



Big Data Solutions Ease Financial Services Compliance and Reporting

Real-time data collection and analysis helps ensure compliance and uncover new business opportunities.

INTRODUCTION

Between asset bubbles and terrorism threats, new regulations force financial institutions to do everything from vetting counterparties against “black lists” of banned entities to real-time global fraud detection. Paper-based processing, siloed product and customer information, manual workflows, and hard-coded business rules can’t keep up. Achieving and proving compliance in this real-time global environment requires real-time processing, Big Data architectures and data models, adaptable business rules engines, and sophisticated analytics.

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About NTT DATA

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Why Regulations Drive Big Data

To understand why compliance is driving the need for Big Data, consider Know Your Customer (KYC) and anti-money laundering (AML) regulations. They require institutions to monitor people and entities that are prohibited from conducting transactions with US financial institutions, with the monitoring extending beyond direct trading partners to board members, guarantors, and counterparties related to the customer. This raises questions such as:

- » When the list of prohibited parties is hundreds of pages long and updated frequently, how do institutions screen a new customer to comply with AML policies while onboarding them quickly?
- » How far into the customer's web of contacts does the AML assessment reach, given that regulators themselves are often unclear on how many levels of related institutions must be monitored?
- » Are institutions required to search unstructured social media data to detect suspicious connections or activity?

The answers to any of these questions could dramatically increase the volume, variety, and velocity of data financial institutions must manage. These are the “Three Vs” of Big Data. (See Sidebar.) Fraud detection, for example, depends on accurately identifying suspicious patterns and behaviors, and then enabling rapid, technology-based reconciliation of massive amounts of customer and transaction data from around the globe. Detecting insider trading may require scanning not only structured transaction data but also unstructured sources, such as news feeds and blogs for commentary designed to boost or depress stock prices.

Volume, Variety, Velocity

Big Data means more types of information that must be processed more quickly and in much greater volumes than ever before. Here's how the “Three Vs” of Big Data apply in financial services.

- » **VOLUME:** The sheer volume of data has exploded as detailed audit trails require better structured and unstructured customer data and metadata. At the same time, the number of regulatory-based business rules continues to grow dramatically and unpredictably. As rising volumes of data must be processed by increasingly complex layers of these business rules, existing systems struggle to keep up.
- » **VARIETY:** With each new regulatory measure, financial institutions capture, analyze, and report on evolving attributes of customers and transactions. Their systems must properly dissect text-based legal documents into actionable pieces of data, establishing useful metadata upon which to apply business rules relating to customers, transactions, and workflows. The myriad sources of data generate a greater amount of real-time information about customer and investor activity, much of it in unstructured or semi-structured form that is difficult for traditional data handling systems to capture.
- » **VELOCITY:** Customers expect to be onboarded in a day, not a week, and to have portfolio views, transaction data, and new products and services available instantly on the latest mobile device. Business managers want transactions completed, recorded, and transmitted to counterparties instantly, along with near real-time transaction monitoring and business reconciliation. Regulatory mandates require same-day transaction clearing, dramatically accelerating processing times and pushing batch processing into obsolescence.

Beyond compliance, better Big Data analysis can help the business. Detecting fraud across geographies early, before transactions are complete, limits institutional losses, and improves profitability. New data models that move from a product-centric to a customer-centric view unlock insights that can be used to improve day-to-day business performance, such as boosting liquidity through better collateral management. But reaping these gains requires fundamental changes in technology and processes.

Escaping Legacy Shackles

Too many financial institutions lack the agile, insight-oriented data platforms required to meet today's – and tomorrow's – needs. Many still lock business data into geographical silos aimed at meeting unique regional regulations. Too many risk, compliance, and business units are saddled with cumbersome paper-based processes and reports that focus on only a single asset class. And for too many, the business rules that assess data for business or regulatory reasons are locked within rigid, hard-coded applications and cannot easily be changed to meet new regulatory needs.

Fixing these issues takes money. Even if an institution is not facing budget constraints, its staff may lack the needed skills or be too busy handling manual processes to meet these challenges. No wonder so many are struggling to achieve cost-effective compliance and reporting, much less leveraging their data to drive the business.

Escaping from this bind requires linking processes, data, and technology to achieve more accurate, holistic views of their business. This meets today's need for regulatory reporting efficiencies and insights while uncovering tomorrow's opportunities that will drive growth.

