

# Solving the legacy technology conundrum: Successful strategies for back-office transformation

Received (in revised form): 19th November, 2019

## James Maxfield

Managing Director, Ascendant Strategy, UK



James Maxfield

**James Maxfield** is Managing Director at Ascendant Strategy Ltd, a consultancy practice that specialises in post-trade strategy and transformation within capital markets. He advises organisations on strategy for post-trade infrastructure and supports execution of their transformation initiatives across IT (information technology) middle and back office. His experience prior to consulting within senior leadership roles with global banks has given him unique insights into strategies for successful transformation of the post-trade landscape. And he has gained an appreciation that the future for sustainable post-trade infrastructure has to be technology enabled. Prior to joining Ascendant Strategy, James held various senior leadership positions at global sell side institutions within operations, technology and change management.

### ABSTRACT

The challenges of post-trade cost have persisted for over a decade, as the aftermath of the 2008 crisis led to a fundamental restructuring of the capital markets industry. This restructuring impacted all of the post-trade value chain, with banks looking to reduce in-house TCO (total cost of operations), custodians pressured to reduce margins and emerging vendors looking to deliver innovation in response. But the cost journey that banks have taken still leaves many with a back-office infrastructure that limits innovation — be that through time to market for product enhancement or the limited ability to leverage emerging technology — effectively leaving them between a rock and a hard place. Overlaying the additional cost of regulations onto this infrastructure has meant that for most,

success has only been running to stand still — offsetting this incremental cost through traditional cost levers such as delaying or offshoring. Against this backdrop of industry restructuring, however, the costs of production continue to be significant across the back office. Out of an estimated end-to-end cost base of US\$700bn, the capital markets industry spent over US\$130bn on asset servicing alone (in areas such as settlement, clearing, reconciliation, corporate actions) in 2017,<sup>1</sup> which appears unsustainable against a macro backdrop of ongoing cost pressure. This pressure is not just focused on the corporate and investment banks (CIBs) — whose cost challenges are well publicised as a segment — but all through the value chain as the buy side also comes under increasing pressure on margins. So although running to stand still may have been a focus in the past, it will not be enough to future-proof business models into the next decade. To survive in the future, capital markets organisations will have to ultimately address this cost of inefficiency and, having largely exhausted traditional cost levers, can only succeed through technology-led transformation. This paper will explore strategies for successful technology transformation across the back-office environment and how organisations should respond to the challenge.

**Keywords:** post-trade, post-trade transformation, FinTech, operations transformation, change management, legacy IT, digital, digital transformation

### INTRODUCTION

The traditional investment approach within capital markets historically saw an overwhelming skew of investment in front

Ascendant Strategy Ltd,  
STC House,  
7 Elmfield Road,  
Bromley  
BR1 1LT, UK  
Tel: + 44 (0)7957 620790;  
E-mail: james.maxfield@  
ascendant-strategy.com

Journal of Securities Operations  
& Custody  
Vol. 12, No. 2, pp. 116–127  
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1753–1802

office areas — where pursuit of revenue far outweighed consideration of cost of operations. Operating within an environment termed by Accenture as ‘lucrative inefficiency’, the historical challenge for the industry was time to market and liquidity provision, with revenue a key optic over cost. Therefore, additional headcount for manual processes and tactical automation — such as spreadsheets — became key levers for facilitation of business growth, which ignored the fundamental challenges of the technology architectures that performed these functions. This trend was pervasive through the entire value chain, with CIBs and custodians living in blissful ignorance of the technology time bomb that was building up as profitable margins enabled them to make money. The return on equity

(ROE) of technology investment in the back office in this business environment plainly did not stack up.

This neglect became stark post the crisis of 2008, where the aftermath led to a fundamental restructuring of the industry. Declining fee pools, heavy capital costs and increasing regulatory burden led to a significant decline in profitability. This is outlined in Figure 1,<sup>2</sup> highlighting the reduction in ROE over the last decade, as a by-product of this fundamental restructuring.

