ELEMENTS Database Layouts

Version 9.0

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Introduction

ELEMENTS software uses two main databases in its processing.

- The Exposure database (EXP) which holds the exposure related information. The Exposure database contains the physical description of the exposure and insurance data loaded from user files using the data import facility. It also contains model related data which is required for ELEMENTS to model the exposure and some intermediate data processing data used to prepare the exposure data for the modeling.

- The Results database (RES) which contains PMLs and AALs, event loss data and other information created as a result of an analysis run.

Both of these databases are created when the user creates a new project during the Portfolio Import Process. Names for these databases are created with a prefix for each database type, followed by the project name as follows:

Database:	**Naming Standard:**	**Example:** **(assuming "MyProject" is the project name entered)**
Exposure Database:	IF_EXP_*(ProjectName)*	IF_EXP_MyProject
Results Database:	IF_RES_*(ProjectName)*	IF_RES_MyProject

Exposure Database (EXP)

Within the EXP database, there are certain categories of table data.

1. **Base Exposure:** This data is directly related to the input files provided by the user containing the base exposure information. This includes insurance related and physical property data including: insured location information with address and building characteristics, location coverage, account, policy and treaty information and some other user provided related data such as tracking index identifiers.
2. **System Generated Exposure:** This data contains information that is closely related to the input data and is generated as part of the import process. This includes geocoding information and other modeling or resource data generated or retrieved during the geocoding process including corrected addresses (if available) and damage functions. Generally, the base exposure data is retained as imported. System generated exposure data contains the results of geocoding and damage function mapping and may differ from the base exposure due to address correction or other similar processes.
3. **Support Data:** This data is used in creating the System Generated data and is loaded from the Reference Database into the EXP database. This allows direct joins to be made, speeding up various processes.
4. **Informational Tables:** This data contains information about the portfolio itself. This includes information about the peril type selected, when the portfolio was created, by whom, and with what input files. Additionally, any error messages that may have occurred during import processing, version information for the database, and links to any analyses created in the Results Database (RES) is also contained in these tables.

Base Exposure Tables

Table Relationship Diagrams: Base Exposure Tables

Below are simplified layouts of the tables within the base insurance portion of the database, as described in the previous section. These diagrams will start with the most basic portions of the database and then add tables and complexity. These diagrams just show the table relationships. While the diagrams suggest that there are foreign keys defined in the database (parent-child relationships), no such foreign keys actually exist so as to not impede data loading, relationships are checked and verified later programmatically. Details on the fields in these tables can be found in the following sections for each table or table grouping.

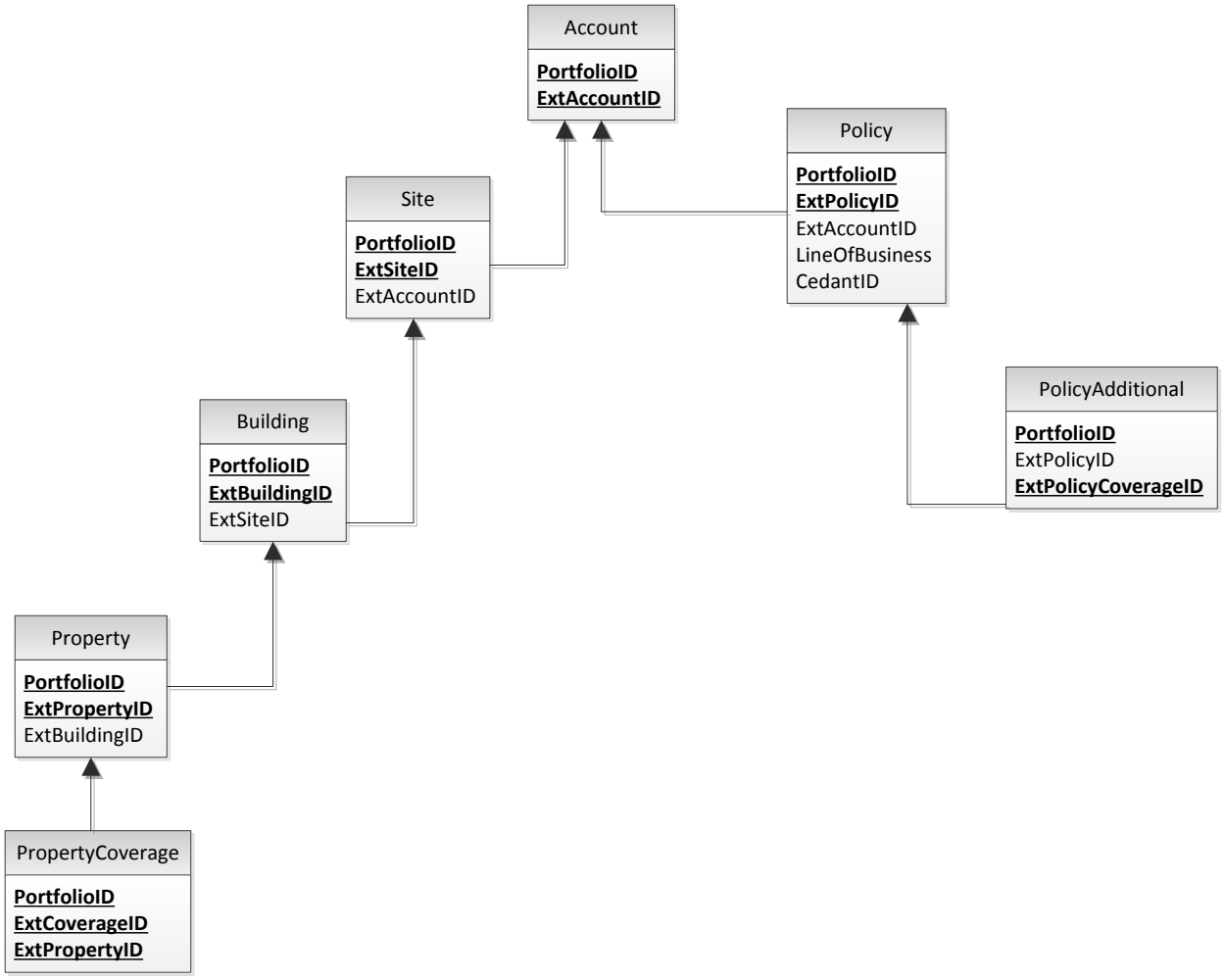

Figure 1 Core Model

Figure 1 shows the most basic of tables within the EXP database. The Account is the top level for all insurance, an Account provides a means of linking a group of locations to a group of Policy records (or more precisely, to a collection of Policy Layers). To the left starting from Account we find the Site,

Building and Property tables. Site contains the site or location insurance information, Building is defined for future development where insurance on a campus of buildings can be modeled, and Property contains the input physical description of the building. Related to the Property table we have Property Coverage where the individual coverages for a property are defined. This may contain more than one coverage record of each type. The coverage types currently supported are Structure, Contents and Time Element which is Additional Living Expense (ALE) or Business Interruption (BI).

Going down the tree to the right of Account, we find the Policy and Policy Additional tables. A single Policy record describes one layer of a policy related to a group of locations (Site, Building, Property combinations) through an Account. Multiple policy records can exist for an account creating a many to many relationship between policies layers and locations. Policy Additional provides for the means for describing the individual coverage terms (Structure, Contents and Time Element coverages) of a policy layer.

Figure 2adds the tables for re-insurance and lines of business. Treaty uses one Treaty Risk table to connect treaty risks to Sites, Accounts, Policies (or policy Layers). Policies may be linked to verbosely or via the Line of Business. The Connection column indicates the type of table the Treaty Risk record relates to. The Treaty table contains the definition of the treaty including the per occurrence limit. Facultative reinsurance should be represented only in the TreatyRisk table as no information from the treaty table is required.

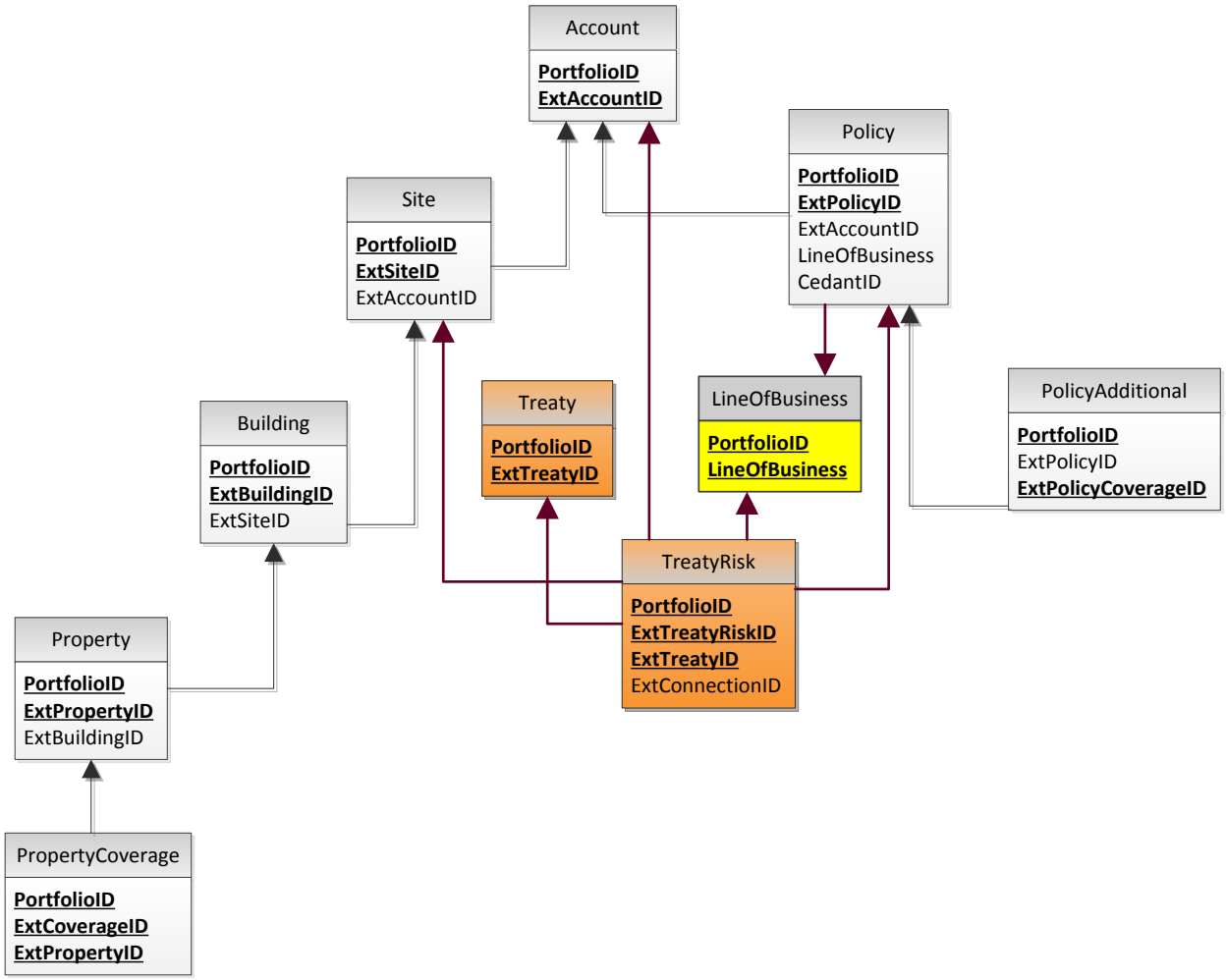

Figure 2 Reinsurance and Line Of Business Data.

