BUILDING A FINANCE, RISK AND COMPLIANCE INFORMATION AND ANALYTICS INFRASTRUCTURE

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Providing Value through Finance, Risk and Compliance Data Convergence and Reuse

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"Soul-searching is Job 1 at a lot of banks"[1]

EXECUTIVE OVERVIEW

The genesis of the global financial services industry's current challenges – global economic instability, profitability pressures, risk exposure, and regulatory uncertainty – is well known. The impacts to the industry have been immense. The outcomes have forced firms to re-examine and analyze the fundamental underpinnings of their strategies and business models. Financial service firms must continue to make the necessary changes that will determine the competitive survivors and resulting leaders, lagers and failures in the coming years. Companies must be diligent to make investments that will deliver not only short term ROI, but also enable them to execute mid and long term strategic goals, that will fundamentally improve the business. Be it banking, capital markets or insurance, all financial firms need to rely on their best information to fulfill mandates and make the best business decisions possible.

As businesses redirect, the units that have received high priority for global financial services firms to execute change have largely fallen within: financial (cost, profitability, performance and growth), risk (credit and market risk reduction), compliance (audit and regulations) and treasury (liquidity and capital.) These business units have historically operated separately, which fostered solitary data repositories driven by specialized point solutions directly coupled and responsive to specific business needs in isolation.

These groups are under intense pressure to manage new regulatory liquidity and capital requirements, maintain vigilant risk management practices and strong expense discipline while making sound investments and growth decisions that are grounded in fact. Thus, it has become vital to reduce the gaps and enhance the inherent overlaps of information across these business units. The need to peer across a company's information stores with much greater levels of granularity, consistency, completeness and confidence is understood. However, most companies contend with legacy distributed data environments. The result is that current data and analytical infrastructures ultimately underserve, or worse, fail to support finance, risk, compliance and treasury imperatives. Taking a consolidated data centric approach to finance, risk, and compliance enables firms to: 1) adapt quickly to new challenges and business requirements; 2) improve analytical capabilities; and 3) reduce the cost to support the infrastructure as the business works to meet its strategic objectives.

1 http://www.americanbanker.com/issues/177_108/kpmg-survey-finds-banks-rethinking-operating-models-1049900-1.html

MARKET RESPONSE SO FAR

Financial services firms are underway reshaping how their finance, risk, compliance and treasury department processes, information and infrastructures are aligned. External mandates have established the requirements and business pressures have forced reaction. Much has been done to reorganize the executive level offices and forge stronger growth and risk-balanced aware cultures. The resulting changes to governance plans that assess the underlying processes and frameworks to operationalize infrastructure needs are being reviewed and largely being put into practice for many firms.

While difficult, many firms are making progress dealing with current market challenges and regulations. In particular, firms are making strong improvements on the following:

- Improved counterparty management.
- Integration of regulatory and economic capital.
- Daily/frequent stress testing with more complex scenarios, more scenarios and more iterations.
- Extension into earning variance and volatility testing.
- Greater operationalization of risk into transactional decisions.

Other trends are at the organizational level, where firms are putting risk and compliance under the helm of finance. Some of the more strategic firms are moving forward to fundamentally cleanup and align the information backbones of their finance, risk and compliance groups to ensure quality, consistency and timeliness. Further, these firms believe these changes will give them distinct competitive advantages in the coming years versus their peers, who they see as unwilling or unable to initiate strategic data and analytical intelligence initiatives.

At the executive level, the CFO and CRO are now more closely aligned. This helps prioritize financial decisions that incorporate risk measures that aim to drive greater ROI. Additionally, the collaboration helps assess the firm's true exposure (securities, customers, and investments) and understand the costs of managing the associated risk processes with greater transparency. The alignment also helps to appropriately assess and offer direction to the executive board, who ultimately establishes the firm's risk appetite.

The shared risk and finance frameworks are very helpful to craft a coordinated strategy when trying to comply with new and every changing mandates. Tighter coupling helps CFOs, CROs and Controllers balance what is needed to strengthen processes, staff and controls and capital management efforts that will enable compliance initiatives and mitigate future risk in a more cost-effective manner.

In summary, even though the overall market is tirelessly working to improve, it is still having difficulty dealing with new and changing mandates, complexity and costs associated with just ticking off checkboxes for regulators. This is without even considering the needs to continuously improve risk management and truly drive growth and profitability for the firm.

