ACORD™

Global Insurance Standards

DOCUMENT REPOSITORY INTERFACE (DRI)
REFERENCE GUIDE

VERSION 1.0.0

JUNE 2004

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1 INTRODUCTION

1.1 Preface

This Guide describes the business requirements, the structure and the architecture of the Document Repository Interface (DRI) standard. It summarizes and introduces the standard reference documentation, whose content is detailed in 1.4.

1.2 Intended Audience

This Guide is intended for business analysts and IT implementers.

1.3 Purpose of this Guide

This guide intends to give all information needed for first time implementers of the standard.

1.4 Structure of the documentation

The standard reference documentation is composed of the following parts:

- This *DRI Reference Guide*
- The *Data Requirement Matrix*, which sets out the definitions and usages for all data elements in the context of each DRI messages and operations.
- The *XML Schema* and the *XML message templates*

A *DRI Implementation Guide* is available separately for ACORD members. It focuses on implementation of the DRI standard in practice and in coordination with other ACORD standards.

2 BUSINESS REQUIREMENTS

2.1 Problem definition

Within the insurance community, business practitioners require access to free format documentation in order to make many business decisions (for example: accepting Risk Submissions, negotiating, agreeing and paying Claims). As computerized trading increases, solutions are required to provide the free format documentation in electronic format. Business practitioners need this electronic documentation to be easily available. Access to electronic documents should ideally:

- be seamlessly integrated with the processing systems used day to day by business practitioners,
- involve no onerous extra steps in the business process, and
- be better and quicker than is possible today in the paper world.

Every organization has, or will have, a strategy for storing their internal electronic documents. Today many have implemented internal document management systems and some have also invested in repository capability by which they offer business partners access to electronic documents. In addition, there are third party organizations starting to offer centralized document repository facilities to specific communities of business partners. To satisfy the business practitioners' needs, technical solutions are needed that allow these repositories to interoperate, in other words to exchange electronic documents, or information about them, between each other automatically, without manual intervention.

2.2 Business Actors

There are *two main categories* of actors considered in the scenarios involved in exchanging electronic documents

Enterprises: insurance or reinsurance companies, brokers or professional intermediaries involved in (re)insurance contracts. Examples of this category: Broker, Underwriter (Re- and Insurer), Cedent, Assured (Corporation), Expert (e.g. lawyer, claims adjuster), Arbitrator/Regulator

Market Service Providers: intermediaries that provide third party business or repository services to multiple Enterprises and therefore act as hubs with Enterprises at the end of the spokes. Such Enterprises may operate interactively (on-line), or in a messaging mode with such hubs.

Each of these two main actors will have their own repository (document management system) that handles storage, indexing, search, import, export of free format business documents. (Note that any Enterprise that does not have its own repository is presumed to be an interactive client of a market repository.) Such repositories are not operated independently, but within a business application context, e.g. Placing, Claim, Accounting and Settlement. Often it is the business application that provides the process control and notification of events and available documents between Enterprises, and between Enterprises and Market Service Providers.

This results in four actor types in the DRI scenarios. Their short names are used throughout this DRI Reference Guide and the DRI implementation Guide and are:

Enterprise application, Enterprise repository, Market application, Market repository

As further explained in section 3.1, Enterprises and Market Service Providers can play different roles in the context of document exchanges: they can be Owner, Originator, Consumer, Sender or Receiver of documents.

2.3   Underlying communication framework

The DRI standard is a set of operations that extend and refine the methods of exchanging free-format documents as defined in the ACORD Messaging Service. An important number of XML elements are common between the two standards. This is designed to ensure consistency and cooperation between the two specifications. The ACORD Messaging Service framework supports:

- exchange of business payload messages and documents in a single communication envelope
- asynchronous and synchronous processing of business messages

This version of the DRI standard is aligned with the version of the ACORD Messaging Service documented in the ACORD *Messaging Service and SOAP Implementation Guide version 1.1*.

Although the DRI standard is expected to be operated over the ACORD Messaging Service, it has been specified to operate independently of a particular communication framework standard, provided that the chosen framework supports the functions identified above.

