



**SLE**  
Series

# RETURN ON DATA INVESTMENT

THOUGHTS FROM THE BANKS OF DATA RIVERS

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EXECUTIVE SUMMARY

*“Thoughts From the Banks of Data Rivers”* arises out of working with the financial services community and learning how to maximize return on data investment. The data-river process concept, the Service Level Expectations (SLE) concept and the five techniques discussed in this paper — *The Investment for Conformance*, *The Investment to be Competitive*, *The Price of Nonconformance*, *The Cost to Withstand Audits* and *The Cost to Manage Change* — can enable you to organize, prioritize and justify continuous improvement in the data rivers that flow through your organization and ultimately maximize your financial institution’s return on its data investment.

*The Service Level Expectations (SLE) concept, introduced here, is the theme for AxiomSL’s new SLE Series — a means to share ideas and best practices on topics centering on the SLE approach: Delineating SLEs for each core data set defines the data-quality bar for a financial institution’s risk and regulatory reporting organization, enabling data veracity, interconnectivity, process improvement and insight across the enterprise.*

THE EYE ROLL

As a newly minted chief data officer at a financial institution, you recognize that rivers and rivers of data flow through your organization, and that ultimately these rivers end their journeys in the balance sheet. You know that governing these data rivers matters a great deal. But, utter the words “data governance,” and you may be met with quizzical looks and some eye-rolling from your audience. Since data governance is a continuous improvement process concept, it is easily lost on an audience from a non-manufacturing industry, or simply treated with skeptical disinterest.

Yet, as data rivers flow through to the balance sheet, you know that one of your most pressing data-management challenges is to enable the accurate interconnecting of regulatory and risk reporting for your financial institution. In a multi business-line financial institution (FI), depicted below, you must facilitate the confluence of data rivers across a constantly changing, disparate corporate landscape.

A Multi Business-Line Financial Institution



Figure 1. Sample FI Business Architecture

What, then, are some techniques you can use to get the point across to the skeptical or disinterested that data rivers matter, and that data governance is mission critical?

While we cannot promise that you won’t still provoke an occasional eye roll from uttering “data governance,” we think that the ideas and techniques discussed in this paper will help you to engage the people holding the purse strings without having to say those words; thereby enabling you and your financial institution to achieve both short- and long-term objectives.

## THE PROCESS OF A DATA-RIVER FLOW

Any process within an FI may be considered a data river. Data rivers flow along in a series of logical steps coursing through data capture, analysis, decision parameters, closing and surveillance. These rivers ultimately meet and flow onto an FI's balance sheet on a continuous basis.

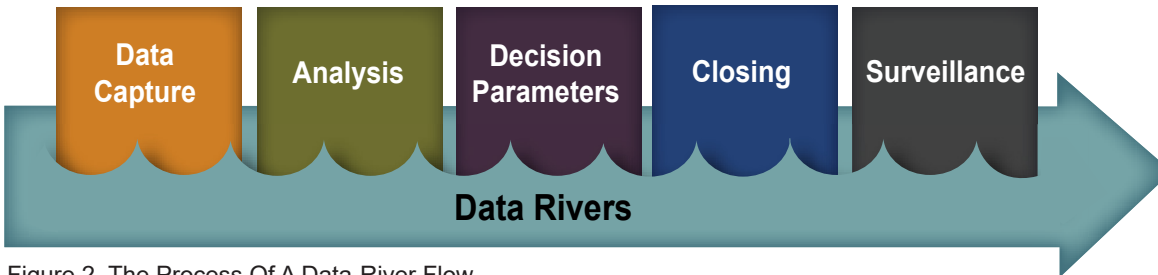


Figure 2. The Process Of A Data-River Flow

Without ever speaking the dreaded words, using the idea of the data river, we can begin to develop the case for data governance simply by asking some questions about an FI's given critical process:

- *What data elements are missing in the data-capture stage of the process?*
- *What elements in the data-capture stage require validation of internal reference masters by a third party?*
- *What are the critical data elements that must be true prior to the analytical stage?*
- *What are the salient data elements that are derived in the decision stage and what rules are followed to establish the point-in-time provenance of such data?*
- *What data elements provide a perspective on the decisions made at that point in time?*
- *What additional data elements need to be captured at the time of closing a transaction?*
- *What data elements have to be surveilled in order to maintain the efficacy of the decision made? How are these data elements tied to continuously changing reference masters?*
- *What analytics are needed to identify the data gaps in data capture, analysis, decision making, closing and surveillance?*
- *What industry or bank metrics are needed to measure the efficacy of the given process?*