Compression of revenues and the knock-on impact this created within the industry led to increasing pressure on business models, with simplification and rationalisation of footprint an initial response by CEOs (chief executive

#### Average return on equity (ROE) of 12 global investment banks

Average ROE remains below pre-crisis levels of 15%, and despite a recent rise for certain firms, this is unlikely to be sustainable and hit pre-crisis levels.



Figure 1 Average return on equity for 12 global investment banks (Deloitte)

Source: Macro-Trends database, January 2019.

Note: ROE, return on equity.

officers). The evolution for most CIBs had been driven in the main by the functional silos that dominated the business — equities, fixed income, currencies, and commodities (FICC), prime services — which maintained their own infrastructure and support networks across the front office and parts of the middle office. Closing a business meant switching off trading platforms and removing those people who are dedicated to it — simplistically speaking, relatively easy to do. What quickly became apparent, however, was that while volume and cost could be taken from the front of the business, this became much more challenging to do across the back office, where the infrastructure for core processing had typically been consolidated onto shared platforms.

Business simplification became a strategic lever for CIBs to reduce cost — by reducing direct expenses and unlocking the capital associated with a reduced footprint — but this ignored the complexity of the legacy estate that supported the back-office process. As a result, the fundamental challenge of inherent inefficiencies within the back office remained, and as the industry recalibrated towards addressing the challenge of increasing cost/income ratios (CIR), cost optimisation in the back office became a significant area of focus.

And this pressure has been felt across all of capital markets as recognition of the cost of this inefficiency has been crystallised — as referenced earlier, out of the US\$130bn spent on asset servicing, only 20 per cent of this cost sits within custodians or exchange groups. The remaining 80 per cent of this operating cost sits in both buy and sell side for what in the most part can be viewed as duplicative processing or reconciliation of different versions of trades and positions.<sup>3</sup> As pressure from investors and shareholders alike increases upon both cost of business

and ultimately ROE, this cost of processing has become viewed as inefficient and ultimately unsustainable for all players within the value chain.

## THE BACK-OFFICE CHALLENGE

As the industry has restructured, the pace of change for the last decade has been seismic. Extensive regulatory reform has had a fundamental impact across all asset classes, adding significant complexity to back-office infrastructure. The time-bound nature of most regulations limited the ability of organisations to re-architect as they went, which while conceptually a logical approach became impractical within the environment in which most banks operated. Alongside this regulatory ‘tsunami’ of change were also internal decisions that banks were making themselves, be these business exit, divesture or redefining entity structures in the face of capital requirements. These business decisions — also typically time bound due to necessity — became further catalysts for change.

Unable to re-architect effectively, organisations had to overlay further complexity of point solutions onto an already fragmented set of infrastructure. While satisfying compliance to a point — be this readiness for T+2 settlement within Europe or satisfying Commodity Futures Trading Commission (CFTC) obligations around over-the-counter (OTC) derivatives reporting — the ripple effect of these responses was merely to make a complex problem even harder. And ultimately, more expensive.

With technology unable to provide solutions, organisations increasingly leveraged tactical options to fill gaps in their infrastructure. And for most, this response came in the form of people to provide manual solutions to challenges such as data enrichment, trade processing or performing reactive controls around data integrity.

Historically, the attraction of lower cost sourcing has enabled organisations to provide a quick and scalable solution to business challenges — and over the last decade sourcing (either business process outsourcing [BPO] to third parties or in-house relocation to lower cost locations) has increased exponentially. Research conducted by Oliver Wyman in 2017<sup>4</sup> into utilisation of operations outsourcing among CIBs found that 45 per cent of those surveyed were using third parties, with a further 17 per cent leveraging lower cost captives (retained in-house). Utilisation of multiple third parties increased to over 75 per cent within CIBs of a size of greater than 5,000 full-time equivalents (FTEs) in operations, giving some insight into the scale and complexity of the processing footprint in place for these organisations. What this has led to in some regards is an ‘out of sight, out of mind’ effect, where manual process complexity has been overlaid onto the infrastructure.

