

Scaling Enterprise Reconciliation Through Trustable Automation

How I transformed FundGuard from a technically capable reconciliation engine into the trusted operational system that enterprise teams at State Street actually relied on.

ROLE

Head of Product Design

TEAM

PM · 6 Eng · Data Science · Ops

SCOPE

Reconciliation workflows

Fund hierarchy

Operational dashboards

Exception handling

AI explainability

+30%

Automation adoption

25%

Faster exception resolution

5% → 0.2%

Error rate reduction

01

Trillions in Assets. Every Line Verified by Hand.

State Street processes trillions in fund assets daily — P&L verification, FX conversion, tax calculation, NAV production — all before markets open.

THE SCALE

10,000

accountants manually verifying reconciliation files — every day

P&L checks

Debit/credit matching

FX accuracy

Tax & NAV

Corporate actions

THE COST

~5%

typical error rate

Incorrect NAV sent to investors and regulators

Rework cycles, compliance exposure, financial liability

Hundreds of millions in annual operating cost

Manual verification was compensating for system opacity.

FundGuard entered to automate this entire process.

02 Over 2 Column Was There. Nobody Could Operate.

The initial reconciliation view showed all the right data — in a format that defeated its own purpose at scale.

The screenshot shows a 'Workflow Dashboard' titled 'FUND GUARD'. The interface includes a search bar, user profile, and a sidebar with various icons. The main area displays a table of tasks:

Status	Date	Step Name	Fund group	Fund	Act. Completed	Starting Conditions	Completion Conditions	Starting Time	SLA Time
Completed	12/06/2025	Start of day	Group 001	Fund 017	16/16			08:00 AM	08:30 AM
Completed	12/06/2025	Transaction Processing	Group 001	Fund 023	6/6		Sign-Off	08:29 AM	04:00 PM
Completed	12/06/2025	Data Analysis	Group 001	Fund 012	8/8	Perdefine		02:30 PM	05:30 PM
Completed	12/06/2025	Market Research	Group 001	Fund 027	5/5	Step Forward +1		03:45 PM	07:15 PM
Completed	12/06/2025	Performance Review	Group 001	Fund 019	9/9	Validation +1		03:05 PM	07:00 PM
Completed	12/06/2025	Project Kick-off	Group 001	Fund 011	10/10	Step Completed +1		06:00 PM	09:00 PM
Awaiting Approval	12/06/2025	End of day	Group 001	Fund 022	7/10	Step Completed +1		12:45 PM	04:35 PM
Scheduled	12/06/2025	Morning Briefing	Group 001	Fund 051	2/5		Sign-Off	01:15 PM	05:00 PM
Archived	12/06/2025	Team Sync	Group 001	Fund 045	1/3		Sign-Off	10:25 AM	06:00 PM
On Hold	12/06/2025	Client Follow-up	Group 001	Fund 033	2/7	Step Completed +1		10:54 AM	06:15 PM
Pending	12/06/2025	Report Generation	Group 001	Fund 058	0/5	Manual +1		11:23 AM	06:30 PM
In Progress	12/06/2025	Budget Planning	Group 001	Fund 005	0/7	Step Completed +1		04:20 PM	08:00 PM
In Progress	12/06/2025	Strategic Meeting	Group 001	Fund 040	0/12	Completed +1		05:15 PM	08:30 PM

STRUCTURAL FAILURE

No hierarchy by asset manager, fund group, or step.

→ Users mentally reconstructed operational structure every session.

COGNITIVE FAILURE

Every row competed equally for attention.

→ No prioritization signal. Nothing stood out.

BUSINESS FAILURE

No answer to "which client is at risk right now?"

→ At 20 funds → manageable. At 1,000 → unusable.

The table exposed data. It never exposed operational structure.

03 ~~series~~ Think in Hierarchies. The System Showed Rows.

FROM WORKFLOW SHADOWING

Operations teams reason in:

Asset Manager → Fund Group → Fund → Step

The system presented:

Row 1 → Row 2 → Row 3

The interface reflected database logic.

Users needed operational logic.

04 ~~series~~ Mirrored Operations. Risk Became Visible.

