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The CRO Function in Buy-side Firms: From 'Stitching' to Strategy

Part of Chartis and TCS's research series *The Future of the Risk Enterprise*

Chartis

Independent. Insightful. Actionable.

About Chartis

Chartis Research is the leading provider of research and analysis on the global market for risk technology. It is part of Infopro Digital, which owns market-leading brands such as Risk and WatersTechnology. Chartis' goal is to support enterprises as they drive business performance through improved risk management, corporate governance and compliance, and to help clients make informed technology and business decisions by providing in-depth analysis and actionable advice on virtually all aspects of risk technology. Areas of expertise include:

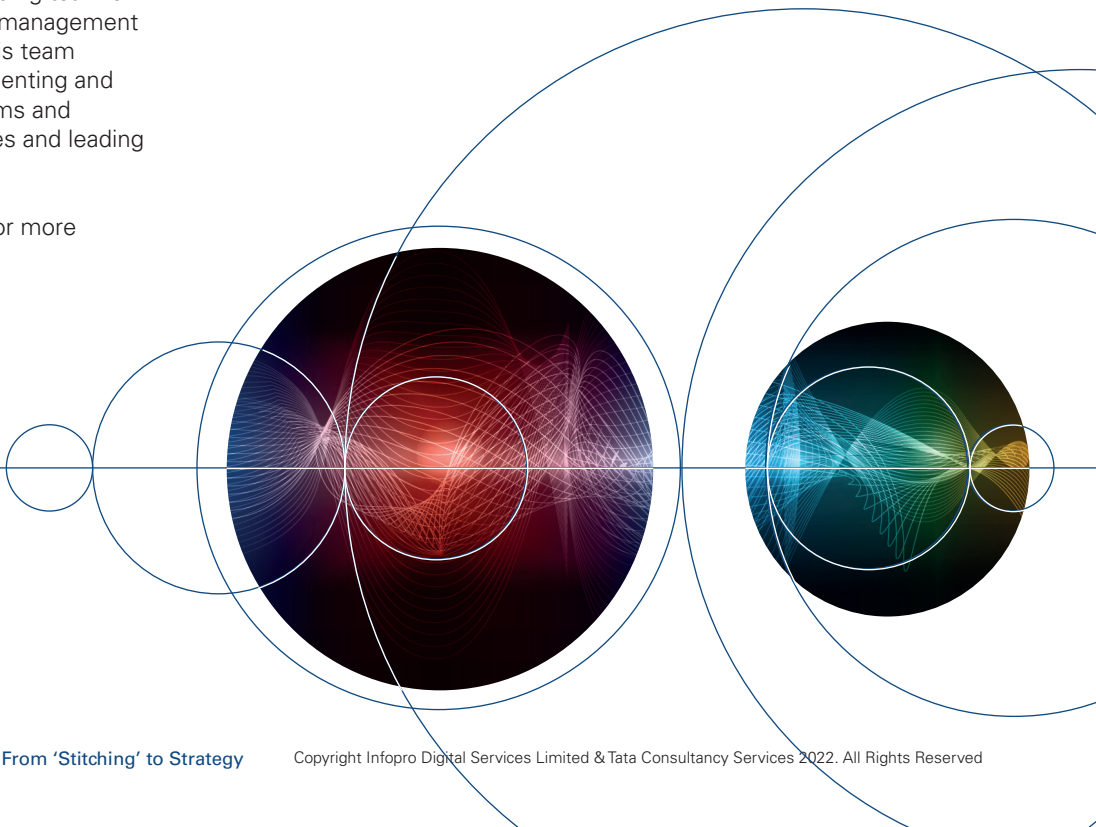
- Credit risk.
- Operational risk and governance, risk management and compliance (GRC).
- Market risk.
- Asset and liability management (ALM) and liquidity risk.
- Energy and commodity trading risk.
- Financial crime, including trader surveillance, anti-fraud and anti-money laundering.
- Cyber risk management.
- Insurance risk.
- Regulatory requirements.
- Wealth advisory.
- Asset management.

Chartis focuses on risk and compliance technology, giving it a significant advantage over generic market analysts.

The firm has brought together a leading team of analysts and advisors from the risk management and financial services industries. This team has hands-on experience of implementing and developing risk management systems and programs for Fortune 500 companies and leading consulting firms.

Visit **www.chartis-research.com** for more information.

Join our global online community at **www.risktech-forum.com**.



About TCS

TCS partners with 900+ clients across 46 countries, including eight of the top 10 global insurers, eight of the top 10 property and casualty insurers, the top 10 global investment banks and 12 of the top 20 global retail banks. With a comprehensive portfolio of technology-led, domain-focused processes, frameworks and solutions, TCS helps banking, financial services and insurance (BFSI) organizations respond to market changes and manage customer relationships effectively, while ensuring regulatory compliance.

Using expertise gained from working with global banks and insurers and regulatory and development institutions, as well as specialty firms, TCS has developed customizable solutions to help global BFSI organizations manage risks better, leverage ecosystems effectively, and create value for customers.

TCS's Risk and Compliance unit is a focused strategic group that partners with CROs of global BFSI organizations in their transformation, innovation and regulatory change journey. With its subject-matter expertise, solutions and broader ecosystem capabilities, it has partnered with global BFSI clients in navigating the risk and compliance landscape, helping to create resilient and agile risk management capabilities.

For more information, contact:

bfsi.marketing@tcs.com

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1. Executive summary

Working with chief risk officers (CROs) and other leading risk professionals, Chartis and TCS have undertaken an important piece of structural research and analysis that aims to understand how the CRO function[1] (or risk function) and its culture and processes are evolving. Focusing on operating processes, the research looks at the CRO function's overarching delivery mechanism, as well as the centralization and restructuring of the risk unit currently occurring in many financial institutions. Crucially, it examines the increased externalization of the risk function, its broader role, and the changing nature and impact of the services it delivers to the wider organization.