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**The data-river concept and these kinds of questions serve as a guide to investigate and improve any process.**

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The data-river concept and these kinds of questions serve as an abstract guide that can be used to investigate any process. In a retail bank, for example, this might be applied to the activities of opening an account and delivering products that create the most profitable relationships. Similarly, the same questions could apply to a corporate account.

Using this guide, we can formulate some techniques to help develop specific business cases. In the following pages, we introduce five techniques illustrated with examples that arise within a multi business-line financial institution.

## THE INVESTMENT FOR CONFORMANCE

The “investment for conformance” technique applies to establishing or improving processes to meet an organization’s minimum standards of compliance/performance.

Let’s now look at this technique through the lens of a typical residential-mortgage process.



Figure 3. Applying Investment For Conformance To A Data River

By applying the questions to the processes of mortgage-banker and credit-risk-assessment teams, we can discover the following:

- *The data elements a mortgage banker must capture to “qualify the bank out of a mortgage opportunity.”*
- *Or, put another way, the cost of continuing the process, knowing fully well that the loan will not be approved.*

The idea of “qualifying out” of an opportunity is counterintuitive to a mortgage-banker’s sales process. But, if we analyze all the opportunities sent to the credit-risk team and the ratio of approvals to rejections, we can begin to formulate a better set of metrics for the efficacy of the process.

By incorporating sources of income and credit credentials and having them validated by credit-reporting agencies, we can calculate the probability of approval based on the bank’s credit policies. The probability of approval could become a new derived data element in the process that would help both the bankers and the credit assessment teams to prioritize their opportunities, thereby improving the overall process.

With this discovery in mind, we can continue our questioning:

- *What additional data elements are required after the pre-approval stage to drive an efficient closing?*
- *What data elements should be recorded at the time of closing the transaction, such as the loan-to-value ratio and pre-payment assumptions?*
- *What data elements need to be surveilled, now that the home buyer is in their residence?*
- *Lastly, what is the best set of metrics to measure the efficiency of the process? For instance, how many mortgages were approved in a straight-through fashion (meeting all criteria and are within the bank’s credit policies)? Conversely, how many proposals were reviewed and rejected? What were the reasons for the rejections?*

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**Asking questions  
— perhaps  
counterintuitive  
ones — may yield  
new data elements  
that improve the  
overall process,  
thus making the  
case for the  
“investment for  
conformance.”**

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Certainly, the new process will drive the maintenance of a smaller volume of data, thus prompting a final question: *What savings are delivered by using this approach?*

This example illustrates that we can apply the questions around data capture, analysis, decision parameters, closing and surveillance to build a case for the “investment for conformance.” As the chief data officer, you and your community cannot solve all data problems at once. However, you can use this method to re-examine each major process within the institution through a data-river lens. And, the best part is that you don’t ever have to say the words “data governance.”

## THE INVESTMENT TO BE COMPETITIVE

In times of economic expansion, FIs venture into new lines of business or geographies. Conversely, in times of economic contraction, FIs focus on core businesses. In the hyper-competitive world of financial services, there is a constant need to be competitive in good times or bad.

Leveraging this technique, we can ask a new series of questions:

- *What data elements can be added to gain insight into the analysis and decision stage of the process?*
- *What data elements can provide additional perspective in surveilling a transaction?*
- *What data elements could serve as early warning indicators, driving the organization to re-examine past decisions?*
- *What are the competitive benchmarks for the process and where does the organization rank in the industry?*
- *What data elements can signal early cross-sell opportunities, given the capabilities of the organization?*

The diagram below illustrates an easy way to enhance an existing process with this new intelligence.



Figure 4. The Impact Of An Additional Ingredient In A Data River

Let’s use wholesale credit to illustrate this line of questioning.

After the credit crisis, major FIs started using the internal ratings-based approach (IRB), effectively becoming credit-rating agencies unto themselves. While they could always use public credit-ratings as an independent barometer to benchmark their credit opinions, most of their exposures were to non-rated entities.

