

The SEI logo is positioned in the upper right corner of the page, within a dark green triangular shape. It consists of the letters 'SEI' in a large, white, sans-serif font, followed by the tagline 'New ways. New answers.®' in a smaller, white, sans-serif font.

SEI New ways.
New answers.®

The main title is located in the center-left of the page, set against a large, light green triangular background. The text is in a white, sans-serif font. The first line is 'THE NEW MIDDLE OFFICE:', and the second line is 'THE KEY TO A COMPETITIVE ADVANTAGE' in a larger, bold font.

THE NEW MIDDLE OFFICE:
**THE KEY TO A
COMPETITIVE
ADVANTAGE**

seic.com/ims

Contents

Introduction	2
The problem with traditional approaches	2
Suboptimal and potentially dangerous data practices	2
Why is change so difficult?	3
The new middle office	4
Derive value from data	4
Become guardians of the data	4
Centralize data management and reporting	4
The provision of value by service providers	5
The service provider enterprise data management solution	6
Unstructured data	7
Predictive analysis	7
The service provider reporting suite	7
The DaaS option	8
Benefits of the new middle office	8
Insulation from vendor risk	8
Less customization required	9
Restoring user trust in data	9
The future belongs to those that keep data safe	10

Introduction

To gain an advantage in today's hypercompetitive world, asset managers must not only evolve their operations, but they must also discover new ways to leverage them. Managers must be operationally adept; particularly in a business that grows more costly and complex, they need an infrastructure that will equip them to better meet client needs, satisfy regulators and compete more effectively. But the days when operating systems were considered just the plumbing behind the real business of asset management are long gone. Sophisticated managers now understand that operations lie at the heart of a firm's value chain, knitting together the back, middle and front offices, and providing the critical infrastructure for everything an investment organization does.¹

Traditionally, an investment management firm's middle office has been cast in the shadow of the front and back offices. While consensus is building that the middle office is largely an untapped source of value, it's often viewed as a cost center supporting mundane, ancillary activities, sandwiched between its more important counterparts.²

Mundane or not, the demands now being placed on the middle office are greater than ever—increased regulatory requirements, daily performance returns, closely monitored enterprise risk, and new client reporting challenges are putting unprecedented pressure on the middle office. Adding to these functional requirements, the middle office must also support an increasingly complex set of financial instruments, an increasing flow of unstructured data, and a heightened demand for data governance and quality.

In this paper, we consider the above factors, how they are influencing the new middle office and attempt to answer the following questions:

- › How can more value be derived from middle-office operations?
- › What can the new middle office do to provide more tools, better information, and improved insights?
- › How can we better use the data that is at the core of the new middle office?
- › How are middle-office service providers responding to these changes?

The problem with traditional approaches

Suboptimal and potentially dangerous data practices

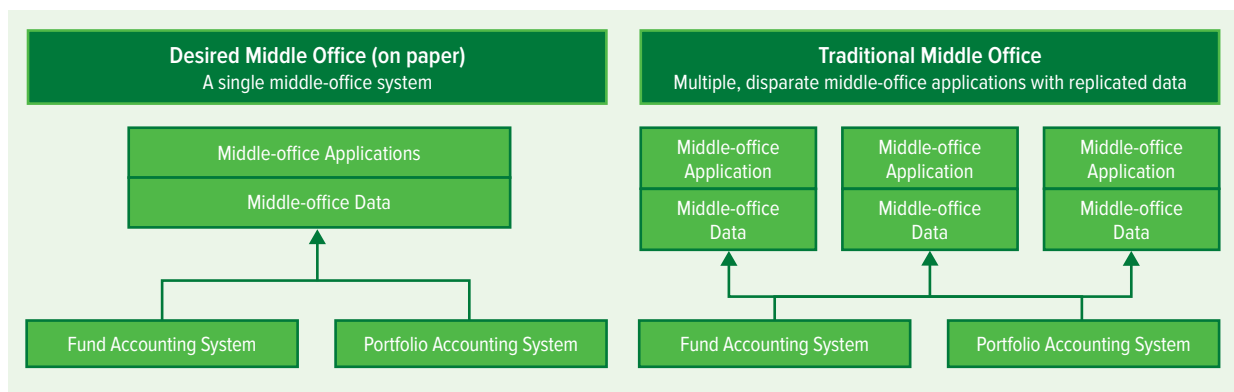
Data is the lifeblood of all investment management firms. Many firms, however, find it difficult to unlock the value of the data that flows through their organization. This challenge is often rooted in the middle office, which is betwixt and between the relatively straightforward functions of the back and front offices. In contrast, middle-office functions can be nebulous and hard to pin down, making it particularly challenging to put effective systems and processes in place.³

