Cambridge Centre for Risk Studies
Risk Management Solutions, Inc.

Consultation Document: Phase One v0.5

Global Explosure Accumulation and Clash (GEAC) Project

MULTI-LINE INSURANCE EXPOSURE DATA SCHEMA

Phase One: Casualty Liability; Marine; Energy; and Aviation

Consultation Document: v0.5

Centre for
Risk Studies

UNIVERSITY OF
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RMS

Multi-Line Insurance Exposure Data Schema: Phase One

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Part A: Overview and Progress

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1   A Standardized Multi-Line Insurance Exposure Data Schema

Cambridge Centre for Risk Studies (CCRS) is coordinating the development of a data schema to capture insured exposure in the main lines of insurance business, with support from RMS.

1.1   Aims and Objectives

The project will develop an open source multi-line data schema to capture the most significant lines of insurance across all geographical markets. The data standard will be agnostic to the platform on which it is implemented.

The proposed schema will provide a standard minimum set of exposure data fields that will enable insurance industry participants, both insurers

and reinsurers, to:

a) Provide a more comprehensive and standardised framework for monitoring and reporting exposure enterprise-wide and function as a system of record, for risk managers, brokers, consultants, and analysts.

b) Improve interchanges of data between market players to improve risk transfer to reinsurers and other risk partners, reporting to regulators, and information exchanged for risk co-share, delegated authority, and bordereau activities.

c) Apply accumulation risk model scenarios for classes of business that currently have less well-developed models available for them.

d) Support clash model analysis for scenarios that impact multiple lines of insurance.

e) Enable a new generation of models and risk analytics as well as expand the scope of potential risk management applications.

The schema will aid in the development of a more unified industry through increasing the capability for dialogue and cross communication.

2   Version 0.5 Consultation

This is the second consultation document. In this we consider the key components of the schema for the lines of business in the first phase of the project. We also begin to consider the outline structure of exposure for classes of business in phase 2. Through this document, we intend to solicit feedback from the insurance community, and continue the dialogue in the schema's ongoing development. We will connect with subject matter experts over the next several weeks to further develop and expand the schema. We are grateful for any feedback available and ask that completed consultation documents be submitted to Kayla Strong (k.strong@jbs.cam.ac.uk) by July 7th, 2017.

The Schema Structure for Phase 1 Classes of Business starts on page 10 of this document.

2.1   Version 0.1: Principles and Prioritization

The first stage of the project involved setting out the key principles and prioritisation of the classes of business for development of the schema. The version 0.1 Consultation Document, available for download here, describes

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the objectives of the project, provides an overview of current market practice, reviews the data schemas that are currently available, and proposes a set of principles to be observed when designing of the schema.

We greatly appreciate the feedback that we have received and gratefully acknowledge the time and contributions from the various companies and individuals who worked with us to refine the objectives. We also thank those who attended the workshop and participated in telephone interviews.

We have incorporated these views and contributions into the planning, phasing, and structure of the development of the schema.

2.2   Version 0.5: Outline Structure and Key Components

For each class of business, the version 0.5 of the proposed data schema provides an outline structure and defines the main categories of exposure data. We define this as a number of 'dictionaries' – lists of categories that can be applied to accounts to describe and classify information about them for accumulation purposes. For version 0.5 we want to identify all the dictionaries required. We are **not** attempting to define all the content of these dictionaries – i.e. the fields and categorisation, lists of asset types, or attributes of the exposures and coverages. While we provide examples, these are not intended to be exhaustive. The consultation stage involves compiling the listings and categories for the detailed structure.

In this document, we are seeking feedback on the proposed outline structure and components of the four classes of insurance business in our first phase: Casualty Liability, Marine, Energy and Aviation.

2.3   Version 0.9 Detailed Structure

For each class of business, when we have received feedback on version 0.5, and have validated an agreed outline structure for the exposure data schema, we will proceed to a more detailed development stage of a minimum data requirement specification for that class. This will involve identifying all the categories for each dictionary in the schema for that class of business: i.e. a full listing of all the categories of sub-types of insurance, coverages, insured assets, and their attributes, which will include the listing of data fields and recommended values for each. This will be summarised in a consultation document version 0.9, which will be circulated for a final stage of feedback and consolidation.

2.4   Version 1.0 Complete Schema

The feedback from the consultation of version 0.9 will be consolidated into a final consensus version. A first complete minimum data standard for that line of business, including listings of field values and reference tables, will be published and made available as an open source document. The schemas will be published for each line of business as they are completed.

We expect there to be future versions of the schema for each class of insurance business, versions 2 and beyond, that could potentially be more detailed and add granularity, or evolve or extend the schema. However, that is not part of this current project. We propose to develop a minimum data requirement for exposure monitoring and accumulation risk management across many classes of insurance. The current focus is on breadth – developing a standard and unified view across multiple classes of insurance business – rather than depth – developing a highly detailed and precise record for a particular line.

3   Phasing of the Schema Development

The development of the exposure data schema is proceeding in phases:

Phase 1

1.1 Casualty Liability: General Liability; Product Liability; Professional Indemnity (E&O); Medical Malpractice; Directors & Officers (D&O); Environmental Liability; Employment Practices Liability

1.2 Marine: Marine Hull and Machinery; Marine Cargo; Marine Casualty; Marine Liability; Specie; Leisure Craft; Ocean, Inland; Port; Abandonment, Wreck and Salvage;

1.3 Energy: Upstream, Downstream; Onshore; Offshore; Energy Property and Liability; Generation, Transmission, Distribution; Oil, Gas, Petrochemicals; Energy and Power; Renewables; Engineering, Construction

1.4 Aviation: Aviation Hull; Aviation Cargo; Aviation Liability and Third Party; Hangar and Airport; In-Flight; Ground Risk; Public and Passenger Liability

Phase 2

Commercial Non-Life

2.1 Political & Security Risk: Political Risk; Political Violence; Terrorism; War; Kidnap & Ransom; Expropriation; Strikes, Riots & Civil Commotion; Sovereign Default; Foreign Direct Investment

2.2 Specialty: Protection Extensions; Specialized Policies; Event Cancellation; Contingency Cover; Satellite;

2.3 Credit and Surety: Trade Credit Insurance; Business Credit; Export Credit; Surety Bond Insurance; Contract Bonds; Mortgage and Financial Guarantees; Accounts Receivable Insurance;

