



# Actuarial & Insurance Breakfast

## Data Quality in Solvency II

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Audit.Tax.Consulting.Corporate Finance.



# Agenda

|          |                                   |
|----------|-----------------------------------|
| <b>1</b> | Setting the scene                 |
| <b>2</b> | Getting it done                   |
| <b>3</b> | Detailed Requirements and Answers |
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## Setting the Scene



# Experience from Basel II

## Data governance and related system development as cost driver

- Many firms and regulators focused on models (Pillar I) too much and for too long
- Programme success requires a clearly thought out data and IT architecture from Group to BUs
- Both Basel II and Solvency II will be difficult to implement on existing data flows and data stores between Group and BUs
- Whether a federated or a top down centralised approach is chosen, data quality and consistency must be assured

*Laurie Mayers, Prudential Risk Division, FSA*

The most common mistake made by many banks was to significantly underestimate the scale of data quality problems and the level of effort required to resolve them.

*Scott Vincent et al., Parker-Fitzgerald*

Experience has shown that best practice data management is key to achieving Basel II compliance and that 'getting the data right' can be one of the most time-consuming parts of the wider programme — and one of the hardest to fix retrospectively.

*Max Richter, Detica*

# Experience from the Swiss Solvency Test

## Requirements for data governance through the back door

### Regulatory requirements in Switzerland are principle-based.

#### **AVO Art. 52 Datenerhebung (1.1.2006)**

Das Versicherungsunternehmen erhebt und erfasst die relevanten Daten in einer Form, welche die Berechnung des Zielkapitals, des risikotragenden Kapitals sowie der marktnahen Rückstellungen ermöglicht.

#### **Richtlinie zum SST, 8.4.4 Dokumentation der Internen Modelle (2008)**

Die Dokumentation äussert sich zur Art und Weise, wie die Datenqualität und insbesondere die Qualität der Information über die Positionen und Exposures gesichert wird.

#### **Rundschreiben zum SST (2008)**

...Die verwendeten Daten müssen vollständig, korrekt und zeitnah sein. Falls zu wenig relevante Daten vorhanden sind, können auch Expertenmeinungen beigezogen werden. ...

#### **Prüfungskonzept (2010)**

III.2 Dokumentationsanforderungen  
III.2.5 Daten  
Prüfungsgebiet 4: Daten



### Internal motivation instead of a compliance exercise.

Companies started to use SST figures for internal management reporting and business steering.

The crisis and its impact on SST results further increased management attention.

Higher visibility and wider use of results raised requirements on data quality and governance.

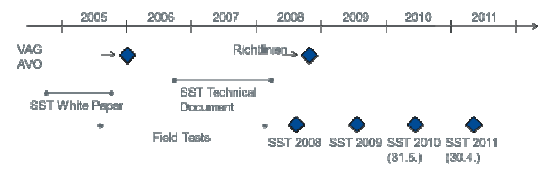
Increased reporting frequencies and ad-hoc requests put a strain on responsible teams and absorb limited expert resources.

Complexity of processes and systems reduce efficiency in ever larger teams.

Operational risk as well as efficiency considerations push companies into considering industrialisation and enterprise data management.

# Developments in Europe: Solvency II

## Solvency II, SST and where it might lead us to

| Fundamental Development   | Switzerland  | Europa   |
|---|--|--|
| <p>The top goal of supervision is policyholder protection.</p> <p>Solvency requirements are a core element of insurance supervision-</p> <p>Rigid, factor-base solvency requirements are being replaced by risk-adjusted, principle-based approaches.</p> <p>These approaches can generally be structured in three pillars:</p> <ol style="list-style-type: none"> <li>1) Quantitative capital requirements</li> <li>2) Risk control</li> <li>3) Risk disclosure</li> </ol> | <p>Switzerland adopted the VAG (insurance supervision act) and AVO (supervision ordinance) by January 1<sup>st</sup> 2006.</p>  <p>The AVO contains a chapter on own capital requirements. In this chapter, reference is made to the Swiss Solvency Test. With the Swiss Quality Assessment (1.1.2007) requirements on corporate governance are set out.</p> <p>2011 Switzerland was acknowledged for equivalence.</p> | <p>The European parliament and the council adopted a directive in 2009, for taking up and pursuing (re)insurance business in Europe.</p> <p>The directive (level 1 text) requires implementation measures (Level 2 Text) which will then be taken up in the country law (Level 3 Text).</p> <p>The consultation of the level 2 texts is complete (Consultation Papers, CPs) and in-official drafts of level 2 can be found on the web.</p> <p>The introduction into EU law is officially planned for 1.1.2013.</p> |

