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**Informal Ad hoc Expert Group on Conceptual and
Technical Aspects of Computerization of the TIR Procedure**

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Item 6(b) of the provisional agenda

Reference Model of the TIR Procedure

Version 4.2 of the eTIR conceptual, functional and technical documentation

Introduction to the eTIR conceptual, functional and technical documentation - Version 4.2a

Background

This document introduces the conceptual, functional and technical documentation for the TIR Procedure Computerization Project in accordance with the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) Modelling Methodology. The eTIR conceptual, functional and technical documentation will be expanded and refined as the work progresses and as feedback is received from modelling work carried out by the Informal ad hoc Expert Group on Conceptual and Technical Aspects of Computerization of the TIR Procedure (GE.1) and the network of eTIR focal points.

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a. Background

At its ninety-fifth session, the Working Party expressed the view that, following the conclusions of Phases I and II of the TIR revision process, the next logical step was to provide the TIR regime with the legal and administrative basis to allow for the use of modern information, management and control technology based on highly automated and secured electronic procedures. The Working Party recognized that computerization of the TIR procedure was inevitable (a) in the light of today's extremely rapid technological developments, based on Internet and Smart Card technologies, particularly affecting international transport and trade, (b) the ever increasing need for improved efficiency of Customs transit procedures and (c) the fight against fraudulent activities which must be conducted with the most appropriate and effective means (TRANS/WP.30/190, para. 26).

The Working Party felt that the existing and widely varying national Customs procedures, administrative practices and legal requirements in the Contracting parties to the Convention should be taken into account during this process. Computerization of the TIR procedure, based on the TIR regime as revised during Phases I and II of the TIR revision process, would therefore have to focus on the possibility of linking national Customs transit procedures via a standard electronic and/or paper-based data file containing all information of the TIR Carnet. The newly to be created electronic data file would need to be compatible with most if not all possible technical EDI solutions applied or yet to be applied in the Contracting Parties (TRANS/WP.30/190, para. 27).

The link between national Customs procedures and the transfer of data files should be possible via (a) international EDI systems, as is being done in the New Computerized Transit System (NCTS), (b) Smart Cards that could be filled-in and carried along by the transport operator as well as filled-in, read and validated by Customs authorities or (c) the present paper-based TIR Carnets, possibly supplemented by bar-code and TIR Carnet holder identification system (TRANS/WP.30/190, para. 28).

The Working Party was of the view that, whatever system is to be used, the approach taken in computerization of the TIR regime must be courageous and forward looking and should be able to accommodate all possible technological solutions likely to be implemented in the years ahead (TRANS/WP.30/190, para. 29).

In order to make solid progress in this complex field, the Working Party decided to follow established practice and to establish an ad hoc group of experts on the computerization of the TIR regime which should be composed of experts from interested countries and industry groups (TRANS/WP.30/190, para. 30).

The Working Party, at its ninety-sixth session, felt that the expert Group, after having highlighted weaknesses and limitations of the current system, should, in particular:

- identify the objectives, procedures and required resources for the computerization of the TIR procedure and determine the role of the various actors (secretariat, Governments, IRU, etc.) in this process;
- analyze all administrative and legal requirements relevant for the computerization of the TIR regime;
- study suitable technological solutions in this respect, and
- take account of experiences made with similar automated systems at the national as well as at subregional levels, such as the NCTS, with a view to preparing possible alternative solutions and scenarios, specifying the benefits as well as the disadvantages of the various approaches (TRANS/WP.30/192, para. 37).

The ad hoc Expert Group (hereafter referred to as “Ad hoc Group”) met twice in 2001, on 19 February and on 21 June.

With regard to the objectives of the computerization process, the Ad hoc Group decided that those identified by the Working Party at its ninety-fifth session had kept their validity TRANS/WP.30/2001/13, paras. 13-14).

The Ad hoc Group reconsidered the fundamental approaches for computerization of the TIR procedure and agreed that, knowing that computerization of the TIR procedure was a continuing process, involving various stages of development, none of the options could be excluded for the time being. Efforts should be pursued at the national level to prepare the national Customs legislation for the acceptance of electronic data processing and interchange techniques and the electronic signature (TRANS/WP.30/2001/13, paras. 18-19).

The Ad hoc Group acknowledged that, regardless of the finally selected approach, from a legal point of view, the amount of changes to be made to the TIR Convention could be limited and that it would basically be sufficient to amend the Convention with either a definition of the TIR Carnet, that would include the use of portable electronic files or introduce one new article which would allow for the use of new technologies in general, including the acceptance of electronic signatures, leaving the existing text of the Convention as it stands. Special provisions dealing with the legal and technical specification of the accepted new technologies could be inserted into a separate, newly to be created Annex (TRANS/WP.30/2001/13, para. 23).

With regard to the role played by the various actors in the computerization process, the Ad hoc Group agreed that the computerization process would have consequences for the persons and organizations dealing with the issuance and organization and functioning of the guarantee system, as well as for Customs authorities, whose task it is to check and process the provided data and ensure the goods’ unaltered arrival at the Customs office of destination. In addition, the use of automated risk management would influence the work of Customs authorities and associations at the national level, as well as the work of the international organization, the insurers and the TIRExB. However, the Ad hoc Group felt that at that time it was not appropriate to pursue this subject, as it depended on a variety of, as yet unknown, factors (TRANS/WP.30/2001/13, paras. 26-27).

On the basis of the outcome of the work performed by the Ad hoc Group, the Working Party mandated the secretariat to convene meetings of special expert groups. These special groups should address the two major problems the Ad hoc Group had encountered in the pursuit of its work:

- To study the conceptual and technical aspects of the computerization process of the TIR Procedure, including the financial and administrative implications of its introduction, both at the national and at the international level, and prepare a draft of electronic messages to allow for an interchange of electronic data, nationally, between Contracting Parties and with international organizations;
- To study in detail the impact of the various approaches that had been identified by the Ad hoc Group on the existing legal text of the TIR Convention as well as the repercussions it could have on international private law, national administrative procedures and to draft a description of the role that the various actors (in particular: national associations, international organization, insurers and TIRExB) could play in the TIR Convention, once the paper-based system would be complemented and/or replaced by a system functioning on the basis of the electronic interchange of information (TRANS/WP.30/2001/13, para. 31).

On the basis of this mandate, the Informal ad hoc Expert Group on Conceptual and Technical Aspects of Computerization of the TIR Procedure (hereafter referred to as “Expert Group), at its first session, adopted its Terms of Reference, which stipulate that the Expert Group shall:

- List and analyse the data elements required for the operation of a TIR transport at the national and international level, as stipulated in the TIR Convention as well as in resolutions and recommendations, adopted by the Administrative Committee (in particular Annexes 1,4, and 9 of the TIR Convention) and make an inventory of possible new features which could be included into the electronic version of the TIR procedure. On that basis, the group shall draw up flow charts, reflecting the actual and future stages of the TIR procedure. Within the context of its work, the group shall also study the use of standardized codes, ensuring a uniform understanding and interpretation of the data elements in the TIR Carnet.
- List and analyse the existing information and telecommunication systems and study to what extent the experiences gained at the national and international level can be included in the development of a computerized TIR procedure.
- Prepare conclusions with regard to the computerization of the TIR procedure, reflecting the results of the work under (a) and (b) and taking account of the financial implications they might have on the national and international level (TRANS/WP.30/2002/11, annex 1)

The Informal ad hoc Expert Group on the Legal Aspects of Computerization of the TIR Procedure shall:

- Study in detail the impact of the various approaches of the computerization process on the existing legal provisions of the TIR Convention as well as the repercussions it could have on national administrative procedures;
- Draft a description of the role the various actors (in particular: national association, international organization, insurers and TIRExB) could play in the TIR Convention, once the paper based system would be complemented and/or replaced by a system functioning on the basis of the electronic interchange of information (Terms of reference still to be adopted).
- Both informal ad hoc Expert Groups shall report to the Working Party on the progress of their work. At the completion of its work, each ad hoc Expert Group shall draw up a working document containing concrete proposals for further action, to be discussed and approved by the Working Party.

At its second meeting, the informal ad hoc Expert Group on Conceptual and Technical Aspects of Computerization of the TIR Procedure discussed at length the conceptual and hierarchical data models, describing the information contained in the TIR Carnet, but felt it could not reach agreement on any of them. Some experts questioned the usefulness of such complex models, whereas others expressed the view that they were not in a position to judge to what extent the models actually represented the structure of information in the current TIR Carnet. For these reasons, the Expert Group decided to revert to his matter at a later stage and mandated the secretariat to organize a meeting with some IT specialists to study which model is best suited for the purposes of the Expert Group. The Expert Group further welcomed the secretariat's proposal to use in the future the Unified Modelling Language-standard (UML) (ExG/COMP/2002/10, paras. 11 and 12).

At their meeting, which took place on 3 July 2003, the IT specialists held an extensive exchange of views on the suitability of the, UML based, UN/CEFACT Modelling Methodology (UMM) as a methodology to model business processes like the TIR procedure. As such, UMM provides a procedure for specifying, in an implementation-independent manner, business processes involving information exchange. Although the IT specialists noted that it could be worthwhile to study other methodologies, they recognized that the process of selecting a methodology is very complex and time consuming. They agreed that this work has already been done by the UN/CEFACT team in the elaboration of UMM and that UMM offers the necessary tools to describe the TIR business process, a uniform approach for the work of the Expert Group and a valuable base for future improvements in the TIR procedure. Seeing that the activities, undertaken by the Expert Group so far, fitted well into UMM, and that the approach endorsed by the Expert Group in the project overview was in line with the UMM, they invited the secretariat to prepare a

first draft document for discussion by the Expert Group at its forthcoming meeting. The scope of the first phase of the work of the Expert Group being the analysis of the current system - the 'as-is' description of the TIR procedure - the IT specialists decided to limit this first document to the Business Domain Modelling, the first step in UMM. Furthermore, the IT specialists recommended having a full implementation of the methodology, including a first descriptive part describing the so-called 'vision' of the project. Moreover, they emphasized the necessity to adapt UMM, as it would be necessary with any other methodology, to the particulars of the TIR business process (ExG/COMP/2003/2, para. 6).

At its one-hundred-and-fifth session, the Working Party was informed orally of the progress made by the Expert Group at its third meeting, which took place on 1 and 2 September 2003 in Budapest. The Working Party endorsed the work undertaken by the Expert Group and took particular note of three issues, where the Expert Group had expressed that it needed further guidance from the Working Party. These issues were:

(a) the definition of the scope of the project, which had been formulated by the Working Party as being "the computerization of the TIR Procedure". The Expert Group felt that the Working Party should clarify in more detail what was meant exactly by this wording. Within this context, the Expert Group also noted that the term "TIR Procedure" was an undefined term, making it impossible to describe exactly the boundaries of the project;

(b) The description of the approach on how to achieve the computerization of the TIR Procedure. In view of political and technical developments, having taken place over the last few years, the Working Party was requested to provide a more detailed guidance to the Expert Group on which approach the computerization project should pursue;

(c) The title of the project. For practical reasons, the secretariat had proposed to refer in the future to the "eTIR Project" as a short name for the project to computerize the TIR Procedure. The Expert Group felt it was not in a position to decide on this issue and decided to refer the matter to the Working Party for further discussion (TRANS/WP.30/210, paras. 27-31)

At its one-hundred-and-sixth session, the Working Party confirmed that:

(a) the final objective of the computerization of the TIR procedure encompasses the computerization of the whole TIR Carnet life cycle from distribution issuance and via the TIR transport to return and repository and that it should, ultimately be aimed at replacing the current paper TIR Carnet. The Working Party agreed that the process to achieve this objective may be challenging, requiring the input of considerable human and financial input, both at the international and the national level. Therefore, the Working Party agreed that a step-by-step approach seemed the only feasible alternative to achieve any tangible results in the near future. To that end, it mandated the secretariat, as a first step, in cooperation with the Expert Group (a) to work out concrete proposals on how to exchange the so-called 'static' data-elements contained in the TIR Carnet (data elements which remain unchanged throughout the TIR Transport) between the competent authorities of Contracting Parties, possibly also including the data contained in the ITDBOnline as a preliminary step, (b) to conduct a feasibility study on the practicability of such proposals and, ultimately, (c) to propose a pilot along one of the major transit corridors to implement them.

The Working Party agreed that, as a next step, the integration of the so-called 'dynamic' data elements (data elements which may be amended or updated in the course of the TIR Transport) should be considered. Further steps should then address the issue of inclusion of additional features, such as security related information and advance cargo information.

Once these tangible steps had been achieved, the Expert Group could focus its attention on further, outstanding, issues in relation to the computerization of the TIR procedure.

(b) The Working Party agreed that the approach of the computerization process should, until further notice, be focused on the establishment of an international, centralized database, whose aim it should be to facilitate the secure exchange of data between national Customs systems. At a later stage, the sharing and exchange of data with other bodies concerned (such as TIRExB, international organizations, national associations and the international guarantee), should not be excluded.

(c) The Working Party agreed that the Project to Computerize the TIR Procedure could, in future, be referred to as “eTIR-project” (TRANS/WP.30/212, para. 26).

At its thirty-sixth session, the Administrative Committee was informed about progress made in the preparation of Phase III of the TIR revision process within the UNECE Working Party (WP.30) and its Ad hoc Group of Experts on Computerization of the TIR Procedure. The Committee endorsed the mandate given by the Working Party to the Informal Ad hoc Expert Group (a) to work out concrete proposals on how to exchange the so-called ‘static’ data elements contained in the TIR Carnet (data elements which remain unchanged throughout the TIR Transport) between the competent authorities of Contracting Parties, possibly also including the data contained in the ITDB Online as a preliminary step, (b) to conduct a feasibility study on the practicability of such proposals and, ultimately, (c) to propose a pilot along one of the major transit corridors to implement them. As a next step, the integration of the so-called ‘dynamic’ data elements (data elements which may be amended or updated in the course of the TIR Transport) should be considered. Further steps should then address the issue of inclusion of additional features, such as security and advance cargo information.

Once these tangible steps have been achieved, the Expert Group could focus its attention on further outstanding issues in relation to the computerization of the TIR procedure.

The Administrative Committee endorsed the opinion of the Working Party that the approach of the computerization process should, until further notice, be focused on the establishment of an international, centralized database, whose aim it should be to facilitate the secure exchange of data between national Customs systems. At a later stage, the sharing and exchange of data with other bodies concerned (such as TIRExB, international organizations, national associations and the international guarantee), should not be excluded.

The Administrative Committee endorsed the Working Party’s decision that the Project to computerize the TIR Procedure could, in future, be referred to as “eTIR-project” (TRANS/WP.30/AC.2/73, paras 38–41).

At its sixth session, the Expert Group established that, with the exception of Chapters 1.1.7 and 1.1.8, it had completed its work on Chapter 1 of the Reference Model and that it would dedicate its future work to the remaining Chapters, unless new, as yet unknown, information would require a re-assessment of Chapter 1 (ExG/COMP/2004/24, para. 15).

At its one-hundred-and-tenth session, the Working Party took note that the first part of the work of the Expert Group, encompassing the description of the current TIR procedure, had been finalized (TRANS/WP.30/220, para. 30).

At its one-hundred and thirteenth session, the Working Party adopted document TRANS/WP.30/2005/32-TRANS/WP.30/AC.2/2005/18, containing Chapter 1 of the Reference Model for the eTIR Project, with the understanding that further chapters will be

included at a later stage of the project, subject to approval by the Working Party, and that a number of points of the document will be updated to reflect recent developments and as the eTIR Project develops over time.

The Working Party was of the opinion that there was no reason to review the mandates and opinions provided, so far, by the relevant TIR bodies in the computerization process. The Working Party felt that the mandate should remain dynamic, thus providing full freedom to the Expert Group to analyze and develop its ideas on a technical level and to take into account technical innovations that could be advantageous for the development of the project.

The Working Party confirmed that the eTIR Project should evolve around the establishment of an international centralized database in order to facilitate the secure exchange of data between national Customs systems. Furthermore, Contracting Parties agreed that the management of data on guarantees, once the guarantor had issued a guarantee to an operator, should lie with Customs (ECE/TRANS/WP.30/226, paras. 34, 35 and 41).

At its forty-second session, the Administrative Committee considered document ECE/TRANS/WP.30/AC.2/2006/13, containing an overview of the mandates and opinions provided, so far, by the relevant TIR bodies in the computerization process. The Administrative Committee noted the concerns of some Contracting Parties with regard to the legal and financial aspects linked to the introduction of the eTIR system and the differences in technological development between countries, which might lead to possible complications and delays at the time of implementation at the national level. The Committee also noted the concerns by the international organization and its member associations with regard to their role in the eTIR system. The Administrative Committee stressed that the eTIR system should meet the requirements of all Contracting Parties to the Convention. The Committee decided to include in the guidelines for the computerization of the TIR system the part of the statement of the UNECE Executive Secretary at the opening of the present session referring to the computerization of the TIR system. The Committee endorsed the document and the following list of guidelines:

- Maintenance of the basic philosophy and structure of the TIR procedure, safeguarding and, possibly, strengthening the provisions of the TIR Convention, particularly those prepared under Phases I and II of the TIR revision process (TRANS/WP.30/194, para. 36);
- Computerization of the whole TIR Carnet life cycle from distribution, issuance and via the TIR transport to return and repository, aimed at, ultimately, replacing the current paper TIR Carnet (TRANS/WP.30/212, para. 26);
- The establishment of an international, centralized database, the aim of which should be to facilitate the secure exchange of data between national Customs systems (TRANS/WP.30/212, para. 26);
- The management by Customs of data on guarantees, once the guarantor has issued a guarantee to an operator (ECE/TRANS/WP.30/226, para. 41);
- The development of the eTIR system, which connects existing and future Customs IT systems, should be realized with an appropriate level of connectivity with the existing TIR related IT systems (ECE/TRANS/WP.30/AC.2/85, para. 38).

At its one-hundred-and sixteenth session, the Working Party requested to start working on Chapter 3 of the Reference Model, dedicated to the analysis of the e-Business-Requirements as contained in Chapter 2 (see ECE/TRANS/WP.30/232, para. 32).

At its one-hundred-and-seventeenth session, the Working Party considered document ECE/TRANS/WP.30/2007/16-ECE/TRANS/WP.30/AC.2/2007/15, submitted by the secretariat, containing Chapter 2 of the eTIR Reference Model and adopted the

document, subject to the deletion of the asterisks and corresponding footnotes in Chapter 2.1.2.2.3. and 2.1.2.4.2. The Working Party decided that the adopted Chapter 2 could be revised at any time (see ECE/TRANS/WP.30/234, para. 22). The Administrative Committee, at its forty-fourth session, endorsed the Working Party's decision (see ECE/TRANS/WP.30/AC.2/91, para. 19).

At its thirteenth session, the Expert Group welcomed a first draft of Chapter 3 of the Reference Model as contained in document ECE/TRANS/WP.30/GE.1/2007/13. After an in-depth discussion, the Expert Group mandated the secretariat to align draft Chapter 3 with its findings, to propose data elements and a structure for the identified electronic messages and to draft the fall-back scenarios sequence diagram, for consideration at its next meeting (ECE/TRANS/WP.30/GE.1/2007/16, paras. 7–9).

At its fourteenth session, the Expert Group welcomed the revised Chapter 3, contained in document ECE/TRANS/WP.30/GE.1/2007/13 Rev.1 as well as the proposals for additional security elements in Informal Document GE.1 No.2 (2008). It reviewed the draft fall-back scenarios and the messages. It also mandated the secretariat to align Chapter 3 with its findings, to propose code lists for messages and to amend the class diagrams and messages with security data elements in a revised Chapter 3, for consideration at its next meeting (ECE/TRANS/WP.30/GE.1/2008/3, paras. 8–9).

At its fifteenth session, the Expert Group mandated the secretariat to organize a drafting group whose task would be to finalize the draft of Chapter 3, taking into account the findings of the Expert Group. At the kind invitation of Serbian Customs, the drafting group met in Belgrade on 28-29 January 2009. The drafting group reviewed each and every UML diagram, revisited the fall-back procedure and revised the messages. It provided the secretariat with clear instructions on how to further revise document ECE/TRANS/WP.30/GE.1/2007/13 Rev.2.

At its one-hundred-and-twenty-first session, the Working Party considered document ECE/TRANS/WP.30/2008/8/Rev.2, containing clarifications on the method of submission of the Customs declaration as described in Chapter II of the eTIR Reference Model, prepared by the secretariat on instructions from GE.1 at its fifteenth session. There was general consensus that the document provided the necessary clarifications. At the request of the Working Party, these clarifications will be added as Annex to the eTIR Reference Model (See ECE/TRANS/WP.30/242, para. 27).¹

At its sixteenth session, the Expert Group revised documents ECE/TRANS/WP.30/GE.1/2007/13 Rev.3, ECE/TRANS/WP.30/GE.1/2009/3 and informal document GE.1 No. 1(2009), containing the various parts composing Chapter 3 of the Reference Model. It also requested experts to provide further inputs to the secretariat after the meeting and before a new revision of Chapter 3 would be issued.

At its one-hundred-and twenty-second session, the Working Party was informed that GE.1 was of the firm opinion that the so-called “push approach was the only viable solution to ensure that the information exchange with and within the eTIR international system takes place in real time. Only the “push” approach would allow that information is sent in real time from one system to another with a direct and traceable acknowledgement of receipt. The Working Party endorsed this opinion, thus ensuring that the information sent in real by the Customs office of departure, after it has accepted the Customs declaration, will be duly acknowledged upon receipt of the advance cargo information, by all Customs authorities involved in the TIR transport (See ECE/TRANS/WP.30/244, para. 28).

At its seventeenth session, the Expert Group welcomed the final version of Chapter 3 of the eTIR Reference Model, contained in document ECE/TRANS/WP.30/GE.1/2010/2,

¹ Annex VI

and took note of the amendments brought to the messages thanks to the kind assistance of Mr. Hans Greven from the Dutch Customs authorities, thus ensuring full alignment with version 3 of the WCO transit data model.

At its eighteenth session, the Expert Group extensively discussed version 3.0a of the eTIR Reference Model, as contained in document ECE/TRANS/WP.30/GE.1/2011/3, as well as the additional amendment proposals contained in Informal document GE.1 No.1 (2011). The Expert Group took note of the two amendments proposals. It decided to further discuss the first proposal, i.e. to include international declaration mechanisms, at its next session on the basis of a revised document to be prepared by the secretariat. The Expert Group decided to forward the second proposal, i.e. to make use of the guarantee chain's database to validate guarantees which have not yet been accepted by Customs, to the Working Party on Customs Questions affecting Transport (WP.30), together with version 3.0 of the eTIR Reference Model. Furthermore, the Expert Group mandated the secretariat to request the views of the network of eTIR focal points on the second proposal, which then, after review, could be transmitted to WP.30 as a technical recommendation by the network of eTIR focal points (ECE/TRANS/WP.30/GE.1/2011/6, paras. 10–11).

At its nineteenth session, the Expert Group took note of requests by WP.30 at its one-hundred-and-twenty-eighth session, and reconsidered two proposals to amend the eTIR Reference Model, version 3.0a, as contained in document ECE/TRANS/WP.30/2011/4.

On the basis of the proposal contained in document ECE/TRANS/WP.30/2011/5 and the recommendations by the eTIR focal points, contained in document ECE/TRANS/WP.30/GE.1/2011/8, the Expert Group reconsidered the proposal to make use of the guarantee chain's database(s) to validate guarantees which have not yet been accepted by Customs. The Expert Group was of the view that, though technically feasible, the proposal would increase the complexity of the eTIR system without there being any indication or justification given with regard to possible benefits. On the contrary, this proposal does not entail a necessity for the guarantor to register guarantees with the eTIR international system in the first place, nor is there any consequence attached to the guarantor's failure to do so. This could have very negative consequences on the functioning of the backup procedures. In conclusion, it was decided to inform WP.30 that, from a technical and conceptual perspective, the Expert Group recommended not pursuing this proposal, leaving it up to WP.30 to decide if, for political reasons of the system, this option could nevertheless be maintained.

The Expert Group also reconsidered the proposal to include international declaration mechanisms in the scope of the eTIR project on the basis of document ECE/TRANS/WP.30/GE.1/2010/9, prepared by the secretariat in collaboration with experts from Czech Customs. While highlighting the absence of global international agreements on electronic signatures, the Expert Group took note that some countries impose the use of national certification authorities when it comes to signing electronic documents intended for governmental agencies. The Expert Group felt that there was insufficient information to take a decision on the issue and requested the secretariat to launch a survey among both TIR and eTIR focal points, aimed at gathering information from all TIR Contracting Parties on the current and expected practice, rules and regulations on electronic signatures. In the absence of internationally recognized certification authorities, the Expert Group also considered two alternative options: on the one hand, the Expert Group envisaged that the advanced cargo information could be signed by a representative (an entity that would assist transport operators to submit their data electronically and sign on their behalf), and, on the other hand, it also considered that authentication of the electronic advance cargo information by means of a hash code could be sufficient. In the latter case, transport operators would not need to be authenticated to be able to send their electronic information and the actual act of submission of the declaration would be accomplished by means of the presentation of the vehicle, the goods and the reference to the information submitted

electronically by the transport operator at the Customs office of departure or entry (en route) (ECE/TRANS/WP.30/2012/1, paras. 8–10).

At its one-hundred-and-twenty-ninth session, the Working Party reaffirmed the importance of computerization of the TIR procedure. Some delegations stressed the need to proceed step-by-step in order to avoid a possible disruption of the TIR procedure in less technically developed countries. WP.30 took note that a progressive introduction of the eTIR system was already foreseen in the eTIR Reference Model, thus allowing countries to join a computerized system as soon as they are ready. The Working Party noted that GE.1 had made sure that not only all functionalities provided in the current paper-based TIR system would be available in the eTIR system, but also the use of modern technologies to bring numerous additional benefits to the Customs and transport industry, as identified in the eTIR Reference Model. The secretariat also recalled that the concepts contained in version 3.0 of the eTIR Reference Model (ECE/TRANS/WP.30/2011/4) were the very same that had already been approved in version 2.0. WP.30 accepted version 3.0 of the eTIR Reference Model as a basis for its work, without prejudice to the outcome of its deliberations on the whole eTIR project.

The Working Party reconsidered the amendment proposal contained in document ECE/TRANS/WP.30/2011/5 and decided to follow the recommendation of GE.1 not to amend the guarantee validation procedure described in the eTIR Reference Model.

Some delegations stressed that the eTIR project has multiple aspects and that the acceptance of version 3.0 of the eTIR Reference Model only addresses the conceptual and technical aspects of the project, leaving aside its legal, administrative and financial dimensions. The importance of capacity-building and transfer of technology was also underlined. Therefore, these delegations were of the view that, once those issues had been addressed, WP.30 would need to reconsider the eTIR Reference Model. Some other delegations did not agree with this view and highlighted the considerable efforts and time spent by the dedicated experts in GE.1 developing the eTIR Reference Model, in line with the mandates of the Working Party. They pointed out the necessity for rapid progress on eTIR and felt that less technologically advanced countries should neither be left aside nor block the computerization. Countries having additional technical proposals were invited to bring those before GE.1 for consideration. In this context, WP.30 reiterated its standing invitation to all countries to participate in the work of GE.1 and contribute to the eTIR project by nominating an eTIR focal point (ECE/TRANS/WP.30/258, paras. 19–21).

At its twentieth session, the Expert Group reconsidered the proposal to introduce international declaration mechanisms in the eTIR project, as presented in document ECE/TRANS/WP.30/GE.1/2011/9, in the light of the results of the survey on the use of electronic signatures in the framework of the eTIR project, contained in Informal document GE.1 No. 3 (2012), as well as comments by eTIR focal points, contained in Informal document GE.1 No. 2 (2012).

The Expert Group acknowledged the necessity to provide the transport industry with a variety of options to submit electronic information to Customs. Considering that, despite the introduction of a standard declaration message in the eTIR Reference Model, national declarations mechanisms might still differ between countries, in particular when it comes to authentication of the sender of the information, the Expert Group felt that it was essential to include international declaration mechanisms in the eTIR project. The survey on the use of electronic signatures in the framework of the eTIR project confirmed that most countries require the use of electronic signatures or other authentication mechanisms for the transmission of advance cargo information. In most countries, only national (or at best: regional) electronic signatures are accepted and, at present, only a few countries recognize foreign certification authorities (CA) for the issuance of legally binding electronic signatures. The Expert Group confirmed that, as long as internationally recognized CA's have not been developed and recognized, it will be extremely difficult to implement the

cross-border use of electronically signed documents. The Expert Groups noted that 50% of respondents to the questionnaire indicated that an international CA could be used if recognized by an international agreement and half of those considered that the TIR Convention could be considered as providing an appropriate platform for that purpose. Consequently, the secretariat was requested to further explore the possibilities to include international declaration mechanisms, for example by means of trusted third party solutions and directly in the eTIR international system, possibly linked with the authorization procedure of TIR Carnet holders. Finally, the Expert Group requested the secretariat to redraft a proposal to include international declarations mechanisms in the eTIR Reference Model for its next meeting, underlining that a realistic proposal should be based on authentication mechanisms (e.g. user/password) and trusted system-to-system information exchanges (e.g. Virtual Private Network), rather than on electronic signatures.

The Expert Group took note of minor errors in the eTIR Reference Model. It requested their correction (including in the XML schemas published on the eTIR website) and the issuance of a version 4.0 of the eTIR Reference Model containing Chapters 1 to 4, as already published in documents ECE/TRANS/WP.30/2011/4, ECE/TRANS/WP.30/GE.1/2011/4 and ECE/TRANS/WP.30/GE.1/2011/10 and available at the TIR and eTIR websites (ECE/TRANS/WP.30/2012/7, paras. 9–11).

At its 130th session, the Working Party endorsed the report of the nineteenth session of the Informal Ad hoc Expert Group on Conceptual and Technical aspects of Computerization of the TIR Procedure (GE.1) (Belgrade, 13 and 14 September 2011), contained in document ECE/TRANS/WP.30/2012/1. The delegations of Iran (Islamic Republic of) and Kazakhstan were of the view that WP.30 should only take note of this report without any endorsement. The secretariat recalled that the endorsement of the GE.1 report does not imply the approval by WP.30 of the outcome of GE.1 work, i.e. additions and/or amendments to the eTIR Reference Model, but rather indicates the support of the Working Party for GE.1 activities and a request to continue the work along the lines presented in the report. As in the past, amendments and additions to the eTIR Reference Model will be submitted separately to the Working Party for approval (ECE/TRANS/WP.30/260, para. 26).

WP.30 also noted that, in line with the joint mandates by WP.30, TIRExB, GE.1 and ITC, the secretariat, with the assistance of the UNOG competent services, had issued a tender for a cost-benefit analysis (CBA) of the eTIR project. On the basis of the offers received, a consultant had been selected. To date, a detailed inception report was produced and agreed upon. The CBA report should be finalized on time to be presented at the twentieth session of the GE.1 and will be later submitted to WP.30 and TIRExB for consideration (ECE/TRANS/WP.30/260, para. 29).

At its 131st session, the Vice-Chair of the Informal Ad hoc Expert Group on Conceptual and Technical Aspects of Computerization of the TIR Procedure (GE.1), Mrs. Özyazici Sunay of Turkey, informed the Working Party of the results of GE.1 at its twentieth session, which was held in Prague on 19 and 20 April 2012, at the kind invitation of the Czech Customs administration. The main issues discussed at the session were the inclusion of international declaration mechanisms in the eTIR Reference Model, the draft Cost-Benefit Analysis (CBA) of the eTIR Project as presently conducted by a consultancy firm at the request of TIRExB and the dematerialization of documents attached to the TIR Carnet (ECE/TRANS/WP.30/262, para. 26).

At its twenty-first session, the Expert Group welcomed the new proposal to introduce international declaration mechanisms in the eTIR project, as presented in Informal document GE.1 No. 10 (2012). Recalling a key principle of the eTIR project, i.e. that the eTIR international systems avoids the multiplicity of direct Customs to Customs

connections, the Expert Group requested removing the direct secure system to system connections between customs administrations from the Customs international declaration mechanisms option (ECE/TRANS/WP.30/2013/5, para. 8).

At its 132nd session, WP.30 took note of the results of the twenty-first session of the Expert Group which took place on 25 and 26 September 2012 in Bratislava, at the kind invitation of the Slovak Customs. The meeting considered a proposal to complement the existing national declaration mechanism, as contained in the eTIR Reference Model, with an international component, in order to provide the transport industry with a variety of options to submit electronic information to Customs. The Expert Group agreed to include in the eTIR Reference Model, various alternative international declaration mechanisms. A first option would be provided by the eTIR international system (web services only), another one by the private sector, with systems such as IRU's TIR-EPD, and a last option could be provided by the Customs authorities of the country of residence of the transport operator, thus taking advantage of national authentication mechanisms. The Expert Group also delivered comments (Informal document GE.1 No. 12 (2012)) on the final draft of the Cost Benefit Analysis (CBA) of the eTIR Project. In particular, the Expert Group agreed with the methodology applied by the consultants, but, at the same time, felt that some costs, e.g. for training, and indirect benefits, like the improved facilitation for trade and increased security, were missing in the calculations. The Expert Group requested the secretariat to prepare a new document, containing a summary of the consultants' findings, in combination with an assessment by the secretariat of the limitations of CBA as well as recommendations by the Expert Group. With regard to the dematerialization of attached documents, WP.30 noted that the secretariat had submitted a request to the Data Model Project Team of WCO to amend the "attached documents" class of the WCO Data Model, so that it no longer only allows the attachment of image files but can also handle various options which were considered by the Expert Group. As a consequence, a new class had been added which would be used in eTIR messages to handle electronically attached documents. The eTIR Reference Model will be amended accordingly (ECE/TRANS/WP.30/264, para. 26).