To gain a deeper understanding of the overall landscape, Chartis and TCS conducted both quantitative and qualitative research. This consisted of an extensive survey and a series of interviews and discussions focusing on CROs and risk IT staff within the risk unit as a whole.

The research and analysis is contained in a series of seven reports:

- An introductory report, *The Future of the Risk Enterprise: Enabling growth and competitive advantage*, which provides an overview of the key findings and recommendations of our research.
- Five reports that consider firms in sub-sectors of the finance industry: retail banks, universal banks, buy-side firms (asset managers, hedge funds, etc.), insurance companies and investment banks. In these we examine the specific pressures faced by firms in each sector and analyze how the risk function is evolving within each type of institution.
- A benchmarking report, *Benchmarking the Risk Function: A Framework*, which focuses on the benchmarks, roadmaps and analytical frameworks Chartis Research and TCS have built to enable financial institutions to analyze and understand where they stand relative to their peers.

[1] *When we refer to the 'CRO function' we don't just mean CROs. CROs can now have several people reporting to them, all of whom undertake a variety of tasks, including risk IT, risk methodology, quantitative development and technology risk. The overall risk function can be relatively large in some bigger organizations and highly distributed by business, geography and functional group. Some big banks can have hundreds of CROs, with many dedicated CROs for individual business lines under a group CRO.*

2. Overview and context

The risk function in asset management

Risk functions in asset management are often significantly 'lighter' than the larger, more complex and more costly systems found in banks. This is partly because they are less regulated and operate within a complex ecosystem that contains many stakeholders. Hedge funds work with prime brokers, for example, while asset managers can work with custodians and the security services in big banks.

Typically, these stakeholders have their own risk platforms made up of highly specific components from independent suppliers and vendors, which the buy-side CRO must 'stitch' together. These components include benchmarks, alternatives, derived data, pricing/risk analytics, P&L performance analytics and reporting. Banks, by contrast, develop their own risk systems within their own periphery.

For buy-side firms, being able to create a platform that integrates the different areas, and multiple vendors, is vital. These differences are reflected in firms' culture, technology, risk measures and risk expenditure.

Key trends, dynamics and areas of growth

Several trends and dynamics are shaping the evolution of the asset management/buy-side sector. These are emerging against a background of growth in several areas: continued growth in hedge fund families, the use of derivatives among asset managers and pension funds, the growth of credit in the wealth management sector, and the shouldering of more risk by insurance firms and other asset managers.

Figure 1: Demand for analytics – the impact

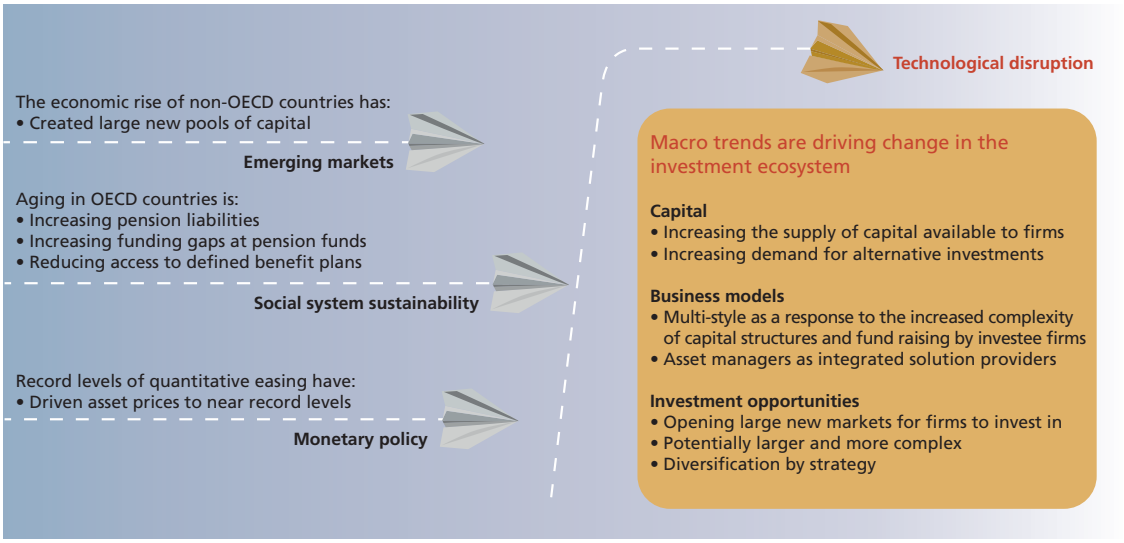
Complex macro environment with deep restructuring and move to conglomerates	Rapid growth of strong managed services
Growth in derivatives and fixed-income portfolios is the single most powerful driver toward the requirement for fully featured risk systems	Asset managers' preference for API-driven consumption
Increasingly complex ecosystem and new types of fund families	Increasingly, many financial institutions provide some analytics. This is a significant opportunity rather than a threat
Rapid growth of risk as a service, which dominates the marketplace, particularly for smaller and less complex entities	Expansion of credit funds

Source: Chartis Research and TCS

Strong demand for real-time risk and portfolio analytics has necessitated changes in several entities, including prime brokers, FX primes, energy and commodity trading firms and complex hedge funds (see Figure 1).

Meanwhile, because of shifts in the market ecosystem, buy-side firms are becoming more multifaceted, with more complex mandates and asset mixes. This is creating new, uncharted territory in the market landscape (see Figure 2).