2.4   Models of interoperation

There are three models which can be used to exchange documents between repositories: they are respectively the "Push model", the "Pull model" and the "Search and Pull model". Their characteristics are explained in the sections below.

> Note: the description that follows uses some DRI operation names, whose definitions are found in Section 4.

2.4.1   Push model

In the Push model, free-format documents and a standard message (the DRI *RepositoryUpload* message) are transmitted by the sender to the receiver in the same "envelope". The Sender's and Receiver's Repository systems interact directly to exchange the documents. The accompanying *Upload* message conveys the attributes of the documents, e.g a document reference, the reference of the contract or claim to which the document relates.

A variation of the Push model is where the standard message is a *regular business transaction*, e.g. a RLC *ClaimMovement*, accompanying one or more supporting documents. This requires the Sender's and the Receiver's Applications to work in coordination with their respective Repository System components. Strictly speaking this case is outside the scope of the DRI specification. For storing the free format documents, the receiving Repository System extracts the document attributes and business data indices from the business transaction and the <WorkFolder> structure of the ACORD Messaging Service specification.

2.4.2 Pull model

In the Pull model, free-format documents are exchanged in a two-step process: a notification followed by a download request and response.

2.4.2.1   Notification

A notification is sent to the recipient's repository. The notification message is a standard DRI *RepositoryNotify* message. It contains the network and system addresses of the documents available for subsequent retrieval and their attributes,

A variation of the notification is the use of a ***regular business transaction,*** e.g. a RLC ***ClaimMovement*** or other standard message, accompanied by attributes and network and system addresses of one or more supporting documents that are available for download.

> **Note – Direct notification to recipient user:** the Pull model could be further elaborated for the case where the notification is sent directly to a recipient user, by e-mail or other methods of communicating a reference. It relates to the standard only by the fact that the notification should make use of one of the specified standard reference to retrieve from a repository system. The retrieval method could be by Web browser interaction. Use of e-mail with attachments to transport documents is discouraged.

2.4.2.2   Download request and response

The documents are retrieved and optionally stored in the recipient's repository through the use of DRI *RepositoryDownload* request and response messages. To build the DRI *RepositoryDownload* request message, the recipient's repository system uses the document's identifiers and/or its network and system addresses from the notification. The DRI *RepositoryDownload* response message is the standard message that accompanies the free-format documents. It conveys the comprehensive set of attributes for those documents.

A variation of the download is where the retrieval method is a ***simple Web HTTP interaction*** using a URL supplied with the notification.

2.4.3   Search and Pull model

The DRI *RepositorySearch* request message is designed for cases where a recipient repository system wants to (re)collate from a sender repository an up-to-date list of available documents, according to certain criteria. The DRI *RepositorySearch* response message contains information about documents which match the search criteria, equivalent to that contained in a DRI *RepositoryNotify* message. The recipient can then use the DRI *RepositoryDownload* request and response to retrieve the required documents as described in 2.4.2.2.

The DRI *Repository***Search** operation may also be used for cases where a recipient application needs to search external repositories for related documents. The results could be collated and a list of related electronic documentation held in multiple repositories, both internally and externally, presented to business practitioners. The business practitioner may then initiate a DRI *RepositoryDownload* request message to view one or more documents in the list.

2.4.4   Models involving a Market Repository Service

There are two ways in which a Market Repository Service may be used.

- An Enterprise may choose to use a Market Repository Service as the distribution mechanism for documents it owns.

- A group of Enterprises may share a Market Repository Service as the holder of documents that relate to business transactions that they share.

A shared Repository Service (latter option) would typically be for a group of underwriters involved in subscription business. Such a repository might be treated as though it were the underwriter's repository (when the underwriter is an interactive user of that service) or might act as a one-stop distribution system and interoperate with the underwriter's own repository. The feeding mechanism of a Shared repository Service could be that of the first option (distribution mechanism).

An Enterprise that uses a Market Repository Service as a distribution mechanism may need close automatic control of the Market Repository. Therefore the following operations enrich the models described above.

2.4.4.1   *RepositoryCreateFolder* operation:

The physical exchange of documents (**RepositoryUpload** *or* **RepositoryDownload**) can be preceded by the creation of a placeholder or folder in the target market repository. This operation allows for a closer control of the target repository storage structure. It enables the creation of hierarchies of Folders with property (e.g. indexing information) inheritance.

