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ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

Working Party on Customs Questions

affecting Transport

Informal ad hoc Expert Group on the

Computerization of the TIR procedure

Updates of the Reference Model of the TIR Procedure

1.6 High level class diagram

Transmitted by the secretariat

A. BACKGROUND

1. At its fourth session, on 1 and 2 March 2004 in Geneva, the Informal ad hoc Expert Group (hereafter called the Expert Group) considered that it was not yet in a position to judge the correctness of the high level diagrams, as contained in Chapter 1.6 of the Reference Model (ExG/COMP/2004/10, para 12).

2. In order to make progress on the issue of validation of the high level class diagram, the secretariat provides in underlying document an explanation how the Experts could analyze the high level class diagram, making use of the information, contained in Annexes 1 and 2 of the Reference Model. In addition, the secretariat presents a decomposition of the sub part of the high level class diagram concerning the TIR operation, in order to clarify how it is put together and how it should be read.

B. ANALYSIS OF THE HIGH LEVEL CLASS DIAGRAM

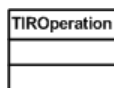
3. When looking at the high level class diagram, people may be tempted to analyze it in its full coherence. However, contrary to what might seem, the high level class diagram has no reading direction. Each relationship should be read independently from the others. Thus, once the reader has understood each separate part of the diagram, he implicitly will understand the complete picture as well, since it does not contain either additional information or add extra complexity. Each relationship is based on requirements, identified by the Expert Group. At its fourth session, the Expert Group decided to review the requirements, contained in Annex 1 of the Reference Model, before reviewing the diagrams. Once it has validated all requirements, the Expert Group should be in a position to understand and validate the sub parts of the high-level class diagram, and, as a consequence, the complete high level diagram.

4. In conformity with the definition, contained in Annex 4 of the Reference Model, a class diagram shows a collection of declarative (static) model elements, such as classes, types, and their contents and relationships. In other words, it shows the links between the entity classes, identified in Chapter 1.5. In order to simplify the reading of the diagram, the content of the classes is not shown. The links, or relationships, between the various subclasses, identified in the Requirements list (Req. 1 to 19) reflect the provisions of the TIR Convention and/or its practical implementation. The links are depicted using the adequate UML symbols from Annex 3 of the Reference Model.

C. EXAMPLE: TIR OPERATION

5. On the basis of the requirements contained in Annex 1 of the Reference Model, we will construct the part of the class diagram depicting the TIR operation.

- First, we draw the class:



- In the list of Requirements, only two requirements deal with the TIR operation:

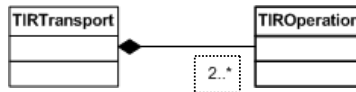
Req.10 A TIR transport is composed of TIR operations. The number of TIR operations within a TIR transport is at the moment limited to 10 with the current paper system and has a minimum of 2 (these limitations should be extensible; therefore a two to many is more advisable). A TIR operation is part of one and only one TIR transport.

Req. 13 The TIR operation is started at one and only one Customs office and terminated at one and only one Customs office. A Customs office can start and terminate any number of TIR operations.

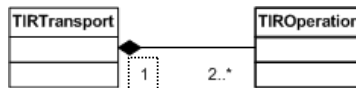
- Requirement 10 first stipulates that *a TIR transport is composed of TIR operations*. UML uses a line terminated by a black diamond to indicate the composition (◐—):



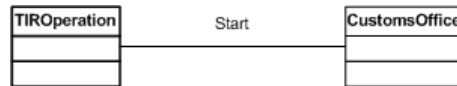
- It also states that *the number of TIR operations within a TIR transport is at the moment limited to 10 with the current paper system and has a minimum of 2 (these limitations should be extensible; therefore a two to many is more advisable)*. This is translated in UML by indicating on the TIR operation side of the line “2..*” (multiplicity). The multiplicity indicates the number of objects participating in the relationship:



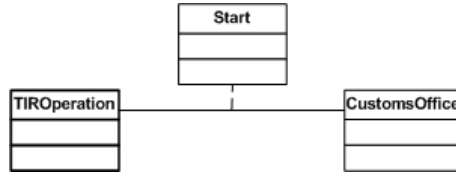
- Finally, requirement 10 says that *a TIR operation is part of one and only one TIR transport*. This is translated by writing “1” on the TIR transport side of the relationship:



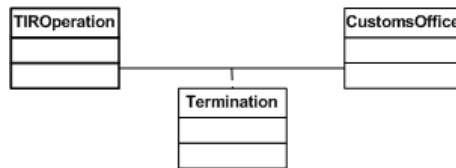
- Requirement 13 contains information about two relationships between the classes *TIR Operation* and *Customs Office*. First, we will identify the two relationships, which are called “associations”. Requirement 13 stipulates that *the TIR operation is started at ... Customs office.... Start* is therefore the first association between the classes *TIR Operation* and *Customs Office*:



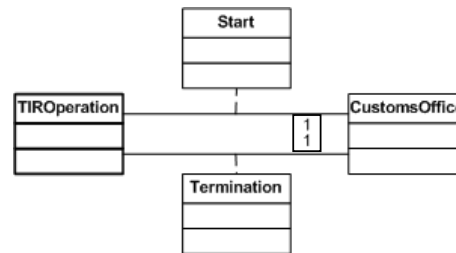
- In case the association itself contains information, UML uses a different symbol called “association class”. This is the case for the *Start* association which contains information, such as the starting date of the TIR operation.:



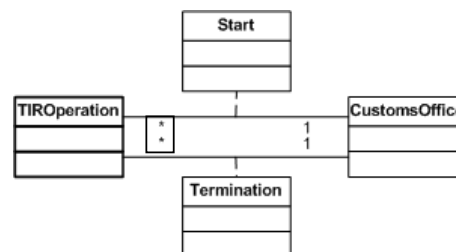
- The second association, *Termination*, can be identified in Requirement 13: *the TIR operation is... and terminated at ... Customs office*. Following the logic of the previous association, the association is depicted as an association class:



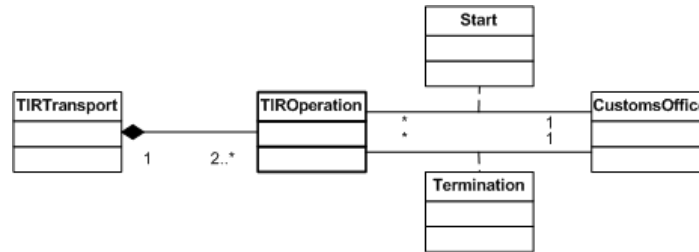
- The multiplicities of these two associations are identical. The words *one and only one* indicate that a TIR operation has to start at a Customs office and can not start at more than one. This is translated in UML by inserting “1” on the *Customs Office* side of the association:



- In addition, *a Customs office can start and terminate any number of TIR operations*. This is translated in UML by inserting “*” (meaning from zero to any number) on the *TIR operation* side of the association:



- Finally, in order to get the full picture of all relationships involving the *TIR operation* class, the sub part of the high level class diagram can be drawn:



- When looking at the complete high level diagram, one should not forget the fact that, although all relationships are depicted in one, single diagram, this does not change the way in which each single relationship should be read.

D. FINAL CONSIDERATIONS

6. The secretariat proposes to move the high level class diagram of Chapter 1.6.1. and to place it after the high level class diagram description of Chapter 1.6.2. This should allow the reader to focus first on the separate parts of the diagram before moving to the complete diagram.