Figure 2: A changing investment ecosystem

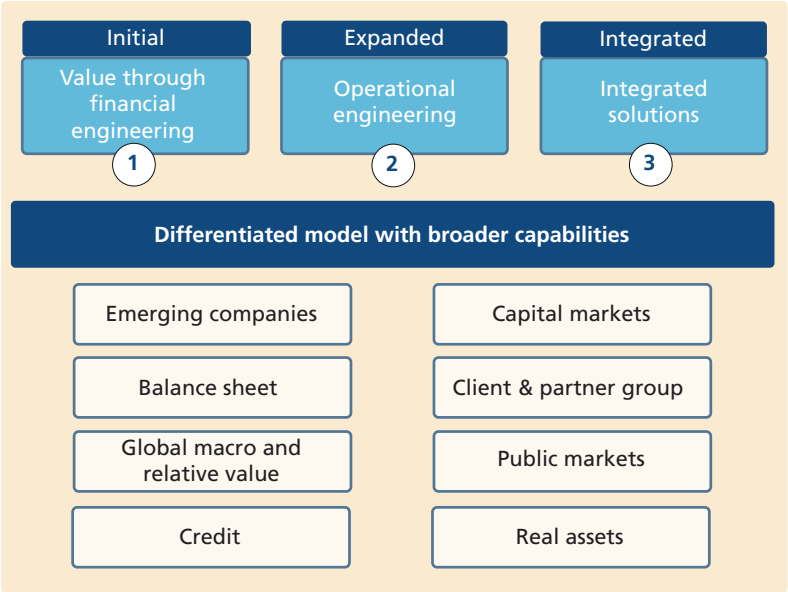


Source: Chartis Research and TCS

This evolution is generating several important dynamics for firms across buy-side sub-sectors:

- Pension funds and other asset owners are moving to full-service managed services and outsourced middle-office operations.
- Credit funds and diversified asset management conglomerates are developing fully fledged risk systems. These take the cost of funds into account, and handle complex interest rate and credit structures.
- Large traditional asset managers are taking on derivatives capabilities and coverage. Insurance asset managers, meanwhile, are evolving in several ways. They are taking on derivatives capabilities and quantitative technology management and developing the ability to replicate sell-side front-office capabilities at low cost, including scripting and automation.
- Alternative providers (such as private equity firms) have become fully fledged investment platforms (see Figure 3).

Figure 3: New providers have emerged with full across-the-board integrated capabilities



Source: Chartis Research and TCS

Acting as orchestrator

In this context, most asset management firms leverage a wide variety of external applications and services, essentially acting as system 'orchestrators'. Even large asset managers and buy-side players are increasingly looking to outsource a wide variety of their core functions. Most firms select independent software modules – only rarely do they consider a fully fledged enterprise risk management (ERM) system.

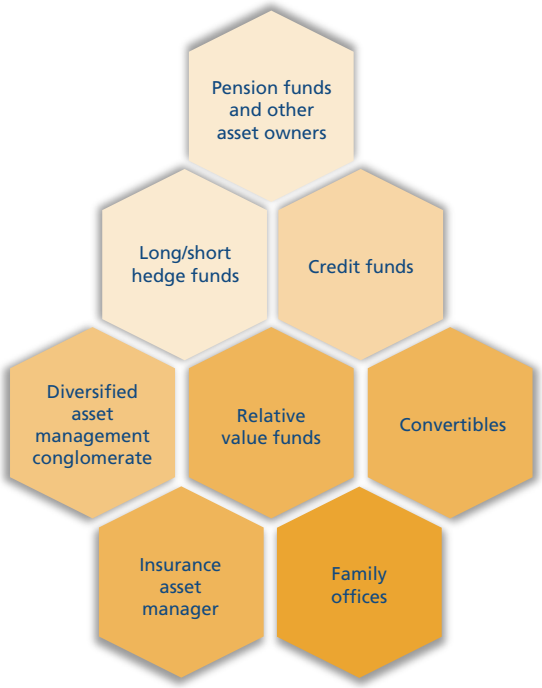
The risk unit increasingly provides a coordinating function, by providing attribution and analysis of the performance of different investment strategies. Attribution analytics become more complicated as firms move away from traditional asset management and equity investments to embrace more sophisticated structured investments, as well as fixed income, credit, commodities and hybrids.

For performance attribution systems, the key challenge is the quality of data involved – especially for equity performance attribution, which has simple modeling requirements. Fixed-income performance attribution systems, which are closely linked to front-office systems, tend to be developed on a more ad hoc basis, often on top of existing fixed-income analytics.

And because buy-side conglomerates have a variety of assets and investment styles, the ability to combine different attribution styles is emerging as a key value-add for the risk function.

Of course, buy-side firms' risk focus depends on the type of institution they are (see Figure 4), although many increasingly fall into the 'diversified' category. Fundamentally, the nature of the risk function depends on the type of institution. Relative-value funds, for example, have a more 'sell-side'-style risk function. This is concerned with liquidity, hedge quality and value at risk (VaR) as core elements of operating risk management, and uses Greeks to manage units or desks. Other asset managers, meanwhile, may concentrate on other risk measures and have a less granular focus. Long-only asset managers, for their part, may embed their risk frameworks directly into their portfolio models.

