

# ACORD and XBRL: Bridging Data Standards to Enhance Re/Insurance Reporting Under Solvency II

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## *Discussion Paper*

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### **About the document**

ACORD and XBRL data standards have, over the years, gained significant adoption levels in a number of jurisdictions worldwide. Established in 1970, ACORD has since become a well-established standard for exchange of messages used between stakeholders of the insurance and reinsurance data supply chains. XBRL standards have, in recent years emerged as a solution-of-choice for insurance and banking regulatory reporting of financial and supervisory information. Both standards have firmly established their roots in their respective domains and it was a matter of time when business cases would emerge connecting the two worlds. Establishment of XBRL projects in the US (US SEC, FDIC), Europe (EIOPA Solvency II), China, Bermuda and other jurisdictions, together with advanced works on the ACORD GRLC (Global Reinsurance and Large Commercial) Tax and Regulatory Reporting and other standards, brought about the initial impulse to research the synergy between ACORD and XBRL. This document aims to discuss the potential of linking ACORD and XBRL which is expected to span several levels: from organisational, through business and reaching technical layers. The organisational layer is primarily the activities undertaken by the ACORD and XBRL organisations to develop, maintain and advocate the implementation of their respective standards. The business layer comprises mostly of the alignment and harmonisation of business terms and definitions between the two sets of standards. The technical layer shall enable direct connection at ACORD and XBRL specifications or derived product levels (messages and taxonomies). This paper presents both consortia, their major products and further examines the respective layers of connections between ACORD and XBRL supporting the overview with relevant business cases. The document concludes with recommendations of further organisational, research and development activities.

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## Abbreviations

ACORD	Association for Co-operation, Research and Development
BR-AG	Business Reporting - Advisory Group
DPM	Data Point Model
EIOPA	European Insurance and Occupational Pensions Authority
EU	European Union
GRLC	Global Reinsurance and Large Commercial (ACORD standards domain)
L&A	Life and Annuities (ACORD Standards domain)
P&C	Property and Casualty (ACORD Standards domain)
QRT	Quantitative Reporting Template
XBRL	eXtensible Business Reporting Language

## Executive summary

ACORD, XBRL International and the Business Reporting - Advisory Group (hereon, “BR-AG”) have worked to ascertain the feasibility of linking transactional data stores with the Solvency II reporting format with the aim of assisting stakeholders to produce automatable, reliable, auditable and traceable reports. In order to do this, the Authors have taken a standards-based approach and mapped data items between the ACORD Global Reinsurance and Large Commercial (GRLC) standards and XBRL’s Solvency II taxonomy. **This work has produced the following findings and recommendations:**

1. In this work, the ACORD GRLC standards’ data items relating to transaction accounting information have been shown to map to the corresponding XBRL Solvency II taxonomy data items (details relating to e.g. Premium, Claims Amount and Natural Catastrophe Perils)
2. This work has illustrated some potential benefits of implementing a data governance strategy to over-arch the various datasets and data stores in use in companies today. By working towards a consolidated view, management is more likely to be able to obtain useful management information and metrics to measure performance in a timely manner. In addition, the strategy can also deliver a more reliable, auditable and traceable set of reporting data for compliance staff to use to report to supervisors.
3. This work has established that while there is a subset of data that is common to the ACORD GRLC transactional data standards and the Solvency II taxonomy, the majority of the Solvency II data requirements are not found in transactional datasets. It should be clear that the mapping of data from transactional databases to reporting datasets is not a *silver bullet* solution.
4. Notwithstanding the first point above, mappings between the two standards is seldom a 1:1 exercise. Although several schedules in Solvency II ask for detailed transaction-level information, Solvency II reporting is typically at an aggregated level, which requires rolling-up of transactional values. The nature of Reinsurance and Large Commercial business can often be multi-currency on a single contract, so care must be taken to ensure that data items are mapped not only in concept, but also in detail (i.e. Net Premium to Net Premium and therein, values accordingly matched as per US\$ to US\$, GB£ to GB£, Euro to Euro etc.) and that functions are applied appropriately (typically, additions/rolling-up).
  - a. The two standards domains of ACORD GRLC and XBRL Solvency II provide reliable data dictionaries for their constituents and supported use cases. However, it would be beneficial to have a unifying data dictionary that encompasses both in order to make future mappings easier and consistent. Two options that warrant further exploration are:
    - i. The ACORD Framework may fulfil this requirement. The ACORD Framework<sup>1</sup> is a series of five inter-related models, or facets, that use different views to define the nature of the insurance industry. These facets are: Business Glossary; Data Model; Component Model; Capability Model and Information Model.

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<sup>1</sup> Further details about the ACORD Framework are available at <http://www.acord.org/standards/Framework/>

- ii. The XBRL Data Point Model. The DPM methodology<sup>2</sup> may support harmonisation of definitions as it describes data requirements according to multidimensional sets of properties that enable explicit, unique, precise and logical expression of information needs.
  - b. A variety of linking mechanisms exist (i.e. ontologies, XBRL Formula, external mapping mechanisms) that may describe connection between standards on a technical level enabling more direct transformations between data sets.
- 5. This work is presented as a Proof of Concept. ACORD, XBRL and BR-AG are keen to conduct further analysis into this work. In order to do so, we believe that roundtable discussions with subject matter experts from the operations teams and compliance teams of insurance companies would provide the expertise required to do so. As standards-setting organizations, ACORD and XBRL can provide the meeting environment and facilitation to do this, along with expertise from BR-AG. The areas of work which could be explored in these roundtables includes:
  - a. Workflow/process mapping
  - b. Data mapping and mapping validation
  - c. Data definitions harmonisation
  - d. Mapping technologies and technical requirements
  - e. Framework validation
  - f. Maintenance and update processes.

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<sup>2</sup> Further details about the Data Point Model methodology are available at <http://www.eurofiling.info/dpm/index.shtml>

## Introduction

### Background

Ever since ancient Egyptian, Indian, Roman and Greek civilisations, where the roots of imposed market regulation can be traced, a collision of opinions on the value of supervision<sup>3</sup> - - compared to the freedom and performance goals of running businesses<sup>4</sup> has been inevitable and often debated. Even after thousands of years, this conflict persists and fuels discussions whenever new regulations are introduced. Market organisations typically take opposing views: those whose origins are traced to market-driven efforts defend the interests of supervised entities, whereas regulatory environment agencies, often supported by public media, justify new controls through arguments of market protection.

