

**UNIFIED INVESTMENT
TECHNOLOGY
SOLUTION FOR
MULTI-ASSET
PORTFOLIOS**

Combining cloud computing,
data science, and human expertise



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Unified Investment Technology Solution for Multi-Asset Portfolios

OCIO industry is growing, and outsourced assets are doubling every five years. OCIOs who leverage technology to scale investment & operations functions are well positioned to capture this growth.

Today the biggest beneficiaries of this growth are the 10 largest OCIOs who invest millions every year in building custom technology solutions in-house for managing client portfolios. The rest of the industry still relies on legacy investment consulting processes and spreadsheets, which could be a major impediment to growth and a hurdle to achieving client investment outcomes.

Investment processes within asset management teams need integrated technology systems from the front office to the middle office to the back office. However, many organizations may still view technology as individual systems for various parts of their investment process – asset allocation, portfolio construction, portfolio management, trading, operations, risk management and so on. It is a daunting task for asset management teams, many of them teams of less than 50 persons to buy multiple systems – one for data, one for portfolio construction, one for analytics, one for rebalancing, one for trade management & operations, another for reporting and try to integrate them all together. OCIOs may buy a performance reporting system or a data repository system and use spreadsheets for the rest of their process with multiple manual interventions or handoffs. This creates several bottlenecks and increases costs & risks in the investment process.

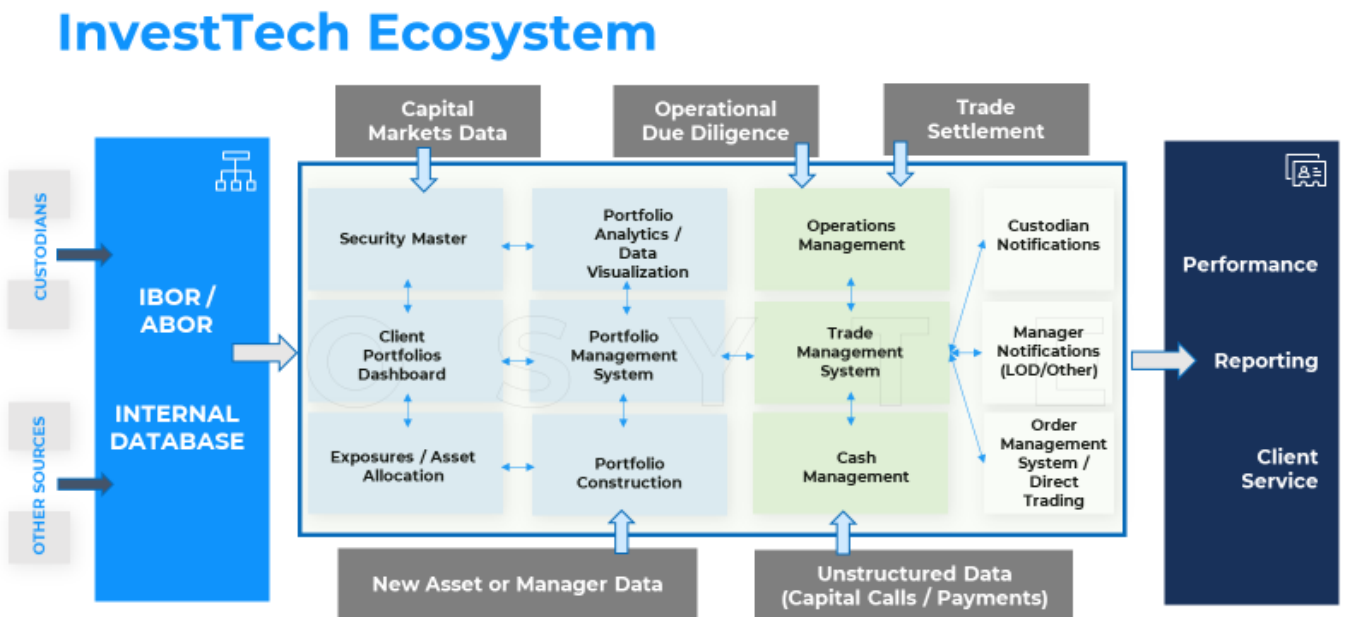
The first cost is the amount of operations staff time to gather the right data and get the data in front of the right investment decision makers. Investment staff's time is expensive, and regardless of how good or fast a human may be, they are no match for a computer to gather, analyze and prepare the data for investment decisions. The second more important cost that directly affects client portfolio results, is time to implementation. What good is an investment idea if we cannot implement that idea effectively into client portfolios at the right time. One of the key value propositions that many allocators, want to bring to their clients is the ability to react quickly to market dislocations and implement portfolio changes appropriately. Disjointed systems with manual processes and spreadsheets are a major impediment to making the right investment decisions and implementing those decisions in times of market volatility.

