TG OPTIMA™
Navigate Your Way Through The Markets

One Strategy For Investing and Trading™

Optimal Portfolio Trading & Investment Management Analytics™

TG OPTIMA Investment Optimizer™ sets the new standard in strategic investment optimization. From portfolio construction and re-balancing to trade management, our cutting-edge, world class optimization platform streamlines the complex investment planning process and facilitates a paradigm shift in optimal trading strategy and investment decision making.

Incorporate Trading Strategy into Portfolio Construction

- Dedicated functions for asset risk and performance, optimal leverage, holding and trade requirements, risk-adjusted transaction cost and Best Execution.
- Direct inclusion of Sharpe ratio, information ratio and estimation error in objective and constraint.
- Support pre-trade TCA model with adjustable parameters on information leakage, liquidity impact, volatility, correlation, alpha, trading horizon
- Support an array of Risk metrics: variance, volatility, tracking error, value-at-risk, beta and correlation.
- Produce smooth efficient investing and trading frontiers with the best solutions.

TG OPTIMA addresses real world portfolio implementation issues: **the strategy integration of investment and execution**. Our innovative, feature-rich, system facilitates direct investment planning, ranging from optimal portfolio composition to portfolio trading, across the life cycle of investment process. Engineered for institutional portfolio managers and traders with a highly intuitive user interface, the intelligent decision making framework within **Investment Optimizer** provides investment strategy development capabilities that enable real-time portfolio optimization, market and position risk management, optimized transaction cost, an integrated trade horizon and order book management.

TG OPTIMA Investment Optimizer facilitates interactions with Portfolio Managers and Traders to precisely align their goals. The optimal investment selection and incomparable trade management leads various funds to achieving a wide range of investment objectives by assembling designated portfolio characteristics while navigating implementation in coordination with market conditions; a crucial trait in today's volatile markets. Our solution supplements existing Order Management Systems (OMS) and portfolio analytics system, and is adaptable to pre-trade TCA and risk models used today.

INNOVATIVE SOLUTIONS

SUPERIOR PERFORMANCE

ONE INTEGRATED INVESTING-AND-TRADING STRATEGY (EITF) OUTPERFORMS TWO-STEP BUILD-THEN-TRADE PRACTICE (CEIF), WHEN **INVESTMENT OPTIMIZER** CONCURRENTLY SELECTS THE **OPTIMAL TRADE HORIZON** FOR BEST EXECUTION.

SUPPORT MULTIPLE INVESTMENT STRATEGIES AND FUNDS INCLUDING: **LONG ONLY, LONG SHORT, MARKET NEUTRAL, INDEX TRACKING, ACTIVE EXTENSION 130/30** AND MORE.

HOW INVESTMENT OPTIMIZER ADD VALUE TO BUY SIDE (MUTUAL FUND, HEDGE FUND, PENSION FUND AND INDEX FUND)

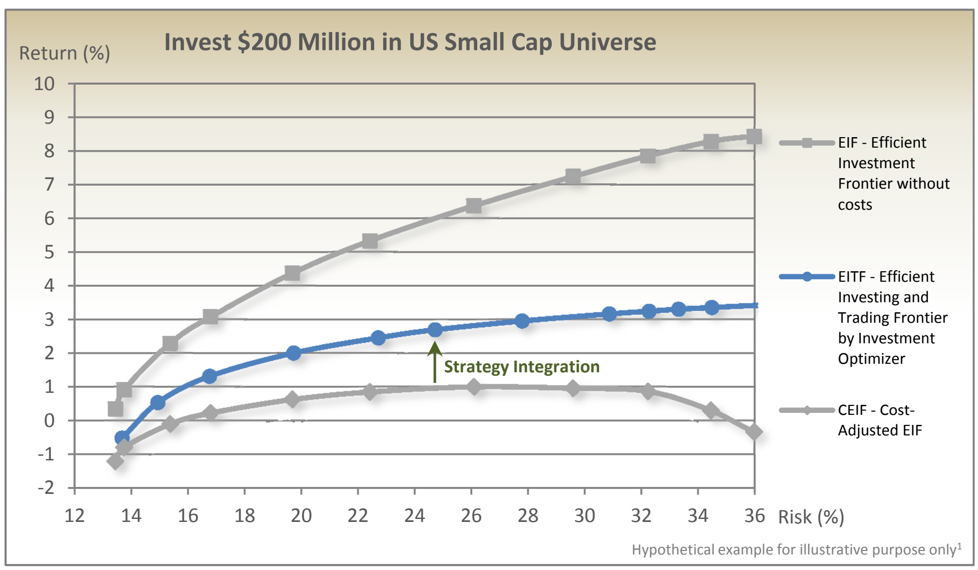
- Facilitate integration of investing and trading strategies
- Turn pre-trade TCA into actionable tools with proactive cost control
- Extend risk management to multiple processes across investment lifecycle
- Enable versatile investment strategy research, design and implementation