At its 133rd session, the Working Party endorsed the report of the twenty-first session of the Ad hoc Expert Group on Conceptual and Technical Aspects of Computerization of the TIR Procedure (GE.1) (ECE/TRANS/WP.30/2013/5). WP.30 was also informed about the finalization of the CBA of eTIR (Informal document GE.1 No.12/Rev.1 (2012)) and its non-technical summary (Informal document GE.1 No.1 (2013)), prepared by the secretariat at request by GE.1 and containing an assessment of the CBA limitations and recommendations. Both documents have been distributed to GE.1 participants and eTIR focal points for consideration, published on the UNECE website and on the agenda of the twenty-second session of GE.1. The Working Party noted that, having addressed financial and most of technical aspects of eTIR, GE.1 was nearing the end of its mandate and considered that this work should be followed by consideration of legal and policy aspects of eTIR by WP.30 (ECE/TRANS/WP.30/266, para. 24).

At its twenty-second session, the Expert Group took note of the final version of the Cost Benefit Analysis of the eTIR Project (CBA) carried out by an independent contractor, as contained in Informal document No. 12 (2012)/Rev.1. It also welcomed Informal document GE.1 No. 2 (2013), containing a summary of the consultants' CBA, in combination with an assessment by the secretariat of the limitations of the analysis as well as recommendations. It discussed and slightly revised the wording of the recommendations.

The IRU expressed the reservations with regard to the final CBA, the corresponding assessment made by the TIR secretariat and the recommendations by the Expert Group.

The Expert Group confirmed that the assessment of the CBA in Informal document GE.1 No. 2 (2013) already takes into account most of the remarks made by the IRU at

earlier sessions and, thus, acknowledged that some cost elements might be slightly underestimated, in particular labour costs, depending on where the eTIR international system would be hosted. Nevertheless, the consultant has calculated the costs based on the requirement contained in the eTIR Reference Model where, for example, an international 24/7 helpdesk is not envisaged. Furthermore, it is not correct to say that managerial and technical costs are not considered, as in most of the options a significant share of those costs are included in the hosting costs. With regard to the cost to the IRU and the associations, the Expert Group recalled that the consultant has taken into account that the largest part of the issuance of TIR Carnets has already been computerized by the IRU and its associations, thus limiting the costs for the guarantee chain to connect to the eTIR international system. The Expert Group was of the view that, since only maximum estimated costs were used and the fact that costs have been increased by 20 per cent to factor in the risk of a possible underestimation, the estimation should be sufficiently accurate to for the sake of the CBA. Furthermore, the Expert Group requested the secretariat to look into the possibility to use off-the-shelf solutions (including open source solutions) for the development of the eTIR kernel, thus, possibly, reducing the costs of development of the eTIR international system.

The Expert Group requested the secretariat to include a revised version of Informal document GE.1 No. 2 (2013) as an annex to the eTIR Reference Model and submit it to WP.30 for consideration (ECE/TRANS/WP.30/2013/10, paras. 15–18).

At its 134th session, the Working Party took note of the outcome of the twenty-second session of GE.1 as presented orally by its vice-Chair. In particular, it took note that GE.1 had finalized the introduction of an international declaration mechanism into the eTIR project and that it had extensively discussed the results of the Cost Benefit Analysis, its summary and its assessment in order to prepare recommendations. (ECE/TRANS/WP.30/268, para. 29).

At its 135th session, WP.30 took note of the finalization of the CBA of the eTIR project, together with its summary, assessment and the resulting recommendations by GE.1 (ECE/TRANS/WP.30/2013/10). The secretariat gave a presentation on this document and, in reply to questions by various delegations, further clarified a number of issues concerning some of the assumptions and results of CBA.

At its twenty-third session, the Expert Group welcomed version 4.0a of the eTIR Reference Model. It took note of the various changes introduced in this version, in particular: the inclusion of the latest references to decisions by the Expert Group and WP.30 in the Introduction, the alignment of all message to the WCO data model v.3.3 (including Customs to Customs (C2C) messages), the reorganization of the various Chapters containing the message descriptions, the introduction of figures to better visualize messages, the integration of Chapter 4 and its Annex as well as the insertion of a new Annex entitled “Cost Benefit Analysis of the eTIR system: summary, limitations and recommendations”. The Expert Group expressed its great appreciation for the extensive contribution by Mr. Hans Greven (Netherlands) in preparing the descriptions of the eTIR messages.

Furthermore, the Expert Group reconsidered if it was necessary to keep UN/EDIFACT message descriptions for a newly devised system such as eTIR, in particular considering that it could ultimately further complicate the process envisaged to ensure the integrity of the data submitted, i.e. the use of hash codes. Taking into account that some countries will use legacy systems based on UN/EDIFACT to allow for the submission of eTIR data (e.g. Belgium) the Expert Group decided to keep UN/EDIFACT as a possible option for communicating TIR data to customs administrations. As a consequence and while taking into account the outcome if its discussion under agenda item 3.b, the Expert

Group decided it should consider if the direct submission of TIR data by the transport operator to customs administrations could replace the hash code mechanism to ensure the integrity of the data. The Expert Group acknowledged that, today, this is a current practice in all countries requiring the submission of electronic advance cargo information, either using nationally provided declaration mechanisms or the TIR-EPD system of the IRU. The Expert Group requested the secretariat to present an informal document on this issue to WP.30 at its February 2014 session and ask WP.30 whether the eTIR project should abandon the objective to request the submission of electronic information only in countries with Customs offices of departure. It also requested the secretariat to analyse the consequences of such a change on the eTIR reference model as a whole, including on the fall-back scenarios.

The Expert Group also considered Informal document GE.1 No. 10 (2013), containing a proposal by the secretariat to include in the eTIR Reference Model tables cross-referencing the functional message descriptions and the tags used in XML schemas. The Expert Group recognized the usefulness of such tables and requested the secretariat to include them in Chapter 4.2.3.1. The Expert Group also pointed out that UN/EDIFACT message descriptions should be amended and be aligned to the WCO data model v.3.3. It requested the secretariat to issue a version 4.1a of the eTIR Reference Model that would include the changes requested above, for consideration by WP.30, possibly at its June 2014 session.

Finally, the Expert Group considered all tasks and activities listed in its Terms of Reference (TRANS/WP.30/2002/11, Annex 1). After extensive discussions, the Expert Group was of the opinion that the eTIR Reference Model fully covers the mandate that WP.30 had entrusted it with. At the same time, the Expert Group was conscious that, ultimately, it is the task of the WP.30 to endorse the eTIR Reference Model and consider if the Expert Group has satisfactorily fulfilled its mandate (ECE/TRANS/WP.30/2014/4, paras. 11–14).

At its 136th session, WP.30 noted that GE.1 was of the view that it was nearing completion of its mandate and had requested the secretariat to start preparing a document summarizing its achievement and recommendations (ECE/TRANS/WP.30/272, para. 24).

At its 137th session, the Working Party, at the request of GE.1, extensively discussed document ECE/TRANS/WP.30/2014/5. In particular, it took note that the submission of diverging safety and security data to each country en route might represent an added complexity for transport operators conducting TIR (or eTIR) transports. The Working Party stressed that the principle of a single TIR declaration in the country of departure should be respected and decided that the declaration mechanisms designed in the eTIR Reference Model should not be amended. Considering that safety and security data requirements have their own legal basis and in view of the difficulty in agreeing on common requirements, the Working Party also decided that, even if they are related to TIR transports, those requirements should be left optional in the standard eTIR declaration. As a consequence, the Working Party instructed GE.1 to continue to work on the development of a standards eTIR declaration (ECE/TRANS/WP.30/274, para. 15).

At its 138th session, the Working Party noted that, at its twenty-fourth session (Antalya (Turkey), September 2014) GE.1 had endorsed, provisionally, version 4.1a of the eTIR Reference Model and had requested the secretariat to circulate it among eTIR focal points. Furthermore, the Working Party noted that GE.1 had held first technical considerations on proposals by Turkey to slightly amend the standard eTIR declaration message, including a proposal to make the HS code mandatory. The secretariat informed the Working Party that the final report of the GE.1 session would be submitted for endorsement at its next session (see ECE/TRANS.WP.30/276, para. 11).

At its 139th session, the Working Party endorsed the report of GE.1 on its twenty-fourth session (ECE/TRANS/WP.30/2015/3 and Corr.1) (see ECE/TRANS/WP.30/278, para. 16).

At its 140th session, the Working Party considered and supported document ECE/TRANS/WP.30/2011/4/Rev.1, containing version 4.1 of the eTIR Reference Model, as a basis for future work of GE.3 as well as for pilot projects. The Working Party recalled that the eTIR Reference Model is not “carved in stone”. Some Contracting Parties indicated they are still analysing the technical details of the document. The Working Party thanked the United Nations Office at Geneva (UNOG) documentation services for having provided a translation into French and Russian of such technically complex and extensive document. The Working Party also took note of the comments provided by various countries, as reproduced in Informal document WP.30 (2015) No. 10 and agreed that the eTIR Reference Model might require further improvements, in particular, as a follow-up to pilot projects and the outcome of the work of the legal Expert Group (see ECE/TRANS/WP.30/280, para. 9).

At its 61st session, AC.2 endorsed the Joint Statement on the computerization of the TIR procedure contained in Annex VII (ECE/TRANS/WP.30/AC.2/125, para. 29).

At its 144th session, the Working Party took note of the oral report of the twenty-fifth session of GE.1 on 19–20 September 2016 in Geneva. It noted that GE.1 had reviewed and welcomed the results from both eTIR pilot projects, acknowledging their contributions toward a fully-fledged eTIR system. GE.1 had also assessed the first findings of GE.2 and acknowledged the need of close collaboration between both groups, in particular when dealing with issues such as electronic signatures. Furthermore, GE.1 had considered a number of pending amendments to the eTIR Reference Model v.4.1a. The Working Party noted that the final report of the twenty-fifth session would be submitted as a formal document for its February 2017 session and approved the continuation of GE.1 in 2017, in particular to make the necessary amendments to the eTIR Reference Model v.4.1a and to deal with the technical issues related to proposals prepared by GE.2. In the context of extending the mandate of GE.1, the Working Party requested the secretariat to also raise the issue of financing the development and maintenance of the eTIR international system at the level of ITC (see ECE/TRANS/WP.30/288, para. 14).

At its twenty-fifth session, GE.1 welcomed Informal document GE.1 No. 4 (2016) by the European Commission (EC). The Expert Group discussed the proposal to split the eTIR Reference Model into functional and technical parts and, in order not to revert to the decision on the modelling methodology used for the project but to, however, facilitate the consultation and maintenance of the reference model, it requested the secretariat to prepare a separate document for each chapter, also including the annexes that are specific for that chapter. The Expert Group further decided to add an annex to the introduction to include the Joint Statement on the computerization of the TIR procedure, as endorsed by AC.2 on 11 June 2015. The Expert Group questioned the need of chapter 1.1.4 and requested the secretariat to consider its deletion in future versions. It instructed the secretariat to consider the need to amend chapters 1.1.6, 1.1.7 and 1.1.8. Furthermore, it welcomed various minor amendments proposed by EC and requested the secretariat to make the necessary changes in the next version. Finally, it requested the secretariat to look into the possible replacement of the Unified Modelling Language (UML) activity diagrams by diagrams following the Business Process Model and Notation (BPMN) standard.

The Expert Group was of the view that a number of issues raised by EC would also require legal expertise. The Expert Group particularly referred to the fact that Annex 10 of the TIR Convention is considered out-of-scope for the eTIR project, whereas countries which would fully implement eTIR, in particular the sending of termination messages (I11), would automatically comply with it. Furthermore, the Expert Group discussed the possibility of using the paper TIR Carnet as a fall back procedure. On this issue, it was

pointed out that if, in future, the eTIR legal provisions would be included in a legal instrument that would be separate and unconnected to the original TIR Convention of 1975, it would be impossible for Contracting Parties to use the paper TIR Carnet as a fall-back unless the whole paper procedure would be included in the new legal instrument. In this context, the Expert Group recalled that Annex VIII chapter 3.1 should contain the printing guidelines for the paper accompanying document, which would function as a fall-back document, and mandated the secretariat to start working on a template for the paper accompanying document.

The Expert Group also carefully considered the various amendment proposal contained in Informal document GE.1 No. 5 (2016) and took the following decisions.

- *Turkish proposal to amend the eTIR Reference Model* – The Expert Group considered the Turkish proposals and highlighted that, since the proposals are about changes to data requirements, they first should be considered at the procedural or legal level. Even though some data elements could be extremely useful, in particular for risk assessment (e.g. the HS code), making those data elements mandatory would require the addition of those data requirements to the eTIR legal provisions. With regard to the inclusion of additional optional elements, the Expert Group acknowledged, in the light of the findings related to the UNECE-IRU eTIR pilot project (see para. 6), in particular the fact that eTIR messages do not yet allow the transmission of required safety and security information, that using solely the standard eTIR message would not be possible. However, gathering each and every specific national data requirement might require the assistance of IRU which has already gone through this process while devising TIR-EPD. The Expert Group requested the secretariat to submit the proposal to WP.30.
- *Mutual recognition of electronic signatures* – After thorough analysis of the various options listed in the Annex of Informal document GE.1 No. 5 (2016) as well as a new option proposed by the Turkish customs administration, the Expert Group decided to maintain its recommendation on this issue, i.e. that, on the basis of the TIR Convention principle of mutual recognition of customs controls, the authentication of the transport operator shall be performed in the country of departure and, since the information will then be transmitted in a secure customs environment (including the eTIR international system), other countries shall recognize that this authentication was performed correctly and that the holder whose name is contained in the electronic messages is the person liable for the TIR transport. The Expert Group acknowledged that this would need to be included specifically in the eTIR legal provisions.
- *UN/EDIFACT message format* – In view of the answers received from eTIR focal points, the Expert Group decided that all eTIR message will be only exchanged in XML format and that the UN/EDIFACT message descriptions will be taken out of the next version of the eTIR Reference Model.
- *Metadata class and Core data types* – The Expert group accepted the proposal and requested the secretariat to amend the next version of the eTIR Reference Model accordingly.
- *Changes to Table 0.3* - The Expert group accepted the proposal.
- *Code lists* - The Expert group accepted the proposal. However, further to indicating the responsible agency for the code lists in the eTIR Reference Model,

the Expert Group requested the secretariat to keep those complete code lists on the eTIR website for reference.

- *Minor Changes* - The Expert group accepted the proposal. (ECE/TRANS/WP.30/2017/3, paras. 12-23)

At its 145th session, the Working Party endorsed the report of the twenty-fifth session (19-20 September 2016, Geneva) of GE.1, as contained in document ECE/TRANS/WP.30/2017/3. Note was taken that the delegation of the Russian Federation did not agree with the conclusions of GE.1 in para. 16 thereof on the mutual recognition of electronic signatures (see ECE/TRANS/WP.30/290, para. 19).

b. Introduction to the conceptual, functional and technical documentation

Just as it is not possible to build a decent and secure house without a proper plan, which has been drawn up by a qualified architect, it is not possible to computerize a system without first designing the necessary models, outlining all the elements and procedures of which it consists. And just as the construction of a small garden shed does not require the same planning as the construction of a hundred storey high commercial building, different systems will require different modelling techniques, in function of their aim and complexity.¹

The conceptual, functional and technical documentation contains the full description of the TIR Procedure Computerization Project.

The business process modelling methodology applied to draw up these documents are based on the UN/CEFACT Modelling Methodology (UMM). UMM in its turn is based on the Unified Modelling Language (UML) from the Object Management Group (OMG) and is derived from the Rational Unified Process (RUP) developed by Rational Corporation. As such, UMM provides a procedure for specifying/modelling business processes in a protocol-neutral, implementation-independent way.

Business Modelling provides a formalized way to describe how the TIR procedure operates and thus enables a common understanding of its key features and requirements. It can be used as a tool to provide a range of e-business solutions covering all or part of the TIR procedure and based on a variety of technologies. The models also facilitate the detection of opportunities for simplification and harmonization.

These documents are first intended to facilitate the work of the Informal ad hoc Expert Group on Conceptual and Technical Aspects of Computerization of the TIR Procedure and to provide modelling support. In addition, it should facilitate the work to be undertaken by the Informal ad hoc Expert Group on Legal Aspects of Computerization of the TIR Procedure. The final version of these documents will be submitted to the Working Party on Customs Questions affecting Transport (WP.30) and the Administrative Committee for the TIR Convention (AC.2) for endorsement before serving as references for any future work in the field of the computerization of the TIR procedure. In addition, each of the documents will, upon completion, be submitted for endorsement to the WP.30 (see Table 0.3).

¹ See also IS architecture artistry. G. Gage, IDG Communication Publication, July 1991.

b.1. Phases and Workflows

According to Rational Unified Process and UMM, every project passes through a series of standard phases. The phases are inception, elaboration, construction and transition. For each phase, a number of workflows is required. The workflows identified for computerization projects are: Business Domain Modelling, e-Business requirements, Analysis, Design, Implementation, Test and Deployment. The UMM focuses on the inception and elaboration phases and limits itself to the first four workflows, not encompassing the Implementation, Test and Deployment workflows. The description of the work during every phase, indication the main or 'high-level' activities, is shown in Table 0.1.

Table 0.1
Activities associated with each phase

Phase	High-level activities
Inception	<ul style="list-style-type: none"> ○ Idea is conceived, and initially documented using the UMM. ○ Main workflows are: 1) Business Domain Modelling, and 2) e-Business requirements.
Elaboration	<ul style="list-style-type: none"> ○ Idea is further refined and expanded ○ Main workflows are: 1) Analysis, and 2) Design ○ The outcome – deliverables – is compared with the already defined models, requirements and references contained in the 'repository' ○ New models or enhancements to existing models are incorporated into the repository
Construction	<ul style="list-style-type: none"> ○ Messages are designed ○ Software development ○ Main workflows are: 1) Implementation, 2) Testing, and 3) Deployment
Transition	<ul style="list-style-type: none"> ○ Testing ○ Main workflow is Deployment

In the Inception and Elaboration phases, the UMM concentrates on workflows needed to understand the business needs to produce business scenarios, business objects and areas of business collaboration. They are:

- Business Domain Modelling (introduction)
- e-Business requirements (conceptual specifications)
- Analysis (functional specifications)
- Design (technical specifications)

Within each of these workflows a set of deliverables is produced (see Table 0.2). The whole process is iterative so that additions and changes can be validated and incorporated into any of the workflows as they are discovered. Additions and changes should be a natural result of maintenance and enhancement.

Table 0.2
Deliverables

<i>Deliverables</i>	<i>Business Domain Modelling Workflow</i>	<i>e-Business requirements Workflow</i>	<i>Analysis Workflow</i>	<i>Design Workflow</i>
Package diagram	X			
Class diagram	X	x	x	x
Use case description	x	x	x	
Use case diagram	x	x	x	x
Sequence diagram			x	x
Collaboration diagram			x	x
Statechart (state machine) diagram			x	x
Activity diagram	x	x	x	x
Component diagram				x
Deployment diagram				x
Requirements list	x	x	x	
Glossary	x	x	x	

Every workflow focuses on specific aspects of the project. The Business Domain Modelling describes the scope of the project within the whole system, enabling a common understanding of the functioning of the current TIR procedure – the “as-is” situation – to all ‘stakeholders’ and defines the high-level business requirements. The e-Business requirements workflow captures the detailed user requirements in the computerized environment to be developed and further elaborates the use cases described in the previous phase of the work. The third workflow, the Analysis, translates the requirements identified in earlier phases into specifications that can be followed by software developers and message designers. Finally, in the Design workflow, the specification devised during the Analysis workflow will be used to develop the messages and the collaborations required to exchange these messages.

Each and every workflow will be terminated by a formal validation by the relevant bodies.

b.2. Step by step approach applied to the UMM

At its one-hundred-and-sixth session, the Working Party agreed that, in the light of the complexity of the project and in order to achieve tangible results in the near future, a step-by step approach was the only feasible way to address the eTIR Project.

As stated in the introduction to Chapter b, the UMM methodology is mainly based upon the Rational Unified Process (RUP), which originally has been used in the field of software engineering. The eTIR Project, although not being a software engineering project, nevertheless is confronted with many similar problems with regard to the complexity of the issues at stake. In order to address complex problems, software engineers usually issue a first version of a software, tackling the main issues. With every new release, they add functionalities to the software with a view to advance towards reaching the final objectives of the project.

In the eTIR project, the various steps to be undertaken to achieve results in the project may be considered as being equivalent to the various releases of software. Therefore (and in accordance with the RUP), every single step, after it has been clearly defined, will be considered as a specific sub-project and will have to pass through all phases of a project lifecycle. All sub-projects share the same final objectives but each individual sub-project contains different elements to achieve them.

b.3. Structure and updating of the document

The introduction, conceptual, functional and technical documents follows the methodology and structure presented above. The four documents correspond to the four workflows of the Inception and Elaboration phases. In addition, a number of annexes also forms part of the documentation.

In the present introduction document:

The requirements list and the glossary (TIR glossary) are two key cross-reference documents which are used throughout the process to ensure that all business requirements, terms, and definitions are recorded. These two documents are maintained as and recorded in Annexes I and II respectively.

Annex III contains the data elements records.

Annex IV contains a UML Symbols Glossary, describing the specific terms and symbols of the language to allow non-UML literates to understand the numerous diagrams contained in this document.

Annex V contains a UMM/UML Glossary, describing the specific terms used by the UMM methodology.

Annex VI contains summary of an independently conducted cost-benefit analysis (CBA), an assessment of the CBA and recommendations.

Annex VII contains the Joint Statement on the computerization of the TIR procedure endorsed by AC.2, on 11 June 2015,

In Annex X the reader can find all references to the documents used to elaborate all documentation.

In the conceptual specifications document

Annex I contains a detailed description of the functioning of the eTIR declaration mechanisms.

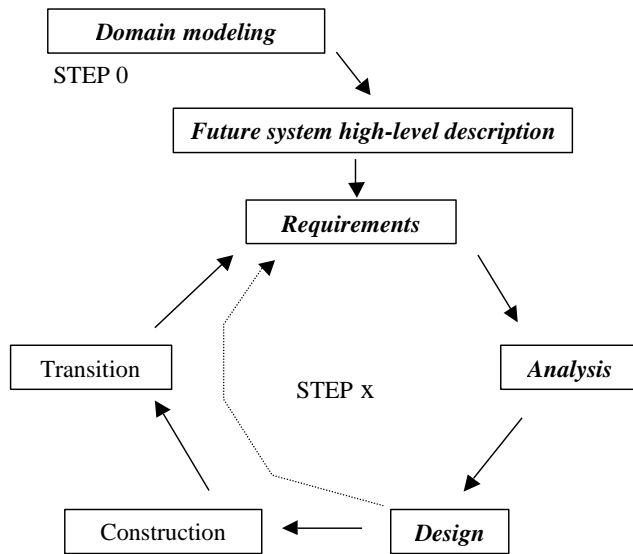
In the technical specifications document

Annexes I and II contain the functional and technical fall-backs.

Each document also contains two Annexes which present the lists of figures and tables contained in the documents.

The eTIR conceptual, functional and technical documents will contain the results of each work phase, in line with the description in Chapter b.1. and in accordance with the decisions by the Expert Group. In view of the step-by-step approach, described in Chapter b.2., this documentation will be amended by means of an iterative process, as shown in Figure 0.1.

Figure 0.1
Step-by-step iterative approach of UMM



Because UMM does not go beyond the design phase of projects, the actual construction and transition phases are beyond the scope of the eTIR Project. Thus, the Expert Group can already start drafting the requirements of the next step before the previous step will actually be in production (see dashed line in Figure 0.1.).

A step-by-step approach can only be successful if all steps, necessary to achieve the final goal, are well defined before starting the actual work. Therefore, the introduction to the conceptual specifications document contains the description of the different steps of the project and explains how these steps will complement each other in order to achieve the overall objectives of the eTIR Project.

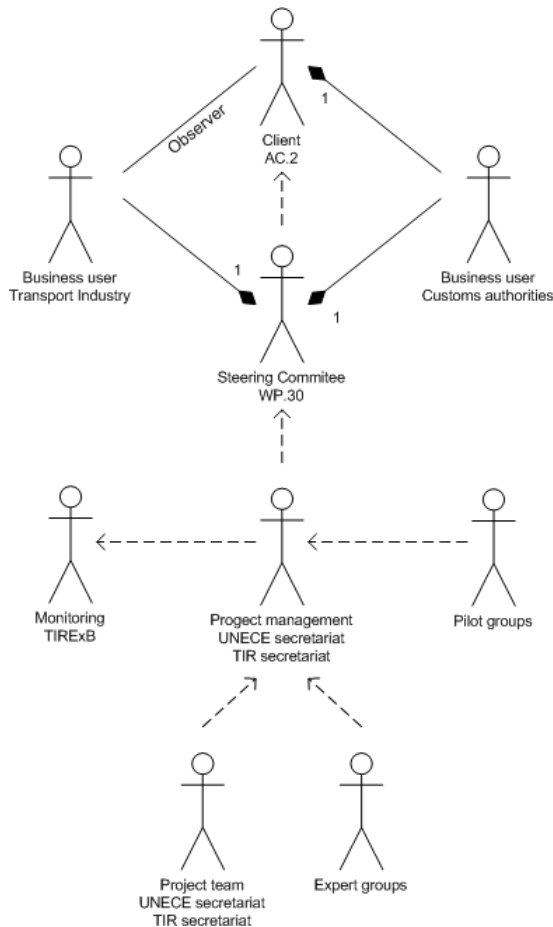
In addition, some chapters or annexes may be added in the future to reflect the specificities of the TIR Procedure Computerization Project.

Moreover, the existing systems identified during the domain modelling phase will have to be taken into account during the Analysis and Design phases of every step to avoid superfluous or incompatible developments. It is important to recall that the eTIR project is not a so-called “Greenfield” project.

b.4. Stakeholders responsibility chart

The computerization of the TIR Procedure is a project involving numerous stakeholders. Most of them have specific roles to play in the project and they are interdependent. Figure 0.2 shows the roles of the stakeholders and dependencies between them; dependency arrows also indicate the reporting directions, in other words, who reports to whom.

Figure 0.2
Stakeholders responsibility chart



b.5. Review and validation status

The table below presents the revisions and the validation dates for the various parts and versions of the reference model.

Table 0.3
Review and validation status

	Version	Validated by ... on ... ¹		
		COMP/GE.1 ²	WP.30 ³	AC.2 ⁴
Introduction (formerly Business domain modelling)	1.5a	27/5/2005	31/5/2006	
	1.6a	29/1/2007	13/6/2007	

¹ This table contains the dates on which the various versions of parts of the reference model have been validated (endorsed) by the different groups. The cells in grey indicate that endorsement by that specific group is not required.
² Informal ad hoc Expert Group on Conceptual and Technical Aspects of Computerization of the TIR Procedure.
³ Working Party on Customs Questions affecting Transport.
⁴ Administrative Committee for the TIR Convention, 1975.

	Version	Validated by ... on ... ¹		
		COMP/GE.1 ²	WP.30 ³	AC.2 ⁴
	3.0a	10/3/2011		
	4.0a	21/11/2013		
	4.1a	26/9/2014	12/6/2015 ¹	
<i>1 Vision</i>	1.2	2/3/2004		
	1.5a	27/5/2005		
<i>2 TIR procedure domain</i>	1.2	2/3/2004		
	1.4a	27/10/2004		
<i>3 TIR Carnet life cycle use cases</i>	1.2	2/3/2004		
	1.4a	27/10/2004		
<i>4 Elaboration the use cases</i>	1.4a	27/10/2004		
<i>5 Entity classes</i>	1.0	2/9/2003		
	1.4a	27/10/2004		
<i>1.6 High-level class diagram</i>	1.4a	27/10/2004		
Conceptual specifications (formerly e-Business requirements)	2.0a	12/6/2007	26/9/2007	27/9/2007
	2.1a	11/4/2008		
	3.0a	10/3/2011		
	4.0a	21/11/2013		
	4.1a	26/9/2014	12/6/2015 ⁵	
Functional specifications (formerly Analysis workflow)	3.0a	10/3/2011		
	4.0a	21/11/2013		
	4.1a	26/9/2014	12/6/2015 ⁵	
Technical specifications (formerly Design workflow)	4.0a	21/11/2013		
	4.1a	26/9/2014	12/6/2015 ⁵	

Business domain modelling

The purpose of the Business Domain Modelling workflow is:

- To present the scope of the project;
- To understand the structure and dynamics of processes within the current TIR procedure;
- To ensure that all stakeholders involved have a common understanding of the current TIR procedure;
- To understand the daily business in the TIR procedure, without reference to an electronic solution;

¹ WP.30 supported document version 4.1a of the eTIR Reference Model as a basis for future work of GE.2 as well as for pilot projects. At the same time WP.30 recalled that the eTIR Reference Model is not “carved in stone”.

- To formulate the high-level business requirements which will serve as a basis for a subsequent detailed analysis.

In an international project such as the computerization of the TIR procedure, it is absolutely indispensable that every stakeholder involved has a common vision of the project. Therefore, the first part of the Business Domain Modelling describes this vision in light of the background and the mandates given to the various groups involved.

Once the vision is clearly defined, the high-level analysis of the TIR procedure domain can be undertaken, followed by a more detailed analysis enabling a deeper understanding of the functioning of the TIR procedure. To this end, the domain is divided into areas and a use case analysis is drawn up for each area of interest. Already at this level some areas will be left aside because they are not part of the scope of the project. The requirements list and the TIR glossary are also filled-in accordingly. The list of entity classes and the high-level class diagram, established during this workflow, contribute to the development of the TIR glossary.

Deliverables from the Business Domain Model workflow include:

- Scope of the Business Domain and the boundaries of the project;
- Business Domain use case diagram with its description and business domain activity diagram;
- Use case diagram, use case description and activity diagram for each area;
- TIR entity classes, definitions and a high-level class diagram;
- List of business requirements (including non-functional requirements);
- TIR glossary.

1 Vision

This first part of the work aims at reaching agreement on the objectives, the business needs and the scope of the business domain. This also involves identifying the business opportunities and specifying the boundaries of the business domain being modelled.

1.1 Project title and abbreviation

The title given by the WP.30 to the project is:

TIR Procedure Computerization Project

The abbreviation used for the project is:

eTIR

1.2 Objectives

This chapter gives a brief description of the purpose of the project.

The final objectives of the eTIR Project are:

- Integrating the computerized TIR procedure in the overall process of technological development in international transport, trade and Customs procedures:
 - Simple and cost effective data capture and data transmission;
 - Facilitation of global intermodal application of the TIR Procedure;
 - Real time exchange of information among actors.
- Improving the efficiency and quality of the TIR procedure:

- Reduction of processing times at border crossings and final destination;
- Increased efficiency of internal administrative and control procedures;
- Increased accuracy and reduction of errors;
- Reduction of costs;
- Progressive replacement of paper TIR Carnet;
- Full use of international standard codes in order to eliminate language barriers;
- Availability of advance cargo information.
- Reducing the risk of fraud and improving security:
 - Automatic generation of data for risk assessment;
 - Facility to implement early-warning system;
 - Easy access to information for control and risk management purposes.

