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How do you monitor data quality?
(...And why should you?)


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Agenda

- Solvency II data quality standards
- Establishing a data quality framework
- 3rd party data
- Solvency II and the IT environment

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Solvency II data quality standards

6 principles for assessing and managing data quality.

Solvency II and its implementing regulations ascribe high importance to data quality

“Given the high importance of data in internal modelling, undertakings and supervisory authorities should strive for the highest data quality standards to be applied.”

CEIOPS' Advice on Tests and Standards for Internal Model Approval

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Solvency II contains 3 fundamental data quality criteria

The assessment of the quality of data should be carried out on the basis of three criteria: Accuracy, Completeness, and Appropriateness.

Accurate	<ul style="list-style-type: none">• Data is free from errors that create a material distortion in model outputs• The impact of data error is understood, with proportionate tolerances set
Complete	
Appropriate	

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Solvency II contains 3 fundamental data quality criteria

The assessment of the quality of data should be carried out on the basis of three criteria: Accuracy, Completeness, and Appropriateness.

Accurate	<ul style="list-style-type: none">• Data provides a comprehensive picture of the insurer / group• Gaps or areas of weaker data are understood
Complete	
Appropriate	

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Solvency II contains 3 fundamental data quality criteria

The assessment of the quality of data should be carried out on the basis of three criteria: Accuracy, Completeness, and Appropriateness.

Accurate	<ul style="list-style-type: none">• Data is relevant to the portfolio and a suitable basis for analysis• Biases that may distort the model output are understood
Complete	
Appropriate	

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To these, three additional criteria may be added as part of a data quality framework

Accurate	<ul style="list-style-type: none">• Data refers to a defined and consistent point in time• Data is up-to-date so analysis can meaningfully influence decisions
Complete	
Appropriate	
Timely	
Accessible	
Comparable	

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To these, three additional criteria may be added as part of a data quality framework

- Accurate
- Complete
- Appropriate
- Timely
- Accessible**
- Comparable

- Data can be accessed in an appropriate format when and where needed
- Reporting is largely automated with minimal manual analysis

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To these, three additional criteria may be added as part of a data quality framework

- Accurate
- Complete
- Appropriate
- Timely
- Accessible
- Comparable**

- Data is consistent across the insurer / group allowing meaningful comparison
- Comparable reporting can be produced at any level in the insurer / group

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Establishing a data quality framework

How do you implement a data quality framework, and, more importantly, will it do any good?

Data governance under Solvency II – what are we trying to achieve?

Organizations need to ensure that data is of sufficient quality that the information generated is materially accurate and representative of the business and its risks.

To do this successfully, an insurer will need to:

1. Identify and prioritize the data to be subject to governance.
2. Define the quality requirements for the identified data.
3. Identify the risks to achieving the identified quality requirements.
4. Develop controls to mitigate the risks to an acceptable level.
5. Where deficiencies are identified, evaluate and remediate.
6. Write it all down!

Setting scope and judging materiality are essential to proportional data governance



“Most firms did not conduct an impact and risk assessment of the data used in the internal model and associated data processes. This was surprising, given the limited budget available for the data workstream, and the need for prudent allocation of resources and proportionate focus on material risks.”

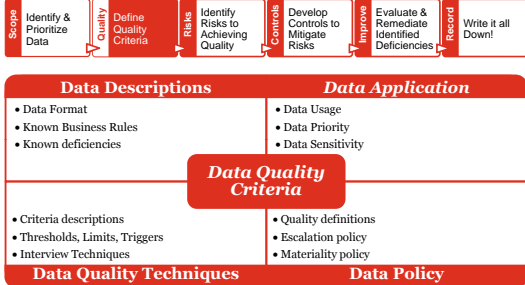
UK Financial Services Authority – Solvency II: IMAP Data Review Findings
September 2012

Setting scope and judging materiality are essential to proportional data governance



- Solvency II applies explicit data quality standards to data used for the calculation of Technical Provisions (reserves), and data used by an approved internal model.
- However, similar data governance concepts can be applied across an organization.
- Some factors to consider: Numerical value, probability of error, sensitivity, combined impact, reference data, mitigating factors, developments over time.

Defining data quality criteria is challenging, but aligns the governance framework to use of data



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Data governance should address the material risks to achieving the defined data quality criteria



- Solvency II requires an explicit link to be drawn between:
 - the use of material data items;
 - the quality criteria necessary to support that use;
 - the risks to achieving those criteria; and
 - the controls which are put in place to manage those risks.
- The assessment should focus on material risks to data quality.