Commercial policy/sub policy records are also provided for in the EXP database. This picture shows how these tables relate to the base tables.

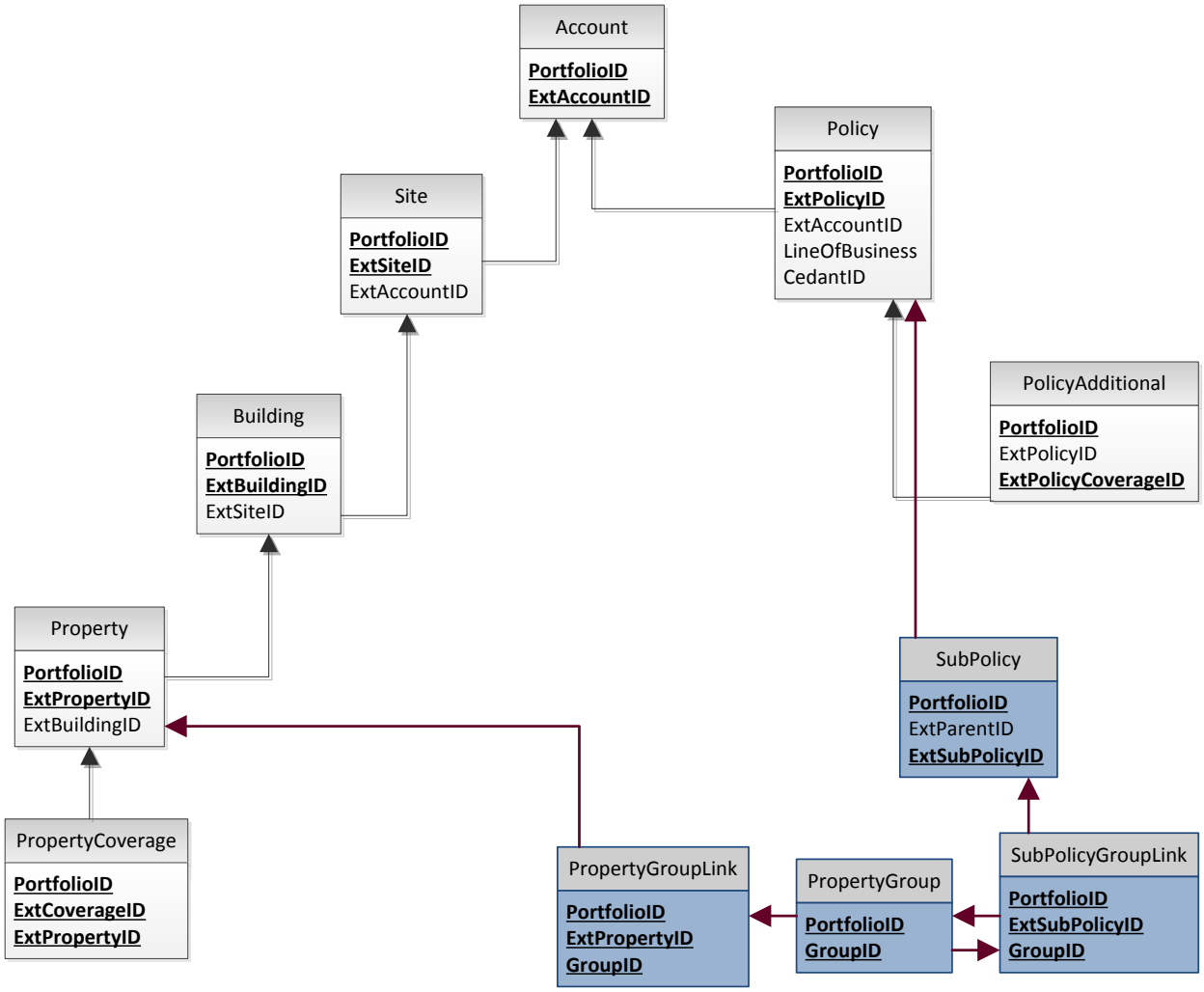

Figure 3 Sub-Policies

Groups of properties are defined (PropertyGroup) and are verbosely connected to the properties via (PropertyGroupLink). The SubPolicy table contains the subPolicy terms and they are applied to the properties in a set of property groups,, this relationship is defined in the SubPolicyGroupLink table.
Adding ModifierWind, Portfolio and Cedant tables completes the user input data tables.

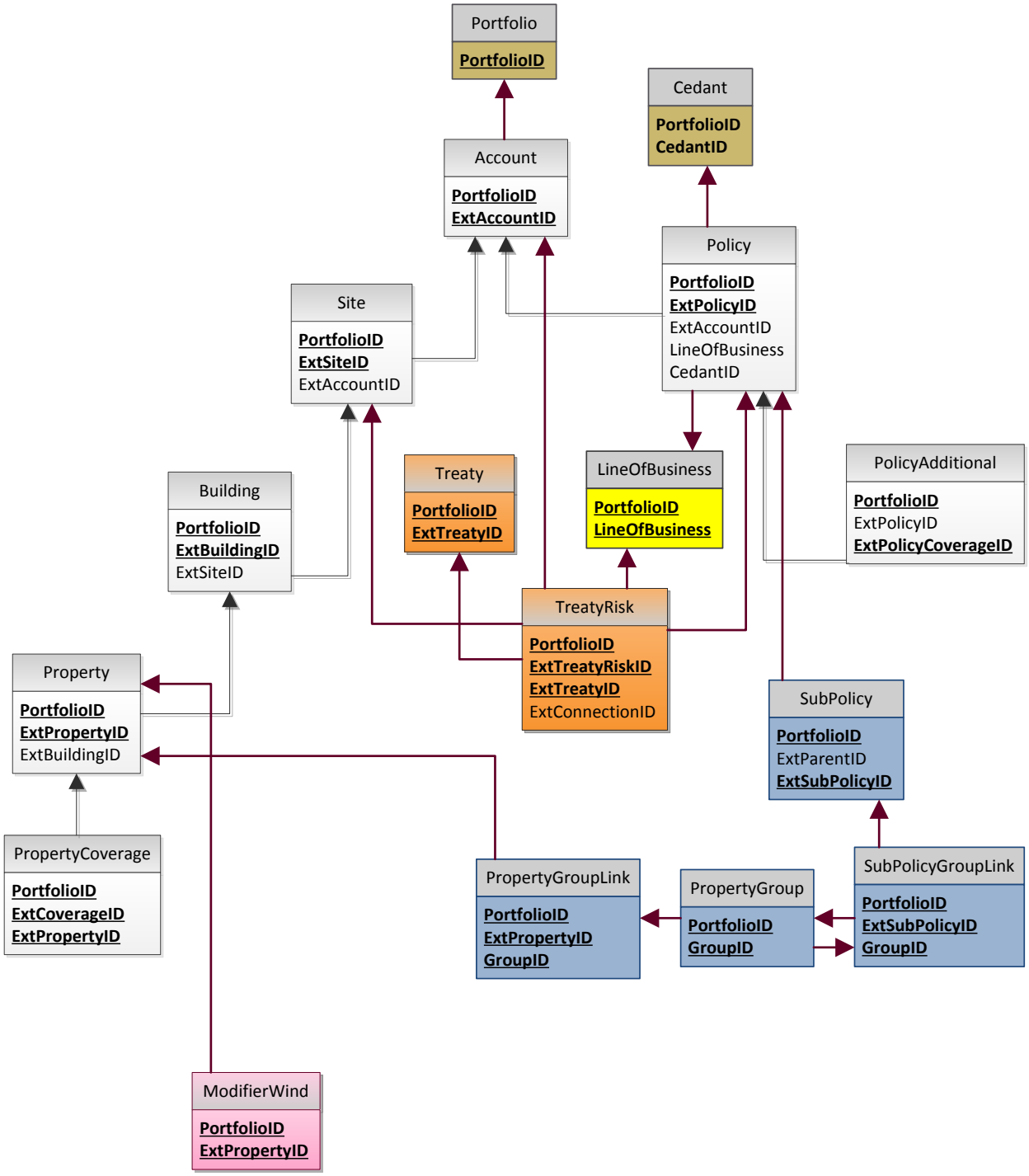

Figure 4 All User Data

Account

The Account table provides a means of joining Sites to Policies (or Policy Layers). The account table does not hold any insurance terms such as limits or deductibles, but one Account serves to link collections of Sites to collections of Policies.

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this account belongs (see portfolio table)
AccountID	Long	This value is generated internally for internal processing and is sequential from 1-N where N is the number of valid accounts.
ExtAccountID		The accountID in the input files.
Book	Integer	Not currently used.
AccountNum	Varchar(50)	Provided for user use
AccountName	Varchar(50)	Provided for user use
AccountNote1	Varchar(20)	User notes
AccountNote2	Varchar(20)	
AccountNote3	Varchar(20)	
AccountNote4	Varchar(20)	
policyType	Integer	Used internally to build input for the loss engine.
TIV	Float	Total Insured Value for all locations and all coverage types in this account
STR_TIV	Float	Total Insured Value for all locations for structure coverages in this account
CON_TIV	Float	Total Insured Value for all locations for contents coverages in this account
TE_TIV	Float	Total Insured Value for all locations for time element coverages in this account
Error	Bit	1 or true if this account is there is an error that makes the account invalid for analysis.
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.

