Indispensable companies in AI, energy, and life sciences.

Critical Bottlenecks and Arms Dealers

Nicholas Mitsakos | November 2026

Horizon Capital's Flagship Fund

The following research report contains my analysis and logic behind the formation of my investment fund, Horizon Capital's Flagship Fund, which is available to review and subscribe to on Autopilot.

Horizon Capital's Flagship Fund on Autopilot

The research and analysis behind my focus on these industry sectors, the portfolio components, and the logic behind these investment choices are described below. We detail the specific portfolio construction and weightings, as well as revisions and updates, which are accessible via the Autopilot link.

Horizon Capital's Flagship Fund on Autopilot

The investment thesis

I invest in companies at the bottlenecks to critical industries. These companies solve essential problems that the most valuable and high-growth sectors require. The most attractive businesses combine broad demand with a capability that is difficult to replace. They supply the industry, resolve a constraint, and retain enough of the value created to reinvest at attractive returns. Their competitive positions are sustainable and profitable.

A good analogy is to think of the components of this portfolio as "the arms dealers to the most important wars." It doesn't matter who wins; everyone must buy their bullets. In addition, critical bottlenecks explain why the customer cannot easily bypass the supplier. An arms dealer is essentially the addressable market for all competitors. Critical bottlenecks identify the market sector and its sustainability. These create the most defensible and sustainable profits.

More frequent and intense volatility.

Research has shown that the most attractive investments tend to have the most significant drawdowns over time. In fact, stocks that have increased in value by 50x in the last 30 years had drawdowns between 50% and 70% at some point. A portfolio that outperforms the market must be able to withstand these kinds of drawdowns, and, given economic, geopolitical, and technological uncertainty, and the interaction of all these factors being magnified in today's media, I expect this portfolio will have moments of excessive drawdowns. Investor patience and a long-term perspective are required.

The horizon

As I have described in my book, “The 10-year Horizon” is critical to keep a long-term view. The waves will batter the boat sideways and even backward, but that’s no time to change direction and lose sight of the horizon. The portfolio focuses on this long-term perspective and can withstand the volatility we expect.

Perhaps the single biggest mistake any investor makes is selling a good investment too soon. People panic and sell at the wrong time, especially during a market correction or meaningful drawdown. However, these corrections and drawdowns are to be expected because that is a fundamental characteristic of public equity markets.

Portfolio composition

The most important industries with the highest growth and profit potential, but also with identifiable and sustainable arms dealers and bottlenecks, are within artificial intelligence, energy, and life sciences. The portfolio holds 18 companies across these industries. Individual positions range from 3% to 10%. These are strategic equity weights for a ten-year horizon, subject to valuation and the evidence supporting each thesis.

Of course, this portfolio is not set in stone, and there are fundamental assumptions as to why these companies are the most attractive. I do not look at market conditions to determine whether or not to exit the position. Instead, I look at the underlying assumptions that have led me to own that position and weight it accordingly. If any of those assumptions change, the weighting may change, or I may exit the position. I do this analysis daily, although modifications to the portfolio tend to be infrequent based on this fundamental perspective.

From investment principles to portfolio construction

In my book, “Investment Principles: Strategies for an Irrational World,” I examine the discipline required to make investment decisions under uncertainty. This portfolio applies that discipline to industries where technological progress depends on physical capacity, accumulated knowledge, and institutional execution. A large market is not sufficient. The business must capture value, convert earnings into cash, and justify the price paid.

In addition to “The New Ten-Year Horizon,” I developed a thorough treatment in my book, “The New Fire: Artificial Intelligence, Geopolitics, and a Transformed World,” that analyzes the interconnections and interdependencies underpinning technological development, including geopolitics, capital markets, and other factors.

Decisions are being made today about where to build data centers, how to structure semiconductor supply chains, which critical mineral deposits to develop, investment decisions, national security decisions, and bets on future technological architecture. These are all critical components of investment decisions, portfolio construction, and sustainable performance.

The portfolio understands the critical connections among technology, energy, biology, and the constraints on useful performance and profitability. AI needs manufacturable chips, reliable electricity, and efficient data movement. Biological discovery still requires clinical evidence, reliable production, and patient access. Those dependencies form the foundation of my research and require a deep understanding of these interconnections and where sustainable opportunity lies.

The discipline behind the allocation

The portfolio concentrates on capabilities that competing businesses need to turn investment into operating results. Manufacturing and design support computation. Power equipment makes capacity usable. Life sciences suppliers help translate discovery into reliable medicines. Each position and weighting in the portfolio must justify both its economic role and its share of capital.

