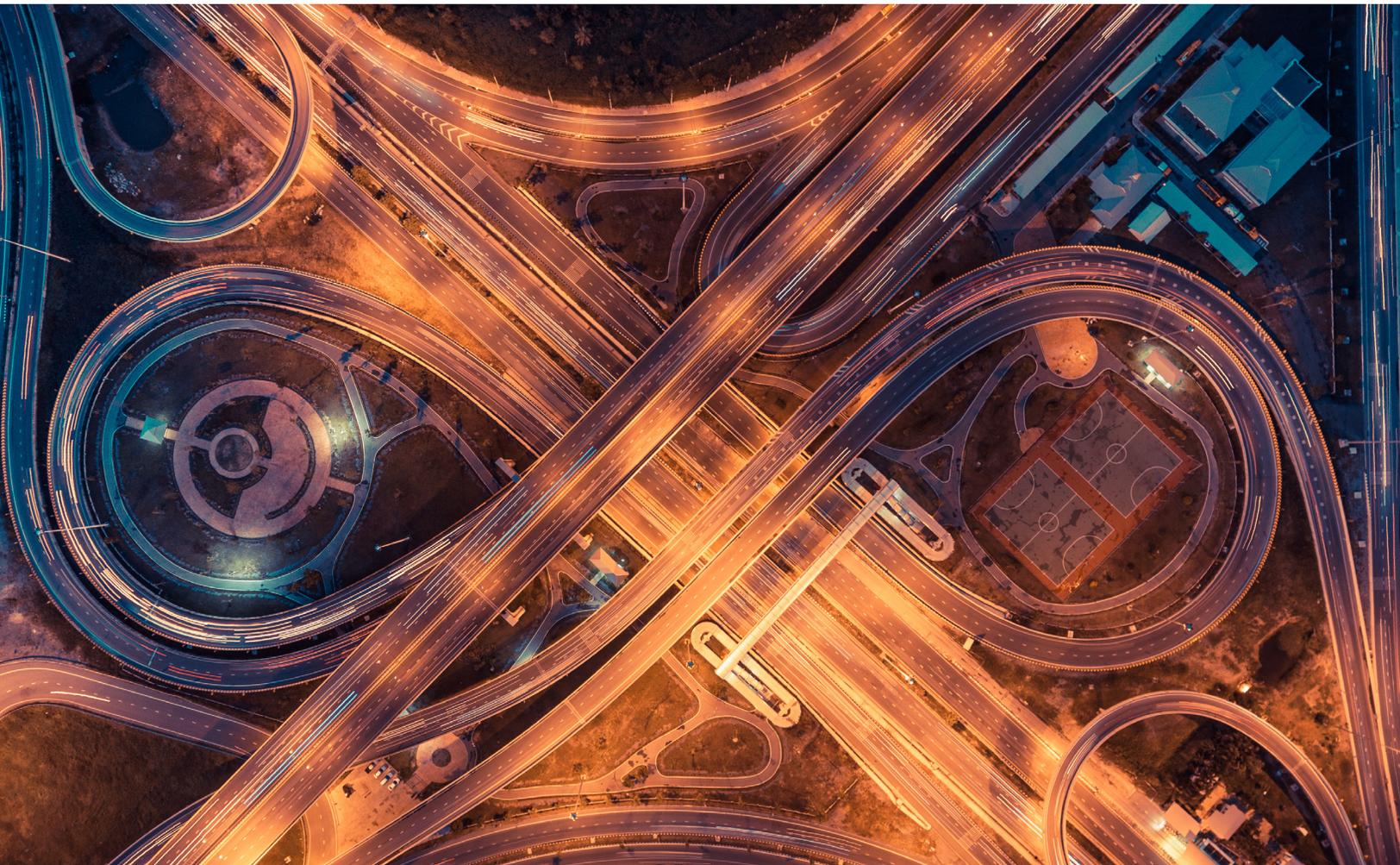


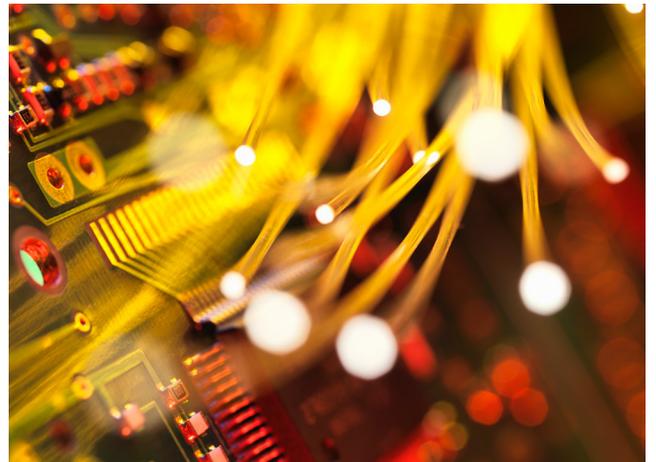
Consolidated Audit Trail

Is the industry finally ready to get strategic about regulatory reporting?



INTRODUCTION

The U.S. Securities and Exchange Commission's (SEC) Consolidated Audit Trail (CAT), focused initially on equities and options, is the latest significant effort globally to increase the transparency of capital markets trading while ensuring competition and fair customer treatment. Similar to many other regulatory efforts in different asset classes such as Dodd-Frank OTC trade reporting, the CAT involves shifting timelines, large changes in technology, operations and processing flows. The need to get all the data elements right, continued uncertainty of how it will shape the industry requirements over time, and the already-missed deadlines for the initial implementation have added to its complexity.



In this report, you'll discover:

THE REGULATORY REPORTING JOURNEY

HOW IS CAT DIFFERENT?

THE TOP FOUR CHALLENGES OF CAT

HOW TO TURN CHALLENGES INTO ADVANTAGES

THREE APPROACHES TO CAT REPORTING

MOST CRITICAL CAT REPORTING CONSIDERATIONS

LEVERAGING COMPLIANCE FOR STRATEGIC VALUE

The CAT imposes fundamental changes in how SEC-regulated banks and broker-dealers manage information and reporting, as well as how they relate to others in the market. It will incur costs for the entire financial community – with the majority of the burden shared by broker-dealers and exchanges.

However, if firms approach CAT reporting correctly, they can leverage the costs to help them capitalize on three main advantages:

1) effectively address future regulatory requirements and asset class expansions of CAT; 2) simplify and consolidate previous platform builds and processes to meet regulatory requirements outside of CAT – thereby reducing costs and enhancing operating models; and 3) repurpose CAT reporting data for strategic business initiatives and functions related to equities and options trading.