Figure 4: Risk focus depends on institution type

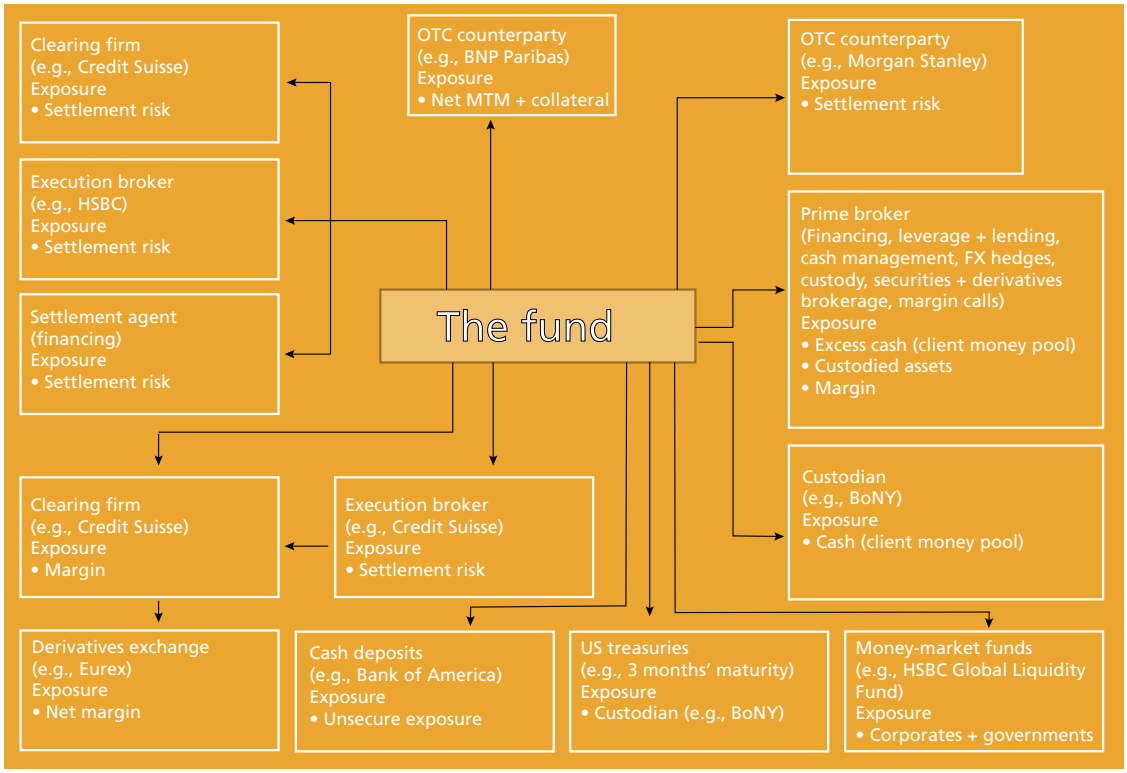


Source: Chartis Research and TCS

A complex ecosystem of stakeholders

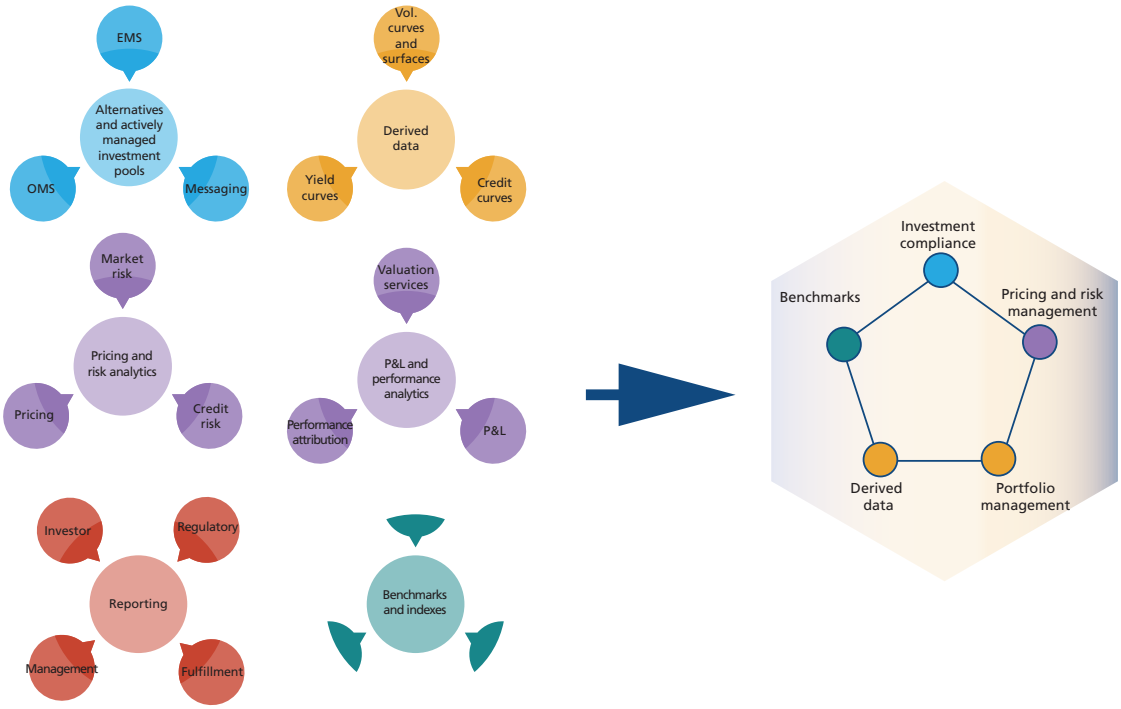
As buy-side firms operate within a complex ecosystem, their CRO functions must work with many stakeholders (see Figure 5). Traditional asset owners and asset managers tend to have a long-focused risk profile. Equally, their use of derivatives is relatively restricted. Certain types of hedge fund, meanwhile, such as relative value or global macro funds, are aggressive users of derivatives, so their

Figure 5: The buy-side – a complex ecosystem



Source: Chartis Research and TCS

Figure 6: Stitching together risk applications



Source: Chartis Research and TCS

risk units will have a completely different set of controls, frameworks and processes.