2.4 Agriculture: Crop (multi-peril; named peril); Livestock; Aquaculture; Bloodstock; Forestry; Greenhouse

Life & Health

2.5 Life

2.5.1 Group Life: Group Life Insurance; Key Man;

2.5.1 Individual Life Insurance: Term Life; Full Life; Life Settlements;

2.6 Health

2.6.1 Group Healthcare: Group Health cover market; Permanent Health

2.6.2 Personal Healthcare: Personal Healthcare; Hospital Insurance;

Phase 3

Non-Life

3.1 Auto Insurance

3.1.1 Commercial Auto: Auto; Fleet; Multi Car; First & Third Party; Collision & Liability; Auto Rental

3.1.2 Personal Auto: Motor; Personal/Individual Auto; First & Third Party

Commercial Non-Life

3.2 Other Commercial Lines: Construction; Engineering; Contractors All Risks; Machinery; Pecuniary Loss

Personal Non-Life

3.3 Other Personal Non-Life: Personal and Consumer Insurance Products; Income Protection; Pets; Extended Warranty;

3.4 Personal Accident

3.4.1 **Group Personal Accident**: Personal Accident; Critical Illness; Travel; Accidental Death & Dismemberment

3.4.2 **Critical Illness & Travel**: Personal Accident; Critical Illness; Travel; Accidental Death & Dismemberment; Income Protection; Payment Protection;

Life & Annuities

3.5 Commercial Pensions: Annuities; Variable Annuities;

3.6 Individual Annuities: Personal Pension Plans; Annuity Products;

Pre-Existing Data Schemas

We recognise that there are existing data schemas for other classes of business that are in use and widely adopted. We acknowledge that they form part of a complete data schema for all classes of business. These schemas will not be further refined or published as part of this project, but we recommend using existing current practice for:

Commercial Non-Life

Commercial Property: Commercial Buildings, Contents and Business Interruption; Industrial Facilities; Facultative; Fire Policies; Peril-Specific Property Catastrophe. Data schemas such as the RMS Exposure Data Model (EDM) and AIR's Touchstone capture this class of exposure for use in natural catastrophe modelling.

Personal Non-Life

Homeowner Property: Residential buildings and contents; Data schemas such as the RMS Exposure Data Model (EDM) and AIR's Touchstone capture this class of exposure for use in natural catastrophe modelling.

Commercial and Casualty

Cyber: Cyber Affirmative; Data Breach; Cyber Liability; E&O for IT; Cyber-Physical. Cyber insurance exposure data schema version 1.0 was developed by RMS and the Cambridge Centre for Risk Studies and published in 2016, available here. This project does not propose to further develop the cyber insurance exposure data standard but we recommend using it as existing current practice for capturing cyber exposure.

Workers Compensation: Workers compensation insurance; wage replacement and medical benefits to employees injured during employment; Workmen's Accident Compensation (Japan). Data schemas such as the RMS Exposure Data Model (EDM) and AIR's Touchstone capture this class of exposure for use in natural catastrophe modelling.

In the previous Consultation Document version 0.1, these classes of business are described and categorized for a 'mapping' of the insurance industry, and account for an estimated $665,000 Trillion ($665 Quadrillion) of insured exposure across the world.

4 Conceptual Structure for a Data Schema for a Class of Business

The schema for each class of business follows how insurance practitioners typically operate their individual operations in specific markets. Each company has its own practices and there is variation across the industry and in different markets between the operational structures, terminology, and business focus of each insurance organisation. We propose to capture a standard that represents common practice for as much of the market as possible and to try to identify translations and equivalences in terminology and concepts.

There may be some specialist activities of individual organisations that may, for various reasons, not be possible to cover in the schema. There is also the potential for introducing uncertainty for an individual company in proposing translation or recategorizations of business into attributes that might be different to their current practice. However, the benefits of a common standard for describing exposure are recognized as being sufficiently important to try to describe a consensus for most of the main types of exposure.

4.1 Policy Level Exposure Capture

The schema proposes a set of information that can be applied to an individual policy. A policy is an insurance contract with an insured, either an organization or an individual. An insured may represent an 'account' to an insurance practitioner, and an account may consist of several policies.

Reinsurers may prefer to receive treaty information as a schedule of policies, and if each policy in the schedule is specified according to this common exposure data standard, and the reinsurer receives similar exposure data information from multiple cedants, they can aggregate and analyse exposure across the standardised exposure attributes.

Where treaty information is not able to be provided to the reinsurer as a schedule of policies, there may be an additional need to specify a standard for reporting aggregated exposure across these classes of business. This is not currently part of the scope of this project.

4.2   Insureds: Commercial

Commercial insurance is the focus of the classes of business in phase 1. In these the policy holder is a commercial organisation. Commercial organisations may hold more than one type of policy with an insurer, and may buy coverage for several classes of insurance business, i.e. a single insured represents an 'account' potentially with multiple policies, across a number of classes of business.

Tracking all the policies held by a commercial organisation and being able to identify the exposure that an insurer has from a single organisation is an important use case that makes a standardised data schema valuable. The ability to identify a specific organisation as a policy-holder in data that may come from different sources across the market, such as through different distribution channels, is important. For a reinsurer, being able to identify that two-insurance company cedants hold policies for the same organization is highly desirable for their reconciliation and roll-up of exposure.

Using Legal Name as Unique Organization Identification

The unique identification of organisations is possible through capturing the full and exact text of the legal name of the organisation. The legal name of an organization is typically specified in legal agreements, such as the name of the purchaser of an insurance policy.

From initial discussions with insurance practitioners on the development steering committee of the exposure data schema, there is acknowledgement of the important need to capture a unique identifier for commercial policy-holders. However there is also concern that current practices may make it difficult, or resource intensive, to adopt and comply with a recommendation for the exposure data schema to capture the unique identifier of legal name of an organization.

For example:
- Exposure data capture and information passed over from the underwriting process may use abbreviations or simplified versions of a company name.
- The exposure data management team may not have access to the legal documents that bind the insurance contract.
- The legal business name may be different from the name the business is commonly known as, or the "doing business as" name.
- The entity holding the policy may be a subsidiary or holding company for the apparent insured, and there may be many similar variants of a company name in the full organisational structuring of a corporation.

However, to achieve the important goal of uniquely identifying the insured, it will be necessary to capture the legal name of the entity holding the policy. We propose that this objective is incorporated in the data schema specification, and is combined with additional research and consultation with the schema development reviewers regarding ways to enable this data to be gathered and populated with the minimum amount of complexity and additional effort.