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**As chief data officer,  
you can’t solve all  
problems at once,  
but... you can  
tackle them by  
looking at your  
processes through  
a data-river lens.**

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In the past few years, Credit Benchmark has emerged as a provider of crowd-sourced and aggregated credit opinions from the IRB banking community. Now, FIs can benchmark the outcomes of their credit opinions against the market, which, in turn, is an industry view of their peers.

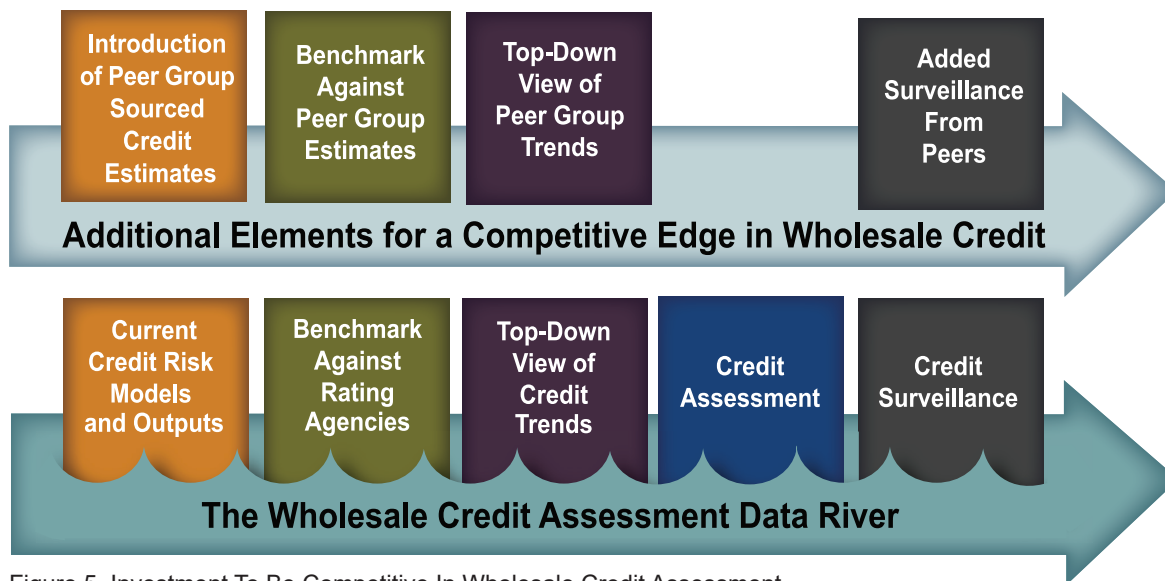


Figure 5. Investment To Be Competitive In Wholesale Credit Assessment

Applying the idea of crowd-sourced credit estimates to a bank's wholesale book, you can ask the following questions:

- *What is the credit trend in any given geography across sovereigns, FIs, corporates, SMEs and funds in both investment-grade and high-yield asset classes?*
- *What is the bank's credit position versus the wisdom of the crowd in any given industry or credit sector over a defined period of time?*
- *What parameters should prompt a discussion when a bank is more than two standard deviations away from the crowd-sourced estimates over a period of time?*
- *What combination of elements would be considered early-warning indicators for the credit team?*
- *How does the introduction of new data elements change the bank's credit decision-making process, and how does the bank respond to changes in credit movement with respect to the crowd?*

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**FIs credit-opinion outcomes can now be benchmarked against the market. How can adding new data elements impact your competitiveness?**

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## THE PRICE OF NONCONFORMANCE

The credit crisis showed us that the cost of reputational risk was far larger than any budget created by a finance organization. Borrowing from manufacturing, we can relate the "price of nonconformance" technique directly to data quality.

Speak those dreaded words, "data quality," though, and expect your peers to give you bored looks. No one wants to re-do legacy applications to meet the quality rigor required in the current financial-services environment.