Currently, broker-dealers are caught in a difficult position: the final shape and timeline of compliance is uncertain. But planning must move forward and solution architectures must be identified. Once the details are finalized, the timelines may be tight depending on a firm's current situation.

Addressing this level of flux is challenging, especially with stretched resources. However, those firms who take this opportunity to look strategically at how CAT can be a catalyst for applying the agile technology and operational platforms designed to meet the challenges of continuing regulatory rollouts and changes to existing regulations, will have an advantage in meeting the ongoing regulatory requirements cost effectively. On the other hand, firms who take a “wait and see” approach are more likely to replay the MiFID II scenario – although a one-year delay was granted, firms and regulators were still sprinting to the finish line, and many seemed to falter down the homestretch.

The next few months will be the most crucial time for firms in U.S. equities and options markets as they weigh their options: either proactively adopt a strategic approach that can handle the long-term needs of trade event reporting, or wait and work through yet another tactical patch for another reporting regime.

Now is the time for firms to take a strategic view of how implementing CAT compliance can streamline their technology and operations, leverage partnerships to mutualize the cost of current and future regulatory changes, and get ahead of today's challenges to capitalize on what's coming next.

ADVANTAGES OF CORRECT CAT REPORTING

ADDRESS FUTURE REGULATORY REQUIREMENTS and asset class expansions of CAT.