> "Organizations will spend hundreds of millions of dollars to build the capabilities that they're going to need, not merely to respond to current changes in regulation or reporting requirements, but to change fundamentally how they manage their financial performance, and risk and capital positions of their organizations."
>
> John Weisel, Ernst & Young

BUSINESS AND IT OBSTACLES AND CHALLENGES

Cooperation between finance, risk, compliance and treasury functions is improving. However, divisions amongst these functions still remain in the form of: culture, perspectives, tasks and objectives. Gaps still remain between the business side and IT, and there are a tremendous amount of challenges housed within IT itself.

Between these groups, there may be disagreements among business managers about data validity and information accuracy, which often interfere with business decision making. Also, it is not uncommon for communications and cultural disconnects to exist between IT and the business. The net effect results in reduced transparency and un-reconciled financial instruments that diminish the ability for risk and finance managers to ascertain a truer view of the firm's current market positions, exposures and opportunities.

From an investment standpoint, as the business side evaluates information improvements they may find themselves reluctant to tackle large information projects or tie themselves to long-term infrastructure investments. There is competition from other projects and the ones chosen must deliver direct value or ROI. Further, budgets are thin for many projects and priority is inevitably given to immediate requirements for compliance.

For many global financial services firms' issues with legacy distributed data environments still remain. In fact, the most recent benchmarking report (1Q'12) from WBR research (surveyed 100+ financial services data executives at the Financial Information Management conference) asked about the top three major challenges they had with data management and found that data silos were the leading pain point as seen in Figure 1.

Data management can be difficult. Many firms may not be equipped to contend with the process or have the time, nor the desire to change. So, how do companies simplify the process and reduce the learning curve? Financial services firms should consider how to most effectively and efficiently centralize and standardize their data in an uncertain business environment. Recent benchmark study findings (2Q'12) done by the EDM (Enterprise Data Management) council highlighted that while the IT infrastructures for enterprise data management efforts are stable, there is much needed work on integration and unraveling legacy environments. Further, the council found that data quality, data lineage traceability and workflow standardization lag behind governance.

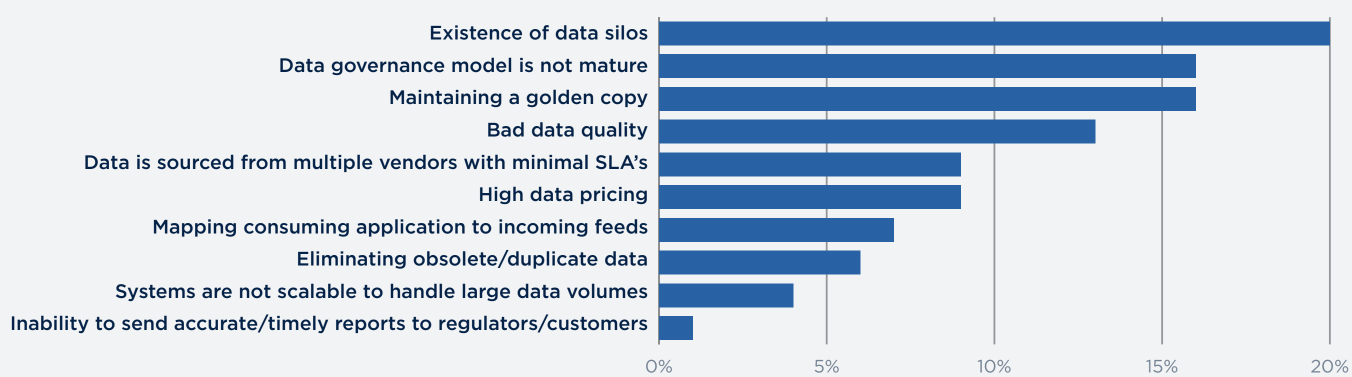

Figure 1: What are the Top Three Major Challenges Associated with Reference Data Management? Source: WBR Research 2012; N=102

IMPACT OF GETTING IT WRONG

We can see in Table 1 (2Q'12 figures) that even for some of the best run banks risk, compliance and managing profitability is an extremely challenging endeavor. These are recent examples that highlight the need for continuous improvement. In particular, reducing data complexity and improving reporting and analytics is fundamental to gain a better understanding of what is going on in the firm, while minimizing the risk of making headlines. Improving transparency is not just a lofty notion – it's also required. Inevitably though, the firm's leadership, people and culture must be prepared to embed awareness into the organization and invest in assets that can help the business transformations that are needed.