We propose to develop guidelines and recommendations for identifying the exact legal name of an organisation and capturing it consistently and uniformly in exposure management systems that are global.

Note that the legal name of a business is required to be registered with the state government in the jurisdiction in which it is incorporated (for example for limited liability corporations (LLCs) and corporations). There are several commercially available datasets and online services that enable look-ups of companies to obtain their full legal name. Several of these are limited to a particular country or jurisdiction. A commonly cited service that is popularly used by insurers to obtain a unique identifier for companies in the United States and major jurisdictions in other parts of the world is the Data Universal Numbering System (DUNS) available from Dun & Bradstreet. We will be reviewing the usefulness, coverage, and limitations of data services in providing the full and exact legal name of organisations for uniquely identifying insurance policy holders in commercial classes of business.

We propose that for commercial classes of business exposure, the policy holder is uniquely identified by capturing the full and exact legal name of the organization. This may be supplemented by or derived from third party data sources such as DUNS.

Insureds: Personal Lines

In phases 2 and 3 of the data schema development, we will develop exposure data standards for personal lines classes of business, appropriate to current practice. We expect this to be significantly different from commercial lines in the need for tracking exposure. The proposed structure for tracking commercial organisations is not appropriate for tracking the exposure of individuals, and a proposal for this will be developed during that next stage of the project.

4.3   Structure of Exposure Information

For each class of business, the exposure information on a policy is proposed be structured as follows:

- Policy identification information
    - Unique identification of the organisation that is the policy holder, and other high-level information, such as categorisation of the activities and operations of the policy-holder.

- Policy legal and financial structure
    - legal jurisdiction in which claims or disputes are settled, inception date and expiration dates of coverage, financial structure, such as limits, deductibles, sub-limits, co-shares, layers, etc., potentially with different financial terms being applied to groupings and permutations of attributes of the exposure in the exposure-defined categorisations.

- Category of insurance type of business within the class [dictionary list]
    - a selection from a dictionary of categories of insurance types, specific to that class of business

- Inventory of assets being insured under this policy
    - A schedule of assets ('risk objects') each of which is described with attributes from the following lists, either for each individual asset, or for sub-groupings of attributes. For casualty liability, the asset being insured is the legal entity, usually the policy holder.

- Type of asset [dictionary list]
    - a categorisation of type of asset. A dictionary will be developed of types of asset for each type of insurance. Each type of asset has a relevant listing of attributes [defined in schema] for which additional information is required.

- Asset-specific information and attributes
    - Information about the asset, required for insurance exposure for this type of insurance, such as location, jurisdiction, total value etc. A list of asset-specific information and attributes is specified for each type of asset [defined in schema].
    - Asset attributes required for each type of asset may be either:
        o   An attribute with values required from a predefined categorisation [dictionary list]

       o   Values or descriptors that are open and free-form

- Coverage or Compensation Types [dictionary list]
  - The coverage or compensation types applicable to the asset. A dictionary list of coverage or compensation types will be developed for this insurance type.

- Causes of Loss or Perils [dictionary list]
  - The causes of loss that are covered, such as named perils, or potentially a selection of excluded causes of loss or perils. A dictionary list of causes of loss and perils, either specifically named or excluded from coverage, will be developed for each insurance type, and potentially modified for each asset type.

- Additional attributes that might be specifically required for that insurance class or type

This is a proposed guide for a structure, but it is *not* essential that the same structure applies to every class. It will be acceptable if some (or all) classes end up needing a unique structure for their exposure.

4.4　Developing Dictionaries of Exposure for Each Class of Business

The schema for each class of business includes of a number of 'dictionaries', i.e. lists of defined categories that can be applied to accounts to describe and classify information about them for accumulation purposes. These dictionaries are defined in the outline structures for each class of insurance, described below. For example:

- a dictionary of insurance types within that overall class of business
- a dictionary of asset types covered by the insurance types
- a dictionary of specific attribute values for attributes that describe each type of asset
- a dictionary of coverage or compensation types within the insurance types
- a dictionary of causes of loss or perils that are included or excluded from coverage

The development of the schema from version 0.5 to 0.9 requires the identification of each of the relevant dictionaries for each class of business, and the structuring and populating of each dictionary.

5　Principles

The following agreed principles will guide the development of this exposure data schema.

i.　Exposure and Accumulation Focus

The primary purpose of the schema will be to report and monitor exposure and to manage accumulation. We acknowledge that the schema will also be useful in other areas of insurance such as underwriting and claims management.

ii.　As Simple as Possible

The schema will be kept as simple as practically possible.

The intent of the schema is to provide a consistent framework for benchmarking exposure across all classes of insurance business. Consequently covering as many classes of business as possible is prioritised over the level of detail for any particular class. Future versions of the schema can be made more complex and detailed over time.

To aid adoption, we propose to limit to a practical minimum the notional 'data budget' - the total amount of effort required for an insurance company to transform their internal data to meet the proposed standard.

We propose to limit each dictionary to a maximum of around ten categories in the primary categorisation, and where possible, fewer than this. Each category can be further subdivided, but once more the sub-categories will be restricted to a maximum of around ten. We will try to limit the schema for version 1.0 to two layers of

subdivision of any dictionary – meaning that the data budget will be limited to a maximum of 100 categories for each dictionary in version 1.0.

iii.   Make the Schema Hierarchical and Extensible

The data schema will be hierarchical – i.e. it will be designed as a number of layers of characteristics and attributes, each of which is capable of being further subdivided to create more detail. The data dictionaries, for example, will be capable of further subdivision to create more detailed versions in the future.

The schema is extensible beyond the recommended minimum standard. Individual companies can create their own sub-categories and add detail as they think appropriate. These will be customisable layers of detail that will be proprietary to that company.

iv.   Asset Descriptions Combined with Insurance Coverage

The design of the schema includes a set of descriptions about the asset or item-at-risk (the 'risk object') in combination with the insurance coverages, policy, terms and conditions. Separating asset descriptions from insurance coverages enables exploration of the impacts of changing insurance coverage structures on the exposure.

v.   Make the data schema compatible with other standards as far as possible

Where possible, we intend to make the data schema compatible with and capable of translating into other data standards, such as regulator reporting standards, rating agency filings, and ACORD components, that are widely used across the industry. Available standards and schemas commonly in use in different sectors of the insurance market are described in the market practice review in our version 0.1 document.

