

# Data aggregation and reporting at a Global Systemically Important Financial Institution (G-SIFI)

## Leading practices from AxiomSL

Date of publication: tbc

**Table of Contents**

1. Introduction ..... 3  
2. Case study: regulatory reporting at a Tier 1 G-SIFI ..... 6  
3. Leading practices from AxiomSL ..... 7

**List of Figures and Tables**

Figure 1: The regulatory data aggregation and reporting maturity journey ..... 5  
Figure 2: AxiomSL risk reporting solution ..... 8  
Table 1: Challenges and requirements ..... 6

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## 1. Introduction

Regulatory risk reporting is not an option for financial institutions (FIs), it is essential. Nowhere is this stark reality clearer than within Globally Significant Financial Institutions (G-SIFIs). Regulators started with a focus on the top banks, which have significantly greater complexity and exceptionally large volumes of data, and now are working their way through the rest of the market, which has simpler structures and lower volumes. The G-SIFIs are still coming under significant pressure as the bar will be raised higher in January 2016 for even greater supervisory reporting and compliance requirements related to risk management functions, data aggregation capabilities, risk governance and internal controls. However, they still face the challenges of opaque siloed data management and reporting requirements. BCBS 239 in particular has detailed guiding principles requiring that banks submit reconciled, validated and accurate reports that cover all material risks.

The larger US financial institutions have adopted new data management and reporting norms relatively recently (within the last five years) after decades of relegating this to under-budgeted, politically weak departments. These pioneering risk data aggregation processes will be keenly scrutinized as potential best-practice by smaller and / or overseas firms, which are and will be shouldering similar burdens and expectations. Compliance reporting requirements will be exported downstream by regulators to the rest of the banking, the buy-side and corporate communities with a plethora of regional differences and interpretations.

FIs are therefore attempting to establish reporting with appropriate:

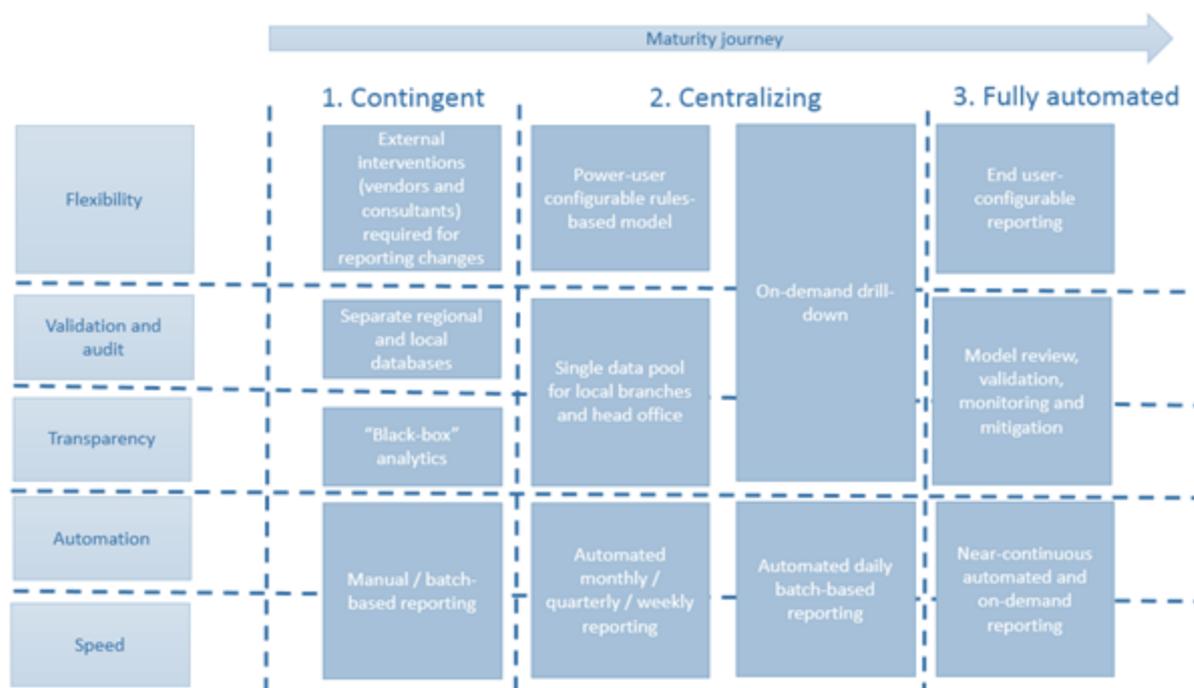
- **Flexibility:** While the idea of a common approach to regulatory reporting and data management is attractive, institutions will almost always have to approach their reporting via different data management processes because they are utilizing subjective legacy architectures. They have different sizes, shapes, roles and responsibilities, varying skilled resource availability and operate across multiple jurisdictions so are subject to many differing compliance processes. They are often utilizing different Key Risk Indicators (KRIs), syntaxes, taxonomies and process operating models. In addition, rolling requirements including regulations such as BCBS 239, which will be coming into effect in 2016, mean that any regulatory reporting system will require near-constant fine tuning, reconfiguring and re-scoping. In addition, data management processes must be designed to handle and repair poor quality data. Finally, regulatory burdens are not static. The frequency and intrusiveness of regulatory demands will often increase over time, and regulators can and will often narrow their focus to demand firm-specific stress tests and information requests. Flexibility in reporting systems, including out-of-the-box configurability and slice-and-dicing of data is a necessity not a luxury.
- **Automation:** The increased scale and velocity of data for cleaning, normalization and aggregation to support an increasing frequency of risk reporting means that automation and industrialized workflows are also a necessity. But even more important is the need to eradicate the high personnel costs of the early stages of the initial design and implementation of the regulatory program. If automation can bring a lower total cost of ownership (TCO) then that stimulates the demise of the expensive manual processes and costs. Furthermore, these industrialized workflows

