MOODY'S ANALYTICS

WHITEPAPER

The Challenges as Solvency II Reporting Goes Live

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Summary

With Solvency II reporting entering its live phase, insurers are actively testing and adapting their systems, processes, and controls in preparation for "real" Pillar III reporting to the regulator. Pillar III requires supervisory reporting and transparency, and means a massive increase in the volume of data to be extracted, consolidated, and reported to regulators on a more frequent basis.

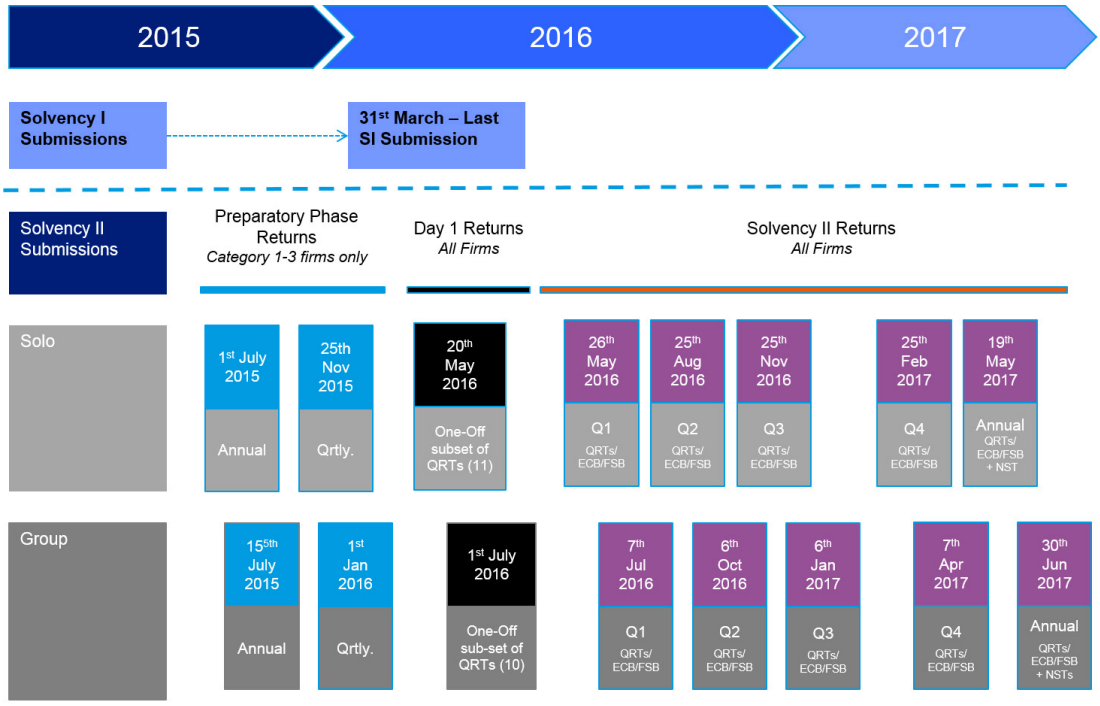
This paper is the first in a series of short whitepapers where the author examines the major challenges and issues insurers face for report production, data management, and SCR calculation for Solvency II. The series of papers also examines the approaches insurers have taken in their Solvency II projects to date.

The Reporting Challenge

At the heart of Solvency II is the requirement for insurers to provide regulators with detailed reports that clearly demonstrate their capital adequacy, risk appetite and risk management practices. One important component of Solvency II's Pillar III reporting is the quantitative reporting templates (QRTs). There have been various iterations of these templates and the number has continued to grow.

As at April 2016, a full set of annual and quarterly returns (based on CP-14 Consultation Paper documents) represents some 240 individual templates including the Financial Stability and European Central Bank (ECB) templates. These figures represent a significant increase in the number of templates from the CP-13 Consultation Paper. For many insurers, fulfilling these requirements will present a major challenge, and require an upgrade to a range of existing systems and processes. Embedded within the templates are over 3,000 validation rules, assertion, and data point checks which must be satisfied to achieve a successful submission to the regulator. These checks must be built into reporting systems and embedded in the extensible business reporting language (XBRL) of the submission format.