This ultimately exacerbated the problem, where technology complexity has now been compounded with people and process complexity — with ‘humans-as-APIs (application programming interfaces)’ now adding a further layer of challenge to the resolution of the legacy problem. This is evident when looking at the true make-up of the TCO for certain functions, which in aggregation is often viewed simplistically as ‘the legacy IT (information technology) problem’, but the reality is often quite different. Let us take an example.

Corporate actions is often viewed as a low standardisation/high complexity process historically, acting as a drag across the cost base. Data fragmentation, bespoke processing and operational risk of failure makes this a hard problem to solve — and when viewed through a TCO lens, it is typically seen as an accepted cost of business.

But delving a little deeper into the challenge can give a different perspective of

the cost. Most organisations have papered over the technical complexity by adding people to the process — independent estimates view the TCO make up for much of the industry as being over 60 per cent people — which highlights that the proportionate IT cost is relatively low. Much of the role of the individual in this process is acting as the ‘API’ into the process, and given the relative low cost per unit, the cost benefit of automation on a simplistic basis does not stack up. So the ‘legacy’ challenge here within the cost base is not just a technology one but also a people and process one — where the sum of the problem is viewed as too complex to unwind and the return on investment (ROI) for transformation may not stack up versus the self-funding hurdle rates of the budget process.

Faced with the complexity of this challenge, organisations have typically maintained the status quo around their back-office architecture and explored more straightforward approaches to cost reduction. But all this has done in effect has been to kick the can down the road, effectively storing up the problem for the future.

## THE INDUSTRY RESPONSE

It would be unfair to blame the reduction of focus on solving the problem of legacy architecture solely on the need to focus on regulatory compliance. While a relentless concentration on cost reduction has limited resource availability for strategic programmes and what has been left has been reallocated to regulatory compliance, different strategies have been attempted to remediate the problem. But this challenge is complex, and one of the main reasons for this is contained within the title of this paper — namely ‘the legacy’. Legacy is often misused in the context of this discussion by industry commentators, where its negative connotations are associated with bad management or poor decision-making.

But to truly understand the complexity of the problem, this term must be taken at face value — where legacy is understood in the context of the *Cambridge Dictionary* definition:

*Something that is a part of your history or that remains from an earlier time.*

In simple terms, it is a complex challenge that is unique and personal to the organisation — so finding a solution that remediates it is also something that must be tailored to the organisation. It is for this reason that the problem of cost reduction is so challenging for the industry to solve — it is hard and complex, and any solution will require either customisation of product (what one is buying) or customisation of business (read standardisation of in-house business flows). Both of these require extensive investment or time to realise sufficient benefits.

Against this backdrop, three common themes have emerged during the last decade to attempt to address the problem of solving the challenge of back-office complexity:

1. **Rip and Replace.** Business simplification for some organisations enabled this option, where a packaged front-to-back (F2B) solution created the opportunity to migrate to a relative greenfield site. As this infrastructure was deployed, it created standardised flows and processes out of a box to enable simplified or restructured business to operate effectively.
2. **Utility Concept.** Mutualisation of back-office cost with others, leveraging a common process infrastructure and standardised processes to gain economies of scale.
3. **Digitisation.** Recognising the challenges of the ‘human API’ by leveraging standardised automation tool

sets — robotic process automation (RPA) or natural language processing (NLP) capabilities — to automate inputs into the legacy infrastructure.

While there have been other strategic initiatives that are typically enterprise wide — such as cloud — these have been the dominant themes for addressing the challenges of the back office.

For some, these levers have enabled cost to be taken out in part, but the overwhelming theme is that even where this has been successful, it has not done enough. Why is this the case?