The middle office is theoretically the guardian of a firm's important data and is where much of its potential value is harnessed. The reality, though, is that many firms continue to rely on traditional operating models where reporting and analysis are based on front- or back-office systems. This model inevitably leads to the implementation of multiple reporting tools, each based on its own underlying application. The result is that different report sets are generated and delivered using disparate presentation approaches which results in varying interpretations of the same underlying data. Furthermore, reporting is often generated directly from various vendor- or service provider-owned systems that are likely to interpret the same data differently.

Business users are understandably frustrated. Common concerns include:

1. Questionable data quality/accuracy from the organization's core applications
2. Poorly presented data from the application
3. Excessive time to run reports or extract data from the application
4. Insufficient history stored by the application

Given these aggravations, it comes as no surprise that business users often resort to maintaining their own separate data stores. This can extend to users relying on their own data visualization and reporting tools to create their own presentation layer. The most common example is business users running readily downloadable Business Intelligence (BI) tools, such as Tableau or QlikView, against their personally maintained Excel spreadsheets or SQL Server databases and analytical tools.



Source: SEI.

This approach causes inconsistency and inefficiency within firms, leading to costly and time-consuming daily reconciliations between systems. Relying on business users to maintain stand-alone spreadsheets and databases makes a bad problem worse, and can be detrimental to the health of an organization. In addition to increased costs, the firm is exposed to risk associated with a lack of data governance. Also, user efforts are likely duplicated since there is no centralized group responsible for managing data sets. Each of these barriers prevents the firm from being able to maximize the value of its data.

Why is change so difficult?

How do investment firms break free of this model? The answer is to centralize data management, data stewardship, and data governance and to report data to consumers through an intuitive user interface.

This is easier said than done. You can't buy a single "middle-office system." There isn't one. The middle office often shares usage of core systems designed for the front and back offices, with supporting, function-specific applications as required. For example, a compliance team will likely leverage the pre- and post-trade guideline monitoring capabilities of a front-office Order Management System (OMS). The portfolio performance team likely will use elements of the performance measurement and attribution systems purchased primarily for portfolio managers. An enterprise risk team will use elements of the risk systems implemented for front-office risk attribution and analysis. In some cases, even the investment accounting function of an asset manager or service provider may be leveraging an application that was built for back-office (fund accounting) purposes.

Even if there were a single middle-office system, a firm probably wouldn't want it. Trying to change even one component of a single, integrated system can drain resources and be costly. Taking a more modular approach to building a middle-office services platform allows asset managers to be more flexible over time. When a platform uses a few different systems, firms can swap out components, as they get stale or too costly and can create different business workflows between components to support different use cases.

The new middle office

Derive value from data

Given the traditional model described above, it is clear that firms that want to better leverage their middle office will need to do more than simply upgrade a single legacy application. Any serious effort to unlock the value of the data coursing through the middle office will require an Enterprise Data Management Platform consisting of:

- › **Data store or data warehouse** – a centralized data repository
- › **Data governance** – to ensure data quality through real-time oversight
- › **Data services** – Application Processing Interface (API) layer for exposing data from the data store or data warehouse and making it consumable by an ingesting application; a good data services layer also allows data usage to be monitored
- › **Data visualization** – Make the data sourced from the data store digestible by multiple end users in a way specifically relevant to them
- › **Technology stack** – extensible architecture that allows you to make changes as your platform needs evolve or as new technology comes to market

Become guardians of the data

Who has responsibility for owning and managing the data management platform? While IT departments can support the technology, it's also necessary to define ownership for the daily governance and stewardship of the organization's data. While the front and back offices are important users of, and/or contributors to data, the guardian of the organization's biggest asset lies squarely in the middle office.