SIMPLIFY AND CONSOLIDATE PREVIOUS PLATFORM BUILDS and processes to meet regulatory requirements outside of CAT– thereby reducing costs and enhancing operating models.

REPURPOSE CAT REPORTING DATA for strategic business initiatives and functions related to equities and options trading.

THE REGULATORY REPORTING JOURNEY

When new reporting initiatives such as the Dodd-Frank CFTC rules went into effect, many firms built their regulatory reporting solutions in-house in a tactical manner to meet tight deadlines and short-term needs. As other mandates were introduced globally, firms had to create separate infrastructures and solutions for these jurisdictions.

In addition, it was not unusual for firms to underestimate the many changes to regulations subsequent to the initial go-live dates. For example, the European Securities and Markets Authority (ESMA) implemented three levels of EMIR trade reporting over a few short years (its Level 3 validations just went live on November 1, 2017), each adding another layer of complexity and cost. As a result, many firms never had a chance to achieve a strategic, end-state regulatory reporting infrastructure that accommodates frequent changes while covering multiple jurisdictions.

This reactive, tactical approach to meeting regulatory requirements has its consequences, often resulting in high initial investments and even higher ongoing maintenance costs for IT and operations. Specifically, this tactical approach created several disadvantages, including:

- **THE NEED TO REBUILD** or significantly re-patch every time an upgrade is required
- **MISREPORTING** and remediation due to poor control of static customer and reference data
- **LACK OF VALIDATION** and ability to view data before submission
- **LACK OF TRANSPARENCY** of data lineage
- **POOR END-USER OVERSIGHT** of underlying decision logic and status of submissions
- **CUMBERSOME OR NON-EXISTENT** exception management
- **INABILITY** to add future asset classes as they come into scope



Firms are now feeling the urgency to carefully examine their existing and future regulatory reporting structures, as the costs and effort to maintain existing approaches become unsustainable. Also, the industry needs to shift the burden from a regulatory cost to an investment that adds business value over time. The value assessment begins with a closer look at how the CAT is truly different from any other regulatory regime to date, and the challenges firms face to comply.

HOW IS CAT DIFFERENT?

Compared to other regulatory reporting regimes, CAT is unique in terms of its sheer magnitude of data ingested and processed, its potential to drive greater data consistency and quality, and its ability to connect trade events across firms.

Every day, the CAT system will take in 58 billion records – orders, executions and quotes for the equities and options markets – and will maintain data on over 100 million institutional and retail accounts and their unique customer identifying information. As currently envisioned by the self-regulating organizations (SROs), all this data would be accessible by thousands of users. The CAT data would grow to an estimated 21 petabytes within five years – the equivalent of over 10 times the content of all U.S. academic research libraries, all in a single database.¹

Because CAT is a single industry repository, it is expected to lead to a more consistent representation of order-level information. In contrast, other jurisdictions have supported multiple reporting destinations or trade repositories (TRs), which have led to inconsistencies and poor cross-industry data quality. Compared with MiFID, in which a transaction report includes a common prescribed representation of a counterparty (LEIs or variations on National IDs for personal individuals), the CAT repository will link cross-firm trade events together. However, this places the burden on firms to create an internal, cross-system identifier (the Firm Designated ID, or FDID) versus leveraging an industry standard.

What this means for an individual firm is that a vast universe of its own customer, account and order data will be more complete, consistent and connected, and will be at its disposal to use for a variety of strategic purposes. But it is also wrought with significant challenges to overcome.

“Compared to other regulatory reporting regimes, CAT is unique in terms of its sheer magnitude of data ingested and processed, its potential to drive greater data consistency and quality, and its ability to connect trade events across firms.”

58 BILLION

The number of orders and quotes for the equities and options markets taken in by the CAT system each day.

TOP FOUR CHALLENGES OF CAT

Firms face four main challenges in meeting CAT requirements: volume, timelines, data lineage and links, and finally, cost.