Site, Building, and Property

Insured locations are described through a combination of the Site, Building and Property tables. This table structure allows a hierarchy of where Sites can contain multiple Buildings and within a building, there may be multiple sets of floors occupied defined as Properties. In current practice, the underlying model has not yet been enhanced to allow this level of differentiation, and for now, only one building per site is allowed and one property per building. Additionally, due to this current restriction, the SitedID should equal the BuildingID and the BuildingID should equal the PropertyID.

The input processing can handle having orphan input records – that is to say there are no foreign key relationships defined in the database that will restrict input of records such that only strict parent child related records can be added. A process at the end of portfolio import will go through and reconcile the unmatched records and only fully reconciled records will be modeled.

Another note – these keys in the input files: SiteID, BuildingID and PropertyID correspond to the ExtSiteID, ExtBuildingID and ExtPropertyID columns in the tables respectively. SiteID, BuildingID and PropertyID refer to the internal IDs created during conversion. The internal model requires consecutive numbering of the data used.

Support for limits and deductibles and combined (building + contents) limits and deductibles for a location is available at the Site level. The current implementation of the combined deductibles and limits is somewhat limited and should be discussed with IF support before using. Individual building characteristics such as address, construction type and occupancy type are defined at the Property level.

The TIV values are stored in these tables to increase the efficiency of the processing of the data during conversion and setup for modeling. The TIVs are required at various levels during data processing to support the conversion of fractional terms to real currency units.

Table 1 Site

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this site belongs.
ExtSiteID	Long	Identifies the Site. This value comes from 'Site' column of the 'Site' file (ENF or 3 file).
SiteID	Long	This value is generated internally for internal processing and is sequential from 1-N where N is the number of valid sites.
ExtAccountID	Long	Links to Policies through the Account table
LocationNum	Varchar(20)	User field not used by the model
LocationName	Varchar(40)	User field not used by the model
User1	Varchar(50)	User field not used by the model
User2	Varchar(50)	User field not used by the model
User3	Int	Location Aggregation key – see user manual for ELEMENTS
LocationLimit	Float	Location or site limit in currency units
LocationDeductible	Float	Location or site limit in currency units
LocationDeductibleFractionBasis	Int	1 for total underlying value
		2 for structure value (only used for fractional deductible)
LocationDeductibleType	Int	1 – Additional
		2 – Net. See Glossary
CombinedLimit	Float	Will be used for PDTE property limits and deductibles if

Field Name	Type	Description
CombinedDeductible	Float	PDTE type is set in policy
SiteFraction	Float	Fraction paid by the insurrer. Must be greater than zero and less than or equal to 1
policyType	Integer	Used internally to support the creation of the internal files.
TIV	Float	Total Insured Value for all locations and all coverage types in this site
STR_TIV	Float	Total Insured Value for all locations for structure coverages in this site
CON_TIV	Float	Total Insured Value for all locations for contents coverages in this site
TE_TIV	Float	Total Insured Value for all locations for time element coverages in this site
Error	Bit	1 or true if this site is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.

Table 2 Building

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this building belongs.
ExtBuildingID	Long	Identifies the Building within a site. Comes from the BuildingID column in the Building file (ENF Format).
BuildingID	Int	This value is generated internally for internal processing and is sequential from 1-N where N is the number of valid buildings.
ExtSiteID	Long	Links to Site ID
TIV	Float	Total Insured Value for all locations and all coverage types in this building
STR_TIV	Float	Total Insured Value for all locations for structure coverages in this building
CON_TIV	Float	Total Insured Value for all locations for contents coverages in this building
TE_TIV	Float	Total Insured Value for all locations for time element coverages in this building
Error	Bit	1 or true if this building is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.

The input address data is in the Property table. There are a number of fields for this and they are not all used in all countries, nor are the definitions precisely the same in each country. See the input file documents for a discussion of address data storage by country.

Table 3 Property

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this property belongs.
ExtPropertyID	Long	Identifies the property and site in this format.
PropertyID	Integer	This value is generated internally for internal processing and is sequential from 1-N where N is the number of valid properties.
ExtBuildingID	Long	Relates a building to a property. Not used by model at this

Field Name	Type	Description
		time, so only a 1:1 mapping between Site, Building and Property is currently supported. This can be used for ad hoc reporting if location/site reporting is turned on.
CondensedAddressID	Integer	Where possible, similar properties are condensed into a single record for hazard processing. This allows for a performance increase in the hazard lookup. The condensed records are kept in the Condensed Address table and this field maps to the ID int he condensed address table.,
BuildingName	Nvarchar(50)	Not used in the model at this time.
BuildingNumber	Nvarchar(60)	Address data (in the US the BuildingNumber is prepended to the StreetName when passed to the geocoding engine.)
StreetName	Nvarchar(60)	Address data, Include the direction indicator if required.
City	Nvarchar(40)	Address data
PostalCode	Nvarchar(50)	Address data
District	Nvarchar(30)	Address data
StateAbbreviation	Nvarchar(2)	2 char state (in the US the standard 2 character postal and FIPS code.)
State	Nvarchar(100)	not used yet- will eventually be used to supplement state code.
TerritoryCode	Nvarchar(4)	2 character ISO country abbreviation or the 3 digit ISO country number. See Table 19.
NumOfStories	Float	Used for damage function selection.
Yearbuilt	Integer	Used for damage function selection. Use 9999 for unknown.
OccupiedFloors	Nvarchar(255)	Reserved for future development.
BuildingType	Varchar(50)	Used with BuildingScheme below to describe the building characteristics. Values vary by country / region and peril. See inpuf file documentation.
OccupancyType	Varchar(50)	Used with OccupancyScheme below to describe the primary occupancy of the insured part of the building. Values vary by country / region and peril. See input documentation.
RoofType	Varchar(50)	Used with roof type scheme to describe the roof type in some of the region / perils supported.
BuildingScheme	Varchar(50)	See above BuildingType
OccupancyScheme	Varchar(10)	See above OccupancyType
RoofTypeScheme	Nvarchar(50)	See above RoofType.
User1	Nvarchar(50)	Optional for tracking of results. Copied directly to the IF_EXP database.
User2	Nvarchar(50)	
User3	Nvarchar(50)	
User4	Nvarchar(50)	
User5	Nvarchar(50)	
PropertyName	Nvarchar(40)	
PropertyNum	Nvarchar(20)	
Error	Bit	1 or true if this building is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.
Latitude	Float	Latitude from the input file. Decimal degrees. -90 to 90 North +ve
Longitude	Float	Longitude from the input file. Decimal degrees. -180 to 180 East +ve (will accept 0 to 360 as well)
Matchcode	Integer	The match or precision code for the latitude and longitude from the intput files. See Reference Data for full list of

Field Name	Type	Description
		geocoding options
CustomDFStubPrimary	Long	Primary and secondary stub for Custom Damage Functions (CDF). These must match entries in the custom damage functions input file. See the documentation on Custom Damage Functions for details.
CustomDFStubSecondary	Long	
CrestaZone	Nvarchar(100)	Used in some models for geocoding.
CrestaZoneVersion	Nvarchar(50)	Currently not used.
GridCellID	Long	An internal geocoding ID used for R&D where geocoding is difficult. This is a geolocation value defined by the hazard modelers.
Municipality	Nvarchar(50)	Used in some non-US models for Geocoding.
County	Nvarchar(30)	Used in some non-US models for Geocoding.
RoofType	Varchar(50)	Used in some models for primary damage function mapping
RoofTypeScheme	Varchar(50)	Used in some models for primary damage function mapping
FloorArea	Int	Field for inputting actual floor area size for use with Parameter Adjustment

Property Coverage

Defines the most basic insurance at the location layer including the value insured. Coverage type designates the type of insurance (structure, contents, time element, etc.) for this insurance value amount for this property.

Table 4 PropertyCoverage

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this property coverage record belongs.
ExtCoverageID	Long	ID for the coverage. Must be strictly unique.
CoverageID	Integer	This value is generated internally for internal processing and is sequential from 1-N where N is the number of valid property coverages.
ExtPropertyID	Long	Property to which this coverage applies
CoverageType	Int	Coverage Type codes: 0. Structure. 1. Reserved for Appurtenant structure 2. Contents, 3. Not currently used. 4. Time Element, 5. Not currently used, 6. Injury – used in the A&H and Workers Comp models. 7. Death – used in the A&H and Workers Comp. models. 8. Injury and Death – used in the A&H and WC models.
CoverageSumInsured	Float	The value of the insured coverage in currency units. For Terrorism A & H Life and Workers Compensation portfolios this is the head count found at this location for this coverage.
CoverageLimit	Float	The limit for this coverage if any.
CoverageDeductible	Float	The deductible for this coverage if any.
CoverageFraction	Float	Coverage fractions are the fraction paid by the insurer. 0 defaults to 1 so it can't be used to turn off exposure.
PolicyTypeCode	Integer	Used internally for construction of input files.
CoverageAggregation	Int	User defined set of Integers for aggregating at this finest granularity in the loss module.
Error	Bit	1 or true if this building is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.
CoverageTIVStub	Int	A user damage function key used in some of the European Flood models.
CoverageMajorInjuryValue	Float	The average payout in the event someone is injured. Currently only used in Terrorism A & H Life and Workers Compensation portfolios for determining the payout when an injury occurs.
ConverageMinorInjuryValue	Float	The average minor injury value. Currently not used.

Field Name	Type	Description
CoverageDeathValue	Float	The average payout in the event of a death. Currently only used in Terrorism A & H Life and Workers Compensation portfolios for determining the payout when a death occurs.

Modifier Wind

This table provides a location for saving the secondary modifier data for Wind perils. This is currently only used in the US Tropical Cyclone (Hurricane) model. The supported values are model specific – please see the input file documentation.

Table 5 ModifierWind

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this Modifier Wind record belongs.
ExtPropertyID	Long	links directly to Property with a 1-1 mapping.
YearBuilt	Varchar(20)	Column still exists, but is no longer used as of version 7. Year built from the Property table is used directly for damage function lookup now.
FloorSize	Varchar(20)	See Model documentation and/or input file documentation.
RoofCover	Varchar(20)	
RoofType	Varchar(50)	
RoofConnections	Varchar(20)	
RoofAge	Varchar(20)	
WindowProtection	Varchar(20)	
RoofSheathing	Varchar(20)	

Policy

The policy table provides storage for the insurance terms for the policy (policy layer). Multiple policy (layers) may exist for each account. Note that the software presently does not check for multiple recoveries.