require auditing, traceability and management feed-back loops to guarantee sustained delivery.

- **Transparency:** Regulators and management are increasingly requiring full drill-down into the source and derived data for Risk Weighted Assets (RWAs) and demanding access to all levels of data, such as in a mortgage book data drill-down conducted by the EBA in 2014. Reporting should earn its keep beyond regulatory requirements. Business benefits should also include the re-use and further enhancement of risk reporting and visualization, the improvement of investment and business decision-making and a general risk culture shift.
- **Validation and audit:** Establishing controls and feed-back loops to repair, validate and audit outputs using automated workflow processes is increasingly being focused on by both regulators (including the OCC's *Supervisory Guidance on Model Risk Management*) and by firms themselves. Perpetual validation functions as an excellent feed-back control mechanism.
- **Speed:** As well as the increasing frequency of regulatory reporting, firms are also being asked to report more quickly on trades and processes and respond to exceptions and anomalies. There is a trend towards more immediate reporting including Dodd-Frank SDR reporting and EMIR reporting for OTC and ETD trades, which are being required within days of trading, with intraday requirements for trades, modifications for financial institutions over \$50 billion, and the BCBS has laid out requirements for intraday liquidity risk in BCBS 248.
- Dodd-Frank requires intraday (aka “real time”) reporting of derivatives trades, modifications and cancellations. Management of intraday liquidity risk forms a key element of a bank's overall liquidity risk management framework. As such, the set of seven quantitative monitoring tools will complement the qualitative guidance on intraday liquidity management set out in the Basel Committee's 2008 *Principles for Sound Liquidity Risk Management and Supervision*. It is important to note that the tools are being introduced for monitoring purposes only and that internationally active banks will be required to apply them. National supervisors will determine the extent to which the tools apply to non-internationally active banks within their jurisdictions.

Together these are driving FIs down a regulatory data aggregation and reporting “maturity journey” (Figure 1).

Figure 1: The regulatory data aggregation and reporting maturity journey



Source: Chartis Research 2015

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Current practices are moving from contingent, required regulatory reporting onto the “Centralizing Stage.” Global FIs still normally have multiple batch-based reporting systems from different vendors and in-house developments that require significant intervention to program, script or re-configure. Automation is proceeding slowly. FIs still have to rely on expensive consultants or data management experts for the long, drawn-out process of testing and implementation. As these processes mature, FIs are progressively centralizing their regulatory reporting, and mapping operational processes to regulatory outputs.

