FROM LEGACY TO AGILE

A Practitioner's Guide to Investment Technology Transformation

Informed by UC Investments' $125 billion transformation with Solovis

ABOUT UC INVESTMENTS

UC Investments oversees the University of California's investment portfolio, including its endowment, pension, retirement savings plan, and working capital, totaling $125 billion AUM. The portfolio spans both private and public assets, with a glide path to grow the proportion invested in alternatives. UC Investments manages seven unique products serving 10 university campuses, five medical centers, three national labs, an endowment serving 280,000 students, a retirement savings plan with 320,000 individuals, a pension plan with 241,450 members, and short-term investments with $84 billion in cash flows annually.

> "With a commitment and dedication to change from both organizations, UC Investments and Solovis were able to accomplish this in one year, proving that even a $125 billion pension and endowment can transform quickly."
>
> Executive Summary | UC Investments

INTRODUCTION: THE CHALLENGE FACING THE INDUSTRY

There is a mounting challenge facing the pension, endowment, and foundation industries: how to transition from the legacy technologies that suited the past to a more holistic, agile platform that will meet current and future demands.

Combine the demands of increasingly sophisticated stakeholders, the growing need to blend outsourced and in-house investments, and the complexities of managing alternative investments such as private equity and hedge funds, and you have a perfect storm of forces propelling the industry to change.

What makes the world of asset owners so complex is the lifeblood of any technological endeavor: data. Unlike a trader leveraging Bloomberg or an equity analyst using FactSet, asset owners have no single, standard data source. They are continuously faced with poor data quality from third-party systems or spreadsheets that lack standardization within and across asset classes.

In addition, asset owners are victims of convoluted, outdated manual processes. The starting point for most data requests is custody system data, which has proven, over and over, to be insufficient for investment decision-making. Most industry participants believe that you build or buy software to solve a specific problem. If another problem arises, you obtain more software to resolve the new problem. This perception is no longer reality.

UC Investments discovered that the status quo is no longer necessary. By seeking out an innovative technology partner, UC was able to make data inconsistencies, irregularities, and undocumented assumptions things of the past, while streamlining processes and providing a holistic portfolio view uniting investments, operations, and risk teams

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SECTION 1: BUILDING YOUR BUSINESS CASE

Before evaluating any vendor or technology, the most important step is building a clear, shared business case internally. UC Investments is a useful model. Arthur Guimaraes, COO, and Albert Yong, head of data and analytics, had previously built a large consortium of legacy technology at a Canadian pension at the cost of multi-million-dollar annual fees and tens of millions in implementation costs. Determined to avoid repeating that outcome, they framed the challenge differently.

> "If we started from scratch today, given everything we know about computing, the cloud, calculations, business intelligence and other modernizations available to us, how would we build the operational backbone of a $125 billion investment office that would best support the investment and philanthropic mission of the organization?"
>
> Arthur Guimaraes, COO | UC Investments

They concluded that a single, consolidated, reconciled, and transparent dataset was needed, with the ability to pull data as easily as they could push it into the system. UC Investments then framed a specific set of goals that drove the entire project charter: create a data platform for all private assets rolling up to a total fund view; streamline communication from front to back office; and overhaul a legacy technology infrastructure that was costly and insufficient.

The Five Core Needs That Drove the Business Case

1. **A single source of truth for core data**

   The combination of internal and external flows and exposure data that serve as the foundation for the accounting books of record (ABOR) and investment books of record (IBOR).

2. **The ability to support all personas across asset classes**

   Including CIO and board-level constituents, each of whom has a unique way of leveraging the same core investment information.

3. **The fundamental need to trust risk assessments**

   How can you accurately assess risk if assumptions, processes, and data are constantly being questioned?

4. **An efficient way to manage multiple pools of capital**

   A defined benefit plan, defined contribution plan, endowment portfolio, captive insurer, and other pools of capital all investing in many of the same assets, independently and uniquely.

5. **The need to overcome poor historical data**

   By UC's own admission, the last data "spring cleaning" had been in 2002, when they on-boarded a new custody accounting system.