The following timeline illustrates the requirement, the reporting sets required and delivery dates to regulators.

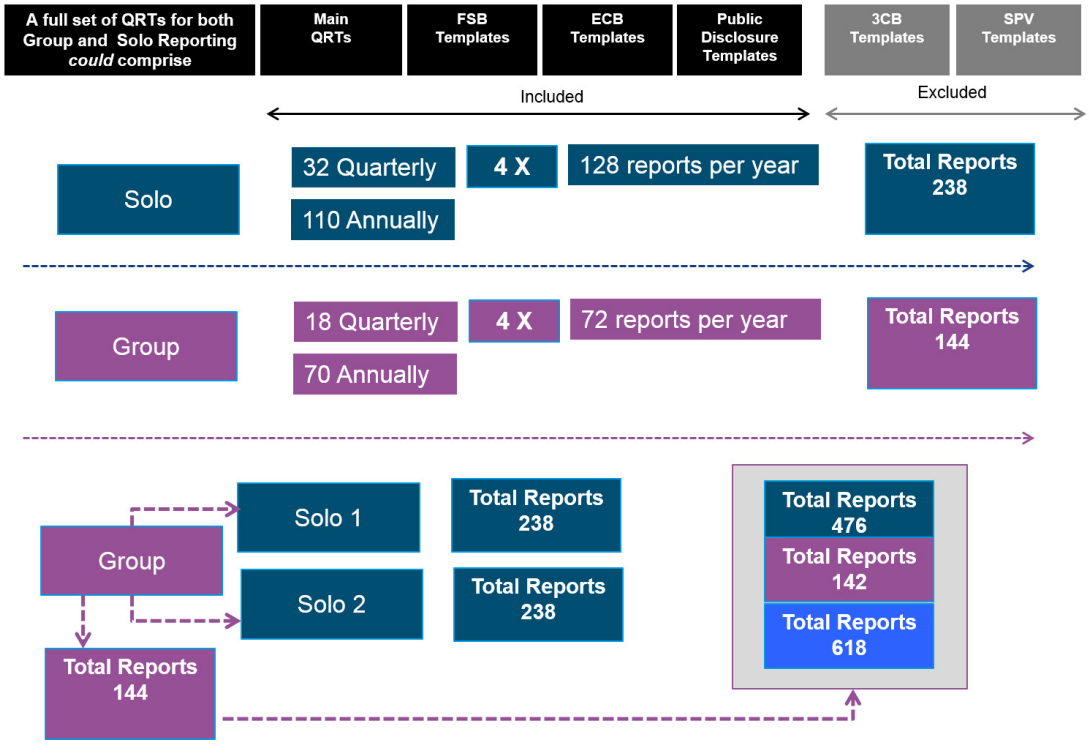


*This diagram shows submission dates for firms with a 31st December year end

For those solo entities that must report quarterly, the timelines are 8 weeks after quarter-end in 2016, gradually reduced to five weeks by 2019. For annual reporting, the timeline is 20 weeks in 2016, gradually reduced to 14 weeks by 2019. Group reporting timescales are extended by 6 weeks.

The following diagram illustrates a reasonable estimate of the number of reports that must be provided to the regulator for both annual and quarterly reporting by a small insurance group. The precise number of reports depends on the lines of business written by the insurance entity and whether they have any third country branches or special purpose vehicles. In the following example, we have assumed there are no third country branches or special purpose vehicles involved. If there were, the number of templates required would increase significantly.

For a group insurer with two solo entities the number of reports to be generated each year is in the region of 600, plus any National Specific Templates (NSTs) that a local regulator requires. For example, the UK Prudential Regulation Authority (PRA) requires 13 more templates and the French regulator, Autorité de Contrôle Prudentiel et Résolution (ACP) an extra 37 templates. Several other regulators, including the Irish, Norwegian, Dutch, and Spanish, have also specified NSTs.



The generation of this number of reports for a large insurance group with many solo entities and third country branches could run into many thousands. To support this level of production, automated data quality checks and extraction process, workflow and governance are essential. The regulations are now fairly firm but there is every likelihood a stream of small changes might need to be incorporated into insurers' reporting and disclosure systems, making flexibility in those systems essential.