Suppliers are not irreplaceable. Technologies and services can be obviated. Innovation and transformation is rapid and aggressive. The research behind this portfolio tries to capture the long-term view and sustainability of all these companies, understand how they capture their strategic advantage, and, more importantly, how it may be eroded. We try to stay ahead of this process, but it is dynamic and requires constant review.

The selection criteria and weighting framework

1. Necessary for the customer

I begin with the customer's operating process. What fails, slows, or becomes more expensive if a capability disappears? A component can represent a small share of cost and still determine whether the entire system works. Process control protects manufacturing yield. Electrical protection enables safe operation. Drug containment protects the integrity of a medicine. Essentially, the company can be a small cost component to its customers but add disproportionate value. These are the best-positioned companies.

2. Difficult to substitute

A temporary shortage may attract capital and attention, but I am interested in durable bottlenecks that survive volatility, not temporary opportunities. The distinction depends on qualification time, accumulated engineering knowledge, embedded workflows, and the cost of failure. I test the advantage against credible alternatives, including redesign, internal development, and architectural changes. The relevant comparison is the customer's total cost and risk of switching. Switching costs can be substantial, but not insurmountable. These need to be monitored constantly.

3. Able to retain economic value

An essential supplier can still be a poor investment. Customers may capture most productivity gains, competition may depress prices, or expansion may consume all incremental cash. I look for evidence that growth improves cash per share after maintenance investment, working capital, financing, and dilution. A backlog is valuable only when contracts produce acceptable margins and cash.

4. Broad enough to survive

The arms dealer test asks whether the business can prosper when industry leadership changes. TSMC serves competing chip designers. Research tools support competing scientific programs. Yet customer breadth does not remove a common spending cycle. NVIDIA and AMD supply AI developers while competing directly at the processor layer. Competitive interactions and shared customers exist, along with potential new competitors. NVIDIA and AMD face potential competition from enhancements at Intel, as well as internal developments at Google, Amazon, and Meta. It is a dynamic, valuable, and volatile sector. The winners will capture substantial value on an ongoing basis, but this needs to be monitored closely and reassessed constantly.

5. Sized for conviction and risk

The portfolio and its contents and specific stock allocations are available on autopilot.

Horizon Capital's Flagship Fund on Autopilot

Sectors and Description

• Materials, computing, and connectivity

Applied Materials

Applied Materials supplies the materials engineering required to construct advanced devices. ASML patterns the wafer; Applied deposits and modifies the materials used to construct the device; KLA helps control defects and yield. The functions are complementary, although the businesses share a capital spending cycle. Applied's work in advanced transistors, memory, and chip stacking exposes the difficulty of manufacturing competing designs. Recent systems target deposition, selective etching, and advanced packaging, including HBM production. [1, 2]

The 4% weight recognizes a strong supplier position without treating every product as a monopoly. Competition, export restrictions, and customer investment cycles constrain returns. The investment case depends on sustained process relevance and cash generation through the cycle.

AMD

AMD provides a second computing architecture through server processors and AI accelerators. Its latest results show substantial expansion in data center revenue. [3] Customers seeking alternative platforms create opportunity, but AMD must still win workloads and establish competitive software economics. It supplies competing AI developers while competing directly at the processor layer.

A 5% position provides meaningful participation without equating a challenger with an unavoidable industry supplier. I would monitor deployment economics, software adoption, customer concentration, and free cash flow. Revenue growth alone does not establish that the platform has earned a sustainable return on capital.

Marvell

Marvell addresses custom silicon and data movement. Its announced acquisition of Lumentum would extend its optical capabilities; the transaction remains subject to closing conditions. [4] The potential combination broadens the supplier proposition while adding integration, dilution, and transaction risk.

The 4% weight remains below Broadcom. Customer program concentration and the economics of the combined business require close attention. A separate Lumentum position would add overlapping transaction exposure rather than a distinct long-term capability.

The constraint can move

Faster processors can shift the limiting factor toward memory, connectivity, packaging, or power. The investment opportunity follows the economics of the new constraint. It does not automatically follow the fastest technical improvement. I would monitor whether performance gains expand total demand, reduce customer spending, or transfer value to another supplier.

- **Production research and medicine delivery**

SLB

SLB extends the arms dealer principle into energy production. Its reservoir, well, and production capabilities serve multiple operators. Production chemicals and artificial lift provide exposure to sustaining output as well as developing new resources. Its latest results also reflect the contribution of the acquired ChampionX businesses. [6]

This is an investment with cyclical demand. Producers can defer spending together, and technical importance does not guarantee pricing power in every service line. The 4% allocation balances customer breadth and operating knowledge against commodity-driven budgets, regional exposure, and acquisition execution.