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SECTION 2: FINDING THE RIGHT TECHNOLOGY

The technology journey started in early 2017 when UC Investments decided to take a novel approach to selecting software and service providers to assist in delivering an accurate investment book of record. The team scoured the investment management landscape for systems both legacy and modern, including eFront, Addepar, SimCorp, Eagle, custodial systems, Blackrock Aladdin, FactSet, and many others. What became abundantly clear was that virtually every investment management system fell into one of three categories:

Category 1: Service Providers with a Technology Layer
For years, the allocator industry has relied heavily on custodians and administrators for data aggregation, accounting, and performance. As a result of the industry's gradual transition to external managers and the rise of alternatives, these providers have been caught flat-footed. Outdated technologies, bolted-on software per asset class, and reconciliation processes that are inadequate for the well-educated are all the norm

Category 2: Accounting Systems
These systems have dominated the global large pension, sovereign wealth, and insurance industries for years. They are workhorses. But without a multi-million-dollar annual budget, a large IT development force, and a tolerance for massive data warehouses with limited flexibility, they are not viable. They also fail to consider that the modern world of multi-asset class investments is very different from an accounting world.

Category 3: Performance Systems
Performance systems are the old IBORs, typically cash flow-based applications. Most modern "investech" applications fall into this bucket, but most are asset class-specific point solutions. They rarely consider holistic portfolio outcomes, do not support decision attribution or CIO views, and provide limited or no data assistance or reconciliation services

After ruling out these three legacy technology categories, UC looked to a new category: emerging leaders in multi-asset class portfolio management technology. A very small group of vendors was gaining growing market share in the limited partner community as a result of a unique focus on the needs of asset allocators, with lighter-weight platform footprints, modern cloud platforms, and flexible software architectures.

> **One quickly rose to the top of the selection process: Solovis.** The winning reasons included: depth of functionality for analyzing and reporting on all asset types with private and public assets on one platform; true IBOR capability with direct performance calculations more accurate than incumbent custodial systems; on-demand portfolio analysis from any angle; an analyst services team that could extend UC's data operations team; and an attitude of true partnership.

In just over one year, UC Investments implemented an accurate accounting book of record and a near real-time investment book of record across all pools of capital, asset classes, and stakeholders, including a complex data implementation and transformation of its risk system. Solovis became the core of the platform, with its open APIs enabling easy communication with other elements of the ecosystem

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SECTION 3: BUILDING THE RIGHT TEAM AND SKILLSET

In addition to evaluating technology, UC Investments conducted a skills analysis across vendors, service providers, and internal staff. One of the key reasons UC Investments was successful is that the internal team signed off on a charter led by the entire leadership team, including asset class heads and functional heads. Everyone was fully aligned with the go-forward plan. Seven categories of skills should be considered in any transformation of this kind:

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1 **Leadership**
Change must be enforced from the top down and with buy-in from the team. Guimaraes was the executive sponsor and drove project success, along with trusted subject matter experts. A signed project charter governed behavior, decision-making, and the go-forward plan.

2 **Messaging**
Once a decision has been made, it is critical that messaging is handled appropriately. UC Investments created a detailed project plan with operations and investment go-live milestones across each individual asset class. The simplest asset class with the shortest history went live first to show value immediately.

3 **Business Requirements**
It is important to have a clear segregation of tasks between software, internal personnel, and outside personnel. Asset owner organizations must recognize the difference between custom development and configuration, and reserve the former for only when necessary.

4 **Allocation of Resources**
The most effective implementations include a person dedicated to answering questions directly, executive management time at least once a month, and an internal champion with a vested interest in the success of the project. Consistency and empowerment are the most important factors in a successful implementation.

5 **Quality Assurance**
The most successful implementations promote quality assurance, processes, and controls around inputs and use of data. A key factor in Solovis' credibility with UC Investments was its ability to dig into the data and uncover errors that had previously been taken at face value as the truth.

6 **Communication**
UC Investments introduced a very formal steering committee process. Asset class heads, executive leadership from both organizations, and a formal board structure created a reporting and accountability relationship that held everyone accountable. These conversations took place every two weeks, then monthly, and now every two months. Minutes are taken and sent to everyone for approval.

7 **Training and User Adoption**
Once an implementation is complete, it isn't. In every implementation you are re-training how people work. The intensity of training and user adoption monitoring can be as demanding as the implementation itself. It is critical to understand the vendor and client adoption and training program, as this information facilitates documentation of what questions are being asked and how they are being answered.

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SECTION 4: DESIGNING FLEXIBLE PROCESSES

For any organization that desires to deliver meaningful, lasting change, it is necessary to start by understanding the starting point. UC Investments created two diagrams showing its historical state and desired future state. While simply high-level process and system flows, they provided a visual goal that everyone could rally behind.

> By Solovis' estimates and experience, the average organization could reduce process touch points, issues, and reporting times by over 75%. In the specific case of UC Investments, the expected cost savings of the implementation over a decade is projected to be $2 million per year.

