Lumen R4A Investment Methodology

Lumen R4A leverages proprietary algorithms, a unique architectural design, advanced optimization techniques, and multi-decade, documented investment expertise to craft portfolios meticulously tailored to specific investment strategies, thus materially raising the probability of meeting the investment goal.

Lumen's investment approach is firmly grounded in two paramount principles:

1. The monetary value of all investments equals the sum of future cash flows discounted back to present value, i.e., the most basic (and powerful) principle of finance, Discounted Cash Flow (DCF). The discount rate used in the net present value calculation is equivalent to the expected percentage return of the investment. The rest is detail.

2. We do not rely on our capability to predict the future—very often a costly exercise in overconfidence. Instead, we dissect the present to extract and assess its embedded value information. The key to shaping investment returns lies in leveraging the opportunities embedded in the present.

In the end, the market is always right.

Armed with these two foundational principles, and leveraging the transformational capabilities of Big Data bolstered by AI advancements, Lumen has developed a battle-tested proprietary algorithm—the Lumen Global Value Compass—that extracts the implied expected return directly from the market. In essence, we place our trust in the predictive power of the most impartial, efficient, and close-to-infallible analyst available: the market itself. This unbiased "equilibrium" metric is a reference point to assess value and consistently rank investment alternatives to carry out optimal asset allocation.

Investing necessarily involves uncertainty about the future. By extracting a market-implied expected return, the Compass provides a disciplined starting point for assessing what is priced in today, i.e., the return the market is implicitly demanding given prevailing assumptions and risks. The investor's task is then not to "forecast" the future, but to evaluate whether the market's embedded assumptions are reasonable, and to size exposures accordingly.

Because uncertainty is ultimately expressed in outcomes, it is useful to frame risk in probabilistic terms. Markets embed implied probabilities in prices; those embedded probabilities are often the best available baseline. Yet markets are "close-to-infallible," not foolproof. Therefore, market-implied expectations are best complemented by the most effective risk-management tool to offset (some) uncertainty: extensive portfolio diversification and optimization—the only free lunch in finance.

The Lumen Compass, a Detailed GPS of Global Value

While there are other methods to extract market-implied expected returns (Ke), the metric derived by the Lumen Compass is unique in that it satisfies three crucial attributes for strategic asset allocation:

- **Universal.** One single value metric to rank and compare value across all investments (bonds, stocks, commodities), across factors (growth, dividends, etc.), ETFs, and more—on an "apple-to-apple" basis, i.e., comparing the present value of future cash flows.

- **Unbiased.** It is not derived from, and does not depend on, subjective and speculative predictions of the future; it reports what the market has "priced" objectively and impartially using the principle above—the DCF.

- **Forward-looking.** The Lumen Compass methodology is powered by live, forward-looking market data; it does not rely on history (the rearview mirror). For those quantitatively inclined, it is not subject to data mining—a unique and distinguishing feature of this proprietary tool.

[FAQ: Lumen Global Value Compass](#)

Generating an extensive menu of investment ideas and opportunities—the crucial ingredient for asset allocation

This proprietary methodology generates a unique, comprehensive, internally consistent, granular global ranking of investment opportunities, providing the most crucial ingredient for effective and customized asset selection. It enables the ranking of all markets (global, developed, emerging, frontier), all asset classes, individual countries, sectors, industries, securities, and investment factors (such as growth, value, quality, etc.). It encompasses benchmarks, ETFs, and thematic areas such as ESG and infrastructure, offering a broad pool of investment combinations. Hence, the key advantage of this extensive (open-source) ranking is its ability to generate an unlimited array of investment combinations and portfolios, each meticulously tailored to meet the most specific strategy and investment goal.

A proprietary optimizer—without the use of deceptive and arbitrary constraints

Once the investment universe—or the set of potential investment ideas—has been meticulously defined, we channel it through our proprietary optimizer. Central to our optimizer is the proprietary integration[1] of the Black-Litterman model—a Nobel Prize–associated framework for portfolio construction—allowing for the seamless incorporation of subjective views within this framework, thus marrying market-implied expectations with expert insights. We then further refine this integration through advanced statistical

techniques, notably matrix shrinkage, leading to portfolios that are coherent—reflecting market-implied expected returns fine-tuned with subjective insights—and exceptionally well-diversified.

Effective diversification means that, for each level of risk undertaken, we maximize return by capitalizing on the risk/return trade-off across investments and calibrating optimal allocation weights—a crucial step too often left to approximation. Significantly, our approach achieves profound diversification without resorting to the arbitrary and disingenuous imposition of min/max position limits—a notable and distinguishing feature of our platform.

A proper assessment of risk—not volatility

Risk in finance refers to the probability of a permanent loss of capital, distinct from the volatility (whether up or down) of security prices. Accordingly, the platform adopts a Value at Risk (VaR) methodology—including historical, parametric, and Monte Carlo methods—to assess downside risk. This approach quantifies the probability (in %) of incurring a loss of amount X (in $) from an initial investment of Y (in $) over a specific period (usually months); e.g., a 5% probability of losing $50,000 on an initial investment of $1,000,000 over a specified period.

To complement this risk analysis, the platform employs stress testing through Monte Carlo simulations to estimate the worst, average, and best outcomes at a given investment horizon. This methodology allows for a comprehensive examination of the portfolio's resilience under extreme market conditions. Finally, the same statistical tools are used to calculate the probability of meeting target goals.

In Summary

R4A's proprietary algorithms and unique open architecture, combined with its advanced modules and optimization techniques, result in highly tailored investment solutions based on forward-looking, coherent expectations; meticulously aligned with the investor's risk profile and goals; well-diversified to manage strategy and risk; and ultimately designed to materially raise the probability of successfully meeting the investment objective.

[1] Using the Compass-generated implied return as the prior. See Nocera, Simon E., *Portfolio Construction and Global Asset Allocation: A Practitioner Solution to a Black-Litterman Flaw* (July 2016). Available at SSRN.

Source: **Lumen R4A**, https://lumenr4a.com/r4a-investment-methodology/