EXTENSIBLE BUSINESS REPORTING LANGUAGE (XBRL)

The QRTs must be physically submitted to most regulators in XBRL format. To accommodate XBRL taxonomy, insurers' reporting systems must generate the XBRL (based currently on the EIOPA 2.1 Taxonomy) and be flexible enough to deal with the frequent changes that are expected to occur. Taxonomy amendments are likely to continue after the taxonomies are in full use, adding to the challenges faced in preparing the reports, and testing the flexibility of their report production software. Many insurers are using the Tool for Undertakings (T4U) tool provided by EIOPA but in the longer-term EIOPA is not maintaining the tool. The intention is it that the tool will move to an open-source model. However the future is unclear. Firms that use it must consider making contingency plans.

The Data Challenge

Data is the single biggest challenge for Solvency II reporting programs. The scope of data required for the QRTs alone is extensive - requiring finance, investment, actuarial, and risk data, much of this data is required in a relatively high level of granularity. Recent estimates quote over 10,000 data items for solo reporting, and 200,000 for group reporting during the preparatory phase, increasing to approximately 40,000, and 800,000 data items respectively when full scope reporting arrives this year. How to accommodate the sheer volume and granularity of data presents a major challenge for insurers as does

ensuring the data is of sufficient quality with full audit trails. Automating the data management and extraction process is essential to a successful Solvency II program.

ASSET DATA

While some of the asset data required for the QRTs exists, particularly data from existing finance systems and actuarial systems, much of it is new, such as the detailed asset transaction data and look-through requirements for the Asset QRT templates. Insurers are increasingly looking to their Investment Managers to provide the level of service for all asset data. Areas such as Over-The-Counter (OTC) derivatives and bond ratings, for the Credit Quality Steps of the Solvency Capital Requirement (SCR) calculation, are proving difficult to provide on a timely and reliable basis.

The situation is considerably more complicated where insurers have multiple fund managers. For example, one UK insurer has 450 investment managers and several insurers have between 60 and 70. The tripartite templates, developed by the Investment Management Association (IMA), are a considerable step forward in standardizing the asset data requirements. But insurers with multiple Investment Managers must aggregate the information from all the tripartite templates submitted to them. There are likely to be challenges in the aggregation process, for example Investment Managers can complete the Tripartite Templates on a fund level basis, a share price, or hybrid approach. Each Investment Manager has their own approach to completing the templates, which can lead to latent inconsistencies for insurers when aggregating templates from different Investment Managers.

Look-though across multiple fund managers is a major challenge and to date there is no industry move to address this particular problem. Aggregators such as Silverfinch have made significant progress, but their data sets are not yet fully complete. A lack-of look through across multiple fund managers could result in a higher capital charge.

The UK PRA stated in its report on the preparatory phase that, "Some firms submitted up to 100,000 rows of asset data across 30 columns, with over half a million rows of data collected across all preparatory phase submissions". The PRA also cited several other issues relating to asset data:

- A mixed approach to providing information on asset issuer.
- Different approaches to categorization.
- Over-use of 'other' category.
- Incomplete data sets re corporate bond credit ratings and sector information.

Standardization across asset codes for example NACE codes, CIC, LEIs were also cited as an issue

EXTRACTION AND AGGREGATION

To produce the necessary QRT reports, insurers must aggregate and consolidate data from a myriad of systems. Many of these systems are internal systems but others, such as investment manager and rating agency systems, are external systems. Some of the data could require manual input because it only exists inside people's heads.

The situation is further complicated because certain data items from solo operations must be consolidated up to group level. Each solo typically has their own unique systems, technologies, and governance processes. There is not a common data (or metadata) model which imposes significant data transformation requirements. Furthermore, the data requirements of group and solo reporting are different, as are the reporting timescales. Solos have tighter reporting deadlines than group, but group need extra time to consolidate.