FUND GUARD

Workflow Dashboard By Group Step Updated At 21/02/26

Fund Groups: Vanguard +24 Order: Delay Date: 12/06/2025 Apply View: 88 888

Vanguard	PIMCO	BlackRock	Charles Schwab
Funds Status: 150 Tasks: 52 Delay: 00:26 (32%) Transactions: 10.8k (32%)	Funds Status: 163 Tasks: 12 Delay: N/A Transactions: 10.8k (32%)	Funds Status: 178 Tasks: 12 Delay: N/A Transactions: 10.8k (32%)	Funds Status: 42 Tasks: 12 Delay: N/A Transactions: 10.8k (32%)
Delayed Funds: Fund001, Fund002, Fund004 (+4)	No Delayed Funds	No Delayed Funds	No Delayed Funds
Vanguard	PIMCO	BlackRock	Charles Schwab
Funds Status: 254 Tasks: No Tasks Delay: N/A Transactions: N/A	Funds Status: 132 Tasks: No Tasks Delay: N/A Transactions: N/A	Funds Status: 132 Tasks: No Tasks Delay: N/A Transactions: N/A	Funds Status: 132 Tasks: No Tasks Delay: N/A Transactions: N/A
Delayed Funds:	No Delayed Funds	No Delayed Funds	No Delayed Funds

FUND GUARD

Workflow Dashboard By Group Step Updated At 21/02/26

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Vanguard1	PIMCO	BlackRock	Charles Schwab	Vanguard
Funds Status: 150 TNA: 192.76M Tasks: 52 Trans: 10.5k (32%) Delay: 00:26 (120%) Delay (Avg): 00:26 (120%)	Funds Status: 150 TNA: 192.76M Tasks: 52 Trans: 32% Delay (Plan): 00:26 Delay (Avg): 00:26	Funds Status: 150 TNA: 192.76M Tasks: 52 Trans: 32% Delay (Plan): 00:26 Delay (Avg): 00:26	Funds Status: 150 TNA: 192.76M Tasks: 52 Trans: 32% Delay (Plan): 00:26 Delay (Avg): 00:26	Funds Status: 150 TNA: 192.76M Tasks: 52 Trans: 32% Delay (Plan): N/A Delay (Avg): N/A
Delayed Funds: Van 001 (+4)	Delayed Funds: Van 001 (+4)	Delayed Funds: Van 001 (+4)	Delayed Funds: Van 001 (+4)	No Delayed Funds
T. Rowe Price	JP Morgan	T. Rowe Price	Franklin Templeton	PIMCO
Funds Status: 150 TNA: 192.76M Tasks: 52 Trans: 32% Delay (Plan): N/A Delay (Avg): N/A	Funds Status: 150 TNA: 192.76M Tasks: 52 Trans: 32% Delay (Plan): N/A Delay (Avg): N/A	Funds Status: 150 TNA: 192.76M Tasks: 52 Trans: 32% Delay (Plan): N/A Delay (Avg): N/A	Funds Status: 150 TNA: 192.76M Tasks: 52 Trans: 32% Delay (Plan): N/A Delay (Avg): N/A	Funds Status: 150 TNA: 192.76M Tasks: 52 Trans: 32% Delay (Plan): N/A Delay (Avg): N/A
No Delayed Funds	No Delayed Funds	No Delayed Funds	No Delayed Funds	No Delayed Funds
PIMCO	Charles Schwab	JP Morgan	T. Rowe Price	T. Rowe Price
Funds Status: 150 TNA: 192.76M Tasks: N/A Trans: 100% Delay (Plan): N/A Delay (Avg): N/A	Funds Status: 150 TNA: 192.76M Tasks: N/A Trans: 100% Delay (Plan): N/A Delay (Avg): N/A	Funds Status: 150 TNA: 192.76M Tasks: N/A Trans: 100% Delay (Plan): N/A Delay (Avg): N/A	Funds Status: 150 TNA: 192.76M Tasks: N/A Trans: 100% Delay (Plan): N/A Delay (Avg): N/A	Funds Status: 150 TNA: 192.76M Tasks: N/A Trans: 100% Delay (Plan): N/A Delay (Avg): N/A
No Delayed Funds	No Delayed Funds	No Delayed Funds	No Delayed Funds	No Delayed Funds
BlackRock	Charles Schwab	BlackRock	JP Morgan	Vanguard
Funds Status: TNA: 192.76M	Funds Status: TNA: 192.76M	Funds Status: TNA: 192.76M	Funds Status: TNA: 192.76M	Funds Status: TNA: 192.76M

Operational hierarchy

UI grouped by asset manager — mirroring how teams are actually assigned.