- Recent research<sup>5</sup> outlines the ongoing deterioration of cost-income ratio (CIR) performance for the CIB sector, with most European organisations experiencing numbers well in excess of 70 per cent. And for some, these numbers continue to sit in excess of 100 per cent, as the trend for revenues has been to decline further than cost.
- More importantly, this problem has worsened over the last two years with an average deterioration of 8 per cent and worst in class showing deterioration of over 20 per cent. So the trend that has persisted over the last decade is getting worse.
- Most of the organisations have all undergone significant restructuring and/or business simplification — with the more obvious cost levers of capital or cost reduction having been exhausted. And corporate (middle/back office) now equates to an increasing proportion of the cost side of the equation. The recent public restructurings of business at Nomura, Commerzbank, Deutsche Bank and Societe Generale are good examples of this — highlighting the need for a more efficient, lower cost architecture.
- And the ever-increasing focus on cost continues, as the industry exerts pressure on fees all through the value chain

— from the buy side right the way through the value chain into both sell side and service providers. Research by Accenture<sup>6</sup> suggests that even while volumes may rise, margins will shrink, leading to increased demand for focus on efficiency and cost management through the entire value chain.

While certain players may have made improvements with their cost optimisation strategies, the overwhelming evidence from the industry points to the fact that for all but the universal scale players, there is more to do. While this paper has outlined the complex nature of the challenge, there are several common themes that have also emerged as barriers to transformational progress:

1. **Sponsorship.** For most financial institutions, regional and functional fragmentation makes ownership of effectively a shared problem extremely challenging to manage. In the absence of strong leadership or recognition of the problem, driving successful strategies across shared infrastructure becomes extremely challenging. Often the functional owners see it as someone else's problem — perhaps where volumes are used to allocate costs — in organisations where the cost is shared. Or it is seen as a back-office problem, where the system operators are given responsibility for solving the problem but without having ownership of the budget to do so.
2. **Lack of Standardisation.** While the industry has pursued external standards — think of International Swaps and Derivatives Association (ISDA) standards for OTC derivatives or ISO (International Organization for Standardization) messaging within SWIFT (The Society of Worldwide Interbank Financial Telecommunication) — this has assumed that where this exists externally, then by

default it does internally. Fragmentation of data sources, in-house software and hard-coded point solutions have in effect created highly bespoke internal processes. Integrating off-the-shelf solutions internally or externally connecting into utility-style services unsurprisingly becomes extremely complex. And typically, the cost associated with this lack of standardisation is never reflected in the benefit case — often rendering the programme unsuccessful or in some cases stopped altogether.

3. **Legacy Knowledge.** The cost restructuring that organisations have gone through in the last decade has fundamentally altered the internal change capability for most organisations. This has been driven primarily by two themes:
  - **Sourcing Strategies.** As process responsibility and oversight has been transitioned to lower cost regions or out to third parties, much of the institutional knowledge has been lost with it. While processes and procedures documentation supporting it contains the knowledge of the day to day, it will not capture the institutional knowledge around the end-to-end business flow. This means that much of the legacy knowledge built up within HQ (headquarters) is lost, replaced by cheaper but more mechanical resources.
  - **Delaying.** An unfortunate by-product of the cost reduction strategies pursued by most organisations has been a delaying of the organisational leadership. As control and compliance functions have been enhanced, this has come at the expense of technology and business process leadership. With the departure of leadership experience, battle hardened in navigating the internal infrastructure and its stakeholders, delivering successful change becomes exponentially harder.

Both themes impact the ability of the organisation to mobilise successfully to drive change — and while external resourcing can help with generic leadership skills, legacy transformation needs people who share that legacy.