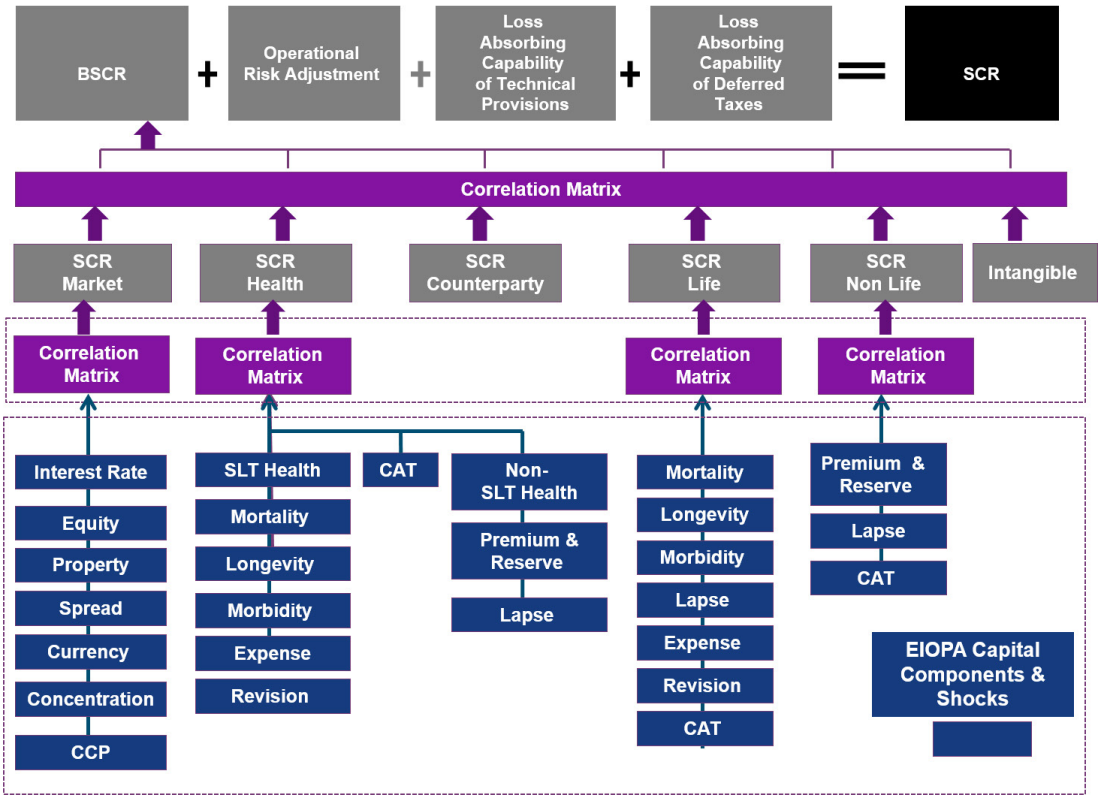
In practice, the extraction, management, storage, and aggregation of large amounts of analytical data is the foundation at the heart of QRT reporting (and wider business reporting) yet few insurers have a centralized analytical datamart. A fact that is a little surprising but we expect that more insurers will address this issue as they endeavor to standardize regulatory and management reporting and incorporate future reporting regimes such as International Financial Reporting Standard (IFRS) 4 and 9.

The Own Risk and Solvency Assessment (ORSA) process requires some of the QRT data and potentially different capital calculations, but must be considered an essential part of the reporting process and technology used by the insurer. The benefits that insurers derive from their Solvency II programs depend largely on how good the processes are for generating granular risk and capital metrics, and complying with the regulatory requirements.

The Solvency Capital Requirement (SCR) Challenge

The calculation of the SCR is a complex process. It requires the evaluation of the main risks that an insurer carries, determining the level of capital that must be held to meet these risks over the following 12 months. The Balance Sheet is recalculated for an extreme shock in each of the individual risks that could change the insurers assets and liabilities. Following each shock the new Net Asset Value is calculated and these values are combined using an approach (the correlation matrix approach if the Standard Formula is being used) that recognizes how likely different risks are to occur at the same time. The result of these calculations is the capital amount the insurer requires (the Required Capital) to withstand an extreme (99.5% tail event) shock.

The following diagram shows a simplified view of the basic risks that make up the SCR calculation when the Standard Formula approach is being followed.