# Governance under Solvency II

## Focus on Risk Management and Actuarial Function

### Risk management function

- Implements system to identify, measure, monitor, manage and report risks
- Designs, implements, tests, validates, documents internal model
- Must be effective and well integrated in the decision making process

### Actuarial function

- Coordinates and reviews the calculation of technical provisions
- Responsible for sufficiency of data and appropriateness of methods
- Expresses an opinion on UW policy
- Contributes to the risk management system

### System of Governance

- Written policies must exist for risk management, internal control, internal audit.
- A data policy with standards, assumptions made and processes and a data dictionary (e.g. TP3, TSIM10)
- A model validation policy (TSIM18) and a change policy (Art 115 dir.) must exist

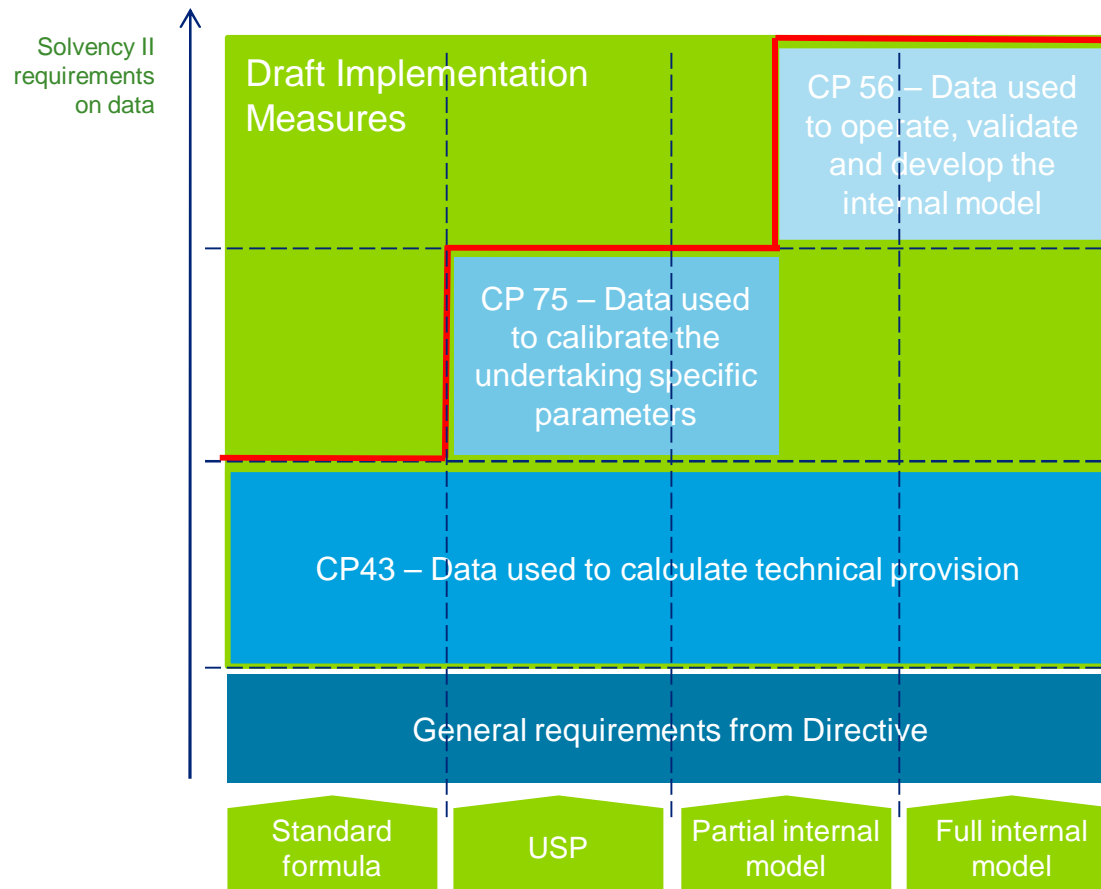
The use of data as well as the appropriateness and effectiveness of methods and models is clearly assigned.

The policies around data must exist, but no clear ownership can be derived from directive or level 2 texts.

# Developments in Europe: Solvency II

## Requirements for data management depend on the maturity level

Solvency II brings along a series of requirements for data management. The extent of the requirements depends on the use of the data and in particular on the degree of maturity of the models in use and on the complexity of the underlying business.