While the above, polarised view is common it does not necessarily represent the modern reality. A simple analysis of processes of development and imposition of new supervisory regimes around the world reveals a sophisticated environment combining numerous approaches, stakeholders, stages, consultations, revisions, methods and tools used by both supervised entities and regulatory agencies in a concerted effort to balance regulatory needs with market freedom and business operation efficiency. Such an engaged approach does not, of course remove the conflicts of interests between regulators and businesses but it does significantly reduce tensions and allows for both sides to communicate on their requirements. One of the key challenges where controversies emerge between private and public sector are information requirements especially those supported by new information technologies.

The integration of technologies and standards used by the market and those proposed by the regulators presents both a challenge and an opportunity for all stakeholders. Businesses may seek improved compliance process efficiency, while regulators may welcome closer ties between information used by market participants to drive their internal decisions, with their supervisory frameworks. Other market participants and intermediaries may benefit from harmonised and integrated environments where data requirements and technology requirements are common and shared and as a consequence, lower market operational costs.

In this paper we examine such connections between two standards used for the global and European insurance sector supervision: the Extensible Business Reporting Language (XBRL) as applied by the European Insurance and Occupational Pensions Authority (EIOPA) for the Solvency II framework, and the ACORD Global Reinsurance and Large Commercial (GRLC) standard used by insurance and reinsurance businesses for exchange of information at transaction levels enabling more efficient business operations.

ACORD and XBRL International are standards development organisations with a remit to simplify operations in the areas of insurance processing and business reporting, respectively. While both organisations share a number of similarities including the development of XML-based data standards, their data standards are different, in terms of naming and design rules, structure, granularity and

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<sup>3</sup> understood to work in favour of market protection

<sup>4</sup> understood as inherently, the rights of people and organisations



even data definitions. Both organisations approach development of standards in distinct ways: while ACORD embraces the development process from business data requirements to technological levels, XBRL International provides a specification and best practices which organisations (e.g. EIOPA) may use to create their dictionaries (e.g. Solvency II XBRL Taxonomy). Nonetheless, there is a clear intersection between ACORD's transactional insurance business data and XBRL's aggregated business reporting information. E.g. Total premiums earned in a financial year, as reported in the Solvency II XBRL taxonomy, will be derived from the function of the sum of each premium transacted, as captured by ACORD transaction messages. This inter-relationship, once identified, documented and codified, can map between the two standards and provide an automatable, reliable, auditable and traceable method of not only collating regulatory reports, but also value-adding Management Information metrics and a credible quasi-Data Governance Strategy<sup>5</sup>.

### **The objective of this paper**

This discussion paper has been prepared to explore the feasibility of bridging data requirements between two data standards: ACORD, serving the transactional process efficiency and XBRL, serving reporting efficiency within the Insurance industry.

The paper outlines mapping work carried out by ACORD, XBRL International (XII) and Business Reporting - Advisory Group (BR-AG) between ACORD's Global Reinsurance and Large Commercial XML data standards and the XBRL Solvency II taxonomy as published by the European Insurance and Occupational Pensions Authority (EIOPA)<sup>6</sup>. The Solvency II XBRL Taxonomy has been defined by EIOPA and is being implemented by European Union regulators to assist insurers with their Solvency II Pillars I and III reporting requirements.

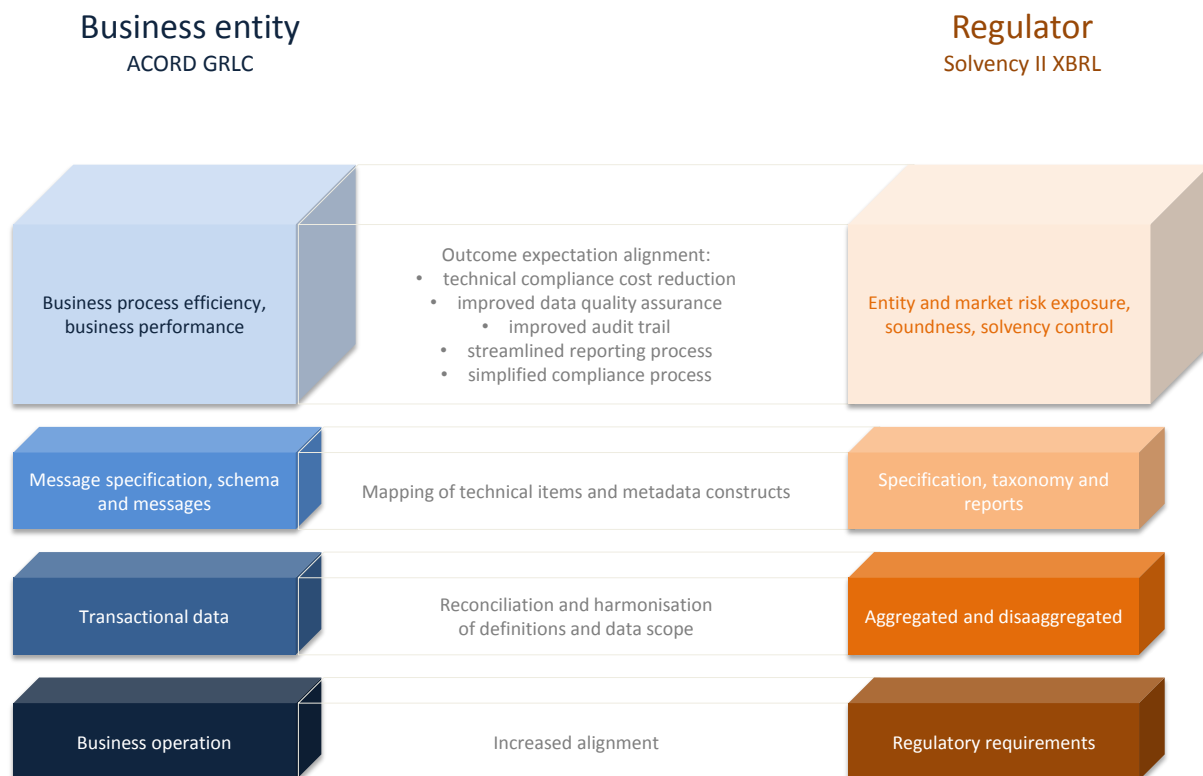
The research field for examining the intersection between ACORD and XBRL standards can be illustrated as follows:

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<sup>5</sup> A comprehensive Data Governance Strategy would extend to the front office as well and ensure that all work processes which capture, move or use data make that data available to stakeholders both upstream and downstream.

<sup>6</sup> More information: <https://eiopa.europa.eu/publications/eu-wide-reporting-formats/index.html>

Figure 1: ACORD and XBRL research field overview



The problem statement as identified using the above diagram can be expressed with the following questions:

1. Is it feasible to align the ACORD and XBRL standards, based on the insurance and reinsurance industry Solvency II business case? What could be a possible method of such alignment?
2. Does such alignment bring potential added value for business entities, regulators and other insurance market stakeholders?