The level of success that the new middle office has supporting data stewardship, data governance, and data quality management will directly affect how well the organization executes the rest of its operations. The impact—and risk—should not be underestimated.

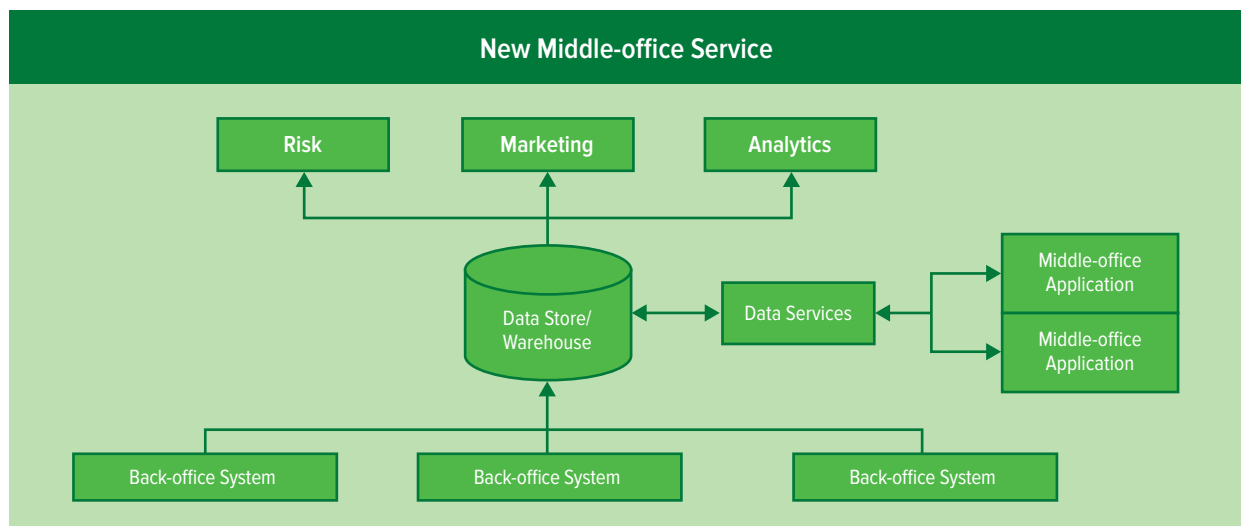
Centralize data management and reporting

Under a new centralized model, data flows from source systems into an enterprise data management platform where it is validated, cleansed, mastered, and then distributed as required.

Distribution includes feeding front-office applications with Investment Book of Record (IBOR) data upon which portfolio managers will base their daily investment decisions. IBOR is a snapshot of a firm's positions and cash, updated continuously based on market events and investments. Its counterpart, the Accounting Book of Record (ABOR), is what a firm believes it held at a specific point in time (typically end of day or monthly) that is updated according to market events and investments once per period. In addition to informing investment decisions, data distribution supports the daily maintenance of a data management platform.

In the previous section, we highlighted the inefficiencies associated with multiple reporting tools running against siloed applications in the traditional application-based operational model. In a centralized reporting environment, data received from vendor applications, service providers and external sources is processed and categorized by the data management platform. The data store/warehouse then supports the various reporting requirements of the middle office, (e.g., performance, enterprise risk and client reporting).

Centralized data management does not benefit only the middle office. The front office can use a data management platform to visualize data in ways not supported by traditional front-office applications. For example, instead of relying on two separate report sets from two different risk management systems (e.g., supporting short- and long-term risk respectively), a data management platform can easily meld those two data sets into a single report, which analyzes both short- and long-term risk for the portfolios managed.