SLB also expands the energy allocation beyond electricity. This matters because energy security includes producing, maintaining, and delivering usable resources. The investment must earn its place through consistent cash returns. The claim that the world needs more energy is definitely appealing. There may be more volatility, reweighting, or changes to portfolio components, as the energy sector is cyclical. But it will always be an important component.

Thermo Fisher Scientific

Thermo Fisher supplies research tools, laboratory products, and services used across drug development and manufacturing. Its clinical supply capabilities extend into manufacturing, testing, and distribution. [5] This provides participation across competing scientific programs without requiring a prediction about the winning medicine.

The 4% allocation complements Danaher while recognizing overlap. Instrument purchases depend on research budgets, clinical services face cancellations, and manufacturing assets require utilization. The investment case requires recurring customer demand, sound acquisition economics, and cash generation after capital expenditure.

West Pharmaceutical

West supplies containment and delivery components for injectable medicines. Material compatibility, container integrity, and qualification can make a low-cost component critical to a high-value product. [7] That relationship strongly reflects the bottleneck principle: the economic importance of an input can exceed its share of the customer's cost.

At 3%, West provides a distinct life sciences capability while still facing strong competition in this sector. I would monitor high-value product mix, customer inventories, manufacturing quality, and returns on added capacity. Its strategic role does not justify paying a price that requires exceptional growth indefinitely.

Danaher

Danaher preserves the portfolio's principal life sciences arms dealer exposure through bioprocessing and scientific workflows. The company excels at customer qualification, process integration, technical support, and recurring demand. Customers can still delay capacity expansion or reduce inventories. The position therefore requires evidence of cash conversion and sustainable returns, not simply an attractive end market.

Danaher, Thermo Fisher and West together represent 14% of the portfolio. Their roles span biological production, research and development infrastructure, and containment and delivery. The supplier approach spreads demand across competing development programs while preserving exposure to clinical research and manufacturing activity. My article, "The Computable Molecule," describes this distinction: scientific discovery must still pass through reliable experiments, production, and delivery.

- # Manufacturing platforms and usable power

Manufacturing and design

These positions remain exposed to shared fabrication budgets and restrictions on technology trade.

Computing and memory

This must be monitored closely. Memory qualification and technical execution are sustainable, but industry cycles are volatile. AMD and Marvell extend these exposures to a degree. These holdings are not completely diversified.

Usable power and nuclear capability

Government programs and contract economics have limits, but nuclear development is active, and the company is an essential supplier.

Quality and price remain separate decisions

The essential decision for any investment has three factors:

1. Which companies are attractive?
2. At what price?
3. (often overlooked but critical) How much to own?

This has been the essential process to determine the components and weights of this portfolio.

These weights define the intended fully invested equity portfolio. Capital should be committed as prices and evidence justify it. A higher strategic weight does not increase intrinsic value. Each holding requires a current valuation before establishing a purchase threshold. The portfolio represents my perspective on long-term ownership, with sufficient diversification but enough concentration in the most important industries and the most valuable and critical components of those industries.

For each holding, I would estimate cash available to owners after maintenance investment, working capital needs, dilution, and financing costs. The base case should use sustainable margins, realistic reinvestment requirements, and a terminal valuation that does not depend on perpetual enthusiasm. Downside cases should test weaker spending, lower margins, competition, and delayed execution.

Memory requires normalized cycle earnings. Life sciences suppliers require scrutiny of recurring demand, qualification, and capacity utilization. Marvell requires attention to the announced transaction and the combined capital structure. Energy equipment and services require scrutiny of backlog conversion, contract terms, and customer spending.

What would change the decision?

I would reduce a position when a credible substitute weakens the economics, incremental returns deteriorate, cash generation fails to follow reported growth, or price implies outcomes the evidence cannot support. Quarterly review should revise the thesis where necessary. Price movement alone is not proof that the business improved or deteriorated.

Most importantly, my academic research and industry participation as a senior advisor to technology, life sciences, and energy companies enable me to see trends before the general market or media identify them. This enables more thorough, ahead-of-the-curve work on any trend that might impact the long-term value of any portfolio component. This enables me to revise holdings based on my proprietary research, network, and industry knowledge.