4. **Simplistic Benefit Cases.** All too frequently, benefit cases for back-office transformation unravel due to simplistic or one-dimensional views of the ROI by its sponsors. Traditionally, front office investment consumed an overwhelming proportion of available spend — due to the inclusion of revenue into the investment budget — which was challenging for pure cost-led cases to compete with. This lack of foresight at the C-suite level has stored up the problem for the leadership of today, who are still in the main challenged by a difficult set of economics, namely, the investment justification of decommissioning a largely depreciated platform, operating on cheap hardware and supported by in the main staff in a low-cost region.

This creates a challenge for both technology-led transformation and vendor-led solutions (such as utilities), where the starting price point effectively eliminates the opportunity. This specific point was reinforced by a recent study by the Association for Financial Markets in Europe (AFME), which found that only 28 per cent of respondents thought that their budget for strategic change was suitable to capitalise on the opportunities that new technology provides. And even for those banks viewed as industry leaders, with sizable budgets and senior sponsorship, self-funding business cases were usually required in all cases.<sup>7</sup>

5. **Governance and Change Management.** Given the complexity of the challenge, the organisation to execute the transformation is often neglected.

The cross-functional nature of the infrastructure replacement requires extensive stakeholder management, detailed analysis and design along with a pragmatic approach to implementation. The traditional approach to a disciplined, well-controlled change is, however, often ignored due to lack of awareness of its value. This often ends in programme failure, as lack of cohesive governance limits accountability from the stakeholders — ‘someone else’s problem’ — and short termism puts pressure on implementation. The retail industry has publicly suffered significantly due to this approach to legacy IT transformation, and the capital markets industry has also had some well-known, albeit less public, challenges.

All these factors have contributed to a lack of resolution to the fundamental challenge of inefficiency across the back office. The complexity of the challenge should not be underestimated, and it is unsurprising that the industry has been unable to solve it.

‘It is clear that seeking to achieve truly meaningful and sustainable efficiency is a complex and mammoth task. “Reduce costs” is a common battle cry, but up to now rarely has it resulted in sustainable cost reduction that leads to highly efficient businesses. The fact that cost reduction has been a recurring theme in Accenture’s Top 10 Challenges series is therefore unsurprising.’ Accenture<sup>8</sup>

But lack of progress on internal transformation, the harsh economic reality of CIR performance for the sector and the ongoing cost pressure within capital markets are now forcing senior leadership to act, because the economics of standing still are now increasingly pointing towards the exit of some players from the industry. So

against this backdrop, how should organisations be thinking about solving this conundrum?

## ARCHITECTING FOR SUCCESS

One of the key challenges for outside-in transformation of the back-office architecture within banks has been around a lack of appreciation of the legacy nature of the problem. This uniqueness requires a tailored approach and limits the effectiveness of a ‘one-size-fits-all’ approach — that is not to say off-the-shelf solutions cannot be successful, but it does highlight recognition of the customisation or standardisation that is required.

Successful approaches must appreciate the bespoke nature of the problem but use that as catalyst rather than a blocker for change. What this means is recognising the problem is a factor of this organisational uniqueness, most of which has been driven by behaviours of the past. Standardisation must be central to the infrastructure and its future — with the delivery of a sustainable operating cost fundamentally tied to the desire for commoditised processes and services. This mantra must be enforced with discipline when faced with bespoke requests, otherwise the true value of the transformation opportunity will not be realised. This then enables the programme to be architected to deliver an environment that embraces standardisation at its core.

Here is how to think differently about the problem:

- **The Vision.** The start point to successful transformation must be a realisation around where the organisation is and where it is trying to get to. This sounds simplistic but is a fundamental requirement for joining up the competing demands of the stakeholders within an organisation. This outlines the journey and why

stakeholders need to feel accountable for the outcome — and as importantly, the downside of doing nothing.

Alongside this must come sponsorship from a senior enough level in the organisation to allocate sufficient resources and budget to the programme through to completion. This is not merely committing to funding within the annual budget cycle; this is the responsibility for underwriting the transformation programme. This seniority is increasingly now at board level, where the severity of the problem is attracting the right level of attention to drive action forwards. Relying on a head of operations or head of back-office IT to drive this is rarely successful, due to the significance of the firm-wide transformation effort required to execute it successfully.