Cognitive chunking

500 rows collapsed into 20 meaningful groups.

Risk surfaced instantly

Health rings and delay metrics answered "who is at risk" at a glance.

Scale embedded

Transaction volume and TNA visible per card, not buried in columns.

"Which asset manager is at risk right now?"

Users could now answer that instantly. UX scalability enabled business scalability.

05 State Was Visible. Flow Was Not.

Reconciliation is time-dependent. NAV depends on sequence. The dashboard showed current state — but not where bottlenecks were forming.

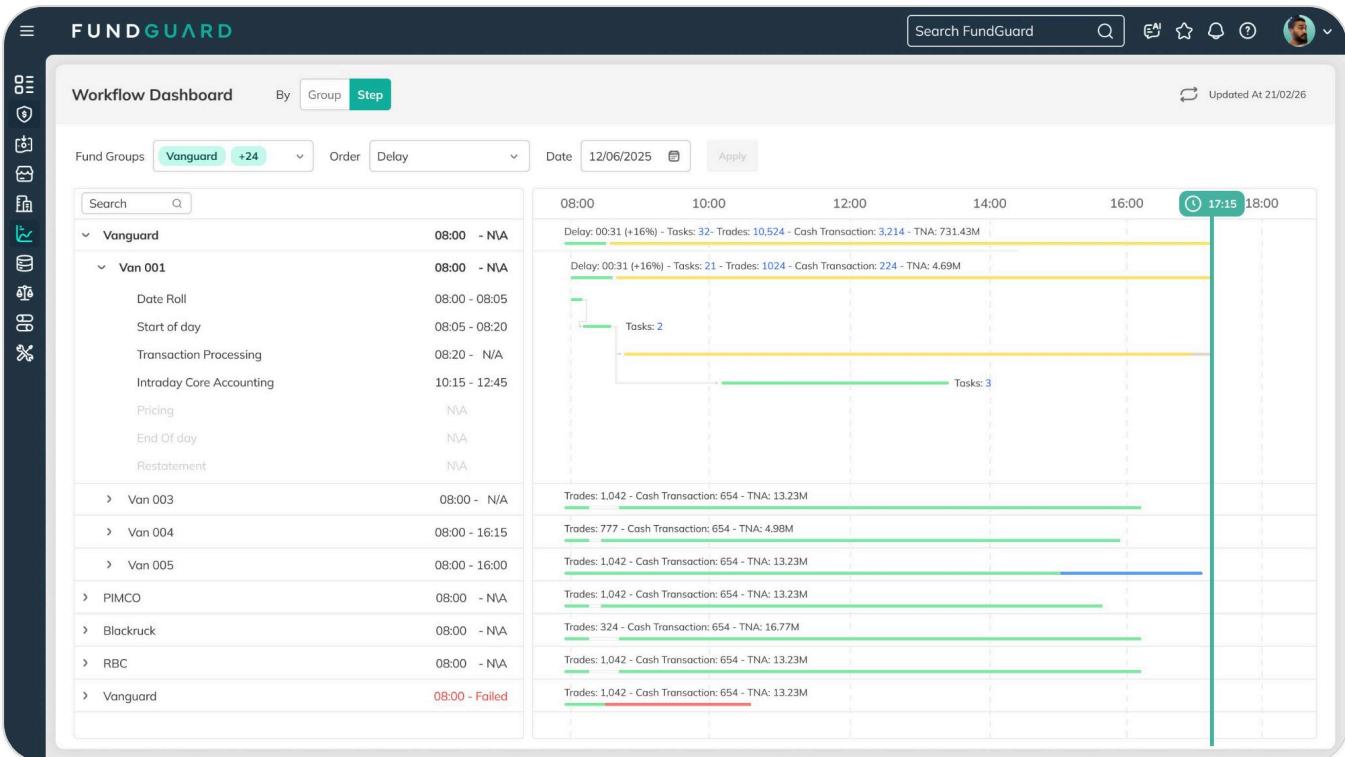
Where are we in the lifecycle?