1. VOLUME

The CAT is not referred to as a “giant” trade database for nothing. Data volume will be much higher than any regulatory reporting regime before it, combining U.S. equities and options markets, which are the largest in the world. The CAT is expected to receive data from thousands of firms, large and small, on roughly 58 billion daily transactions and maintain data on over 100 million institutional and retail accounts and their unique customer identifying information.¹ As such, each firm is expected to gather and prepare a greater amount of data due to its complexity, which could take a dramatic toll on internal resources.

2. SHIFTING TIMELINES

FINRA, other SROs and exchange operators were supposed to begin CAT reporting on November 15, 2017, and the industry reported that final specifications were to be published that day. On November 13, 2017, the participants filed a request for Exemptive Relief which proposed updating timelines for the implementation of CAT. Since the SEC has not acted upon this request as of now, SROs are moving forward with development according to the proposed dates and are looking for possible

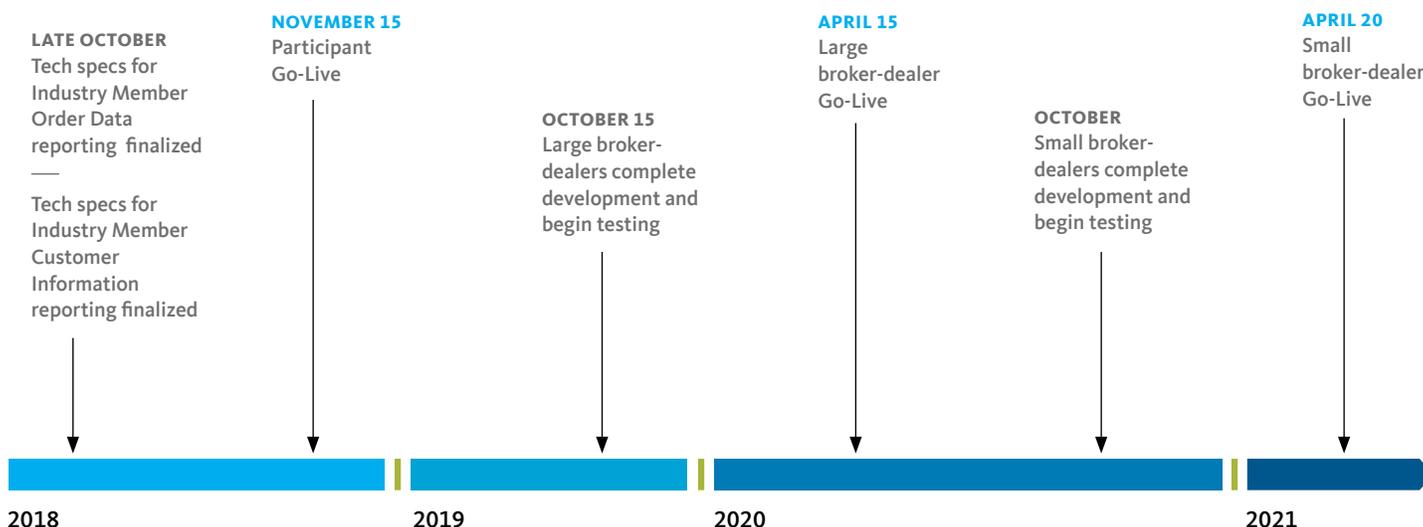
ways to shorten the timelines.² Once it is solidified, the challenge becomes how quickly firms can react. For many firms, additional integration work into what may have already been built, could be required.

In the meantime, SIFMA continues to be in favor of extending deadlines to allow proper time to build and test such a complicated system, as well as alleviate the burden on broker-dealers to meet the deadlines without final specifications from the SROs.¹

3. GETTING THE DATA AND LINKS RIGHT

The most critical and challenging aspects firms must contend with are the complex data dependencies and the process of linking information with different types of events across multiple systems. Other major challenges relate to the need to reconstruct and bring together trade lifecycles and connections, while also linking back to FDIDs. In addition, firms will need to make changes to customer and account information on a daily basis and refresh their full set of customer and account information monthly or quarterly, as well as provide allocation information for the beneficial owners of the trade.