$5.8 BILLION AND COUNTING

To date, how much JPMorgan has lost on the trade put in place by the London Whale (aka Bruno Iskil)

"I think no matter how good you are, how competent people are, never get complacent in risk. Challenge everything" Jamie Dimon, CEO JPMC

$7 BILLION AND 10 YEARS

Amount HSBC's Mexican bank shipped in bulk cash to the firm's U.S. bank in 2007 and 2008 for laundering. Further, HSBC issued a 335-page report describing a decade of compliance failures by Europe's biggest bank

David Bagley, HSBC's head of group compliance, offers his resignation at HSBC's Senate hearing

5,350 JOBS SHED

Recent announcement by three of the world's largest banks due to industry struggles to adapt itself to continuing economic woes and the advent of new regulation. More cuts anticipated.

"The whole industry faces structural change. The impact of OTC reform, Volcker and Basel III could lead to a 15-20 percent headwind on revenues over the next two to three years" Analyst

24 MILLION MAN-HOURS AND $22 BILLION

Number of man hours estimated to comply with the DFA and the total number of expenses or lost revenue for the 23 largest banks in the US from just two parts of DFA

"While the promised benefits of Dodd-Frank are still illusory, the costs are beginning to become crystal clear" Oversight and Investigations Subcommittee Chairman Randy Neugebauer

Table 1: The Task at Hand is Extremely Challenging, Complex and Imperfect

WHY INTERSECTIONS OF THESE FUNCTIONS MATTER

Without a way to control the data environment, firms lack a strong ability to manage risk, optimize finance and treasury, and streamline compliance to make the most informed business decisions. Further, what are seemingly basic departmental questions can be extremely difficult to answer. For example:

- Does your firm understand the impacts of its financial and treasury decisions related to customers, transactions, or asset investments?
- What are the impacts to liquidity and the G/L or balance sheet when doing various trade related functions (e.g. pre-trade scenario analysis)?
- Do we understand the profitability and risks with existing customers across the firms multiple touch points? Additionally, what are the costs typically associated with providing services to them?

Just looking at the finance function, at a minimum, operating management needs the finance department to supply reliable data and insightful analyses so they can make decisions that are grounded in fact. In a recent Teradata survey, one respondent highlighted the fact that CFOs and senior finance executives provide value when they can work with business lines to help them better understand "how operational actions will translate into financial results and [how to use] the relevant financial data to make strategic decisions."

Other business scenarios that illustrate what can be done by converging the various finance, risk, treasury and compliance information sets are:

- **Capital Adequacy and Regulatory Reporting**: Be it Basel III, Dodd-Frank, or CCAR (Comprehensive Capital Adequacy Review) mandates require strong integration of balance sheet, portfolio capital management and an integrated capital plan. Intersections can tie balance sheet and income statement plans to risk portfolio loss, and capital and stress tests at lower levels of granularity. US regulators, for example, have the ability to stop capital activities like dividends and stock repurchases. Reporting to regulators needs to be complete without plugs, wrong data, and it requires measure across multiple risk dimensions. Data quality, master data and metadata management are absolutely vital.
- **Pre-trade scenario analysis**: Users often call for trade, risk, and liquidity data and would like to understand the impacts to the G/L or balance sheet. The goal is to determine the merit of a trade with greater insight into broader exposure limits, cash to cover, ledger impacts and profitability.
- **Onboarding**: Integrated data stores help clear KYC requirements once (reduce duplication), with a common identifier to understand any existing cross-business product and service touch points. As an example, in wealth management a firm can better understand how profitable an existing customer is and the costs typically associated with providing services.

Inevitably, finance, risk and compliance have many shared demands, such as more timely response, transparency, margin pressure, expense management along with the need to drive synergies between business units, and improved forecasts. When working to fulfill these demands it's often found that there's substantial commonality in information (inputs and outputs of decisions and reporting) that tie or overlap more closely then perhaps what's realized.