The intention of this paper is to examine the levels of alignment as outlined above and to drive subsequent action in the form of roundtable discussions between constituents from the reporting and operations parts of the insurance industry, to work through more detailed business and data requirements and make recommendations for further standards-related work by ACORD and XBRL. This work may be in developing additional schemas, taxonomies, mappings, over-arching data dictionaries and/or frameworks.

## Scope of this discussion paper

ACORD's and XBRL's data standards encompass a wide range of use cases and business segments. The scope of this paper is limited to:

- ACORD Global Reinsurance and Large Commercial XML standards
- Solvency II XBRL Taxonomy as published by EIOPA

The ACORD GRLC standards were chosen because they became the “de facto” global standard for messages and transactional reporting of insurance and reinsurance industry and because within ACORD, this subset represents the data requirements commonly used by large insurance and reinsurance companies. It is these companies that are directly faced with complying with Solvency II regulation. This is elaborated further in later sections of the paper. It is worth noting that ACORD also has other standards programs, which focus on Property & Casualty Insurance (i.e. domestic, primary insurance for products such as automobile, building and contents, small business operators etc.), Life & Annuities (i.e. domestic, primary and secondary insurance for products such as life assurance), the ACORD Framework (discussed in this paper) and the ACORD Messaging Library (ACORD's next generation of XML messaging standards) as well as Infrastructure standards. The Property & Casualty and Life & Annuities standards encompass not only transactional messages, but also messages related to compliance checking and licensing and appointment amongst other use cases.

The Solvency II XBRL Taxonomy was selected because it comprehensively addresses Solvency II's scope of data requirements. Solvency II is one of the largest regulatory reporting frameworks within the insurance industry and is presently being implemented by EIOPA and various European supervisors. It is worth noting that other XBRL taxonomies exist which are applied in the insurance and reinsurance industries including the US GAAP XBRL Taxonomy, the IFRS XBRL Taxonomy, the Bermudian BRRT XBRL Taxonomy, the Japanese GAAP XBRL Taxonomy, the Chinese GAAP XBRL Taxonomy and other. Despite architectural and definitional differences between those taxonomies, for the purpose of this paper, it was assumed that alignment possibilities with EIOPA Solvency II XBRL Taxonomy, representing one of the most sophisticated and extensive dictionaries, should mean opportunities to define alignments with other.

The following alignment levels between ACORD and XBRL are examined:

1. Strategic (organisation);
2. Business (definition);
3. Technical (implementation).



## XBRL and ACORD strategic partnership

On 15 May 2012, XBRL International and ACORD announced a reciprocal agreement in a form of Strategic Alliance to explore areas in which their XML-based standards may present interoperability opportunities. XBRL has become an Association Member of ACORD, and ACORD is a Direct Association Member of XBRL. This announcement was followed by a series of presentations at events held both by ACORD and XBRL International outlining preliminary areas of interoperability. A group of experts representing both organisations was formed to explore detailed relationships and this paper presents the first outcome of several discussions held both at XBRL International and Eurofiling<sup>7</sup> events.

## Previous works

ACORD and XBRL US jointly published the *XML Standards and the Insurance Value Chain*<sup>8</sup> White Paper in February 2005. That paper described the functional areas where ACORD XML and XBRL provide standard data definitions and messages as well as the theoretical data standard links between transaction-supporting ACORD messages and enterprise reporting XBRL taxonomies. The paper focused primarily on the US taxonomies including the under-development US GAAP and US initiatives including Sarbanes-Oxley. The 2005 paper provided readers with a good understanding of where each standard added value for implementers and provided clarity over the discreet benefits of each as well as the expected combined complementary benefits of implementing both standards for the Insurance industry.

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<sup>7</sup> See: <http://www.eurofiling.info>

<sup>8</sup> See: [http://www.acord.org/library/Documents/ACORD\\_XBRL\\_WhitePaper.pdf](http://www.acord.org/library/Documents/ACORD_XBRL_WhitePaper.pdf) or <http://bit.ly/Z5T1G2>.

## Overview of ACORD and ACORD data standards

ACORD is a global, not-for-profit Standards Development Organization, based in the USA. ACORD is focused on developing and advocating the implementation of data standards for the insurance industry and its related financial services operations. ACORD develops and maintains its data standards through a consensual methodology and operating procedures.

ACORD data standards cover three lines of insurance business i.e. Life & Annuities (L&A), Property & Casualty (P&C), and Global Reinsurance & Large Commercial (GRLC). These lines of business are supported with data standards in paper form, e-form (e.g. fillable PDFs), EDIFACT and XML standards<sup>9</sup>. These three lines of business are also increasingly covered by the next generation of ACORD's XML standards: AML (ACORD Messaging Library). While the standards predominantly support transactional messaging, they also support some regulatory-based messaging between insurance principals or intermediaries and Governmental bodies e.g. with States' Departments of Motor Vehicles providing accurate driver records to Police Departments and in licensing and appointment of Agents amongst others.

ACORD data standards enable Straight-Through-Processing - i.e. it is possible for data to only have to be entered once, and then automatically re-used by all subsequent business partners in down-stream processes, without the need for re-keying. While this is a reality for some implementations, ACORD is typically one element in a mix of data sources for most companies. ACORD-based data makes up a proportion of data received by companies, with other formats such as paper, electronic (unstructured) documents and EDI making up the other data sources employed.

## ACORD's Global Reinsurance & Large Commercial standard

With regard to ACORD data standards, this paper will focus on the GRLC standards program. GRLC standards are global in nature and consistently implemented by multinational companies in numerous geographies, covering the full transactional process flow from pre-sale to post-sale processes. The data standards are XML schemas, transmitted securely over the internet, with corresponding code sets and process rules detailed in Implementation Guides. The data standards are derived from the ACORD GRLC Data Dictionary – effectively a normalised data model. ACORD GRLC XML standards are regarded as mature and stable, having first been released in 2001.

It was felt that the GRLC standards offered the best basis for the purposes of this research. L&A and P&C standards are typically localised to meet specific market needs, but the Authors hypothesise that local XBRL taxonomies and localised ACORD standards should also be bridgeable in the manner that this paper details between ACORD GRLC and the Solvency II XBRL Taxonomy.

ACORD GRLC data standards are implemented by three principal actors in the professional insurance value chain:

1. **Insureds** - Commercial Risk Managers and Ceding Insurers transferring risk to Reinsurers
2. **Brokers** - Professional intermediaries representing Insureds
3. **Re/insurers** - Insurers and Reinsurers, selling capacity

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<sup>9</sup> Not all formats are employed by all lines of business, nor for all business functions

ACORD GRLC standards are implemented in various insurance markets around the world, with messages often and typically moving cross-borders. Certified implementations demonstrate full compliance with ACORD's XML schemas as well as business processes defined within Implementation Guides; certification assures that companies have consistently implemented ACORD messages in the same way.