2.4.4.2   *RepositoryDownloadFolder* operation:

Download all folders and documents, with their attributes, from designated repository folder(s). By this means, the receiving repository has all the information available to be delivered from the source repository, without necessarily being obliged to utilize it.

2.4.4.3   *RepositoryChangeAttributes* operation:

Change Attributes allows a user to change the characteristics of documents or folders after their creation in the target repository. For example the owner of a document may want to add business data indices or alter its Access Control List (see below).

2.4.4.4   Exchange of *Access Control and Notification lists*:

In order to safely outsource its distribution, a document-owning Enterprise must be able to communicate information relative to access rights of potential document consumers. It may also want to delegate the task of notifying potential consumers. Therefore *Access Control Lists* and *Notification Lists* can be included in DRI messages for all the operations where a Market Repository is involved.

3   DATA MODEL

3.1   Core objects

Party: Any significant organization, sub-organization or person identified for the purpose of document ownership, origination, access rights, notifications, or identified as a sender or receiver. The following roles are specified in the context of document exchanges:

- Owner: the party who is responsible for the management of a document and defines access rights to it. The owner may change depending on versions of documents.

- Originator: the party from whom the document originates e.g. a risk manager or loss adjuster.

- Consumer: the party who makes use of the documents in a business process. For example a (re)insurer who collects information about a loss in order to adjust, agree and settle a claim.

- Sender: the issuer of a message, which controls the flow of a document.

- Receiver: the recipient of a message, which controls the flow of a document.

These roles can be combined with party roles defined in the more general context of (re)insurance contracts (e.g. Insurer, Cedent, Broker, Reinsurer, Service Provider etc).

Folder: an entity used to group documents in a repository and possibly to define access rights. It is usually defined by a set of business references. There may be hierarchies of folders with property (e.g. access rights and indexing) inheritance. Documents placed in folders may inherit access rights and indexing.

Package: a transient (limited life time) group of documents used for transfer, physical addressing and formatting.

Document: a single business document stored in a repository with an identifier. Support for any type of document is provided. Documents are held with associated attributes that enable interpretation and processing.

Document list: a list of Documents and/or Folders.

Access Control List (ACL): a list of parties with access rights to a Document or Folder.

Notification List: a list of users or systems, which should be notified of Document/Folder creation. Systems that may be notified are other Repository Services.

3.1.1   Identification of Documents

A document is uniquely identified with one of two exclusive methods:

    (1) a globally unique id <DocumentId>

    or

    (2) an Owner's repository reference <DocumentReference>, optionally augmented by a
    document version number <DocumentVersion>.

When <DocumentVersion> is given by the Owner in addition to <DocumentReference>, it should be considered part of the unique identifier. It should be used consistently for referencing this document. Note that <DocumentVersion> can be given with <DocumentId> as well, but then it is not part of the unique identifier.

Explanatory notes:

The rules described above support three modes of document identification in repository systems:

1. There are repositories that support the use of globally unique ids – i.e. <DocumentId> is used as unique key.

2. There are repositories that use an internal Document Id, which is generated as each document is added, including later versions of existing documents – i.e. <DocumentReference> is used as unique key.

3. There are repositories that use an internal Document Id root, and then increment the version number as later versions are added – i.e. <DocumentReference> is not sufficient as unique key, and <DocumentVersion> is required as well

A receiver should store the reference sent by the owner (<DocumentId> or <DocumentReference>, and <DocumentVersion>) next to his own reference, as a shared document identifier. A third party operator acting as a pure 'distributor' should use the reference sent by the owner (<DocumentId> or <DocumentReference>>, and <DocumentVersion>) together with the Owner identifier (<Owner>) in all external communication to identify documents consistently in the distribution chain.

3.1.2 Identification of Folders

Similarly to a document, a folder is uniquely identified with one of two exclusive methods:

(1) a globally unique id <FolderId>

or

(2) an Owner's repository reference <FolderReference>

As above, the receiver should store the reference sent by the owner next to his own reference, as a common folder identifier. Also, a third party operator acting as a pure 'distributor' should use the owner reference in his external communication for consistency of folder identification.