The hedge fund ecosystem is complex and the prime broker, as custodian of multiple funds' exposure, requires a diverse and intersecting range of risk functionalities. These can include:

- Multi-asset-class coverage that tends to be broad but is not necessarily specialized by asset class.
- Books and records.
- Real-time margin and credit.
- Real-time risk.
- P&L analytics (with the support of Greeks and sell-side P&L explain).
- A scalable and expandable transaction platform that allows risk aggregation at scale.
- Performant dashboards.

Broadly, because buy-side firms prefer – and are increasingly able – to stitch together applications, this moderates the value of vendor-driven integration (see Figure 6). For firms to achieve this effectively, their platforms will need to interconnect, and platform providers and vendors will have to examine their licensing and interface strategy platform interconnections. These include market data utilities that provide analytics to order management systems (OMSs)/execution management systems (EMSs). This makes the process of structuring and managing licensing agreements central to firms' commercial success.

3. The evolving role of the CRO

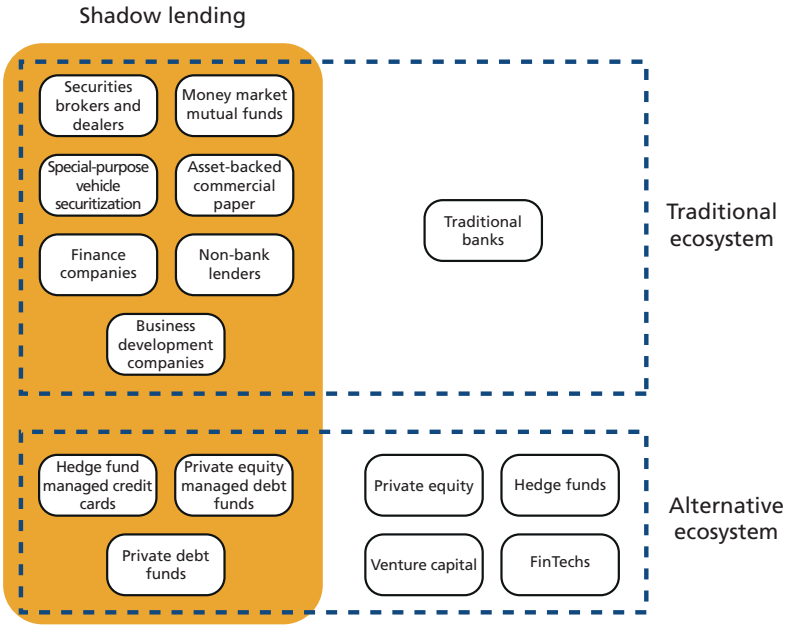
As the market environment evolves and as buy-side firms take on ever more diverse risk, some of which is outside their historical remit and experience, new challenges, issues and considerations are emerging.

In such an asset management services environment, the role of the CRO function is rapidly changing from one of gatekeeper to one of strategist, due to regulatory mandates and the need to compile platforms. Increasingly among buy-side firms, the CRO or risk officer comes from a trading/portfolio management background rather than a strictly compliance one.

This in itself has created new challenges, as buy-side firms take on more risk by increasing the supply of capital and diversifying their portfolios in larger, newer markets, and by increasing the proportion of alternative investments they hold.

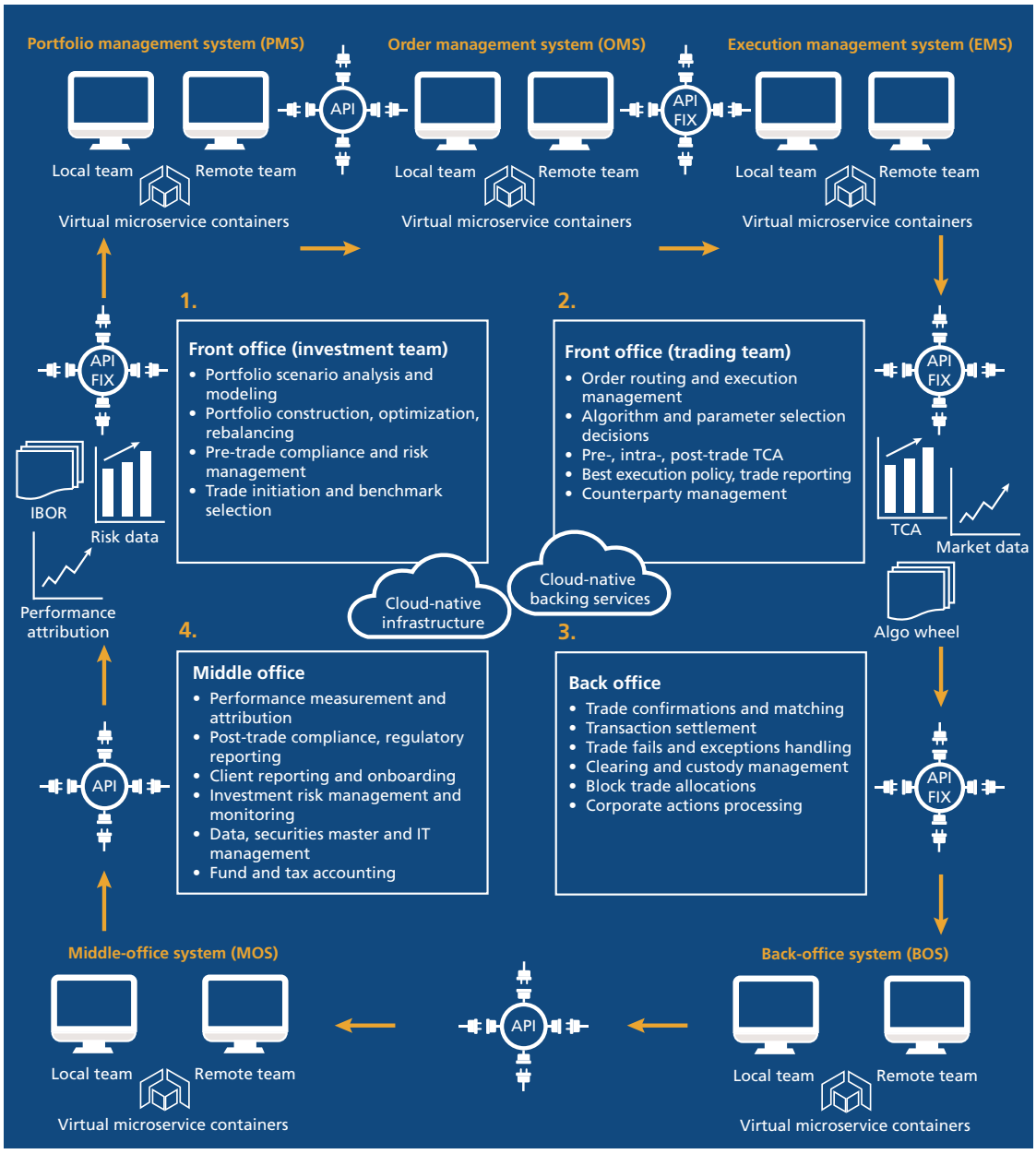
With credit now an essential part of asset management on the buy-side, the CRO function must also possess banking-style credit risk management skills (see Figure 7), as well as a broad range of executional analytics (see Figure 8), such as transaction cost analytics (TCA). This is creating strong demand for real-time risk and portfolio analytics services (see Figure 9).