Instead, try turning the argument upside down. Focus on the impact of "not getting it right the first time." You can then ask the following questions for a mission-critical process, especially as it relates to risk, compliance and regulatory requirements:

- What data sets have to come together from multiple sources to develop an aggregate view of a given depositor, corporate customer, counterparty, investment holding or credit exposure?
  - For each of those data sets, what enrichment rules have to be in place as they arrive in a central location?
- How would we describe our Service Level Expectations (SLEs) for each field and the rules associated with accepting or not accepting information prior to aggregation of such data?
  - If the SLEs and, subsequently, the rules for enrichment are not defined, what is our confidence level to use this information for risk and/or regulatory reporting?
- What is the mechanism to pre-process such information and identify the gaps in data quality? In other words, what metrics are available to assess the gaps in data quality?

**The concept of setting Service Level Expectations (SLEs) is absolutely key to optimizing the value of your data.**

Put another way, let's say that a car manufacturer makes doors that have to fit on a car on an assembly line. Not having the door built to specifications could result in it being uninstallable, creating enormous costs for the manufacturer. Using the same analogy, the diagram below articulates a simple process to mitigate the "price of nonconformance," without the need of saying "data quality."

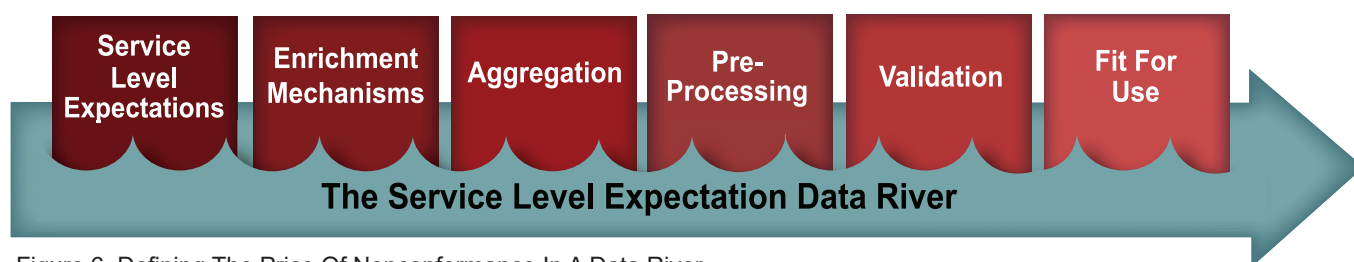


Figure 6. Defining The Price Of Nonconformance In A Data River

The concept of Service Level Expectations is key. It sets the data-quality bar for a discrete data set. For instance, the following could be SLEs for a counterparty data set:

Data-Quality Dimension	Description	Element Example
Completeness	Mandatory or optional	Occurrence of a Legal Entity Identifier (LEI)
Timeliness	Refreshed for the given decision period	Current exposure against the LEI
Accuracy	Valid and correct	Sector or industry classification and currency of the LEI
Precision	Accurate to an exact decimal place	Exposure against a counterparty
Conformity	Adherence to a series of rules, standards and/or formats	Internal parent-subsidary hierarchies
Congruence	Range similar to prior values and identical in form	Reference identifiers associated with an industry or sector
Collection	Valid when all related components exist	Reference identifiers, counterparty name, exposure types, exposures, etc.
Cohesion	Aligned with all other data	Exposures for a given sector or industry
Lineage	Appropriate metadata and a mechanism to deliver traceability and auditability of each reference system	All counterparty data ingested from multiple front-office systems

To put this into context, let's examine counterparty reporting, a process where pieces of information must come together across multiple lines of business. For the FI, counterparties could include organizations:

- *With which it trades.*
- *To which it extends credit.*
- *With which it has credit guarantees that may extend to other obligors.*
- *Where its exposure is to a subsidiary where the ultimate parent is the obligor.*

The cost of not getting counterparties “right” the first time can be very high. One counterparty’s default precipitates a large ripple effect through the system. The cost of one major default, thus, can become a benchmark used to propagate a project to set correct SLEs for counterparty data.