Source: SEI.

The concept of centralized data stores is not new, but traditionally they have been fed from multiple application sources, making it challenging to maintain data consistently. The differentiator in the new operational model is that it uses the data management platform and centralized data stewardship and governance to cleanse, categorize and channel mastered data into the data store/warehouse.

The provision of value by service providers

The ability to extract maximum value from the new middle office will be dependent on the entire data management platform working in concert:

- › The data needs to move from the underlying systems to the data store/warehouse
- › The quality of the data needs to be verified
- › The reporting and data visualization tools need to call and present the data

One problem for firms is that implementing a true data management platform can be an expensive and risky undertaking. System evaluation, selection and procurement are a significant undertaking. Defining and implementing the required data validations, transformations, and the mastering process is a costly and time-consuming exercise that will require significant attention and resources on an ongoing basis.

In response to these challenges, we are seeing a trend toward Data as a Service (DaaS) offerings from service providers. To alleviate the need for clients to develop and implement their own data management platforms, some service providers are now making their own data management platforms available for their clients to use.

The service providers that are introducing such client-configurable data management platforms should support the entire data management platform rather than just a single set of data (i.e., positional data but not transactional data), a certain period of time (i.e., current year but without historical data) or a portion of the client's book of business (i.e., Private Equity data but not the separate account data)—ensuring consistency and efficiency of the final solution. Alternatively, a client can manage data storage components of the data management platform on its own, but outsource integration and support to a third party, or vice versa. Partnering with the right provider is essential for the latter, piecemeal implementation, because asset management firms need a provider whose data management platform is both source and destination agnostic.

To complete the picture, service providers can provide standard, client-configurable data visualization and reporting packages that sit on top of an asset manager's proprietary data store/warehouse. This integration, using best practices, can create a larger value-added service and has a greater return on investment compared to a data management project, which can carry a hefty price tag.

In any of the scenarios listed above, the asset manager should always retain ownership of their data. Whether a firm's entire data management platform or only specific components are outsourced, the manager should ensure it has access to the data in its most raw form, not simply through systematic reporting and data visualization facilitated by the service provider. This can be accomplished through direct database access, APIs or via contractual workflows that produce portable data sets that the manager receives. Some service providers will even create client-specific data stores where the manager has direct read/write access to database and has the ability to extend the data set. An arrangement like this opens many avenues to a technically savvy manager while providing full transparency and portability of the firm's data, even though the data store itself is not physically located at the manager's site.

The service provider enterprise data management solution

The data management platform required for the new middle office can be provided as an extension of the suite of options provided by service providers.

Asset managers who already outsource send their trade data, for example, to service providers to update their investment book of record and to support downstream processing. This data can now also be routed to the service provider's data management platform.

The asset manager helps define the data that will be supported and the processes for how that data will be distributed to downstream applications. The range of data available, and the frequency of update and maintenance, is configurable. The service provider provides the technical implementation and support. The result is an asset manager-configurable outsourced data management solution.

The value proposition to the manager is significant. No longer does the manager need to support multiple reporting tools, which access disparate vendor provided systems, proprietary databases or data warehouses. The data management platform provides one-stop shopping and supports all reporting needs, using the manager's preferred reporting/data visualization tool. There is cost savings as the result of reduced support and maintenance and, importantly, this approach provides data consistency.

Reporting sourced from different systems generally leads to reports that show conflicting results. A centralized data management platform, however, generates reports from a central data store or a “single version of the truth.” Thus, over time, the asset manager can achieve consistent, reliable, trusted reporting across the organization. The time frame within which benefits are realized is generally dependent on the complexity of data, the volume of data, the number of source systems, and the number of downstream applications that need to consume the data.

Unstructured data

Asset managers’ use of alternative investments and other new and evolving instrument types have increased exponentially over the past decade. The related analysis conducted by asset managers generates large amounts of unstructured data, (e.g., documents, PDFs, graphs, etc.), which need to be sifted and analyzed to support decision-making.