Figure 7: The CRO function needs banking-style skills



Source: Chartis Research and TCS

Figure 8: Analytics in the investment management lifecycle



Source: Chartis Research and TCS

Figure 9: Demand increases for real-time analytics services

Prime brokers	FX primes	Energy and commodity trading	Complex hedge funds
- Growing complexity in their business - Need to manage the risks of their clients - Ongoing data revolution and expansion of data-focused services - Need to develop custom services that can be based on performant frameworks	- Rapid growth and expansion - Continued growth in volume - Complex execution models - Focus on credit and market risk of participants - New applications: portfolio management	- Energy and commodity firms trade multiple assets from energy OTC derivatives - Merchant model of trading is coming back into fashion	- Multi-asset class hedge funds - Consolidation among hedge funds is rapidly leading to more complex and consolidated fund families - Crossover of fund styles (hedge funds, 40 Act funds, etc.); some fund families could introduce multi-style complexity

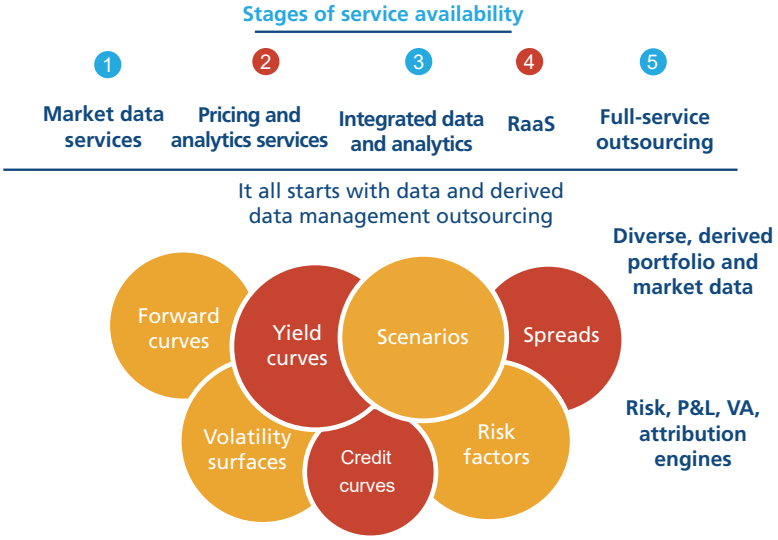
Source: Chartis Research and TCS

The technology differentiator

Given the unique environment in which buy-side firms operate, there is a real opportunity for some firms to 'leapfrog' others by leveraging next-generation technology options and an open-source systems stack (see Figure 10). Indeed, while buy-side firms have historically had relatively light capabilities, today they are increasingly consuming risk analytics in the form of managed services.