- **The Benefit Case.** Traditional transformation efforts have typically floundered through an overly simplistic view of the benefit case, where the demand for self-funding economics usually erodes the opportunity. Traditional return hurdles of a one- or two-year ROI are unrealistic due to the complexity of the challenge, which requires more foresight in constructing the true value proposition for transformational change. McKinsey and others have long championed the value of zero-based budgeting for organisations looking to develop sustainable cost improvement. One of the keys to success of this approach is taking a bottom-up view of cost — ‘what can the business sustainably afford’ versus a traditional top-down approach of setting percentage-driven targets and hoping for the best. Given the criticality of the CIR challenge outlined earlier, the start point for the benefit case must be based on affordability — for a base level of income, what must the cost look like?

Once this start point is clear, this then sets the mandate for the programme to

explore solutions to drive towards this given level of cost. The benefit case is then developed alongside this goal with a clear objective — cost/income sustainability — rather than the challenge of justifying investment based on short-term ROI horizons. This latter approach typically only leads to tactical, short-term approaches to cost reduction, which are insufficient to solve the problem.

Integrated into this benefit case must also be a broader view of inputs as opposed to merely seeking bottom line cost reductions. The perspective of the cost base has to be forward looking in the sense that it can incorporate opinions such as future cost of change (cheaper and easier vs. the current state), speed of change (an enabler of business growth and regulatory compliance), the client experience (revenue retained or gained through enhancement) and reduced risk profile (fewer key person dependencies, improved resilience and recovery). All these inputs must be considered and modelled credibly to give value to support transformational change.

- **Change Management Governance.** Alongside sponsorship, governance must be recognised as critical by senior management to ensure that the programme can be executed successfully. This requires top-down support at a minimum, but it also requires the programme to be set up for success. What this means in practice is allocating enough resources to dedicate to driving the transformation — and this is not something that is a part-time role or part of the day job. Senior management often hide behind the statement that ‘strategic transformation has to be part of everyone’s role’, but in practice they use this to justify cost avoidance. Solving the legacy architecture challenge is hard — that is why it has not been solved in the main by most organisations — so

recognition of that complexity is critical to getting execution right.

Allocating key resources who understand the legacy process — full time — alongside dedicated and disciplined programme management teams is critical to success. And ensuring that the tone from the top is clear and consistent is as important as having the right team to execute. Steering committees need to be visible, active and accountable for the outcome, and the effectiveness of these forums often differentiates success from failure.

- **Data.** Data must be the cornerstone of the architectural design, not merely an input to it. Data strategy is an extremely complex topic for most organisations, but it often frustrates architecture efforts due to the size of the organisational challenge. When assessing cost over-run or failures of legacy transformation, data is often a primary cause of the problem. This often relates to the challenges of integrating feeds into vendor platforms (lack of standardisation) or trying to force legacy data models into an end state design. Data is the single biggest enabler of successful transformation, but the architecture must be developed around the data, not the other way around.
- **Operating Model Alignment with Technology.** Too frequently the disconnect of the technology solution with the target operating model leads to failure of back-office transformation efforts. This often starts with a failure of governance but also often manifests itself within the benefit case — where ROI is viewed as tech driven by operations (or vice versa). The future state operating model must be constructed based on how technology will enable it — not define it. ‘Zero Ops’ is commonplace language across the industry to visualise a future state, but this labelling is too simplistic to act as a catalyst for transformation.

Understanding the transformation of the value chain — from as-is towards to-be — is a critical component for success. And it is only by reimagining the value chain that technology can then be provided with the blueprint for the end state architecture. Being clear around the operational touch points or roles of the operations team in the future enables technology decision-making around the platforms and infrastructure to support them. This alignment is also a key ingredient for benefit case realisation, as articulating what services or processes make up the future cost base is as important as articulating what costs are saved. This then provides true transparency of the total cost of operations.