Until recently, many insurers have used the EIOPA Helper Tabs, spreadsheets, and manual processes to calculate their SCR numbers for the various Quantitative Impact Studies, long-term guarantee exercises, and stress tests and for internal testing purposes. These approaches have proved effective for calculating

results on a one-off basis. In the longer term, these approaches create issues around repeatability, auditability, and accuracy. The manual processes are inherently error-prone and lacking effective management and audit controls. There is also the issue of whether mundane, repetitive tasks are the best use of valuable internal resource. Moving forward, it is critical for most insurers to automate the SCR calculation process, particularly as quarterly reporting cycles become more aggressive.

Some insurers are buying or developing an SCR calculation engine that enables both the calculation of their regulatory SCR and the formulation of multiple SCRs based on different risk factors, shocks, and assumptions. The specific aim of which is to understand the impact of individual risks on their SCR.

Approaches Adopted

To date, most European Insurers have adopted one of two mainstream approaches in building their Solvency II systems, taking either a ***tactical*** or ***strategic*** approach to their Pillar III reporting. The characteristics of each approach are illustrated in the following table.

Approach	Important Points
The **Tactical Approach** advocates a piecemeal methodology to collecting, aggregating data and report generation. It is predominantly a manual approach, based around multiple spreadsheets with the SCR calculation typically undertaken separately by actuaries using existing actuarial engine or spreadsheets. This approach is quick and affordable to implement but can lack essential audit and governance controls and has limited reuse capabilities. Best suited for small insurers with simple product and entity structures adopting a minimal compliance approach. Although some larger insurers have used the approach as a quick fix, but are planning to adopt a more strategic, automated solution when their processes and systems have been proven and the regulation has been finalized.	» Quick and cheap to implement. » Manually intensive processes, heavily dependent on people and spreadsheets. » Difficult to audit and track data and reporting changes. » Little or no automation particularly in the ETL process. » Does not address all the data management and quality issues latent in the project. » Can cause compliance issues in the longer term particularly around spreadsheet management. » Good for dry-runs and testing the QRT process. » Ideally suited for small insurers with simple business/product lines.

Approach	Important Points
The **Strategic Approach** is at the opposite end of the spectrum and advocates a robust holistic solution based on a centralized analytical data repository and associated data quality, workflow, and reporting/disclosure tools. This strategic approach provides a long-term platform for analytical data centralization and reporting. It requires a significant commitment to implement, but can reduce long-term costs. Has a high degree of reuse, and potentially can be used to support future reporting regimes such as IFRS 4 and 9 reporting. Some insurers have adapted their existing financial accounting and consolidation systems for Solvency II reporting, but as Solvency II requires more data and calculations related to Pillar I, such an approach has not always been successful. Others have built their own systems or purchased vendor solutions.	» Robust, scalable solution for QRT reporting, and the quantitative aspects of ORSA. » Automated, workflow driven processes including SCR generation. » Central repository for all analytical data maximizes data reuse and consistency. » Technology often has embedded data quality tools and workflow capabilities. » More readily meets audit and security requirements. » Can be deployed easily across the enterprise. » Capabilities extend beyond Solvency II reporting (Pillar I, Exposure monitoring, ORSA). » Major implementation project and initially more expensive than the tactical approach, reduces long-term cost of ownership.

Some insurers have attempted to mix the approaches, using elements of both. For example, some insurers have bought spreadsheet based reporting packages that provide the reporting template formats and XBRL generation but still rely on manual processes for all the data aggregation, calculations and governance controls. For all but small insurers, data aggregation, calculations, governance, and the supporting processes account for at least 80% of the overall project.

Moving Forward

The move to live quarterly reporting will severely test insurers' (and to a degree regulators') reporting systems. Initially, the regulators might take a lenient approach, but their stance is likely to harden over time. Another larger test for insurers comes in 2017 when full annual reporting commences, which is more complex and wide ranging. While some insurers systems and processes are up-to the job, others might find their systems inadequate and their processes too slow and error prone.

History shows us that regulations are constantly evolving, and one can easily imagine today's Solvency II requirements turning into Solvency III in the next few years. Keeping pace with all the EIOPA, ECB, and local regulator changes presents a significant challenge. Insurers must allocate dedicated resources to monitor, interpret, and analyze regulatory changes. In addition, insurers must identify new data sets and corresponding source systems and remap them. For some insurers, these steps could prove difficult and costly, particularly as some systems rely on hard-coding and are inflexible.