Which step is blocking?

Are we missing SLA?

06 Sequence Made Explicit. Bottlenecks Surfaced.

Drilling into any group opened a step-based timeline — the full reconciliation lifecycle across a time axis, with delay and volume context embedded.



Operational flow explicit

Date Roll → Processing → Accounting → Pricing → End-of-Day — each step visible.

SLA urgency embedded

Current time indicator showed exactly how close to deadline.

Bottleneck clarity

Delayed steps highlighted — users saw where processing stalled.

Volume signals risk

High-volume delays surfaced proportionally higher risk.

Faster escalation. Fewer status calls. Clear NAV readiness.

07 Automation Worked. Trust Did Not.

Even with group dashboards and timeline views, automation adoption remained limited. The technology was ahead of user confidence.

WHAT THE SYSTEM HAD

Real-time processing

Unified ABOR + IBOR

AI anomaly detection

Continuous reconciliation

WHAT USERS STILL DID

⚠ Rechecked every AI flag manually

✉ Exported to Excel for "real" analysis

⌚ Ran parallel offline workflows

Excel exports were a behavioral signal.

Users trusted their spreadsheets more than the platform.

08 The Problem Was Not Functionality. It Was Cognition.

H1

Row-based configuration prevents structural understanding. Users cannot reason about what they cannot see.

H2

Users lack confidence because they cannot validate full system state in one place. Without visible state, there is no basis for trust.

Trust requires orientation. Orientation requires structural visibility.

09 Make Structure Spatial. Make Logic Visible.

Funds became nodes. Allocations became connections. Status embedded directly in structure. The system became inspectable before any edit.

BEFORE – ROWS WITHOUT RELATIONSHIPS

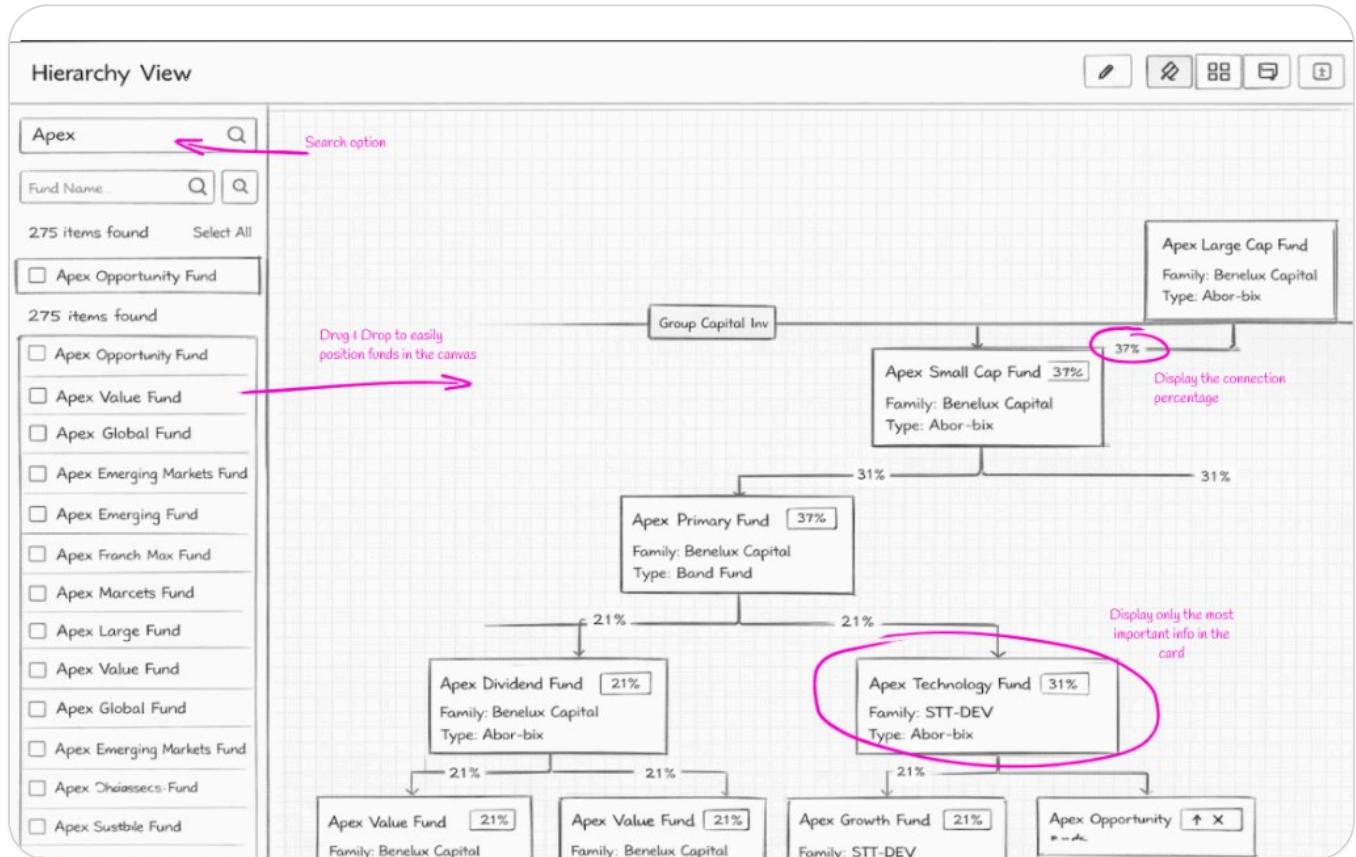
Poor scalability
As hierarchies grow, the table becomes harder to read, scan, and reason about, especially with multiple feeders and rollups.