While most organizations focus on initiatives dealing with structured data, they must not lose sight of the opportunity to derive significant business value from properly harnessing the power of unstructured data. IDC has estimated that such unstructured content already accounts for an astounding 90% of all digital data, much of which is held across a variety of different data stores, in different locations and in varying formats.⁴ The data management platform of the new middle office will be designed to support unstructured data. This goes beyond optical character recognition, to the next set of applications that can process and analyze large amounts of unstructured data and produce predictive results.

Predictive analysis

Given the sheer potential size of a data warehouse, significant opportunities exist for artificial intelligence, machine learning, predictive and prescriptive analysis. In the SEI paper, “The Upside of Disruption,” we explored the idea of “Watsonization” and how cognitive computing is transforming how things are discovered, interpreted, decided and accomplished and its potential impact on the investment management industry.⁵ By leveraging cognitive technologies, such as IBM’s Watson or Microsoft Azure’s Cognitive Services platform, asset managers can establish a competitive edge, even as alpha becomes more elusive. In terms of portfolio management, the front offices of asset managers BlackRock and Bridgewater Associates, for example, are trending toward use of cognitive algorithms for predictive analysis of unstructured data to inform investment strategy.

While there are a few asset managers leading the pack in this regard, the vast majority simply do not have the clean and appropriately governed data necessary to benefit from predictive analytics yet, let alone the in-house skill set to determine what questions need to be answered and how those answers can be predicted. The new middle office is changing that, and the benefit of the new data management model has the potential to increase exponentially as cognitive learning technologies mature and gain further use in risk management and operational optimization.

The service provider reporting suite

In the new enterprise data management platform where all of the data needs to be presented, a robust reporting and visualization tool is essential.

Service providers are making use of the latest visualization and reporting tools to produce a suite of charts, diagrams and reports based on their enterprise data stores. While the base suite of reports and visualizations can be seen as “standard,” the latest tools are highly configurable. Asset managers will be able to take the standard service provider report set and customize this to satisfy their unique requirements

without extensive development efforts. Some providers also support a bring-your-own-application (BYOA) approach for reporting and visualization. This approach allows the manager to choose a tool that meets their specific needs or a tool that already has an established presence within their firm. These providers are providing an API service layer to simplify the integration between applications.

The DaaS option

If we consider the aforementioned model, the possibility of providing DaaS becomes very real. In its most simple form, DaaS employs cloud-based data storage. However, DaaS, as delivered by service providers, offer a one-stop shop for asset managers who may pick and choose components to add onto their current in-house platform. If the manager is already a client of the provider, they may choose to extend their current list of services they are getting from that provider by adding data management services.

Many clients have been hesitant to adopt cloud-based tools over security concerns. The fact is, a considerable number of vendor applications and service provider solutions already are supported under an application service provider (ASP) framework that is essentially using cloud-based storage at some level. Firms would be hard-pressed to find a vendor application or service provider who has not moved, or is not exploring the option of moving, to the cloud, whether private or public.

Due to perceived security and regulatory risks and lack of a compelling economic rationale, many banking and other financial institutions historically have not embraced public cloud services provided by firms such as Amazon Web Services and Microsoft Azure. According to a Wall Street Journal article, however, “the pressure to cut infrastructure costs and increase flexibility, paired with more security and compliance services from the cloud vendors, has boosted banks’ willingness to explore the technology.”⁶ Researchers at Deutsche Bank were told by some bank IT executives that they could go from “zero use of the cloud compute or IaaS (Infrastructure as a Service) model today to 20% to 30% (mostly for dev/test workloads) within 3 years,” an extraordinary growth trajectory.⁷

The future of large-scale data management platform solutions will require significant data storage capabilities, for which cloud-based computing is a natural solution.

Benefits of the new middle office

Implementing the new middle office can be challenging, but the improved tools, insight and productivity that accompany it bring tangible benefits, including greater operational efficiency, improved transparency, and reduced business and investment risk. These alone should be enough to convince most investment firms to consider at least the new middle-office approach as they face unprecedented levels of competition and regulation. There are nevertheless several additional benefits that are worth highlighting.