HOW INVESTMENT OPTIMIZER ADD VALUE TO SELL SIDE (CASH DESK, PROGRAM DESK, RISK DESK, DERIVATIVE DESK AND TRANSITION MANAGEMENT)

- Provide better client service in trade generation and execution planning
- Fulfill risk book management and hedging without hard market impact
- Strategically enhance portfolio/ program trading and risk pricing
- Facilitate financial product development, design and market-making

VERSATILE INVESTMENT STRATEGY EXAMPLES

● **STYLE FUND** invests in a US small cap portfolio to achieve maximum return after costs. The total return and risk diversification are captured by efficient implementation.



Hypothetical example for illustrative purpose only[1]

● **ENHANCED ACTIVE FUND** invests cash inflows in a short extended equity strategy with an optimal leverage ratio, to capture the maximum alpha, while tracking performance of a particular market index. The fund is mandated with self financing trades and target active risk, correlation, and beta. The position is accumulated by tapping into the available liquidity in the market, without causing much market impact.

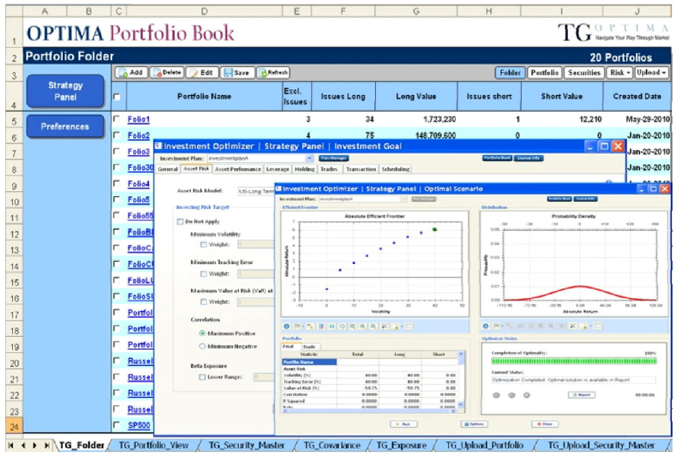
● **HEDGE FUND** manages a dynamic long-short, market neutral portfolio to achieve the maximum Shape Ratio after transaction costs, and contain the portfolio downside risk (VaR). The optimal strategy dynamically adjusts long/short ratio and gross market exposure (notional size) in response to changing market conditions, while maintaining desired market neutrality for risk management.

Key Features

- One Integrated Solution
- Dynamic Portfolio Management
- Optimal Trading Strategy
- Nonlinear Market Impact Cost Model: Temporary and Permanent Impacts
- TCA Model Parameter Calibration Toolkit
- Constrained/Optimized Sharpe Ratio & Information Ratio
- Optimal Leverage Ratio
- Optimal Long/Short Ratio
- Fast Robust Optimization
- Broad Selections of Objectives and Constraints
- Multiple Investment Strategies
- Comprehensive Strategy Panel
- Single Long-Short Optimization
- Holding/Trade Threshold and Quantity Specifications
- Integration of Investment & Trading Alpha and Risk
- Broad Risk Metrics of VaR, Correlation, Beta, Volatility , Variance, and Tracking Error
- Broker-Neutral Open Data System and Interactive Editor
- Open Multi-Factor Risk Model
- Confidential Local Database Storage
- Graphic-Based Investment Scenario Analysis
- Excel-Interfaced Portfolio and Data Management
- Fast, Reliable LINDO Solvers

Broad Functionalities in Portfolio Hedging, Tracking, Transition and Investment

Built with fund managers and execution traders in mind, **TG OPTIMA Investment Optimizer** delivers unprecedented **speed**, **security** and **sophistication** to prudent investment managers through its dual inter-coupled platforms.