Part B: Schema Structure for Phase 1 Classes of Business

This section describes the outline structure and key components of the exposure data schema for the following classes of insurance business:

- Casualty Liability
- Marine
- Energy
- Aviation

Please review and comment on the proposed structure and where possible, propose content for the various dictionaries required.

Policy level information will be captured consistently across each of these classes:

Policy Level Exposure Capture

The schema proposes a set of information that will be applied to each individual policy. A policy is an insurance contract with an insured. For commercial lines the insured is an organization. An insured may represent an 'account' to an insurance practitioner, and an account may consist of several policies.

The following information is proposed for each policy:

- Full and exact legal name of the organization. (See note and elicitation of feedback on uniquely defining commercial insureds in section 4.2, above).
- Additional organisation identifier coding information, derived from third party data sources such as DUNS number.
- Unique identifier specific to the insurance company, if they are prepared to share that with external data partners.
- Size of company: Annual revenue
- Size of company: Total number of employees
- Activity/business sector of company: North American Industry Classification System (NAICS) code for the organisation, together with the version of the NAICS code that applies (2017 version preferred).

A. Please comment on the proposal to uniquely identify the commercial policyholder using their full and exact legal name, in conjunction with third party data sources, such as DUNS. How easily and quickly might this be adopted across the market?

Policy Legal and Financial Structure

Information about the legal and financial structure of each policy will be captured at the highest level possible, preferably for the policy as a whole. Where this varies by sub-sets of the exposure, the data structure will enable specific financial terms to be applied to groupings and permutations of attributes of the exposure in the exposure-defined categorisations.

Legal and financial structures for a policy will include:

- legal jurisdiction in which claims or disputes are settled (typically a country, defined by the ISO 3166-1 alpha-2, two-letter country code)
- inception date of the policy coverage
- expiration dates of the policy coverage
- financial structure applicable to the total policy
  - Total limit of all components on the policy, if applicable
  - Total deductible or retention on the policy, if not sub-limited
  - Co-share proportion of exposure, if applicable
- If the policy is structured to have layers of participation, then the financial structure specifies the number of layers, and for each layer describes:

- Attachment point of the layer
- Exhaustion point of the layer
- Participation in the layer as a proportionate co-share

Where different financial terms are applied to sub-groupings of assets or coverages, the data structure of the schema will enable it to identify the appropriate sub-sets of the exposure and apply financial terms to that subset, in a similar way to specifying coverages, causes of loss, and terms and conditions to sub-sets of assets under coverage, specifying:

- Total sub-limit of all components of the sub-set, if applicable
- Total deductible or retention to apply to the sub-set
- Co-share proportion of pay-out on the sub-set

The structure of the information about the exposure is specific to each class of business, as described in the following sections.

1   Casualty Liability Insurance

Casualty liability insurance comprises a diverse range of categories of insurance. The overarching principle behind all casualty coverages is the financial compensation for losses or damages arising from injury caused by negligence. Casualty insurance does not cover events where it is not the client's fault. Negligence can be proven when the consequences of one's acts or omissions if, through failure to use reasonable care, result in unintended damage to the person or property of another, whether this other be one's employee or legally a stranger. Anyone can be subject of such action, but those operating a business have a heightened risk of it.

The asset at risk for casualty liability is the legal entity of the organisation, which is typically the policy holder.

Additional information about the organisation is required for managing the exposure of liability insurance, over and above the information about the organisation when managing exposure of other classes of insurance exposure from the assets that they own or insure.

1.1   Types of Insurance within Casualty Liability

[Dictionary: Liability – Types of Insurance]

We propose to categorise each casualty liability policy by the common types of liability insurance in the market. The dictionary of types of liability insurance will consist of primary categories which can be sub-divided into secondary categories where appropriate (and third levels of categories if essential).

A suggested listing of primary level types of liability insurance commonly offered within the class of casualty liability business is

a) Commercial General Liability (CGL)
b) Employers Liability
c) Product Liability
d) Public Liability
e) Umbrella and Excess
f) Professional Liability (also known as Errors and Omissions)
g) Directors and Officers
h) Environmental Liability
i) Workers Compensation
j) Personal Accident

If required, each of these primary categories could be further subdivided into secondary categories. For example, the following primary category of professional liability might be subdivided into major groups of professions with significantly different types of liabilities, without having to list every single profession:

f) Professional Liability (also known as Errors and Omissions)

f.1) Medical Malpractice, Therapy, and Treatments

f.2) Financial Institution Liability

f.3) IT Consultants and Suppliers

f.4) Business, Audit, and Management Consultants

f.5) Construction and Engineering

f.6) Other Advisory, Consultancy, and Design Services

f.7) Retail and Wholesale Trade

f.8) Small Businesses and Start-Ups

B. Please review and comment on the proposal for the dictionary of 'Liability – Types of Insurance'. Are there any major categories missing, or extraneous? Which of these categories are typically subdivided into other sub-types? What should the sub-types be?

1.2 Casualty Liability – Claims Made vs Occurrence

[Dictionary: Liability – Categories of Claims Made vs Occurrence]

A particular characterisation and differentiation of Casualty Liability insurance is by Claims Made vs Occurrence. Policies will be categorised to identify which one they are, and additional information gathered about the contract specified, as follows:

A. Claims Made

a) Claims Made
b) Claims Occurred
c) Claimed Notified
d) Claims Manifesting
e) Extended Reporting Period (ERP)

B. Occurrence basis

f) Underwriting year
g) Accident year
h) Calendar year

C. Please review and comment on the proposal for the dictionary of 'Liability – Categories of Claims Made vs Occurrence'.

1.3 Additional Information about Insured for Liability Exposure

The insured asset for casualty liability is the legal organisation, typically the policy holder. The details on the policy holder being collected for a policy on any class of business includes (see section B '' above):

- Full and exact legal name of the organisation.
- Additional organisation identifier coding information, derived from third party data sources such as DUNS number.
- Unique identifier specific to the insurance company, if they are prepared to share that with external data partners.
- Size of company: Annual revenue
- Size of company: Total number of employees

- Activity/business sector of company: North American Industry Classification System (NAICS) code for the organization, together with the version of the NAICS code that applies (2017 version preferred).