PROPOSED TIMELINES BASED ON EXEMPTIVE RELIEF REQUEST



Source: Industry Update on the Consolidated Audit Trail, December 19, 2017.

TURNING CHALLENGES INTO ADVANTAGES

4. COST BURDEN

Regulatory filings show that the CAT repository is expected to cost brokers and exchanges \$50.7 million for the fiscal year ending November 21, 2017, with broker-dealers bearing 75 percent of the costs.³ The remaining 25 percent will be picked up by stock and options exchanges, as well as alternative trading systems, according to the May 3, 2017 SEC filings by the exchanges and the Financial Industry Regulatory Authority (FINRA).³ Internal costs to implement CAT in 2018 and beyond have varying estimates per firm, but is expected to be significant.

The SEC estimated that the total annual cost of CAT would be \$1.7 billion, of which \$1.5 billion, or 88 percent, would be allocated to broker-dealers to meet their data reporting requirements. However, the cost allocation to large broker-dealers was recently reduced to 67 percent, or approximately \$81,000 per firm per quarter.⁴ In addition, the CAT NMS Plan estimates the implementation costs per large firms to be approximately \$5 million and \$3.6 million for maintenance.⁵ Per-firm costs to comply with the CAT would be reduced by mutualization.

These four challenges complicate firms' ability to reliably capture and report on customer/account information, order life cycle events and time stamps, and then process with the proper governance. In addition to the cost burden shared by all broker-dealers, small firms will be impacted the most: those who are currently exempt from recording and reporting requirements under OATS will no longer receive the same exemption for CAT, which will drastically change their operating cost structures.

Over time, firms will successfully overcome the challenges of meeting CAT reporting requirements with the right technology, process and governance. And with that achievement will come the opportunity to finally turn the check-the-box mantra of past and current regulatory mandates into a strategic business asset. CAT reporting can help firms create more business value in the future, in two distinct ways:

1. **Simplifying their long-term regulatory reporting technology and operations to successfully address the ongoing evolution of reporting regimes**
2. **Creating a solid data foundation to help firms offer better customer strategies, services and business value**

Broker-Dealers that can aggregate and manage this data correctly can benefit from a strong repository that feeds their other data strategies specific to the equities and options markets. Some of the key uses of this data include identifying and achieving a better understanding of trading patterns for enhanced decision making, strengthening customer strategies by identifying and crafting more competitive service offerings, and using analytics to increase the flow of trades from clients through these new services.

A graphic consisting of the numbers '88' and a percentage symbol '%', where each digit and the symbol are formed by two overlapping circles. The graphic is white and set against a dark blue background.

Portion of the \$1.7 billion in 2017 CAT costs that broker-dealers will pay to meet data reporting requirements.

THREE APPROACHES TO CAT REPORTING

Firms seeking a CAT reporting solution, rather than build in-house, have three main options: modules offered through individual order management systems (OMSs), a separate vendor-specific CAT reporting solution, or a platform-agnostic, full-service regulatory reporting solution.

1. OMS PRODUCT EXTENSIONS/MODULES

Some software providers offer a CAT reporting module designed as an extension of its core OMS or trade surveillance product. With this type of solution, data is extracted from the core system (and only that system) and moved to a module that handles the CAT reporting. This is often the least costly option since the firm already has a relationship with the vendor, and the expense may be limited to the license and maintenance fee to use the module for CAT reporting.

However, this does not solve the full CAT reporting requirement, given that it is rare for any firm to use a single OMS across all asset classes, or even within one asset class. Such a modular approach does not take into account the multiple systems the firm may be using and needing to feed into CAT, especially as many OMSs do not contain the relevant name and address information required for the client static data reporting to CAT and for creating FDIDs. It also does not offer any data aggregation, provide standardized formatting across multiple systems, or give users a single view of transactions or submissions – which will be a significant issue as the industry anticipates a deluge of reportable events. Firms will need the ability to proactively monitor submissions to ensure they are correct and validate the rules to move forward.