1.3 Boundary of the eTIR Project

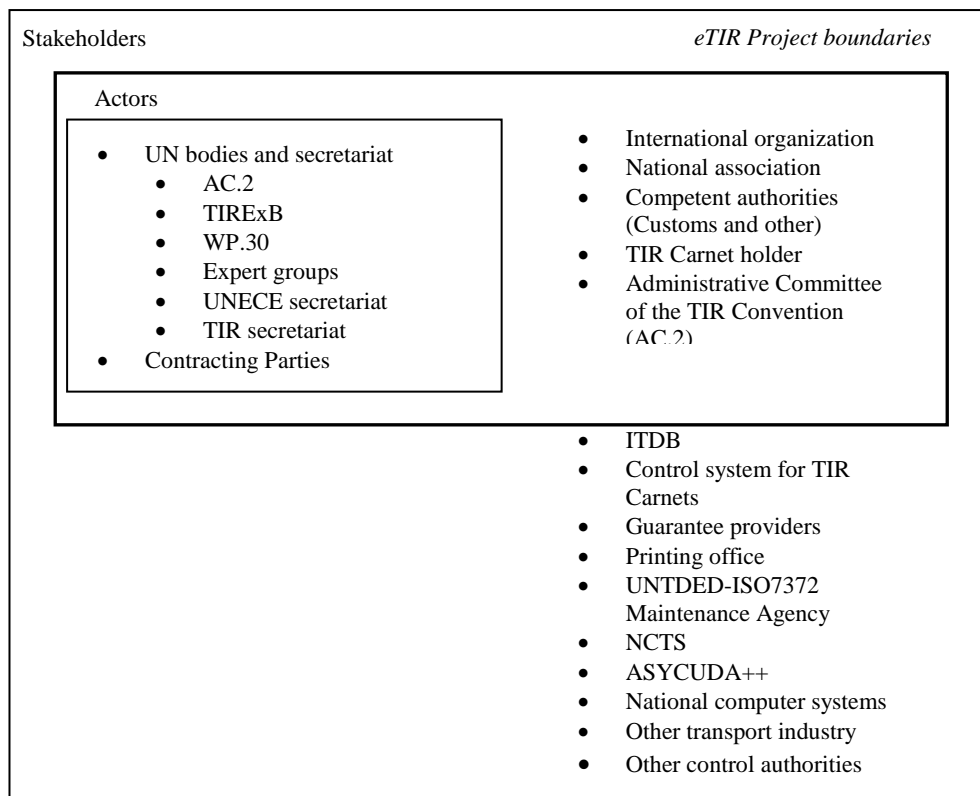
The final objective of the eTIR project encompasses the computerization of the whole TIR Carnet life cycle (from issuance and distribution via the TIR transport to return and repository) and is ultimately aimed at replacing the current paper TIR Carnet. However, the eTIR Project will inevitably have repercussions on other parts of the TIR Procedure. Therefore, it is important to identify the boundaries of the project in order to realize the full impact the project may have and to ensure that the views of all stakeholders are taken into due account. The boundaries are defined along two axes: stakeholders and information

1.3.1 Stakeholders

A stakeholder is defined as someone (or something) who is materially affected by the outcome of the system but may or may not be an actor of the system. Actors are stakeholders who are involved in the specific project as users and are thus part of the Reference Model. Stakeholders inside the boundary of the system are involved in the project as active participants in the work and/or members of decision-making bodies; those outside the boundary may participate in meeting to ensure any future compatibility where necessary.

Figure 1.1 shows the stakeholders inside and outside the boundaries of the project and emphasises those who are also actors.

Figure 1.1
Stakeholders and actors



1.3.2 Information

The data elements inside the boundaries have already been identified and are listed in Annex III of the Reference Model (source: the report of the Second meeting of the Expert Group (ExG/COMP/2002/10, Annex 3)). These data elements reflect the information contained in the current, paper-based, TIR carnet and provide the basis for the elaboration of a minimal set of data to be computerized. However, this set may need to be further amended in the course of the project, when the Group addresses other issues, such as, for example, security.

1.4 References

References are contained in Annex X.

1.5 Scope of the project

The scope of the project is to allow for the use of electronic data interchange in the so-called “TIR Carnet life cycle” without changing its basic philosophy.

The following elements of the TIR procedure are inside the scope of the project:

- TIR Carnet life cycle:
 - Issuance and distribution of TIR Carnets;
 - TIR Transport;
 - Return and repository of the TIR Carnets;

The following elements of the TIR procedure are outside the scope of the project:

- Approval of the guarantee chain;
- Approval of the association;
- Approval of transport operators;
- Approval of vehicles;
- Management of a control system for TIR Carnets (Annex 10 of the TIR Convention);
- Administration of the TIR Convention;
- Organization and functioning of the guarantee system.

When outlining the contents of the eTIR Project, the WP.30 and the Expert Group have already identified a number of tasks which shall be included. The key statements are reproduced here after:

- Analysis of the actual and future functioning of the TIR procedure (TRANS/WP.30/2002/5; ExG/COMP/2002/7);
- Development of a standard set of messages allowing for an effective communication between parties involved (ExG/COMP/2002/5);
- Preparation of the required amendments to the TIR Convention (TRANS/WP.30/2002/5; ExG/COMP/2002/7);
- Description of roles and responsibilities of all actors involved in an electronic environment (TRANS/WP.30/2002/7);
- Estimation of the costs generated by a computerized environment (cost/benefit analysis) (TRANS/WP.30/2002/5; ExG/COMP/2002/7);
- Inventory of impact on national administrative procedures and national infrastructure (TRANS/WP.30/2002/7);
- Step-by-step approach to achieve tangible results in the computerization of the TIR procedure (TRANS/WP.30/212);
- Establishment of an international centralized database (TRANS/WP.30/212);
- Management by Customs of data on guarantees, once the guarantor has issued a guarantee to an operator (ECE/TRANS/WP.30/226).

1.6 Constraints

This Chapter describes which issues of a technical, political, economical or other nature have to be taken into account when designing and describing the eTIR Project. Some such issues may limit the possibilities for the project, whereas others may represent dependencies or even create opportunities.

The Requirement List of Annex I specifies how each of these constraints has to be addressed.

1.6.1 Technical constraints

- Data protection
- Security
- Compatibility, interoperability or interfacing with the following projects
 - NCTS
 - National Customs systems

- SafeTIR/Cutewise
- ITDB
- ASYCUDA, ASYCUDA⁺⁺, ASYCUDA WORLD
- UNTDED/ISO7372
- UNeDocs (project)
- WCO data sets and data model
- A complete migration overnight towards a computerized environment is not realistic (a step by step implementation is required).
- Use only future-proof systems and standards
- Character set and coding management

1.6.2 *Political/legal constraints*

- The TIR Convention should be changed as little as possible.
- Certain Contracting Parties may not want to directly exchange information with other Contracting Parties.
- The computerisation should not result in the exclusion of Contracting Parties from the TIR system.
- Data protection laws (e.g. business secrecy, privacy of physical persons law, governmental data protection)
- It may be a legal requirement that the national language of the country of departure is used.

1.6.3 *Financial / Economic constraints*

- Limited resources available at the national and international level, both at the private and the public sector.
- Budgeting procedure might take up to 50 months in certain countries. National investments should be planned long in advance.
- Financial support necessity

1.6.4 *Other constraints*

- Prioritisation and timing
- IT knowledge in countries (human constraints)

1.7 Stakeholders' needs

1.7.1 *Needs of Customs administrations*

Functional needs of Customs

- Real time information
- Advance cargo information
- International Guarantee management for Customs
- International validation of the authorisation of the TIR Carnet holders against the ITDB (Authorisation, Withdrawal, ...)

- Reports with statistical information
- Status of the TIR transport to be available

Functional needs of guarantors (in the view of Customs)

- Termination notification
- Discharge notification
- Status of the TIR transport to be available

Functional needs of the private sector (in the view of Customs)

- Status of the TIR transport to be available

Additional data needs for Customs

- Consignee
- EU: need of consignor data

1.7.2 *Needs of the transport industry*

- Keep the TIR System accessible for new Contracting Parties and small transporters meeting the requirements of Annex 9;
- Ensure the TIR system to be easy to use and competitive in comparison with another means of guaranteeing the delivery of goods to customs office of destination;
- Develop standardized instructions for all the participants of the TIR System with the aim to eliminate disconnected actions and human element causing mistakes while working with the system;
- Facilitate the movement of goods through faster and more standardized Customs procedures;
- Reduce the risk of providing the guarantee by rapidly securing termination and making data timely and available 100%;
- Quickly identify and eliminate from the system those who perpetrate fraud;
- Safeguard data from unauthorized access and occasional damage or loss;
- Increase the level of transparency and confidence between the industry and competent authorities.
- Standard declaration mechanism
- Status of the TIR transport to be available

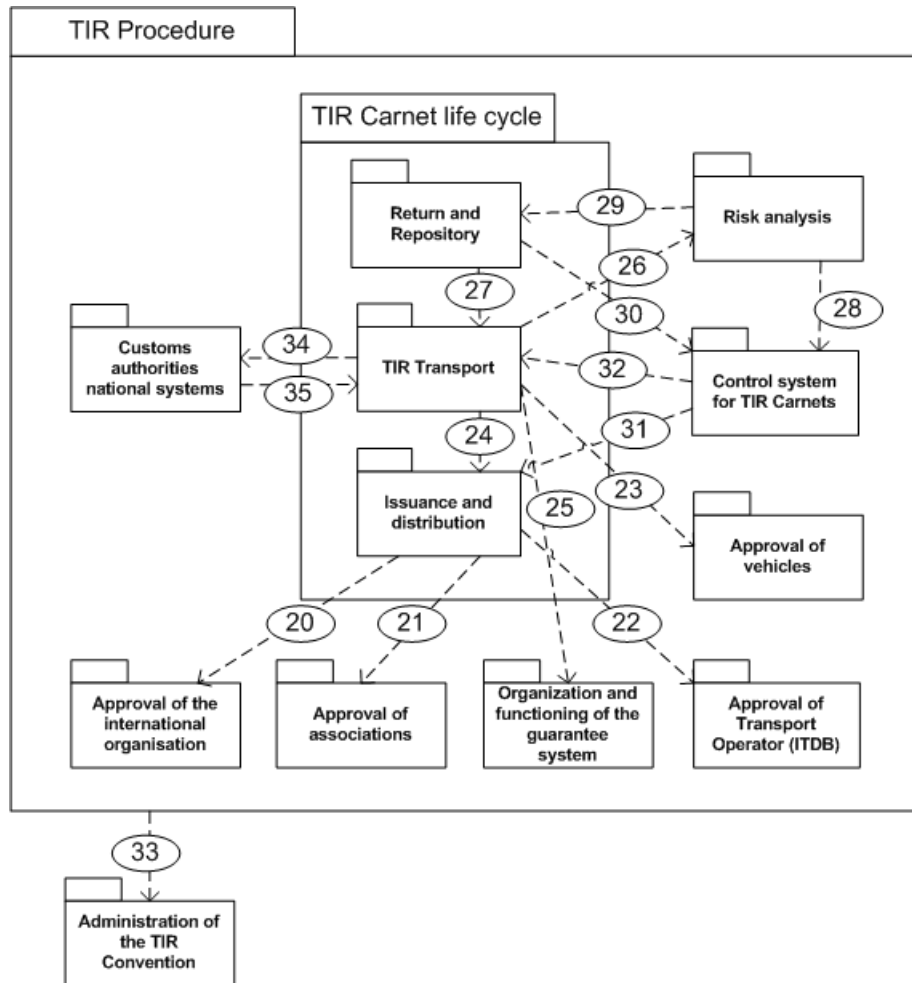
2 **TIR procedure domain**

The TIR procedure is a very wide domain, composed of numerous interconnected systems. As seen under 1.5, the current project is limited in its scope to a part of the overall TIR procedure: the TIR Carnet.

2.1 **TIR Procedure package diagram**

The following package diagram is intended to show the division of the domain into systems and the dependencies among those systems.

Figure 1.2
TIR procedure package diagram



2.2 TIR Procedure package diagram description

Table 1.1
TIR procedure package diagram description

Name	TIR procedure package diagram
Description	<p>The TIR procedure is an International Customs Procedure governed by the TIR Convention, 1975. A detailed description of the procedure can be found in the introduction of the TIR Handbook distributed by the TIR Secretariat.</p> <p>The TIR procedure is composed of numerous interconnecting systems to allow for the functioning of the procedure. The system we are most interested in for the current project is the TIR Carnet system. It can be defined by listing all functions and uses of the TIR Carnet. It is composed of sub-systems, namely: the issuance and distribution system, the TIR transport system and the return and repository.</p> <ul style="list-style-type: none"> • The function of the issuance and distribution sub-system by the international organization and the national associations is to provide transport operators with TIR Carnets in order to allow them to perform TIR transports;

- The TIR transport sub-system is the central system of the TIR procedure. It links the transport industry to the customs offices involved in a TIR transport and allows them to exchange the necessary information;
- The transport operators, the associations and the international organization manage the return and repository sub-system. Its function is to centralize the storage of the used TIR Carnet and to check that no problems have occurred during the TIR transport;

Other systems outside the scope of the current project but of importance for the well functioning of the TIR procedure are:

- Customs authorities national systems;
- Approval of the guarantee chain;
- Approval of the association;
- Approval of transport operators;
- Approval of vehicles;
- Control system for TIR Carnets;
- Organization and functioning of the guarantee system;
- Risk analysis system;
- Administration of the TIR Convention.

In the package diagram, the dependencies between all systems are indicated with dashed arrows. The dependencies are numbered according to the Requirements 20 to 35 of which they are the consequences.

Actors	Transport industry, Customs, Guarantee chain.
Performance Goals	Facilitate border crossing in international transport of goods.
Preconditions	Ratification of the TIR Convention by Contracting Parties and implementation of the TIR system.
Requirements Covered	20-35

3 TIR Carnet life cycle use cases

Now that we have described the domain, we can concentrate on the scope of the eTIR Project, the TIR Carnet system.

3.1 Actors of the TIR Carnet life cycle

Before describing the use cases of the TIR Carnet life cycle, we will identify all the actors who play a role in the course of the TIR Carnet life cycle. By definition any person, entity or system playing a role in the TIR Carnet life cycle is an actor. The actors have already been identified when setting the boundaries of the project and they are:

- International organization,
- National association,
- Competent authorities (Customs and other),
- TIR Carnet holder,
- Administrative Committee of the TIR Convention (AC.2).

Each actor plays one or more roles in the course of the TIR Carnet life cycle. Therefore, the actors are often considered and defined according to one of the roles they play. For example, the actor “Customs authority” can play the role of Customs office of entry (en route) for incoming TIR transports but it can also play the role of Customs office of exit (en route) for outgoing TIR transports.

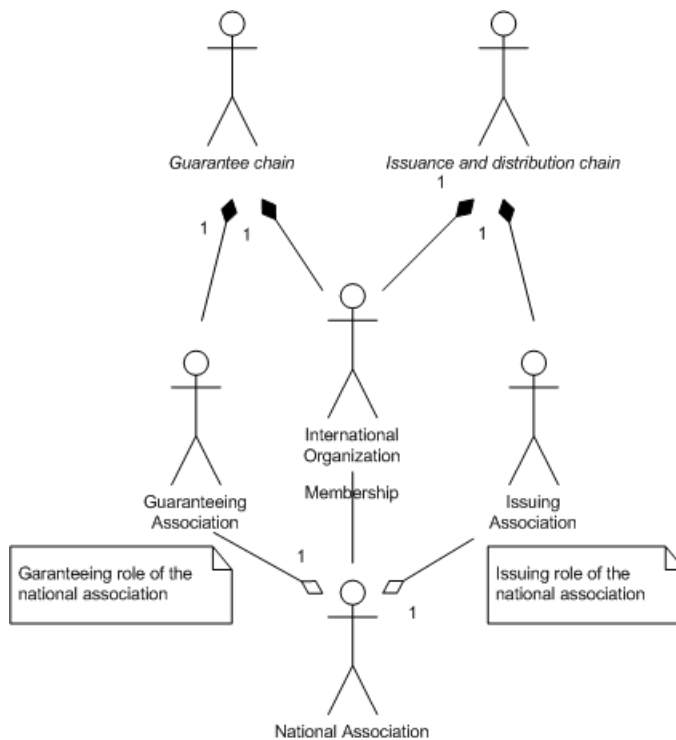
As a consequence, we will identify all aspects of each actor through the roles he performs within the context of the TIR Convention. The following description of the actors by means of the role they play is essential for understanding the rest of the chapter.

3.1.1 *International organizations and national associations*

International organizations and national associations can be described according to their two main roles in the TIR Carnet life cycle: the guaranteeing role and the issuing role. Figure 1.5 shows the relation between the international organizations and national associations, taking account of these roles.

Figure 1.3

International organizations and national associations

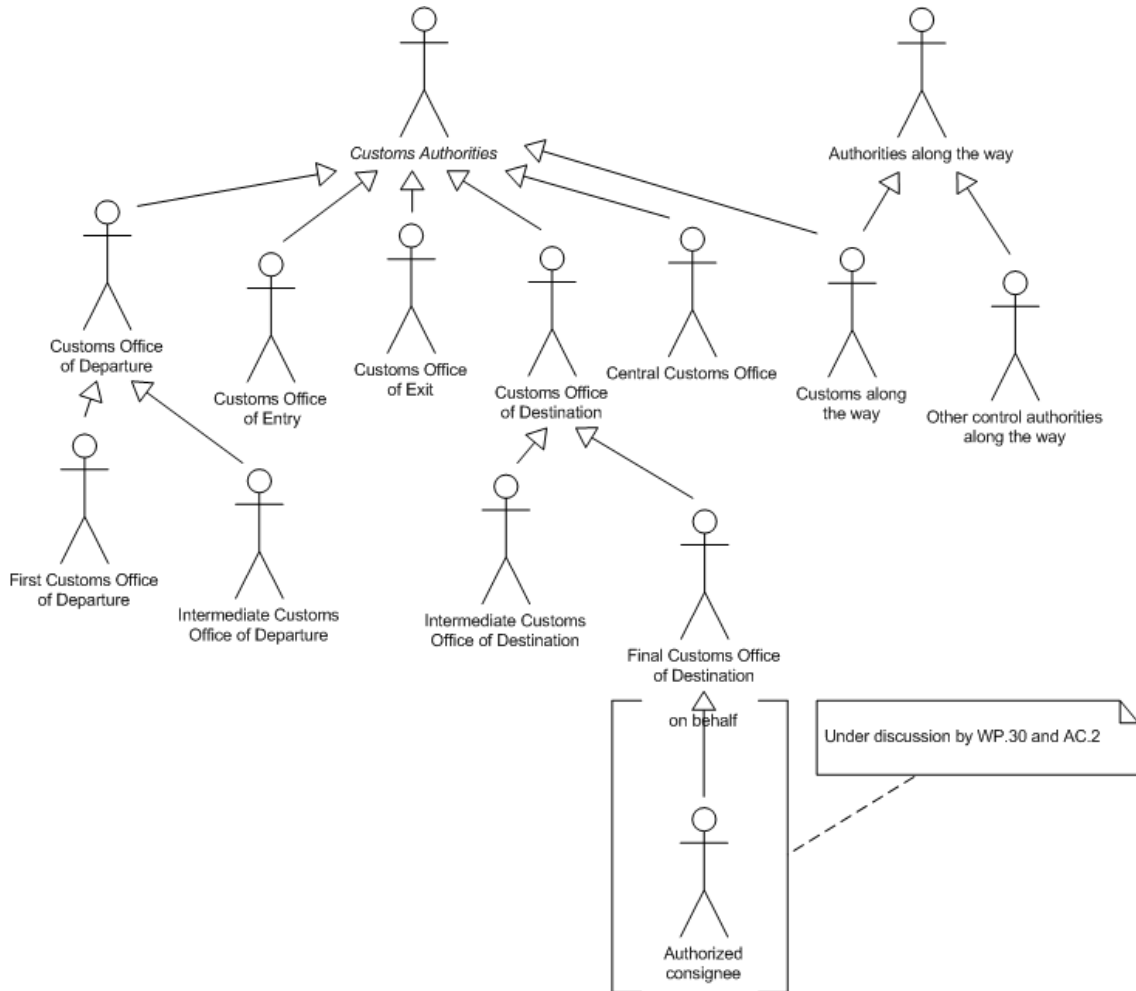


3.1.2 *Competent authorities*

The various competent authorities (Customs and other) can be structured in such a way that they reflect the generalization of the roles they have in common. Figure 1.4 reflects the various aspects of the competent authorities (mainly Customs authorities) in the course of the TIR Carnet life cycle.

Figure 1.4

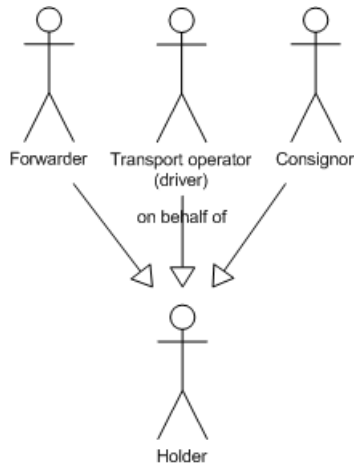
Customs authorities and other authorities



3.1.3 *TIR Carnet holder*

The TIR Carnet holder fulfils a central role in the TIR Carnet life cycle. This role is reflected in various use cases. Among these, the use case in which he provides data on the TIR transport and certifies them is certainly a crucial one. It can also happen that other persons, on his behalf, fill-in and certify the information that he must provide. Figure 1.6 shows the TIR Carnet holder and the agents who may provide data on his behalf.

Figure 1.5
TIR Carnet holder and agents



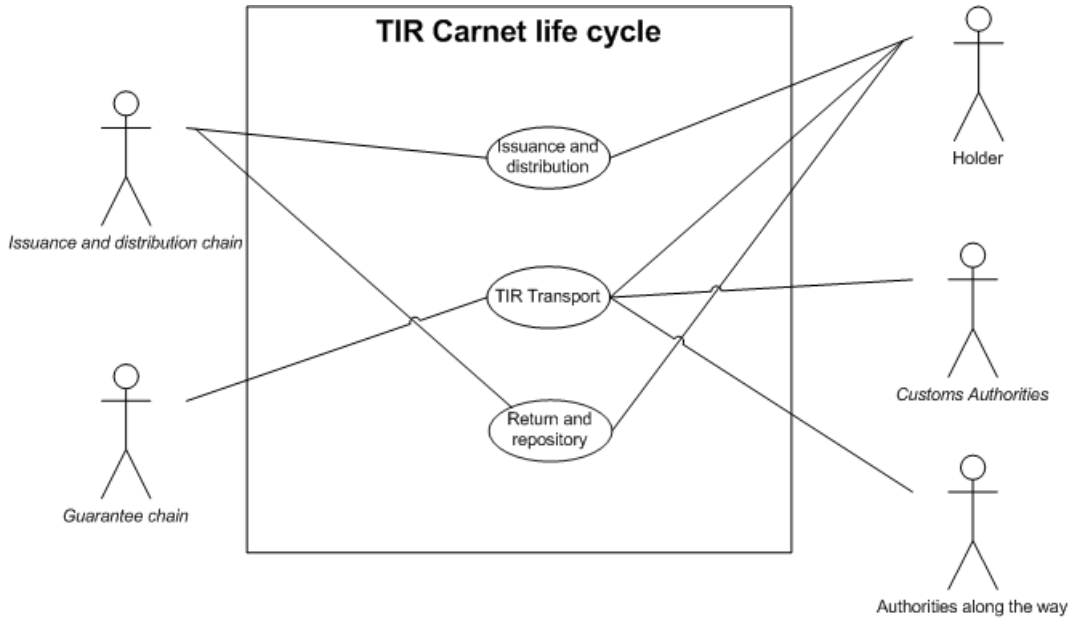
3.1.4 *Administrative Committee of the TIR Convention (AC.2)*

The AC.2 has a supervisory role with regard to the TIR Carnet life cycle. We will see in the detailed analysis of the use cases that some use cases in connection with that role are performed by the TIRExB.

3.2 TIR Carnet life cycle use case diagram

Figure 1.6

TIR Carnet life cycle use case diagram



3.3 TIR Carnet life cycle use case description

Table 1.2

TIR Carnet life cycle use case description

Name	TIR Carnet life cycle use case
Description	High-level view of all activities related to the paper TIR Carnet and the actors involved.
Actors	Guarantee chain, Customs authorities, Holder, Authorities along the way
Performance Goals	Allows the exchange of information between parties involved.
Preconditions	<ul style="list-style-type: none"> • Approval of the guarantee chain; • Approval of the association; • Approval of transport operators; • Approval of vehicles; • Management of the guarantee chain; • Administration of the TIR Convention.
Postconditions	-
Scenario	An international organization prints (organizes the printing) of TIR Carnets and distributes them to the authorized national associations. An authorized transport operator (TIR Carnet Holder) can then request a TIR Carnet from his national association. The national association issues the TIR Carnet to the TIR Carnet Holder. The national association may in certain cases return the TIR Carnet to the international organization instead of

issuing it to a TIR Carnet holder.

The TIR Carnet is then presented to the Customs office of departure within the limits of its validity by the holder to perform a TIR Transport. The TIR Carnet does not only represent the international Customs document, but also the guarantee.

Once the TIR Transport has ended, the TIR Carnet is returned to the holder, then to the association and finally to the international organization. In case the validity of a TIR Carnet has expired before it is presented to the Customs office of departure by the TIR Carnet holder, he must return it unused to the national association, which sends it back to the international organization.

Alternative Scenario In case of fraud, Customs authorities may keep the TIR Carnet until the case is solved.

Special requirements -

Extension Points -

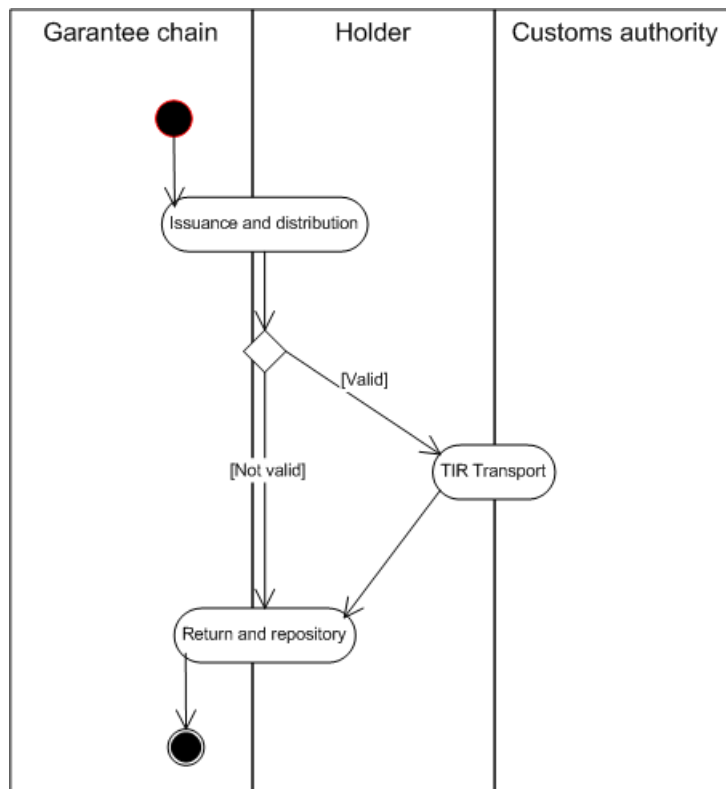
Requirements -

Covered

3.4 High-level activity diagram of the TIR Carnet life cycle

Figure 1.7

TIR Carnet life cycle activity diagram



4 Elaboration of use cases

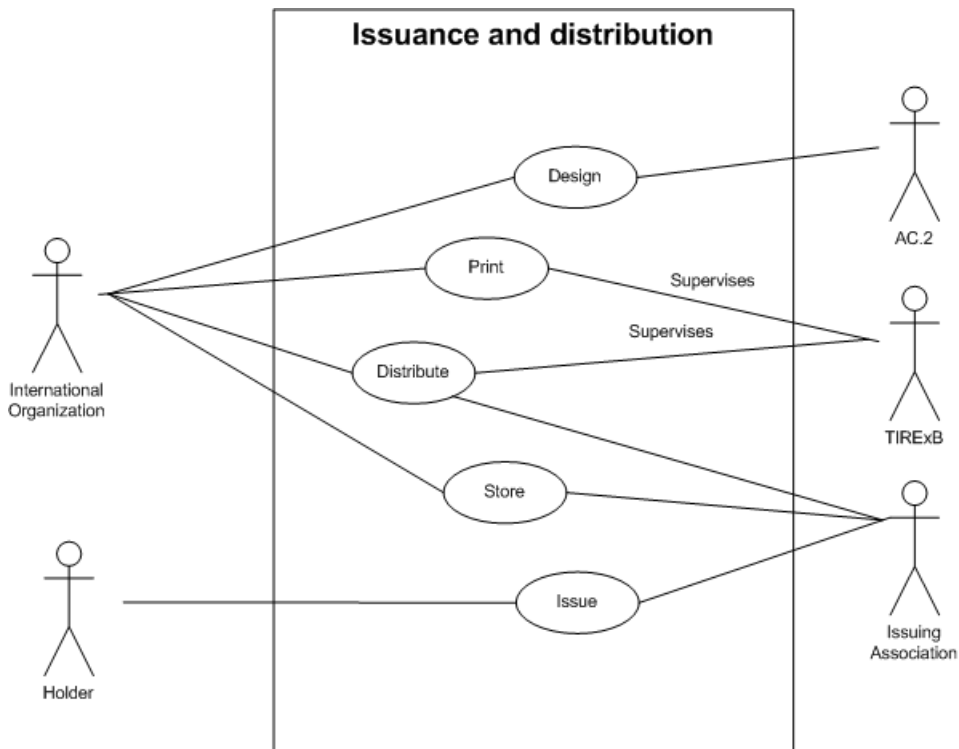
This chapter aims at providing a detailed view of the procedural aspects of the TIR system. It focuses on the most common procedure and does not describe in details occasional procedures. These latter are only identified as alternative scenarios and not dealt with in more details.

4.1 Issuance and distribution use case

4.1.1 Issuance and distribution use case diagram

Figure 1.8

Issuance and distribution use case diagram



4.1.2 Issuance and distribution use case description

Table 1.3

Issuance and distribution use case description

Name	Distribution and issuance use case
Description	In the course of this use case, the TIR Carnet is produced (printed, stored), distributed and issued to authorized transport operators.
Actors	AC.2, international organization, issuing association, holder of TIR Carnet, TIRExB
Performance Goals	To provide authorized TIR Carnet holders with TIR Carnets, the TIR Carnet being a Customs declaration to place goods under the TIR procedure (transit procedure) and representing an internationally recognized financial guarantee to Customs authorities of Contracting Parties with which a TIR operation can be established, in accordance

	with the provisions of the TIR Convention
Preconditions	<p>The international organization is authorized by AC.2 to centrally print and distribute TIR Carnets in accordance with Art. 6.2bis of the TIR Convention and Annex 8, Article 10 (b) of the TIR Convention under the supervision of the TIR Executive Board</p> <p>The national association is authorized by its national Customs authorities, according to Art. 6.1 of the TIR Convention and Annex 9, Part I of TIR Convention, to issue TIR Carnets and to act as guarantor. The national association should be affiliated to an international organization.</p> <p>Transport operators have to be authorized by competent Customs authorities, according to Art 6.4 and 6.5 of the TIR Convention and Annex 9, Part II of TIR Convention, in order to obtain TIR Carnets from their issuing association and to utilize TIR Carnets, according to Art. 6.3.</p>
Postconditions	<p>In accordance with the TIR Carnet life cycle use case, this use case can be followed by:</p> <ul style="list-style-type: none"> - the TIR transport use case; - the Return and repository use case.
Scenario	<p>While respecting the design, elaborated under the auspices of the United Nations Economic Commission for Europe and endorsed by AC.2, the international organization is responsible for printing TIR Carnets. The TIR Carnets are stored temporarily before being distributed by the international organization to its affiliated national issuing associations.</p> <p>The issuing association, possibly after another storage period, fills-in fields 1 to 4 of the TIR Carnet cover page and issues the TIR Carnet to authorized TIR Carnets holders, according to Art.6.3 of the TIR Convention (to national or, in some situations, to foreign TIR Carnet holders, respecting, in such case, special requirements) within the quota fixed by the association.</p> <p>The TIRExB supervises the centralized printing and distribution in accordance with Annex 8, Article 10 (b) of the TIR Convention.</p>
Alternative Scenario	<p>The main scenario does not take into account that the TIR Carnet may be stolen, lost or not valid. The following scenarios are possible:</p> <ol style="list-style-type: none"> 1. The TIR Carnet is lost/stolen/not valid after printing but before being stored at the premises of the international organization; 2. The TIR Carnet is lost/stolen/not valid while still stored at the premises of the international organization; 3. The TIR Carnet is lost/stolen/not valid during transport between the international organization and the national association; 4. The TIR Carnet is lost/stolen/not valid, while in possession of the national association, before being issued; 5. The TIR Carnet is lost/stolen/not valid after having been issued to the authorized TIR Carnet holder; 6. The TIR Carnet is returned by the national association to the

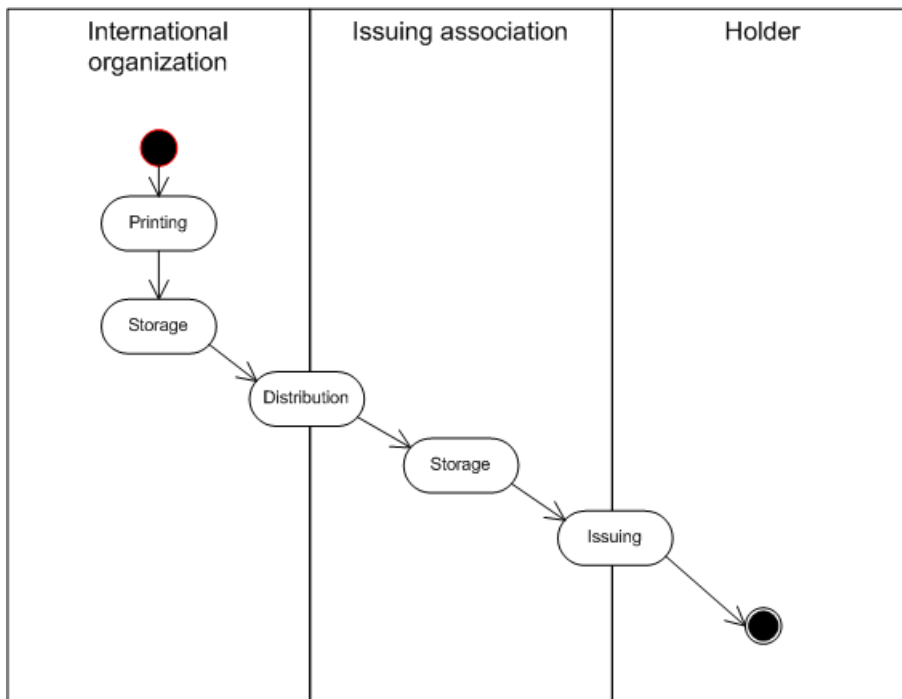
international organization before being issued.