Table 6 Policy

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this Policy record belongs.
ExtPolicyID	Long	Uniquely identifies this policy layer using the value entered in the files.
PolicyID	Integer	This value is generated internally for internal processing and is sequential from 1-N where N is the number of valid Policy records (for this portfolio).
ExtAccountID	Long	Links this policy to an Account
PolicyNum	Varchar(50)	Optional for tracking of results – not used in model.
PolicyNote1	Varchar(50)	User data – not used in the model
PolicyNote2	Varchar(50)	User data – not used in the model
Attachment	Double	The start of the layer in currency units. For step policy types, this is the lesser boundary of the step. This should be in monetary amounts not percentages of something else like TIV.
Layer	Double	The thickness of the layer. If a fraction was provided in the input files, it will be converted to a monetary amount based on the underlying TIV.
Deductible	Double	A deductible in currency units.
MinimumDeductible	Double	A minimum deductible in currency units
MaximumDeductible	Double	A maximum deductible in currency units
DeductibleFractionBasis	Int	This is used when the fractional deductibles are converted to currency deductibles during load.1 for total underlying value, 2 for structure only.
BlanketLimit	Double	Used for both standard limit and for layered policy limits. If a fraction was provided in the input files, it will be converted to a monetary amount based on the underlying TIV.
DeductibleTypeCode	Integer	How the deductibles at the policy are treated in relation to any underlying deductibles. 1 – Additional 2 – Net 11 – Step entered based on B losses 12 – Step entered based on B+C losses 13 – Step entered based on either B or C losses 14 – Step entered based on B and/or C losses (not supported) 15 – Step entered based on C losses
LocationDeductibleMax	Integer	Indicates the presence of a location deductible max. The deductible for the location with loss that has the largest deductible sets the total location level deductibles. 1 – No

Field Name	Type	Description
		2 – Yes
PolicyType	Integer	1 - Standard Policy 3 - California Earthquake Authority (CEA) Policy 4 – PDTE 11 – fixed payment step policy 12 – loss value step policy
LineOfBusiness	Integer	Links to the LineOfBusiness table.
PolicyFraction	Float	0<fraction<=1, A participation factor for the insurance provider.
CedantName	Varchar(50)	Name of the Cedant (not currently used).
CedantID	Integer	ID of the Cedant (not currently used)
TIV	Float	Total Insured Value for all locations and all coverage types in this policy
STR_TIV	Float	Total Insured Value for all locations for structure coverages in this policy
CON_TIV	Float	Total Insured Value for all locations for contents coverages in this policy
TE_TIV	Float	Total Insured Value for all locations for time element coverages in this policy
Error	Bit	1 or true if this policy is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.
CombinedLimit	Float	Combined terms from the input file. These are used to create separate Policy Additional records for building and contents split by percentage of coverage.
CombinedDeductible	Float	
Payment	Float	Fixed payment amount for Step Policies

Policy Additional

The Policy Additional table provides for creating limits and deductibles for a specific coverage at the policy level.

Table 7 PolicyAdditional

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this policy additional record belongs.
ExtPolicyID	Long	Links to Policy to which this additional record is linked.
ExtPolicyCoverageID	Long	Unique ID for this Policy Additional record
PolicyCoverageID	Integer	This value is generated internally for internal processing and is sequential from 1-N where N is the number of valid Policy Additional records (for this portfolio).
Limit	Double	In currency units
Deductible	Double	In currency units
PolicyCoverageFraction	Float	0<=fraction<=1, the participation factor for the insurance provider for this coverage.
Coverage	Integer	Coverage Type codes: 0. Structure. 1. Reserved for Appurtenant structure 2. Contents, 3. Not currently used. 4. Time Element, 5. Not currently used, 6. Injury – used in the A&H and Workers Comp models. 7. Death – used in the A&H and Workers Comp. models. Note: Property Coverage allows for a type 8 – Death and Injury. This is not available in Policy Additional, and should these occur, they will need to be split into separate records with Death and Injury coverages.
Type	Integer	Application of deductibles with respect to other deductible levels. 1 - Additional 2 - Net
Error	Bit	1 or true if this policy additional is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.

Sub-Policy Tables

The following comprise the Sub-Policy tables. In general, Properties within an account can be part of a group and then Sub Policies are defined to join to these groups. A single Sub-Policy can, with the below structure, be defined to multiple groups. This would allow the defining of say one group of properties to belong to a group defined by the state to which they belong and another set of properties to belong to another state, and then have a sub-policy that refers to both of these groups. However, the internal ELEMENTS modeling engine only supports one group to one sub-policy.

Table 8 PropertyGroup

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this property group record belongs.
GroupID	Long	ID for the Group
GroupName	Varchar(50)	Name for the Group
Description	Varchar(1024)	Description
Error	Bit	True if this policy additional is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.

Table 9 PropertyGroupLink

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this property group link record belongs.
ExtPropertyID	Long	ID of the Property that connects to this group
GroupID	Long	ID for the Group
Error	Bit	True if this property group link record is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.

Table 10 SubPolicy

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this sub-policy belongs.
ExtParentID	Long	Links to the parent of this SubPolicy. Currently, the parent must be a Policy, and children of sub-policies are not yet supported
ExtSubPolicyID	Long	ID of this Sub Policy
SubPolicyID	Integer	This value is generated internally for internal processing and is sequential from 1-N where N is the number of valid Sub-Policy records (for this portfolio).
Type	Integer	0 – sub-limit,
ApplicationOrder	Integer	Will be used in the future to designate the order to apply the sub-policies. Currently not used.
Note	Varchar(1024)	User text field
Deductible	Double	
DeductibleType	Integer	0,1 – additional,
Limit	Integer	0 >= limit – unlimited,
LimitType	Integer	Currently Not Used
Error	Bit	True if this sub-policy record is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.

Table 11 SubPolicyGroupLink

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this Sub-Policy Group Link record belongs.
ExtSubPolicyID	Long	Link to Sub Policy
GroupID	Long	Link to Group
Combination Rule	Varchar(10)	Currently not used
Error	Bit	True if this sub-policy group link record is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.

Reinsurance Tables

These tables contain the insurance information and the relationship definitions for facultative, working excess, surplus share and quota share treaties. Faculative does not require a record in the treaty table but having one is not a problem. The treaty table contains information common to all risks in the treaty such as the occurrence limits. The treaty risk table contains the risk specific information such as per risk limits, the relationship to the risk tables etc. All levels of risk definition (site, account, policy layer) are linked from the same treatyRisk table. A group of policy layers may also be linked via the line of business.

Table 12 TreatyRisk

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this Treaty Risk record belongs.
ExtTreatyRiskID	Long	A TreatyRiskID is required for all facultative and treaty records.
TreatyRiskID	Integer	This value is generated internally for internal processing and is sequential from 1-N where N is the number of valid Treaty Risk records (for this portfolio).
ExtTreatyID	Long	Links this Treaty Risk record to a Treaty record in the treaty table. A 0 can be used for a faculatative treaty.
TreatyType	Integer	1 – facultative 2 – work 3 – surplus 4 – quota
Connection	Long	Indicates at what level this treaty connects 2 – Site 3 – Account 4 – A single policy layer 5 – A group of policy layers via a common Line of Business
ExtConnectionID	Long	The ExtSiteID, ExtAccountID, ExtPolicyID or LoBID connected to, per above field
ConnectionID	Long	The system generated SiteID, AccountID, PolicyID or LoBID connected to, per Connection field

Field Name	Type	Description
Attachment	Double	Attachment point
Limit	Double	Limit
PercentRecovery	Double	0<= percentage <=100. This value is not a fraction, but is expressed as a percentage for legacy reasons.
Error	Bit	True if this treaty risk record is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.

Table 13 Treaty

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this Treaty record belongs.
ExtTreatyID	Long	An ExtTreatyID is required for all facultative and treaty records.
TreatyID	Integer	This value is generated internally for internal processing and is sequential from 1-N where N is the number of valid Treaty records (for this portfolio).
EventLimit	Float	occurrence limit
Notes	Varchar(50)	Optional data for the user, not used in modeling
CedantName	Varchar(50)	Name of the Cedant (not currently used).
CedantID	Integer	ID of the Cedant (not used)
Error	Bit	True if this treaty risk record is in error
Reason	Varchar(50)	Reason for the error. Null if this record is not in error.

Line of Business and Cedant

The Line of Business table stores the Line of Business Name and the internal ID related to it. If a Name can be converted to an integer, the integer value is used for the ID as well.

Table 14 LineOfBusiness

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this account belongs.
LineOfBusiness	Integer	ID Generated for this Name. If the string name can be converted to an integer, that number will be used as the ID.
Name	Varchar(50)	The Name associated with this ID
Notes	Varchar(50)	Notes imported (not used)

The Cedant table relates a Cedant Name to a Cedant ID. This table and the related data are not yet used by the modeling.

Table 15 Cedant

Field Name	Type	Description
PortfolioID	Integer	Indicates to which portfolio this account belongs.
CedantName	Varchar(50)	The Name associated with this ID
CedantID	Integer	ID Generated for this Name. If the string name can be converted to an

Field Name	Type	Description
		integer, that number will be used as the ID.
Notes	Varchar(50)	Notes imported (not used)

System Generated Exposure Data

Table Relationship Diagrams: System Generated Exposure Data

Below shows how the system generated exposure data relates to the base portfolio information. System generated tables are in green.