Excel-interfaced portfolio book for portfolio and data management

User-friendly strategy panel for investment and trade planning

➢ **One for All:** When performing portfolio optimization, the **ONE** strategy by **Investment Optimizer** can account for investment risk as well as market risk at the same time, blending expected return with expected transaction cost. This integral process constructs an optimal portfolio while concurrently assembling a cost effective trade list with the desired profiles. The extension to trading strategy (e.g., duration, participation) and list profile (e.g., correlations) raises Investment Optimizer above current products.

➢ **Trading Factor Breakdown:** Many plain portfolio optimizers may attack the weakness of investment models, for instance, generating a block of trades representing several days of average daily volumes, whereas most portfolios may not be appropriate for multi-day trades, and opportunity for block orders is sporadic. In addition to relying on the approximate models, investors may benefit by further controlling the factors of trading cost, e.g., order size, time, participation rate, liquidity, beta, covariance.

➢ **Dynamic Portfolio Management:** The versatile capabilities of **Investment Optimizer** allow portfolio managers to re-optimize dynamically, constructing portfolios with desired characteristics, and trading parameters, while investing in accordance with market condition (e.g. liquidity). The flexible process swiftly generating plausible alternative trades, not only ensures diversification, but also reduces the risk of being front run.

➢ **Comprehensive Strategy Tools:** Portfolio Managers can tap into the Robust Optimization framework to incorporate a distribution of returns, while imposing desired constraints: turnover ratio, holding/trades threshold and names, long-short ratio, cash ratio, self-financing, timing risk, alpha trend, and trading horizon and participation.

Contact Information

TG OPTIMA, INC.

1010 Northern Boulevard

Great Neck, NY 11021

516.252.1860

info@tgoptima.com

www.tgoptima.com

For sales, contact our Business Partner -

LINDO SYSTEMS, INC.

1415 North Dayton Street

Chicago, IL 60642

800.441.2378 | 312.988.7422

www.lindo.com

Powerful Optimization Algorithms

- **Joint Development:** TG Optima Investment Optimizer leverages over 30-year experience of pioneering innovation and product development in mathematical programming by LINDO Systems. The cooperation weaves cutting-edge optimization technology into pragmatic investment management to deliver paradigm shift products tailored for money managers.

- **Versatile Engine:** The Investment Optimizer carries an arsenal of powerful solvers for linear, quadratic, quadratically constrained, second order cone and integer optimization. All solvers incorporate numerous enhancements to reach maximum speed and reliability.

- **High Performance Computing:** Tap into the advanced technology of multi-core/multi-thread processing to achieve handy speedup through exploiting computational concurrency. High performance computing reachable at your fingertips on desktops/laptops, enables rapid, real-time decision making in trading and investing, amid today's volatile market conditions.

- **Smart Algorithms:** Benefit from proprietary algorithms developed exclusively for use within the financial industry, where only the best of the best matters. Unlike naive implementation on generic solvers, the seamless integration of models and solvers achieves the ultimate power in complex problem solving, remarkably reducing computing time by intelligent reformulation and smart algorithm switching.

Broker-Neutral Open Data System Delivers:

- **Confidentiality:** The revolutionary system architecture accommodates proprietary/individual model data, embeds private databases on a local computer, keeps portfolios and trade lists in-house and connects to an online on-demand license manager for security.

- **Transparency:** Flexible options and comprehensive planning details enable portfolio managers get to know and fully control the nuts and bolts of investment process.

- **Efficiency:** Excel-interfaced book management and graphic result display can help portfolio managers and traders work together with an intuitive workflow and focus on capturing alpha and/or managing risk in the fast paced environment.

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[1] Actual results will vary subject to market conditions. There is no guarantee that results will be achieved.