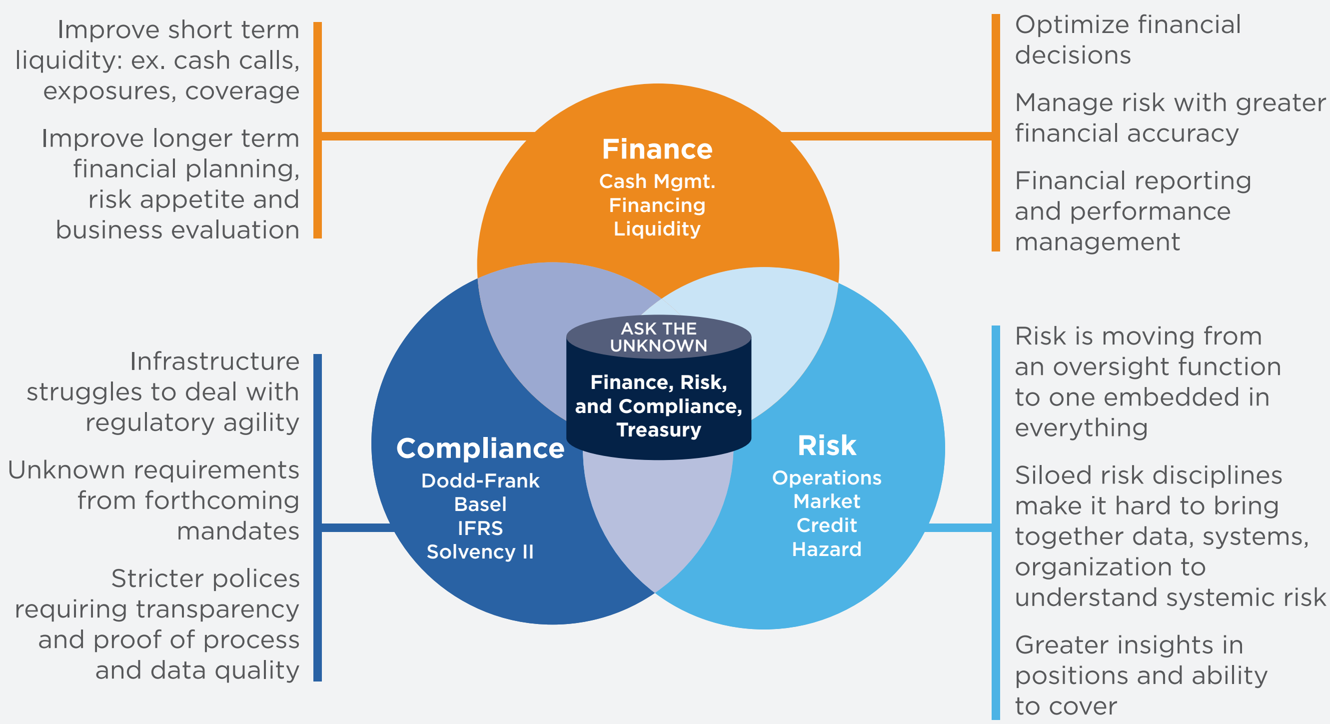

Figure 2: Impact of Information Overlaps: Improve Data Reuse, Question Depth and Analytical Insights   Source: Teradata Corporation

Figure 2 highlights the fact that data overlaps exist within these groups and are typical in any financial services firm. Additionally, the figure points out examples of the improvements or new business questions that become possible through a consolidated information approach.

These are just a few examples, but the goal is that your organization needs to put itself in position to meet current challenges now, yet have the flexibility to really ask the unknown – answer any question, any time (be it highly specific or exploratory.)

Levels of overlap and reuse opportunities are detailed in Figure 3. Looking at an actual example (sanitized for confidentiality) Figure 3 shows if all the data required for Credit Risk were organized for business use, 91% of the data required for Payment Analysis would be "available," that is directly leverage-able and reusable. Available data that is directly leverage-able and reusable can be considered a "data leverage credit" – a form of resource/ investment sharing. This leverage point is critical and often not considered when seemingly disparate business capabilities are prioritized and funded within an organization. However, this insight into resource/investment synergy is invaluable to ensure scarce funding resources are optimized.