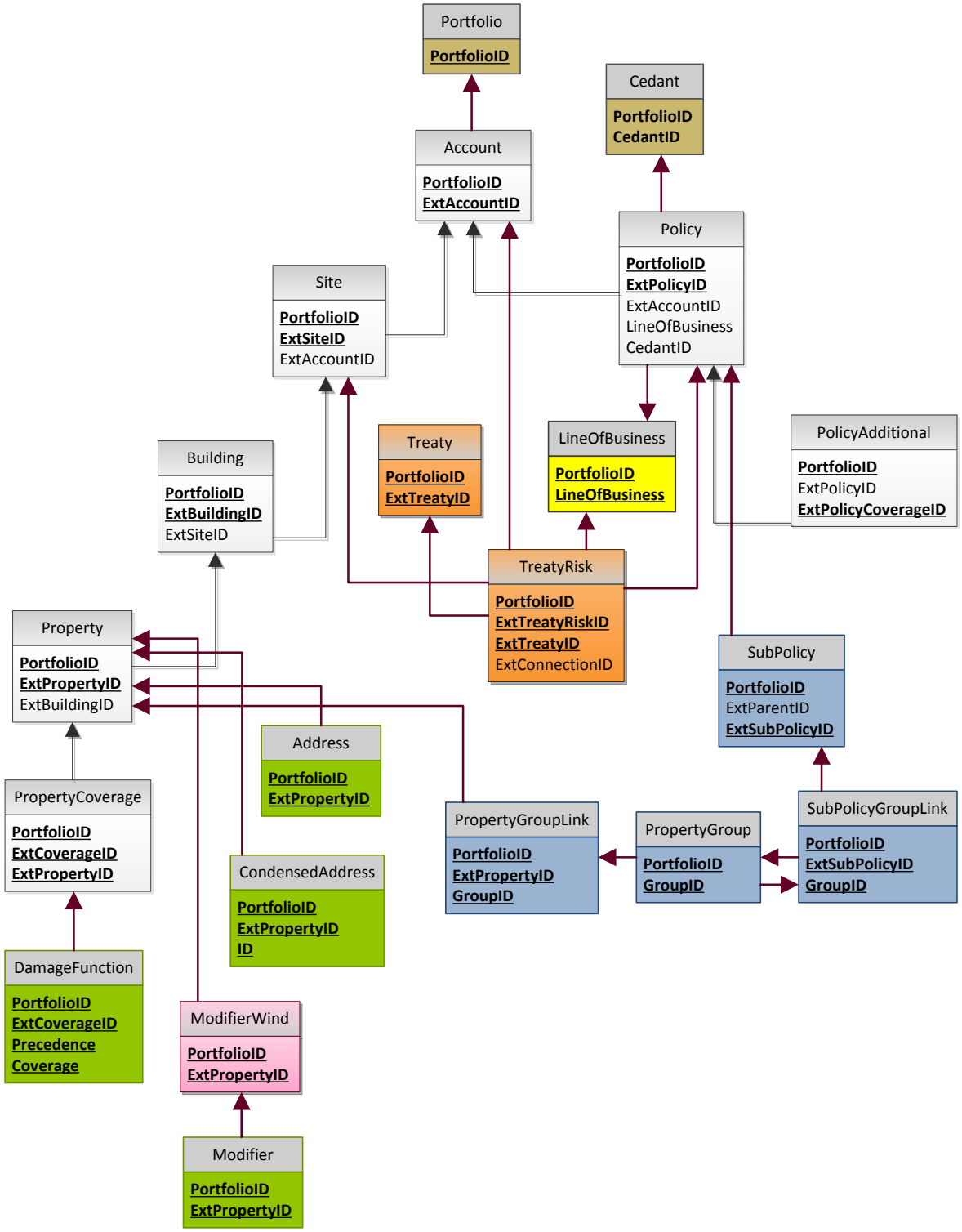

Figure 5 System Generated Data

Address

The address table contains the corrected and reference data generated within a portfolio import and the data conversion process. Address records are one to one mapped to Property records. Examples of data found includes corrected address data, geocoding information including the Latitude and Longitude found during geocoding, and region and tier information.

Table 16 Address

Field Name	Type	Description
PortfolioID	Integer	The identifier for the set of data for this portfolio – with the extpropertyid privides a unique key.
ExtPropertyID	Big Integer	The propertyid supplied in the input files and the link between the tables.
Addressnum	Varchar(60)	The number on the street for the building addresses.
Addrmatch	Integer	This is the type of geocoding match found (see Geocoding Match Table in the Appendix.)
CensusBlockID	Integer	For the US census data
CensusTract	Integer	
City	Varchar(50)	The corrected city name
CoastalDistance	Float	The distance to the nearest coast subject to TC.
CountryISO	Integer	The country identifier – see reference table in file load manual.
CountyID	Integer	A county code – in the US the FIPS code.
CrestaZoneID	Integer	A CRESTA zone ID where available.
DataBaseVersion	Varchar(50)	The version identifier of the database used to geocode the data
DistrictID	Big Integer	A district ID – used for some countries.
Elevation	Integer	The local elevation of the location in cm from mean sea level.
EQ_HHG_ID1	Integer	The 3 HHG IDs for US EQ
EQ_HHG_ID2	Integer	
EQ_HHG_ID3	Integer	
EQFoundationVulnerability	Integer	A code for the foundation vulnerability for the EQ model.
EQPeriod	Integer	The Period of the building for the EQ model. (Required for hazard and hazard runs at the “location” level.
Fuel	Integer	A code for the local fuel conditions for the US Wildfire model.
GridCellID	Big Integer	Some of the models use a defined grid for geospatial loction. It uses an external geocoding enging to provide the number and it is copied here.
HHG_CellID	Integer	The HHG ID used for US TC
HHG_Weight1_X	Integer	The weights for the EQ HHG ids above.
HHG_Weight2_Y	Integer	
Latitude	Integer	The geocoded latitude (microdegrees).
LiqID	Integer	A code for the liquefaction potential for the EQ hazard model.
LocationCode	Varchar(50)	The code returned by the geocoder – not used in the model.
Longitude	Integer	The geocoded longitude (microdegrees).

Field Name	Type	Description
LslID	Integer	A code for the landslide potential for the EQ model.
MasterTableID	Big Integer	The key to the master table hazard models.
MunicipalityID	Integer	The ID for the municipality. The scheme varies by region.
PAG	Integer	The primary aggregation key for the peril.
PostalCode	Varchar(50)	The corrected postalcode from the geocoder.
PostalCodeID	Integer	An ID used when the postalcode above is non numeric. The main model does not support alphanumerics for aggregation.
Region	Integer	A region ID which is peril and country dependent and is used for the identification of the correct damage functions.
SAG	Integer	The secondary peril aggregation key (for example Storm Surge when the primary is for Tropical Cyclone)
Slope	Integer	A measure of the local ground slope – used for the US WildFire model.
SoilCode	Integer	A code representing local soil conditions. Used in the EQ models.
State	Varchar(50)	A state name from the geocoder.
StateAbbreviation	Varchar(50)	A state abbreviation from the geocoder.
StateID	Integer	A standardized state id from the geocoder (in the US this is the FIPS code.)
StormSurgeCellID	Integer	A geospatial cell used for the determination of the Storm Surge hazard.
StreetName	Varchar(60)	The street name – combined with AddressNum for geocoding.
TerrainFactor	Integer	A roughness factor used in the wind models to correct the ground level wind speed.
Tier	Integer	A geospatial parameter used for some models to further differentiate the appropriate damage function (for US TC it is related to the changes in the building codes as one moves further from the coast.
UnitID	Big Integer	
VS30	Integer	A parameter of the US EQ model
ZipArea	float	The nominal area of the zipcode. It is used in the STS model.
Error	Bit	Marks if this record is not a valid record for processing.
Reason	Varchar(50)	Indicates the reason for the error.

Condensed Address

Address data is condensed prior to Hazard processing to speed up the hazard processing.

Table 17 CondensedAddress

Field Name	Type	Description
PortfolioID	Integer	Identifies the data set for this portfolio
ID	Integer	The ID of this condensed record.
CountyID	Integer	The ISO id for the country
StateID	Integer	The ID for the state (scheme varies by country)
Longitude	Integer	The longitude (microdegrees)
Latitude	Integer	The latitude (microdegrees)
ziparea	Float	The area of the postal code
CoastalDistance	Float	The distance to the nearest TC impacted coast.
Geo_Aggr_ID	Integer	An aggregation key at the geospatial level.
EQPeriod	Integer	The building period for the EQ model.
SoilCode	Integer	The soil code for the EQ model.
TerrainFactor	Integer	The correction factor for the local terrain for the wind models.
PostalCodeID	Big Integer	ID of the postal code associated with this condensed address.
Liqid	Integer	Not used in the current model.
Lslid	Integer	
Sprinkler_Factor	Integer	
LQF_Prob_Index	Integer	
LSL_Prob_Index	Integer	
FFE_Prob_Index	Integer	
SS_Prob_Index	Integer	
Addrmatch	Integer	The geo-precision code of the latitude / longitude.
Casualty1	Integer	Not used in the current model.
Casualty2	Integer	
Life1	Integer	
Slope	Integer	The local slope for the US Wildfire model.
Fuel	Integer	The local Fuel for the US Wildfire model.
AMBest_Urban_Area	Integer	Not used in the current model
HeadCount	Integer	
StormSurgeCellID	Integer	The geospatial cell id for the Storm Surge event hazard data.
Elevation	Integer	The local elevation in cm from mean sea level used in the US Flood models.
PAG	Integer	The aggregation key for the standard zones for the primary peril.
SAG	Integer	The aggregation key for the standard zones for the secondary peril.
Tier	Integer	The tier – used in the damage function identification.
CrestaZoneID	Integer	The cresta zone ID where available.
CountryISO	Integer	The country ISO id
VS30	Integer	A parameter for the US EQ model.
HHG_CellID	Integer	Spatial keys for the US peril models.
HHG_Weight1_x	Integer	
HHG_Weight2_y	Integer	

Field Name	Type	Description
EQ_HHG_ID1	Integer	
EQ_HHG_ID2	Integer	
EQ_HHG_ID3	Integer	
MasterTableID	Big Integer	The geospatial ID for the master table hazard based models.
MunicipalityID	Int	The ID of the municipality associated with this condensed address.
DistrictID	Int	The ID of the district associated with this condensed address.

Damage Function

Internal indices used for the selection of damage functions at run time.

Table 18 DamageFunction

Field Name	Type	Description
PortfolioID	Integer	ID of the Portfolio
ExtCoverageID	Big Integer	ID of the Property Coverage record this Damage Function belongs to
ExtPropertyID	Big Integer	ID of the Property record this Damage Function belongs to
Precedence	Integer	Indicates the type of damage function 1 – Primary 2 – Secondary 3 – Alternate
DFID	Big Integer	Damage Function ID
DFIDStructure	Big Integer	Structure Damage Function related to this Damage Function.
Error	Bit	Indicates if there was an error for this record.
Reason	Varchar(50)	Reason for the error. Null if not in error.
Coverage	Integer	Type of Coverage for this damage function. Generally, this is the same as the coverage on the Property Coverage record, except in the case that the coverage on the Property Coverage record is 8 (death and injury), in which case, two damage function records will appear for that Property Coverage records with coverage types 6 (Injury) and 7 (Death).

Modifier

The values in this table are used to modify the primary structural damage functions based on the various secondary modifiers supported for the peril – country.