2. TACTICAL CAT REPORTING SOLUTIONS

Vendor-specific CAT solutions enable data to be extracted from one or multiple OMS or trade surveillance platforms, and then send it to another solution to perform CAT reporting. Generally, compliance solutions designed for CAT reporting tend to be more robust than OMS modules. Many have data aggregation and translation capabilities, as well as data lineage tracking and rules that are applied to events as they come in, ensuring complete transparency of how data is flowing through the trade cycle.

“The downside to individual CAT reporting solutions is that the firm still needs to keep up with frequent or sporadic changes and iterations to CAT reporting specifications.”

The downside to individual CAT reporting solutions is that the firm still needs to keep up with frequent or sporadic changes and iterations to CAT reporting specifications, even though the vendor will likely provide software updates automatically to address them. The key issues are the need to make changes to system configurations, internal processes and procedures, retrain staff, and potentially involve IT, which adds to overhead costs and risk of errors.

3. FULL-SERVICE REGULATORY REPORTING

Strategic, full-service offerings cover not only CAT reporting and responses, but all other regulatory regimes across different asset classes and geographies. This means they effectively address the next regulatory requirements as well as any future asset class expansions of CAT – essentially putting an end to the reactive approaches to building yet another silo of regulatory reporting.

For the firm, full-service regulatory reporting does not require internal staff or systems to maintain, since the function is provided through a provider who manages the technology and operations while giving the firm direct control of its data. The service provides a strategic regulatory reporting platform that leverages an existing rules engine configured for multiple, complex trade and transaction reporting regimes, and eliminates the need for the firm to ever have to start from scratch with the next regulation.

Whether delivered as a software-as-a-service (SaaS) or a fully managed service, this approach accommodates multiple sources of trade data, regardless of platform, while providing data lineage and visibility – ensuring high data quality, which is crucial for analytics and tracing issues if erroneous results are produced. Many firms opt to invest in managed services to reduce regulatory risk and minimize the need for large internal compliance and operational teams. In addition, the services ensure the firm's information is visible and accessible for other uses through extensible data models and mutualize the cost of non-differentiating functions.

MOST CRITICAL CAT REPORTING CONSIDERATIONS

With a great deal at stake for meeting complex data requirements and shifting timelines, firms must carefully assess their technology options by first considering the most important CAT reporting capabilities.

AGILE DATA INGESTION

A CAT reporting solution or service must be able to ingest a firm's data on its preferred cycles, submit only when required including multiple times during the day, or batch submissions after validation. Therefore, a solution should be able to ingest any data over any time frame, and constantly monitor data to ensure the firm has the flexibility to report as needed, ultimately reducing issues with end-of-day (EOD) processes.