Insulation from vendor risk

Bloomberg’s acquisition of Barclays BRAIS and FactSet’s acquisition of BISAM (as well as industry rumblings of some legacy investment accounting systems to end soon) have highlighted the risks associated with vendor loss. Because individual vendor applications provide unique functionality as well as support for associated reporting, clients are increasingly dependent upon the individual applications that support their best-of-breed application model. In addition, the management of the data used by vendor systems is controlled by the vendors, (e.g., the usage of vendor-supplied security master and market data). Finally, and perhaps most important, the data created and saved by vendor applications is often housed only on that vendor application, which means that the organization’s historical data is sitting outside of the organization on a system that may not be in existence 18 months from now.

With a traditional application-based operational model, the asset manager is dependent on vendors and, thus, sensitive to vendor loss. The new middle-office model, however, can insulate the manager from vendor risk. With a centralized data management platform, data maintenance and storage is not the responsibility of individual vendors. Rather, data sourced from each of the asset manager's vendors is cleansed and categorized by the data management platform provider. The data management platform becomes the central data repository for the organization. If a vendor is lost, there is no need to initiate a project to extract all the historical data from that vendor's system and remap it to the replacement application.

Creating an abstract data layer, essentially a general data set built to be leveraged rather than for a specific-use case, allows firms to move reporting functions from underlying systems to the data management platform layer. Aside from the benefits of having data in one place, a good data management solution also alleviates the reporting burden of other systems. Back- or front-office systems rarely have robust reporting capabilities and, particularly where multiple systems are used, users typically will have different experiences. Moving reporting to the data management layer allows for consistent reporting across data sourced from all underlying systems. Additionally, this move also gives the manager more flexibility to select which systems they use. Once a data management platform is in place, upgrading or changing systems becomes much easier. All that is required for the new system is a onetime integration and mapping exercise to the data management platform.

Less customization required

While there are legitimate reasons for bespoke reports and processes, customization is expensive, time consuming, and resource draining. With required data fully defined and populated in the data management platform, the need for the report customization is minimized. The traditional application-based operational model forced reporting tools to link data sets from different sources and applications together, which often led to slow running reports with complex logic. The data management platform, as supported by the new middle office, presents all of the data needed by the enterprise in one place. End-user visualization and reporting becomes an exercise in slicing and dicing data that is readily available.

The new middle office recognizes this issue and presents an environment that allows the business user access to the data they need from a governed, supported environment. By providing the reporting and visualization toolkits that business users are already employing, the new middle office offers a solution in an enterprise-supported secure framework that ensures consistency and governance of the end results.

Restoring user trust in data

One of the greatest benefits of the new middle office is its potential to restore business user trust in data. If the business users do not trust the quality of the data and, in turn, the systems presenting that data, they will not use those systems or the outputs of those systems; instead, they will create their own work-arounds and subsystems. The new middle office governs the data used by the organization and restores business user trust in that data. The middle office also needs to make sure all users and potential users of the data understand the current state and the future road map of the data.

The future belongs to those that safeguard data

Investment management firms face unprecedented challenges, including the exponential growth of data volumes, diminishing opportunities to generate alpha, and a looming arms race in artificial intelligence and machine learning. Asset managers are looking for competitive advantages wherever possible, and it is in this context that the new middle office is stepping out from the shadows to assume the role of guardian of a firm's most valuable asset: data. By using a data management platform to proactively steward the organization's data and support consistent and governed reporting, asset managers can harness value throughout the organization.

To generate the most value from data, the new middle office transforms structured and unstructured data from a variety of sources into valuable information and actionable knowledge. It does this by leveraging advanced reporting and analytics technologies, replacing disjointed application-based models, ungoverned databases, and siloed reporting tools, dashboards and portals. The value of this shift is apparent in improved investment decision-making, risk mitigation and increased efficiency. The new middle office will support the demands of increased regulatory reporting, facilitate greater demand for investor transparency, insight into front-office strategies through advanced data quality, availability, and predictive analytics.