Table 19 Modifier

Field Name	Type	Description
PortfolioID	Integer	ID of the Portfolio this record belongs to
ExtPropertyID	Big Integer	ID of the Property record this record belongs to
M1	Integer	These contain the set of mean value multipliers to the damage function for this property.
M2	Integer	
M3	Integer	
M4	Integer	
M5	Integer	
M6	Integer	
M7	Integer	
M8	Integer	
M9	Integer	
M10	Integer	
M11	Integer	
M12	Integer	
M13	Integer	
M14	Integer	
M15	Integer	
M16	Integer	
S1	Integer	These contain the set of standard deviation multipliers to the damage function for this property.
S2	Integer	
S3	Integer	
S4	Integer	
S5	Integer	
S6	Integer	
S7	Integer	
S8	Integer	
S9	Integer	
S10	Integer	
S11	Integer	
S12	Integer	
S13	Integer	
S14	Integer	
S15	Integer	
S16	Integer	

Portfolio Summary

This table contains the pre-computed Import Summary Report Data. The report can be viewed by right clicking the portfolio from the Tree View and selecting View Import Summary Report, or by right clicking

the run in the dashboard and selecting View Import Summary Report. This report contains various sums of TIV for data that completed successfully and for data that did not import successfully.

Table 20 PortfolioSummary

Field Name	Type	Description
PortfolioID	Integer	ID of the portfolio which this data summarizes.
Ordinal	Integer	A value indicating the type of summary this is for. These are ordered in the default order the summaries should appear on the report. 1 - Total TIV 2 - TIV Per Geocoding Precision 3 - TIV Per Country and Geocoding Precision 4 - Valid TIV Per Country and State 5 - Valid TIV Per Construction Type 6 - Valid TIV Per Country and Construction Type 7 - Valid TIV Per Occupancy Type 8 - Valid TIV Per Country and Occupancy Type 9 - Valid TIV Per Coverage 10 - Valid TIV Per Country and Coverage 11 - Valid TIV Per Line of Business 12 - Valid TIV Per Country and Line of Business
Info	Varchar(60)	Text that appears on the report indicating what is being summarized. The above descriptions of the Ordinal values are the possible info values.
Name	Varchar(60)	Name of the country to which this data belongs or 'All Countries'
CountryISO	Int	Country ISO Code
IDNumber	Integer	ID of the item being summarized. See info text to understand what this ID could be. Possible IDs: Geocoding Precision Construction ID (Generated internally based in Class and Schema) Occupancy ID (Generated internally based in Class and Schema) Coverage Type Line of Business ID Combined CountryISO and StateID
IDString	Varchar(50)	Text string related to the ID Number, for instance, this could be the state name when the ordinal is 4 or the construction class used when the ordinal is 5 or 6.
Error	Bit	Value indicating if the data being summarized was somehow in error during the conversion. This may be because the locations could not be geocoded or damage function mapped. 1 indicates an error whereas 0 indicates data that was summarized without errors.
Reason	Varchar(50)	Reason this data was in error. See Import Log for more details on specific lines from the input file.
TIV	Float	TIV value total for this summarized data.
TIV_Percentage	Float	Percent of total TIV summarized.

Support Data

Miscellaneous support tables

Country Lookup

This table is used to map whatever the user enters as the country name/code to a Country ISO. This ISO is then used in geocoding and damage function mapping. This data is copied from the Reference Database and lookup strings consist of ISO Codes, 2 and three digit abbreviations and English language country names.

Table 21 CountryLookup

Field Name	Type	Description
LookupString	Varchar (50)	String against which a match can be made, per the above.
CountryISO	Integer	ISO code of the Country looked up.
Abbreviation	Varchar (10)	2 letter abbreviation of that country.

Country Map

Maps country ISO found to a country name, 2 digit and 3 digit abbreviation. These are used in the import summary report for consistent naming.

Table 22 CountryMap

Field Name	Type	Description
CountryISO	Integer	Country ISO Code
Name	Nvarchar (50)	Country Name
Abbreviation	Nvarchar (50)	2 letter abbreviation.

Coverage Info

Maps the Coverage type from the Property Coverage table to a text name. Used in the import summary report.

Table 23 CoverageInfo

Field Name	Type	Description
ID	Integer	Coverage type ID
Name	Nvarchar (50)	Text name of the coverage type.

DF Construction

This table is used to improve the speed of Damage Function lookups by converting the construction scheme and construction class into an integer ID so that an integer match can be made when doing the lookup.

Table 24 DF_Construction

Field Name	Type	Description
ID	Integer	System Generated ID of this Class and Scheme
ConstructionScheme	Nvarchar (50)	Scheme Name
ConstructionClass	Nvarchar (50)	Class Name

DF Occupancy

This table is used to improve the speed of Damage Function lookups by converting the occupancy scheme and occupancy class into an integer ID so that an integer match can be made when doing the lookup.

Table 25 DF_Occupancy

Field Name	Type	Description
ID	Integer	System Generated ID of this Class and Scheme
OccupancyScheme	Nvarchar (50)	Scheme Name
OccupancyClass	Nvarchar (50)	Class Name

DF Roof Type

This table is used to improve the speed of Damage Function lookups by converting the roof type scheme and roof type class into an integer ID so that an integer match can be made when doing the lookup.

Table 26 DF_RoofType

Field Name	Type	Description
ID	Integer	System Generated ID of this Class and Scheme
RoofTypeScheme	Nvarchar (50)	Scheme Name
RoofTypeClass	Nvarchar (50)	Class Name

Geo-Precision Mapping

Geographic precision indicates the accuracy of the latitude and longitude given for a location. A user may indicate various levels of accuracy. The hazard models use differing mechanisms for determining possible exposure to a hazard for a location based on this accuracy. Only certain levels of precision are supported for The Geo-Precision Mapping table is used to map user provided geographic precision for a location to a geographic precision that is supported in that model for that country. This is used for data where latitude and longitude is specified and is being used in geocoding. For instance, a user may include in the input file a latitude and longitude for a location and indicate that the precision is for some geo-precision not supported by the peril and country selected. Instead of throwing out this location, the latitude and longitude will be marked as being for some other supported geo-precision. This table enables that mapping.

Table 27 Geo-PrecisionMapping

Field Name	Type	Description
CountryISO	Integer	ISO of the country
PerilID	Integer	An ID related to the Peril chosen for import
UserProvidedPrecisionID	Integer	Precision the user may have provided for a Latitude and Longitude
SupportedPrecisionID	Integer	Precision that the user provided precision should be mapped to.

Precision

This table maps a precision ID to a Name. This is used in the Import Summary Report.

Table 28 Precision

Field Name	Type	Description
ID	Integer	ID of the Precision
Name	Varchar(50)	String name of the Precision. Used in the Import Summary Report

State Province

This table maps a state ID to a Name. This is used in the Import Summary Report.

Table 29 StateProvince

Field Name	Type	Description
CountryISO	Integer	ISO number of the country this state is in.
ID	Integer	ID of the state (for the US, these are FIPS codes)
Name	Varchar(50)	String name of the state. Used in the Import Summary Report
Abbreviation	Varchar(10)	State Abbreviation

Informational Tables

Portfolio

The portfolio table holds the base information about a portfolio including when the name, when it was generated, by whom, etc.

Table 30 Portfolio

Field Name	Type	Description
PortfolioID	Integer	The main key to identify a set of data in all tables.
PortfolioName	Varchar (100)	The name of the portfolio provided by the user.
PortfolioDescription	Varchar (100)	A user supplied description of the portfolio.
CreatedBy	Varchar (50)	The id of the ELEMENTS user logged into the system when the data is imported. If the ELEMENTS Client is using Windows Authentication, this is the Windows User ID.
CreatedDateTime	Datetime	The time of data load.
PortfolioReady	Bit	Indicates if the conversion was successful. This indicates completion not a judgment of quality.
DCPeril	Varchar (50)	Peril selected by the user when the user imported the portfolio
FilePath	Varchar (max)	The path to the input files used to load the portfolio
CreatedFromComputer	Varchar (50)	The computer name where the data was loaded.
DeleteFlag	Bit	A flag indicating a soft delete of the portfolio – it removes it from the GUI.
DeletedBy	Varchar (100)	The name of the user who deleted the portfolio.
DeletedDateTime	Datetime	The time of deletion.
GeocodingOption	Varchar (50)	The geocoding option selected at time of data load.
WorkersCompType	Varchar (50)	Not used yet.

Project

This table contains some basic header information about the overall project or database including the user that created the database, the name when it was created and the related result database name at time of creation.

Table 31 Project

Field Name	Type	Description
ProjectName	Varchar (150)	Name of the Project entered at import
ProjectDescription	Varchar (100)	Description entered at import
CreatedBy	Varchar (50)	Elements User who created this project. Under Windows Authentication, this is the Windows user name.
CreatedDateTime	Datetime	Date and Time created based on date and time of the server hosting SQL Server.
ExpDBName	Varchar (150)	Name of the Exposure Database
ResDBName	Varchar (150)	Name of the related Results Database

Data Conversion Log (Import Log)

The Data Conversion Log Header and the Data Conversion Log Detail tables combine to form the basis of the logging mechanism during portfolio import (AKA Data Conversion). As there can be similar errors in the same column of data from an input file, two tables were created with the header table containing the potentially repeating messages, while the detail table contains a record for each related row found in error and the time and date that error was found. Generally, these are best viewed by right clicking the portfolio in the tree view in ELEMENTS and selecting View Portfolio Import Log.

Table 32 DataConversionLogHeader

Field Name	Type	Description
PortfolioID	Integer	ID of the portfolio which this log record belongs to.
InternalID	Integer (Identity)	An internal ID created for sorting log messages.
ID	Integer	ID of this message. Used to link to log details.
Type	Nvarchar (20)	String Message Type. These can be: CRITICAL – This is an error such as disconnection from the database that causes all import processing to fail ERROR – This indicates an error with a specific record in the portfolio. See the detail for which record. An individual record failing in this state will not cause processing to be incomplete, unless all records fail in some manner and there are subsequently no records to process. Parse – this happens when an unexpected value occurs in the input file, such as a string value in a numeric field. Users should note these errors and clean up their input files for the most complete import. Warning – This indicates a warning has occurred. This can happen when the user does not provide a Treaty file when importing a 3 file portfolio, or similar situations. It alerts the user to a potential issue, but not one that would be necessarily an error. Informational – This indicates a message is simply for informational purposes, such as the start or end of an import.
Module	Nvarchar (50)	Module where the error occurred. Used for IF diagnostics.
Method	Nvarchar (50)	Method where the error occurred. Used for IF diagnostics.
Message	Varchar (1024)	Log message
ExternalMessage	Varchar (1024)	If this exists, it will be the underlying system generated related error message.
RelatedTable	Nvarchar (50)	For Parsing errors. This is the table the import process was trying to write to when it found an error in an input file.
RelatedIDName	Nvarchar (50)	For Parsing errors. Name of the column in the table which contains the ID, which, when used in conjunction with the Portfolio ID, returns the record in the database which had a

Field Name	Type	Description
		parsing error. For instance, suppose an error existed in the Site file where the Location Limit field contained an alphabetic character. The Related Table name would be 'Site', and the Related ID Name would be 'ExtSiteID', which together with the Portfolio ID, is the primary key for the Site table. For this example, in the detail table, the Related ID would contain the ExtSiteID for the record after it was imported into the database.
FileName	Varchar (MAX)	For Parsing errors. Name of the file which contained the parsing error.
BadField	Nvarchar (50)	For Parsing errors. Field in the input file that contained the Parsing Error.
Expected	Varchar (1024)	For Parsing errors. Information about what might have been expected in the field that was in error.