### Maturity levels:

1. Standard formula
2. Undertaking specific parameters
3. Partial internal model
4. Full internal model

Requirements for data management will be reflected in the implementation measures:

1. Technical provisions: Art. 14ff (Art 82 of the directive)
2. USP: Art. 197 (Art 104 of the directive)
3. Internal model: Art. 220 (Art 121 of the directive)

# Solvency II

## Requirements for data management

### Technical provisions

#### Data Policy:

- Definition and assessment of DQ
- Assumptions in collecting, processing and using data
- Update process, frequency and triggers

#### Data Directory:

- Source, characteristics and use
- Requirements are set out wrt
- Accuracy, Completeness, Appropriateness of data
  - Consistency of use
  - Assumptions made
  - External data

Limitations must be documented.

Approximations must be justified.

Regular validation is required. (Art. 255)

The actuarial function must assess sufficiency and quality of data. (Art. 48 of the directive)

### USP

Additional requirements on content consistency and on audit ability of external processes.

### Internal Model

Data is now all input to the model and must fulfill mostly the same criteria as data for TPs.

Frequency of update must be consistent with use test. Inconsistent use must be documented and justified

#### Responsibility of RM:

- Monitor and help to operate the RM system
- Analyse the performance of the RM system
- Not responsible for the input but for the accuracy and use of the output.

Advice to use XBRL as reporting standard.

Getting it done



# Change in a dynamic environment

There is a vast set of requirements beyond Solvency II

### Solvency II

Supporting topics.

Less impacted areas that often are required for enterprise-wide data management

The key areas of impact

### Other drivers

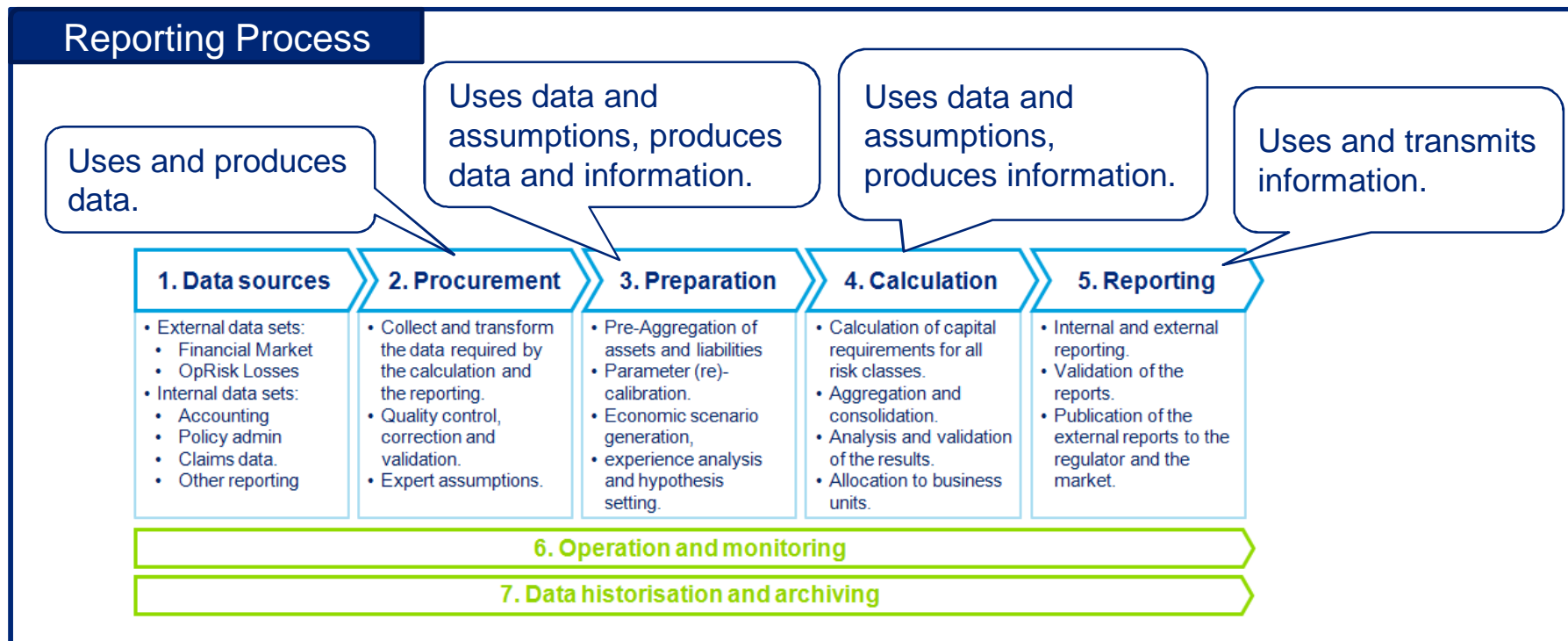
- Business activities require their own changes to source systems and have priority.
- Ever changing reporting requirements put emphasis on flexibility.
- Ad hoc analyses require full „manual“ access to all data and algorithms.
- Neither organization nor peripheral systems can be changed for Solvency II.
- „Kingdoms“ must be conserved/ dissected.