Special requirements	Data on authorized TIR Carnet holders are stored in the International TIR Database (ITDB) maintained by the TIR Executive Board and TIR Secretariat. Data on lost/stolen TIR Carnets is maintained by the international organization in an electronic control system.
Extension Points	During the distribution and issuance, information will be sent to the electronic control system maintained by the international organization.
Requirements Covered	-

4.1.3 Activity diagram of the issuance and distribution use case

Figure 1.9

Issuance and distribution activity diagram



4.2 TIR transport use case

4.2.1 TIR transport use case diagram

Figure 1.10

TIR transport use case diagram



4.2.2 TIR transport use case description

Table 1.4

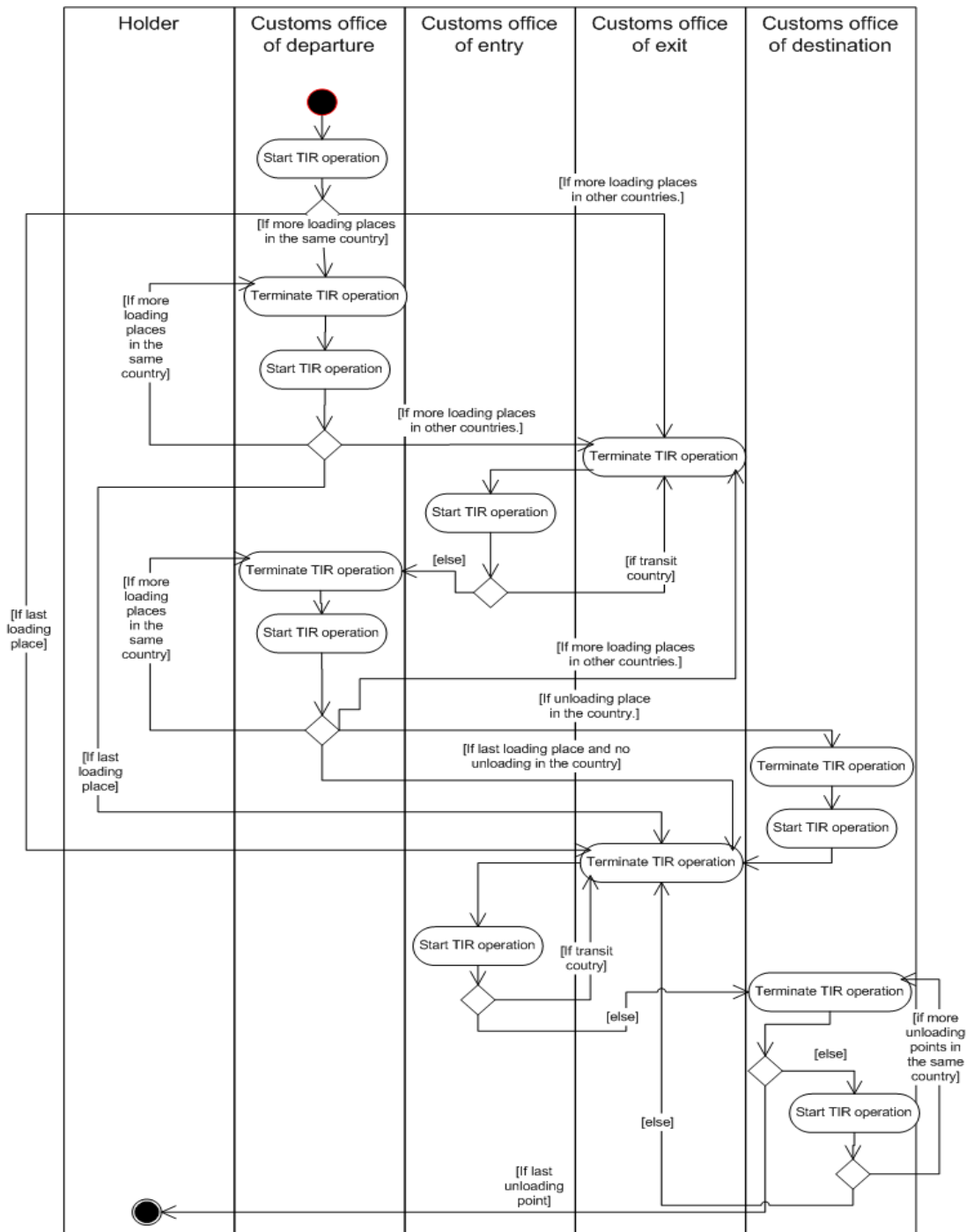
TIR transport use case description

Name	TIR Transport Use Case
Description	This use case describes the transport of goods from the first Customs office of departure to the final Customs office of destination under the TIR procedure, where borders between countries (Customs territories) are crossed.
Actors	Customs authorities, Guarantee chain, TIR Carnet holder
Performance Goals	Reduce the time spent at all concerned Customs offices during international transport of goods performed under cover of a TIR Carnet in accordance with the provisions of the TIR Convention
Preconditions	<p>The authorized TIR Carnet holder must be issued with a valid TIR Carnet to begin the transport. The applicability of the TIR Carnet may depend on the type of the goods to be shipped (e.g. tobacco and alcohol require “Tobacco and Alcohol” TIR Carnets). For the transport of heavy or bulky goods, the TIR Carnet should bear the relevant inscription.</p> <p>The TIR transport has to be performed with an approved vehicle and/or container unless heavy or bulky goods are transported.</p> <p>The TIR transport must be guaranteed by associations approved in accordance with the provisions of Article 6 of the TIR Convention.</p>
Postconditions	<p>In accordance with the TIR Carnet life cycle use case, this use case shall be followed by:</p> <ul style="list-style-type: none"> - The Return and repository use case <p>After the TIR transport, the goods shall be placed under another Customs regime.</p>
Scenario	<p>Because the TIR transport is a sequence of TIR operations, the scenario of a TIR transport is represented here as a succession of TIR operations, each one being described in two steps. Each step 1-step 2 sequence constitutes a single TIR operation.</p> <p><u>Step 1</u>: Start of the TIR operation at the first Customs office of departure. The Customs officers check the conformity of the TIR Carnet, the goods, the loading compartment, as well as the approval certificates for vehicle and/or container and the commercial and transport documents. Seals are affixed to the loading compartment. The Customs officer fills-in and stamps all the relevant parts of the TIR Carnet pages including counterfoil No. 1. Upon acceptance of the TIR Carnet by the first Customs office of departure, the guarantee is activated (Art. 8, 4).</p> <p><u>Step 2</u>: Termination of the TIR operation at the Customs office of exit <u>en route</u>. The Customs officer stamps counterfoil No. 2, takes out voucher No. 2 and sends it to the Customs office of departure.</p> <p>Steps 1 and 2 are repeated if there are several Customs offices of departure (maximum 3 in one or several countries (Customs territories). In such case, in every consecutive Contracting Party <u>en route</u> transited by the TIR transport, steps 1 and 2 are repeated with the following differences: the Customs office which carries out step 1 is called Customs office of entry <u>en route</u>. It checks the seals, the loading compartment and fills-in the relevant fields of vouchers 1 and 2 and</p>

	counterfoil No. 1.
	Step 2 is equal to the previous step 2 at the Customs office of exit <u>en route</u> .
	In the country (Customs territory) of destination, step 1 is identical to the previous step 1 at the Customs office of entry <u>en route</u> . The Customs office which carries out step 2 is called the Customs office of destination. In step 2, Customs officers take off the seals, stamp counterfoil No. 2, take out voucher No. 2 and send it to the Customs office of entry <u>en route</u> . Step 2 encompasses the termination of the TIR operation for this country (Customs territory) as well as the certification of termination for the goods arrived at the Customs office of destination.
	The validity of the TIR Carnet can be checked by any Customs office of departure, exit <u>en route</u> , entry <u>en route</u> and of destination, using, for example, CUTE-Wise. All Customs offices have the right to remove the seals and to check the goods (see Article 5). In such case, new seals have to be affixed and the appropriate fields of the TIR Carnet have to be filled-in accordingly (box 16, box 3 of counterfoil 1 or box 4 of counterfoil 2).
Alternative Scenario	The main scenario does not take account of the following scenarios: <ol style="list-style-type: none"> 1. Falsified acceptance of a TIR Carnet: fraudsters may attempt to falsify the acceptance of a genuine TIR Carnet by using false Customs stamps and seals; 2. Incident or accident <u>en route</u>: in such case, the so-called “certified report” should be filled-in by the competent authorities. In case the vehicle can no longer be used, the goods may be reloaded on a different truck and a new TIR Carnet is opened. If the goods are destroyed, competent authorities should state this fact. In this case, the TIR transport cannot be terminated at the intended Customs office(s) of destination but has to be terminated at the nearest Customs office <u>en route</u>. The TIR Carnet may also be amended by competent authorities so that the TIR Transport can continue with the same TIR Carnet; 3. Under some conditions, the TIR Transport can be suspended (Art. 26).
Special requirements	-
Extension Points	-.
Requirements Covered	-

4.2.3 Activity diagram of the TIR transport use case

Figure 1.11
TIR transport activity diagram



4.2.4 Structured description of activity diagrams of the TIR transport use case

The TIR transport is a sequence of TIR operations that shall start at the first Customs office of departure and terminate at the final Customs office of destination.

The TIR Transport **BEGINS** when the first Customs office of departure starts the first TIR operation.

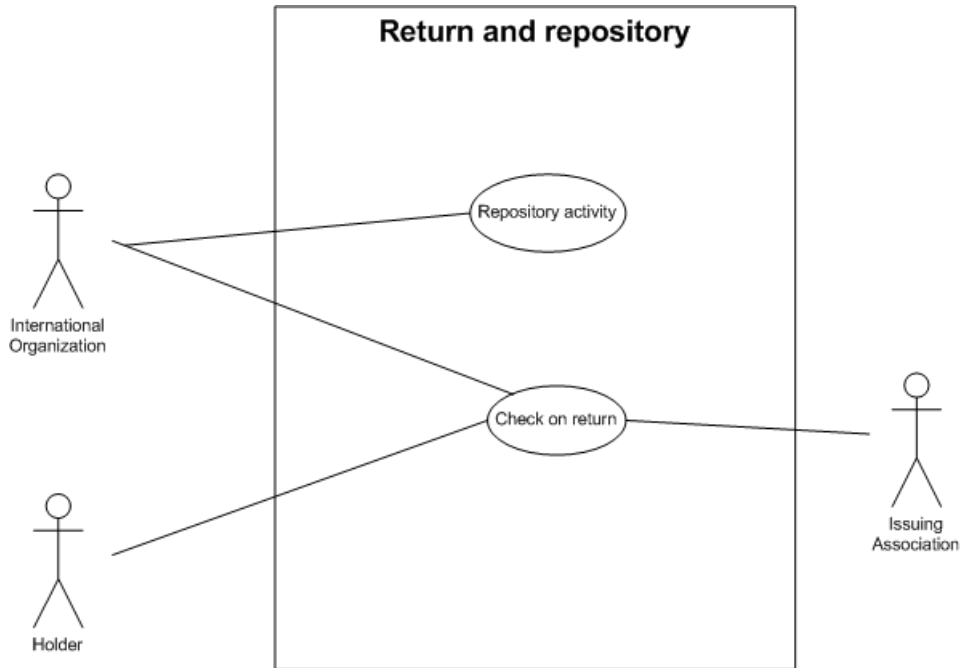
- If other loading point in the same country (Customs territory): **go to 1**;
 - If additional loading will take place in other countries (Customs territories): **go to 2**;
 - If the loading phase is terminated: **go to 3**;
1. At the next loading point, the intermediate Customs office of departure will terminate the current TIR operation (acting as Customs office of destination) before starting a new TIR operation.
 - If there is another loading point in the same country (Customs territory) and if the number of loading points is still inferior to 3: **repeat 1**;
 - If additional loading will take place in other countries (Customs territories) and if the number of loading points is still inferior to 3: **go to 2**.
 - If the loading phase is terminated: **go to 3**.
 2. The Customs office of exit (en route) of the country (Customs territory) will terminate the current TIR operation and the Customs office of entry (en route) of the following country (Customs territory) will start a new TIR operation.
 - If it is a transit country (Customs territory): **repeat 2**.
 - If it is a country (Customs territory) where a loading will take place if the number of loading points is still inferior to 3: **go to 2.1**.
 - 2.1. At the next loading point, the intermediate Customs office of departure will terminate the current TIR operation (acting as Customs office of destination) before starting a new TIR operation.
 - If there is another loading place in the same country (Customs territory) and if the number of loading points is still inferior to 3: **repeat 2.1**;
 - If additional loading will take place in other countries (Customs territories) and if the number of loading points is still inferior to 3: **go to 2**;
 - If the loading phase is terminated and there is no unloading in the current country (Customs territory): **go to 3**;
 - If the loading phase is terminated and there is an unloading point in the current country (Customs territory) and if the number of loading points is still inferior to 3: **go to 2.1.1**.
 - 2.1.1. At the first unloading point, the intermediate Customs office of destination will terminate the current TIR operation before starting a new TIR operation (acting as Customs office of departure).
 - The maximum number of loading and unloading places is limited to 4 and when reaching 2.1.1 the number of loading and unloading is already 3. Thus, only one more unloading point is possible. The goods loaded in one country (Customs territory) cannot be unloaded in the same country (Customs territory). Therefore, the next step has to be the border: **go to 3**.
 3. The Customs office of exit (en route) of the country (Customs territory) will terminate the current TIR operation and the Customs office of entry (en route) of the following country (Customs territory) will start a new TIR operation.
 - If it is a transit country (Customs territory): **repeat 3**.
 - If it is a country (Customs territory) where an unloading will take place if the number of loading + the number of unloading points is still inferior to 4: **go to 3.1**.
 - 3.1. At the unloading point, the Customs office of destination will terminate the current TIR operation.
 - If it is the last unloading point: **END**.
 - If there are other unloading points: **go to 3.1.1**.
 - 3.1.1. At the unloading point, the Intermediate Customs office of destination will start a new TIR operation (acting as Customs office of departure).
 - If there are other unloading points in other countries (Customs territories) and if the number of loading + the number of unloading points is still inferior to 4: **go to 3**.
 - If there are other unloading points in the same country (Customs territory) and if the number of loading + the number of unloading points is still inferior to 4: **go to 3.1**.

4.3 Return and repository use case

4.3.1 Return and repository use case diagram

Figure 1.12

Return and repository use case diagram



4.3.2 Return and repository use case description

Table 1.5

Return and repository use case description

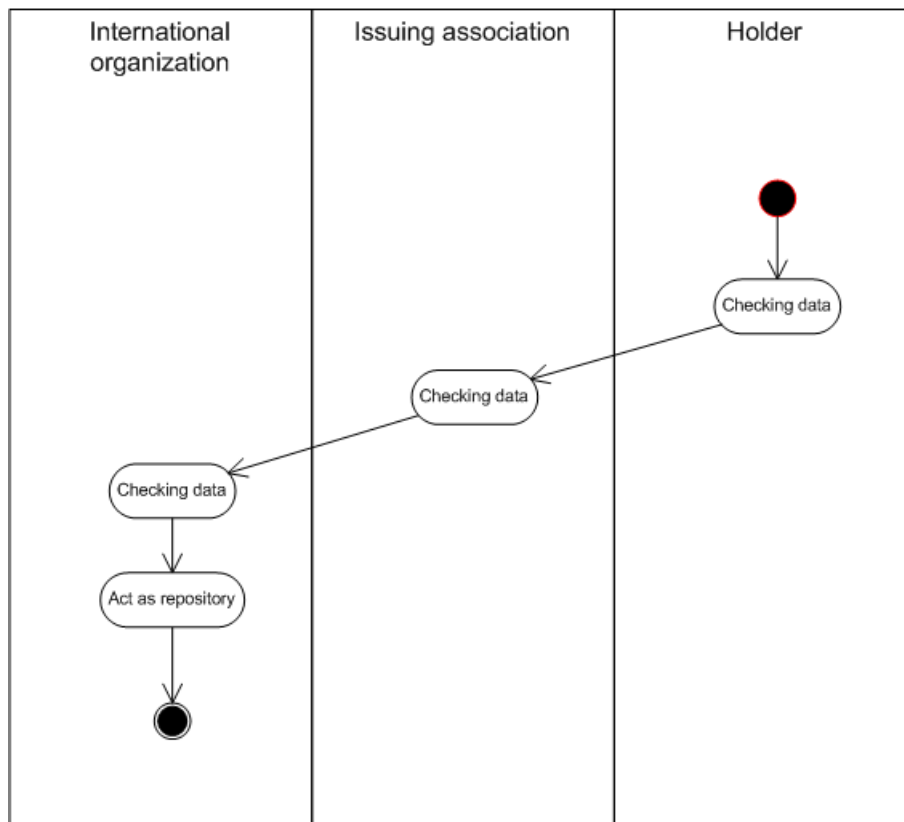
Name	Return and repository use case
Description	The TIR Carnet is sent back by the TIR Carnet holder to the international organization, via his national association, to centrally store the used or unused TIR Carnets.
Actors	TIR Carnet holder, national association, international organization.
Performance Goals	Store at a central point the evidence of the termination for the duration of the liability of the international guaranteeing chain.
Preconditions	In accordance with the TIR Carnet life cycle use case, this use case can be launched in two cases: <ul style="list-style-type: none"> - The TIR Carnet was issued to a TIR Carnet holder, who used it for a TIR Transport; - The TIR Carnet was issued to but not used by a TIR Carnet holder (usually because the TIR Carnet expired)
Postconditions	-
Scenario	After having checked the TIR Carnet, the TIR Carnet holder returns it to the national association that issued him the TIR Carnet (within the deadline fixed by the association). The national association checks whether the TIR Carnet was used properly and whether it was terminated (check of stamps against the

	<p>electronic control system maintained by the international organization). The national association returns the TIR Carnets to the international organization.</p> <p>The international organization checks the TIR Carnets and archives them. All returned TIR Carnets are physically stored at the international organization for at least the period during which its liability can be invoked according to the TIR Convention.</p>
Alternative Scenario	<p>The main scenario does not take account of the following scenarios:</p> <ol style="list-style-type: none"> 1. The TIR Carnet is lost/stolen after the TIR Transport has ended; at the premises of the holder, the national association or the international organization; 2. It may happen that the TIR Carnet is kept by Customs authorities and not returned to the TIR Carnet holder. In such case, Customs are encouraged to provide the TIR Carnet holder with the return slip which he should return to the national association.
Special requirements	-
Extension Points	-
Requirements Covered	-

4.3.3 Activity diagram of the return and repository use case

Figure 1.13

Return and repository activity diagram

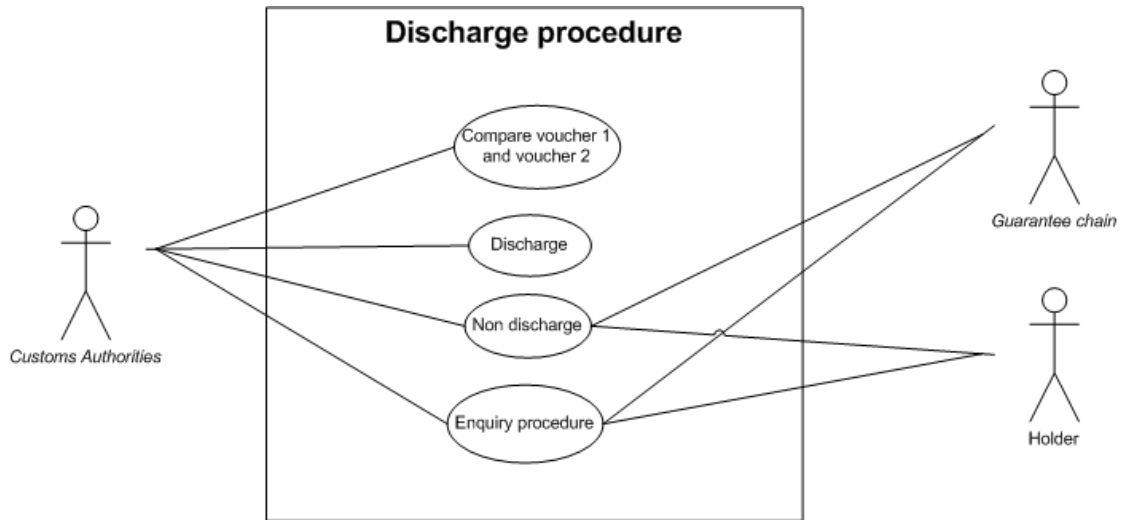


4.4 Discharge procedure use case

4.4.1 Discharge procedure use case diagram

Figure 1.14

Discharge procedure use case diagram



4.4.2 Discharge procedure use case description

Table 1.6

Discharge procedure use case description

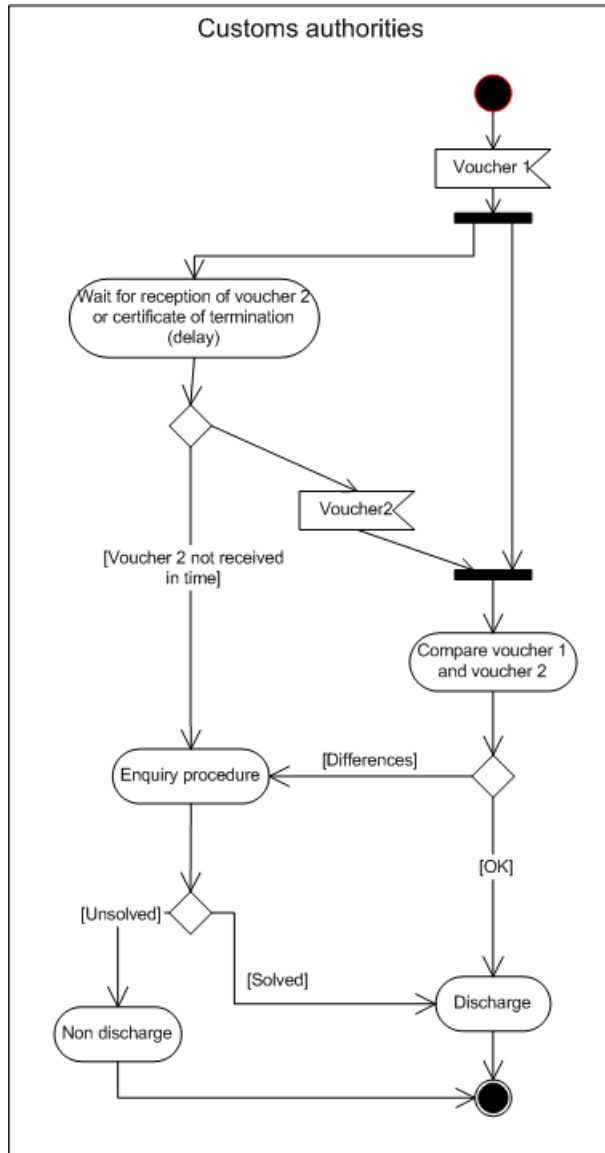
Name	The discharge procedure for a TIR operation
Description	Evaluation of the data or information available at the Customs office of destination or exit (<u>en route</u>) and those available at the Customs office of departure or entry (<u>en route</u>).
Actors	Customs authorities, Holder, Guarantee Chain
Performance Goals	Determine whether a TIR operation has been terminated correctly, in order to release the holder of his responsibilities and the national association of its guarantee.
Preconditions	This use case is launched after the start of a TIR operation.
Postconditions	-
Scenario	Once the TIR operation has been terminated, the Customs office of destination or exit (<u>en route</u>) sends back voucher No. 2 to the Customs office of departure or entry (<u>en route</u>) or to a centralized Customs office. Customs authorities compare vouchers No. 1 and No. 2 in order to establish the discharge.
Alternative Scenario	The main scenario does not take account of the following scenarios: <ol style="list-style-type: none"> 1. Instead of sending vouchers by post, an exchange of electronic messages between different Customs offices may take place; 2. In case the certificate of termination of the TIR operation has been obtained in an improper or fraudulent manner or in case no termination has taken place, neither the holder would be released of his responsibilities nor the national association of its guarantee;

Special requirements	-
Extension Points	-
Requirements Covered	-

4.4.3 Activity diagram of the discharge procedure use case

Figure 1.15

Discharge procedure activity diagram



4.4.4 Structured description of the activity diagram of the discharge use case

Two major scenarios can be envisaged depending on the national practice:

a) The discharge procedure is performed by the Customs office that has started the TIR operation; in that case the Customs office that has terminated the TIR operation sends either voucher No. 2 or the certificate of termination to the Customs office having started the TIR operation.

b) The discharge procedure is performed by a central Customs office; in that case both the Customs office that has started the TIR operation and the Customs office that has terminated the TIR operation send respectively voucher No. 1 and voucher No. 2 or the certificate of termination to a central Customs office.

Except from these differences all three scenarios are mainly similar.

1. The discharge procedure **BEGINS** when the Customs office responsible for the discharge receives voucher no. 1 duly filled-in. A deadline for the reception of voucher No. 2 is then fixed.

- If voucher No. 2 arrives before the deadline: **go to 2**

- If voucher No. 2 does not arrive before the deadline: **go to 3**

2. The information between voucher No. 1 and voucher No. 2 (or the certificate of termination) is compared.

- If the comparison leads Customs to the assumption that a Customs infringement has taken place and taxes and duties are due: **go to 3**

- If the comparison does not lead Customs to the conclusion that a Customs infringement has taken place and taxes and duties are due: **go to 4**

3. Inquiry procedures are launched:

- If the inquiry procedure concludes that a Customs infringement has not taken place and taxes and duties are not due: **go to 4**

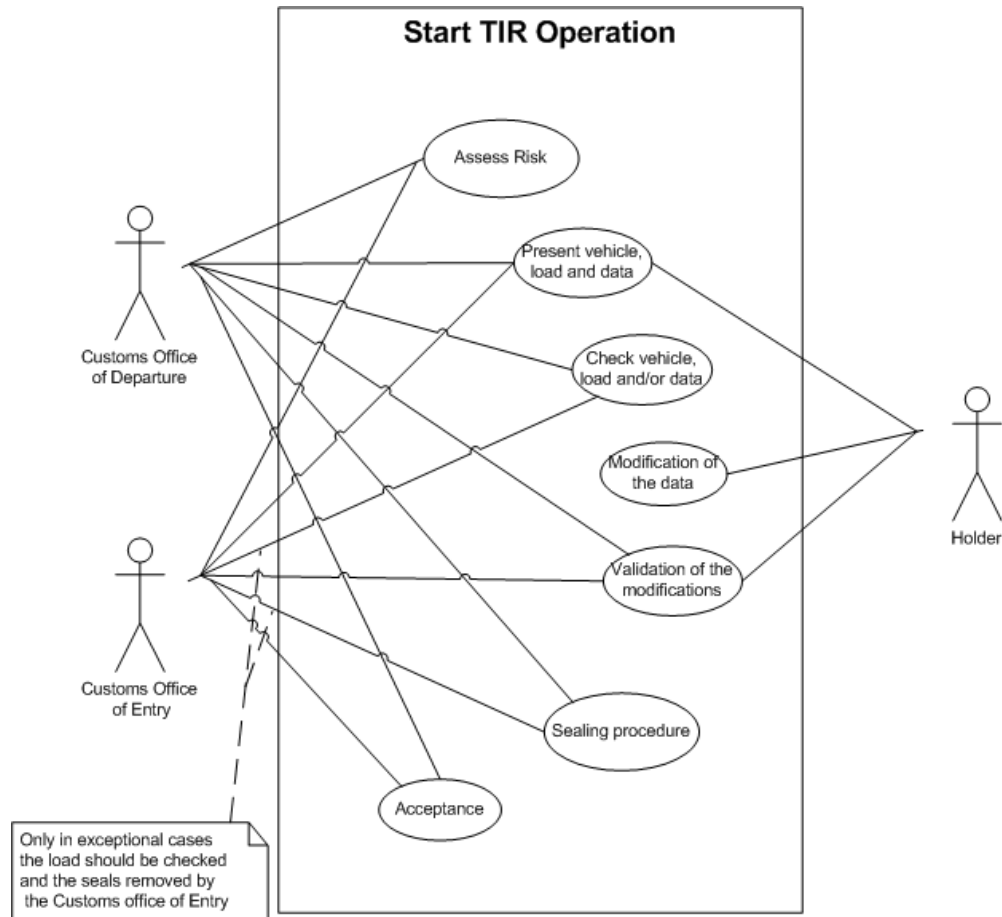
4. The TIR operation is discharged: **END**

4.5 Start TIR operation use case

4.5.1 Start TIR operation use case diagram

Figure 1.16

Start TIR operation use case diagram



4.5.2 Start TIR operation use case description

Table 1.7
Start TIR operation use case description

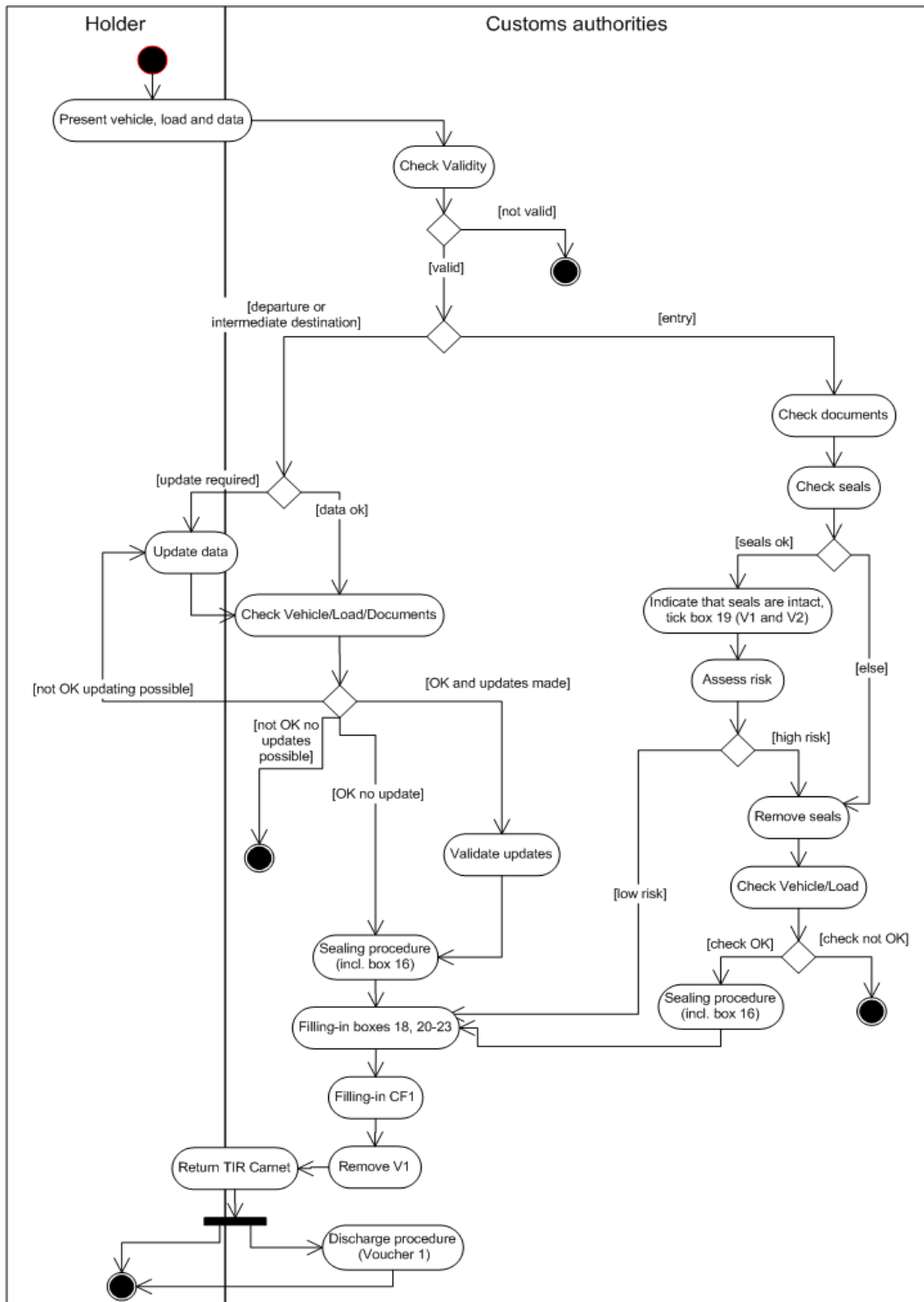
Use Case Name	Start TIR operation use case
Use Case Description	The TIR Carnet is filled-in by the TIR Carnet holder and presented with the vehicle and goods to the Customs office of departure; in continuation, TIR Carnet, vehicle and goods have to be presented at intermediate Customs offices of departure and/or Customs offices of entry (<u>en route</u>).
Actors	TIR Carnet holder, Customs authorities.
Performance Goals	Start a transit procedure in a given country (Customs territory) for a specific leg of the TIR Transport.
Preconditions	In accordance with the TIR Transport use case, this use case applies in one of the following situations: <ul style="list-style-type: none"> - At the beginning of the TIR transport: The TIR Carnet holder has provided and validated all information for the TIR transport; - In all other cases: The preceding TIR operation has been terminated.
Postconditions	In accordance with the TIR Carnet life cycle use case, this use case is followed by: <ul style="list-style-type: none"> - The termination of the TIR operation. In addition the discharge procedure is launched.
Scenario Customs office of Departure	An authorized TIR Carnet holder presents a valid and duly filled-in TIR Carnet, together with the goods and a TIR approved vehicle at the Customs office of departure. The Customs office of departure checks the data of the TIR Carnet and other accompanying documents with the load. The Customs office of departure seals the load compartment and validates the TIR Carnet by inserting the number and identification of the seals in field 16, and by applying the stamp, signature, date and name of the Customs office of departure in field 17 of all vouchers No. 1 and No. 2 of the TIR Carnet. The Customs officer completes fields 18 and 20 to 23 of the vouchers No. 1 and No. 2 corresponding to the TIR operation, completes counterfoil No. 1, removes voucher No. 1 and returns the TIR Carnet to the holder.
Scenario Customs office of entry	Upon presentation of the TIR Carnet by the holder, the Customs office of entry checks the seals and carries out a routine check of the truck and accompanying documents and may check the validity of the TIR Carnet in Cute-Wise. In exceptional cases, Customs authorities can require examination of road vehicle, combination of vehicles or containers and their load. <p>The Customs officer validates the TIR Carnet by completing fields 18 to 23 of vouchers No. 1 and No. 2 corresponding to the TIR operation, completes counterfoil No. 1, removes voucher No. 1 and returns the TIR Carnet to the holder.</p>
Scenario Intermediate Customs office of	The holder presents the TIR Carnet, together with the goods, already loaded at a previous Customs office of departure, at the intermediate Customs office(s) of departure which acts in the same way as the Customs office of departure: the Customs officer checks the data of

departure	the TIR Carnet and other accompanying documents with the load. He affixes new seals to the load compartment and validates the TIR Carnet by inscribing the number, identification of the seals in field 16, and by applying the stamp, signature, date and name of the intermediate Customs office of departure in field 17 of all vouchers No. 1 and No. 2 remaining in the TIR Carnet. He completes fields 18 and 20 to 23 of vouchers No. 1 and No. 2 corresponding to the TIR operation, completes counterfoil No. 1, removes voucher No. 1 and returns the TIR Carnet to the holder.
Alternative Scenario	The main scenarios do not take account of the following scenarios: <ul style="list-style-type: none"> a) Non validation of the TIR Carnet by Customs; b) Falsified acceptance of the TIR Carnet; c) Use of lost or stolen TIR Carnets.
Special requirements	In case of heavy and bulky goods with own identification marks, neither sealing nor a TIR approved vehicle is required. Specific identification marks will be mentioned in the TIR Carnet.
Extension Points	In the process of checking the validity of the TIR Carnet, Customs authorities may make use of information stored in the electronic control system maintained by the international organization.
Requirements Covered	