A New Approach to Risk and Compliance

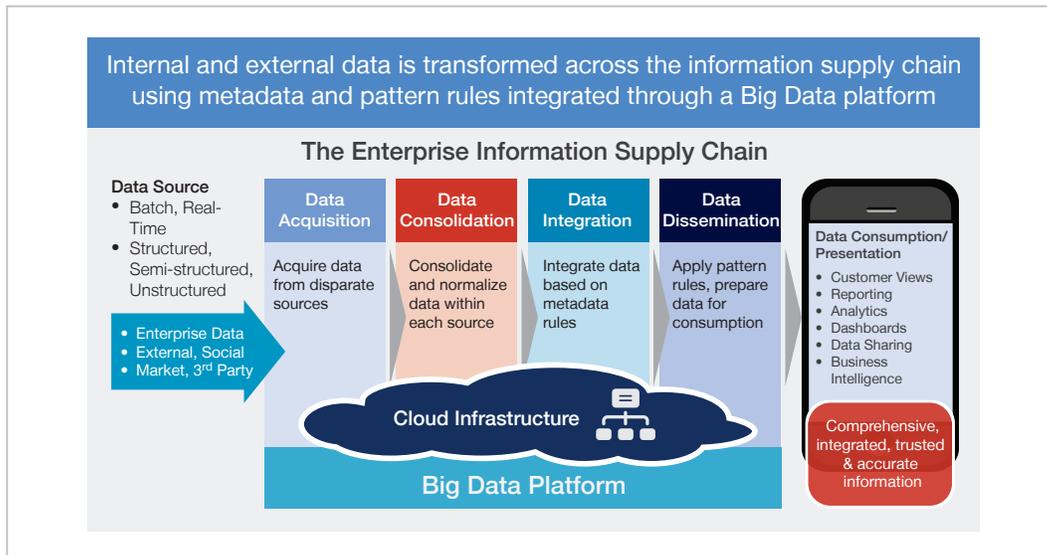
Imagine a world in which improved, automated fraud detection and compliance platforms integrate streaming data from facilities' scanners, logs, print queues, and other structured feeds in near real time. Risk and compliance staff monitor customizable real-time visualizations and alerts from multiple geographies on their smartphones and tablets.

When a new regulation requires a unique report or audit trail, IT can deliver it in days or weeks, not months or years. **Breaking internal silos across product lines not only simplifies audit trails but also uncovers new business opportunities** by giving managers a better understanding of all the business each customer does with the institution.

At the heart of this digitized, insight-driven approach is data. Every bit of information needed to better manage risk and ensure compliance must be identified, acquired, consolidated, and integrated. (See Figure 1.) Patterns and rules must be implemented to prepare the analyses for consumption through reports, analytics, and dashboards. Business rules must be freed from hard-wired legacy applications to easily adapt to changing compliance and business needs. And the technology architecture must be upgraded to apply these business rules in real time.

Reaching this new world requires significant changes in the data and technology that supports the enterprise. These center around Big Data technologies and skills to handle the increased volume, variety, and velocity of data, along with natural language processing to draw insights from documents and social media. The changes also require common data models, easily adaptable business rules, new platforms to speedily process large amounts of data, enhanced visualization capabilities, and new, more transparent workflows and audit trails.

Figure 1: Enterprise Data Supply Chain for Managing Risk and Ensuring Compliance



Using Big Data to ease compliance and reporting requires new tools and processes at every step, from data acquisition to its consolidation, integration, dissemination, and presentation to users.

Build a Stronger Foundation

Among the key foundational technologies for this new approach to risk and compliance management are:

1. **Common data models integrated among legacy and new systems.** The first requirement is to better link legacy systems, ranging from mainframe databases to document management systems, to more modern components so that older systems don't slow real-time, coordinated information sharing. Many organizations have already taken the first step by using "wrappers" or similar

technologies to give such older systems basic connectivity to newer platforms for end-to-end integration. Accelerators such as in-memory databases provide linear scalability to accommodate the volume and velocity of modern data streams. Low-cost, open-source highly configurable engines capture and dissect a variety of data, such as that created in social media, while machine-learning and natural language processing capabilities integrate this data through classification, regression, and predictive modeling.

2. **Nimble business rules.** Finding, examining, and changing the business rules that determine how the business runs is essential to efficiently meeting

new regulatory and market requirements. But business rules are often hard-coded within brittle, hard-to-change legacy applications. To comply with increasingly complex regulations about everything from underwriting to capital requirements, organizations need a central repository from which they can easily find and modify such rules. Business rules are growing in number and complexity, and they must be adapted more often and more quickly. Organizations should therefore consider new Big Data technologies and accelerators that allow them to manage, access, and execute these rules efficiently and effectively.

3. **Real-time processing for large volumes of data.** This helps quickly synchronize internal and external information, ranging from new rules and regulations to updates on customer transactions and on other parties with whom the customers are associated. It requires not the hosting of all data in a single location, but the ability to quickly access that data as needed, even if it involves millions of accounts or tens of millions of trades. Here again, Big Data solutions such as in-memory processing can help achieve the required scale and speed.
4. **Transparent workflows and audit trails.** Workflow visualization and traceability allow organizations to determine what rules were in effect at a given time, whether they were properly followed, and who took (or failed to take) the proper action. This backward-looking view that encompasses all geographies and asset classes not only aids AML and compliance audits but also improves business operations. For example, if an organization can trace a series of transactions with another institution, regardless of asset class, it can