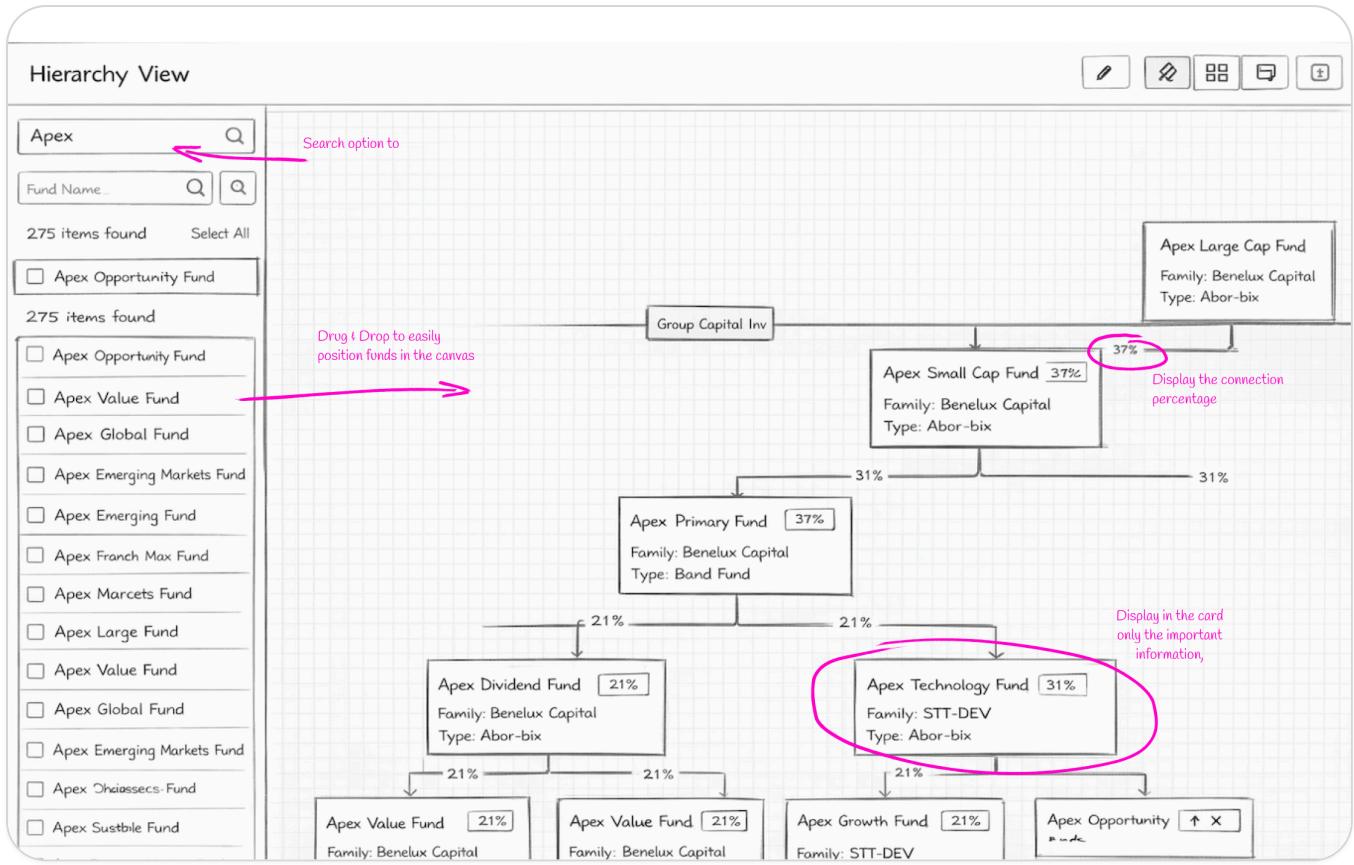
High cognitive load
Users must mentally reconstruct the hierarchy instead of seeing it visually represented.