4.5.3 Activity diagram of the start TIR operation use case

Figure 1.17

Start TIR operation activity diagram



4.5.4 Structured description of the activity diagram of the start TIR operation use case

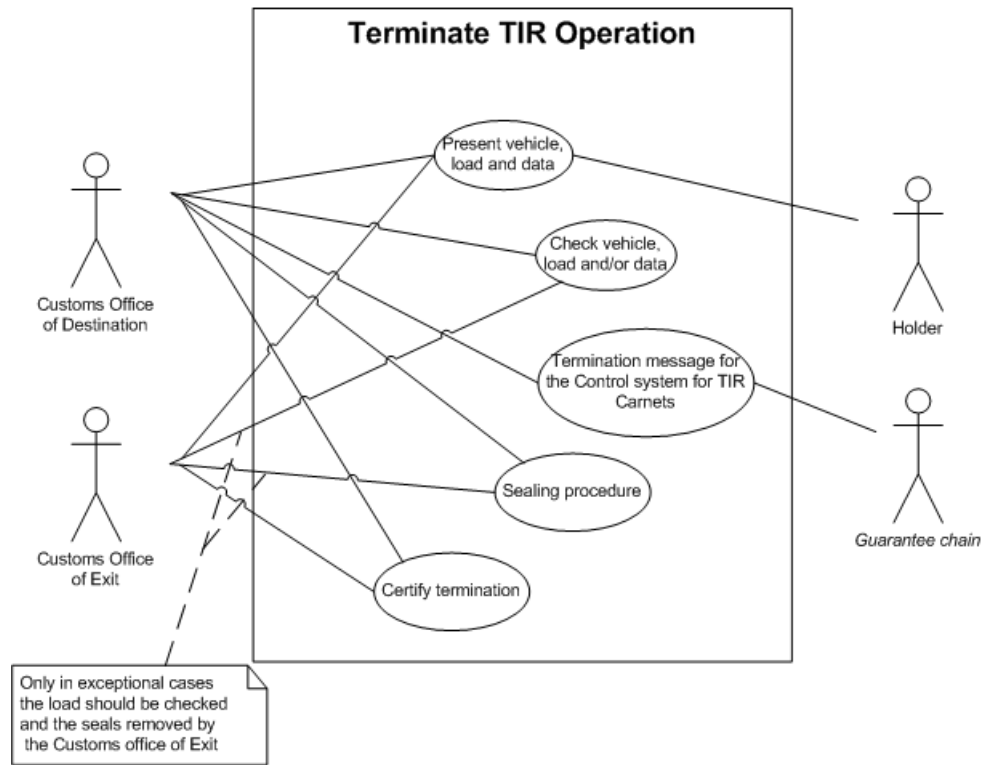
-
1. The start of a TIR operation **BEGINS** when the TIR Carnet holder presents a valid and duly filled-in TIR Carnet, together with the goods and a TIR approved vehicle at a Customs office. The Customs officer first checks the validity of the TIR Carnet and **ENDS** the procedure if the TIR Carnet is not valid.
 - If the vehicle is at a Customs office of departure or at an intermediate Customs office of destination: **go to 1.1;**
 - If the vehicle at a Customs office of entry: **go to 1.2.**
 - 1.1. If necessary, the TIR Carnet holder is requested to update the information in the TIR Carnet. The Customs office of departure checks the data of the TIR Carnet and other accompanying documents with the load.
 - If any problem is encountered: **go to 1.1.1;**
 - If checks are OK: **go to 1.1.2.**
 - 1.1.1. Update the information on the TIR Carnet.
 - If updating is possible: **go to 1.1.2.**
 - If no updating is possible: **END.**
 - 1.1.2. In case any updating in the TIR Carnet has taken place (goods, itinerary,...) the Customs officer validates those changes by applying the stamp, signature, date and name of Customs office in field 17 of all vouchers No. 1 and No. 2 remaining in the TIR Carnet. **Go to 1.1.3.**
 - 1.1.3. The Customs officer affixes (new) seals to the load compartment. He validates the TIR Carnet by inscribing the number and identification of the seals in field 16 of all vouchers No. 1 and No. 2 remaining in the TIR Carnet, **Go to 2.**
 - 1.2. The Customs officer checks the data of the TIR Carnet and other accompanying documents, as well as the seals and carries out a routine check of the truck.
 - If checks are OK: **go to 1.2.1;**
 - If checks are not OK: **go to 1.2.2**
 - 1.2.1. The Customs officer ticks box 19 on both vouchers 1 and 2 for the current operation and determines whether or not physical checking of the load is required.
 - If NO: **go to 2;**
 - If YES (exceptional cases): **go to 1.2.2.**
 - 1.2.2. The Customs officer removes the seals and checks the load and compares it with the data of the TIR Carnet and other accompanying documents.
 - If everything is OK: **go to 1.1.3;**
 - If any problem is encountered: **END.**
 2. - The Customs officer completes fields 18 and 20 to 23 of both vouchers No. 1 and No. 2 corresponding to the TIR operation,
 - he completes counterfoil No. 1,
 - he removes voucher No. 1,
 - he returns the TIR Carnet to the holder,
 - he keeps or transmits the voucher number 1 for the discharge procedure: **END.**
-

4.6 Terminate TIR operation use case

4.6.1 Terminate TIR operation use case diagram

Figure 1.18

Terminate TIR operation use case diagram



4.6.2 *Terminate TIR operation use case description*

Table 1.8

Terminate TIR operation use case description

Name	Terminate TIR operation use case
Description	The road vehicle, the combination of vehicles or the container with the goods and the TIR Carnet are presented for purposes of control to the Customs office of exit, destination or to the intermediate Customs office of departure (playing the role of a Customs office of exit or destination ¹).
Actors	TIR Carnet holder, Customs authorities, Guarantee chain.
Performance Goals	Terminate the transit procedure in a given country (Customs territory) for a specific leg of the TIR Transport.
Preconditions	In accordance with the TIR Transport use case, this use case can be launched only after the start of the TIR operation.
Postconditions	A termination message is sent to the control system for TIR Carnets Voucher N°2 or the certificate of termination is sent to the office in charge of the discharge of the TIR operation
Scenario 1	<p>Terminate TIR operation at the Customs office of exit en route:</p> <p>The holder presents the road vehicle, the goods and the TIR Carnet to the Customs Office of exit (<u>en route</u>) for purposes of control. The Customs officer checks the validity of the TIR Carnet, checks the integrity of the sealing devices, seals and their number against the seals' number mentioned in the TIR Carnet.</p> <p>The Customs officer may also examine all parts of the vehicle in addition to the sealed load compartment (Explanatory Note 0.21-1 to Article 21 of the TIR Convention).</p> <p>The Customs officer may exceptionally carry out an examination of the goods, particularly when an irregularity is suspected (Art. 5 par. 2 of the TIR Convention). In case of examination of the load of a road vehicle, combination of vehicles or the container, the Customs Officer affixes new seals and records on the TIR Carnet vouchers used in that Contracting Party, on the corresponding counterfoils, and on the vouchers remaining in the TIR Carnet, particulars of the new seals affixed and of the controls carried out (Art. 24 of the TIR Convention).</p> <p>If the checks are not satisfactory to the Customs officer, because he notices any irregularity in connection with the TIR operation itself, he may certify the termination of this TIR operation with reservation. In this case, the Customs officer completes field 24 of the appropriate detachable green sheet of voucher No. 2 by inscribing the name of the Customs office of exit (<u>en route</u>), crosses out box 25 (or does not cross out box 25, if the reason for the reservation is that seals or identification marks were indeed not found to be intact), completes field 27 by placing an "R" and fills-in field 28 by putting a stamp, date and a signature. Then the Customs officer completes accordingly the corresponding green counterfoil namely by inscribing the name of the Customs office of exit (<u>en route</u>) in field 1, crossing out box 2 (or does not cross out box 2, if the reason for the reservation is that seals or identification marks were</p>

¹ The procedure to terminate the TIR operation at an intermediate office of departure is slightly different than at Customs offices of exit or destination.

indeed not found to be intact), repeating “R” under item 5 inscribing the reason why the TIR operation is terminated with reservation, and completing field 6 by putting the Customs stamp, date and signature.

If the checks are satisfactory to the Customs officer, he completes field 24 of the appropriate detachable green sheet of voucher No. 2 of the TIR Carnet by inscribing the name of the Customs office of exit (en route), crosses out box 25 and completes field 28 by putting a stamp, date and a signature. Then the Customs officer completes accordingly the corresponding green counterfoil namely by inscribing the name of the Customs office of exit (en route) in field 1, crossing out box 2 and completing field 6 by putting the Customs stamp, date and signature.

After completing voucher and counterfoil number 2 with or without reservation, the Customs officer removes the green voucher number 2 of the TIR Carnet, and returns the TIR Carnet to the holder. The TIR operation is now terminated (Art. 1 lit. d of the TIR Convention). The Customs officer further tears off the detachable green sheet of voucher No. 2 of the TIR Carnet.

Scenario 2

Terminate TIR operation at the Customs office of destination:

The holder presents the road vehicle, the goods and the TIR Carnet to the Customs Office of destination for purposes of control. The Customs officer checks the validity of the TIR Carnet, checks the integrity of the seals and their number against the seals’ number mentioned in the TIR Carnet.

The Customs officer may also examine all parts of a vehicle in addition to the sealed load compartment (Explanatory Note 0.21-1 to Article 21 of the TIR Convention).

The Customs officer takes the seals off and checks the goods.

If the checks are not satisfactory to the Customs Officer because he noticed some irregularities connected with the TIR operation itself, he may certify the termination of this TIR operation with reservation. In this case, the Customs officer completes field 24 of the appropriate detachable green sheet of voucher No. 2 of the TIR Carnet by inscribing the name of the Customs office of destination, crosses out box 25 (or does not cross out box 25, if the reason for the reservation is that seals or identification marks were indeed not found to be intact), inscribes the number of packages for which the termination of the TIR operation is certified in field 26, completes field 27 by placing an “R” and fills-in field 28 by putting a stamp, date and a signature. Then the Customs officer completes accordingly the corresponding green counterfoil namely by inscribing the name of the Customs office of destination in field 1, crossing out box 2 (or does not cross out box 2, if the reason for the reservation is that seals or identification marks were indeed not found to be intact), inscribing the number of packages for which the termination of the TIR operation is certified in field number 3, repeating “R” under item 5 inscribing the reason why the TIR operation is terminated with Reservation, and completing field 6 by putting the Customs stamp, date and signature.

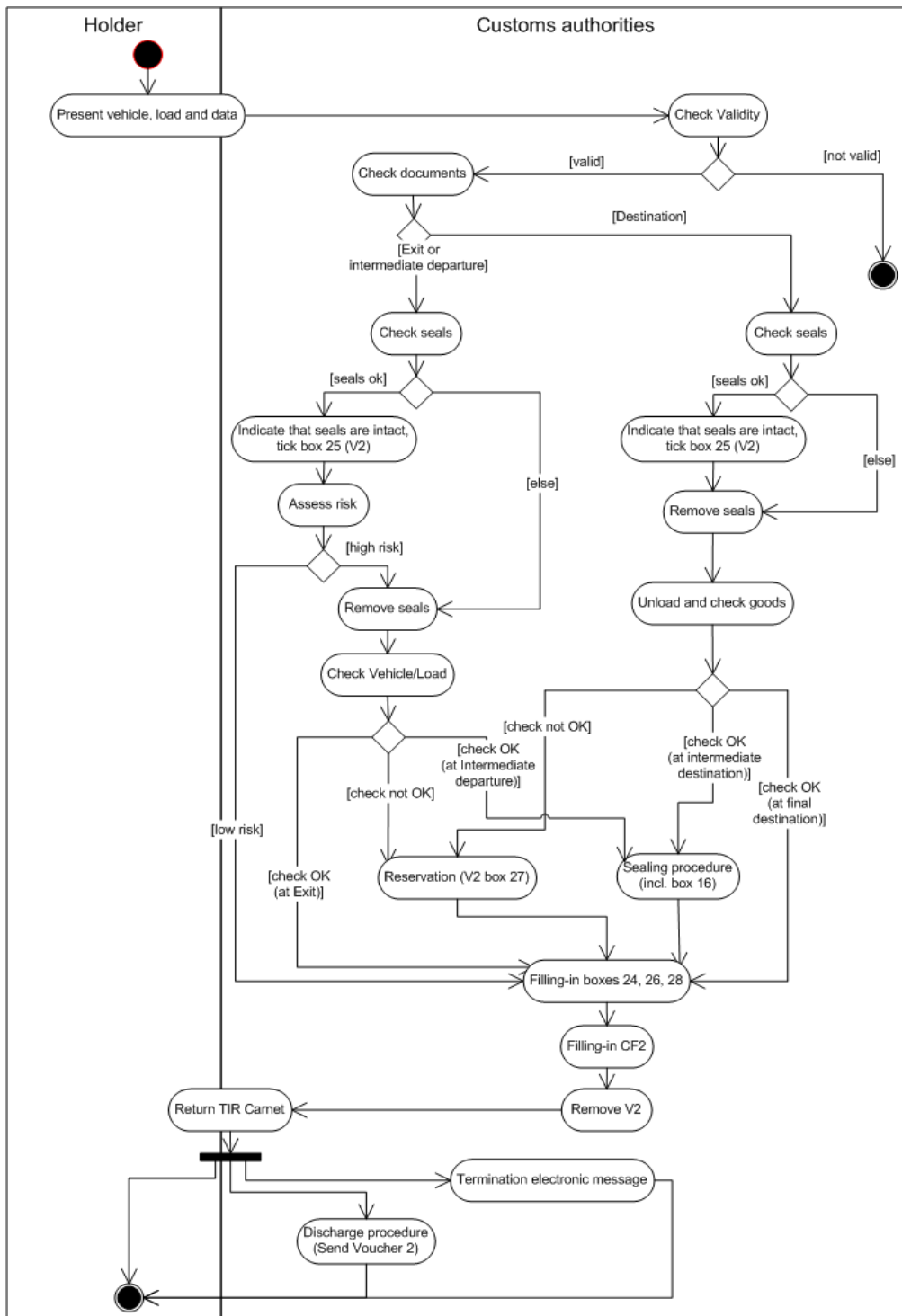
If the checks are satisfactory to the Customs officer, he completes field 24 of the appropriate detachable green sheet of voucher No. 2 of the TIR Carnet by inscribing the name of the Customs office of destination, crosses out box 25, inscribes the number of packages for which the termination of the TIR operation is certified in field 26 and completes field 28 by putting a stamp, date and a signature. Then the Customs officer completes accordingly the corresponding green counterfoil namely by inscribing the name of the Customs office of destination in

	<p>field 1, crossing out box 2, inscribing the number of packages for which the termination of the TIR operation is certified in field number 3, and completing field 6 by putting the Customs stamp, date and signature.</p> <p>After completing voucher and counterfoil No. 2 with or without reservation, the Customs officer removes the green voucher No. 2 of the TIR Carnet and returns the TIR Carnet to the holder. The Customs officer further tears off the detachable green sheet of voucher No. 2 of the TIR Carnet, keeps the upper part of the green voucher number 2 at the Customs office of destination.</p> <p>The TIR operation is now terminated (Art. 1(d) of the TIR Convention). The Customs office of destination sends the SafeTIR message confirming the correct termination of the TIR operation at the Customs office of destination to the competent national guaranteeing association.</p> <p>The Customs officer sends the detachable green sheet to the Customs office of entry (en route).</p>
Scenario 3	<p>Intermediate Customs office of destination</p> <p>In case a TIR transport consists of various part loads, one or two TIR operations will be terminated at intermediate Customs offices of destination. Such Customs office will play both the role of Customs office of destination (see scenario 2) as well as of Customs office of departure (see also: Use Case 4.5.)</p>
Alternative Scenario	<p>The main scenarios do not take account of the following scenarios:</p> <ol style="list-style-type: none"> 1. Non validation of the TIR Carnet by Customs; 2. Falsified acceptance of the TIR Carnet; 3. Use of lost or stolen TIR Carnets
Special requirements	<p>Goods which have arrived at their Customs office of destination are no longer under the TIR regime. Therefore, they are put under another Customs regime.</p>
Extension Points	<p>In the process of checking the validity of the TIR Carnet, Customs authorities may make use of information stored in the electronic control system maintained by the international organization.</p>
Requirements Covered	<p>-</p>

4.6.3 Activity diagram of the terminate TIR operation use case

Figure 1.19

Terminate TIR operation activity diagram



4.6.4 Structured description of the activity diagram of the terminate TIR operation use case

1. The termination of a TIR operation **BEGINS** when the TIR Carnet holder presents a valid and duly filled-in TIR Carnet, together with the goods and a TIR approved vehicle at a Customs office (exit, destination or intermediate office of departure). The Customs officer may first check the validity of the TIR Carnet and **END** the procedure if the TIR Carnet is not valid.

The Customs officer may also examine all parts of the vehicle in addition to the sealed load compartment (Explanatory Note 0.21-1 to Article 21 of the TIR Convention).

- Customs of destination: **go to 1.1;**

- Customs of exit or intermediate departure: **go to 1.2;**

1.1. The Customs officer checks the integrity of all seals and their number against the seals' number(s) mentioned in the TIR Carnet

- If seals are OK: **go to 1.1.1;**

- If seals are not OK: **go to 1.1.2.**

1.1.1. Indicate that seals were intact by ticking box 25 in voucher N°2; **Go to 1.1.2.**

1.1.2. The Customs officer takes the seals off and checks the goods

- If checks are OK at intermediate Customs office of destination: **go to 1.2.2.1;**

- If checks are OK at final Customs office of destination: **go to 3;**

- If checks are not OK: **go to 2.**

1.2. The Customs officer checks the integrity of all seals and their number against the seals' number(s) mentioned in the TIR Carnet

- If seals are OK: **go to 1.2.1;**

- If seals are not OK: **go to 1.2.2.**

1.2.1. The Customs officer indicates that seals are intact by ticking box 25 in voucher N°2; he determines whether or not physical checking of the load is required:

- If YES: **go to 1.2.2;**

- If NO: **go to 3.**

1.2.2. The Customs officer removes the seals and checks the load and vehicle.

- If everything is OK at Customs office if exit: **go to 1.2.2.1;**

- If everything is OK at intermediate Customs office of departure: **go to 3;**

- If a problem is encountered: **go to 2.**

1.2.2.1. The Customs officer affixes new seals and records on the TIR Carnet vouchers used in that Contracting Party, on the corresponding counterfoils, and on the vouchers remaining in the TIR Carnet, particulars of the new seals affixed and of the controls carried out (Art. 24 of the TIR Convention): **go to 3.**

2. The Customs certifies the termination of the TIR operation with reservation. In this case, the Customs officer completes field 27 by placing an "R": **go to 3.**

3. - The Customs officer completes fields 24, 26 and 28 of voucher No. 2 corresponding to the TIR operation;

- he completes counterfoil No. 2;

- he removes voucher No. 2;

- he returns the TIR Carnet to the holder;

- he also should send an electronic message to the control system for TIR Carnets;

- and finally send a termination message to the discharge office (see discharge use case for details): **END.**

5 Entity classes

Entity classes describe “things” representing characteristics within the TIR procedure, which can take on a certain value or responsibility. Examples of entity classes are persons, places, concepts or situations.

In the TIR procedure, the following classes have been identified:

- International Organization
 - Issuing Association
 - Guaranteeing Association
- Road Vehicle
- Sealed loading unit
 - Load compartment
 - Container
- TIR transport
- TIR operation
- Goods Manifest Line Item
- Customs office
- Country
- TIR Carnet holder

6 High-level class diagram

6.1 High-level class diagram description

The following diagrams are sub parts of the complete high-level class diagram shown in Chapter. This subdivision aims at simplifying the explanation by focusing on a specific class at a time, describing its particularities and analyzing its relations with other classes.

In order to fully understand its complexity, the following diagrams reflect the various parts of the high-level class diagram of Figure 1.30, as seen from the perspective of its main classes.

6.1.1 International organization

Figure 1.20

International organization class and its relationships

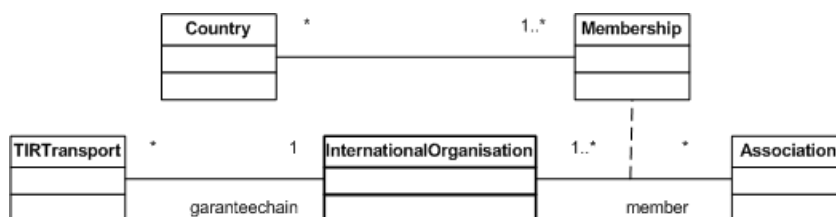


Table 1.9

International organization sub class diagram description

Name	International organization sub class diagram
Description	Sub part of the high-level class diagram presenting the international organization class and all relations with other classes.
Central Class	International organization
Example instance of the central class	<ul style="list-style-type: none"> ○ IRU ○ ...
Associated Classes	TIR transport, association
Associations and constraints	<p>The international organization organizes and ensures the proper functioning of the guarantee chain for a TIR transport. A TIR transport can be associated to one and only one international organization. The international organization can represent the guarantee chain for an unlimited number of transports. (Req. 1)</p> <p>The international organization has member associations. The membership is associated to at least one country. An association has to be member of at least one international organization. An international organization can have any number of member associations. A membership can be associated to various countries (e.g. FEBETRA –IRU has a membership valid for Belgium and Luxembourg) and one country can be covered by various memberships. (Req. 2)</p>
Requirements Covered	1 and 2

6.1.2 Association

Figure 1.21

Association class and its relationships

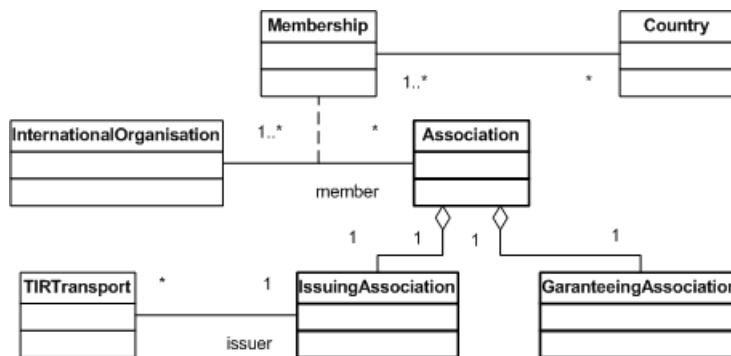


Table 1.10

Association sub class diagram description

Name	Association sub class diagram
Description	Sub part of the high-level class diagram presenting the association class and all relations with other classes.
Central Class	Association

Example instance of the central class	<ul style="list-style-type: none"> ○ FEBETRA ○ BGL ○ ...
Associated Classes	TIR transport, international organization
Associations and constraints	<p>An association has two roles represented by the subdivision of the association into its issuing role (the issuing association), responsible of the issuance of TIR Carnets to the TIR Carnet holders, and its guaranteeing role (the guaranteeing association), representing the guarantee chain in its national territory. The two roles cannot be disconnected. (Req. 3)</p> <p>The international organization has member associations. The membership is associated to at least one country. An association has to be member of at least one international organization. An international organization can have any number of member associations. A membership can be associated to various countries (e.g. FEBETRA –IRU has a membership valid for Belgium and Luxembourg) and one country can be covered by various memberships. (Req. 2)</p> <p>The issuing association issues TIR Carnets for TIR transports. One and only one issuing association is issuing the TIR Carnet for a TIR transport. The issuing association can issue TIR Carnets for numerous TIR transports. (Req. 4)</p>
Requirements Covered	2, 3 and 4

6.1.3 Road vehicle

Figure 1.22

Road vehicle class and its relationships



Table 1.11

Road vehicle sub class diagram description

Name	Road vehicle sub class diagram
Description	Sub part of the high-level road vehicle class diagram presenting the class and all relations with other classes.
Central Class	Road vehicle
Example instance of the central class	<ul style="list-style-type: none"> ○ Road tractor (Brand W, Model X, Chassis ref. Number Y, Plates ZZZZ) ○ Semi-Trailer (Brand M, Model N, Chassis ref. Number O, Plates PPPP) ○ ...
Associated Classes	Load compartment, TIR transport
Associations and constraints	A road vehicle can serve in numerous TIR transports. A TIR transport is performed by means of one or many road vehicles.

	(Req. 6)
	A road vehicle is composed of zero or many load compartments. A load compartment is part of a single road vehicle. (Req. 7)
Requirements Covered	6 and 7

6.1.4 Sealed loading unit

Figure 1.23

Sealed loading unit class and its relationships

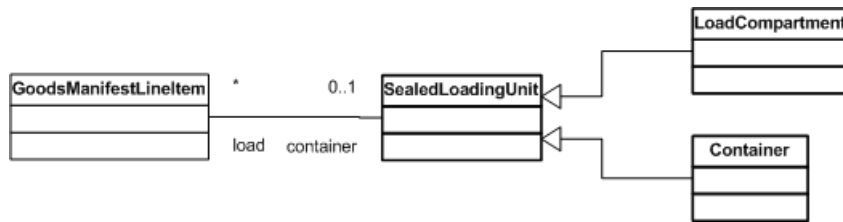


Table 1.12

Sealed loading unit sub class diagram description

Name	Sealed loading unit sub class diagram
Description	Sub part of the high-level class diagram presenting the sealed loading unit class and all relations with other classes.
Central Class	Sealed loading unit
Example instance of the central class	<ul style="list-style-type: none"> ○ Container n° xxxxxxxxx ○ Load compartment of road vehicle of brand W, model X, chassis ref. Number Y and Plates ZZZZ approved for transports under customs seals. ○ ...
Associated Classes	Goods Manifest Line Item
Associations and constraints	<p>A sealed loading unit is a generalization of a container and a load compartment of a road vehicle. (Req. 8)</p> <p>A sealed loading unit can contain numerous loads, mentioned in the TIR Carnet as Goods Manifest Line Items. The goods described in the Goods Manifest Line Item are contained in one and only one sealed loading unit. In case of heavy and bulky goods (HBG), the goods described in the Goods Manifest Line Item may not be contained in a sealed loading unit. (Req. 9)</p>
Requirements Covered	8 and 9

6.1.5 TIR transport

Figure 1.24

TIR transport class and its relationships

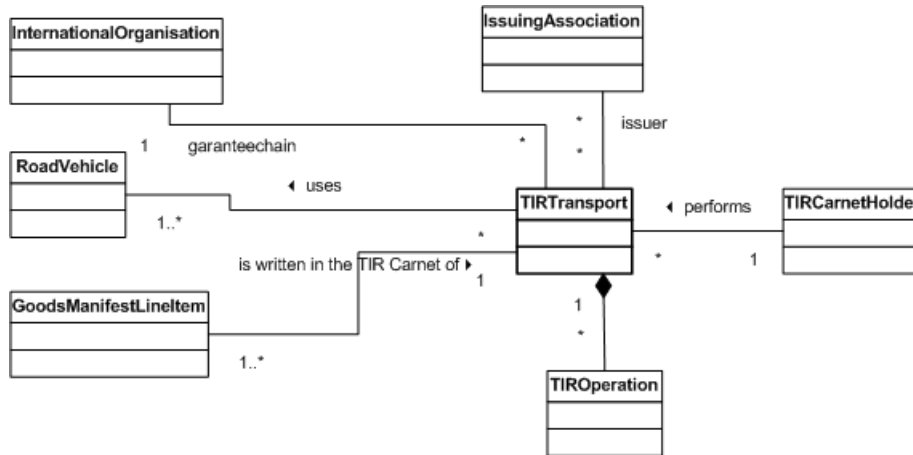


Table 1.13

TIR transport sub class diagram description

Name	TIR transport sub class diagram
Description	Sub part of the high-level class diagram presenting the TIR transport class and all relations with other classes.
Central Class	TIR transport
Example instance of the central class	<ul style="list-style-type: none"> ○ Transport of 2000kg of chocolate from Geneva to Moscow under cover of the TIR Carnet No. XC38000000. ○ Transport of 100 computers from Ankara to Madrid under cover of the TIR Carnet No. XC38999999. ○ ...
Associated Classes	International organization, issuing association, road vehicle, TIR operation, Goods Manifest Line Item, TIR Carnet holder.
Associations and constraints	<p>The international organization organizes and ensures the proper functioning of the guarantee chain for a TIR transport. A TIR transport can be associated to one and only one international organization. The international organization can represent the guarantee chain for an unlimited number of transports. (Req. 1)</p> <p>The issuing association issues TIR Carnets for TIR transports. One and only one issuing association is issuing the TIR Carnet for a TIR transport. The issuing association can issue TIR Carnets for numerous TIR transports. (Req. 4)</p> <p>A road vehicle can serve in numerous TIR transports. A TIR transport is performed by means of one or many road vehicles. (Req. 6)</p> <p>A TIR transport is composed of TIR operations. The number of TIR operations within a TIR transport is at the moment limited to ten with the current paper system and has a minimum of two (these limitations should be extensible; therefore, two to many is more advisable). A TIR operation is part of one and only one TIR transport. (Req.10)</p>

	A Goods Manifest Line Item is associated to one and only one TIR transport. A TIR transport can have from one to many Goods Manifest Line Items. (Req.11)
	A TIR transport is performed by one and only one TIR Carnet holder. A TIR Carnet holder can perform any number of TIR transports. (Req. 12)
Requirements Covered	1,4,6,10,11 and 12