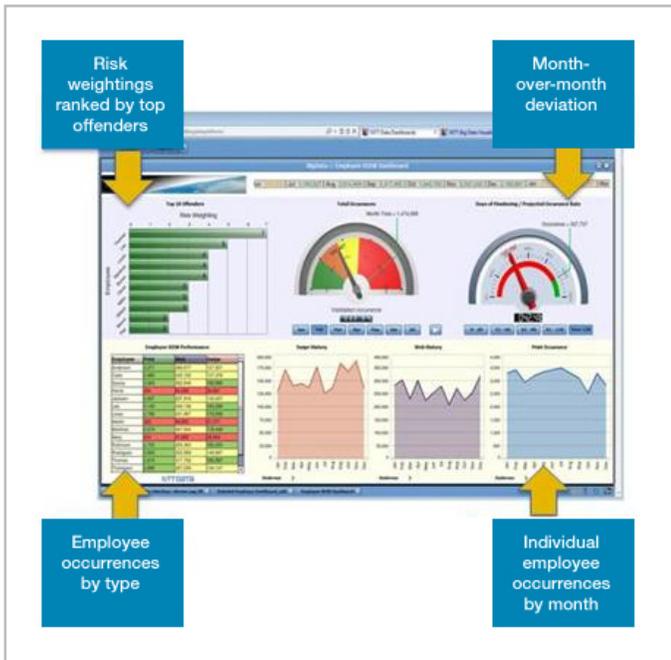
determine and report on the “nettable” value of transactions and reduce its capital requirements. In another scenario, multi-device toolkits enable information sharing from legacy systems on mobile devices, while rapid prototyping allows organizations to easily experiment with which formats and presentation types are most effective for accelerating workflows. Customizable real-time dashboards allow organizations to tailor alerts and other data to changing regulatory and business needs. (See Figure 2.)

5. **Integrity of Original Data Sources.** Finally, organizations must accept that traditional document-based information will not disappear. Therefore, they need the ability to translate legal documents into their component data structures so that business transaction rules can be applied and then traced back to the original document. This ability to find, view, and prove the authenticity of the original documents related to a series of transactions is essential to compliance.

Underlying all these capabilities are business, technical, and data models that define the types of data required for compliance and business purposes by each user group.

Each of these capabilities incrementally streamline aspects of risk and compliance processes. Together, they allow financial services organizations to move beyond the demands of regulators and start using Big Data insights to create a more responsive, profitable business.

Figure 2: Tailored Risk and Compliance ACTION Dashboard



Customizable dashboards present visual data in real time, or near real time, to help uncover compliance issues or business opportunities. Above is an example of an NTT DATA Advanced Computing Technology for Informatics ON demand (ACTION) dashboard.

Pave the Way with Quick Wins

Given the high stakes involved, we recommend an incremental process of transforming risk and compliance practices that provides early wins to the business.

- » Start by **calling out scenarios** in which a breakdown in compliance would be particularly damaging, gaps in data that cause disjointed or flawed risk analyses, or manual processes that slow risk and compliance work. The more of these you find, the easier it will be for you to gain support from senior leadership who must sign off on the required budgets and organizational changes.
- » Next, “**check your temperature**” with an assessment of your Big Data infrastructure. This includes not only the maturity of your technology and skills, but also the maturity of the metadata models and compliance rules you will apply to that data. This is one area where involvement from the business is essential to identifying gaps in your understanding of the data, the metadata used to organize it, and the rules applied to understand it.
- » Next, lay out a **long-term roadmap** that includes quick wins and proofs of concept. This puts “flesh on the bones” of the required changes and helps keep business stakeholders involved.

Such a progressive deployment of a data-enabled risk and compliance approach delivers clear value at each step. With each small victory, you pave the way for not only more efficient and assured compliance but also new insights that can transform the business.

Do You Need a Big Data Boost for Compliance?

- » Are you trapped in paper-based processes that need to be digitized to formalize structured and unstructured data and to speed processing?
- » Does product and customer information sit in silos, preventing data integration and a comprehensive view of your risks and opportunities?
- » Can your business rules be extracted from legacy code into flexible and adaptable business rules engines so they can be applied on a real-time, transactional basis?
- » Can your workflows integrate and trace actions across operations so data generated by them is disseminated quickly and transactional histories can be easily examined for audit and compliance purposes?
- » Does your data efficiently deliver business insight, allowing leadership to drive new sources of revenue and mitigate risk across business units and asset portfolios?

Embrace the Digital Imperative

Working your traditional risk and compliance processes harder cannot give you the comprehensive view you need to ensure compliance, understand your customers and markets, and compete effectively. Creating a new and more effective risk and compliance strategy requires combining a growing volume, variety, and velocity of information with flexible, just-in-time analysis as compliance requirements and business needs evolve.

NTT DATA is a top provider to financial institutions worldwide, possessing deep domain, technology, and operations knowledge to help meet institutions' growing risk and compliance objectives. We have helped our financial services clients adopt a new risk and compliance approach through:

- » Risk and compliance operational dashboards
- » Automated fraud detection and monitoring solutions
- » Enterprise data hub and Big Data platforms
- » Near real-time processing engines for high volume data

As institutions introduce innovative technologies for managing Big Data, risk, and compliance can evolve from a purely reactionary operational function to a powerful source of business effectiveness and strategic oversight.

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