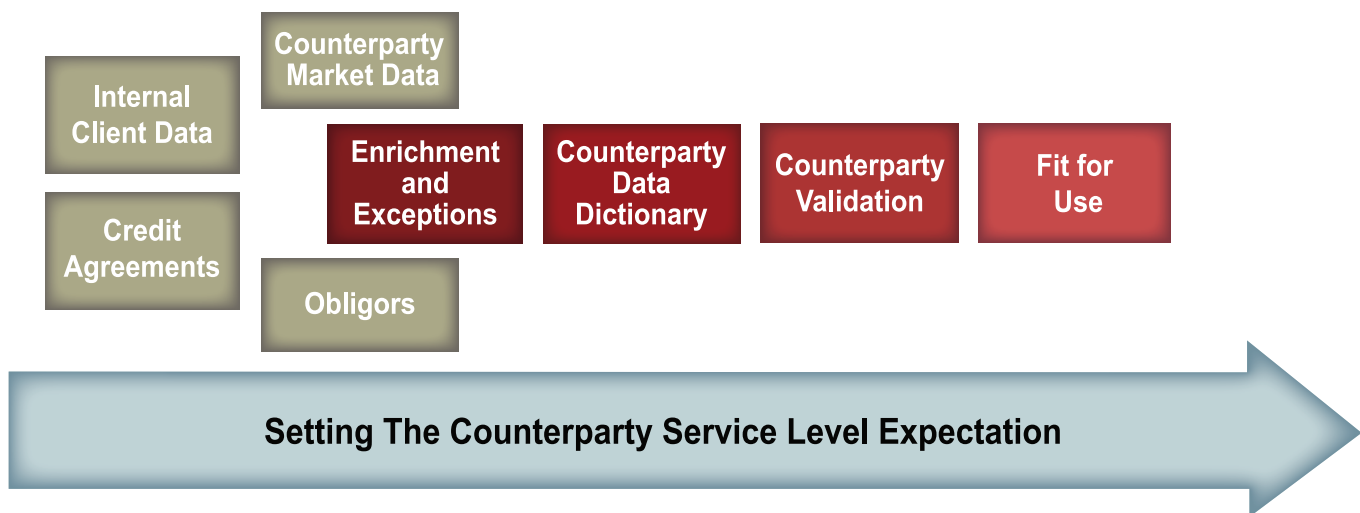


Figure 7. Articulating The Price Of Non-Conformance For Counterparty Data

It is a natural outgrowth of a data-river investigation to begin to ask questions in order to develop a business case for a project to create a counterparty reference master:

- *How are counterparties’ parent-child relationships characterized and continuously managed?*
- *How is the industry and sector classification of such counterparties managed in order to aggregate exposures accordingly?*
- *What methodology is used to classify high-risk exposures?*
- *What early warning signals are used to triangulate the most urgent exposures for the institution?*
- *To what extent could credit losses have been mitigated if accurate early warning indicators were part of the data ecosystem?*
- *What is the reporting cycle from credit risk, exposure and loss perspectives?*

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**It is a natural outgrowth of a data-river investigation to ask the right questions to develop insightful business cases.**

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In an effort to drive interoperability among FIs, the industry has been making strides to build new levels of standardization. A prime example is the LEI initiative that directly applies to identifying counterparties and which facilitates setting SLEs for this data set. Similarly, the Unique Transaction Identifier and the Unique Product Identifier initiatives underway with the Financial Stability Board (FSB) and standards bodies should also have a positive impact on setting SLEs for discrete data sets.



## THE COST TO WITHSTAND AUDITS

The audit is the last line of defense in any FI. An audit, along with regulatory examinations and investments for conformance, helps mitigate the price of nonconformance.

“Data lineage” is another phrase that is much talked about as a method to prove the provenance of data flowing through an FI’s data rivers. But, if you choose to utter it, you may again be at risk of losing your audience. Significant monies are often spent putting in place data-lineage technology that at best delivers a static result that is quite difficult to justify.

However, it makes sense to implement dynamic data-lineage when it comes to regulatory reporting. Preventing fines is a relatively simple business case!

Typically, data arrives from general ledgers, portfolio accounting, core banking, custody and in-house data-warehouse applications. The ability to capture metadata from source systems, delivers value to the organization, as shown below.