ACORD GRLC standards are implemented in, amongst others: North America, Bermuda, UK, Continental Europe, Qatar, India, Singapore and Australia. The map presents a global, consistent and certified application of the GRLC standard.

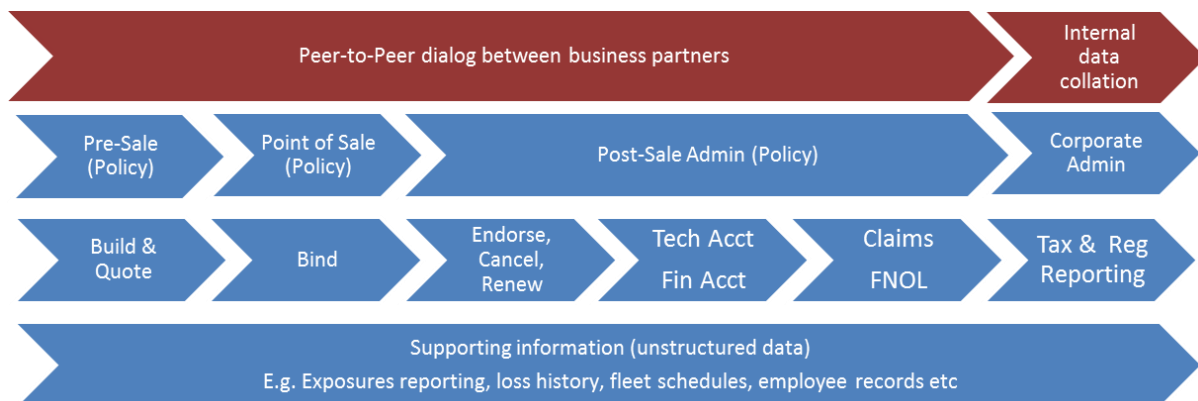
Figure 2: Certified ACORD GRLC implementations



## Business processes supported by ACORD GRLC

ACORD GRLC standards allow for the electronic interchange of insurance data between parties, enabling electronic business processing for the entire risk lifecycle and some internal administrative activities. These are illustrated below:

Figure 3: Business processes supported by ACORD GRLC Data standards

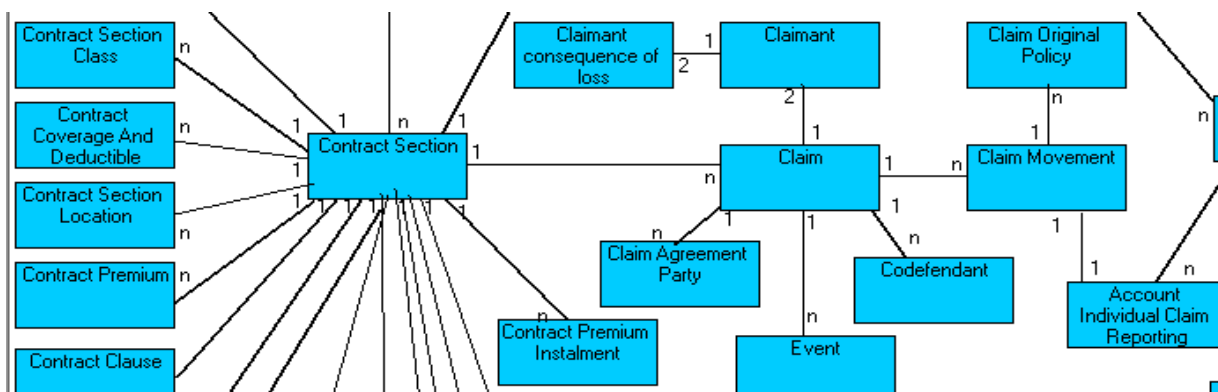


The ACORD GRLC messages are aligned with activities and tasks executed along common insurance processes and enable prompt interaction between systems and organisations.

## ACORD GRLC Data Dictionary

The ACORD GRLC Data Dictionary is the primary reference for the standards, with all GRLC XML messages constructed from its components. Below is a graphical view of the highest level view of the GRLC Data Dictionary. Each data group shown stores numerous related data items, along with their definitions, XPath paths and where applicable, code sets.

Figure 4: Snapshot of selected part of the ACORD GRLC Data Dictionary / Dictionary Model



The ACORD Data Standards are supplemented with “infrastructure” standards – i.e. web messaging standards (SOAP profiles, such as ACORD Web Services Profile (AWSP) and ACORD Messaging Service (AMS)) and supporting document sharing and access (ACORD Document Repository Interface (ACORD DRI) standards) for unstructured data such as fleet schedules, property schedules, personnel records, loss histories etc.

## The ACORD Framework

In order to integrate development of data standards ACORD embarked on creation of the ACORD Framework - a series of five interrelated models, or facets, that use different views to define the nature of the insurance industry.

### Business Glossary

The Business Glossary contains standardized definitions of insurance concepts, such as "accident location", and includes synonyms, business line-specific usage, and references. The Business Glossary's consistent terminology will help improve communication between partners and within project teams.

### Data Model

The Data Model is a logical level entity-relationship model. "Logical level" implies that it can be used in any database implementation. Some of the many uses of the ACORD Data Model include creating physical data models, data warehouses, or to validate your own data models.

### Component Model

The Component Model is a set of reusable components for the various data services in the insurance industry, organized around the kinds of concepts described in the other models. This model has many uses including portfolio rationalization design and the basis of specifications for software builds or buys.

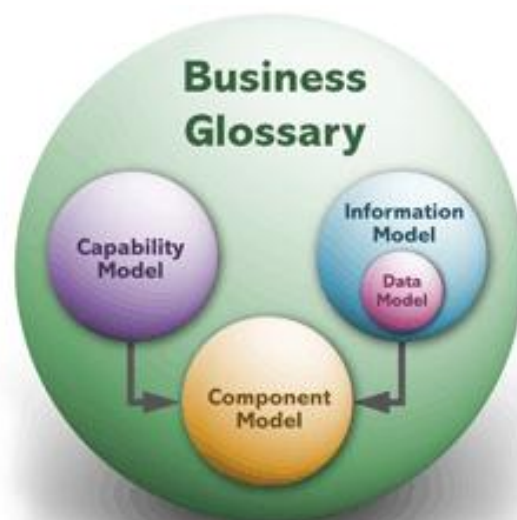
### Capability Model

The Capability Model defines a baseline of the things insurance companies need to do – the company's capabilities. It includes a listing of process names for some of those capabilities, called Process Maps. This model can be used in process engineering, merger/divestiture evaluations and business operations analysis.