Five lessons learned on the process front:

1 **Fit processes to desired outcomes, not outcomes to processes**

It is critical that a solution vendor has the flexibility to support the right processes for your organization and not force you to conform to the technology. Outcomes can be as simple as "we want an estimate of our total portfolio performance by the second business day of each month." That one statement drives questions about data availability, staffing, and restatement frequency.

2 **The five-yard line rule**

Know what outcomes are acceptable from the five-yard line versus the ones you must punch into the endzone. At UC Investments, the Solovis platform was required to deliver a risk file by the eleventh business day of every month. Solovis implemented processes defining data cutoff and roll-forward periods with related reporting, giving the risk team transparency to potential issues. Exceptions recognized and flagged are totally acceptable and quickly managed.

3 **Flexibility and scalability**

Modern, agile technology promotes flexibility and configurability on a user-by-user and organization-by-organization basis. This promotes conformance to your unique goals and investment views. If a given technology cannot address your desired business and operational outcomes, don't buy it.

4 **Break up larger problems into manageable segments**

If UC had tried to attack its entire investment and operational processes at once, or implement every asset class concurrently, it never would have worked. Segmenting problems ensures continuous progress, the team feels momentum, results are measurable, and you realize the benefits of the new system faster.

5 **Align your processes to the goals of the investment office**

Investment offices often don't think like businesses. Investing in people, process, and technology as part of the overall mandate should be as much a conversation for trustees and investment offices as it is for boards of companies. Creating scale for outsized returns should be a top priority for all investment offices.

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SECTION 5: MEASURING TRUE INNOVATION

At the core of the decision for UC Investments was how to be innovative in a world where the status quo just wasn't good enough. Solovis entered discussion with UC Investments well after their evaluation process had started.

> "The second I saw a drag and drop recalculation of an entire investment world with total asset class reclassificationsand shifts, I knew that Solovis was not the status quo."
>
> Arthur Guimaraes, COO | UC Investments

When evaluating any technology partner, ask these questions to measure true innovation

1 **Ask your custodian to create a new performance composite live**

The largest players in the space will say they do it through technology. Ask to see it done live. What you will find is a "wizard behind the curtain" reality: people with spreadsheets who must manually add new asset classes to potentially hundreds of reporting constructs. The process is "pick up the phone and call, explain your needs, wait a few days, then test the results." This is far from true innovation.

2 **Measure how long the risk package takes to generate**

In the case of UC Investments, generating the risk package across systems resulted in a processing and verification black hole of up to four days. Ask for any change, like adding a new fund manager, and it will take up to two weeks. This is manual inefficiency, not technology innovation.

3 **Ask private equity vendors to show since-inception IRR and TWR and time it**

Ask private equity systems vendors to show the since-inception transactions and valuations, and their impact to both IRR and TWR. Take out the stopwatch and measure how long it takes.

It is time for asset owners to recognize the need for holistic change: innovation throughout all levels of the investment cycle, both externally and internally. UC Investments has proven that even a $125 billion pension fund can transform quickly, within one year, when provided with the right technology framework and a unified commitment to change.

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CONCLUSION: KEY TAKEAWAYS FOR ASSET OWNERS

UC Investments' one-year transformation offers a clear set of actionable lessons for any pension, endowment, or foundation considering a similar journey. The following takeaways are synthesized from the experience documented in this guide and are intended for SME review before publication.

1	Ask the "start from scratch" question first. Before evaluating any vendor, align leadership on what an ideal operational backbone	**6**	Go live on your simplest asset class first. Demonstrating value quickly builds organizational confidence and momentum.
2	Audit your current technology against the three categories. If your systems are service providers with a technology layer, accounting	**7**	Segment the problem. Attack one asset class or process area at a time. Concurrent implementation across all asset classes rarely
3	Build a cross-functional business case using the five-need framework. Single source of truth, persona support, trusted risk,	**8**	Plan for training at the same intensity as the implementation. User adoption is as demanding as the go-live itself and is consistently
4	Appoint an empowered internal champion with something at stake. This is the single most important factor in implementation	**9**	Test vendors with the three innovation questions. Ask to see a new performance composite created live. Measure risk package
5	Structure your communication before day one. Formal steering committees, set cadences, and written minutes held all parties at UC Investments accountable.	**10**	Hold the line on your data ownership. Any vendor you choose must enable you to pull your data as easily as you push it in. Open APIs and data portability are non-negotiable.

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