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Controls should be explicitly linked to the risks that they are intended to address



“It is critical that firms are able to articulate the nature of data quality checks and of any resulting actions that are conducted on material data sets, and to demonstrate how the process is operating consistently with appropriate controls in BAU.”

UK Financial Services Authority – Solvency II: IMAP Data Review Findings
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- Most organizations already have processes and controls in place to manage data, but in many cases lack the explicit link to quality criteria required for Solvency II.
- Factors to consider: Evidence, reporting of exceptions, link to SOx.

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Defining data producers and data consumers can help firms manage data quality responsibilities

Data Producers

- Provide Data Requested.
- Confirm required standards met.

Data Consumers

- Specify Data required.
- Specify Quality Requirements.

Evaluation and remediation should take ongoing business as usual (BAU) into account

- Evaluation should consider both the deficiencies themselves and the cause of those deficiencies.
- Remediation at source rather than at point of use.
- Expert judgment can be applied at all stages in the data process, including evaluation and remediation.
- Solvency II explicitly recognizes the role of expert judgment in data use and management, and requires appropriate governance over its application.

Documentation is key to Solvency II, but useful for business as usual as well

Requirement	Project Activity	Business as Usual
Data Policy A data policy compliant with Solvency II requirements must be documented and embedded within the organisation.	Draft Data Policy Policy must comply with requirements and be specific on activities and responsibilities. Policy should not include detailed procedures. Implement & Embed Data Policy Policy must be communicated to the appropriate staff, and procedures, tools and training required to enable the policy to operate must be developed.	Update Data Policy The Data Policy is regularly reviewed and updated as circumstances require. Monitor compliance with Data Policy Compliance with the Data Policy is monitored and periodically reviewed.
Data Directory A directory of data, specifying the source, characteristics and usage of all data used to operate, validate and develop the internal model must be produced.	Clearly defined scope of data The data in scope for Solvency II needs to be clearly defined at a detailed level. Details of relevant Data Sufficient detail over data in scope needs to be maintained, including a consistent definition of the scope, characteristics and source of data. This might include data materiality and the data quality criteria. Operate, Validate, Develop All data used to validate and develop the internal model, and not just data used to operate the model, must be included in scope.	Review materiality of data Over time the materiality of certain data items or sets may vary, and hence what was acceptable data quality may no longer be. Items in the data directory must be reviewed periodically to reconfirm their materiality and the relevant quality criteria. Update Data Directory As new data feeds or new products are included within the Internal Model, the Data Directory must be updated to reflect these changes.

Documentation is key to Solvency II, but useful for business as usual as well



“The Data Directory is meant to be a documented repository where different users can go to understand which data is being used in the model, where it comes from (“source”), how it is used (“use”) and what its specific “characteristics” are.”

UK Financial Services Authority – Solvency II: IMAP Data Review Findings
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Documentation is key to Solvency II, but useful for business as usual as well



“Nearly all firms struggled with an appropriate classification of data in the Data Directory...Efficient classification requires assigning each data item to exactly one class, so that each data item is covered just once.”

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3rd party data

Managing data from outside the organization.

3rd party data can present an additional challenge for Solvency II data governance

- Solvency II requires insurers to implement governance processes over 3rd party data (e.g. bordereau data, catastrophe exposure data) as if it were internal data.
- This can pose significant challenges, where the ability to exercise control over 3rd party data providers is limited.

“We found that where data was obtained from a third party, many firms relied on the controls operated at the third party despite having no mechanism to obtain assurance over the control environment and without independently validating the external data received.”

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Practical approaches to using 3rd party data in a Solvency II context

- Potential options for 3rd party data governance:
 - Data audits.
 - Data profiling.
 - Audits of data providers.
 - Outsourcing arrangements and expectations.
 - Approach to data limitations.
 - Application of expert judgment.
- All 6 data quality factors may potentially be relevant: Accurate, Complete, Appropriate, Timely, Accessible, Comparable.

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Solvency II and the IT environment

For many insurers implementing Solvency II, IT infrastructure has been just as important as pure data.

Solvency II places substantial demands on IT, and many firms are upgrading their IT infrastructure

- Compliance with Solvency II can be IT-intensive (e.g. modeling, analysis, automation, reporting timelines), and many insurers are developing their IT systems in advance of the transition:
 - Data warehousing.
 - Consolidation of legacy systems.
 - Dedicated Solvency II reporting systems.
 - Automation/control v.s. spreadsheets and manual processing.
 - Accounting and/or actuarial modeling systems.

“Most firms were replacing or building on their existing IT infrastructure as part of their Solvency II program.”

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Thank you...

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