### Information Model

The Information Model provides the relationships among insurance concepts, such as Policy, Product, Party, and Claims. It can be used to jump start application development, consume ACORD XML messages, and as a semantic model for integration, among other uses.

Figure 5: ACORD Framework





## Overview of XBRL and XBRL standards

XBRL International is a global non-profit Standards Development Organization based and registered in the USA. XBRL International through its members develops specifications and best practices used for a variety of electronic business reporting functions including: tax, statistics, financial reporting, prudential and supervisory reporting and other. XBRL International develops and maintains specifications and best practices through established Standards Board and Best Practices Board operating by means of voluntary, market-driven Working Groups. Standards and best practices are developed on a consensual basis and undergo several maturity and review stages.

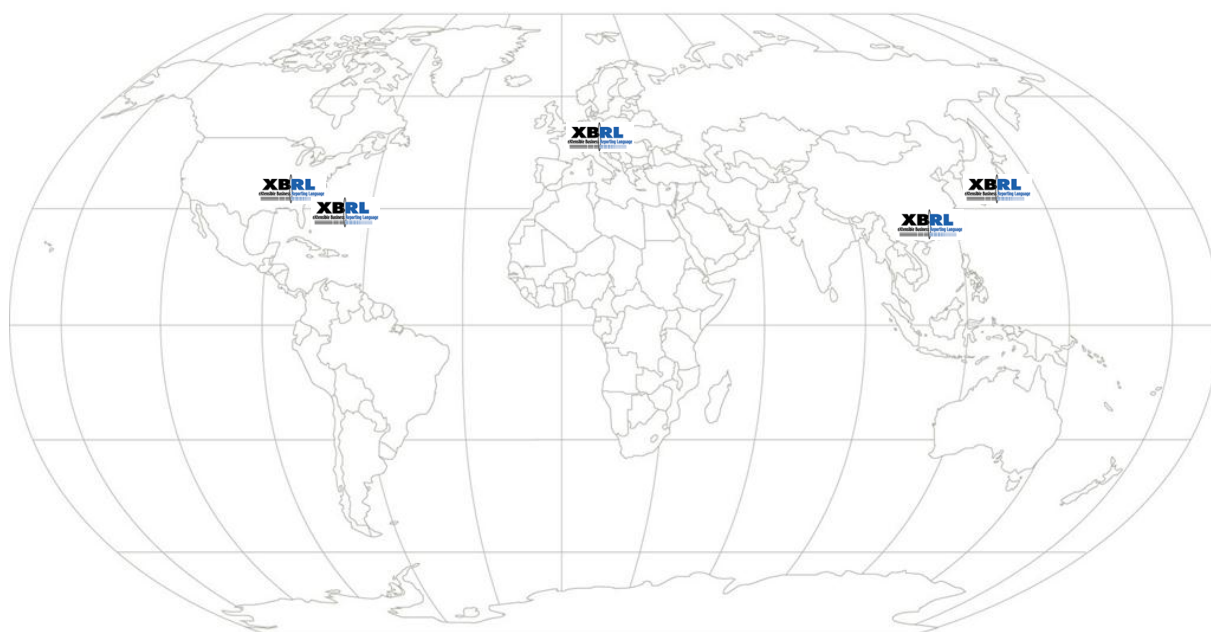
XBRL specifications and best practices are further used by business and regulatory organisations to create XBRL taxonomies – dictionaries of data items or data points covering a specific area. For instance the International Accounting Standards Board offering the IFRS XBRL Taxonomy for International Financial Reporting Standards. This model led since 2000 to emergence of numerous taxonomies for a variety of reporting domains including banking (COREP, FINREP, BSI-MIR), securities (IFRS, US GAAP, JP GAAP and other national reporting standards), insurance (Solvency II, BRRT, US GAAP Insurance, Chinese GAAP Insurance), non-financial (GRI, ESG, WICI), tax (Ireland, UK, Netherlands) and many other.

In the majority of its implementations XBRL allows for streamlining and simplifying business reporting functions through mapping of data from internal sources and/or manual entry, advanced validation embracing several levels (syntactical: XML, XBRL and semantical: taxonomy, business rules) and integration with diversified analytical systems. The XBRL specifications and best practices allow for, and in many cases trigger, harmonisation activities of cross-sector dictionaries.

## Adoption of XBRL for insurance and reinsurance industries

Worldwide use of XBRL for insurance sector (existence of taxonomies) is presented on the diagram:

Figure 6: Global adoption of XBRL for insurance and reinsurance sector



The European Insurance and Occupational Pensions Authority Solvency II XBRL project is the biggest ever regulatory exercise to bring insurers and reinsurers under single supervision. Being one of the more sophisticated implementations of XBRL for insurance supervisory purposes the Solvency II XBRL Taxonomy was therefore selected for this analysis.

### Solvency II XBRL Taxonomy

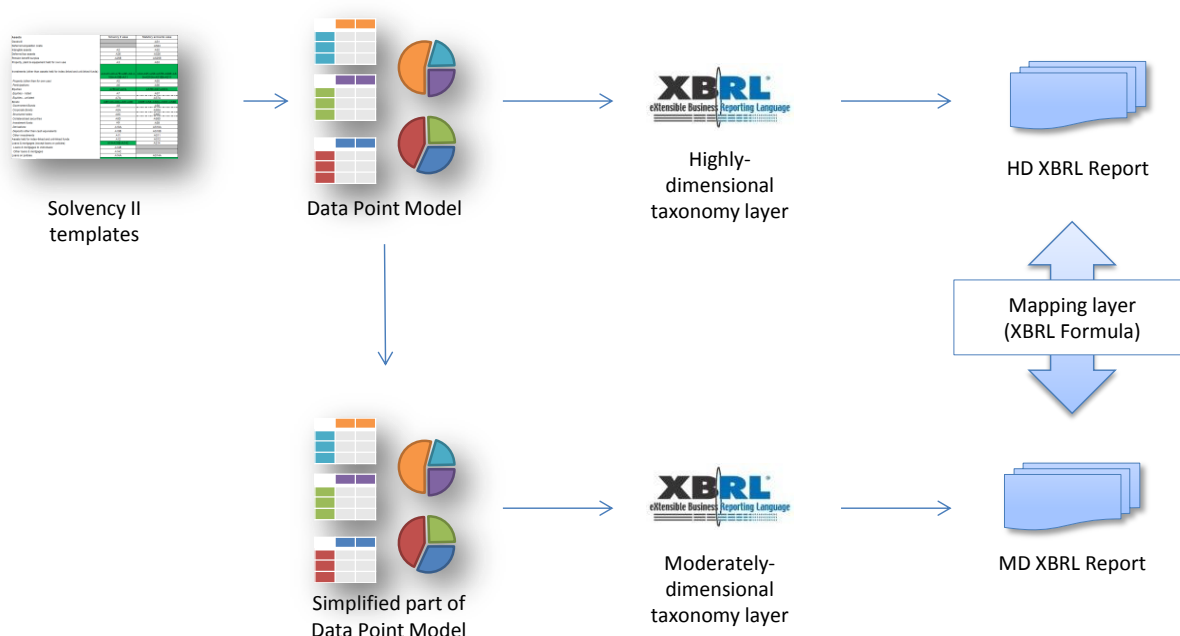
The Solvency II XBRL Taxonomy is a dictionary of Solvency II reporting requirements, developed by the European Insurance and Occupational Pensions Authority (EIOPA) based on XBRL specifications and best practices. In addition the design process of underlying reporting requirements for the Solvency II XBRL Taxonomy used the Data Point Modelling (DPM) methodology. The DPM is a method of precise, unique, explicit and logical description of technologically-neutral data models. Such description disallows ambiguities and therefore improves comparability and harmonisation opportunities.