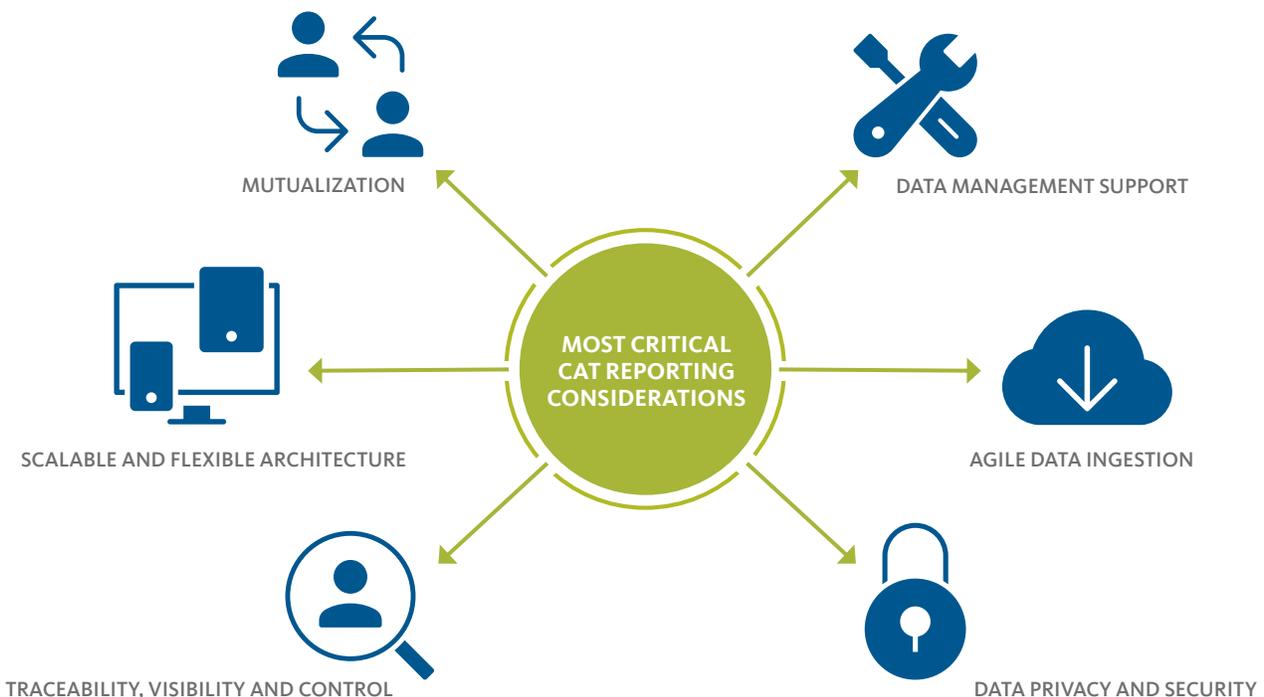
DATA PRIVACY AND SECURITY

With the unprecedented amount of data being stored in a central repository, the industry has raised concerns about securing customer and other sensitive data. In addition, some firms worry that their proprietary trading strategies may unintentionally be revealed to competitors. The right solution is crucial to ensuring firms safeguard the trust of their customers and the industry, as well as their own interests, by protecting their data.

MUTUALIZATION

Mutualization enables firms to share in the investment and innovation necessary to manage non-differentiating tasks and processes. This can provide cost savings and a more efficient operating model to each participating firm, allowing funds to be diverted to more strategic areas. In fact, Broadridge research suggests that \$2 billion to \$4 billion of the core post-trade processing costs across the industry could be eliminated through mutualization.⁶

Because regulations are essentially the same for every firm, mutualized rule sets – whether for Dodd-Frank, CFTC, EMIR, MiFID II or CAT reporting – save time and money since they are only built once and then deployed across many firms. The core rules deployed across multiple industry participants leverage common interpretations, while providing the visibility and flexibility to adjust the interpretation where needed. In other words, firm-specific rules can co-exist with core rules used by other participants.



LEVERAGING COMPLIANCE FOR STRATEGIC VALUE

SCALABLE AND FLEXIBLE ARCHITECTURE

The functional and technical architecture of CAT reporting should be scalable and accept data in any format and maps internal codes to standards such as the FDID. It should also be flexible in order to solve the complexity of multiple system environments, data requirements (including aggregation and volumes), and various rules for different reporting regimes such as CFTC, MiFID, EMIR, IIROC. Such architecture should be rules-based to allow for changes in logic as CAT evolves and new asset classes are implemented.

Firms often use a broad set of vendors or in-house systems, as many as five or more, that process items that will be reportable under CAT. They also have different strategic preferences in terms of integration and data extracts with existing in-house regulatory solutions. The architecture must also be able to handle aggregation, categorization, error and exception handling, as well as submission to the CAT repository. The CAT reporting solution should also be able to ingest OATS reports during the overlap period with OATS, and match them against the equivalent CAT reports to ensure consistency in reporting.

TRACEABILITY, VISIBILITY AND CONTROL

CAT reporting needs to allow for validation of content prior to submission, and it should provide a single operational process and view for issue and error correction through an end-user dashboard. It must also enable the firm to demonstrate adherence through transparency tools that show how data across systems and regimes has been sourced, transformed and evaluated to enhance compliance, as well as understand why information was reported or not reported.