Table 33 DataConversionLogDetail

Field Name	Type	Description
PortfolioID	Integer	ID of the portfolio which this record belongs to.
ID	Integer	ID of this log detail.
ParentID	Integer	Header ID for this log detail.
Time	Datetime	Date and time the error occurred.
RelatedID	Big Integer	ID in the table containing the data that was in error. (see discussion in the DataConversionLogHeader about the RelatedIDName column).
FileRow	Integer	For Parsing errors. Row in the input file that was in error.
BadData	Varchar(max)	For Parsing errors, this is the data that was found in the input file. For other errors, this may be other text such as the reference database used and the server on which this database is located.
ImpactedValue	Float	Impact this had on the record/portfolio. Currently not used and always zero.

DB Header

This table contains some basic header information about the portfolio in key and value pair combinations that are loaded when the database/project is created. Contained in this table is the version of the database tables and the version of the logic (or stored procedures) within the database.

Table 34 DBHeader

Field Name	Type	Description
KeyName	Nvarchar (50)	Name portion of the Key/Value Pair
KeyValue	Nvarchar (255)	Value portion of the Key/Value Pair

Key Name values

The above table contains these keys with the following descriptions:

Table 35 DBHeader

KeyName	Description
DBVersion	Version of the database tables.
DBLogicVersion	Version of the database stored procedures
ProjectName	Name of the Project
ProjectDescription	Description of the Project
CreatedBy	ELEMENTS user who created this database. If the ELEMENTS Client is using Windows Authentication, this is the Windows User name.
CreateDateTime	Date and time the project was created.

Analysis Settings

The Analysis Settings tables link an Analysis in the Results database (RES) to a portfolio in the Exposure database (EXP). The details table contains the details of all the selections made when setting up an analysis.

The detailed records are somewhat obscure and the important settings should be reviewed via the ELEMENTS GUI.

Table 36 AnalysisSettingsMaster

Field Name	Type	Description
AnalysisSettingID	Integer	This ID identifies this analysis set in the Analysis table in the results database
AnalysisName	Varchar (50)	The name of the analysis given by the user.
AnalysisDescription	Varchar (255)	The description given by the user.
PortfolioID	Integer	The portfolio to which this analysis applies.
ElementsVersion	Varchar	The version of ELEMENTS selected to run this analysis.
CreatedBy	Varchar (50)	The ELEMENTS user that created the analysis set.
CreatedDateTime	Datetime	The time of creation.
DeleteFlag	Bit	An indicator of a soft delete.

Field Name	Type	Description
DeletedBy	Varchar (100)	The ELEMENTS user that deleted it.
DeletedDateTime	Datetime	The date of deletion.

Table 37 AnalysisSettingsDetails

Field Name	Type	Description
AnalysisSettingID	Integer	This ID identifies this analysis set in the Analysis table in the results database
ParamName	Varchar (200)	Name of the parameter for which the following value is used.
ParamValue	Varchar (1000)	Value of this parameter used in this analysis.

Results Database (RES):

For each new project created during the portfolio import process (that is, when a new Exposure Database is created), a new Results database is created. Results database names begin with “IF_RES_” followed by the Project Name entered during import. The following tables describe the contents of this Results database. Each table in the database stores a specific type of result information. Most of the tables follow the same schema for ease of reading. Schema information for this database is described in the sections following this table. See the section following for full details on the relationships between these tables and those in the EXP database.

Table Name	Description	Schema Type
AnalysisInfo	Information about analysis submitted	AnalysisInfo
AnalysisPartsDone	It is used to maintain the counter of jobs that are completed. It is incremented after each subjob completes the transferring of loss files.	AnalysisPartsDone
AnalysisStatus	Detail status of analysis in progress.	AnalysisStatus
AnnAgg_Temp	Event Loss by Portfolio with modified frequency for each loss column	AnnAgg_Temp
Annual_Aggregate	AAL results	B
Annual_Aggregate_TVAR	AAL TVAR results (Currently not supported)	B
COUNTRY_EL	Event loss by Country ISO	A
COUNTY_EL	Event loss by County ID	A
COUNTY_EL_NT	Event loss by County ID - Near Term (Only used for Tropical Cyclone analysis)	A
COVERAGETYPE_EL	Event loss by Coverage type	A
COVERAGETYPE_EL_NT	Event loss by Coverage type - Near Term (Only used for Tropical Cyclone analysis)	A
CRESTA_EL	Event loss by CRESTA Zone ID	A
DAMAGEFUNCTION_EL	Event loss by Damage Function	A
DAMAGEFUNCTION_EL_NT	Event loss by Damage Function - Near Term (Only used for Tropical Cyclone analysis)	A
DBHEADER	Metadata about database	DBHeader
DISTRICT_EL	Event loss by DISTRICT ID	A
GEOID_EL	Event loss by Geo ID	A
GEOID_EL_NT	Near Term event loss by Geo ID	A
LINEOFBUSINESS_EL	Event loss by Line of Business ID	A

Table Name	Description	Schema Type
LINEOFBUSINESS_EL_NT	Near Term event loss by Line of Business ID	A
LOBBYCOUNTY_EL	Not used	LOBBYCOUNTY_EL
LOBBYSTATE_EL	Not used	LOBBYSTATE_EL
LOCATION_EL	Event loss by Location ID	A
LOCATION_EL_NT	Event loss by Location - Near Term (Only used for Tropical Cyclone analysis)	A
Log	Application and Error Logs	Log
LossCaseMaster	List of Loss Cases	LossCaseMaster
MUNICIPALITY_EL	Event loss by Municipality ID	A
PML	PML Results	B
PML_TRR	PML Results for terrorism peril	PML_TRR
PML_TVAR	TVAR PML Results	B
PORTFOLIO_EL	Event loss by Portfolio	C
PORTFOLIO_EL_EXPD	Event loss by Portfolio for DNC expanded life book	C
PORTFOLIO_EL_NT	Event loss by Portfolio - Near Term (Only used for Tropical Cyclone analysis)	C
PORTFOLIO_SAMPLES_EL	Event loss for each damage samples selected for analysis. RefID column is used to store sample number.	A
POSTALCODE_EL	Event loss by Postcode/Zipcode	A
POSTALCODE_EL_NT	Event loss by Postcode/Zipcode	A
PRIMARYZONE_EL	Event loss by Primary zone	A
PRIMARYZONE_EL_NT	Event loss by Primary zone - Near Term (Only used for Tropical Cyclone analysis)	A
PROPERTYPROGRAM_EL	Event loss by Property program / Account	A
PROPERTYPROGRAM_EL_NT	Event loss by Property program / Account - Near Term (Only used for Tropical Cyclone analysis)	A
ReturnPeriod	Return periods selected by user for given analysis.	ReturnPeriod
SCENARIOFORECASTEVENTS	Event ID and Event Names	SCENARIOFORECASTEVENTS
SECONDARYZONE_EL	Event loss by Secondary zone	A
SECONDARYZONE_EL_NT	Event loss by Secondary zone - Near Term (Only used for Tropical Cyclone analysis)	A
STATE_EL	Event loss by State	A

Table Name	Description	Schema Type
STATE_EL_NT	Event loss by State - Near Term (Only used for Tropical Cyclone analysis)	A
TempGross	Temporary table having refid,probid and Gross loss value for calculating PML	A
TempGU	Temporary table having refid,probid and GU loss value for calculating PML	A
TempNFAC	Temporary table having refid,probid and NFAC loss value for calculating PML	A
TempNTY	Temporary table having refid,probid and NTY loss value for calculating PML	A
TempOTHP	Temporary table having refid,probid and OTHP loss value for calculating PML	A
TempRefID	Temporary table having distinct refid for given analysis	A
TempRREC	Temporary table having refid,probid and RREC loss value for calculating PML	A
TempSIR	Temporary table having refid,probid and SIR loss value for calculating PML	A
TRReport	Exposure and Loss reports for Terrorism Peril	
USERDEFINED1_EL	User Defined Location event loss records- currently disabled in GUI	A
USERDEFINED1_EL_NT	User Defined Location event loss recordsNear term- currently disabled in GUI	A
USERDEFINED2_EL	Not used	A
USERDEFINED2_EL_NT	Not Used	A
USERDEFINED3_EL	User Defined Coverage event loss records	A
USERDEFINED3_EL_NT	User Defined Coverage event loss records for Near Term	A

Schema A

This schema is used to store Event Loss information at various levels (Portfolio, State, County, etc.).

Column Name	Data Type	Description
AnalysisRunID	int	System generated Analysis ID
LossCaseID	int	Refers to Description in Loss Case Mater Table, which describes which loss case this row represents.
EveID	int	Event Identification
RefID	int	Represents ID of unit based on which table it belongs to. (i.e. this will represent StateID in STATE_EL table while will represent CountyID in COUNTY_EL table, etc.)
ProbID	float	Probability of Event
GU	float	Ground up loss
SIR	float	Self-insured retention loss
GROSS	float	Gross loss
OTHP	float	Other participants loss
RREC	float	Reinsurance recovery
NTY	float	Net of treaty
NFAC	float	Net of facultative
Year	int	Year
YearProbId	float	Year Frequency

Schema B

This schema is used to store PML/AAL results at various levels (Portfolio, State, County, etc.).

Column Name	Data Type	Description
AnalysisRunID	int	System generated Analysis ID
PMLLevelType	string	Describes PML unit (Please see table-A below for mapping)
LossCaseID	int	Refers to Description in Loss Case Mater Table, which describes which loss case this row represents
RefID	int	Represents ID of unit based on PMLLevelType (i.e. if PMLLevelType = "STATE" then RefID is StateID.)
RetPeriod	int	Return Period for PML. (0 = AAL, -1 = Standard Deviation)
GU	float	Ground up loss
SIR	float	Self-insured retention loss
Gross	float	Gross loss
OTHP	float	Other participants loss
RREC	float	Reinsurance recovery
NTY	float	Net of treaty
NFAC	float	Net of facultative
IsNearTermLoss	int	0 = Long Term, 1 = Near Term (Only used for Tropical Cyclone analysis)

Schema C

This schema is used to store PML/AAL results at various levels (Portfolio, State, County, etc.).