IF ▶ / THEN ▼	CREDIT RISK	ORGANIC GROWTH	PAYMENT ANALYSIS	PERFORMANCE MANAGEMENT	PERFORMANCE MEASUREMENT AND CAPITAL ALLOCATION (RAROC)	PRODUCT DEVELOPMENT AND PACKAGING	SALES PERFORMANCE AND REPORTING	TARGET MARKETING	ANTI-FRAUD AND MONEY LAUNDERING	ASSET LIABILITY MANAGEMENT
CREDIT RISK	**100%**	53%	18%	47%	37%	61%	58%	58%	50%	46%
ORGANIC GROWTH	**74%**	**100%**	23%	51%	44%	68%	**82%**	**81%**	62%	54%
PAYMENT ANALYSIS	**91%**	**83%**	**100%**	**77%**	**74%**	**73%**	**87%**	**87%**	**77%**	61%
PERFORMANCE MANAGEMENT	67%	52%	22%	**100%**	51%	**75%**	65%	56%	51%	48%
PERFORMANCE MEASUREMENT AND CAPITAL ALLOCATION (RAROC)	**83%**	70%	32%	78%	**100%**	**81%**	**72%**	**79%**	64%	65%
PRODUCT DEVELOPMENT AND PACKAGING	62%	50%	14%	54%	37%	**100%**	50%	57%	41%	41%
SALES PERFORMANCE AND REPORTING	**81%**	**83%**	24%	64%	46%	69%	**100%**	**85%**	67%	59%
TARGET MARKETING	**70%**	**70%**	21%	47%	43%	68%	**73%**	**100%**	55%	48%
ANTI-FRAUD AND MONEY LAUNDERING	**77%**	68%	23%	55%	45%	62%	**73%**	70%	**100%**	57%
ASSET LIABILITY MANAGEMENT	**95%**	**81%**	25%	70%	61%	**84%**	**87%**	**82%**	**77%**	**100%**

Figure 3: Information for Reuse and Deeper Insights: A Foundation for Multi-Use Self Service. Benefits Uncovered through Data Overlap Analysis

Source: Teradata Corporation

WHERE TO BEGIN

Only after business requirements are analyzed from multiple perspectives, can the appropriate pace and priority for development of a decision support environment be identified, prioritized and articulated. Ultimately, there are a tremendous amount of man hours, expense and legacy that have been invested to build the existing business. At whatever point the firm begins its transformational journey, flexibility and scalability of the solution should be designed to enable the firm to use IT to support their business decisions, not let IT make them.

A good approach is to enter on a specific strategic need or pain point and build accordingly. Projects should be optimized for the benefits of an analytical or decision support environment through proper planning and analysis. Additionally, it should link specific business drivers to improvement opportunities and, ultimately, to the data required. A roadmap to integrated data for reuse can be seen in Table 2.

BUSINESS DRIVEN VISION AND STRATEGY	Identify and engage Key Sponsors Identify Targeted Business Capabilities – Integrated Data Define Compliance and Regulatory Concerns Establish Business Case components and targets
CULTURAL ALIGNMENT AND GOVERNANCE	Align Business and IT Goals, Objectives and Success Criteria Analyze Organizational Structure and Culture Define Governance Processes for Data Reuse Establish Training, Communication and Marketing Plans
ROADMAP AND PRIORITIZATION	Validate Business Capabilities Develop Process for prioritization aligning to business case Execute Data Overlap Analysis and Refine Business Case Set Roadmap Options, Define Accountabilities, Address Security and Compliance Concerns
TECHNOLOGY ENABLEMENT	Design Data Architecture Framework Institute Data Management Process and Governance Define Architecture design patterns and alternatives Define End-to-End Technical Architecture
REPEATABLE INCREMENTAL PROGRAM	Define Logical, Physical and Access Layer Models Define and deploy implementation alternatives Define BI and Analytics Development Approach and Tools Test and Implement defined projects
SUSTAINABILITY AND CONTINUOUS IMPROVEMENT	Measure and Communicate Business Value Realized Improve/Update Release and Governance Processes Manage Workload and Capacity Tune Performance – Infrastructure Tune Performance – Analytics and Data Reuse processes