NEED OF THE HOUR

- Asset Allocators need a single unified system for data, decision, implementation, and oversight.
- This system should have a straight-through process of aggregating data from multiple sources and presenting portfolio information in a format that is aligned within the investment allocation process.
- Investment teams need to systematically generate allocations to active external manager strategies or internally managed strategies such as ETFs or Futures.
- Allocators who have internal trade management capabilities can quickly implement beta exposures, using ETFs or Futures, in response to changing market conditions.
- They can transition to active manager strategies in due time but are able to take advantage of market dislocations.
- All this needs to be accomplished with appropriate risk controls, compliance management and audit trail of all decisions and implementation of client portfolio allocations.
- None of this is possible without a technology system integrated across the entire investment process [Front/Middle/Back Offices].

Investment Technology (InvestTech) Ecosystem Today

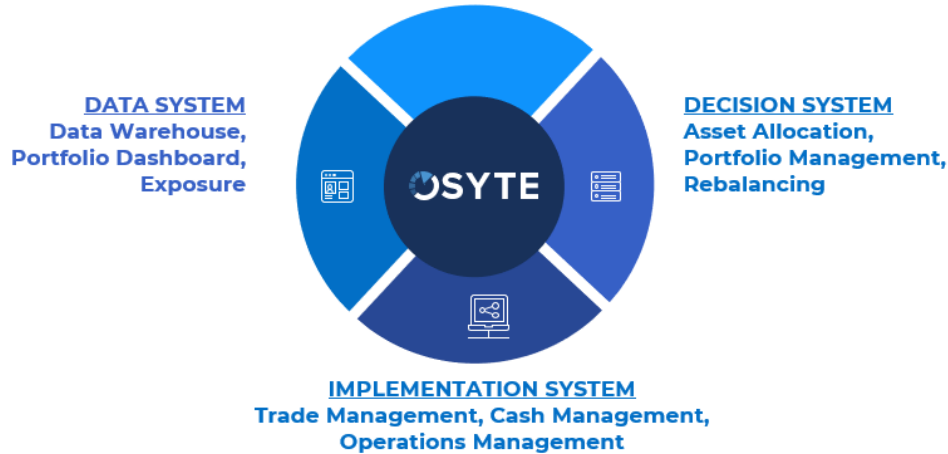
The InvestTech ecosystem is fragmented today with multiple FinTech vendors providing solutions for various parts of the investment process. It is the allocator’s responsibility to buy and integrate multiple systems at significant expense - time, costs, and risk of failed integration. At a minimum, asset allocators need a unified investment allocation platform - a single system for data, decision, and implementation. This system should have flexibility to connect with custodian data systems, existing reporting systems, perhaps even existing data systems (Investment Book of Record, IBOR or Accounting Book of Record, ABOR), and adjacent technologies such as manager research data, operational due diligence, document management, capital markets data or risk analytics.



Technological advancements in cloud computing, data science and machine learning have transformed many industries. However, technology has been the #1 No-Show in the investment allocation industry for the last 20 years [2022 Global Pension Assets Study, Willis Towers Watson]. Things are changing. The institutional asset allocator industry (\$100 trillion in global assets) is at the beginning of a major technology adoption wave. Boston Consulting Group’s 2021 global asset management study predicts technological efficiencies, tech-led asset allocation tools, sophisticated data & visualization systems, alternative data sources and a streamlined back office will be the investment management of the future. This human-machine collaboration in investment processes is evolving and will continue to improve this decade.

OSYTE Investment Technology Platform

Osyte’s vision of a single, unified investment allocation solution is a reality today – a single platform for data management, data visualization, asset allocation, portfolio management, trade management and operations management.