3.1.3 Relationship between Documents and Folders and between Documents

Folders can be organized in hierarchies and documents can be located in a Folder.

Documents can be further related to one another with a selectable type of relationship (e.g. Annotation, Version, Component)

A document must be physically self-contained. When sub-documents are structurally included in it (e.g. an e-mail with all its attachments) they get no separate identifier. However, if it makes sense, a sub-document could be detached, identified and stored separately with a 'Component' relationship to the containing document.

3.2   Objects used for indexing

Documents and Folders exist in pre-defined business contexts. Business objects used to specify this context might be for example an Insurance Policy, a Reinsurance Contract, a Claim, a Transaction or a Party. Attributes of these objects, like a Policy Reference, a Loss Date, a Party Identifier, can be used to create indices to documents and folders within a Repository.
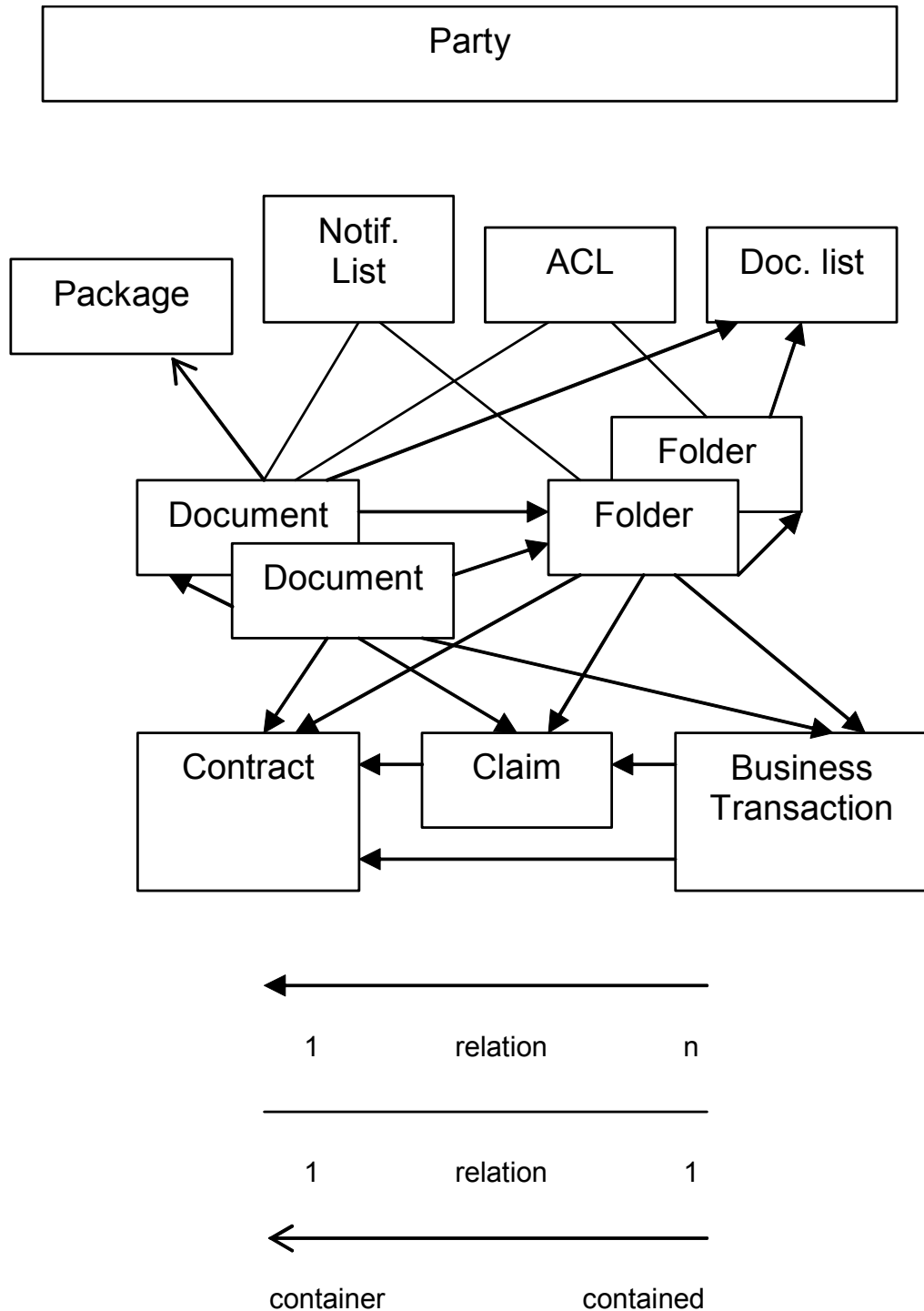
The DRI specification is flexible as to which business objects from any of the ACORD standard segments can be used for indexing. The initial specification allows for the following pre-existing RLC XML aggregates to be reused. Any child data element of those aggregates can serve for indexing if it makes sense in a business context. Indicative lists of such indices are given in Appendix 6.1.