From a business perspective, the Solvency II XBRL Taxonomy reflects reporting requirements as expressed in the Quantitative Reporting Templates (templates) and as described using the DPM method at two levels: detailed (high-dimensional) and simplified (moderately-dimensional). Such description allows for more precise definition of data points and in consequence better maintenance (through increased stability of definitions) and extended analysis (through detailed queries based on dimensions). The two layers also assist the national regulators and reporting entities in development of the XBRL instance documents. To further assist in this process EIOPA prepared an XBRL Formula

layer which enables automated transformation of reports created according to one of the layers into the second.

Technically the Solvency II XBRL Taxonomy consists of a set of XML schemas extended by XBRL specification and set of linkbases defining relationships between defined items or relationships linking to external resources. The Solvency II XBRL Taxonomy utilises specifically the label linkbase (allows to attach multilingual and technical labels to dictionary declarations), definition linkbase (allows to describe data points in multi-dimensional manner), formula linkbase (allows to define mathematical, logical and transformational business rules). The moderately-dimensional model was created using the highly-dimensional definitions in order to improve performance of XBRL files processing and allow for alternative, simplified implementation approach by EU regulators.

Figure 7: Solvency II XBRL Taxonomy Layers



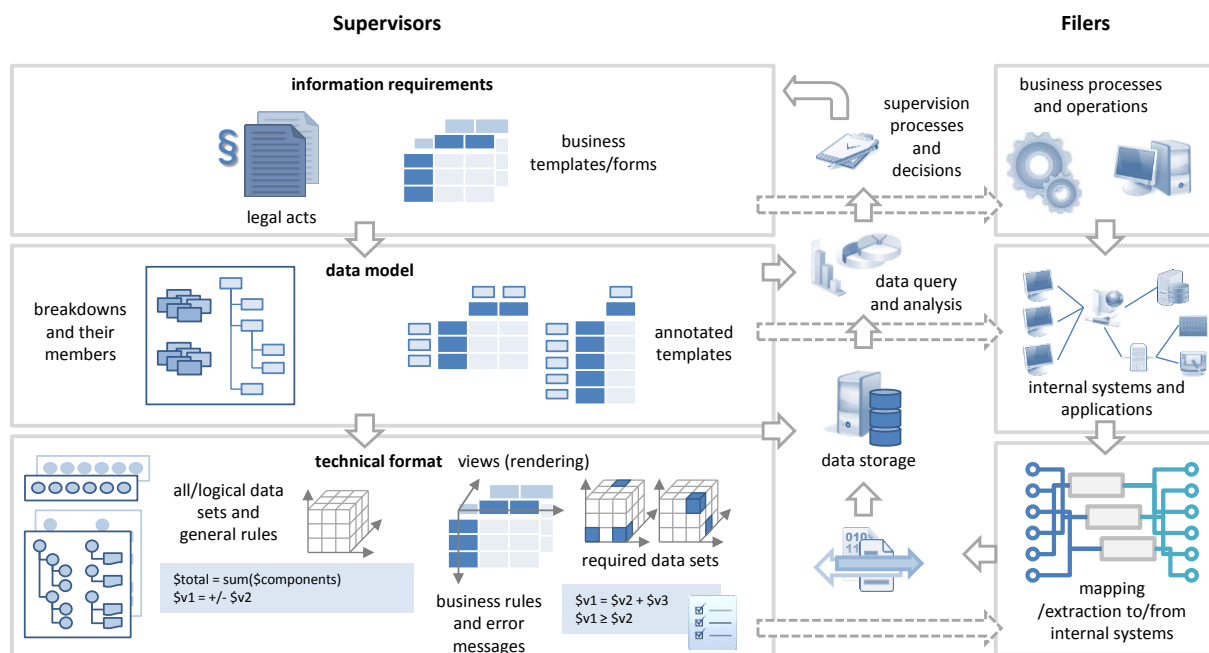
### Business processes supported by Solvency II XBRL Taxonomy

EIOPA has announced that the Solvency II XBRL Taxonomy is expected to become the standard of collection of Solvency II data at the following levels:

1. From EU regulators to EIOPA
2. From reporting entities to EU regulators

While the first option is considered to be mandated the second level will most likely depend on actions undertaken by the national regulators. Nevertheless EIOPA is expecting that availability of the Solvency II XBRL Taxonomy should assist filers in the European Union in data governance and organisation including design of internal reporting systems and databases. The overview of processes supported by the Solvency II XBRL Taxonomy is presented on the diagram.

Figure 8: Overview of processes supported by the Solvency II XBRL Taxonomy



The Data Point Model - describing information requirements – becomes a bridge between business and technology layers. The Data Point Model is used to map data from business operations to the Solvency II level as well as support the analytical and assurance processes. The XBRL taxonomy provides a direct mapping interface and therefore allows extraction of structured data from internal systems.

## Challenge: linking transactional and reporting data

### Understanding the differences

Instinctively, a mapping between two XML data standards seems a relatively simple task. In terms of insurance-related financial information, a given data item within the Solvency II XBRL Taxonomy should map to an equivalent data item within ACORD. However, in reality the mapping has to consider at least the business and technical levels. The diagram below presents an overview of differences between ACORD and XBRL approaches to describing insurance data. This overview will assist in further exploration of the alignment of more detailed levels.