Risk and the underlying research framework

Test common dependencies

The principal risk is a simultaneous reduction in AI capital spending. Several holdings depend on the same customers and manufacturing chain. Owning more layers of that chain does not make their cash flows independent. A disruption in Taiwan, export restrictions, or a financing contraction could affect multiple positions together.

My point is that I am aware of the magnitude of these risks and am sensitive to impacts of economic, geopolitical, and industry trends. With this awareness, we can manage risk more effectively, but we can never eliminate volatility. This is the world we live in, and to ignore it would be foolish and naïve.

As I mentioned at the outset, stocks with the highest long-term returns have significant drawdowns. Patience and fortitude are essential. Also, market volatility will continue to be more frequent and intense. Recognizing the signal versus the noise is essential.

What is a real long-term market signal that must be acted upon, and what is noise that will resolve itself without further action? These are the critical components of the decisions made regarding the portfolio and any risk management modification or change in perspective about any holdings or sector.

My academic and intellectual framework

I have written eight books and published over 200 articles focusing on investment principles, technologies and transformation, geopolitical uncertainty, decision-making, and related topics and analysis. I lecture at several leading academic institutions and constantly revise my research and analysis. This informs my investment strategy and portfolio construction.

More specifically, my book, “Investment Principles: Strategies for an Irrational World,” says to distinguish a business's quality from the attractiveness of its price, preserve room for error, and revise decisions when evidence changes. The arms dealer analogy is useful when it leads to specific questions about customers, substitutes, and cash returns.

In my book, “The New Ten Year Horizon,” I place these decisions in a wider system. Technology depends on energy, materials, manufacturing, institutions, and capital. A constraint can migrate as one problem is solved. The portfolio must follow that migration without assuming that today’s scarcity will remain tomorrow’s advantage.

Another of my books, “Uncertainty Algorithms and Better Decisions,” informs how scenarios and incomplete knowledge are treated. A model makes assumptions visible; it does not remove uncertainty. My article, “The Computable Molecule,” extends that reasoning into biology, where discovery, clinical evidence and commercial adoption follow different schedules.

These are examples of the foundation of my analysis and recommendations. More examples appear in my writing, research, and lectures.

My research and professional perspective

My investing, entrepreneurship, academic, and board service place operating consequences at the center of this analysis. My writing and graduate-level teaching connect those experiences to explicit frameworks for uncertainty, capital allocation, and technological change. Across these settings, I return to the same question: what must be true for a promising company to produce growing and sustainable value?

I’ve developed an investment process that crosses disciplinary boundaries and understands how they interrelate. Engineering establishes feasibility. Customer behavior tests utility. Financial analysis tests value capture. Valuation determines the prospective return. Each stage requires its own evidence.

References and research notes

Company disclosures support the operating and transaction statements below. Portfolio weights, classifications and judgments are the author's analysis. This report establishes portfolio construction; it does not present a completed current valuation screen for all 18 holdings.

[1] Applied Materials. Deposition and selective etch systems for 3D chip scaling, 15 June 2026. Read source

[2] Applied Materials. Systems for DRAM and advanced packaging, 25 June 2026. Read source

[3] AMD. Third quarter 2026 financial results, 3 November 2026. Read source

[4] Marvell and Lumentum. Announced combination, 2 November 2026. Read source

[5] Thermo Fisher and Patheon. Clinical trial supply services and capabilities. Read source

[6] SLB. Third quarter 2026 results, 23 October 2026. Read source

[7] West Pharmaceutical. Third quarter 2026 results, 29 October 2026. Read source

Selected work by Nicholas Mitsakos

Investment Principles: Strategies for an Irrational World. Investment judgment, uncertainty and valuation discipline.

The New Ten Year Horizon. Technology, energy, biotechnology and the constraints on useful outcomes.

Artificial Intelligence: The Sharpened Rock, recognizing AI as a powerful tool

Uncertainty Algorithms and Better Decisions. Decision-making with incomplete information.

The New Fire: Artificial Intelligence, Geopolitics, and a Transformed World

The Total Perspective Vortex: Artificial Intelligence and Real-World Systems

What? So What? Now What?: Uncertainty, Transformation, and Upheaval: better understand a situation (What), determine why it's important (So What), and decide what to do next (Now What).

Transformation and Disruption: Innovation and Absurdity, the opportunities and risks of disruptive technologies and global transformation

The Computable Molecule. Computational discovery and the requirements for useful medicines.

The AI Bottleneck Portfolio and The Energy Investment Portfolio. Sector research on infrastructure constraints and economic value.

The author's books and articles provide the intellectual framework. Company disclosures provide evidence about operations. Neither guarantees future investment returns.