Indexing business objects for the RLC standard:

- **Parties:** Insured, Broker, Insurer, Cedent, Reinsurer, ServiceProvider, OriginalInsurerOrReinsurer, OriginalPolicyholder

- **Policies and Contracts:** Contract, ContractSection, OriginalPolicy

- **Claims:** Claim

- **Transactions:** ReferredPlacing, ReferredTechAccount, ReferredClaimMovement, ReferredSettlement

When P&C and Life members are ready to use the DRI standard, the indicative list of indexing business objects for each standard segment and line of business will need to be defined.

3.3 Object diagram

4   REPOSITORY OPERATIONS

4.1   List of repository interface operations

The following list of operations for a repository interface has been defined for this release of the specification.

Each operation is composed of a pair of request and response messages.

They are listed in the table below, with the following column headings:

- **Operation**: name of the operation

- **Explanation**: purpose of the operation and conditions of use

- **Request information**: summary of information/data contained in the request message for this operation

- **Response information**: summary of information/data contained in the response message for this operation

- **Sync**: "x" indicates that the request/response pair would be assumed to be synchronous, otherwise asynchronous operation would be assumed. This is only an indication, as all the operations can be made available both as synchronous and as asynchronous implementations, per agreement between trading partners.

Operation	Explanation	Request Information	Response Information	Sync.
RepositoryUpload	Upload document(s) in target repository Documents can be uploaded in pre-created folder(s)	Document(s) and document attributes (single /collection, with/without access control list, with direct attributes and indexing information)	Confirmation/Error	
RepositoryCreateFol der	Prepare a document placeholder in target repository	Folder attributes (single folder/collection, with/without access control list, with/without indexing information)	Confirmation/Error	
RepositoryChangeAt tributes	Change characteristics of documents or folders Can only be issued by the party who created the Folder or uploaded the document or those who have authority to modify the Folder or document attributes. This includes situations where the owner of the Folder delegates authority over it to other persons.	Create/Remove document/folder access rights and/or add document/folder direct attributes and indexing information	Confirmation/Error	
RepositoryDownload	Download designated documents from a repository	Document references (UUId or Repository reference)	Document(s) and document attributes (single/collection, with/without document packaging, with direct attributes and indexing information)	x
RepositoryView	View designated documents from a repository Download on a temporary basis. Technically the same as Download	Document references (UUId or Repository reference)	Document(s) and document attributes (single/collection, with direct attributes and indexing information)	x
RepositoryDownload Folder	Download all folders and documents, with their attributes, from designated repository folder(s) By this means, the receiving repository has all the information available to be delivered from the source repository, without necessarily being obliged to utilize it	Folder references (UUId or Repository reference)	Folder(s) attributes and if applicable the folders and documents contained in the folder(s) and their attributes. .	x
RepositoryViewFolde r	View all documents from designated repository folder(s) Download on a temporary basis. Technically the same as Download Folder	Folder references (UUId or Repository reference)	Folder(s) attributes and if applicable the folders and documents contained in the folder(s) and their attributes.	x
RepositorySearch	Search for documents or folders following specified criteria	Search criteria including any document or folder attribute (with search limit)	Folder and/or document list and their references (with/without full attributes)	x
RepositoryNotify	Notify designated parties of creation of documents or folders. Notify Folder creation can be used by receiving party to create a mirror structure (and then by a document owner to feed the Folder).	Folder and/or document list and their references (with/without full attributes)	Confirmation/Error	

4.2 Request and response messages

Each operation is composed of a pair of request and response messages.

