With Gurobi, we can clearly lay out the hierarchy we are following. We have a single source of truth, and that also makes it easier for us internally."

Supporting Exponential Growth

55ip has seen exponential growth over the last four years, with total assets under their management increasing from $1.7 billion in 2021 to over $60 billion in 2025. Gurobi played a key role in supporting this growth, with more than100,000 optimizations in production each month.

By leveraging Gurobi's parallelization capabilities and advanced algorithms, 55ip also maintains fast response times for on-demand portfolio optimizations, which is crucial for their end-user experience.

Through it all, the 55ip R&D team knows they can count on the support of Gurobi's experts for any optimization questions that arise.

"In the early days, when we were first getting up to speed and before we went into production with the model, we shared our linear programming files with Gurobi and they suggested some changes we could make to the parameters for better results," says Karthik Muthukumar, Executive Director, Quantitative Research and Development at 55ip. "They went the extra mile, and we found that really helpful."

About 55ip

55ip is the marketing name used by 55 Institutional Partners, LLC, an investment technology developer, and for investment advisory services provided by 55I, LLC, an SEC-registered investment adviser.