6.1.6 TIR operation

Figure 1.25

TIR operation class and its relationships

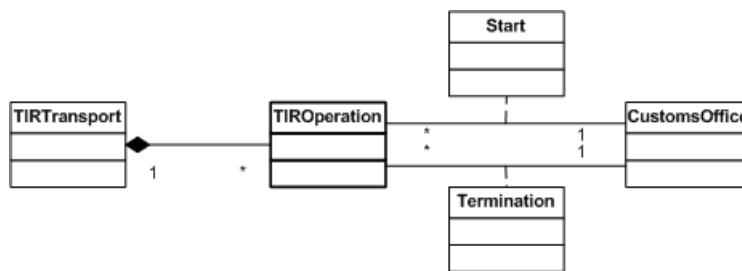


Table 1.14

TIR operation sub class diagram description

Name	TIR operation sub class diagram
Description	Sub part of the high-level class diagram presenting the TIR operation class and all relations with other classes.
Central Class	TIR operation
Example instance of the central class	<ul style="list-style-type: none"> ○ A transit operation through Switzerland under cover of TIR Carnet N° XC380000XX starting in Geneva and terminated in Basel. ○ The first operation of a TIR transport under cover of TIR Carnet N° XC380000YY, starting in Moscow and terminated at the border point with Finland in Vyborg. ○ ...
Associated Classes	TIR transport, Customs office
Associations and constraints	<p>A TIR transport is composed of TIR operations. The number of TIR operations within a TIR transport is at the moment limited to ten with the current paper system and has a minimum of two (these limitations should be extensible; therefore, two to many is more advisable). A TIR operation is part of one and only one TIR transport. (Req.10)</p> <p>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. (Req. 13)</p>
Requirements Covered	10, 13

6.1.7 Goods Manifest Line Item

Figure 1.26

Goods Manifest Line Item class and its relationships

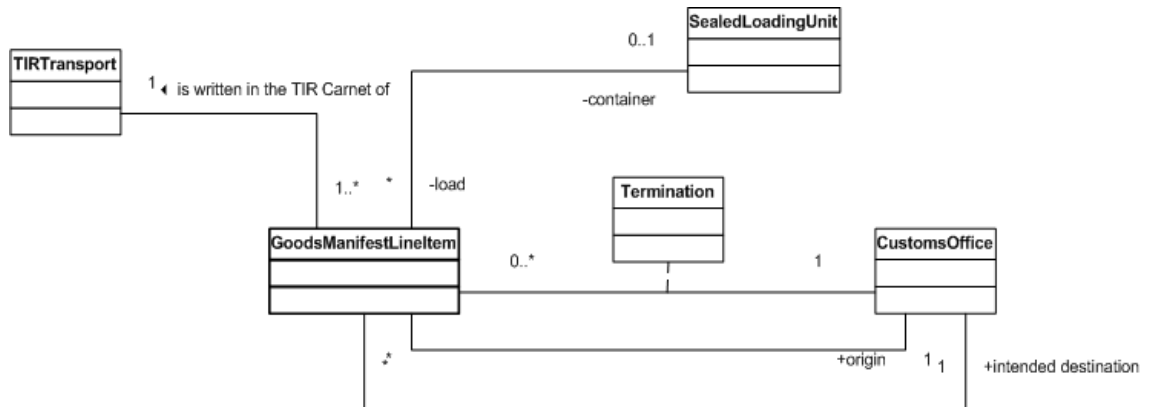


Table 1.15

Goods Manifest Line Item sub class diagram description

Name	Goods Manifest Line Item sub class diagram
Description	Sub part of the high-level class diagram presenting the Goods Manifest Line Item class and all relations with other classes.
Central Class	TIR consignment element
Example instance of the central class	<ul style="list-style-type: none"> ○ 200 kg of chocolate loaded in Geneva transported under cover of TIR Carnet N° XC380000ZZ with destination Budapest. ○ 10 cars loaded in Turin transported under cover of TIR Carnet N° XC380000VV with destination Budapest. ○ ...
Associated Classes	Sealed loading unit, Customs office, TIR Transport
Associations and constraints	<p>A sealed loading unit can contain numerous loads, mentioned in the TIR Carnet as Goods Manifest Line Items. The goods described in the Goods Manifest Line Item are contained in one and only one sealed loading unit. In case of heavy and bulky goods (HBG), the goods described in the Goods Manifest Line Item may not be contained in a sealed loading unit. (Req. 9)</p> <p>A Goods Manifest Line Item is associated to one and only one TIR transport. A TIR transport can have from one to many Goods Manifest Line Item. (Req. 11)</p> <p>The goods described in one single Goods Manifest Line Item arrive at and have their termination certified by one and only one Customs office. A Customs office can “terminate” any number of goods described in Goods Manifest Line Items. (Req.14)</p> <p>A Goods Manifest Line Item has one and only one intended Customs office of destination. A Customs office can be the intended destination of numerous Goods Manifest Line Items. (Req. 15)</p> <p>The goods described in a Goods Manifest Line Item are loaded at a single Customs office of departure. A Customs office can be the departure for any number of goods described in Goods Manifest Line Items. (Req.17)</p>

Requirements Covered	9, 11, 14,15 and 17
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6.1.8 Customs office

Figure 1.27

Customs office class and its relationships

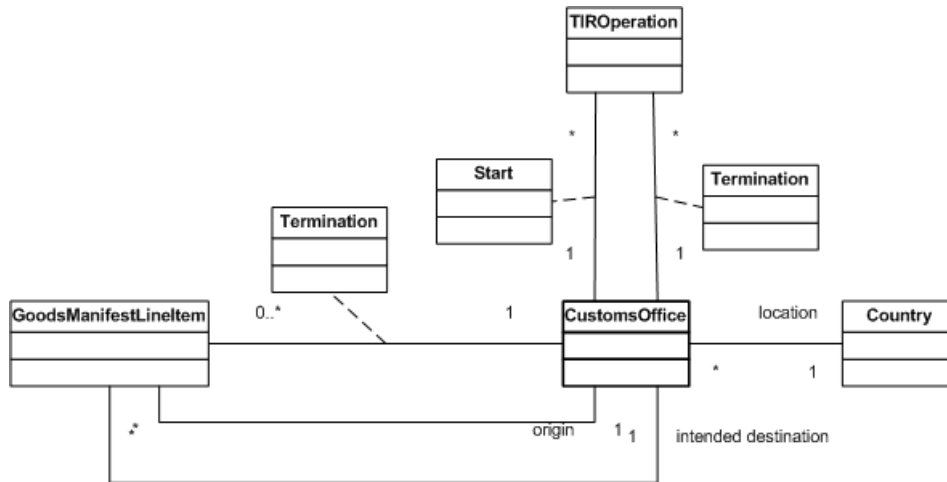


Table 1.16

Customs office sub class diagram description

Name	Customs office sub class diagram
Description	Sub part of the high-level class diagram presenting the Customs office class and all relations with other classes.
Central Class	Customs office
Example instance of the central class	o ??
Associated Classes	TIR operation, Goods Manifest Line Item, Country
Associations and constraints	<p>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. (Req. 13)</p> <p>The goods described in one single Goods Manifest Line Item arrive at and have their termination certified by one and only one Customs office of destination. A Customs office can “terminate” any number of goods described in Goods Manifest Line Items. (Req.14)</p> <p>A Goods Manifest Line Item has one and only one intended Customs office of destination. A Customs office can be the intended destination of numerous goods described in Goods Manifest Line Items. (Req. 15)</p> <p>The goods described in a Goods Manifest Line Item are loaded at a single Customs office of departure. A Customs office can be the departure for any number of goods described in Goods Manifest Line Items. (Req.17)</p> <p>A Customs office is located in one and only one Contracting Party. A Contracting Party can have any number of Customs</p>

	offices. (Req. 18)
Requirements Covered	13,14, 15,17 and 18

6.1.9 Country

Figure 1.28

Country class and its relationships

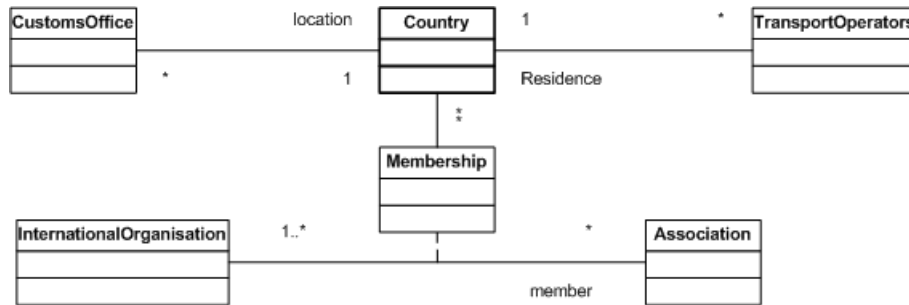


Table 1.17

Country sub class diagram description

Name	Country sub class diagram
Description	Sub part of the high-level class diagram presenting the country class and all relations with other classes.
Central Class	Country
Example instance of the central class	<ul style="list-style-type: none"> ○ Switzerland ○ Luxembourg ○ ...
Associated Classes	Membership (international organization and association), Customs office, transport operator
Associations and constraints	<p>The international organization has member associations. The membership is associated to at least one country. An association has to be member of at least one international organization. An international organization can have any number of member associations. A membership can be associated to various countries (e.g. FEBETRA –IRU has a membership valid for Belgium and Luxembourg) and one country can be covered by various memberships. (Req. 2)</p> <p>A Customs office is located in one and only one Contracting Party. A Contracting Party can have any number of Customs offices (Req. 18)</p> <p>A transport operator is established in one and only one Contracting Party. A Contracting Party can be the residence of numerous transport operators. (Req. 19)</p>
Requirements Covered	2, 18 and 19

6.1.10 TIR Carnet Holder

Figure 1.29

Transport operator class and its relationships

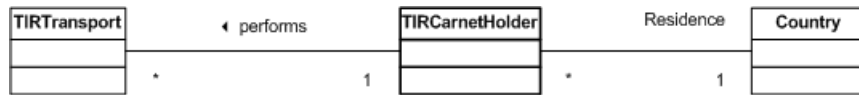


Table 1.18

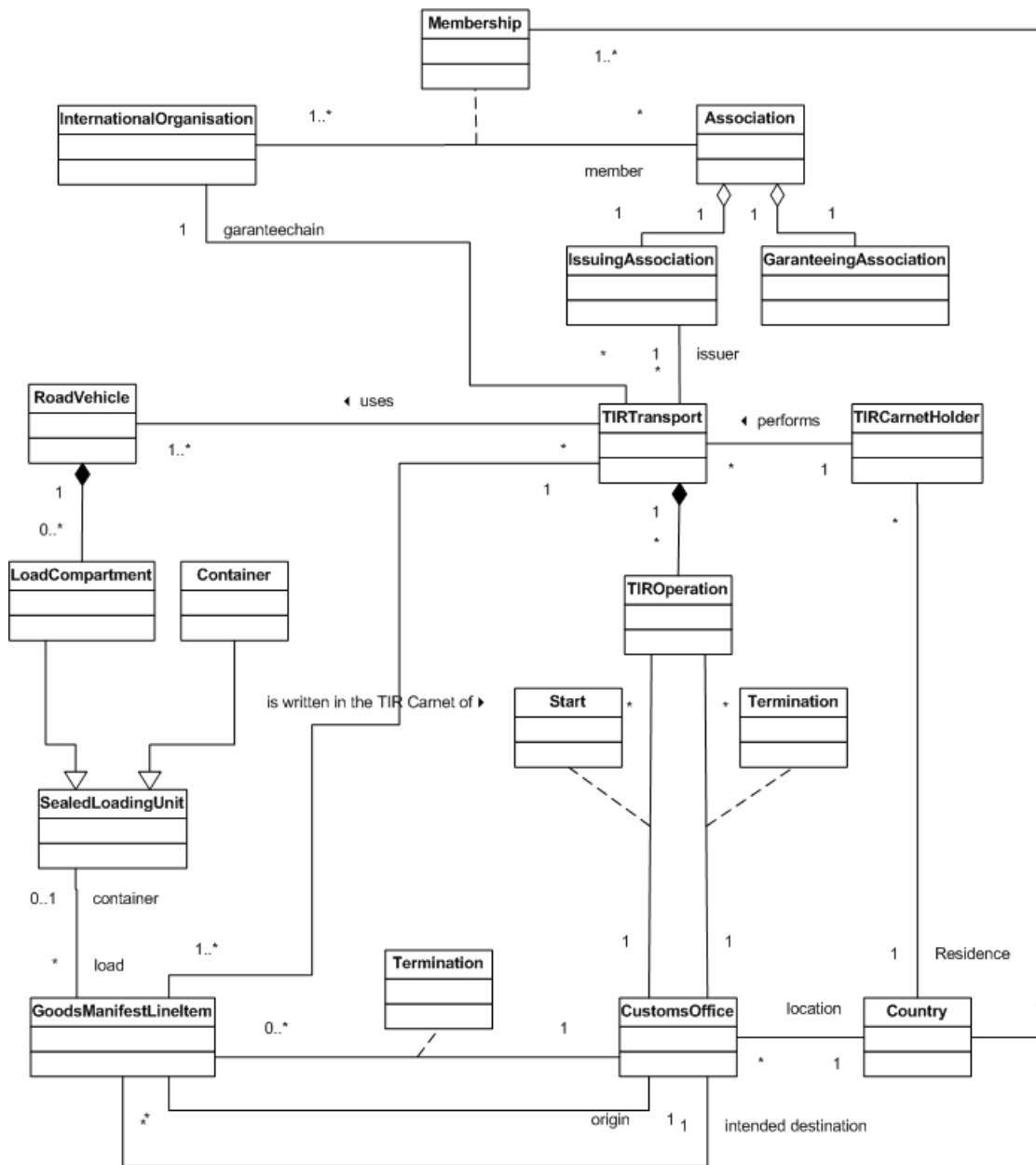
Transport operator sub class diagram description

Name	TIR Carnet Holder sub class diagram
Description	Sub part of the high-level class diagram presenting the transport operator class and all relations with other classes.
Central Class	TIR Carnet Holder
Example instance of the central class	<ul style="list-style-type: none"> ○ THALMANN TRANSPORTE AG ○ RAB-TRANS - Sp.z o.o. ○ ...
Associated Classes	TIR transport, country
Associations and constraints	<p>A TIR transport is performed by one and only one TIR Carnet holder. A TIR Carnet holder can perform any number of TIR transports. (Req. 12)</p> <p>A transport operator is established in one and only one Contracting Party. A Contracting Party can be the residence of numerous transport operators. (Req. 19)</p>
Requirements Covered	12 and 19

6.2 High-level class diagram

Figure 1.30

High-level class diagram



Annex I

Requirements list

The requirements list provides an artefact for storing discrete, measurable business requirements and constraints. As requirements and constraints are discovered in performing the modelling steps they are added to this running list by the secretariat. Note: requirements shall be referenced in all modelling artefacts, and if necessary, each requirement should reference modelling artefact(s) that are based on it.

<i>Req. #</i>	<i>Statement</i>	<i>Source</i>	<i>Date</i>	<i>Status</i>
1	The international organization organizes and ensures the proper functioning of the guarantee chain for a TIR transport. A TIR transport can be associated to one and only one international organization. The international organization can represent the guarantee chain for an unlimited number of transports.	ExG Warsaw	28-29 June 2004	Used in 6
2	The international organization has member associations. The membership is associated to at least one country. An association has to be member of at least one international organization. An international organization can have any number of member associations. A membership can be associated to various countries (e.g. FEBETRA –IRU has a membership valid for Belgium but also for Luxembourg) and one country can be covered by various memberships.	ExG Warsaw	28-29 June 2004	Used in 6
3	An association has two roles represented by the subdivision of the association into its issuing role (issuing association), responsible for the issuance of TIR Carnets to the TIR Carnets holders, and its guaranteeing role (guaranteeing association), representing the guarantee chain in its national territory. The two roles cannot be disconnected	ExG Warsaw	28-29 June 2004	Used in.6
4	The issuing association issues TIR Carnets for TIR transports. One and only one issuing association is issuing the TIR Carnet for a TIR transport. The issuing association can issue TIR Carnets for numerous TIR transports.	ExG Warsaw	28-29 June 2004	Used in 6
5	Deleted			
6	A road vehicle can serve in numerous TIR transports. A TIR transport is performed by means of one or many road vehicles.	ExG Warsaw	28-29 June 2004	Used in 6
7	A road vehicle is composed of zero or many load compartments. A load compartment is part of a single road vehicle.	ExG Warsaw	28-29 June 2004	Used in 6
8	A sealed loading unit is a generalization of a container and a load compartment of a road	ExG Warsaw	28-29 June	Used in 1.6

<i>Req. #</i>	<i>Statement</i>	<i>Source</i>	<i>Date</i>	<i>Status</i>
	vehicle.		2004	
9	A sealed loading unit can contain numerous loads, mentioned in the TIR Carnet as Goods Manifest Line Items. The goods described in the Goods Manifest Line Item are contained in one and only one sealed loading unit. In case of heavy and bulky goods (HBG), the goods described in the Goods Manifest Line Item may not be contained in a sealed loading unit.			Used in 6
10	A TIR transport is composed of TIR operations. The number of TIR operations within a TIR transport is at the moment limited to ten with the current paper system and has a minimum of two (these limitations should be extensible; therefore, two to many is more advisable). A TIR operation is part of one and only one TIR transport.	ExG Warsaw	28-29 June 2004	Used in 6
11	A Goods Manifest Line Item is associated to one and only one TIR transport. A TIR transport can have from one to many Goods Manifest Line Items.			Used in 6
12	A TIR transport is performed by one and only one TIR Carnet holder. A TIR Carnet holder can perform any number of TIR transports.	ExG Warsaw	28-29 June 2004	Used in 6
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.	ExG Warsaw	28-29 June 2004	Used in 6
14	The goods described in one single Goods Manifest Line Item arrive at and have their termination certified by a one and only one Customs office of destination. A Customs office can "terminate" any number of goods described in Goods Manifest Line Items.			Used in 6
15	A Goods Manifest Line Item has one and only one intended Customs office of destination. A Customs office can be the intended destination of numerous Goods Manifest Line Items.			Used in 6
16	Deleted			
17	The goods described in a Goods Manifest Line Item are loaded at a single Customs office of departure. A Customs office can be the departure for any number of goods described in Goods Manifest Line Items.			Used in 6
18	A Customs office is located in one and only one Contracting Party. A Contracting Party can have any number of Customs offices.	ExG Warsaw	28-29 June 2004	Used in 6
19	A transport operator is established in one and only one Contracting Party. A Contracting Party can be the residence of numerous transport	ExG Warsaw	28-29 June	Used in 6

<i>Req. #</i>	<i>Statement</i>	<i>Source</i>	<i>Date</i>	<i>Status</i>
	operators.		2004	
20	The printing and distribution of TIR Carnets can only be performed by an approved international organization.	ExG Geneva	26-27 October 2004	Used in 2.1
21	Only an approved association can issue TIR Carnets.	ExG Geneva	26-27 October 2004	Used in 2.1
22	TIR Carnets shall be issued only to authorized persons.	ExG Geneva	26-27 October 2004	Used in 2.1
23	A TIR transport can only be performed by means of road vehicles, combinations of vehicles or containers previously approved under the conditions set forth in Chapter III of the Convention.	ExG Geneva	26-27 October 2004	Used in 2.1
24	A TIR transport must be performed under cover of a TIR Carnet.	ExG Geneva	26-27 October 2004	Used in 2.1
25	A TIR transport must be guaranteed by associations approved in accordance with the provisions of Article 6 of the Convention.	ExG Geneva	26-27 October 2004	Used in 2.1
26	Customs authorities can use national and international risk analysis data to assess risk in relation to the TIR transport.	ExG Geneva	26-27 October 2004	Used in 2.1
27	When the TIR transport has ended, the TIR Carnet is returned to the holder, then to the association and finally to the international organization.	ExG Geneva	26-27 October 2004	Used in 2.1
28	The international organization and the associations uses the control system for TIR Carnets to check TIR Carnets.	ExG Geneva	26-27 October 2004	Used in 2.1
29	The international organization can perform risk analysis with data stored in the repository.	ExG Geneva	26-27 October 2004	Used in 2.1
30	Risk analysis can be performed with data from the control system for TIR Carnets.	ExG Geneva	26-27 October 2004	Used in 2.1
31	The control system for TIR Carnets stores data regarding the distribution of TIR Carnets.	ExG Geneva	26-27 October 2004	Used in 2.1
32	The control system for TIR Carnets stores data on the termination of TIR operation at Customs offices of destination as transmitted by Customs authorities.	ExG Geneva	26-27 October 2004	Used in 2.1
33	The TIR procedure as laid down in the TIR Convention.	ExG Geneva	26-27 October 2004	Used in 2.1

<i>Req. #</i>	<i>Statement</i>	<i>Source</i>	<i>Date</i>	<i>Status</i>
34	All through the TIR transport, national Customs authorities need the information in the TIR Carnet to feed their national systems.	ExG Geneva	26-27 October 2004	Used in 2.1
35	All through the TIR transport, national Customs authorities need data from their national systems to feed the TIR Carnet.	ExG Geneva	26-27 October 2004	Used in 2.1

Annex II

TIR glossary

The TIR glossary captures any terms and acronyms the reader might need to understand about the TIR procedure domain. The glossary is maintained in a running list by the secretariat throughout the requirements gathering/modelling process. This document is used to define terminology associated with TIR procedure business process modelling as well as terminology specific to it, explaining terms (or groups of terms from a sub-business domain) that may be unfamiliar to the reader of the use-case descriptions or other project documents. Often, this document can be used as an informal data dictionary, capturing data definitions so that use-case descriptions and other project documents can focus on what the system shall do with the information. Reference may be made to external documents that give such details.

<i>Term</i>	<i>Definition</i>	<i>Source</i>	<i>Date</i>
Advance cargo information	Information provided to the competent Customs authorities within the prescribed deadlines and in the prescribed form and manner of the intention of the holder to place goods under the TIR procedure or pursue a TIR transport.	ECE/TRANS /WP.30/GE.1 /2010/2	GE,1 8-9 March 2010
Consignee	Person receiving goods	ExG Warsaw	ExG 28-29 June 2004
Consignor	Person consigning goods on behalf of the TIR Carnet holder	ExG Warsaw	ExG 28-29 June 2004
Container	An article of transport equipment (liftvan, movable tank or similar structure): <ol style="list-style-type: none"> 1. fully or partially enclosed to constitute a compartment intended for containing goods; 2. of a permanent character and accordingly strong enough to be suitable for repeated use; 3. specially designed to facilitate the transport of goods by one or more modes of transport without intermediate unloading; 4. designed for ready handling, particularly when being transferred from one mode of transport to another; 5. designed to be easy to fill and to empty, and 6. having an internal volume of one cubicle metre or more 	Art. 1 (j)	ExG 28-29 June 2004

<i>Term</i>	<i>Definition</i>	<i>Source</i>	<i>Date</i>
Customs office	Any Customs office of a Contracting Party approved for accomplishing TIR operations	Art. 45	ExG 28-29 June 2004
Customs office of departure	Any Customs office of a Contracting Party where the TIR transport of a load or part load of goods begins	Art. 1 (k)	ExG 28-29 June 2004
Customs office of destination	Any Customs office of a Contracting Party where the TIR transport of a load or part load of goods ends	Art. 1 (l)	ExG 28-29 June 2004
Declaration	Act whereby the holder, or his representative, indicates in the prescribed form and manner a wish to place goods under the TIR procedure	ECE/TRANS /WP.30/GE.1 /2010/2	GE,1 8-9 March 2010
Discharge of a TIR operation	The recognition by Customs authorities that the TIR operation has been terminated correctly in a Contracting Party. This is established by the Customs authorities on the basis of a comparison of the data or information available at the Customs office of destination or exit (en route) and that available at the Customs office of departure or entry (en route)	Art. 1 (e)	ExG 26-27 October 2004
Driver	Natural person operating the means of transport on behalf of the TIR Carnet holder	ExG Warsaw	ExG 28-29 June 2004
Forwarder	Person performing services (such as receiving, transshipping or delivering), designed to assure and facilitate the passage of goods to their destination on behalf of the TIR Carnet holder	ExG Warsaw	ExG 28-29 June 2004
Good	Commodity, merchandise	Webster	ExG 28-29 June 2004
Good Manifest Line Item	Goods Manifest Line Item expresses the way goods are described and listed in the TIR carnet according to the points B.10.a), d), e) of the "Rules regarding the use of the TIR carnet". Specifically, these rules state that goods must be clearly separated by the combination of vehicle or container, Customs office of departure and the intended customs office of destination.	ExG	ExG 26-27 May 2005

<i>Term</i>	<i>Definition</i>	<i>Source</i>	<i>Date</i>
Guarantee chain (International guarantee system)	System covering the liabilities of national associations, authorized to act as surety for TIR Carnets issued by them as well as for liabilities incurred by them in connection with operations under cover of TIR Carnets issued by foreign associations affiliated to the same international organization as that to which they are themselves affiliated	ExG Warsaw	ExG 28-29 June 2004
Guaranteeing Association	An association approved by the Customs authorities of a Contracting Party to act as surety for persons using the TIR procedure	Art. 1 (q)	ExG 28-29 June 2004
Heavy or bulky goods	Any heavy or bulky object which because of its weight, size or nature is not normally carried in a closed road vehicle or closed container	Art. 1 (p)	ExG 26-27 October 2004
Import or export duties and taxes	Customs duties and all other duties, taxes, fees and other charges which are collected on, or in connection with, the import or export of goods, but not including fees and charges limited in amount to the approximate cost of services rendered	Art. 1 (f)	ExG 26-27 October 2004
International Organization	International organization, which is authorized by the TIR Administrative Committee, as referred to in Annex 8, Article 10 (b) to take on responsibility for the effective organization and functioning of an international guarantee system provided that it accepts this responsibility, as referred to in Article 6, paragraph 2	Art. 6.2 bis Annex 8, Art. 10 (b)	ExG 28-29 June 2004
Issuing Association	An association approved by the Customs authorities of a Contracting Party to issue TIR Carnets	Secretariat	ExG 28-29 June 2004
Load compartment	Compartment intended for containing goods	Secretariat	ExG 28-29 June 2004
National Association	An association approved by the Customs authorities of a Contracting Party to issue TIR Carnets and to act as surety for persons using the TIR procedure	Secretariat	ExG 28-29 June 2004
Person	Both natural and legal persons	Art. 1 (n)	ExG 26-27 October 2004
Road Vehicle	Not only any power-driven road vehicle but also any trailer or semi-trailer designed to be coupled thereto	Art. 1 (g)	ExG 28-29 June 2004

<i>Term</i>	<i>Definition</i>	<i>Source</i>	<i>Date</i>
Sealed loading unit	Any part of a container or load compartment suited for sealing under the conditions stipulated by the TIR Convention	Secretariat	ExG 28-29 June 2004
Start of a TIR operation	The road vehicle, the combination of vehicles or the container have been presented for purposes of control to the Customs office of departure or entry (en route) together with the load and the TIR Carnet relating thereto and the TIR Carnet has been accepted by the Customs office	Art. 1 (c)	ExG 26-27 October 2004
Termination of a TIR operation	The road vehicle, the combination of vehicles or the container have been presented for purposes of control to the Customs office of destination or of exit (en route) together with the load and the TIRE Carnet relating thereto.	Art. 1 (d)	ExG 26-27 October 2004
TIR Carnet holder	The person to whom a TIR Carnet has been issued in accordance with the relevant provisions of the TIR Convention and on whose behalf a Customs declaration has been made in the form of a TIR Carnet indicating a wish to place goods under the TIR procedure at the Customs office of departure. He shall be responsible for the presentation of the road vehicle, combination of vehicles or the container together with the load and the TIR Carnet relating thereto at the Customs office of departure, the Customs office en route and the Customs office of destination and for due observance of the other relevant provisions of the TIR Convention.	Art. 1 (o)	ExG 28-29 June 2004
TIR operation	The part of a TIR transport that is carried out in a Contracting Party from a Customs office of departure or entry (en route) to a Customs office of destination (en route)	Art. 1 (b)	ExG 28-29 June 2004
TIR transport	The transport of goods from a Customs office of departure to a Customs office of destination under the procedure, called the TIR procedure, laid down in the TIR Convention	Art. 1 (a)	ExG 28-29 June 2004
Transport operator	Person actually transporting the goods or in charge of or responsible for the operation of the means of transport on behalf of the TIR Carnet holder	ExG Warsaw	ExG 28-29 June 2004

Annex III

Current TIR Carnet data elements records

This annex contains the results of the survey on current TIR Carnet elements, which had been held by the secretariat among participants of the Expert Group in the course of 2002. In the survey, participants had been requested to supply information on each individual data element contained in the paper TIR Carnet.

This Annex presents the amended records, as discussed by and presented to the Expert Group at its second session in Prague. To understand the records correctly, certain premises should be taken into account:

- a) each actor, writing a specific piece of information, is assumed to read it as well;
- b) each actor, writing a specific piece of information, is assumed to validate it as well; in addition, the same information may also be validated by another actor;
- c) updating of information refers to the act of changing data as a result of a certain action or event occurring; after updating, the updated data will have to be validated¹ (ExG/COMP/2002/10, para. 14 and Annex 4).

¹ In the course of the session, the issue of distinction between correcting and updating of data was raised, because in the current situation, where the TIR Carnet is filled-in by hand, it may not seem relevant to distinguish between the two actions. In an electronic environment, however, it is important to introduce such distinction because these two actions may take place at different times, which may require or lead to different procedures. Within the context of the data records of Annex 3, updating does NOT include corrections.