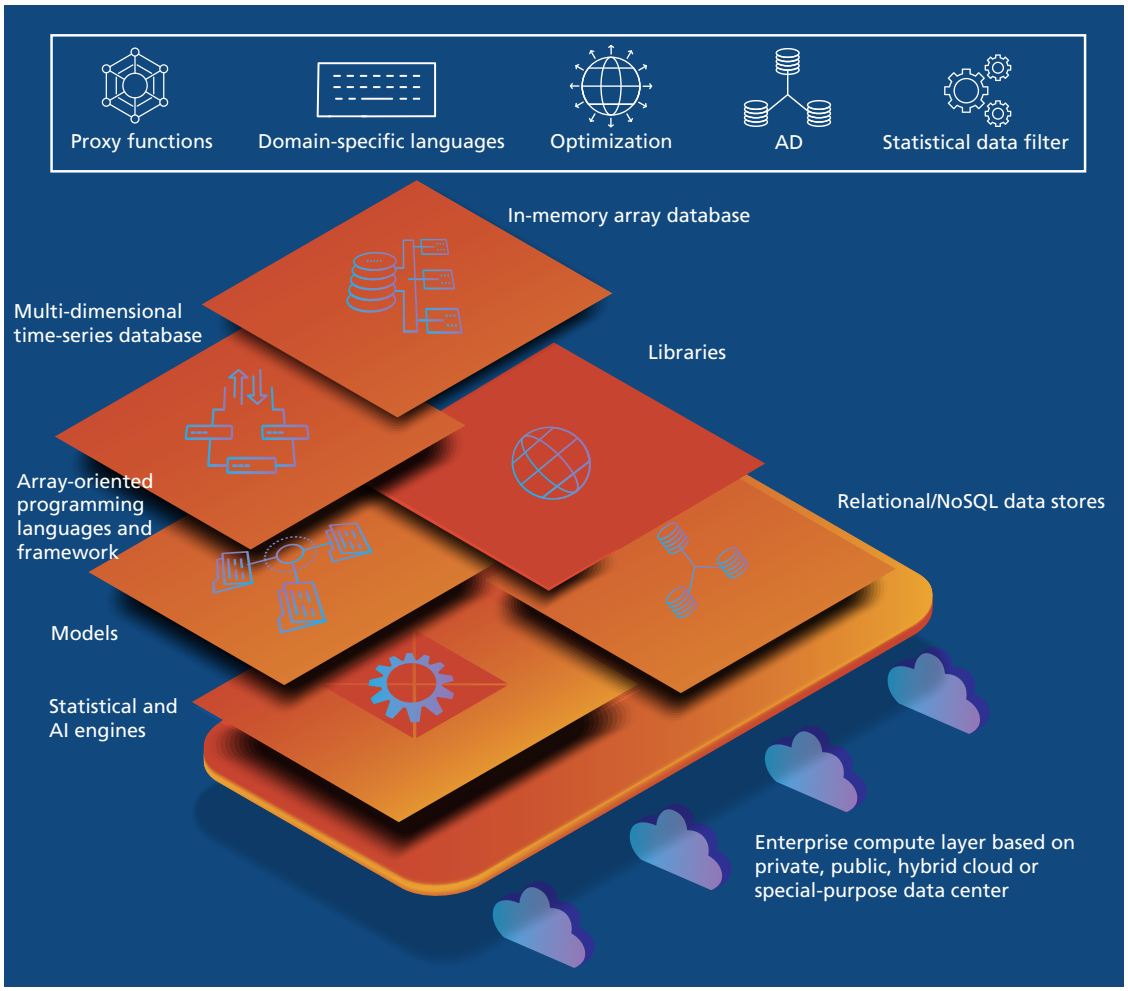
Firms' opportunities to advance also include investing in computational languages (such as Python and Julia) as a way of combining diverse analytics and data. They can also leverage low-cost, open-source databases and frameworks to reduce the cost of operating statistical and simulation capabilities at scale (see Figures 11 and 12).