**Table 1: ACORD GRLC and Solvency II XBRL Taxonomy - Differences**

	ACORD GRLC	XBRL Solvency II Taxonomy
<b>Business perspective</b>		
Nature of data	Transactional (mostly disaggregated)	Aggregated and disaggregated
Owner of business definition	ACORD	EIOPA (regulator)
General approach to design of data constructs	According to ACORD GRLC Data Dictionary	According to Data Point Model
Description of data items	Flat item (single name)	Dimensional data point (combination of names)
General scope (brief description)	ACORD's insurance transactional data describes details about the risk, the parties involved in the contract, the terms of the contract, the payment terms, claims notification and subsequent movements, agreements to pay, and details about payment terms.	Solvency II quantitative reporting templates and related XBRL taxonomy describe the data that European Supervisory Authorities find necessary to conduct the off-site supervision in an efficient manner (i.e. investments, technical provisions, SCR, MCR, own funds, intragroup transactions, etc.).
Inter-relations between data items	ACORD standard message is typically a set of small reusable data items used to describe the message content.	Solvency II XBRL report (instance document) is a set of comprehensive, highly inter-connected data items.
Relationship to processes	ACORD messages structures are derived from the business processes they support. The construct of data items relies entirely on the business requirements of the process supported.	Solvency II XBRL reports are independent from processes and only remotely may be related to overall processes running insurance business and reporting processes.

Continued...

	ACORD GRLC	XBRL Solvency II Taxonomy
<b>Technical perspective</b>		
Technical format	XML schemas	XBRL (taxonomies and reports)
Owner of technical specification	ACORD	XBRL
Owner of technical representation	ACORD	EIOPA
Metadata representation	XML Schema	XML Schema and XLink linkbases
Specifications used	XML 1.0	XML 1.0, XBRL 2.1, Dimensions 1.0, Formula 1.0, Functions 1.0, Generic Link 1.0
Data items construct representation	Single XML element with several attributes.	Combination of primary item, dimensions, and domain members connected through hypercubes.

## Harmonising data standards

The ACORD GRLC data standards are derived from a Data Dictionary. The model is a representation of how information is organised for the insurance use cases supported by the standard; the model defines data item names and definitions in a semantically correct manner representing the intended communication contents.

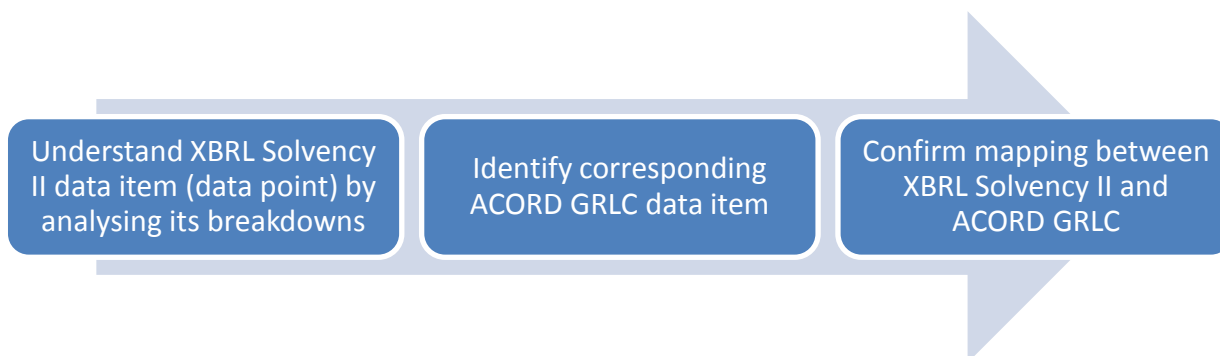
The Solvency II Data Point Model, developed by EIOPA, contains the Dictionary, Functional relationships between Dictionary definitions and lastly a Rendering layer (visualisation of Data Points arrangement in form of tables). The set of tables to be reported depends on reporting scenarios which take into account (among others): the type of business that the reporting institution is running, reporting frequency or consolidation scope.

There are at least two levels, on which similarities could be investigated between ACORD GRLC and Solvency II DPM:

- Dictionary level
- Data items level

‘General’ information like claims, premiums, etc. can be considered similar across Solvency II and ACORD data models, the dictionary level investigation should consider similarities between different breakdowns of information (i.e. metadata description). It is important to highlight that the naming convention used may impact the understanding of metadata descriptions and itself does often not constitute valid definition, therefore it is the real content of data items that should drive recognition of similarities, preferably based on breakdowns.

Figure 9: Analysis process of mapping between ACORD and Solvency II data items



An example of preliminary analysis is described below for a part of a breakdown named “Perils” in ACORD and “Risks” in the Solvency II framework. It was not assumed that in a short run, either of the standards will converge their definition or description convention to the other, therefore it is important for users of the standards that the differences be identified. Further joint research may lead to a level of consensus in breaking down the information description into more consistent hierarchies. The breakdowns must be applied (directly or indirectly) to internal systems of all insurance/reinsurance companies trying to benefit from use of both standards, therefore it is likely that these entities may influence further reconciliation of definitions. The table below presents definition of Perils codes classification in ACORD as compared to Solvency II Risk types classification.

Table 2: Definition of peril codes classification in ACORD as compared to Solvency II risk types classification

	ACORD peril codes classification	Solvency II risk types classification
<b>Potential common definition</b>	Earthquake	Earthquake
<b>Detailing</b>	Earthquake - ground shaking Earthquake - fire following Earthquake – mining Earthquake - tsunami Earthquake - dam break (reservoir) Earthquake - landslide, rockfall Earthquake - sprinkler leakage	No detailing available.
<b>Comments</b>		As Solvency II classification for types of risks merges two kinds of information: (i) perils and (ii) types of activity (direct business and proportional reinsurance vs. non-proportional reinsurance) - “Catastrophe risk non-proportional property reinsurance” is not included into “Earthquake” category.

Since the definitions in dictionaries of both standards are not unified, the data item-level comparison presents an even larger challenge. Due to the multidimensional description of data points in Solvency

II, for ACORD data items to match the Solvency II data point, all breakdowns used to describe the latter, shall altogether match the ACORD definition. Examples of potential match between ACORD message and Solvency II data points are described in a table below.