General Information							
N°	UNTDED No.	Field name					
1		International organization name					
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed			x	x	x		
in Box No :				3	3		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			x				
in Box No :			3				
Properties							
Data type			Data size *	Coding			
Text			50				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization			x		x	x	
Issuing Association						x	
Guaranteeing Association						x	
Holder						x	
- Forwarder ¹						x	
- Driver ²						x	
- Consignor ¹						x	
First Customs office of departure						x	
Intermediate Customs office of departure						x	
Customs office of entry (en route)						x	
Customs office of exit (en route)						x	
C. or other control authorities along the way						x	
Intermediate Customs office of destination						x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information						
N° 3	UNTDDED No.		Field name Association name			
Description and remarks						
Name of association which has issued the TIR Carnet						
Paper Carnet						
			Cover	Voucher 1	Voucher 2	Return slip
Is displayed			x			
in Box No :			2			
			Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed						
in Box No :						
Properties						
Data type			Data size *	Coding		
Text			100			
Conditions						
Convention						
References (other than Annex 1)						
Art. 6, Annex 9						
Authorisations						
			Write	Update	Validate	Read
International organization			x			
Issuing Association			x		x	x
Guaranteeing Association						x
Holder						x
- Forwarder ¹						x
- Driver ²						x
- Consignor ¹						x
First Customs office of departure						x
Intermediate Customs office of departure						x
Customs office of entry (en route)						x
Customs office of exit (en route)						x
C. or other control authorities along the way						x
Intermediate Customs office of destination						x
Final Customs office of destination						x
- Consignee ³						x
Central Customs office						x
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.						
¹ agent on behalf of the holder						
² on behalf of the holder						
³ on behalf of the final Customs office of destination (under consideration by WP.30)						

General Information							
N°	UNTDDED No.	Field name					
6	3340	Holder name					
Description and remarks							
Name of holder of the TIR Carnet							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed			X	X	X		
in Box No :			3	4	4		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			X				
in Box No :			4				
Properties							
Data type			Data size *	Coding			
Text			100				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association			X		X	X	
Guaranteeing Association						X	
Holder			X		X	X	
- Forwarder ¹						X	
- Driver ²						X	
- Consignor ¹						X	
First Customs office of departure						X	
Intermediate Customs office of departure						X	
Customs office of entry (en route)						X	
Customs office of exit (en route)						X	
C. or other control authorities along the way						X	
Intermediate Customs office of destination						X	
Final Customs office of destination						X	
- Consignee ³						X	
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
7	3340	Holder address					
Description and remarks							
Address of holder of the TIR Carnet							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed			X	X	X		
in Box No :			3	4	4		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			X				
in Box No :			4				
Properties							
Data type			Data size *	Coding			
Text			255				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association			X		X	X	
Guaranteeing Association						X	
Holder			X		X	X	
- Forwarder ¹						X	
- Driver ²						X	
- Consignor ¹						X	
First Customs office of departure						X	
Intermediate Customs office of departure						X	
Customs office of entry (en route)						X	
Customs office of exit (en route)						X	
C. or other control authorities along the way						X	
Intermediate Customs office of destination						X	
Final Customs office of destination						X	
- Consignee ³						X	
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
8	3340	Holder country					
Description and remarks							
Country of holder of the TIR Carnet							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed				X	X	X	
in Box No :				3	4	4	
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed				X			
in Box No :				4			
Properties							
Data type	Data size *	Coding					
Text	60	ISO3					
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
				Write	Update	Validate	Read
International organization							X
Issuing Association				X		X	X
Guaranteeing Association							X
Holder				X		X	X
- Forwarder ¹							X
- Driver ²							X
- Consignor ¹							X
First Customs office of departure							X
Intermediate Customs office of departure							X
Customs office of entry (en route)							X
Customs office of exit (en route)							X
C. or other control authorities along the way							X
Intermediate Customs office of destination							X
Final Customs office of destination							X
- Consignee ³							X
Central Customs office							X
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
9		Holder ID Number					
Description and remarks							
ID number for TIR Carnet holders being persons which have been authorized to utilize TIR Carnets							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed				x	x	x	
in Box No :				3	4	4	
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed				x			
in Box No :				4			
Properties							
Data type				Data size *	Coding		
Text				16			
Conditions							
Convention							
References (other than Annex 1)							
Recommendation 20 Oct. 2000							
Authorisations							
				Write	Update	Validate	Read
International organization							x
Issuing Association				x		x	x
Guaranteeing Association							x
Holder				x		x	x
- Forwarder ¹							x
- Driver ²							x
- Consignor ¹							x
First Customs office of departure							x
Intermediate Customs office of departure							x
Customs office of entry (en route)							x
Customs office of exit (en route)							x
C. or other control authorities along the way							x
Intermediate Customs office of destination							x
Final Customs office of destination							x
- Consignee ³							x
Central Customs office							x
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDED No.		Field name				
10			TIR Carnet reference number				
Description and remarks							
10 digit alpha-numeric code							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed				X	X	X	X
in Box No :							
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed				X	X	X	
in Box No :							
Properties							
Data type				Data size *	Coding		
Text				10			
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
				Write	Update	Validate	Read
International organization				X		X	X
Issuing Association							X
Guaranteeing Association							X
Holder							X
- Forwarder ¹							X
- Driver ²							X
- Consignor ¹							X
First Customs office of departure							X
Intermediate Customs office of departure							X
Customs office of entry (en route)							X
Customs office of exit (en route)							X
C. or other control authorities along the way							X
Intermediate Customs office of destination							X
Final Customs office of destination							X
- Consignee ³							X
Central Customs office							X
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.			Field name			
11				Validity			
Description and remarks							
Final date up to which a TIR Carnet can legally be accepted by Customs							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed				X			
in Box No :				1			
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed							
in Box No :							
Properties							
Data type				Data size *	Coding		
Date							
Conditions							
Convention							
References (other than Annex 1)							
Art. 9,1							
Authorisations							
				Write	Update	Validate	Read
International organization							X
Issuing Association				X		X	X
Guaranteeing Association							X
Holder							X
- Forwarder ¹							X
- Driver ²							X
- Consignor ¹							X
First Customs office of departure							X
Intermediate Customs office of departure							X
Customs office of entry (en route)							X
Customs office of exit (en route)							X
C. or other control authorities along the way							X
Intermediate Customs office of destination							X
Final Customs office of destination							X
- Consignee ³							X
Central Customs office							X
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDED No.	Field name					
12		Country of departure					
Description and remarks							
Country (max 3 countries) where goods are loaded							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed				x	x	x	
in Box No :				6	5	5	
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed				x			
in Box No :				5			
Properties							
Data type				Data size *	Coding		
Text				60			
Conditions							
Countries of departure and destination must not exceed 4							
Convention							
References (other than Annex 1)							
Art. 18							
Authorisations							
				Write	Update	Validate	Read
International organization							x
Issuing Association							x
Guaranteeing Association							x
Holder				x	x	x	x
- Forwarder ¹				x	x	x	x
- Driver ²				x	x	x	x
- Consignor ¹				x	x	x	x
First Customs office of departure						x	x
Intermediate Customs office of departure						x	x
Customs office of entry (en route)							x
Customs office of exit (en route)							x
C. or other control authorities along the way							x
Intermediate Customs office of destination							x
Final Customs office of destination							x
- Consignee ³							x
Central Customs office							x
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
13	3216	Country of destination					
Description and remarks							
Country (max 3 countries) where goods are unloaded							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed				X	X	X	
in Box No :				7	6	6	
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed				X			
in Box No :				6			
Properties							
Data type	Data size *	Coding					
Text	60						
Conditions							
Countries of departure and destination must not exceed 4							
Convention							
References (other than Annex 1)							
Art. 18							
Authorisations							
				Write	Update	Validate	Read
International organization							X
Issuing Association							X
Guaranteeing Association							X
Holder				X	X	X	X
- Forwarder ¹				X	X	X	X
- Driver ²				X	X	X	X
- Consignor ¹				X	X	X	X
First Customs office of departure						X	X
Intermediate Customs office of departure						X	X
Customs office of entry (en route)						X	X
Customs office of exit (en route)						X	X
C. or other control authorities along the way					X	X	X
Intermediate Customs office of destination						X	X
Final Customs office of destination							X
- Consignee ³							X
Central Customs office							X
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
14	8162	Vehicle registration					
Description and remarks							
Registration number of the vehicle							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed			X	X	X		
in Box No :			8	7	7		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			X				
in Box No :			7				
Properties							
Data type			Data size *	Coding			
Text			20				
Conditions							
*In case of transport by containers							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association						X	
Guaranteeing Association						X	
Holder			X	X	X	X	
- Forwarder ¹			X	X	X	X	
- Driver ²			X	X	X	X	
- Consignor ¹			X	X	X	X	
First Customs office of departure				X	X	X	
Intermediate Customs office of departure				X	X	X	
Customs office of entry (en route)						X	
Customs office of exit (en route)						X	
C. or other control authorities along the way				X	X	X	
Intermediate Customs office of destination						X	
Final Customs office of destination						X	
- Consignee ³						X	
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
15			Certificate of approval No				
Description and remarks							
Number of the vehicle's certificate of approval							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed			X				
in Box No :			9				
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed							
in Box No :							
Properties							
Data type			Data size *	Coding			
Text			50				
Conditions							
Mandatory if not heavy and bulky goods or transport in containers							
Convention							
References (other than Annex 1)							
Art. 14							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association						X	
Guaranteeing Association						X	
Holder			X	X	X	X	
- Forwarder ¹			X	X	X	X	
- Driver ²			X	X	X	X	
- Consignor ¹			X	X	X	X	
First Customs office of departure				X	X	X	
Intermediate Customs office of departure				X	X	X	
Customs office of entry (en route)						X	
Customs office of exit (en route)						X	
C. or other control authorities along the way				X	X	X	
Intermediate Customs office of destination						X	
Final Customs office of destination						X	
- Consignee ³						X	
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
16		Certificate of approval Date					
Description and remarks							
Date of the vehicle's certificate of approval							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed			x				
in Box No :			9				
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed				x			
in Box No :							
Properties							
Data type			Data size *	Coding			
Date							
Conditions							
Mandatory if not heavy and busky goods or transport in containers							
Convention							
References (other than Annex 1)							
Art. 14							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association						x	
Guaranteeing Association						x	
Holder			x	x	x	x	
- Forwarder ¹			x	x	x	x	
- Driver ²			x	x	x	x	
- Consignor ¹			x	x	x	x	
First Customs office of departure				x	x	x	
Intermediate Customs office of departure				x	x	x	
Customs office of entry (en route)						x	
Customs office of exit (en route)						x	
C. or other control authorities along the way				x	x	x	
Intermediate Customs office of destination						x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							
ExG/COMP/2002/10							

General Information							
N°	UNTDED No.	Field name					
17	1492	Identification number of container					
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed			x				
in Box No :			10				
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed							
in Box No :							
Properties							
Data type			Data size *	Coding			
Text			50	BIC-CODE			
Conditions							
*Mandatory if transport is made in containers approved for transport under Customs seals							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association						x	
Guaranteeing Association						x	
Holder			x	x	x	x	
- Forwarder ¹			x	x	x	x	
- Driver ²			x	x	x	x	
- Consignor ¹			x	x	x	x	
First Customs office of departure				x	x	x	
Intermediate Customs office of departure				x	x	x	
Customs office of entry (en route)						x	
Customs office of exit (en route)						x	
C. or other control authorities along the way				x	x	x	
Intermediate Customs office of destination						x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDED No.		Field name				
18			Various observations				
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed			x				
in Box No :			11				
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed							
in Box No :							
Properties							
Data type			Data size *	Coding			
Text			255				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association			x	x	x	x	
Guaranteeing Association						x	
Holder			x	x	x	x	
- Forwarder ¹			x	x	x	x	
- Driver ²			x	x	x	x	
- Consignor ¹			x	x	x	x	
First Customs office of departure						x	
Intermediate Customs office of departure						x	
Customs office of entry (en route)						x	
Customs office of exit (en route)						x	
C. or other control authorities along the way						x	
Intermediate Customs office of destination						x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDED No.		Field name				
19			Customs office of destination				
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				X	X		
in Box No :				12	12		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			X				
in Box No :			12				
Properties							
Data type			Data size *	Coding			
Text			100				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association						X	
Guaranteeing Association						X	
Holder			X	X	X	X	
- Forwarder ¹			X	X	X	X	
- Driver ²			X	X	X	X	
- Consignor ¹			X	X	X	X	
First Customs office of departure					X	X	
Intermediate Customs office of departure					X	X	
Customs office of entry (en route)					X	X	
Customs office of exit (en route)					X	X	
C. or other control authorities along the way				X	X	X	
Intermediate Customs office of destination						X	
Final Customs office of destination						X	
- Consignee ³						X	
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
20			Customs office of departure				
Description and remarks							
Up to max. 3 offices of departure							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				x	x		
in Box No :				2	2		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			x				
in Box No :			2				
Properties							
Data type			Data size *	Coding			
Text			100				
Conditions							
Convention							
References (other than Annex 1)							
Art. 18							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association						x	
Guaranteeing Association						x	
Holder			x	x	x	x	
- Forwarder ¹			x	x	x	x	
- Driver ²			x	x	x	x	
- Consignor ¹			x	x	x	x	
First Customs office of departure					x	x	
Intermediate Customs office of departure					x	x	
Customs office of entry (en route)				x	x	x	
Customs office of exit (en route)				x	x	x	
C. or other control authorities along the way						x	
Intermediate Customs office of destination						x	
Final Customs office of destination						x	
- Consignee ³							
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°		UNTDDED No.		Field name			
21				Documents attached to the manifest			
Description and remarks							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed					X	X	
in Box No :					8	8	
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed				X			
in Box No :				8			
Properties							
Data type				Data size *	Coding		
Text				255	UNDOCS		
Conditions							
Convention							
References (other than Annex 1)							
Art. 19							
Authorisations							
				Write	Update	Validate	Read
International organization							X
Issuing Association							X
Guaranteeing Association							X
Holder				X	X	X	X
- Forwarder ¹				X	X	X	X
- Driver ²				X	X	X	X
- Consignor ¹				X	X	X	X
First Customs office of departure				X		X	X
Intermediate Customs office of departure				X		X	X
Customs office of entry (en route)					X	X	X
Customs office of exit (en route)					X	X	X
C. or other control authorities along the way					X	X	X
Intermediate Customs office of destination							X
Final Customs office of destination							X
- Consignee ³							X
Central Customs office							X
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
22			Holder certification place				
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				x	x		
in Box No :				14	14		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			x				
in Box No :			14				
Properties							
Data type			Data size *	Coding			
Text			100				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association						x	
Guaranteeing Association						x	
Holder			x		x	x	
- Forwarder ¹			x		x	x	
- Driver ²			x		x	x	
- Consignor ¹			x		x	x	
First Customs office of departure						x	
Intermediate Customs office of departure						x	
Customs office of entry (en route)						x	
Customs office of exit (en route)						x	
C. or other control authorities along the way						x	
Intermediate Customs office of destination						x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
23			Holder certification date				
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				X	X		
in Box No :				14	14		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			X				
in Box No :			14				
Properties							
Data type			Data size *	Coding			
Date							
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association						X	
Guaranteeing Association						X	
Holder			X		X	X	
- Forwarder ¹			X		X	X	
- Driver ²			X		X	X	
- Consignor ¹			X		X	X	
First Customs office of departure						X	
Intermediate Customs office of departure						X	
Customs office of entry (en route)						X	
Customs office of exit (en route)						X	
C. or other control authorities along the way						X	
Intermediate Customs office of destination						X	
Final Customs office of destination						X	
- Consignee ³						X	
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
25		Seals or identification marks applied					
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				X	X		
in Box No :				16	16		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			X	X	X		
in Box No :				3	4		
Properties							
Data type			Data size *	Coding			
Text			20				
Conditions							
*Not mandatory if heavy and bulky goods							
Convention							
References (other than Annex 1)							
Art. 19; Art. 24; Art. 34; Art. 35							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association						X	
Guaranteeing Association						X	
Holder						X	
- Forwarder ¹							
- Driver ²						X	
- Consignor ¹							
First Customs office of departure			X		X	X	
Intermediate Customs office of departure			X	X	X	X	
Customs office of entry (en route)			X	X		X	
Customs office of exit (en route)			X	X		X	
C. or other control authorities along the way				X		X	
Intermediate Customs office of destination			X	X		X	
Final Customs office of destination						X	
- Consignee ³						X	
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
29	2280	Departure date					
Description and remarks							
Customs office date stamp (departure)							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				x		x	
in Box No :				23		23	
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed				x			
in Box No :				6			
Properties							
Data type			Data size *	Coding			
Date							
Conditions							
Convention							
References (other than Annex 1)							
Art. 8,4 Art. 9,2							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association						x	
Guaranteeing Association						x	
Holder						x	
- Forwarder ¹							
- Driver ²						x	
- Consignor ¹						x	
First Customs office of departure			x		x	x	
Intermediate Customs office of departure			x		x	x	
Customs office of entry (en route)			x		x	x	
Customs office of exit (en route)						x	
C. or other control authorities along the way						x	
Intermediate Customs office of destination			x		x	x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDED No.	Field name					
30		Heavy or bulky goods					
Description and remarks							
Endorsement of Heavy or bulky goods on cover and all vouchers							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed				X	X	X	
in Box No :							
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed				X			
in Box No :							
Properties							
Data type				Data size *	Coding		
Boolean				1			
Conditions							
Convention							
References (other than Annex 1)							
Art. 29-35							
Authorisations							
				Write	Update	Validate	Read
International organization							X
Issuing Association				X			X
Guaranteeing Association							X
Holder				X			X
- Forwarder ¹				X			X
- Driver ²				X			X
- Consignor ¹				X			X
First Customs office of departure							X
Intermediate Customs office of departure							X
Customs office of entry (en route)							X
Customs office of exit (en route)							X
C. or other control authorities along the way							X
Intermediate Customs office of destination							X
Final Customs office of destination							X
- Consignee ³							X
Central Customs office							X
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
31			Tobacco and alcohol				
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed			X	X	X	X	
in Box No :							
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			X	X	X		
in Box No :							
Properties							
Data type			Data size *	Coding			
Boolean			1				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization			X		X	X	
Issuing Association						X	
Guaranteeing Association						X	
Holder						X	
- Forwarder ¹						X	
- Driver ²						X	
- Consignor ¹						X	
First Customs office of departure						X	
Intermediate Customs office of departure						X	
Customs office of entry (en route)						X	
Customs office of exit (en route)						X	
C. or other control authorities along the way						X	
Intermediate Customs office of destination						X	
Final Customs office of destination						X	
- Consignee ³						X	
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
32			For official use				
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				X	X		
in Box No :							
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed							
in Box No :							
Properties							
Data type			Data size *	Coding			
Text			255				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association						X	
Guaranteeing Association						X	
Holder						X	
- Forwarder ¹						X	
- Driver ²						X	
- Consignor ¹						X	
First Customs office of departure			X			X	
Intermediate Customs office of departure			X			X	
Customs office of entry (en route)			X			X	
Customs office of exit (en route)			X			X	
C. or other control authorities along the way						X	
Intermediate Customs office of destination			X			X	
Final Customs office of destination			X			X	
- Consignee ³			X			X	
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
33		Seals check (entry)					
Description and remarks							
Seals or identification marks found to be intact at entry or departure							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed					x		x
in Box No :					19		19
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed					x	x	
in Box No :					4	2	
Properties							
Data type				Data size *	Coding		
Boolean				1			
Conditions							
*Not mandatory if heavy and bulky goods							
Convention							
References (other than Annex 1)							
Art. 22							
Authorisations							
				Write	Update	Validate	Read
International organization							x
Issuing Association							x
Guaranteeing Association							x
Holder							x
- Forwarder ¹							
- Driver ²							x
- Consignor ¹							
First Customs office of departure				x			x
Intermediate Customs office of departure				x			x
Customs office of entry (en route)				x			x
Customs office of exit (en route)				x			x
C. or other control authorities along the way				x			x
Intermediate Customs office of destination				x			x
Final Customs office of destination				x			x
- Consignee ³							x
Central Customs office							x
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDED No.			Field name			
34				Time-limit for transit			
Description and remarks							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed					x		x
in Box No :					20		20
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed							
in Box No :							
Properties							
Data type				Data size *	Coding		
Integer				4			
Conditions							
Convention							
References (other than Annex 1)							
Art. 20							
Authorisations							
				Write	Update	Validate	Read
International organization							x
Issuing Association							x
Guaranteeing Association							x
Holder							x
- Forwarder ¹							x
- Driver ²							x
- Consignor ¹							x
First Customs office of departure				x			x
Intermediate Customs office of departure				x			x
Customs office of entry (en route)				x			x
Customs office of exit (en route)							x
C. or other control authorities along the way					x		x
Intermediate Customs office of destination				x			x
Final Customs office of destination							x
- Consignee ³							x
Central Customs office							x
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
35			Departure/Entry Custom name				
Description and remarks							
Registered/Accepted by the Customs office at							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				x		x	
in Box No :				21		21	
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed				x			
in Box No :				1			
Properties							
Data type			Data size *	Coding			
Text			100				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association						x	
Guaranteeing Association						x	
Holder						x	
- Forwarder ¹							
- Driver ²						x	
- Consignor ¹							
First Customs office of departure			x		x	x	
Intermediate Customs office of departure			x		x	x	
Customs office of entry (en route)			x		x	x	
Customs office of exit (en route)						x	
C. or other control authorities along the way			x		x	x	
Intermediate Customs office of destination						x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
36		Departure/Entry registration number					
Description and remarks							
Registered by the Customs office under number							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				x		x	
in Box No :				21		21	
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed				x			
in Box No :				2			
Properties							
Data type			Data size *	Coding			
Text			20				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association						x	
Guaranteeing Association						x	
Holder						x	
- Forwarder ¹						x	
- Driver ²						x	
- Consignor ¹						x	
First Customs office of departure			x		x	x	
Intermediate Customs office of departure			x		x	x	
Customs office of entry (en route)			x		x	x	
Customs office of exit (en route)						x	
C. or other control authorities along the way						x	
Intermediate Customs office of destination						x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
37			Miscellaneous				
Description and remarks							
Itinerary stipulated, Customs office at which the load must be produced, etc.							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed					x		x
in Box No :					22		22
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed					x		
in Box No :					5		
Properties							
Data type				Data size *	Coding		
Text				255			
Conditions							
Convention							
References (other than Annex 1)							
Art. 20							
Authorisations							
				Write	Update	Validate	Read
International organization							x
Issuing Association							x
Guaranteeing Association							x
Holder							x
- Forwarder ¹							x
- Driver ²							x
- Consignor ¹							x
First Customs office of departure				x		x	x
Intermediate Customs office of departure				x		x	x
Customs office of entry (en route)				x		x	x
Customs office of exit (en route)							x
C. or other control authorities along the way					x	x	x
Intermediate Customs office of destination							x
Final Customs office of destination							x
- Consignee ³							x
Central Customs office							x
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
40	3086	Exit/Destination Customs name					
Description and remarks							
Certificate of termination of the TIR operation (exit / destination)							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed							X
in Box No :							24
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed						X	
in Box No :						1	
Properties							
Data type				Data size *	Coding		
Text				100			
Conditions							
Convention							
References (other than Annex 1)							
Art. 10							
Authorisations							
				Write	Update	Validate	Read
International organization							X
Issuing Association							X
Guaranteeing Association							X
Holder							X
- Forwarder ¹							X
- Driver ²							X
- Consignor ¹							
First Customs office of departure							
Intermediate Customs office of departure				X		X	X
Customs office of entry (en route)							X
Customs office of exit (en route)				X		X	X
C. or other control authorities along the way							
Intermediate Customs office of destination				X		X	X
Final Customs office of destination				X		X	X
- Consignee ³							
Central Customs office							X
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
41		Seals check (exit/desination)					
Description and remarks							
Seals or identification marks found to be intact at exit or destination							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed						X	
in Box No :						25	
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed					X		
in Box No :					2		
Properties							
Data type			Data size *	Coding			
Boolean			1				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association						X	
Guaranteeing Association						X	
Holder						X	
- Forwarder ¹						X	
- Driver ²						X	
- Consignor ¹							
First Customs office of departure							
Intermediate Customs office of departure			X		X	X	
Customs office of entry (en route)						X	
Customs office of exit (en route)			X		X	X	
C. or other control authorities along the way							
Intermediate Customs office of destination			X		X	X	
Final Customs office of destination			X		X	X	
- Consignee ³							
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.	Field name					
42		Number of packages					
Description and remarks							
Number of packages with certified termination							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed						X	
in Box No :						26	
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed					X		
in Box No :					3		
Properties							
Data type			Data size *	Coding			
Integer			5				
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association						X	
Guaranteeing Association						X	
Holder						X	
- Forwarder ¹						X	
- Driver ²						X	
- Consignor ¹							
First Customs office of departure							
Intermediate Customs office of departure			X		X	X	
Customs office of entry (en route)						X	
Customs office of exit (en route)			X		X	X	
C. or other control authorities along the way							
Intermediate Customs office of destination			X		X	X	
Final Customs office of destination			X		X	X	
- Consignee ³							
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.			Field name			
43				Reservations			
Description and remarks							
Indication of existence of reservations							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed							X
in Box No :							27
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed						X	
in Box No :						5	
Properties							
Data type				Data size *	Coding		
Text				255			
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
				Write	Update	Validate	Read
International organization							X
Issuing Association							X
Guaranteeing Association							X
Holder							X
- Forwarder ¹							X
- Driver ²							X
- Consignor ¹							
First Customs office of departure							
Intermediate Customs office of departure				X		X	X
Customs office of entry (en route)							X
Customs office of exit (en route)				X		X	X
C. or other control authorities along the way							
Intermediate Customs office of destination				X		X	X
Final Customs office of destination				X		X	X
- Consignee ³							
Central Customs office							X
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
45			Exit/Dest date				
Description and remarks							
Customs office date stamp (exit/desination)							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed						X	
in Box No :						28	
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed					X		
in Box No :					6		
Properties							
Data type			Data size *	Coding			
Date							
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association						X	
Guaranteeing Association						X	
Holder						X	
- Forwarder ¹						X	
- Driver ²						X	
- Consignor ¹							
First Customs office of departure							
Intermediate Customs office of departure			X		X	X	
Customs office of entry (en route)						X	
Customs office of exit (en route)			X		X	X	
C. or other control authorities along the way							
Intermediate Customs office of destination			X		X	X	
Final Customs office of destination			X		X	X	
- Consignee ³							
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
46			Load compartment(s) or container(s)				
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				x	x		
in Box No :				9	9		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			x				
in Box No :			9				
Properties							
Data type			Data size *	Coding			
Text			20				
Conditions							
Convention							
References (other than Annex 1)							
Art. 19							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association						x	
Guaranteeing Association						x	
Holder			x	x	x	x	
- Forwarder ¹			x	x	x	x	
- Driver ²			x	x	x	x	
- Consignor ¹			x	x	x	x	
First Customs office of departure					x	x	
Intermediate Customs office of departure					x	x	
Customs office of entry (en route)				x	x	x	
Customs office of exit (en route)				x	x	x	
C. or other control authorities along the way					x	x	
Intermediate Customs office of destination				x	x	x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
47			Marks and Nos. of packages of articles				
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				x	x		
in Box No :				9	9		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			x				
in Box No :			9				
Properties							
Data type			Data size *	Coding			
Text			20				
Conditions							
Convention							
References (other than Annex 1)							
Art. 19							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association						x	
Guaranteeing Association						x	
Holder			x	x	x	x	
- Forwarder ¹			x	x	x	x	
- Driver ²			x	x	x	x	
- Consignor ¹			x	x	x	x	
First Customs office of departure						x	
Intermediate Customs office of departure						x	
Customs office of entry (en route)				x	x	x	
Customs office of exit (en route)				x	x	x	
C. or other control authorities along the way				x	x	x	
Intermediate Customs office of destination				x	x	x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
48			Number of packages or articles				
Description and remarks							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed					x	x	
in Box No :					10	10	
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed				x			
in Box No :				10			
Properties							
Data type	Data size *			Coding			
Integer	5						
Conditions							
Convention							
References (other than Annex 1)							
Art. 19							
Authorisations							
				Write	Update	Validate	Read
International organization							x
Issuing Association							x
Guaranteeing Association							x
Holder				x	x	x	x
- Forwarder ¹				x	x	x	x
- Driver ²				x	x	x	x
- Consignor ¹				x	x	x	x
First Customs office of departure						x	x
Intermediate Customs office of departure						x	x
Customs office of entry (en route)					x	x	x
Customs office of exit (en route)					x	x	x
C. or other control authorities along the way					x	x	x
Intermediate Customs office of destination							x
Final Customs office of destination							x
- Consignee ³							x
Central Customs office							x
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
49			Type of packages or articles				
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				x	x		
in Box No :				10	10		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			x				
in Box No :			10				
Properties							
Data type			Data size *	Coding			
Text			50	HS			
Conditions							
Convention							
References (other than Annex 1)							
Art. 19							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association						x	
Guaranteeing Association						x	
Holder			x	x	x	x	
- Forwarder ¹			x	x	x	x	
- Driver ²			x	x	x	x	
- Consignor ¹			x	x	x	x	
First Customs office of departure					x	x	
Intermediate Customs office of departure					x	x	
Customs office of entry (en route)				x	x	x	
Customs office of exit (en route)				x	x	x	
C. or other control authorities along the way				x	x	x	
Intermediate Customs office of destination						x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

General Information							
N°	UNTDDED No.		Field name				
50			Description of goods				
Description and remarks							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				x	x		
in Box No :				10	10		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			x				
in Box No :			10				
Properties							
Data type			Data size *	Coding			
Text			255	HS			
Conditions							
Convention							
References (other than Annex 1)							
Art. 19							
Authorisations							
			Write	Update	Validate	Read	
International organization						x	
Issuing Association						x	
Guaranteeing Association						x	
Holder			x	x	x	x	
- Forwarder ¹			x	x	x	x	
- Driver ²			x	x	x	x	
- Consignor ¹			x	x	x	x	
First Customs office of departure					x	x	
Intermediate Customs office of departure					x	x	
Customs office of entry (en route)				x	x	x	
Customs office of exit (en route)				x	x	x	
C. or other control authorities along the way				x	x	x	
Intermediate Customs office of destination				x	x	x	
Final Customs office of destination						x	
- Consignee ³						x	
Central Customs office						x	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							

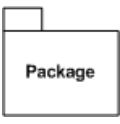

General Information							
N°	UNTDDED No.		Field name				
51	6292		Gross weight				
Description and remarks							
Gross weight in kg (For some goods another reporting unit is used (e.g. m3))							
Paper Carnet							
			Cover	Voucher 1	Voucher 2	Return slip	
Is displayed				X	X		
in Box No :				11	11		
			Voucher NFCU	Counterfoil 1	Counterfoil 2		
Is displayed			X				
in Box No :			11				
Properties							
Data type			Data size *	Coding			
Real			10 / 3				
Conditions							
Convention							
References (other than Annex 1)							
Art. 20							
Authorisations							
			Write	Update	Validate	Read	
International organization						X	
Issuing Association						X	
Guaranteeing Association						X	
Holder			X	X	X	X	
- Forwarder ¹			X	X	X	X	
- Driver ²			X	X	X	X	
- Consignor ¹			X	X	X	X	
First Customs office of departure					X	X	
Intermediate Customs office of departure					X	X	
Customs office of entry (en route)				X	X	X	
Customs office of exit (en route)				X	X	X	
C. or other control authorities along the way				X	X	X	
Intermediate Customs office of destination				X	X	X	
Final Customs office of destination						X	
- Consignee ³						X	
Central Customs office						X	
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							





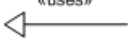

General Information							
N°	UNTDDED No.			Field name			
52				Page number			
Description and remarks							
Page number in the TIR Carnet							
Paper Carnet							
				Cover	Voucher 1	Voucher 2	Return slip
Is displayed					X	X	X
in Box No :							
				Voucher NFCU	Counterfoil 1	Counterfoil 2	
Is displayed					X	X	
in Box No :							
Properties							
Data type				Data size *	Coding		
Integer				2			
Conditions							
Convention							
References (other than Annex 1)							
Authorisations							
				Write	Update	Validate	Read
International organization				X		X	X
Issuing Association							X
Guaranteeing Association							X
Holder							X
- Forwarder ¹							X
- Driver ²							X
- Consignor ¹							X
First Customs office of departure							X
Intermediate Customs office of departure							X
Customs office of entry (en route)							X
Customs office of exit (en route)							X
C. or other control authorities along the way							X
Intermediate Customs office of destination							X
Final Customs office of destination							X
- Consignee ³							X
Central Customs office							X
* Size is: in characters for text, in digits for integers, in digits before / after the comma for reals.							
¹ agent on behalf of the holder							
² on behalf of the holder							
³ on behalf of the final Customs office of destination (under consideration by WP.30)							








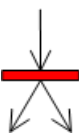
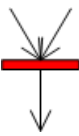
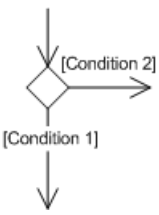
Annex IV

UML

UML symbols glossary

Package diagram	
Package	
Dependency	

Use case diagram	
System	
Use case	
Actor	
Communication	
Uses	
Comment	

Activity diagram	
Swimlane	
Action state	
State	
Initial state	
Final state	
Control flow	
Object flow	
Transition (fork)	
Transition (join)	
Decision	

Class diagram	
Class	
Object	
Association	
Association class	
N-ary association	
Generalization	
Composition	
Aggregation	
Association roles	
Association function and reading direction	

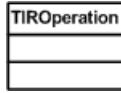
Multiplicities (cardinalities)	
Exactly one	
Many (zero or more)	
Optional	

General symbols	
Interface	
Constraint	
Comment	

Elaboration of a class diagram – TIR Operation example

On the basis of the requirements contained in Annex I, we will construct the part of the class diagram depicting the TIR operation.

First, we draw the class:

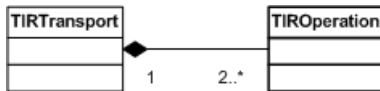


In the list of Requirements, only two requirements deal with the TIR operation:

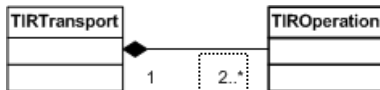
Req.10 A TIR transport is composed of TIR operations. The number of TIR operations within a TIR transport is at the moment limited to 10 with the current paper system and has a minimum of 2 (these limitations should be extensible; therefore a two to many is more advisable). A TIR operation is part of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

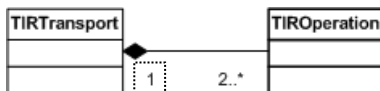
Requirement 10 first stipulates that *a TIR transport is composed of TIR operations*. UML uses a line terminated by a black diamond to indicate the composition (◆—):



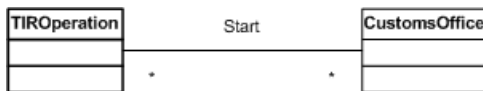
It also states that the number of TIR operations within a TIR transport is at the moment limited to 10 with the current paper system and has a minimum of 2 (these limitations should be extensible; therefore a two to many is more advisable). This is translated in UML by indicating on the TIR operation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



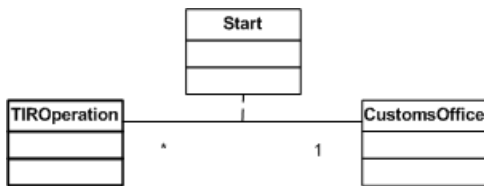
Finally, requirement 10 says that *a TIR operation is part of one and only one TIR transport*. This is translated by writing “1” on the TIR transport side of the relationship:



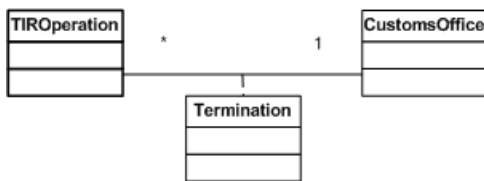
Requirement 13 contains information about two relationships between the classes *TIR Operation* and *Customs Office*. First, we will identify the two relationships, which are called “associations”. Requirement 13 stipulates that *the TIR operation is started at ... Customs office.... Start* is therefore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



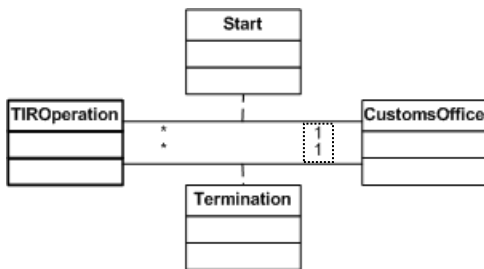
In case the association itself contains information, UML uses a different symbol called “association class”. This is the case for the *Start* association which contains information, such as the starting date of the TIR operation:



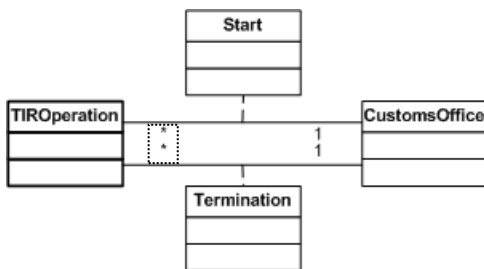
The second association, *Termination*, can be identified in Requirement 13: *the TIR operation is... and terminated at ... Customs office*. Following the logic of the previous association, the association is depicted as an association class:



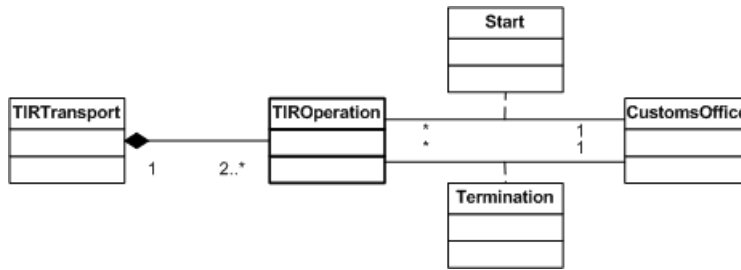
The multiplicities of these two associations are identical. The words *one and only one* indicate that a TIR operation has to start at a Customs office and can not start at more than one. This is translated in UML by inserting “1” on the *Customs Office* side of the association:



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 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.