Table 2: Roadmap to Integrated Data for Reuse

Source: Teradata Corporation

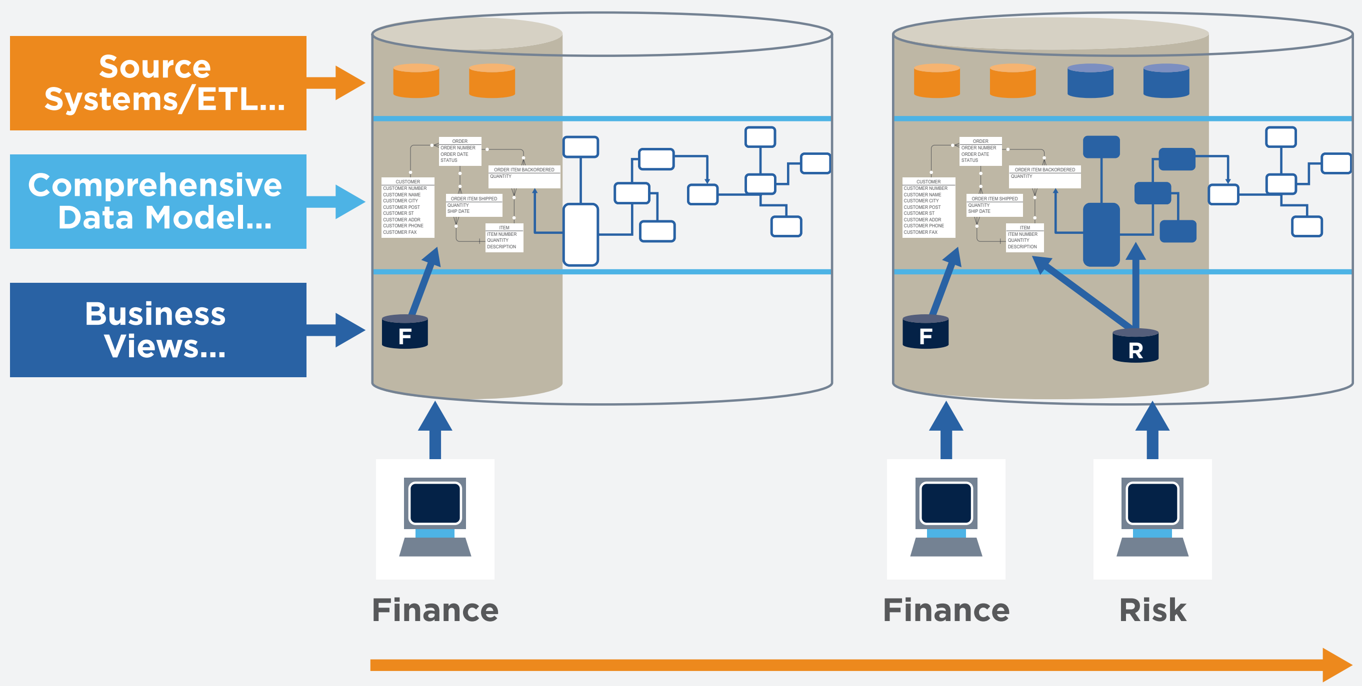

Figure 4: Sequential Data Loading Over Time

Figure 4 illustrates how information assets might be loaded sequentially (left to right) to first support Finance requirements, then Risk requirements. As data is added to an analytical environment (represented by the shaded areas of the underlying data model), the incremental cost of additional data declines as existing data is increasingly leveraged. This is because generally smaller increments of data are then required to satisfy cumulative data requirements as demonstrated in Figure 3.

INFORMATION VISION

The end state or vision state of an information and analytics infrastructure enables companies to fulfill on its requirements with cost takeout and enhanced analytics and support for the business as it move towards its strategic goals. The platform should be open enough to provide a common level to build, yet have flexibility that can be tailored to the business. Ultimately the firm should build an infrastructure that provides a competitive informational advantage. The outcome is a smarter business, doing more for less.

Where financial services are in the maturity curve today (Figure 5) with their data management efforts varies drastically. However, most firms need to be investing in data and analytics initiatives because a well thought out information strategy can be a major differentiator. Firms need to continually work to improve on their data and analytics management, as more data – complex data – becomes needed to gain a complete knowledge on their existing business. Are executive level decisions being made with adequate insights? Are line of business experts equipped with the right data to improve responses?