Data, data management, and automation of the associated processes becomes increasingly important, particularly as the regulators' focus is likely to move beyond the final numbers to the data that underpins those numbers. Proving the quality of the data, its accuracy, and lineage represents a major challenge for insurers given the diversity and the complexity of the data involved. If the data is flawed, then the SCR calculation is too. Auditability, governance, and transparency become increasingly important as the regulators move beyond the initial submissions.

Is there a Nirvana Solution? Probably not. Most insurers have some existing components and processes that can be retained. Nonetheless, we foresee that many insurers must enhance their existing reporting systems or replace some of the components. What areas require focus? Our view is set out in the following table:

1	**Automation of End-to-End Processes**	Workflow processes to drive data, reviews, calculation, and approvals based on a reporting calendar. » Defining and documenting reporting processes, roles, and responsibilities. » Integrating with existing financial reporting processes (for example GAAP and future IFRS). » Mapping data flows, then automating data extraction and transformation routines. » Automation of regulator and business data quality checks. » Identifying inefficiencies and bottlenecks that can slow down or prevent efficient reporting.
2	**Dedicated Analytical Datamart**	Extracting, transforming, and storing analytical data for multiple purposes is a major problem for most insurers in terms of their Solvency II projects. The quality and availability of data is paramount for both reporting and modeling. Data has to be available in the right level of granularity, right format and within the tight time scales. EIOPA requirements mandate data quality policies, tools, and processes with full lineage and auditability controls.
3	**Data Quality /Data Management Tools**	Data extract, transform, and load (ETL) tools that automate the data extraction and collection process. Many ETL tools have embedded capabilities to check and improve data quality. The data quality checks are designed to protect the integrity of the repository. As the process checks the data quality, it attempts to correct the problems. In practice the process has to cleanse the data, remove duplicate fields and finally run a series of contextual "rules" that check the format and content of the data against business logic. An important aspect that is often forgotten is that it is not sufficient merely to have data quality checks in place, you must be able to demonstrate the effective operation of data quality checks to both auditors and the regulator. Thus, evidence of controls and the reporting of issues identified result of conducting the check are essential.
4	**XBRL Engine & Viewer**	Most insurers must build or purchase a dedicated XBRL engine and viewer to convert the QRT templates to XBRL format and check the validation rules.
5	**SCR Calculation**	A small insurer might rely on a Helper Tab/Spreadsheet-based process for SCR calculation but a larger more complex organization might need to develop a dedicated SCR Engine based on their current actuarial systems, or purchase one from a vendor. Automation of the SCR processes becomes increasingly important.
6	**Governance**	Governance around data quality, internal and external inputs, approvals processes, and third parties are under increasing scrutiny. Demonstrable and auditable governance controls are critical and must be embedded in systems and processes.

Conclusion

2016 is pivotal for Solvency II Reporting and as the year takes shape it is going to be interesting to follow how well insurers, asset managers, and regulators have coped with live reporting. For the preliminary submissions in 2015 regulators such as the PRA switched-off most of the validation rules. The first real test is in 2016 when the rules are live. But the Day One and Quarterly Reporting requirements represent, at most, one-third of the overall reporting requirements, and full annual reporting in May 2017 is the acid test.

While some insurers are prepared others will find their processes and controls too slow and manual. Tactical approaches have proven adequate up to this point. However moving forward, with a minimum of 200 plus reports to generate each year there is a much greater focus on automating processes across the spectrum, from data extraction, quality checks, SCR calculation, governance, and audit controls.

Getting asset data from Investment Managers in the right level of granularity remains a significant challenge and is the subject of much debate in the coming months. We also expect insurers to increasingly focus on improving the quality of their analytical data and look to extend that data to support wider business and regulatory reporting.

Solvency II has been a long time coming and many insurers have invested significant amounts of time and effort in developing their current Solvency reporting systems. For many insurers, these systems will continue to evolve. However some insurers need to rethink their approach and develop new system components and processes.