Column Name	Data Type	Description
AnalysisRunID	int	System generated Analysis ID
LossCaseID	int	Refers to Description in Loss Case Mater Table, which describes which loss case this row represents
EveID	int	Event Identification
RefID	int	Represents ID of unit based on which table it belongs to. (i.e. this will represent StateID in STATE_EL table while will represent CountyID in COUNTY_EL table)
ProbID	float	Probability of Event
GU	float	Ground up loss
SIR	float	Self-insured retention loss
GROSS	float	Gross loss
OTHP	float	Other participants loss
RREC	float	Reinsurance recovery
NTY	float	Net of treaty
NFAC	float	Net of facultative
GUStdDev	float	Not Used
GROSSStdDev	float	Not Used
NTYStdDev	float	Not Used

Schema “AnalysisInfo”

This schema is used to store information about analyses submitted by the users. Information from this table (AnalysisSettingID) can be used to tie information from the IF_EXP_(Project Name) database which stores exposure data.

Column Name	Data Type	Description
AnalysisRunID	int	System generated Analysis ID
AnalysisName	Varchar(50)	Name of the Analysis provided by User while submitting the analysis
ElementsVersion	Varchar(100)	Version of the ELEMENTS engine this analysis was run with.
EventSetID	Int	Version of Event Set this analysis was run with.
AnalysisSettingID	Int	This ID is linked to “AnalysisSettingsMaster” in IF_EXP table. User can use this along with “AnalysisSettingsDetails” table to get analysis settings this analysis was run with.
TotalParts	Int	Total number of parts this analysis was run with.
PartsDone	Int	Total number of parts completed successfully.
Status	Varchar(255)	Analysis Status (PML Calculation Completed, Error)

TimeRemaining	Varchar(255)	NOT Used
PercentageDone	Varchar(255)	NOT Used
IsLOBSelected	Bit	NOT Used
ModelName	Varchar(150)	
CreatedBy	Varchar(150)	Username who created this project.
CreatedDateTime	Datetime	Creation Date
BreakoutOptions	Varchar(2000)	Breakouts selected by the user while creating the analysis
IsScenarioKey	Bit	Is the peril of type scenario
Notes	Varchar(max)	Any information about the analysis
MachineName	Varchar(200)	DB Machine name where the analysis is created
Losscases	Nvarchar(255)	Loss cases selected by the user while creating the analysis
IsOEPAEPMethod	int	0 - Old way of calculating PML/AAL using event frequency 1 – New way of calculating PML/AAL using year and year frequency (ProbId)

Schema "AnalysisStatus"

This schema is used to store the current status of the analysis (includes % completed and Time Remaining) for the Hazard and Loss calculations.

Column_Name	DATA_TYPE	Description
AnalysisRunID	Int	System generated Analysis ID
MainJobID	Int	JobID assigned by ELEMENTS Framework
SubJobID	Int	SubJobID assigned by ELEMENTS Framework
Hazard_PercentCompleted	Int	Hazard analysis Percentage completed for given SubJobID.
Hazard_TimeRemaining	Int	Hazard analysis Time remaining for given SubJobID
Loss_PercentCompleted	Int	Loss analysis Percentage completed for given SubJobID.
Loss_TimeRemaining	Int	Loss analysis Time remaining for given SubJobID

Schema "AnnAgg_Temp"

Column Name	Data Type	Description
AnalysisRunID	Int	System generated Analysis ID
LossCaseID	Int	Refers to Description in Loss Case Mater Table, which describes which loss case this row represents.
EveID	Int	Event Identification
RefID	Int	Represents ID of unit based on which table it belongs to. (i.e. this will represent StateID in STATE_EL table while will represent CountyID in COUNTY_EL table, etc.)
ProbID_GU	Float	Probability of Event
GU	Float	Ground up loss

Column Name	Data Type	Description
ProbID_SIR	Float	Probability of Event
SIR	float	Self-insured retention loss
ProbID_GROSS	Float	Probability of Event
GROSS	float	Gross loss
ProbID_OTHP	Float	Probability of Event
OTHP	float	Other participants loss
ProbID_RREC	Float	Probability of Event
RREC	float	Reinsurance recovery
ProbID_NTY	Float	Probability of Event
NTY	float	Net of treaty
ProbID_NFAC	Float	Probability of Event
NFAC	float	Net of facultative

Schema "LossCase Master"

Column_Name	DATA_TYPE	Description
LossCaseID	int	Loss Case ID used in Schema A, B and C
LossCase	Nvarchar(255)	Name of the Loss Case
Description	Nvarchar(255)	Description of the Loss Cass

The Losscase Master Table is a mapping table between the LossCaseID and its meaning. This table's contents remain constant. The following list shows the possible contents of this table.

LossCaseID	LossCase	Description
1	PERIL ONLY	PML for Peril Only and without Demand Surge
2	PERIL ONLY_DS	PML for Peril Only and with Demand Surge
3	COLLATERAL ONLY	PML for Collateral Only and without Demand Surge
4	COLLATERAL ONLY_DS	PML for Collateral Only and with Demand Surge
5	PERIL+COLLATERAL	PML for Peril AND Collateral without Demand Surge
6	PERIL+COLLATERAL_DS	PML for Peril AND Collateral with Demand Surge
7	DEATH+INJURY	PML for Death and Injury
8	DEATH ONLY	PML for Death Only
9	INJURY ONLY	PML for Injury Only
10	PROPERTY ONLY	PML for Property Only
11	BI ONLY	PML for BI Only
12	PROPERTY+BI	PML for Property and BI

Exposure Database to Results Database Mapping

This section describes how the EXP and RES databases are related and how to map between these two databases. For speed of insert, no primary keys are actually created on these tables, but essentially, the keys are as follows:

Schema A+C Primary Key	Schema B Primary Key
AnalysisRunID LossCaseID EveID RefID	AnalysisRunID PMLLevelType LossCaseID RefID

LossCaseID, and EveID are defined in the section about the RES database and are specific to the results being run. See the above section for information about these fields.

AnalysisRunID

Analysis Run ID specifies the run of a specific set of Analysis settings. This can be used to link back to the Portfolio ID in the EXP database like so:

Database	Table	Link Column (same name in both tables)	Links to Database	Table	Yielding
RES	*_EL table	AnalysisRunID	RES	AnalysisInfo	AnalysisSettingID
RES	AnalysisInfo	AnalysisSettingID	EXP	AnalysisSettingsMaster	PortfolioID

RefID

RefID is a generic term in each of these tables indicating this refers to some other ID in the EXP tables. Below shows the mapping, and to which table and column the Ref ID value refers in the *_EL or *.EL_NT tables. Mapping is the same for *_EL and *_EL_NT tables (such as County_EL and County_EL_NT). While only the *_EL table is shown in the list both are implied where both exist. Some tables are only used in our internal testing and are not available for general use. These are marked N/A.

RES table	RES Column	EXP Table Source	EXP Matching Column
COUNTRY_EL	RefID	Address	CountryISO
COUNTY_EL	RefID	Address	CountyID
COVERAGETYPE_EL	RefID	PropertyCoverage	Coverage
CRESTA_EL	RefID		
DAMAGEFUNCTION_EL	RefID	N/A	
DISTRICT_EL	RefID		
GEOID_EL	RefID	N/A	
LINEOFBUSINESS_EL	RefID	LineOfBusiness	LineOfBusiness
LOBBYCOUNTY_EL	RefID	N/A	
LOBBYSTATE_EL	RefID	N/A	

LOCATION_EL	RefID	Property, Building or Site	PropertyID, BuildingID or SiteID. Currently, these are equal (see notes …)
MUNICIPALITY_EL	RefID	Address	MunicipalityID
PORTFOLIO_EL	RefID		Special Case – see note below
POSTALCODE_EL	RefID	Address	PostalCodeID
PRIMARYZONE_EL	RefID	Address	PAG
PROPERTYPROGRAM_EL	RefID	Account	AccountID
SECONDARYZONE_EL	RefID	Address	SAG
STATE_EL	RefID	Address	StateID
USERDEFINED1_EL	RefID	N/A	
USERDEFINED2_EL	RefID	N/A	
USERDEFINED3_EL	RefID	PropertyCoverage	CoverageAggregation

PMLLevelType

PMLLevelType is a string value that indicates the level at which this PML is created (i.e. state, county, etc.). This value indicates which table the Ref ID joins.

RES table	RES Column	EXP Table Source	EXP Matching Column
COUNTRY	RefID	Address	CountryISO
COUNTY	RefID	Address	CountyID
COVERAGETYPE	RefID	PropertyCoverage	Coverage
CRESTA	RefID	Address	CrestaZoneID
DISTRICT	RefID	Address	DistrictID
LINEOFBUSINESS	RefID	LineOfBusiness	LineOfBusiness
LOCATION	RefID	Property, Building or Site	PropertyID, BuildingID or SiteID. Currently, these are equal (see notes …)
MUNICIPALITY	RefID	Address	MunicipalityID
PORTFOLIO	RefID		Special Case – see note below
POSTALCODE	RefID	Address	PostalCodeID
PRIMARYZONE	RefID	Address	PAG
PROPERTYPROGRAM	RefID	Account	AccountID
STATE	RefID		Special Case – see note below
SECONDARYZONE	RefID	Address	SAG
USERDEFINED3	RefID	PropertyCoverage	CoverageAggregation

Portfolio EL

This table deviates slightly from the norm above. The Ref ID in the Portfolio EL table is always zero. Linking back to the whole portfolio is done via the Analysis Run ID, per above.

Appendix

Geocoding Match Table

These indicate at what geo-precision a location was geocoded to. Said another way, this indicates what the latitude and longitude associated with a location on the address table or input file refers to, such as a street address or a postal code centroid.

Table 38 Geocoding Match

Match Code	Geocoding Match
0	None
1	Street Address
2	Postal Code
3	Truncated Postal Code 1
4	Interpolated Street
5	Street Segment
6	Street
10	Grid Cell ID
11	Soil
12	Population
20	Enhanced Postal Code
23	Truncated Postal Code 2
24	Truncated Postal Code 3
31	District
33	Municipality
34	City
36	County
38	State
40	Cresta
41	Sub-Cresta