DATA MANAGEMENT SUPPORT

It is essential for firms to limit the impact of CAT on their upstream systems. A CAT reporting solution that serves as a repository for designated IDs, and cross-references those IDs with those of other systems, eliminates the need to make major changes in multiple places. By selecting a best-in-class reporting platform, firms can address the complexity of compliance by reducing changes and gaining central visibility of data flows and enrichments necessary to make proper CAT submissions. This approach also eases the ability to test and adapt to future change.

In the world of the new CAT regime, firms must gain greater control and transparency in regulatory reporting. Fortunately, there are more and better options today to help them comply and reduce the internal burden on staff and systems. As firms are increasingly focusing internal technology efforts on things that genuinely differentiate their firms from the competition, the complexity and cost of CAT reporting make it an ideal function for mutualization.

The CAT reporting solution should evolve with the firm, giving it the ability to change its ecosystem around business needs rather than just compliance events. Its security and processing acumen should enable the firm to concentrate on their business, comply with regulations, and advance their data strategies through quality, well-tracked data models.

And ultimately, the exercise should deliver greater business value by addressing future asset expansions and regulatory requirements, simplifying platforms and processes to meet all regulatory requirements while reducing costs and enhancing operating models. Turning the cost of doing business into actual business value, CAT will offer a comprehensive, consolidated data set that never before existed at the regulatory or firm level in one place. The advantages of being able to mine full trading diaries and analyze short-term and long-term trading prospects, target customers better, and discover new business opportunities are virtually limitless.

A multi-jurisdictional, fully managed service solution with cross-asset class support, as well as the ability to adapt to change and make valuable data available to the firm for transparency and numerous applications, is the best option for any firm to solve CAT strategically and enable a best-in-class approach that delivers business value over the long term.

FOOTNOTES

1 Written Testimony of Lisa Dolly, Chief Executive Officer, Pershing on behalf of the Securities Industry and Financial Markets Association before the U.S. House of Representatives Committee on Financial Services Subcommittee on Capital Markets, Securities, and Investment Hearing entitled "Implementation and Cybersecurity Protocols of the Consolidated Audit Trail", November 30, 2017.

2 At the time this paper was written, December 2017

3 "New U.S. trading database to cost industry \$50.7 million this year," Reuters, May 5, 2017. <http://www.reuters.com/article/us-sec-database-costs/new-u-s-trading-database-to-cost-industry-50-7-million-this-year-idUSKBN1811WD>

4 Securities and Exchange Commission, Release No. 34-82253; File No. SR-FIN-RA-2017-011, December 8, 2017, page 66. <https://www.sec.gov/rules/sro/fin-ra/2017/34-82253.pdf>

5 Limited Liability Company Agreement of CAT NMS, LLC (CAT NMS Plan Current as of July 24, 2017), Appendix C-72 and C-73, pages 159-160. <http://www.catnmsplan.com/wp-content/uploads/2017/03/CAT-NMS-Plan-Current-as-of-7.24.17.pdf>

6 Trade processing functions include core post-trade and related functions (clearance and settlement, custody, financing, books and records, reference data, reconciliations, corporate actions, client life cycle management, tax and regulatory reporting) and trade expenses linked to executing brokers. Highly standardized asset classes defined as equities and fixed income, excl. OTC derivatives. Broadridge's analysis is based on internal models and Morgan Stanley/Oliver Wyman data. Savings estimate includes: 1) 20-40% reduction of \$6-9B in annual spending on core post-trade and related functions within highly standardized asset classes; plus, 8-10% reduction of \$5-6.5B in annual industry spending on trade expenses.

Broadridge, a global fintech leader with over \$9 billion* in market capitalization, provides communications, technology, data and analytics solutions. We help drive business transformation for our clients with solutions for enriching client engagement, navigating risk, optimizing efficiency and generating revenue growth. *As of November 2017

broadridge.com

Ready for Next

Communications
Technology
Data and Analytics