**Table 3: Exemplary matches between ACORD and Solvency II data items**

ACORD messages	Solvency II	
	Location of data point (QRT)	Data points content (according to HD approach)
<b>CoverageAmount</b>	TP-E7A, cell I1	“Metric: Monetary”; “BC:BC/Sum insured”; “AM:VG/Solvency II”
<b>DeductibleAmount</b>	TP-E7A, cell J1	“Metric: Monetary”; “BC:BC/Sum insured”; “AM:VG/Solvency II”; “MC:OS/Retained by policyholder”
<b>PremiumCalculationBasis</b>	TP-E7A, cell K1	“TB:TU/All members” (context of other data points)

Other types of relations are also theoretically possible including one-to-many, many-to-one or many-to-many and their identification could become a subject of further research. The intersection between ACORD GRLC and Solvency II XBRL Taxonomy accounts for a relatively small proportion of data. The Authors stress that while there are robust benefits to be gained from flowing transactional data through to regulatory reports, there remains, certainly in the case of the Solvency II XBRL Taxonomy, a great amount of data which is not accounted for in the ACORD datasets. This data is largely to do with how an insurer manages its assets and liabilities in terms of strategic decisions relating to investments, risks and its own funds. In short, there are numerous areas where the standards do not intersect. This, in the Authors’ opinion, does highlight the value of the two standards, in that they are designed and fit for their intended purpose and avoid the dangers of over-extending their scope.

Where the standards intersect, and even when data items share the same name, their definitions may be subtly different. Moreover, as the business functions for these data items is different, the aggregated reports require, at the least, the rolling-up of transactional data to arrive at the required figure. This function cannot be performed as a 1:1 operation and requires an intermediate step. For the desired purposes of auditability and traceability, this step should be recorded (and ideally, automated) on an IT system. Acknowledging this interim step adds a nuance to the “Mapping XBRL Solvency II and ACORD GRLC XML” diagram above, particularly the third box “Confirm mapping between XBRL Solvency II and ACORD GRLC.” Rather than propose a proprietary solution for each company, the Authors recommend that a standards-based approach should be considered. The point has previously been made that XBRL and ACORD GRLC data standards serve their use cases as intended, and it is not wise to over-extend the scope of either. Among candidates to bridge the two standards at a business level the Authors preliminarily identified the ACORD Framework and the Data Point Model potentially combined. Once business alignment is resolved the technical bridge can be potentially provided by XBRL Formula linkbase or external mapping mechanism or introduction of technical reference context in either of the standards or both. Further research could explore the applicable method for efficient bridging at both business and technical levels.



## Use case of bridging the standards

Based on the above analysis, benefits appear to exist from the creation of linkages on both business and technical levels between the ACORD GRLC standards and Solvency II QRT. Further research may identify potential synergies related to specific use cases. An example of such a case could be based on initial findings from analysis of common areas of interest of ACORD GRLC and Solvency II, such as information related to reinsurance receivables.

**Table 4: Table Re-J3. Share of reinsurers table applicable to both solo and group reporting.**

Name of reinsured entity (only for groups)	Code reinsurer	Code broker	Activity code broker	Reinsurance recoverables: Premium provision Non-life including Non-SLT Health	Reinsurance recoverables: Claims provisions Non-life including Non-SLT Health	Reinsurance recoverables: Technical provisions Life including SLT Health	Reinsurance recoverables: Total reinsurance recoverables	Net receivables	Assets pledged by reinsurer	Financial guarantees	Cash deposits	Total guarantees received
A1	B1	I1	K1	L1	M1	N1	O1	P1	Q1	R1	S1	T1

In the case of Solvency II, this information must be reported at both aggregated (see table “BS-C1”) and disaggregated (see table “Reinsurance-J3”) levels, while within ACORD it is disaggregated. As European Supervisors will gather the information from both sides of reinsurance contracts, it will be relatively easy for them to compare if reinsurance receivables for one party are equal to reinsurance payables of the other. At an entity level, it may be beneficial to confirm those values before submitting information to supervisors.

## Conclusions and future plans

**This work has produced the following findings and recommendations:**

1. In this work, the ACORD GRLC standards' data items relating to transaction accounting information have been shown to map to the corresponding XBRL Solvency II taxonomy data items (details relating to e.g. Premium, Claims Amount and Natural Catastrophe Perils)
2. This work has illustrated some potential benefits of implementing a data governance strategy to over-arch the various datasets and datastores in use in companies today. By working towards a consolidated view, management are more likely to be able to obtain useful management information and metrics to measure performance in a timely manner. In addition, the strategy can also deliver a more reliable, auditable and traceable set of reporting data for compliance staff to use to report to supervisors.
3. This work has established that while there is a subset of data that is common to the ACORD GRLC transactional data standards and the Solvency II taxonomy, the majority of the Solvency II data requirements are not found in transactional datasets. It should be clear that the mapping of data from transactional databases to reporting datasets is not a *silver bullet* solution.
4. Notwithstanding the first point above, mappings between the two standards is not usually a 1:1 exercise. Solvency II reporting is at an aggregated level, which typically requires rolling-up of values although several schedules in Solvency II ask for detailed transaction-level information. The nature of Reinsurance and Large Commercial business can often be multi-currency on a single contract, so care must be taken to ensure that data items are mapped not only in concept, but also in detail (i.e. Net Premium to Net Premium and therein, values accordingly matched as per US\$ to US\$, GB£ to GB£, Euro to Euro etc.) and that functions are applied appropriately (typically, additions/rolling-up).
  - a. The two standards domains of ACORD GRLC and XBRL Solvency II provide reliable data dictionaries for their constituents and supported use cases. However, it would be beneficial to have a unifying data dictionary that encompasses both in order to make future mappings easier and consistent.
    - i. The ACORD Framework may fulfil this requirement. The ACORD Framework<sup>10</sup> is a series of five inter-related models, or facets, that use different views to define the nature of the insurance industry. These facets are: Business Glossary; Data Model; Component Model; Capability Model and Information Model.
    - ii. The Data Point Model may support harmonisation of definitions. The DPM methodology<sup>11</sup> describes data requirements according to multidimensional sets of properties that enable explicit, unique, precise and logical expression of information needs.

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<sup>10</sup> Further details about the ACORD Framework are available at <http://www.acord.org/standards/Framework/>

<sup>11</sup> Further details about the Data Point Model methodology are available at <http://www.eurofiling.info/dpm/index.shtml>

- b. A variety of linking mechanisms exist (i.e. ontologies, XBRL Formula, external mapping mechanisms) that may describe connection between standards on technical level enabling more direct transformations between data sets.
- 5. This work is presented as a Proof of Concept. ACORD, XBRL and BR-AG are keen to conduct further analysis into this work. In order to do so, we believe that roundtable discussions with subject matter experts from the operations teams and compliance teams of insurance companies would provide the expertise required to do so. As standards setting organizations, ACORD and XBRL can provide the meeting environment and facilitation to do this, along with expertise from BR-AG. The areas of work which could be explored in these roundtables includes:
  - a. Workflow/process mapping
  - b. Data mapping and mapping validation
  - c. Data definitions harmonisation
  - d. Mapping technologies and technical requirements
  - e. Framework validation
  - f. Maintenance and update processes