If additional information is required about the company, to manage the exposure of casualty liability insurance for specific types of liability insurance, as defined in part B section 1.1, it will be captured in this section of the schema.

[dictionary: Liability – Additional Information about Insured]

D. Are there additional attributes of the insured, beyond those captured for standard policy holder information, for types of liability insurance that need capturing in a dictionary 'Liability – Additional Information about Insured'?

1.4   Liabilities, Locations, and Jurisdictions

A specific description of insured exposure for liability that can add insight into multi-line clash is to add information about the locations where the liability exposure resides. Location information is standard information for property insurance exposure management. The exposure data schema for casualty liability will enable schedules of locations to be incorporated for some types of liability insurance, where appropriate.

Employee location schedule

Where the type of liability insurance includes liabilities for the health and safety of employees, a schedule of the locations of the workplaces with the largest concentrations of employees will be part of the exposure data, identifying the location and number of employees. For example:

a) Commercial General Liability (CGL)
b) Employers Liability
c) Workers Compensation
d) Personal Accident

Jurisdiction schedule of activities with liability

Where the type of liability insurance includes liabilities arising from international commercial activities that could give rise to liabilities in jurisdictions beyond those of the home jurisdiction of the insured, as specified in policy, the exposure data will include a schedule of other jurisdictions where the insured has business. For each jurisdiction (typically a country, defined by the ISO 3166-1 alpha-2, two-letter country code) the schedule will specify the relevant amount of business activity exposed to that type of liability in that jurisdiction, as represented by total revenue.

Counterparty and other schedules

In the schema, we propose to include the ability to add other schedules representing liabilities of other types. These may be location schedules or non-geographic listings of assets or relationships with significance to liabilities. Potential schedules that might be added could include:

a) Customers or sectors of the public for whom the insured has third party liabilities, segmented by attributes of liability, or geography of location
b) Suppliers, customers, or counterparties with financial relationships to the insured, where the insured has a policy with potential liabilities arising from financial relationships with counterparties
c) Product inventories, consumers, and potential total exposures from product liabilities and recall
d) Site locations with potential to create environmental liability

Top Liability Locations

A potential alternative schedule highlights major locations that have the highest liability given the insured portfolio. One could imagine if a company produces a product that could cause liability claims, and they sell 10,000 units of the product, the insurer might be able to capture an estimate of the top locations that have the greatest liability. This interpretation will be explored further during the V0.5 consultation process, and is considered a potential location and jurisdiction schedule variation.

E. Please comment on the usefulness of including schedules of employee locations, jurisdictions, counterparties and other schedules for tracking liability

1.5   Casualty Liability Insurance Coverages

[Dictionary: Liability – Coverages]

For each of the types of casualty liability insurance listed in 1.1, we are developing a dictionary of typical coverage categories, and their definitions. A policy may have some or all of these coverage types, and financial terms can be applied to sub-groupings of the coverages. Exclusions and additional riders, write-backs, or extensions are defined in separate dictionaries and applied as appropriate. If there are coverages that are common to several types of liability insurance then these may be defined in a master dictionary for the class of casualty liability, with others that are specific to each type of liability insurance defined separately. The following are examples of the coverage dictionary for selected types of liability insurance:

a.   Commercial General Liability (CGL)

a.1) Bodily Injury (physical harm, injury, death, sickness or disease)

a.2) Property Damage

a.3) Business Interruption - loss of use of tangible property from damage, including loss of use as a result of damage elsewhere of property that has not been physically injured.

a.4) Defence Insurance

f.   Professional Liability Insurance

f.1) Negligence – errors and omissions

f.2) Infringement of Intellectual Property Rights

f.3) Defamation – making false or damaging claims about a person or organisation

f.4) Breach of Confidence – sharing confidential or commercially sensitive information without consent

F. Please comment on the proposal to develop a dictionary of coverage for each type of liability insurance

1.6   Casualty Liability Insurance Exclusions

[Dictionary: Liability – Exclusions]

Exclusions are a common feature of casualty liability policies. We are developing a dictionary of common exclusions and endorsements, and also a dictionary of specific inclusions, including exceptions to the exclusions, riders, write-backs, and extensions. If there are exclusion and extensions that are common to several types of liability insurance then these may be defined in a master dictionary for the class of casualty liability, with others that are specific to each type of liability insurance defined separately.

The following are examples of the exclusions dictionary for a selected type of liability insurance:

a.   Commercial General Liability (CGL)

a.1) Expected or intended cause of personal injury or property damage, or personal and advertising injury, activities in violation of statutes

a.2) Coverage provided by another type of insurance, such as Workers Compensation Insurance

a.3) Coverage for which another type of insurance must be bought (employers liability, product liability or defective recall, pollution, making, selling or serving alcohol, etc.)

a.4) Uninsurable risks, such as business risks or market risk

a.5) Contractual liability, where the insured assumes the liability of another in a contractual arrangement

a.6) Mobile equipment, Aircraft, Autos and Watercraft, Bodily injury or property damage that may result from the use of these, owned, operated, or rented or loaned to any insured

a.7) Damage to property owned by, rented to, or occupied by the insured. (potentially with fire being an exception or write-back to this exclusion)

a.8) Damage to completed work

a.9) Electronic data

1.7   Casualty Liability Insurance Inclusions

[Dictionary: Liability – Inclusions]

The following are examples of the inclusions dictionary, incorporating exceptions to the exclusions in a policy, riders, write-backs, and extensions, for a selected type of liability insurance:

a.   Commercial General Liability (CGL)

a.1) Exception to pollution exclusion: sickness or injury caused by malfunctioning heating system of property owned or occupied by insured

a.2) Exception to mobile equipment exclusion: bodily injury or property damage that takes place while operating mobile equipment owned and operated by insured.

a.3) Exception to exclusion for damage to property owned by insured: the exclusion for property damage to premises occupied or rented to the insured does not apply to damage by fire.

a.4) Exception to exclusion for completed work: if the completed work that suffers property damage is the result of a named insured subcontractor's completed work

a.5) Exception to exclusion for impaired property: exclusion does not apply if the loss of use is caused by sudden and accidental physical injury to the named insured's property or work

G. Please comment on the proposal to develop a dictionary of exclusions and inclusions for each type of liability insurance

H. Please review the overall proposed structure for casualty liability exposure. Is it missing any significant elements? Are there parts that are not needed? How could it be improved?