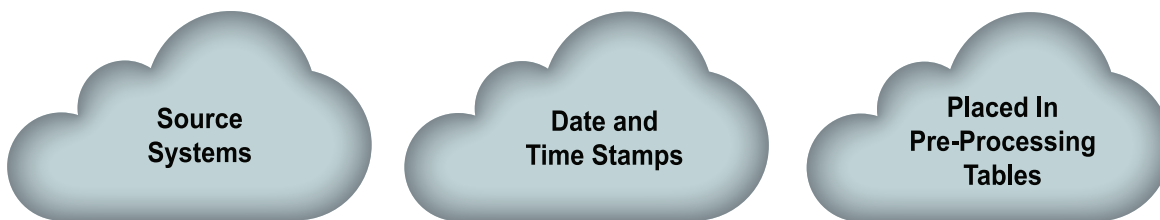


Figure 8. Capturing The Metadata Needed To Withstand Audits

Without uttering those dreaded words, “data lineage,” this series of questions can get the ball rolling:

- *Are the specific processes to ingest data for regulatory reporting happening per the defined schedule?*
- *Can the metadata collected at the point of ingestion withstand an internal or external audit?*
- *Typically, data sets have to be aggregated and processed to deliver regulatory reports. Can the journey of data elements from their source systems to a given filing be traced and documented?*
- *What is the method for keeping track of the changes in a given filing and of the ongoing changes in the continual data journey of these filings?*

To describe this another way, let’s use the example of an FI’s process to file its stress-testing report. This is a large effort. Inputs from multiple sources must come together in order to demonstrate the behavior of the balance sheet under the following scenarios: base-case, adverse and severely adverse.

In the U.S., the Federal Reserve regularly introduces changes to these scenarios and to the specifications for filing. The question we can ask ourselves is fairly simple: *Do we want to be in a position to withstand an audit on our stress-testing process? ...Or not?*

Thus, investing in tracking the data journey through the regulatory data-river makes sense — an easy rationale for the FI.

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**Investing in tracking the data journey through the regulatory data-river affords FIs a dynamic, granular understanding of their data.**

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THE COST TO MANAGE CHANGE

Nothing stays the same, and, in the world of data, it is a challenge to manage to velocity of change. Let’s start by asking ourselves what can change. For starters data sources, additional data elements, derived data elements, and new reporting formats, all can change. More importantly, when it comes to regulatory reporting, the journey of data elements can change.

Let’s face it, in FIs, change is not usually a very welcomed concept. Nor is change usually made gracefully. Large data sets, huge transaction volumes and M&A activity contribute to the complexity of managing change across a landscape of diverse systems and applications.

So, how does one begin to think about managing change on a consistent basis, given limited capacity to change legacy applications, finite budgets and relentless pressures to deliver on our commitments?

Disruptive innovation usually happens outside a traditional data process. One way to think about managing change, is to introduce a data integrity and control platform that sits adjacent to the current mechanisms, and helps the organization to manage change on a continuous basis.

Introduce a data integrity and control platform that enables your organization to respond quickly to changes.

Data Integrity and Control Platform

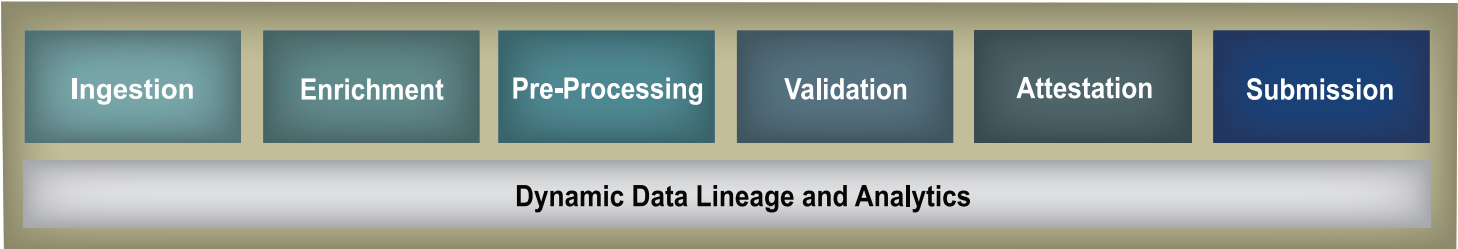


Figure 9. Data Integrity And Control Platform To Manage Change

Such platforms not only facilitate addressing the investment concepts presented earlier, but also track data elements through their regulatory journey and provide analytics to report on data processes.

Because technology firms continuously invest in such platforms to keep pace with the emerging needs of the marketplace, FIs also benefit from innovative technologies such as Apache Spark/Hadoop that address the velocity and the volume of the data to be processed.