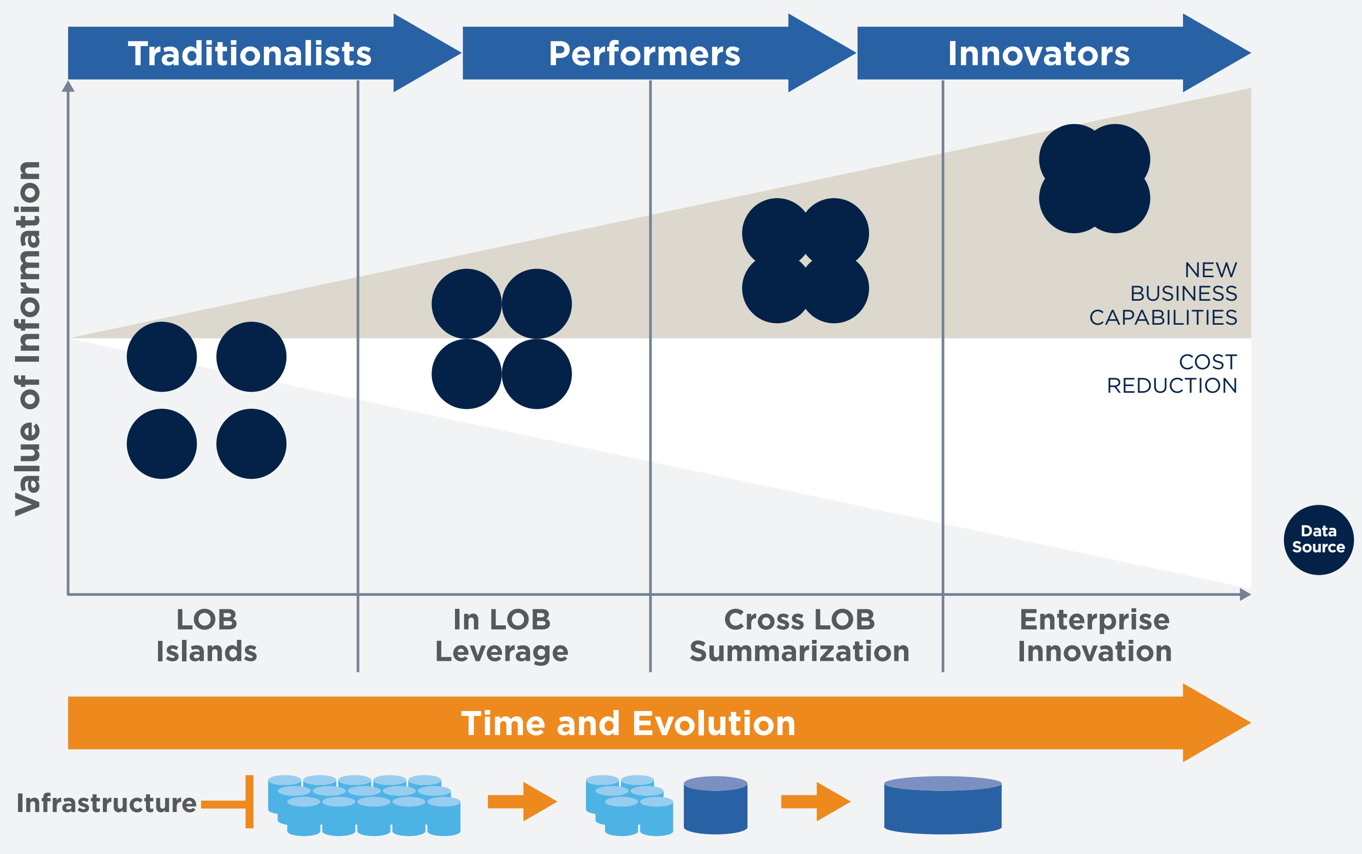

Figure 5: Information Maturity Model

Adapted from: *Convergence of Healthcare Information Creates Opportunities for Life Sciences*, Published: 28 March 2012, Analyst(s): Steven Lefebure

RECOMMENDED ACTIONS NOW

As firms embark on building out their information strategy it is vital that the business, in coordination with IT, steer projects that leverage the firms existing data stores and build enhanced analytical capabilities. It is necessary to reduce existing gaps and enhance overlaps of information across finance, risk and compliance functions. These efforts will yield the ability to adapt quickly to new challenges and business requirements while improving analytical capabilities and reducing the cost to support the infrastructure as the business works meet its strategic objectives.