**▶ A variety of sometimes contrasting requirements add project complexity and make stakeholder management key to success.**

# Data, Assumptions, Information

Concepts and terms of Solvency II retrieved in a common reporting process

1. **Data:** Gross data collected from the source systems (e.g. policy data, asset data) and transformed data.
2. **Assumption:** Output of a process requiring the use of an expert judgment and that can be compared with experience (e.g. future lapse rate, calibration factors of the ESG)
3. **Information:** Output of a calculation process (e.g. economic scenarios, BE, SCR, etc.)



# Appropriate, Complete and Accurate

Common sense but hard to implement

- 1. Appropriate:** Data is considered to be appropriate, if it is suitable for the intended purpose. A statement of purpose is required for all data sources, be it for the calculation of best estimate provisions or for determining the required capital, preventing the data to be "abused" at a later stage.
- 2. Complete:** Data must be available for all business activities and at a level of detail, that allows the proper reflection of risk.
- 3. Accurate:** Data must be free of material mistakes or omissions, recorded adequately and timely and allow for a high level of confidence.

These terms reflect common sense. However, in order to define the right measures, sound business experience as well as data quality expertise is required.

## Organisational Measures

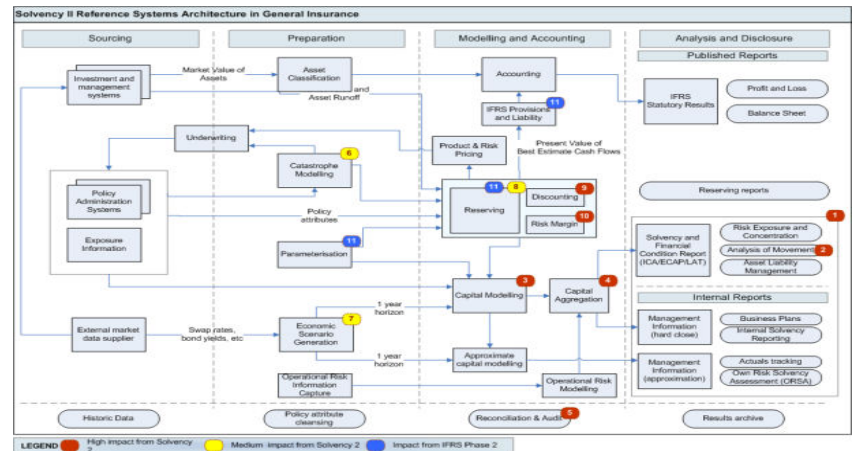
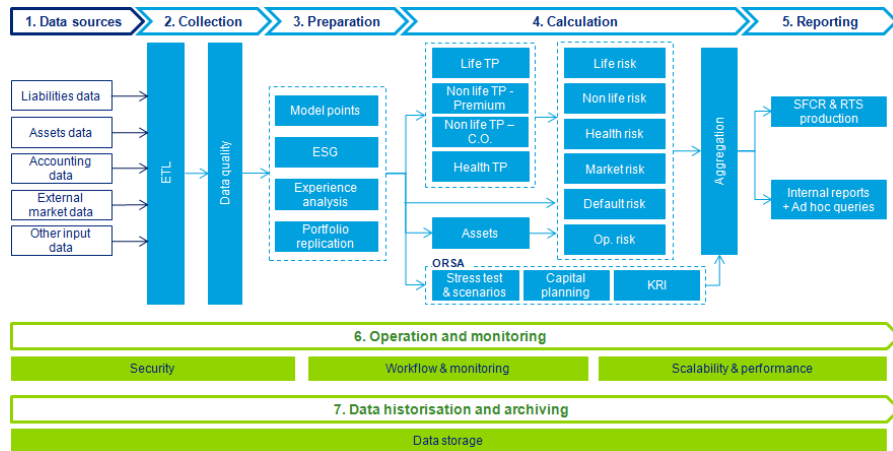
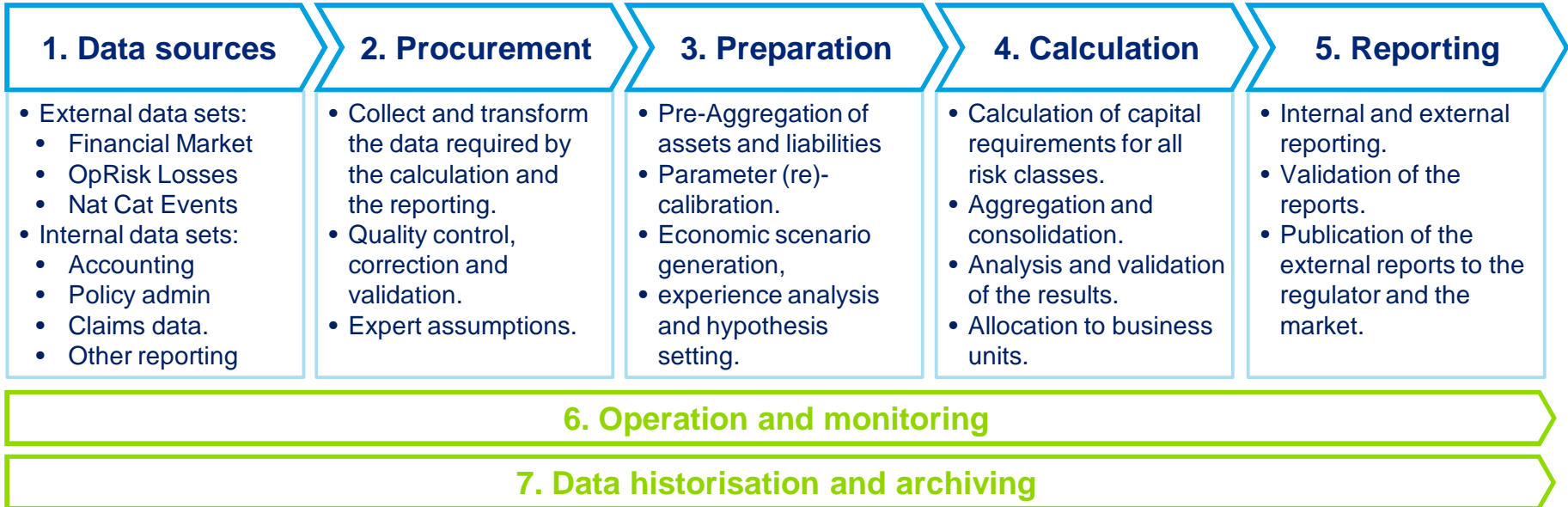
- Use of the same data across the company.
- Clearly assigned responsibilities for data as well as business process.
- Empowerment of employees for true accountability through access to results.