For asset managers looking to further leverage their partnerships with their service providers, or for those that do not want to invest in a data management program, service providers are offering DaaS to their clients with access to the full suite of data management functions. This environment encompasses a secure data architecture, including data control, governance, quality management and stewardship, as well as advanced reporting and analytics through visualization tools and reporting.

While the traditional middle office may be described as mundane, its next evolution is anything but. Serving as the key conduit between operations and investments, the new middle office represents the future of asset management where cutting-edge technologies enable the things that have always mattered the most: optimizing the client experience, cultivating relationships, delivering optimal risk-adjusted returns, and running a successful business.

About SEI

SEI (NASDAQ:SEIC) is a leading global provider of investment processing, investment management, and investment operations solutions that help corporations, financial institutions, financial advisors, and ultra-high-net-worth families create and manage wealth. As of September 30, 2017, through its subsidiaries and partnerships in which the company has a significant interest, SEI manages, advises or administers \$845 billion in hedge, private equity, mutual fund and pooled or separately managed assets, including \$325 billion in assets under management and \$516 billion in client assets under administration. For more information, [visit seic.com](http://visit.seic.com).

About SEI's Investment Manager Services Division

Investment Manager Services supplies investment organizations of all types with advanced operating infrastructure they must have to evolve and compete in a landscape of escalating business challenges. SEI's award-winning global operating platform provides investment managers and asset owners with customized and integrated capabilities across a wide range of investment vehicles, strategies and jurisdictions. Our services enable users to gain scale and efficiency, keep pace with marketplace demands, and run their businesses more strategically. SEI presently partners with more than 300 asset owners and investment managers of traditional, alternative and hybrid structures representing \$16.5 trillion in assets, including 36 of the top 100 managers worldwide. For more information, [visit seic.com/ims](http://visit.seic.com/ims).

Sources

- ¹"Evolving in the New Operational Frontier," SEI, December 2014.
- ²"Middle Office: A hidden source of competitive advantage," SEI, May 2016.
- ³"Middle Office: A hidden source of competitive advantage," SEI, May 2016.
- ⁴Jaikumar Vijayan, "Solving the Unstructured Data Challenge," CIO from IDG, June 25, 2015.
- ⁵"The Upside of Disruption: Why the future of asset management depends on innovation," SEI, June 2016.
- ⁶Steven Norton, "Big Banks Starting to Embrace Public Cloud, Deutsche Bank Says," The Wall Street Journal, June 9, 2016.
- ⁷Brandon Butler, "Deutsche Bank: Nearly a third of finance workloads could hit cloud in 3 years," Network World, June 14, 2016.

The Investment Manager Services division is an internal business unit of SEI Investments Company. This information is provided for education purposes only and is not intended to provide legal or investment advice. SEI does not claim responsibility for the accuracy or reliability of the data provided. Information provided by SEI Global Services, Inc.

SEI Knowledge Partnership

The SEI Knowledge Partnership is an ongoing source of action-oriented business intelligence and guidance for SEI's investment manager clients. It helps clients understand the issues that will shape future business conditions, keep abreast of changing best practices and develop more competitive business strategies. The SEI Knowledge Partnership is a service of the Investment Manager Services division, an internal business unit of SEI Investments Company.

Connect with Us

Twitter: @SEI_KP

LinkedIn: SEI Investment Manager Services

For more information

Call: 610 676 1270

Email: ManagerServices@seic.com

Visit: seic.com/ims

United States

Corporate Headquarters
1 Freedom Valley Drive
P.O. Box 1100
Oaks, PA 19456
+1 610 676 1270

United Kingdom

1st Floor
Alphabeta
14-18 Finsbury Square
London EC2A 1BR
+44 (0)20 3810 7570

Ireland

Styne House
Upper Hatch Street
Dublin 2
+353 1 638 2400