2   Marine Insurance

The marine market is one of the oldest classes of insurance, and is wide ranging in its coverage and the assets it includes. It typically covers the loss or damage of ships, cargo, terminals, and any transport or cargo by which property is transferred, acquired, or held between the points of origin and destination.

In addition to the policy level capture of information about the insured, and the policy legal and financial structure information, described above (beginning of Part B) the following information should be appended to describe marine insurance policy-level exposure.

2.1   Types of Marine Insurance

[Dictionary: Marine – Types of Insurance]

We propose to categorize each marine insurance policy by the common types of marine insurance in the market. The dictionary of types of marine insurance will consist of primary categories which can be sub-divided into secondary categories where appropriate (and third levels of categories if essential).

A suggested listing of primary and secondary level types of marine insurance commonly offered within the marine market is:

     a. Hull
          i. Blue Water Hull
          ii. Brown Water Hull
          iii. Pleasure Craft
          iv. Fishing Vessels
          v. Rolling Stock
     b. Cargo
          i. Cargo in Transit
          ii. Cargo in Storage
          iii. Stock Through Put
          iv. Trade Fairs/Exhibition Risks (potentially more often considered a part of Specie?)
     c. Marine Liability
          i. Environmental Liability
          ii. Ship Repairs Liability
          iii. Protection and Indemnity
          iv. Charterers
     d. Construction
          i. Vessels
          ii. Offshore Energy
     e. Ports and Terminals
     f. Offshore Energy
          i. Mobile Production

        ii.   Floating Production Storage and Offloading (FPSO)
        iii.   Fixed Platform
        iv.   Floating Platform

  g. Specie
        i.   Fine Art
        ii.   Jewellers Block
        iii.   Cash in Transit
        iv.   General Specie

I. Please comment on the dictionary of types of marine insurance.

2.2   Asset Types Covered by Marine Insurance

[Dictionary: Marine – Asset Types]

Assets typically covered in marine insurance can be broadly categorised as:

a) Vessels
b) Cargo
c) Specie
d) Legal entity of the policy holder (for marine liability)
e) Marine Construction Projects
f) Port and Terminals
g) Rolling Stock
h) Offshore Energy Facilities

Each of these is further categorized as a sub-list, defined in the asset type dictionary. For example, the types of asset type 'b) Cargo' can be categorised as:

  a. General Cargo
        i.   Automobiles
        ii.   Consumable
        iii.   Electronics
        iv.   Heavy Industry
        v.   Pharmaceuticals
        vi.   Project Cargo
        vii.   General Cargo

  b. Bulk
        i.   Break Bulk
        ii.   Dry Bulk
        iii.   Liquid Bulk

  c. Specie and High Value
        i.   General Specie
        ii.   Cash in Transit
        iii.   Fine Art and Collectables
        iv.   Jeweller's Block

  d. Special Care
        i.   Explosives
        ii.   Petroleum Products
        iii.   Livestock
        iv.   Temperature Controlled

J. Please comment on the dictionary of asset types covered by marine insurance.

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2.3   Asset Attributes

[Dictionary: Marine – Asset Attributes]

For each of these asset types, there is asset-specific information and attributes. Attributes can be General Attributes and Asset Specific Attributes.

General Attributes: A list of attributes captured for each of the primary asset types listed above.

An example of this is the attributes to be collected for all Cargo assets.

General Attributes: Cargo

- Value of cargo
- Region Travelled
- Average length of journey
- Perishability
- Policy maximums

Asset Specific Attributes: Specific attributes that should be captured for unique assets which fall within each of the sub-type of assets.

An example of this is attributes that should be collected for Automobiles, which is a form of cargo asset.

Asset Specific Attributes: Cargo - Automobiles

- Count of Goods
- Brand of Automobile
- Model of Automobile
- Shipping Method: Ro-Ro/Container
- Specialised Protective Measures in Place
- Vehicle Registration Number

K. Please comment on the proposed structure for describing asset attributes for marine exposure.

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2.4   Locations, Jurisdictions, and Geographical Area of Operation

[Dictionary: Marine – Ports and Operational Regions]

Exposure for marine lines of business has not traditionally been mapped to locations. By nature, shipping is transient and highly mobile. This schema development explores whether it would be advantageous to provide a data structure for the capture of information about location of marine exposure, and the appropriate level of geographical information.

Some types of exposure, such as cargo, can have concentrations of insured value at ports and storage facilities. It would be helpful in monitoring accumulations if locational information can be obtained.

One proposition is that for cargo, and potentially for other types of marine exposure, the schema can include additional schedules of location, particularly those areas where there are sensitive jurisdictions and higher

potential liabilities, or concentration points with potential for exposure accumulation across multiple accounts. Locational schedules to assist with this could include:

a) **Most Commonly Used Ports** – a standardised listing of the world's top ports with a number of them identified as those most commonly-used by the insured for the loading and unloading of cargo, and berthing of vessels.

b) **Sea Regions of Operation** – a standardised listing of the main operational areas of the oceans, for example utilizing the Lloyd's Shipping Register standard reporting ocean regions and shipping canals, used to identify the most commonly-used regions where the insured routes operate through.

L. Please comment on adding schedules to capture location information for marine exposure.

2.5   Coverage or Compensation Types

[Dictionary: Marine – Coverage Types]

The primary types of coverage that apply in the policy include the following, defined in the coverage type dictionary:

a) Physical Damage
b) Liability
    a. Personal Injury
    b. Product Liability
    c. Third Party Liability
    d. Grounding Liability
c) Hull
    a. Hull War
    b. Hull All Risks
d) Business Interruption

M. Please comment on developing a dictionary of coverage and compensation types.

2.6   Causes of Loss Included and Excluded (Perils)

As with other classes of insurance, the causes of loss that are covered in the terms and conditions can be defined both as a listing of included causes of loss, and perils that will be covered, and also as a list of exclusions, exceptions, and common endorsements.

Inclusions

[Dictionary: Marine – Causes of Loss Included]

Hull and Cargo Losses from the following causes:

a) Grounding
b) Wrecking and stranding
c) Foundering in open sea
d) Fire and explosion
e) Collision (hitting another ship)
f) Allision (hitting a fixed object)
g) Missing or Overdue Vessel
h) Spoilage

    i) Machinery Damage

Perils

    j) Specific Perils (Force majeure):
        a. Floods
        b. Lightning
        c. Earthquake
        d. Storms
        e. Hurricane
        f. Fires
        g. Landslide and Rock slide
        h. Tornado
        i. Power Outage
    k) Human Action
        a. Piracy
        b. Warfare
        c. Terrorism
        d. Crime
        e. Property Damage
        f. Fidelity & Liability

Exclusions

[Dictionary: Marine – Exclusions]

We propose to develop a dictionary of common exclusions in the marine market.