DATA SYSTEM		
<p>Data Warehouse</p> <ul style="list-style-type: none"> • Cloud-based data warehouse technology that can be integrated with multiple data sources • Multiple custodian platforms, fund administrators, private assets valuations, even existing data repositories like an IBOR or ABOR or internal data bases. • Investment data is validated daily for significant changes in NAV or cash or other benchmarks prior to inclusion in the data store and subsequent investment management processes. • Data is encrypted at rest and in transit. Secure, scalable, and highly available distributed technology system. 	<p>Portfolio Dashboard</p> <ul style="list-style-type: none"> • A single client dashboard for all multi-asset client portfolios. • Visibility to day-over-day asset changes and asset class exposures. • Access to read-only capital markets data. • OCIO team users can be assigned to specific client funds or groups of funds for internal portfolio management. • OCIO team users will have various roles and access controls – system admins, portfolio managers, investment analysts, operations analysts, and read-only access for compliance managers or other internal users. 	<p>Exposure / Asset Allocation</p> <ul style="list-style-type: none"> • Asset class view customized to any investment policy or asset detail. • Daily asset allocation exposures alongside client investment policy targets. • Compliance alerts for investment policy targets and asset allocation ranges. • Exposure details to show sub-asset class, manager NAV and security level details if available. • Asset allocation and exposure details can be exported to excel. • Systematically monitor client portfolio exposures and provide investment policy compliance alerts.

DECISION SYSTEM

The screenshot displays a 'What-If Rebalancing' interface. At the top, it shows 'Fund: Teton College' and 'Date: 03/19/2022'. Below this, there are input fields for 'Redemption' (0) and 'Contribution' (3,500,000), with a 'Net Contribution Amount' of 3,500,000. A 'Relative Weight: Number of Transactions' slider is set to 5. The main table is divided into 'Current' and 'Proposed' columns. The 'Current' column shows 'Current Balance' and 'Current Allocation'. The 'Proposed' column shows 'Buy', 'Sell', and 'Proposed Balance'. Assets are grouped into Equity, Fixed Income, and Hedge Funds. At the bottom, summary statistics are provided: 'Total Initial Asset Class Deviation: 18.24%' and 'Total Proposed Asset Class Deviation: 6.92%'.

	Current		Target			Proposed		Proposed	
	Current Balance	Current Allocation	Lower Bound	Target Allocation	Upper Bound	Buy	%Buy	Sell	%Sell
Equity	121,176,000	100.00 %		100.00 %		10,770,560	8.89 %	7,270,560	6.00 %
US Equity Mngt 1	50,893,920	42.00 %	35.00 %	40.00 %	55.00 %	885,880	0.73 %		
EM Equity 1	12,723,480	10.50 %	6.00 %	10.00 %	14.00 %				
EM Equity 2	6,664,680	5.50 %	3.00 %	5.00 %	7.00 %				
Intl Equity 2	9,088,200	7.50 %	4.80 %	6.00 %	11.20 %	885,880	0.73 %		
Intl Equity 1	9,088,200	7.50 %	4.20 %	7.00 %	9.80 %				
US Equity Mngt 2	13,329,360	11.00 %	6.00 %	10.00 %	14.00 %				
Fixed Income	32,717,520	27.00 %	20.00 %	25.00 %	30.00 %	490,000	0.40 %		
Manager 6	8,482,320	7.00 %	3.60 %	6.00 %	8.40 %				
Manager 5	7,270,560	6.00 %	3.80 %	6.00 %	8.40 %	200,000	0.17 %		
Manager 4	7,270,560	6.00 %	3.00 %	5.00 %	7.00 %				
Manager 3	9,694,080	8.00 %	4.80 %	6.00 %	11.20 %	280,000	0.23 %		
Hedge Funds	14,541,120	12.00 %	15.00 %	20.00 %	25.00 %	5,394,680	7.75 %		
Manager ARB Fund 1	2,423,520	2.00 %	2.40 %	4.00 %	5.60 %				

Asset Allocation / Portfolio Management / Rebalancing

- Scenario analysis for various allocation trades and asset / asset class targets.
- Ability to lock certain assets such as illiquid assets and exclude from rebalancing decision.
- Functionality to include forward looking cash flows such as capital calls, benefit payments or other cash contributions/redemptions in the rebalancing decision.
- Ability to control or balance between number of transactions and deviations from asset or asset class targets.
- Functionality to include policy targets or tactical targets.
- Systematically generate rebalance trade allocations & redemptions across different type of assets both externally managed assets such as comingled funds / separate accounts and internally managed exposures such as ETFs/Futures/other exchange traded securities.
- Export transactions to Trade Management in a straight through process.
- Systematic two-party check and approval customized to OCIO's investment workflow.
- Compliance management and audit trail of all investment decisions and trade allocations.