Figure 11: Leveraging tech – think of all applications as APIs



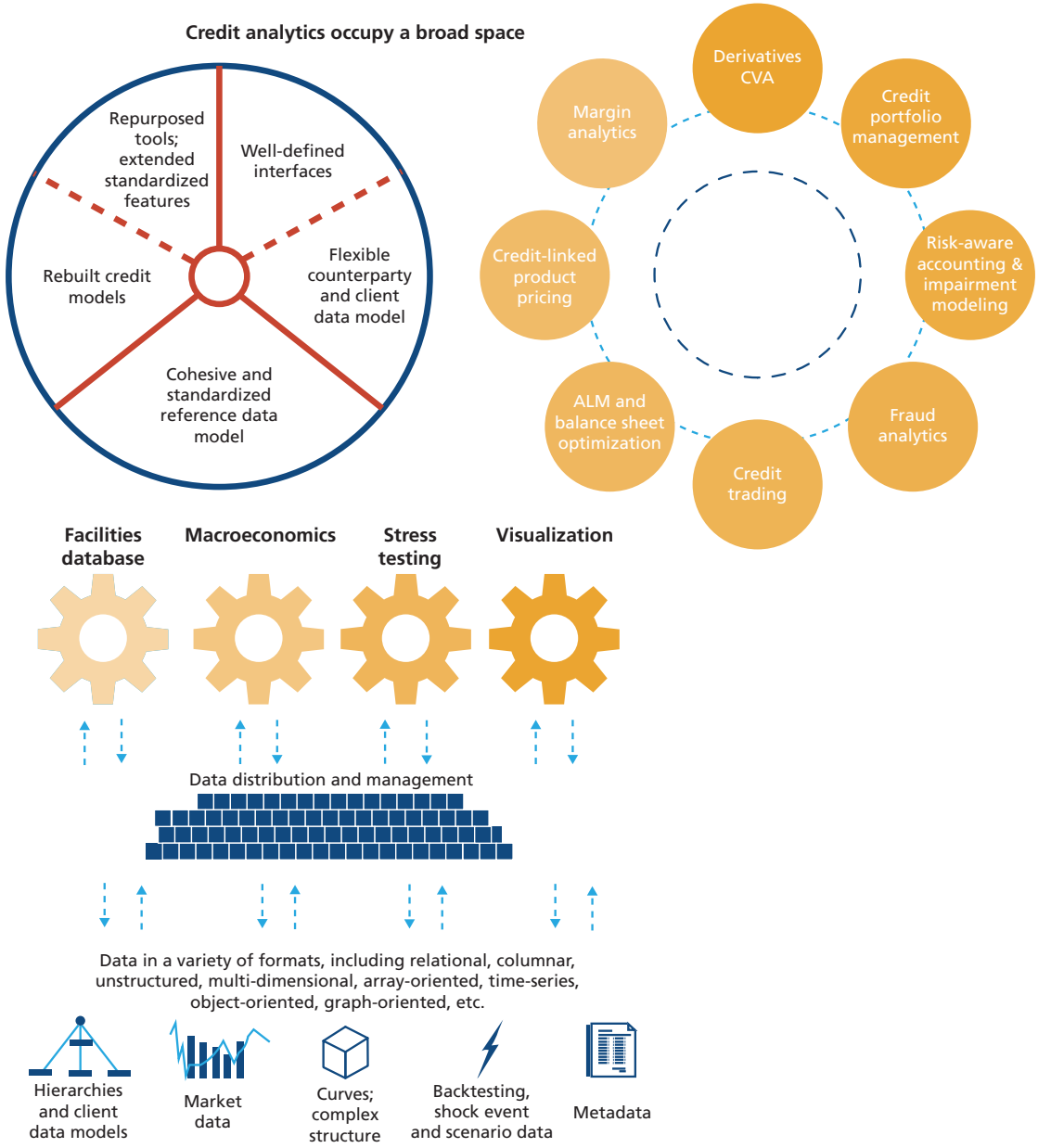
Source: Chartis Research and TCS

Figure 10: Leaping ahead with technology



Source: Chartis Research and TCS

Figure 12: Leveraging tech – exposing underlying prices and data to applications through APIs



Source: Chartis Research and TCS

In this context, we would argue that:

- Buy-side firms could leverage Julia/Python frameworks to provide effective dynamic data management/dashboards and control environments through which all applications and components could be controlled and viewed.

- They could create and manage standardized statistical and optimization frameworks that leverage machine learning (ML) and heuristic optimization. This could enable their risk and portfolio management groups to take advantage of new tools. Optimization, for instance, which can exist in many heuristic structures, is the bedrock technique of buy-side modeling and risk management. And having a standardized library of heuristic optimization can be very powerful for firms attempting to 'leapfrog' the competition.

4. The way forward

Across the entirety of this research we have explored strategic shifts in the way that risk departments and functions are being organized, how they are interacting with other business groups, and how far they and their institutions have moved toward commercializing and externalizing the risk function and its activities. This has involved an analysis of the mechanism by which risk units are involved, directly or indirectly, with customer management – how the risk function is enabling customers of institutions to manage and control their own risks.

The research has revealed enormous variance in these situations and approaches. Some risk organizations are centralized, some are highly distributed, some collaborate closely with their business units, some even have special units designed to collaborate. And still others are highly commercialized, providing repackaged services to create commercial value and/or stronger customer relationships. From the institutions' perspective, some of this repackaging and commercialization serves strong business ends, enabling them to 'de-risk' in a way that does not disrupt existing customer relationships.

Looking ahead, we expect these themes – greater interaction with front-line business units and greater commercialization and externalization of risk units – to continue and expand across the industry as organizations and risk units mature. The mechanics of these developments will vary from organization to organization. We will see greater diversification of the personnel who work within risk units, to include a wider variety of backgrounds, such as technology and financial risk, engineering, data science and other disciplines that complement core risk capabilities.

As we have noted, there are correct and incorrect ways for firms to approach the evolving risk function and its fit within the wider organization. Any plans must be properly structured – firms' response to these evolving dynamics will vary depending on their size and type and the nature of their customer relationships. Institutions must manage the necessary growth and change, but they must also calibrate and measure themselves appropriately as they evolve. This is a complex process, and to succeed firms will have to break down some existing cultural ideas around how risk units should be organized.

In that context, when establishing this culture, processes and methodologies are often far more important than high-level conceptual approaches. Senior management must consider the organizational maturity of the risk function and what it needs to achieve, setting out very clear guidelines and targets around the level of interaction between risk and other business units. As our research highlights, formal rules, processes and methodologies are vital elements in driving risk culture throughout an organization.

Finally, it is one thing to talk about culture, and quite another to define and communicate it effectively. The more formal rules and well-defined methodologies firms have, the more likely they are to avoid problems. And carefully benchmarking how they are achieving this is key – what you can't measure you don't understand and you can't control.

Buy-side: expanding commercialization and externalization

The buy-side is a complex environment containing a variety of asset owners and managers that are constrained by a range of rules. Within this collection of entities, many will be intermediary-oriented, as in essence they are managing money on other people's behalf. As a result, they will have behavior and success factors that align with other intermediaries, and will increasingly pursue risk commercialization and the externalization of risk analytics. And as the regulatory environment on the buy-side puts more pressure on firms to have clearer risk reporting, firms will also be looking to expand these commercialization and externalization activities.

Risk frameworks are increasingly central for a variety of buy-side firms, due in part to regulatory pressures and investor focus. Traditionally, the buy-side has been divided into highly purpose-built silos (asset managers, hedge funds, private equity firms, credit funds, etc.), each of which with its own analytical framework and operating risk model. Very often, when two different types of firms integrate, the risk function can present a philosophical and operational challenge. The nature of the risk model, why and how measurements are being affected, and to what extent the 'owner'

of the firm has capital at risk vary, and often can be the subject of contentious debate.

Our observations suggest that as more complex conglomerates emerge, buy-side firms have the opportunity to leapfrog the slow and incremental process of building out a cross-asset and cross-business-line risk function. They can achieve this by carefully examining lessons learned from other large buy-side conglomerates and other types of financial institutions (principally universal and investment banks).