An all-or-nothing approach has been adopted as regards to operation request processing. The response message will only report an "acknowledged" (meaning fully completed), a "processed_with_data_ modification" (meaning completed with unilateral data modification by the receiver) or "rejected" (meaning not completed) status. This approach has consequences for operations that perform the actual transport of documents (*RepositoryUpload, RepositoryDownload, and RepositoryDownloadFolder*): the repository system should apply some kind of transactional integrity regarding the storage of the documents.

A small selection of data elements from a request message are echoed back in a response message. If it is, it is generally for replicating identification information that can be useful in response processing, such as the reference to a related business transaction.

Applicability of data elements in responses also depends on whether the operation is acknowledged or rejected. In the latter case, information returned is kept to the minimum that is necessary to process the error response.

4.3 Data requirement per Repository operation

A data requirement matrix is provided as a separate document. It sets out the definitions and usages for all elements of *RepositoryOperationRx* messages. Usages are given in the context of each specific operation code, request and response.

Please refer to spreadsheet file *Repository Interface Data Requirements Matrix_v-1-0-0*

5   MESSAGE ARCHITECTURE

5.1   The *RepositoryOperationRq* and *RepositoryOperationRs* messages

Every message instance follows common templates, which are the base for the XML Schema validation. There is a distinct template for request (root tag is <RepositoryOperationRq>) and response messages (root tag is <RepositoryOperationRs>). Within the template, the specific repository operation is indicated by the <RepositoryOperationCd> coded value.

The *RepositoryOperationRx* messages share the same XML namespace (http://www.ACORD.org/ Standards/AcordMsgSvc/xxx) as the ACORD Messaging Service set of messages. An important number of elements are common, which enforces the consistency and cooperation between the two specifications. As a result, the DRI standard can be viewed as a set of operations that extend and refine the means of exchange of free-format documents.

XML elements needed for specifying the business data attributes, which may be used for indexing in repositories, are defined in aggregates from one of the three ACORD business standard segments. Only high-level aggregates are prescribed by the specification and any child data element of those aggregates can serve for indexing if it makes sense in a business context. To allow for embedding of business data aggregates in *RepositoryOperationRx* messages, usage is made of the ability of XML Schemas to manage several namespaces in an XML document. A standard container element, <ReferredObjects>, encapsulates all the elements from a particular ACORD namespace. For example, the set of business data elements borrowed from the RLC standard is encapsulated as follows:

```
<RepositoryOperationRq xmlns="http://www.ACORD.org/Standards/AcordMsgSvc/1.1.0"
xmlns:rlc="http://www.ACORD.org/standards/Jv-Ins-Reinsurance/2003-1">
…….
  <!--
  Embedded RLC vocabulary
  -->
  <rlc:ReferredObjects xmlns="http://www.ACORD.org/standards/Jv-Ins-Reinsurance/2003-1">
```

At this stage of the specification, only one referred standard can be used per individual document or folder.

The following XML templates and schema files are released in support of the specification:

Template files :
-   *RepositoryOperationRq-template_v-1-0-0.xml*: request message template
-   *RepositoryOperationRs-template_v-1-0-0.xml*: response message template

Schema files:
-   *Acord-Repository_v-1-0-0.xsd* : main schema for the DRI specification, sharing the http://www.ACORD.org/Standards/AcordMsgSvc/1.1.0 namespace with the Messaging Service
-   *AcordMsgSvc_base_v-1-1-0.xsd* : schema containing the common elements between the DRI and Messaging Service specifications (namespace http://www.acord.org/Standards/AcordMsgSvc/1.1.0)

Referred schema files in other ACORD standards:

- *Jv-Ins-Reinsurance-2004-1.xsd*: RLC 2004-1 schema, in support of the DRI referred RLC
  business objects.

6 APPENDICES

6.1 Indicative indexing business data per document type

This is an indicative list of business data items that may be used to search a target repository, in absence of specific search profile for that repository.

Note: Once indexing data have been fixed in a repository, it may be very difficult to change this later.