IMPLEMENTATION SYSTEM

Trade Management	Cash Management	Operations Management
<ul style="list-style-type: none"> • Systematic trade generation from Rebalancing/Portfolio management system. • Manual trade entry if needed • Trade date adjustments, custom minimum investment amounts, custom trade rounding and notification period alerts. 	<ul style="list-style-type: none"> • Automated cash flow reconciliation for trade allocations and redemptions across assets. • Systematic cash flow monitoring and alerts for cash movements within a client portfolio such as capital calls or redemptions, and for cash movements into/out of a client fund 	<ul style="list-style-type: none"> • Single source of oversight across entire AUM, trades, cash flows and client funds. • Daily validation of data sources, data entries, job, and error logs. • Dashboard controls for COO, Heads of Operations and Heads of Portfolio management.

<ul style="list-style-type: none"> • Customized letter of directives (LOD)/letter of instruction (LOI)/subscription document templates for various investment managers or custodian platforms. • System can automatically populate custom LOD instructions and provide integrated e-signatures for approval. • Notifications can be sent automatically to various custodian platforms or investment managers for trade execution. • Trades are batched into exchange traded instruments (internal) and manager allocation trades with or without LODs (external). • In cases of internally managed or exchange traded assets, system can generate a trade blotter that can be exported directly to an order management system for trade execution. • Once trades are instructed, system will automatically monitor and process downstream settlement and reconciliation. • Audit trail and history of all trades instructed. 	<p>portfolio such as benefit payments or operating payments.</p> <ul style="list-style-type: none"> • Machine learning capabilities including natural language processing (NLP) and optical character recognition (OCR) for loading unstructured cash flow details in PDF, emails, or other sources. • Cash flow forecasting tools. • No more spreadsheets and calendar reminders for cash flow tracking. 	<p>Document Management</p> <ul style="list-style-type: none"> • OCIO team can store reports, investment manager agreements, investment policy statements, due diligence documents in a single repository organized by unique client funds. • Reports/documents can be published for internal view or external view for asset owner clients. <p>Digital Client Service Portal</p> <ul style="list-style-type: none"> • OCIO's Clients can have read-only digital access to their unique fund exposures and reports published by the OCIO team. • Asset Owner Clients will ONLY see their fund or group of funds.
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Conclusion

The asset allocator function is an institutional asset management function. Asset owner clients rely on OCIOs not just to provide the right governance framework but also provide daily oversight, portfolio management and more importantly provide the required investment outcomes. As the industry grows at a rapid pace, asset allocators may be increasing assets under management but struggling to onboard new portfolios, implement portfolio decisions quickly, and manage these assets at scale. Investment management industry is moving to a 'people plus technology' investment model where CIOs and OCIOs can use technology effectively. Asset owners and asset allocators cannot rely solely on hiring new investment & operations staff but need to leverage cloud computing, data science, machine learning and enterprise technology to scale their business operations and deliver the investment outcomes their clients and beneficiaries expect.

Value of such an Investment Technology System

There are three key value drivers for asset allocators to consider a fully integrated technology solution in their investment process.

1. Save time spent in data & operations processes. Save costs not paying for multiple technology systems
2. Scale investment process, onboard new portfolios quickly and increase AUM without hiring & training new staff. Increase capacity and effectiveness of current team.
3. Implement investment ideas into client portfolios quickly and efficiently. Higher likelihood of achieving investment outcomes and risk adjusted return targets.

About Osyte [O-Sight]

Osyte's mission is to enable better investment technology outcomes through human-machine collaboration in investment decisions and implementation. Osyte was created by a team of portfolio managers, quantitative researchers, and enterprise technology entrepreneurs. The Osyte platform is a unified data, decision, and implementation solution for asset allocators.

The image shows the Osyte logo on the left, which consists of a stylized 'O' with a blue and white circular pattern, followed by the word 'OSYTE' in white capital letters. Below the logo is a blue bar containing the text 'osyte.com' and a small globe icon. To the right of the logo are four circular profile icons, each followed by a name and an email address, separated by horizontal lines.

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