LEVERAGING DATA-RIVER TECHNIQUES  
ACROSS BUSINESS LINES

It is helpful to envision the data rivers that flow through your organization through the lens of the total business architecture. This perspective invites you to apply any of these data-river techniques to your processes in order to build business cases.

A Multi Business-Line Financial Institution



Figure 10. Sample FI Business Architecture

For instance, if you look at the investment process data river shown below, you can use the “investment to be competitive” concept as a technique to articulate the business case for improvement.

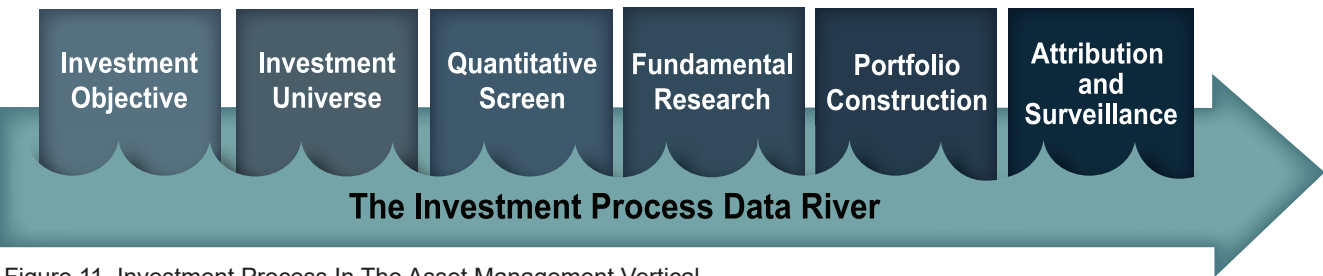


Figure 11. Investment Process In The Asset Management Vertical

Conversely, if you look at the customer-acquisition process for the wealth management vertical, you can employ the “investment for conformance” or “price of nonconformance” concepts to discover the business case.



Figure 12. Customer Acquisition Process In The Wealth Management Vertical

## CONCLUDING THOUGHTS

Clearly, your role as chief data officer is a difficult one. The rivers of data you oversee mingle and flow inexorably to the balance sheet. All data issues and problems arrive at your doorstep. Yet, your efforts calling for investment to improve “data governance”, “data quality” and “data lineage” can produce the dreaded eye roll, falling on deaf ears.

Mitigating costs to withstand audits and manage change, and realizing improvements arising from data-river investigations clearly require technology innovation. Therefore, implementing a data integrity and control platform with dynamic data lineage/tracing capabilities will enable trusted information.

A high-performance integrated data-driven platform enables easy ingesting of source data from modern or legacy technologies and data silos — without need to transform original data. Utilizing such a platform enriches the taxonomy and metadata across an organization’s infrastructure and enables necessary aggregation and validation to create trustworthy, transparent, auditable data sets that are fit for use for all risk and regulatory needs. ■

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## ABOUT AXIOMSL

AxiomSL is a global leader in risk data management and regulatory reporting solutions. Its unique enterprise data management platform empowers firms to address data governance and risk aggregation objectives while delivering the analytics, workflow automation, validation, traceability, data lineage and reporting required by multiple stakeholders across global and local regulatory landscapes.

Leveraging its more than 25 years' experience, AxiomSL combines deep industry expertise with an intelligent data management platform to deliver services around regulatory and risk reporting, liquidity, capital and credit, operations, trade and transactions, and tax analytics. Its global footprint spans a client base of regional and global financial institutions with more than \$39 trillion in total assets and covers more than 70 regulators, 50 jurisdictions and 4,000 regulatory reports.

AxiomSL's collaborative platform is known for its robustness, adaptability, transparency and state-of-the-art data-lineage module. The platform, which imposes no constraints on where the data is located, seamlessly integrates clients' source data from disparate systems. AxiomSL's enterprise-wide approach enables clients to reduce implementation costs, accelerate time to market and deliver trusted information.

AxiomSL's cutting-edge platform and outstanding client-service satisfaction have been recognized by many industry leaders and observers, including the Waters Technology Rankings, RegTech Awards, American Financial Technology Awards, The Asian Banker Award and Chartis RiskTech 100® rankings.

For more information regarding AxiomSL, please visit: [www.axiomsl.com](http://www.axiomsl.com)

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