The final step in the process is the fuller automation of regulatory reporting and risk data aggregation, leveraging a taxonomized inventory of data, function and operational processes mapped to jurisdictional-specific regulatory reporting and compliance. Chartis sees this as best-practice in the future. The quality assurance, validation and controls of regulatory risk reporting can then be aligned with other internal risk management processes and functions sharing controls with operational risk management and reducing duplication of effort. Nimble reporting systems should reduce reliance on expensive external interventions and / or power users by de-skilling the risk data aggregation and reporting process and putting it into the hands of the end-users, dramatically reducing costs, and balancing flexibility and automation to establish reporting as an industrialized, continuous process.

**2. Case study: regulatory reporting at a Tier 1 G-SIFI**

**2.1. Introduction**

The bank is a top 10 Global Financial Institution by balance sheet and scope of operations, headquartered in the US. The bank’s US office was under increasing regulatory pressure, including the FRB Risk-Based Guidelines for Market Risk in 2012, necessitating regular reporting under Basel 3 and Dodd-Frank guidelines.

**2.2. The challenge**

*“We had to do a lot of reporting for the Fed, and we really weren’t set up for it. The Fed wanted to see a push towards automation, because our reporting was largely manual” - Head of Risk and Compliance.*

Facing increased compliance demands and attempting to adhere to a new standard of transparency, the bank recognized that its current regulatory reporting systems were not fit for purpose for responding quickly to risk compliance requirements. Some of the specific challenges and requirements are outlined below in Table 1:

Table 1: Challenges and requirements

Challenge	Requirements
Lack of flexibility	<ul style="list-style-type: none"> <li>■ Out-of-the-box configuration of reporting and data collection</li> <li>■ Designing a solution allowing easy plug-in of change and new data sources in production environment</li> <li>■ Rule-based reporting logic</li> <li>■ The bank would reduce reliance on templates and specialized vendor programs in order to create and modify its reports</li> </ul>
Manual processes	<ul style="list-style-type: none"> <li>■ Harmonizing large volumes of multiple source data collections, and reconciliation</li> <li>■ Auditable automation of manual processes</li> </ul>
Opaque transparency	<ul style="list-style-type: none"> <li>■ Drill-down to data sources with clear visibility of data lineage</li> <li>■ Breaking down data silos of multiple systems and reporting schedules</li> </ul>
Ad hoc validation and audit	<ul style="list-style-type: none"> <li>■ Reconciliation across disclosures</li> <li>■ Data adjustments with audit trail</li> </ul>

## Lack of speed

- Reduction of time taken in report creation allowing for at least one re-run to accommodate changes to provide submission-ready report delivery

## Cost

- Reduce Total Cost of Ownership (TCO)
- Reduce dependencies on 3<sup>rd</sup> party consultancies and software vendor support
- De-skill in-house operations through industrialization and automation of regulatory reporting processes

An initial combined multi-vendor and internal development approach included parallel implementations around the world. These solutions were delivering to an unforgiving schedule to provide reports or prove the bank's compliant behavior. They required extensive support from external consultancies, software vendor staff and extra contractors.

### 2.3. Why AxiomSL?

*“From a business perspective, AxiomSL provides superior functionality for managing the disclosure process compared to other vendor tools evaluated. Also, AxiomSL has a proven track record working with the regulators to keep in sync with their changes” - Head of Risk and Compliance.*

## 3. Leading practices from AxiomSL

AxiomSL, a privately owned software company, was founded 20 years ago, focusing on risk management and regulatory reporting.

The AxiomSL solution provides an approach across multiple jurisdictions and regulators on a unified platform, including the ability to extract data from various sources; enrich and integrate data while retaining the native data model; apply business rules and calculations; deliver aggregated results and reporting with drill-down capabilities back to the original source data; and support multiple electronic reporting and submission standards across global and regional requirements.

AxiomSL's risk management engine performs multiple risk analytics functions and processes in the areas of market, credit and liquidity risk. This includes:

- **Liquidity** calculations (LCR, NSFR, etc.)
- **Testing and pricing** with an engine for cash flow generation for liquidity management
- Basel liquidity asset categorization and regulatory capital calculations for a number of jurisdictions.