## Technical Measures

- Integrated data storage.
- Transparent validation reports.
- Personal sign-offs and tracking.
- Access to results and as-if calculations before sign-off.
- Access to plausibility calculations/tools.

# Target Architecture

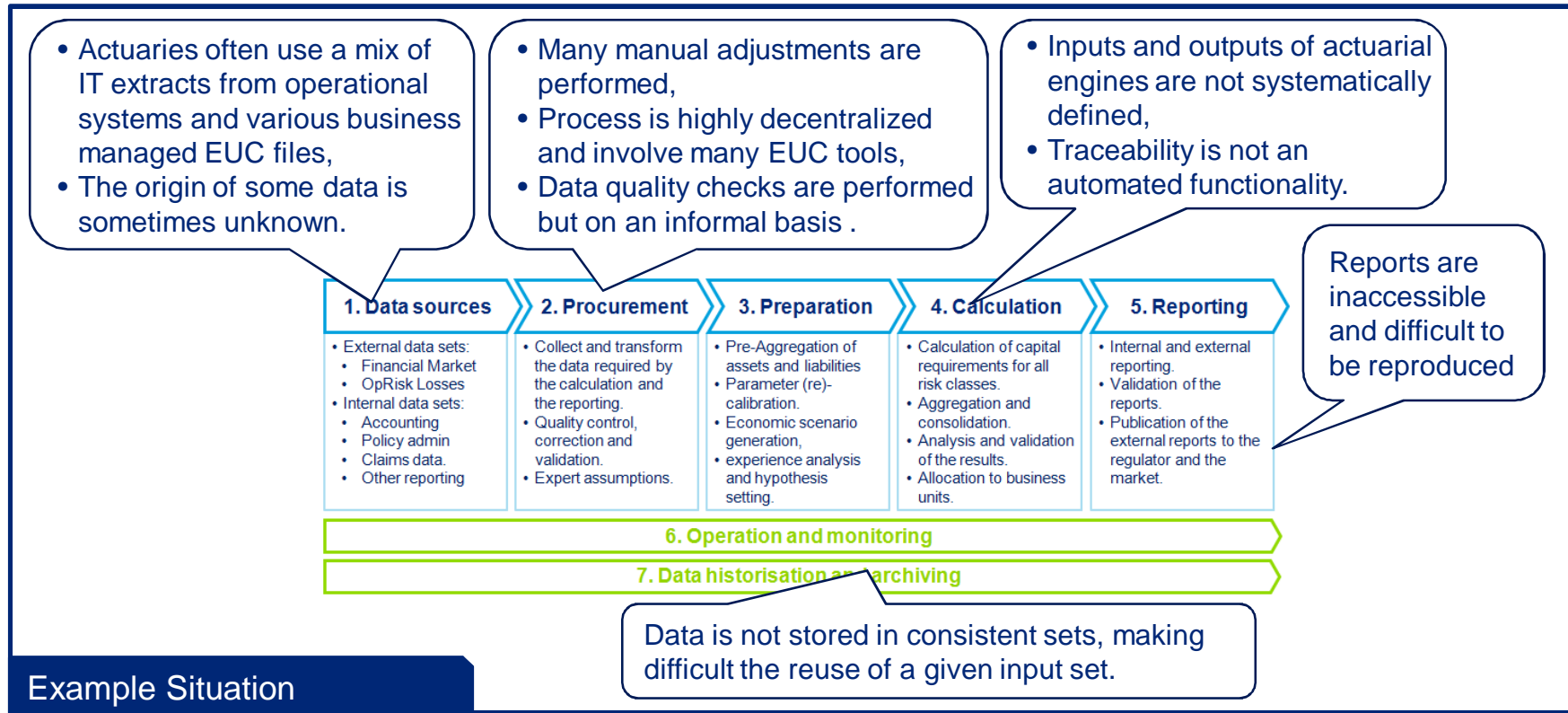
A typical risk reporting process



# Target Architecture

## Where are we now?

Ever changing requirements and an ongoing history of growth and mergers put flexibility at the core of the environment. Controls deteriorate or are enforced only via discipline of employees.