N. Please comment on developing a dictionary of causes of loss, perils, exclusions and inclusions for marine insurance.

O. Please review the overall proposed structure for marine insurance exposure. Is it missing any significant elements? Are there parts that are not needed? How could it be improved?

3   Energy Insurance

The energy insurance market serves the oil and petrochemical industry and power generation, distribution, and utilities businesses. It covers offshore and onshore risks for energy and related businesses.

In addition to the policy level capture of information about the insured, and the policy legal and financial structure information, described above. In the beginning of Part B, the following information should be appended to describe marine insurance policy-level exposure.

3.1   Types of Energy Insurance

[Dictionary: Energy – Types of Insurance]

We propose to categorise each energy insurance policy by the common types of energy insurance in the market. The dictionary of types of energy insurance will consist of primary categories which can be sub-divided into secondary categories where appropriate (and third levels of categories if essential).

A suggested listing of primary and secondary level types of energy insurance commonly offered within the energy market is:

- a. Upstream:
    - i. Exploration & Production
    - ii. Contractors
    - iii. Construction
    - iv. Midstream
- b. Downstream
    - i. Production
    - ii. Construction
    - iii. Transportation
- c. Renewables
    - i. Construction
    - ii. Transportation

3.2 Asset Types Covered by Energy Insurance

[Dictionary: Energy – Asset Types]

Assets typically covered in Energy insurance can be broadly categorized as:

- a) Oil Production Rig or Platform
- b) Mobile Unit
- c) Tools
- d) Portable buildings
- e) Contents
- f) Machinery
- g) Substructures
- h) Drill pipes
- i) Transmission
- j) Generator

3.3 Attributes of the Insured Assets by Type

[Dictionary: Energy – Asset Attributes]

A categorisation of the attributes to be captured about the insured asset will include for example:

Attributes for Asset Type a): **Oil Production Rig**

- a) Reference in third party database providing attributes for this asset type (such as Clarkson's, a resource of data about oil production rigs)
- b) Geocode Latitude & Longitude Coordinates
- c) Number of Employees on Site
- d) Air Gap (clearance of platform from sea surface)
- e) Building Age
- f) Construction Type

Exposure attributes will be proposed that are specific to each asset type in the individual categories of the market.

3.4 Locations, Jurisdictions, and Offshore Area of Operation

[Dictionary: Energy – Offshore Area of Operation]

Fixed facilities, such as major oil production rigs and tank farms, can be individually located by latitude and longitude coordinates to provide georeferencing for risk analysis and exposure management.

Other facilities and assets being insured can be mobile or less critical to locate with precision. This schema development explores the value of providing a data structure for the more general capture of information about the regional location of energy exposure.

For less critical facilities, we propose that assets can be categorised by their regional location against schedules that can be added, such as:

a) **Major Oil Fields and Production Regions** – a standardised listing of the world's major production gas and oil fields, key facilities, and named regional or specific locations. Assets will be assigned to these regional locations, even if they are not able to be precisely geocoded.

P. Please comment on adding schedules to capture location information for energy exposure.

3.5   Coverage or Compensation Types

[Dictionary: Energy – Coverage Types]

The primary types of coverage that apply in the policy include the following, defined in the coverage type dictionary:

  a. Physical Damage
  b. Removal of Debris & Wreck
  c. Operators Extra Expense
  d. Business Interruption
        i.   Loss of Production
        ii. Loss of Hire
  e. Contingent Business Interruption
  f. Liability
        i.   Offshore Pollution Liability
        ii. Seepage Liability
        iii. Construction All Risk
        iv. Erection All Risk

3.6   Causes of Loss Covered (Perils)

As with other classes of insurance, the causes of loss that are covered in the terms and conditions can be defined both as a listing of included causes of loss, and perils that will be covered, and also as a list of exclusions, exceptions, and common endorsements.

Causes of loss included (perils)

[Dictionary: Energy – Causes of Loss Included]

  a. Force majeure (Elemental):
        i.   Fire
        ii.   Explosion
        iii. Lightning
        iv.   Storms
        v.   Hurricane
        vi.   Flood
        vii. Earthquake
        viii. Landslide and Rock slide
        ix.   Tornado
        x.   Wind

      b.   Human Action (Non-Elemental)
           i.   Terrorism
           ii.   Warfare
           iii.   Crime
           iv.   Property Damage
           v.   Fidelity & Liability
           vi.   Riots, Strikes and Civil Commotion
           vii.   Cyber
      c.   All Risks

Exclusions

[Dictionary: Energy – Exclusions]

We propose to develop a dictionary of common exclusions in the energy market.

Q. Please comment on developing a dictionary of causes of loss, perils, exclusions and inclusions for energy insurance.

R. Please review the overall proposed structure for energy insurance exposure. Is it missing any significant elements? Are there parts that are not needed? How could it be improved?

4   Aviation

Aviation insurance is insurance coverage geared specifically to the operation of aircraft and the risks involved in aviation.

In addition to the policy level capture of information about the insured, and the policy legal and financial structure information, described above (beginning of Part B) the following information should be appended to describe marine insurance policy-level exposure.

4.1   Types of Aviation Insurance

[Dictionary: Aviation – Types of Insurance]

We propose to categorise each aviation insurance policy by the common types of aviation insurance in the market. The dictionary of types of aviation insurance will consist of primary categories which can be sub-divided into secondary categories where appropriate (and third levels of categories if essential).