This is supported by a calculation and a reporting layer which performs multi-dimensional roll-ups for entity levels and beyond.

For COREP and FINREP requirements, the solution converts XBRL into transparent, aggregated data models (hyper cubes). It creates a presentation layer, which can both render XBRL taxonomy or be

configured by the user and automatically generates XBRL instance based on given COREP / FINREP reports.

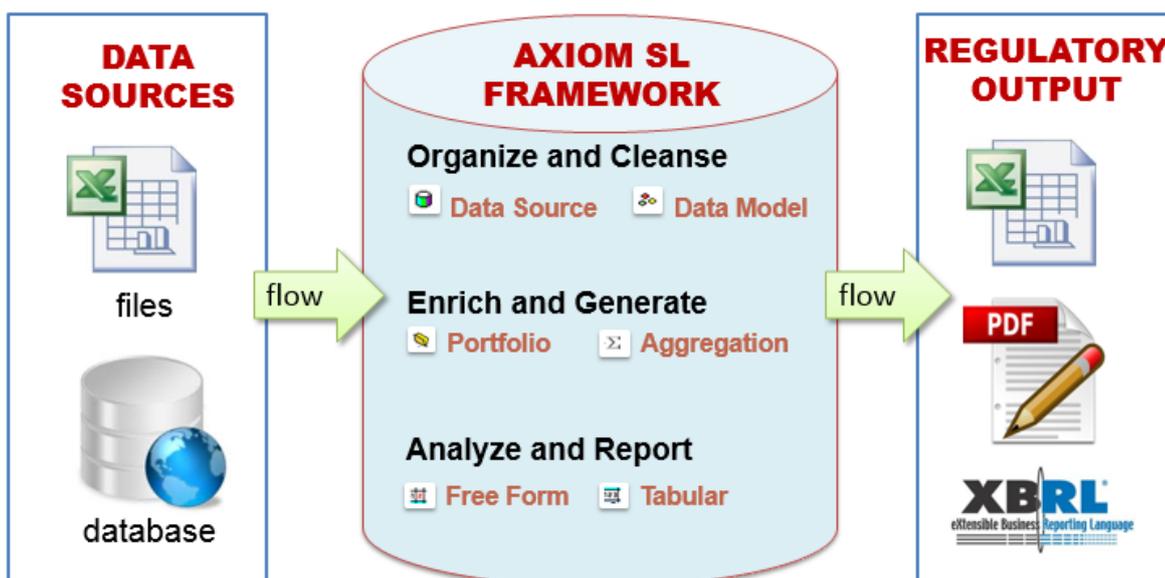
AxiomSL was already implemented in the bank’s UK subsidiary for FINREP and COREP reporting, and Asian entities such as Korea and Hong Kong, and was subsequently selected to be implemented globally in the US HQ. It was considered to be a global risk technology vendor with appropriate support.

*“The AxiomSL solution is a very configurable tool. It included the ability to drill-down from the risk data and dashboards summary into detailed sub-reports and source information” - Head of Risk and Compliance.*

The AxiomSL solution enabled:

- The automation of manual reporting processes
- The harmonization and reconciliation of large volumes of source data
- Organizing and cleansing of data collections into a number of regulatory outputs, including XMS, PDF and XBRL (Figure 2)
- User signoff
- Controls for data integrity and validation
- Work-flow automation
- Auto-submission to regulators
- Flexible configuration of functionality, calculation and data through a scripting language.

Figure 2: AxiomSL risk reporting solution



The solution provided automation of reporting business logic, data integration, governance and accountability. This included integration of multiple systems and data models as a data layer, without expensive and time-consuming data transformation into common data formats.

*“The underlying technology is particularly strong. Data sources can be locked down, including automatic submissions and data filing” - Head of Risk and Compliance.*

There were a number of parallel business drivers to be accounted for. These included the reduction of complexity of current multi-vendor solutions, which included multiple data structures, ETL tools, syntaxes, documentation standards and support teams as well as the overhead of understanding the resultant internal anomalies. There was a need to make the current systems more resilient, reliable and industrialized, and to reduce inventoried processes and overall technology spend. Prior reporting solutions utilized by the bank were not considered to be giving the appropriate granular drill-down into the underlying data.