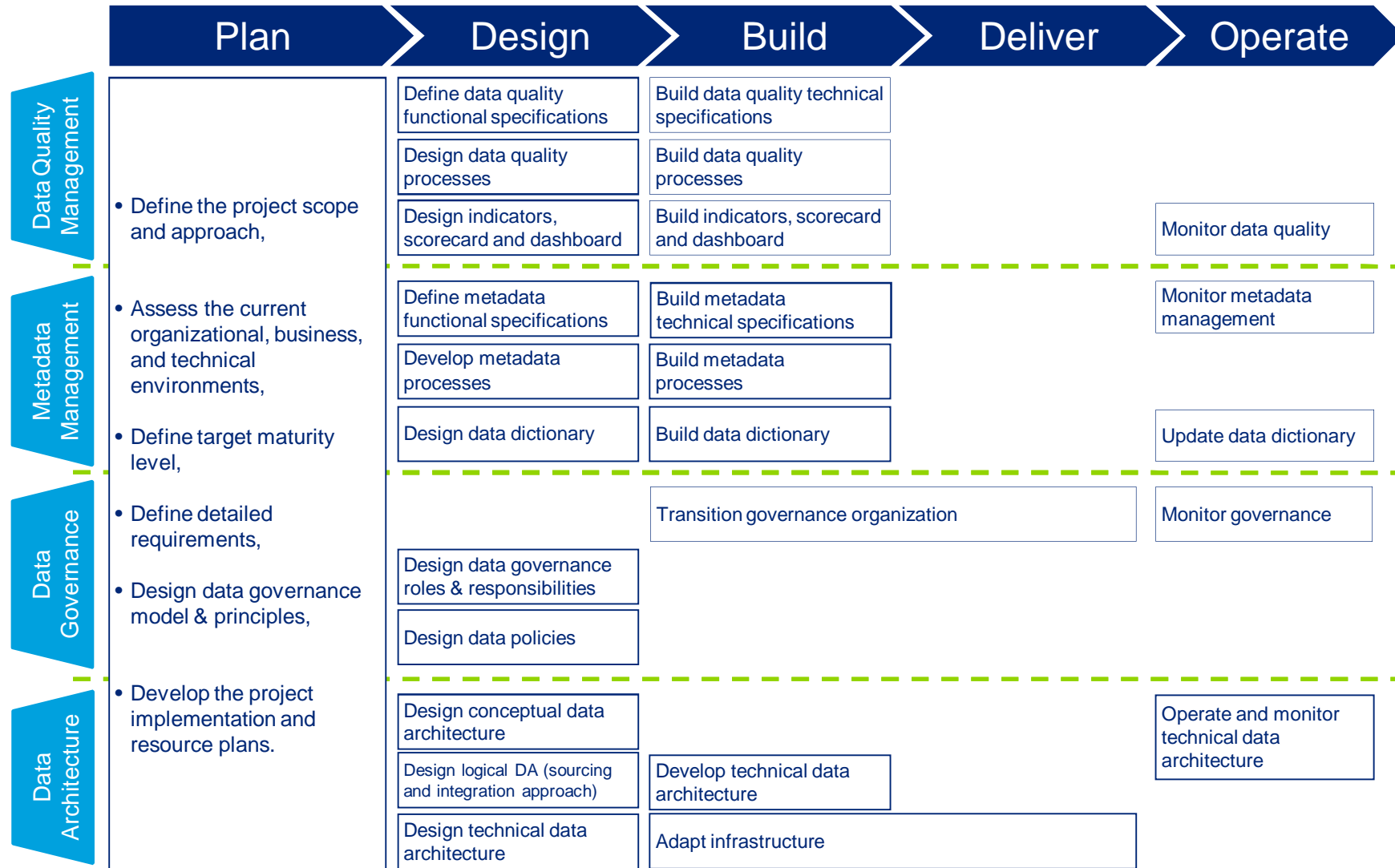


Example Situation

**We believe that a majority of companies is not yet ready for Solvency II.** There is still time left, but experience shows that the implementation risk and timelines should not be under-estimated.

# Enterprise Data Management methodology

After an initial analysis, 5 sequenced steps lead to an EDM



# Choice of System

## Risk reporting is becoming an operational task

The make or buy decision and the decision for a system must not be exclusive. However, the choice you take will most likely stay for many years and be difficult to revise.

### Buy

- 20-25% cheaper
- Innovation
- Knowledge transfer
- Alignment of organization

The diagram illustrates the Solvency II Framework from SAS. It features three gauges for Accuracy (99%), Appropriateness (98%), and Completeness (99%). The central 'Reporting Portal' feeds into 'Firmwide Risk' (comprising Property full risk, Operational risk calculation, and Concentration risk). Below this are 'Underwriter Risk - Life' (with sub-components: Market risk capital calculation, Life capital calculation, and Loss reserving) and 'Underwriter Risk - P&C' (with sub-components: Market consistent valuation and Qualitative assessments). The entire framework is supported by 'Enterprise Governance, Risk and Compliance' (including Qualitative assessments and Control testing).

The diagram shows a data model for insurance. It includes entities like INSURANCE PRODUCT, INSURANCE ARRANGEMENT, INSURANCE CLAIM, INSURANCE POLICY, SERVICE ENTITIES, and MARKETING CAMPAIGN. Relationships are defined: 'INSURANCE PRODUCT' is for 'INSURANCE ARRANGEMENT', 'INSURANCE ARRANGEMENT' is for 'CUSTOMER', 'INSURANCE CLAIM' is against 'INSURANCE POLICY', and 'INSURANCE POLICY' is managed by 'SERVICE ENTITIES'. 'MARKETING CAMPAIGN' targets 'CUSTOMER'.

### Make

- 100% fit
- Learning process
- Flexibility
- Company history

The flowchart details the XBRL reporting process. It starts with 'Data sources' (Sales projection data, Policy administration and claims data, Global assumptions data, Investment management data, Operational risk team) feeding into 'Preparation' (Model point file creation, Model point file grouping, Experience analysis and assumption setting, Asset allocations, Loss event data). These lead to 'Models' (Asset and liability modeling, Deterministic, stochastic, asset, tax; and Counterparty exposure modeling, Operational risk AMA model). The output is 'Capital calculations' (Risk and capital aggregation (VaR, MCR, SCR)) and 'Balance sheet output' (Assets, Other liabilities, Surplus, SCR (over MCR), MCR, Risk Margin, Market value of assets, Book estimate liabilities (for non-eligible risks), Market value of liabilities (for eligible risks)).

The screenshot shows the XBRL software interface with various data entry fields and a 'Data Controls' panel.