6.1.1 RLC standard

Note: the tags are shown in XPATH format

6.1.1.1 Risk related document (in support of a Placing process)

RLC Tag
Contract/BrokerReference
Contract/InsurerReference
Contract/CedentReference
Contract/ReinsurerReference
Contract/ServiceProviderReference
Contract/OriginalInsurerOrReinsurerReference
ContractSection/LayerOrSurplusNbr
ContractSection/ContractPeriod
ContractSection/UnderwritingYear
Insured/Party/Name
Broker/Party/Name
Broker/Party/Id
Insurer/Party/Name
Insurer/Party/Id
Cedent/Party/Name
Cedent/Party/Id
Reinsurer/Party/Name
Reinsurer/Party/Id
OriginalInsurerOrReinsurer/Party/Name
OriginalInsurerOrReinsurer/Party/Id
ServiceProvider/Party/Name
ServiceProvider/Party/Id
ReferredPlacing/UUId
ReferredPlacing/BrokerReference
ReferredPlacing/InsurerReference
ReferredPlacing/CedentReference
ReferredPlacing/ReinsurerReference
ReferredPlacing/ServiceproviderReference
ReferredPlacing/PlacingStage
ReferredPlacing/PlacingTransactionFunction
ReferredPlacing/CreationDate

6.1.1.2   Claim related document (in support of a Claim handling process)

RLC Tag
Contract/BrokerReference
Contract/InsurerReference
Contract/CedentReference
Contract/ReinsurerReference
Contract/ServiceProviderReference
Contract/OriginalInsurerOrReinsurerReference
ContractSection/LayerOrSurplusNbr
ContractSection/ContractPeriod
ContractSection/UnderwritingYear
Claim/BrokerReference
Claim/InsurerReference
Claim/CedentReference
Claim/ReinsurerReference
Claim/OriginalInsurerOrReinsurerReference
Claim/ServiceProviderReference
Claim/BureauSigningReference
Claim/LossDate
Claim/LossPeriod
Claim/LossOrEventName
Claim/CatastropheNbr
Claim/PcsReference
ReferredClaimMovement/BrokerReference
ReferredClaimMovement/CedentReference
ReferredClaimMovement/ServiceProviderReference
ReferredClaimMovement/CreationDate
ReferredClaimMovement/ContractReferenceCurrency
ReferredTechAccount/AccountTransactionType
ReferredTechAccount/AccountingYear
ReferredTechAccount/AccountPeriod
Insured/Party/Name
Broker/Party/Name
Broker/Party/Id
Insurer/Party/Name
Insurer/Party/Id
Cedent/Party/Name
Cedent/Party/Id
Reinsurer/Party/Name
Reinsurer/Party/Id
OriginalInsurerOrReinsurer/Party/Name
OriginalInsurerOrReinsurer/Party/Id
ServiceProvider/Party/Name
ServiceProvider /Party/Id

6.1.1.3   Account related document (in support of an Accounting and Settlement process)

RLC Tag
Contract/BrokerReference
Contract/InsurerReference
Contract/CedentReference
Contract/ReinsurerReference
Contract/ServiceProviderReference
Contract/OriginalInsurerOrReinsurerReference

ContractSection/LayerOrSurplusNbr
ContractSection/ContractPeriod
ContractSection/UnderwritingYear
ReferredTechAccount/BrokerReference
ReferredTechAccount/CedentReference
ReferredTechAccount/ServiceProviderReference
ReferredTechAccount/CreationDate
ReferredTechAccount/ AccountTransactionType
ReferredTechAccount/ReferenceCurrency
ReferredTechAccount/AccountingYear
ReferredTechAccount/AccountPeriod
Insured/Party/Name
Insurer/Party/Name
Insurer/Party/Id
Broker/Party/Name
Broker/Party/Id
Cedent/Party/Name
Cedent/Party/Id
Reinsurer/Party/Name
Reinsurer/Party/Id
OriginalInsurerOrReinsurer/Party/Name
OriginalInsurerOrReinsurer/Party/Id
ServiceProvider/Party/Name
ServiceProvider /Party/Id

7 REVISION HISTORY/CHANGE SUMMARY

Version	Date	Description of Change
1.0.0	June 2004	First release