*“A previous vendor provided a solution which was a ‘black box’ - the firm required transparent and configurable reporting, and we didn’t want to have to be in the situation of going to the vendor every time we wanted to change the rules” - Head of Risk and Compliance.*

The AxiomSL solution addressed several key challenges in adopting vendor products, including:

- **User-configurable, rules-based flexibility** through AxiomSL’s Visual Business Rules™ was a key differentiator. This enabled business analysts to configure business reporting logic without requiring traditional programming skills. Configurable capabilities, including rule-based calculations, aggregations and drill-down with lockdown of report filings, rules and data sources were provided.
- **Automation of reporting**, including auto-submission to regulators. Millions of rows of data for hundreds of entities are processed into, for example, CCAR / DFAST monthly, quarterly and annual reports (FR Y 14).
- **Transparency and drill-down from the reporting layer into the underlying data.** Audit trails and validation processes were retained, so that anomalies in market and credit risk analyses and allocations by departments / legal entities could be identified, adjusted and then the reports re-run.
- **Reduction of the costs of software and consultants**, and internal regulatory reporting costs through automation and de-skilling of the process.

A historical data report repository was created of over seven years of risk data, and 10,000 edit checks were enabled for audit and traceability of adjustments. Strict timeline constraints were met for multiple report submissions, which are to be expanded in future, meeting growing regulatory requirements.

*“The first implementation was well-coordinated with AxiomSL staff on-site to ensure a smooth implementation” - Head of Risk and Compliance.*

The requirements were defined by the bank in 2012, and the solution was rolled out over a 13 month period. The roll-out strategy began with a capital calculations report required for the Federal Reserve Board (FRB) in 2013 for Federal Reserve / OCC reports, increasing to 7 reports by 2014, and 13 reports by 2015. The technology is considered to be scalable - plans are for the AxiomSL reporting to be increased to 52 reports for up to 800 legal entities in 2016.

### 3.1. Business benefits

The benefits included:

- 50% decreased time to market for reporting.
- Reduced reliance on external consultants (by more than 50%) and vendors for the modification of rules, resulting in significantly decreased costs.
- Reduction of cost by eliminating duplication of effort and integrating risk and finance reporting into a single BI layer.
- Time to generation for annual and quarterly reporting was reduced to a predictable <5 days per report when previously it had been varied and unpredictable.

### 3.2. Lessons learned

- Speed in risk data aggregation and reporting is a key requirement. Shorter processing windows are not only important due to responsiveness to internal and external regulator demands, but because FIs will be sorting greater volumes of more highly granular data over time.
- Therefore, risk data aggregation and reporting technical architectures should be designed for growth of data, scope and speed.
- FIs should avoid being “held to ransom” by software vendors and consultancies, and should prioritize end user-configurability in order to de-skill their risk reporting processes from a cost and resource availability perspective.
- When implementing international solutions, FIs should focus on parallel implementations. If using multiple vendors they should always plan and budget for a consolidation phase.
- It should be assumed that the regulator will become more intrusive and will ask more detailed and specific questions. Therefore, it is important that smaller FIs start to adopt and anticipate the best practice in their regulatory reporting activities. They should ensure that they have a responsive, configurable, event-driven environment where they can drill-down and slice-and-dice through data supported by business-user friendly dashboards and visualizations. Thus they will be ready by the time the experienced regulatory focus shifts downstream.

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- Credit risk
- Operational risk and governance, risk and compliance (GRC)
- Market risk
- Asset and liability management (ALM) and liquidity risk
- Energy and commodity trading risk
- Financial crime including trader surveillance, anti-fraud and anti-money laundering
- Insurance risk
- Regulatory requirements including Basel 2, Basel 3, Dodd-Frank, EMIR and Solvency II

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Chartis has brought together a leading team of analysts and advisors from the risk management and financial services industries. This team has hands-on experience of implementing and developing risk management systems and programs for Fortune 500 companies and leading consulting houses.

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