A suggested listing of primary and secondary level types of energy insurance commonly offered within the aviation market is:

    a) Airlines
        a.   Hull
        b.   Passenger
        c.   Aviation Cargo
    b) Aerospace
        a.   Airport Facility
        b.   Air Traffic Control
        c.   Product Manufacturing
        d.   Service Providers

        e.   Re-fuellers
        f.   Maintenance Repair and Overhaul Facilities
        g.   Drones
  c) General Aviation
        a.   Fixed Wing
        b.   Rotor Wing
  d) Hull
        a.   Hull War

4.2 Asset Types Covered by Aviation Insurance

[Dictionary: Aviation – Asset Types]

Assets typically covered in Aviation insurance can be broadly categorised as:

a) Airline
b) Fleets of aircraft
c) Individual aircraft
d) Passengers and Crew
e) Ground staff
f) Cargo
g) Airport facilities
h) Refuelling facilities and stored fuel
i) Aircraft construction and assembly facilities

4.3 Attributes of the Insured Assets by Type

[Dictionary: Aviation – Attributes of Assets]

We will develop a list of attributes for each of the asset types, to assist with exposure management, for example:

Attributes for Asset Type: **Airline**

a) Aviation Tier
b) Number of operating aircraft of each size and type
c) Average Fleet Value
d) Geographic Hub
e) Schedule of airports served, by traffic volume
f) Number of Passenger
g) Number of Seats
h) Revenue per Km
i) IT Infrastructure
j) Nationality of Passengers (On Average)
k) Types of Passengers (On Average)
l) Average Values of Passenger
m) Flight Schedules

Attributes for Asset Type: **Aircraft**

a) Type of Aircraft
b) Insured Value
c) Market Value
d) Year Built
e) Value of Plane
f) Flight Route

Attributes for Asset Type: **Small Aircraft**

    a) Overall Maintenance Status
    b) Operator's Domicile
    c) Number of Passengers

4.4   Locations, Jurisdictions, and Operational Regions

[Dictionary: Aviation – Airports and Operational Routes]

Aviation is by nature transient and highly mobile. This schema development explores the value of providing a standardised data structure for the capture of information about location of aviation exposure, and the appropriate level of geographical information.

Aviation has concentrations of insured exposure at major airports. It would be helpful in monitoring accumulations if information about the usage of airports and operational regions can be obtained.

We propose that the schema could include additional schedules of location, identifying important airport hubs of potential concentration risks, areas where there are sensitive jurisdictions and higher potential liabilities, or operational flight regions with potential for exposure accumulation across multiple accounts. Examples of locational schedules to assist with this could include:

    a) **Major Airports** – a standardised listing of the world's top airports. Commercial airline aviation policies can identify the airports most commonly-used by the insured.
    b) **Travel Routes and Air Regions of Operation** – a standardised listing of the main travel routes and air regions of operation used to identify the most commonly-used regions where the insured operates or routes through.

S. Please comment on adding schedules to capture location information for aviation exposure.

4.5   Causes of Loss Covered (Perils)

As with other classes of insurance, the causes of loss that are covered in the terms and conditions can be defined both as a listing of included causes of loss, and perils that will be covered, and also as a list of exclusions, exceptions, and common endorsements.

Causes of loss included (perils)

[Dictionary: Aviation – Causes of Loss Included]

    a) Physical Damage
    b) Liability
        a. Personal Injury
        b. Product Liability
        c. Third Party Liability
        d. Grounding Liability
    c) Hull
        a. Hull War
        b. Hull All Risks
    d) Business Interruption – Note that business interruption coverage is not typically included in aviation insurance policies. The coverage is included within the schema to reflect special cases or exceptions when its use may arise.

4.6   Causes of loss covered (Perils)

As with other classes of insurance, the causes of loss that are covered in the terms and conditions can be defined both as a listing of included causes of loss, and perils that will be covered as well as a list of exclusions, exceptions, and common endorsements.

Causes of loss included (perils)

[Dictionary: Aviation – Causes of Loss Included]

a. Force majeure:
   i. Fire
   ii. Explosion
   iii. Lightning
   iv. Hail
   v. Storms
   vi. Hurricane
   vii. Flood
   viii. Earthquake
   ix. Landslide and Rock slide
   x. Tornado
   xi. Bird Strike
   xii. Volcano
   xiii. Snow Storm
   xiv. Tsunami
b. Human Action
   xv. Terrorism
   xvi. Warfare
   xvii. Crime
   xviii. Property Damage
   xix. Fidelity & Liability
   xx. Riots, Strikes and Civil Commotion

Exclusions

[Dictionary: Aviation – Exclusions]

We propose to develop a dictionary of common exclusions in the aviation market.

T. Please comment on developing a dictionary of causes of loss, perils, exclusions and inclusions for aviation insurance.

U. Please review the overall proposed structure for aviation insurance exposure. Is it missing any significant elements? Are there parts that are not needed? How could it be improved?

5   Feedback

Thank you for taking part in the Phase 1 version 0.5 consultation for the development of a multi-line insurance data schema.

We will credit the individuals and organisations who have assisted in the development of the schema in the final publication. If you are comfortable with being credited, please provide your name, job title and organisation, and list any colleagues who assisted and who should be credited.

V. Please list the names, job titles, and organisation of people who helped with responses to this consultation.

 Please email your completed consultation document by July 7th, 2017 to:

Kayla Strong
Research Assistant
Centre for Risk Studies at University of Cambridge.
Email: k.strong@jbs.cam.ac.uk

Part C: Schema Structure for Phase 2 Classes of Business

1   Inputs required for phase 2 classes of business

We request inputs to identify the key outline structural components of the classes of business scheduled for phase 2. For each class of business, we want to identify:

1. The main types of insurance commonly offered in that class of insurance

2. The types of assets typically insured in each of the main types of insurance in that class

3. The attributes commonly captured about the asset types

4. Jurisdiction or locational information typically captured as market practice

5. Coverage and compensation types

6. Typical causes of loss

7. Typical exclusions

2   Classes of Business in Phase 2

2.1 Political & Security Risk: Political Risk; Political Violence; Terrorism; War; Kidnap & Ransom; Expropriation; Strikes, Riots & Civil Commotion; Sovereign Default; Foreign Direct Investment

2.2 Specialty: Protection Extensions; Specialised Policies; Event Cancellation; Contingency Cover; Satellite

2.3 Credit and Surety: Trade Credit Insurance; Business Credit; Export Credit; Surety Bond Insurance; Contract Bonds; Mortgage and Financial Guarantees; Accounts Receivable Insurance

2.4 Agriculture: Crop (multi peril; named peril); Livestock; Aquaculture; Bloodstock; Forestry; Greenhouse

2.5.1 Group Life: Group Life Insurance; Key Man

2.5.1 Individual Life Insurance: Term Life; Full Life; Life Settlements

2.6.1 Group Healthcare: Group Health cover market; Permanent Health

2.6.2 Personal Healthcare: Personal Healthcare; Hospital Insurance