



9. Introduction to Information Modelling

Chapter 8 explains the overall approach to modelling in the WCO Data Model Project. For this project Unified Modelling language (UML)- serves as the basis for building the information models. In UML, items of information are organized in the form of **class diagrams**.

The process of building class diagrams begins with the identification of simple and generic business processes described in the Revised Kyoto Convention (RKC). This helps describe the boundaries of the scope and coverage of the business processes that are being dealt with. It may be seen from the diagrams annexed to Chapter 8 that these business process models are detailed enough to describe the interaction between Cross-Border Regulatory Authority and the trade but not specific enough to describe the way business processes are organized within the Cross-Border Regulatory Agency (CBRA) and the Traders.

Using these high-level descriptions, the Data Model Project Team examined the data elements needed of the interaction between CBRAs and the Trade. These data elements were assembled in the form of a Data Set. Please see Chapter 7 for the Data Sets. Every entry in the data set is identified by a WCO ID (column A of the data set). In UML terms, every data element is an attribute of a UML object class. The object class name corresponding to the data element can be found in the 'Data Model Class' column of the Data Set. The data set also provides a mapping between data elements and the procedures that use them. The columns E, F, G, H and I in the Data Set marks these procedures. These mappings hold the link between the information models and the business processes that use them,

9.1 UML Class Diagrams

To build UML class diagrams, the Data Model Project team used a UML tool, which captured all the object classes and their attributes and maps the relationship between the object classes. The first diagram, called the Overall Multilink Diagram includes every class in the Data Set. The cardinality for the association between classes in this diagram has been set without any constraints imposed by the business logic of electronic messaging scenarios.

Subsequently, other UML class diagrams were derived for the Business-to-Government procedures. These were: (i) Import one step goods declaration (IM1), (ii) Export one step goods declaration (EX1), (iii) Cargo Report Import (CRI), (iv) Cargo Report Export (CRE), (v) Conveyance Report (CONV) and (vi) Transit Declaration (TRT). Classes not relevant for the procedure have been eliminated from the diagram for the procedure. For these diagrams, the association with other classes have been built by setting the cardinality for the Declaration class as '1'. The associations of the declaration class with other classes were built subsequently by giving association names. Cardinality has been specified for the business context.

Likewise the UML class diagram for Response (RES) was derived for Government –to- Business procedures.

9.2 Hierarchical Class Diagrams

The purpose of producing the hierarchical diagram was to use the UML class diagrams in order to produce electronic messages. Electronic messages often represent documents and a document contains information that can be organized as a hierarchical tree structure.

The UML class diagrams described in section 9.1 above, were converted into hierarchical diagrams for the purposes of building electronic messages in any messaging syntax. The WCO Data Model includes electronic messaging specifications in UN/EDIFACT and XML syntaxes. These are described in Chapter 10.



Hierarchical diagrams were developed for (i) Import one step goods declaration (IM1), (ii) Export one step goods declaration (EX1), (iii) Cargo Report Import (CRI), (iv) Cargo Report Export (CRE), (v) Conveyance Report(CONV) and (vi) Transit Declaration(TRT). An Overall Diagram for Declaration also is also included. The Overall Diagram for Declaration has been built in such a way that each of the other hierarchical diagrams was a 'true subset' of the Overall Diagram for declaration.

Additionally the hierarchical diagram for Response was also developed.

9.3 Other potential uses of Class Diagrams

The WCO Data Model has been built to describe the interface between business and trade. It can be further extended to describe inter-CBRA messaging. However, this area is not covered by the scope of Version 3.0 of the WCO Data Model.

Besides its use in the developing standard electronic messages and data harmonization, the WCO Data Model can also be used in the development of corporate data models for customs administrations and cross-border regulatory agencies. Corporate data models have wider implications for the design of databases for enterprise-wide systems. While this eHandbook does not provide specific guidance in building corporate data models for individual Customs administrations, it use useful to note that the relationships described in the UML diagrams form valid inputs to the creation and maintenance of corporate data models for Customs and other Cross-Border Regulatory Agencies. A corporate data model serves as the blue-print for building an enterprise-wide system as the corporate data model normally remains constant over time and serves the needs of changing business process.