- **Leverage External Services.** The marketplace for FinTech has grown rapidly during the last five years, with solutions entering the marketplace to challenge the dominant incumbents. No longer are requests for proposals (RFPs) for technology solutions solely directed towards the ‘usual suspects’, and the emergence of credible offerings provides organisations the opportunity to modernise their capabilities. The challenge of blending newer technology with established in-house core systems is not insignificant, but leveraging external services creates an opportunity to dismantle the legacy environment in a controlled and staged fashion.

Some organisations will deem a more disruptive ‘rip-and-replace’ approach as being the approach most suited to their goals — which may be correct — but adopting a renovative approach to architecting the future provides the opportunity to truly leverage best of breed solutions. By integrating componentised products into the architecture, organisations can make decisions on the types of services they need to support their goals. These goals may change

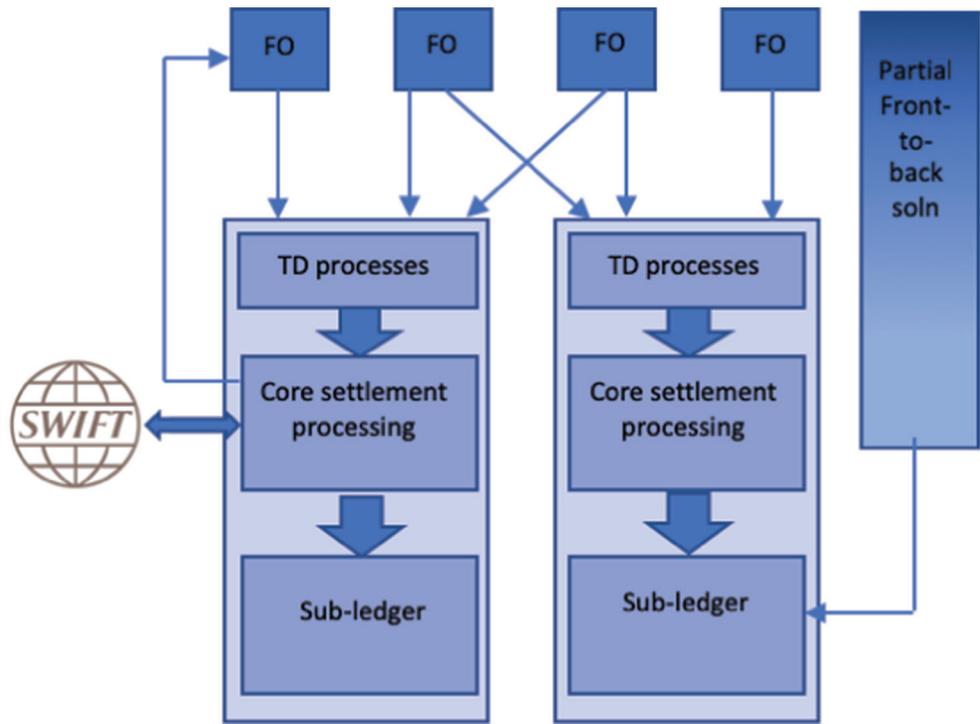
over time — business entry or exit as an example — but the architecture can retain sufficient flexibility to migrate to different services. As an example, with the increasing migration of European organisations into a FICC-only business, a simpler back-office solution is required rather than that which is needed to support a full-service capital markets business. Being able to architect this flexibility to facilitate integration of, or migration from, different managed services is essential to maintaining an optimised cost base for the back office.