Hierarchy isn't visually clear
Tables flatten relationships, making it hard to understand how funds feed into one another at a glance.

Limited flexibility
Adjusting or re-structuring the hierarchy requires manual edits rather than intuitive interaction.

AFTER — SPATIAL HIERARCHY WITH EMBEDDED STATE





Spatial reasoning

Humans reason about structure spatially — not in rows.

Propagation visible

Allocation % displayed on connections between nodes.

State embedded

Active/inactive status visible without switching tabs.

Direct manipulation

Drag-and-drop reorganization matched the mental model.

Configuration errors dropped. Structural confidence increased. Downstream propagation risk reduced.

10

Not All Exceptions Are Equal. The System Should Know.

PROBLEM

Every exception presented with equal weight. Users spent time on low-risk items while high-impact issues waited.

INTERVENTION

- Ⓐ Risk-based prioritization
- Ⓐ Financial impact surfaced first
- Ⓐ Contextual resolution tools

Human attention became focused on what mattered financially.

11

Reasoning Was Invisible. So Users Ignored It.

AI was already validating ABOR vs IBOR discrepancies, metadata anomalies, and allocation mismatches. The logic was sound. But reasoning was opaque — so users treated every flag as unverified.

WHAT WE MADE VISIBLE

Ⓐ Confidence indicators

☰ Risk grades

↗ Financial impact

Ⓐ Reasoning paths

☑ Audit trails

Automation became inspectable. Trust followed.

12 Trust Unlocked Scale.

Every reconciliation step was AI-validated. Humans reviewed only genuine exceptions. The system became the source of truth.

5% → 0.2%

Error rate

+30%

Automation adoption

25%

Faster exception resolution

Customers scaled transaction volume without scaling headcount.

13 Trust Became Revenue Infrastructure.

This was not a UI redesign. It was cognitive infrastructure for enterprise automation.

More funds per client

Higher transaction volume

Expansion into advanced modules

Larger enterprise deals

When users trust the system, they stop building workarounds. When they stop building workarounds, the platform scales.

14 Design Became Accountable for System Cognition.

🔍 Embedded in operations

Shadowed real workflows. Understood the domain, not just the interface.

↖ Measured trust, not clicks

Tracked automation acceptance rate and offline workaround frequency.

🤝 Cross-functional alignment

Engineering, data science, and ops aligned around system cognition.

🧪 Simulation sandbox earlier

Users needed safe experimentation before committing changes.

📊 Trust dashboards from day one

We inferred trust retrospectively — a live dashboard would have sharpened decisions.

📘 AI education in onboarding

Users needed to understand AI reasoning before encountering their first exception.

Enterprise UX is not simplification.

It is stabilizing complexity at scale.

When users stop exporting to Excel —

When they stop rechecking every AI output —

When they stop reconstructing system logic in their heads —

And start reasoning directly about the system —

You've designed infrastructure, not interface.