Business users should evaluate their current information strategy and needs. It is recommended to consider the following factors:

Focus on a data and information centric approach to be successful

- Provides lowest enterprise total cost of ownership and greatest flexibility.
- Treats data as an enterprise asset and not owned by the application.
- Build out your information infrastructure in increments that are rooted in business drivers linked to strategic goals.
- Strong data governance and master data management plans are extremely important to drive success of an information strategy and drive the greater return on data related investments.
- Have a proven analytic architectural approach that includes a business-centric roadmap and strategic plans for data reuse and usage across the organization.

INFORMATION DISCOVERY (ANALYTICS)	INFORMATION HEIGHT (SCALABILITY)	INFORMATION RECYCLING (REUSE)	INFORMATION MOVEMENT (WORKLOAD)
What is your firm's ability to get the answers that you seek and find ones you never thought about?	**What is the firm's ability to grow and without ceilings or limitations of your infrastructure?**	**What is the firm's ability to build their central data store once and reuse it often?**	**What is the firm's ability to move data to its destinations with directional accuracy and speed?**
Not all information may be needed, but how do you know that when you haven't looked through the halls of your own information library?	With greater information ingestion and requirements to reduce the noise, there will be a need to add to your infrastructure in a manner that will not prohibit your growth and speed at which you need to do business	This is not only about reducing the cost of sourcing data, but also consolidation that enables a path towards a full data integration that enables powerful analytics and decisioning	Too often, information paths congests easily with greater convergence of data and the demands to pull that data through to its destinations Managing the workloads becomes invariably difficult, yet there is an absolute need to manage the critical information towards its destination

Figure 6: Data Management Infrastructure Assessment Benchmark

Source: Teradata Corporation

Technology

- The platform should be extremely reliable and provide information consistently, timely and with high responsiveness to many users across the firm.
- When dealing with changing regulations, M&A activity, or business changes that alter the amount of data and information being called for, the platform should scale easily to meet changing business requirements.
- Solutions should be used not only for Finance, Risk and Compliance, but leveraged for the entire enterprise (i.e. Marketing and Customer Management).
- It is important to utilize new and different information sources for areas such as risk or customer profitability. The platform must be flexible with strong capabilities to deal with the full spectrum (i.e. structured, semi-structured, unstructured) of data types be it pictures, video, web, text or product, client or security data. The ability to ask any question: allow for complete query (question) freedom & complexity.
- Allow for complete question flexibility: Simple, complex or unknown, users should be able to formulate any type of question for "decisioning" or discovery with their existing information sets.

Experience is required

- Provider should be a proven ethical leader in the industry.
- Partner should solely be focused on enterprise analytics.
- Vendor should have strong references and a demonstrable history with building information and analytical infrastructures.
- How strong are the data architects? Data strategies proposed and strength of the logical data models?

For technology users your firm should consider four factors to benchmark your data management infrastructure (see Figure 6) and providers. These factors are centered on information analytics, scalability, reuse and workload capabilities.

LEARN MORE

All businesses are different. So are their information and analytical needs. Teradata has worked on numerous engagements that combat the nuanced regulatory, risk, or operational requirements for global capital markets and large financial services firms. Visit **Teradata.com** to learn more about how you can ease regulatory burdens, reduce operational risk exposure, and drive efficiencies into your consolidated finance, risk and compliance infrastructure.

ABOUT THE AUTHOR

Sean O'Dowd leads the Global Capital Markets program at Teradata for Industry and Marketing Solutions. In this role Sean focuses on industry strategy, marketing and field enablement.

He comes to Teradata after spending over six years as IDC Financial Insights' Manager for its Global Securities and Investment Management Service. In this role, Sean was responsible for research, consulting and forecasts on the securities and investment management industry. His coverage spanned the market structure, regulations and technologies that impact the business models and strategies of financial markets firms (buy-side, sell-side, wealth management, custody, exchanges, and retail brokers).

This was following seven years' experience in consulting and analyst positions within the investment management side of financial services. His experience is in investment research and consulting (securities and real estate), securities valuation and pricing and portfolio analysis at his past firms JTC LLC, Ashton Partners, State Street and Tower Group, respectively.

Mr. O'Dowd is a speaker at industry events, and is a quoted source in such publications as *The Wall Street Journal, Businessweek, Institutional Investor, Wall Street Letter, Traders Magazine* and *Wall Street and Technology* among others. Sean holds a B.A. in Finance from Bentley University and an M.B.A. from Babson's F.W. Olin Graduate School of Management.

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