- **Adopt an Architecture to Enable Success.** One of the common themes within organisations that have successfully completed the transformation journey for their back-office systems and processes has been their ability to enable access to standardised, accurate data. As outlined previously, data must be seen as the cornerstone of the architectural design, and success is often characterised by the investment made in ‘opening up’ monolithic legacy platforms to move towards a more service-orientated architecture (SOA). By making the migration towards this model, they are effectively enabling access to third-party services — from full utility services down to software as a service (SaaS)-style offerings — to achieve their goals. This migration can be seen visually in Figure 2.

This is a simplified ‘old-school’ architecture for a bank. It is characterised by unidirectional data flows (unstandardised) and multisystem complexity. Accessing data from this architecture is challenging and complex, resulting in very limited flexibility.

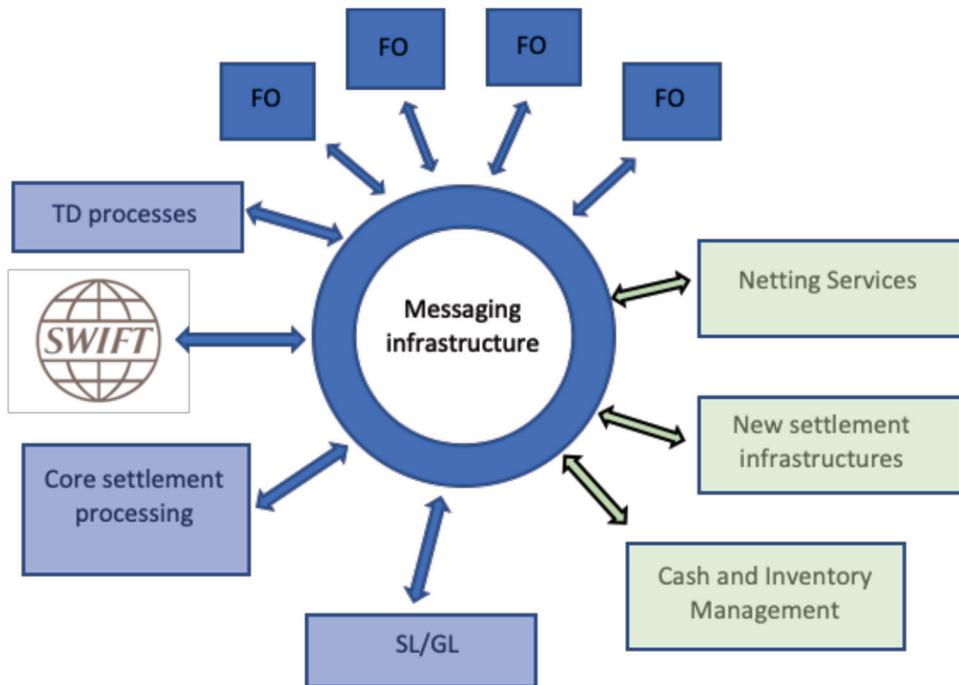
This lack of standardisation (and ultimately flexibility) prevents organisations with this type of architecture from enabling migration to vendor services.

Figure 2 Example of typical legacy post-trade architecture



Note: FO, front office; TD, trade date.

Figure 3 Target service-orientated architecture



Note: FO, front office; GL, general ledger; SL, subledger; TD, trade date.

By migrating towards this simplified SOA concept outlined in Figure 3, organisations increasingly have the benefit of access to standardised data. This significantly reduces implementation effort and ultimately creates a position that allows organisations to exploit changing technology services and offerings in the market.

So, while successful back-office transformation is complex to execute, it can be achievable by adopting some of these key principles.

## CONCLUSION

The economic imperative for back-office transformation is increasingly dominating senior management discussions, in a way that has not been the case in the past. This realisation is creating the right environment for the capital markets industry to address the cost associated with this challenge, but its success will only be realised by recognising the need to dedicate investment and resources to its resolution. And by its very name, the challenge of ‘legacy’ architecture must be owned by those who are responsible for it — relying on a white horse from the industry or a technological silver bullet is unlikely to deliver the type of sustainable CIR impact to ensure survival.

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