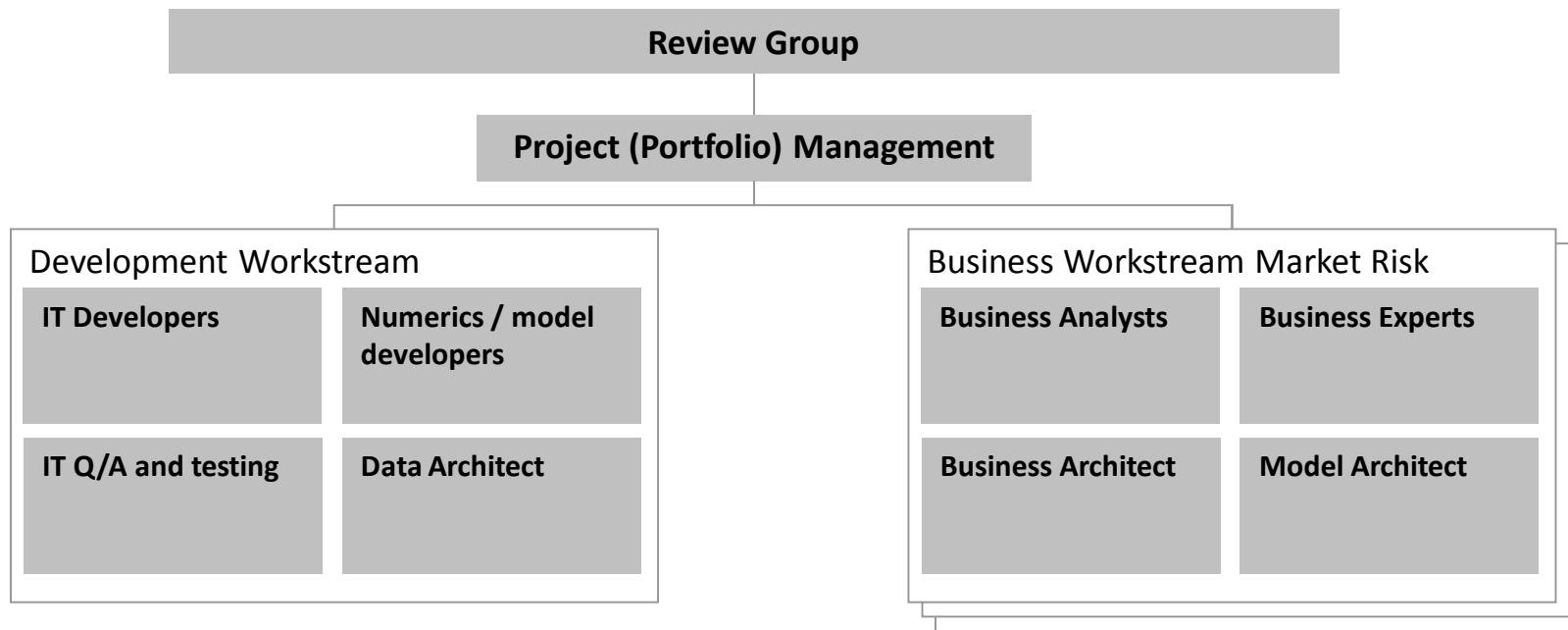
The XBRL logo is displayed at the bottom right of the slide.

▶ Systems usually are in use for more than 10 years. The introduction of a risk management system is a good opportunity to go through a thorough evaluation.

# Project Setup

Close interaction is required between business and IT

Similar to accounting or contract administration in earlier days, the introduction of a firm-wide risk management system requires an appropriate project management and can be taken as an opportunity to transmit governance and transparency via on-the-job training of employees..



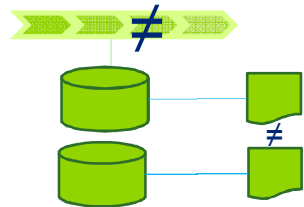
A project with the IT department on board adds governance, improves documentation and establishes a better firm-wide collaboration.

▶ The project must lead into ongoing operations. After project closure, data governance becomes an permanent institution with stakeholders from business and IT.

# Relevance of Data Quality for Insurance Companies

Compliance is only one, but an increasingly important reason.

## 1. Because poor data quality is expensive: 10% of revenue

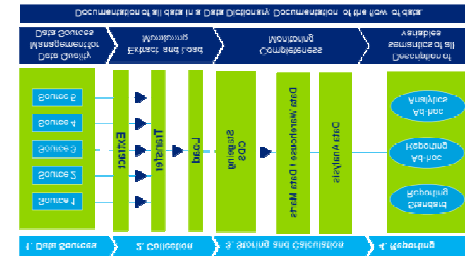


Inaccurate, incomplete reporting

- Wrong decisions or actions
- Redundant data handling costs for replication and synchronization

- Process failure: Rework, Restart
- Cost based on lower reputation

## 2. Because the management needs valid, complete and consistent information



- A Data Warehouse needs accurate and complete data, because important decisions are based on that data.
- Stress tests need accurate and complete data.

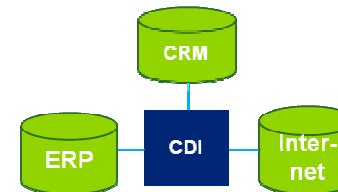
## 3. Because controlled data quality is mandatory for compliance



Higher regulatory compliance attestation demand needs better data quality and documentation

- FINMA SST Swiss Solvency Test Solvency II
- Basel III
- FATCA
- Need for accurate ad-hoc evaluation for FINMA

## 4. Because a good data quality helps to increase the customer value



Customer Data Integration and Data Quality

- More customer
- Better up and cross selling
- Better campaign management

Contact



# Contact



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