Annex V

UMM/UML glossary

<i>Term</i>	<i>Definition</i>	<i>Source</i>
abstract class	A class that cannot be directly instantiated.	<i>Unified Modelling User Guide</i>
abstraction	The essential characteristics of an entity that distinguish it from all other kinds of entities. An abstraction defines a boundary relative to the perspective of the viewer.	<i>Unified Modelling User Guide</i>
activity diagram	Shows behaviour with control structure. Can show many objects over many uses, many objects in single use case, or implementation of method. Encourages parallel behaviour.	<i>UML Distilled</i>
actor	Someone or something, outside the system or business that interacts with the system or business.	<i>Rational Unified Process</i>
aggregation	A special form of association that specifies a whole-part relationship between the aggregate (the whole) and a component (the part).	<i>Unified Modelling User Guide</i>
analysis classes	An abstraction of a role played by a design element in the system, typically within the context of a <i>use-case realization</i> . Analysis classes may provide an abstraction for several role, representing the common behaviour of those roles. Analysis classes typically evolve into one or more design elements (e.g. design classes and/or capsules, or design subsystems).	<i>Rational Unified Process</i>
analysis	The part of the software development process whose primary purpose is to formulate a model of the problem <i>domain</i> . Analysis focuses on what to do, design focuses on how to do it. See <i>design</i> .	<i>Rational Unified Process</i>
API	Application Protocol Interface.	
architecture	The organizational structure of a system. An architecture can be recursively decomposed into parts that interact through interfaces, relationships that connect parts, and constraints for assembling parts. Parts that interact through interfaces include <i>classes</i> , <i>components</i> and <i>subsystems</i> .	<i>Rational Unified Process</i>
artifact	(1) A piece of information that (1) is produced, modified, or used by a process, (2) defines an area of responsibility, and (3) is subject to version control. An artefact can be a <i>model</i> , a <i>model element</i> , or a <i>document</i> . A document can enclose other documents.	<i>Rational Unified Process</i>
association	A structural relationship that describes a set of links, in which a link is a connection among objects; the semantic relationship between two or more classifiers that involves the connections among their instances.	<i>Unified Modelling User Guide</i>
attributes	An attribute defined by a <i>class</i> represents a named property of the class or its objects. An attribute has a <i>type</i> that defines the type of its instances.	<i>Rational Unified Process</i>
binary association	An association between two classes.	<i>Unified Modelling User Guide</i>
BPAWG	UN/CEFACT Business Process Analysis Working Group. Responsible for	<i>UN/CEFACT</i>

<i>Term</i>	<i>Definition</i>	<i>Source</i>
	analysing and understanding the key elements of international transactions and working for the elimination of constraints.	
Boolean	An enumeration whose values are true and false.	<i>Unified Modelling User Guide</i>
business domain model	The first stage in UN/CEFACT unified process.	<i>UMM</i>
business entity class	Group of Items which are structured in the same way: that serves the fundamental missions of the company, that has legal and/or commercial basis, which may participate in exchanges with partners, which will be implemented into objects (object technology) through a modelling process. For example: order is a business entity class.	<i>UMM</i>
business entity	Something that is accessed, inspected, manipulated, produced, and son on in the business.	<i>UMM</i>
business expert	A person who is knowledgeable about the business area being modelled.	<i>UMM</i>
Business Operational View (BOV)	A perspective of business transactions limited to those aspects regarding the making of business decisions and commitments among organizations, which are needed for the description of a business transaction.	<i>(Open-edi Reference Model - ISO/IEC 14662).</i>
business process	The means by which one or more activities are accomplished in operating business practices.	<i>UMM</i>
business rule	Rules, regulations and practices for business.	<i>UMM</i>
business	a series of processes, each having a clearly understood purpose, involving more than one organization, realized through the exchange of information and directed towards some mutually agreed upon goal, extending over a period of time.	<i>(Open-edi Reference Model - ISO/IEC 14662). (MoU)</i>
cardinality	The number of elements in a set.	<i>Unified Modelling User Guide</i>
class	A description of a set of objects that share the same <i>attributes, operations, methods, relationships</i> , and semantics. A class may use a set of interfaces to specify collections of operations it provides to its environment. See: <i>interface</i> .	<i>Rational Unified Process</i>
class diagram	shows static structure of concepts, types, and classes. Concepts show how users think about the world; types show interfaces of software components; classes show implementation of software components. (UML Distilled) A diagram that shows a collection of declarative (static) <i>model elements</i> , such as <i>classes, types</i> , and their contents and <i>relationships</i> . (Rational Unified Process).	<i>UML Distilled/ Rational Unified Process</i>
collaboration diagram	(1) A collaboration diagram describes a pattern of interaction among objects; it shows the objects participating in the interaction by their links to each other and the <i>messages</i> they send to each other. Unlike a sequence	<i>Rational Unified Process</i>

<i>Term</i>	<i>Definition</i>	<i>Source</i>
	diagram, a collaboration diagram shows the relationships among the instances. Sequence diagrams and collaboration diagrams express similar information, but show it in different ways. See: <i>sequence diagram</i> .	
component	A physical, replaceable part of a system that packages implementation and conforms to and provides the realization of a set of interfaces. A component represents a physical piece of implementation of a system, including software code (source, binary or executable) or equivalents such as scripts or command files.	<i>Rational Unified Process</i>
component diagram	A diagram that shows the organizations and dependencies among <i>components</i> .	<i>Rational Unified Process</i>
component interface	A named set of operations that characterize the behaviour of a component.	<i>OMG</i>
composition	A form of aggregation with strong ownership and coincident lifetime of the parts by the whole; parts with nonfixed multiplicity may be created after composite itself, but once created they live and die with it; such parts can also be explicitly removed before the death of a composite.	<i>Unified Modelling User Guide</i>
constraint	A semantic condition or restriction. Certain constraints are predefined in the UML, others may be user defined. Constraints are one of three extensibility mechanisms in UML. See: <i>tagged value, stereotype</i> .	<i>Rational Unified Process</i>
construction	The third phase of the software development life cycle, in which the software is brought from an executable architectural baseline to the point at which it is ready to be transitioned to the user community.	<i>Unified Modelling User Guide</i>
control classes	A class used to model behaviour specific to one, or a several use cases.	<i>Rational Unified Process</i>
datatype	A descriptor of a set of values that lack identity and whose operations do not have side effects. Data types include primitive pre-defined types and user-definable types. Pre-defined types include numbers, string and time. User-definable types include enumerations.	<i>Rational Unified Process</i>
delegation	The ability of an object to issue a message to another object in response to a message.	<i>Unified Modelling User Guide</i>
deliverables	An output from a process that has a value, material or otherwise, to a customer or other stakeholder.	<i>Rational Unified Process</i>
dependency	A semantic relationship between two things in which a change to one thing (the independent thing) may affect the semantics of the other thing (the dependent thing).	<i>Unified Modelling User Guide</i>
deployment diagram	A diagram that shows the configuration of run-time processing nodes and the <i>components, processes, and objects</i> that live on them. Components represent run-time manifestations of code units. See: <i>component diagram</i> .	<i>Rational Unified Process</i>
design	The part of the software development process whose primary purpose is to decide how the system will be implemented. During design, strategic and tactical decisions are made to meet the required functional and quality <i>requirements</i> of a system. See <i>analysis</i> .	<i>Rational Unified Process</i>
design patterns	A specific solution to a particular problem in software design. Design patterns capture solutions that have developed and evolved over time, expressed in a succinct and easily applied form.	<i>Rational Unified Process</i>

<i>Term</i>	<i>Definition</i>	<i>Source</i>
design view	The view of a system's architecture that encompasses the classes, interfaces and collaborations that form the vocabulary of the problem and its solution; a design view addresses the functional requirements of a system.	<i>Unified Modelling User Guide</i>
diagram	A graphical depiction of all or part of a <i>model</i> .	<i>Rational Unified Process</i>
Document type definition	See DTD.	
domain	An area of knowledge or activity characterized by a family of related systems. An area of knowledge or activity characterized by a set of concepts and terminology understood by practitioners in that area.	<i>Rational Unified Process</i>
DTD	Document Type Definition.	
EDI message	An approved, published, and maintained formal description of how to structure the data required to perform a specific business function, in such a way as to allow for the transfer and handling of this data by electronic means.	<i>(MoU)</i>
EDIFACT messages	A electronic message formats based on UN/EDIFACT standard set developed and maintained by the UN/EDIFACT Working Group which are in UN/TDID directories.	<i>UN/CEFACT</i>
edifact working group	To develop and maintain UN/EDIFACT, the support of harmonised implementations and the use of multi-lingual terminology.	
elaboration phase	The second <i>phase</i> of the process where the product <i>vision</i> and its <i>architecture</i> are defined.	<i>Rational Unified Process</i>
electronic business	a generic term covering information definition and exchange requirements within and between enterprises, including customers.	<i>(MoU)</i>
electronic commerce	Electronic Commerce is doing business electronically. This includes the sharing of standardised unstructured or structured business information by any electronic means (such as electronic mail or messaging, World Wide Web technology, electronic bulletin boards, smart cards, electronic funds transfers, electronic data interchange, and automatic data capture technology) among suppliers, customers, governmental bodies and other partners in order to conduct and execute transactions in business, administrative and consumer activities.	<i>UN/CEFACT SIMAC</i>
Electronic Data Interchange (EDI)	The automated exchange of any predefined and structured data for business among information systems of two or more organizations.	<i>(Open-edi Reference Model Standard - ISO/IEC 14662). (MoU)</i>
entity classes	A class used to model information that has been stored by the system, and the associated behaviour. A generic class, reused in many use cases, often with persistent characteristics. An entity class defines a set of entity objects, which participate in several use cases and typically survive those use cases.	<i>Rational Unified Process</i>
enumerations	A list of named values used as the range of a particular attribute type. For example, RGBColor = {red, green, blue}. Boolean is a predefined enumeration with values from the set {false, true}.	<i>Rational Unified Process</i>

<i>Term</i>	<i>Definition</i>	<i>Source</i>
EWG	UN/EDIFACT Working Group. To develop and maintain UN/EDIFACT, the support of harmonised implementations and the use of multi-lingual terminology.	
eXtensible Markup Language	See XML.	
Functional Service View (FSV)	A perspective of business transactions limited to those information technology interoperability aspects of IT Systems needed to support the execution of Open-edi transactions.	(MoU)
generalization	A taxonomic relationship between a more general element and a more specific element. The more specific element is fully consistent with the more general element and contains additional information. An instance of the more specific element may be used where the more general element is allowed. See: <i>inheritance</i> .	<i>Rational Unified Process</i>
implementation	A concrete realization of the contract declared by an interface; a definition of how something is constructed or computed.	
inception phase	The first <i>phase</i> of the Unified Process, in which the seed idea, request for proposal, for the previous generation is brought to the point of being (at least internally) funded to enter the <i>elaboration</i> phase.	<i>Rational Unified Process</i>
inheritance	The mechanism by which more specific elements incorporate structure and behaviour of more general elements related by behaviour. See <i>generalization</i> .	<i>Rational Unified Process</i>
instance	An individual entity satisfying the description of a <i>class</i> or <i>type</i> .	<i>Rational Unified Process</i>
interaction diagram	A diagram that shows an interaction, consisting of a set of objects and their relationships, including the messages that may be dispatched among them; interaction diagrams address the dynamic view of a system; a generic term that applies to several types of diagrams that emphasize object interactions, including collaboration diagrams, sequence diagrams and activity diagrams.	<i>Unified Modelling User Guide</i>
interface	A collection of <i>operations</i> that are used to specify a service of a <i>class</i> or a <i>component</i> . A named set of operations that characterize the behaviour of an element.	<i>Rational Unified Process</i>
ISO	The International Organization for Standardization.	
Messages	A specification of the conveyance of information from one instance to another, with the expectation that activity will ensue. A message may specify the raising of a signal or the call of an operation.	<i>Rational Unified Process</i>
messaging protocols	See Messages and Protocol.	
Metaclass	A class whose instances are classes. Metaclasses are typically used to construct <i>metamodels</i> .	
Metamodel	A model that defines the language for expressing a <i>model</i> .	<i>Rational Unified Process</i>
metaobjects	A generic term for all metaentities in a metamodeling language. For example, metatypes, metaclasses, metaattributes, and metaassociations.	<i>Rational Unified Process</i>
method	(1) A regular and systematic way of accomplishing something; the detailed, logically ordered plans or procedures followed to accomplish a task or	<i>Rational Unified Process</i>

<i>Term</i>	<i>Definition</i>	<i>Source</i>
	attain a goal. (2) UML 1.1: The implementation of an operation, the algorithm or procedure that effects the results of an operation. The implementation of an operation. It specifies the algorithm or procedure associated with an operation.	
methodology	the science of method. A body of methods used in a particular branch of activity.	<i>COD</i>
model	A semantically closed abstraction of a system. In the Unified Process, a complete description of a system from a particular perspective ('complete' meaning you don't need any additional information to understand the system from that perspective); a set of model elements. Two models cannot overlap. A semantically closed abstraction of a subject system. See: <i>system</i> . Usage note: In the context of the MOF specification, which describes a <i>meta-metamodel</i> , for brevity the meta-metamodel is frequently referred to as simply the model.	<i>Rational Unified Process</i>
modelling tools	any device or implement used to carry out modeling whether manually or by a machine.	<i>COD</i>
naming	to give a string used to identify a <i>model element</i> .	<i>Rational Unified Process</i>
n-ary association	An association among three or more classes.	<i>Unified Modelling User Guide</i>
note	One of model elements which is a figure symbol to express an element in a diagram.	<i>UML Toolkit</i>
object diagram	A diagram that encompasses <i>objects</i> and their relationships at a point in time. An object diagram may be considered a special case of a class diagram or a collaboration diagram. See: <i>class diagram, collaboration diagram</i> .	<i>Rational Unified Process</i>
Object Oriented Approach	The development of classes of business objects may support and have an impact on the developments in the area of simplification of EDI and its standards. A business object is a true representation of a tangible concept stemming from real business usage.	
objects	An entity with a well-defined boundary and identity that encapsulates <i>state</i> and <i>behaviour</i> . State is represented by <i>attributes</i> and <i>relationships</i> , behavior is represented by <i>operations, methods</i> , and <i>state machines</i> . An object is an instance of a class. See: <i>class, instance</i> .	<i>Rational Unified Process</i>
OCL	Object Constraints Language; a formal language used to express side effect-free constraints.	<i>Unified Modelling User Guide</i>
OO-edi	Object Oriented edi.	
Open-edi	electronic data interchange among multiple autonomous organizations to accomplish an explicit shared business goal according to Open-edi standards (i.e. that complies with the Open-edi Reference Model Standard - ISO/IEC 14662).	<i>(MoU)</i>
operation signature	See Operation and Signature.	

<i>Term</i>	<i>Definition</i>	<i>Source</i>
operation	A service that can be requested from an object to effect behaviour. An operation has a <i>signature</i> , which may restrict the actual parameters that are possible.	<i>Rational Unified Process</i>
package	A general purpose mechanism for organizing elements into groups. Packages may be nested within other packages.	<i>Rational Unified Process</i>
package diagram	shows groups of classes and dependencies among them.	<i>UML Distilled</i>
parameter	The specification of a variable that can be changed, passed, or returned.	<i>Unified Modelling User Guide</i>
patterns	offers useful bits of analysis, design, and coding techniques. Good examples to learn from; starting point for designs.	<i>UML Distilled</i>
phases	The time between two major project milestones, during which a well-defined set of objectives is met, artefacts are completed, and decisions are made to move or not move into the next phase.	<i>Rational Unified Process</i>
process view	The view of a system's architecture that encompasses the threads and processes that form the system's concurrency and synchronization mechanisms; a process view addresses the performance, scalability and throughput of the system.	<i>Unified Modelling User Guide</i>
projects	a plan; a scheme. A planned undertaking. A long-term task undertaken by a student to be submitted for assessment.	<i>COD</i>
protocol	A specification of a compatible set of messages used to communicate between <i>capsules</i> . The protocol defines a set of incoming and outgoing messages types (e.g. operations, signals), and optionally a set of sequence diagrams which define the required ordering of messages and a state machine which specifies the abstract behaviour that the participants in a protocol must provide.	<i>Rational Unified Process</i>
prototype	A release that is not necessarily subject to <i>change management</i> and <i>configuration control</i> .	<i>Rational Unified Process</i>
register	an official list in which items are recorded for reference (list of elementary data in which the meaning –i.e. semantics- of these data is defined).	
Registry	a place where registers are kept.	
Relationship	A semantic connection among model elements. Examples of relationships include <i>associations</i> and <i>generalizations</i> .	<i>Rational Unified Process</i>
repository	Electronic store of structured information (such as EDIFACT messages, X12 messages, XML messages).	
requirement	A desired feature, property or behaviour of a system.	<i>Unified Modelling User Guide</i>
re-use	Further use or repeated use of an <i>artefact</i> .	<i>Rational Unified Process</i>
scenario	A formal specification of a class of business activities having the same business goal.	<i>(ISO 19735 part I)</i>

<i>Term</i>	<i>Definition</i>	<i>Source</i>
schema	In the context of the MOF (Metadata Object Facility), a schema is analogous to a <i>package</i> which is a container of <i>model elements</i> . Schema corresponds to an MOF package. Contrast: <i>metamodel</i> , package corresponds to an MOF package.	<i>Rational Unified Process</i>
scope	the extent to which it is possible to range; the opportunity for action etc.	<i>COD</i>
semantics	relating to meaning in language; relating to the connotations of words.	<i>COD</i>
sequence diagram	A diagram that shows object interactions arranged in time sequence. In particular, it shows the objects participating in the interaction and the sequence of messages exchanged. Unlike a collaboration diagram, a sequence diagram includes time sequences but does not include object relationships. A sequence diagram can exist in a generic form (describes all possible <i>scenarios</i>) and in an instance form (describes one actual scenario). Sequence diagrams and collaboration diagrams express similar information, but show it in different ways. See: <i>collaboration diagram</i> .	<i>Rational Unified Process</i>
signature	The name and parameters of a behavioural feature. A signature may include an optional returned parameter.	<i>Rational Unified Process</i>
Simpl-EDI	Subsets of UN/EDIFACT messages especially designed for SMEs. Simpl-EDI (Simple Electronic Business) defines simplest processes and their required core data allowing the exchange of the minimum data to effect a business transaction electronically.	<i>UN/CEFACT SIMAC</i>
software developer	A person responsible for developing a software in accordance with project-adopted standards and procedures. This can include performing activities in any of the <i>requirements, analysis & design, implementation, and test</i> workflows.	<i>Rational Unified Process</i>
software solution	the act or a means of solving a problem or difficulty using a software.	<i>COD</i>
specification	A declarative description of what something is or does. Contrast: <i>implementation</i> .	<i>Rational Unified Process</i>
stakeholder	An individual who is materially affected by the outcome of the system.	<i>Rational Unified Process</i>
state diagram	shows how single object behaves across many use cases.	<i>UML Distilled</i>
state machine	A state machine specifies the behaviour of a <i>model element</i> , defining its response to events and the life cycle of the object. A behaviour that specifies the sequences of <i>states</i> that an object or an interaction goes through during its life in response to events, together with its responses and actions.	<i>Rational Unified Process</i>
statechart (state machine) diagram	A diagram that shows a state machine. See: <i>state machine</i> .	<i>Rational Unified Process</i>
states	A condition or situation during the life of an object during which it satisfies some condition, performs some activity, or waits for some event. Contrast: state [OMA].	<i>Rational Unified Process</i>
stereotype	A new type of modelling element that extends the semantics of the metamodel. Stereotypes must be based on certain existing types or classes in the metamodel. Stereotypes may extend the semantics, but not the structure of pre-existing types and classes. Certain stereotypes are	<i>OMG</i>

<i>Term</i>	<i>Definition</i>	<i>Source</i>
	predefined in the UML, others may be user defined. Stereotypes are one of three extensibility mechanisms in UML. See: constraint, tagged value.	
sub-domain	An lower area of knowledge or activity characterized by a family of related systems contained by a domain.	
swimlane	A partition on an interaction diagram for organizing responsibilities for actions.	<i>Unified Modelling User Guide</i>
syntax rules	rules governing the structure of an interchange and its functional groups, messages, segments and data elements.	(ISO 9735)
system	As an instance, an executable configuration of a software application or software application family; the execution is done on a hardware platform. As a class, a particular software application or software application family that can be configured and installed on a hardware platform. In a general sense, an arbitrary system instance. 1. A collection of connected units that are organized to accomplish a specific purpose. A system can be described by one or more models, possibly from different viewpoints. Synonym: physical system. 2. A top-level subsystem.	<i>Rational Unified Process</i>
templates	A pre-defined structure for an <i>artifact</i> . Synonym: <i>parameterized element</i> .	<i>Rational Unified Process</i>
test	A <i>core process workflow</i> in the software-engineering process whose purpose is to integrate and test the system.	<i>Rational Unified Process</i>
TMWG	UN/CEFACT Techniques and Methodologies Group. To research and identify techniques and methodologies which could be utilised by CEFACT and its working groups to enhance the process by which its deliverables are produced and integrated.	
traceability	The ability to trace a project element to other related project elements, especially those related to <i>requirements</i> .	<i>Rational Unified Process</i>
transition phase	The fourth <i>phase</i> of the process in which the software is turned over to the user community; a relationship between two states indicating that an object in the first state will perform certain actions and enter the second state when a specified event occurs and conditions are satisfied.	<i>Unified Modelling User Guide</i>
type	Description of a set of entities which share common characteristics, relations, attributes, and semantics. A stereotype of class that is used to specify a domain of instances (objects) together with the operations applicable to the objects. A type may not contain any methods. See: <i>class</i> , <i>instance</i> . Contrast: <i>interface</i> .	<i>Rational Unified Process</i>
UML	See Unified Modelling Language.	
UN/EDIFACT	(United Nations Electronic Data Interchange for Administration, Commerce and transport): "User application protocol, for use within user application systems for data to be interchanged, compatible with the OSI model."	(UN/EDIFACT <i>syntax implementation guidelines</i> , UNTDID 1990). (MoU)
Unified Modeling	a set of diagrams that communicate requirements regarding a business	

<i>Term</i>	<i>Definition</i>	<i>Source</i>
Language (UML)	process.	
use case	The specification of a sequence of actions, including variants, that a system (or other entity) can perform, interacting with <i>actors</i> of the system. See: <i>use-case instances</i> . A use-case class contains all main, alternate flows of events related to producing the 'observable result of value'. Technically, a use-case is a class whose instances are <i>scenarios</i> .	<i>Rational Unified Process</i>
use-case analysis	The part of the software development process using use case methodology whose primary purpose is to formulate a model of the problem <i>domain</i> . Analysis focuses on what to do, design focuses on how to do it.	
use-case diagram	A diagram that shows the relationships among <i>actors</i> and <i>use cases</i> within a system.	<i>Rational Unified Process</i>
use-case instance	A sequence of actions performed by a system that yields an observable result of value to a particular actor.	<i>Rational Unified Process</i>
use-case model	A model that describes a system's functional <i>requirements</i> in terms of <i>use cases</i> .	
use-case realization	A use-case realization describes how a particular use case is realized within the <i>design model</i> , in terms of collaborating objects.	<i>Rational Unified Process</i>
use-case view	An <i>architectural view</i> that describes how critical use cases are performed in the system, focusing mostly on architecturally significant components (objects, tasks, nodes). In the Unified Process, it is a view of the <i>use-case model</i> .	<i>Rational Unified Process</i>
view elements	A view element is a textual and/or graphical projection of a collection of <i>model elements</i> .	<i>Rational Unified Process</i>
view	A simplified description (an abstraction) of a model, which is seen from a given perspective or vantage point and omits entities that are not relevant to this perspective. See also <i>architectural view</i> .	<i>Rational Unified Process</i>
workflow	A sequence of activities in the Rational Unified Modelling Methodology.	
XML (eXtensible Markup Language)	XML is designed to enable the exchange of information (data) between different applications and data sources on the World Wide Web. XML is a simplified subset of the Standard Generalized Markup Language (SGML). XML allows construction of structured data (trees) which rely on composition relationships. XML schemas are used to define data models.	<i>UN/CEFACT SIMAC</i>

Annex VI

Cost Benefit Analysis of the eTIR system: summary, limitations and recommendations

VI.1. Background

At its forty-eighth session, further to requests from the Inland Transport Committee (ITC), the Working Party on Customs Questions affecting Transport (WP.30) and the Informal Ad hoc Expert Group on Conceptual and Technical aspects of Computerization of the TIR Procedure (GE.1 or “Expert Group”), the TIR Executive Board (TIRExB) mandated the secretariat to conduct a Cost Benefit Analysis (CBA) of the eTIR Project (TIRExB/REP/2011/48final para. 10). Consequently, taking into account the funds available in the TIRExB consultancy budget line and the task to be undertaken, the TIR secretariat requested the relevant services of the United Nations Office at Geneva (UNOG) to issue a tender. In line with the applicable United Nations procurement principles, rules and procedures, UNOG sent out a request for quotes to five companies. Two companies submitted bids, which were evaluated. The contract was awarded to the qualified bidder, whose bid substantially conformed to the requirements set forth in the solicitation documents and who had been evaluated as being most cost-efficient for the United Nations.

At its twentieth session, the Expert Group welcomed the draft CBA, presented in Informal documents GE.1 Nos. 6a, 6b, 6c, 6d and 6e (2012). The Expert Group expressed its general consent with the methodology used by the consultants, while, at the same time, raising preliminary comments on various assumptions used by the consultants in the course of the CBA. Inter alia, the Expert Group was of the opinion that the two scenarios described in the CBA (gradual introduction of eTIR Carnets versus the one time replacement of the paper TIR system by an electronic system, the so-called “big-bang” scenario) were too optimistic and requested the unrealistic “big-bang” scenario, to be replaced by a more pessimistic (i.e.: more realistic) one. In reply to suggestions that the scenarios used should be based on complex forecasts on the long-term development of transport flows between TIR Contracting Parties, the secretariat recalled that the CBA had been adjudged to the consultants on the basis of a clear mandate and with a limited budget and that, therefore, it was unrealistic to expect them to undertake such a complex simulation exercise, in addition to their work so far. To wrap up its initial discussions on the issue, the Expert Group requested additional time in order to provide the secretariat in writing with its comments on the draft CBA and proposed that eTIR focal points would also be given the opportunity to submit their contributions. Further to this request, the secretariat sent an e-mail to eTIR focal points, soliciting their considerations on the draft CBA.

On the basis of all comments received, the consultants prepared an updated version of the CBA, which was presented as Informal document No. 12 at the Expert Group’s twenty-first session. The Expert Group took note that, apart from apparent mistakes in the calculations and lack of textual consistency, the CBA was final. The Expert Group agreed on the methodology used by the consultants, but felt that some costs, e.g. training, and indirect benefits were missing from the calculations. The Expert Group agreed with the proposal by the secretariat to prepare a revision of Informal document No. 12, correcting all remaining mistakes, for circulation among the network of eTIR focal points. Furthermore, it requested the secretariat to prepare a document, for consideration at its twenty-second session,

containing a summary of the consultants' CBA, in combination with an assessment of the limitations of the analysis, i.e. the missing costs and benefits, as well as recommendations.

At its twenty-second session, the Expert Group welcomed Informal document GE.1 No. 2 (2013), discussed it and slightly revised the wording of the recommendations. The IRU expressed reservations with regard to the final CBA, the corresponding assessment made by the TIR secretariat and the recommendations by the Expert Group (see ECE/TRANS/WP.30/2013/10, para. 16). After responding to the IRUs reservations (see ECE/TRANS/WP.30/2013/10, para. 17), the Expert Group requested the secretariat to include a revised version of Informal document GE.1 No. 2 (2013) as an annex to the eTIR Reference Model and submit it to WP.30 for consideration.

VI.2. Summary of the Cost Benefit Analysis

VI.2.1. Disclaimer

The CBA, as contained in Informal document GE.1 No. 12 Rev.1 (2012), reflects the views of the consultants and not those of the UNECE secretariat. The UNECE secretariat's contribution has been limited to ensuring that the CBA methodology has been properly applied and preparing the underlying summary.

VI.2.2. Objective and methodology

The main objective of the eTIR CBA is to compare the costs and the benefits of the implementation of an eTIR system under various assumptions, exploring different technological options and assuming different scenarios over a period of twelve years, i.e. two years for the development and deployment of a centralized exchange platform (the "so-called" eTIR international system), followed by ten years of progressively increased usage. In line with standard CBA methodology, costs and benefits are discounted to allow their comparison at present value. For the purpose of the eTIR CBA, a discount rate of 5 per cent is used. Returns on investment (ROI) and Net Present Values (NPV) are used to compare the various technological options.

7. The assumptions are based on various sources, e.g. the eTIR Reference Model, as well as the consultants' expertise in the field of information and communication technology (ICT) projects, in particular software development projects.

VI.2.3. Technological options

The CBA identifies six technological options to implement a centralized eTIR international system.

- At premises: a new data centre will be established to host the eTIR international system. This implies the purchase and maintenance of a completely new data centre (space, network, hardware and software).
- UNOG: the eTIR international system will run on machines hosted and maintained at the United Nations at Geneva (UNOG) data centre.
- UNICC: the eTIR international system will run on machines hosted and maintained at the United Nations International Computing Center (UNICC) data centre.

- IaaS (Infrastructure as a Service): the eTIR international system will run on a shared infrastructure in cloud.¹⁰
- PaaS (Platform as a Service): the eTIR international system will run on a shared platform in cloud.
- SaaS (Software as a Service): the eTIR international system will be provided as a service by a cloud provider.

The technical assessment, presented in Annex of the CBA, identifies PaaS as the best option, followed by UNOG and UNICC.

VI.2.4. Scenarios

The CBA considers two different scenarios over a period of 12 years. It is assumed that, at the end of this period, all 57 Contracting Parties (CP) to the TIR Convention would have upgraded their Customs IT systems to ensure the connectivity with the eTIR international system, according to the following schedule:

Table VI.1

Annual number of Contracting Parties upgrading their IT system

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>
No. of Contracting Parties		3	3	3	5	10	10	5	5	5	4	4

The two scenarios differ from each other by the number of TIR transports that would be handled solely electronically every year, i.e. making full use of the eTIR international system. In the first scenario, the number of computerized TIR transports would gradually reach the current annual number of TIR Carnets used (approx. 3 million). In the second scenario, only half of those would be computerized after the twelfth year. The following table shows the annual number of computerized TIR transports for both scenarios.

Table VI.2

Number of fully computerized TIR transports (thousands)

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>
Scenario 1		100	700	800	1 200	1 300	2 000	2 500	2 600	2 800	3 000	
Scenario 2		50	300	400	500	600	1 000	1 200	1 300	1 400	1 500	

VI.2.5. Costs

The following costs categories are considered:

- Development costs
- Initial costs
- Operational and hosting costs
- Helpdesk costs
- Costs to adapt national applications

¹⁰ The term “cloud” refers to cloud computing, i.e. the usage of (shared) computing resources (hardware and software) made available by specialized companies as services over the Internet.

For each cost category, minimal and maximum costs are estimated.

VI.2.5.1. Development costs

The development costs of the three components of the eTIR international system have been estimated separately:

- (a) the kernel (ensuring the electronic exchange of eTIR messages);
- (b) the web base user interface, which would serve as backup to the kernel, and
- (c) the administration console.

The system dimension of each component has been estimated by means of a function point analysis (FPA) and adjusted on the basis of an estimated processing complexity. On that basis (and by using the Constructive Cost Model (COCOMO) II methodology), the development costs and schedule have been estimated. The development costs of the entire eTIR international system range between 924,800 and 1,127,000 US\$.

VI.2.5.2. Initial Costs

Setting up the eTIR international system will require different costs, depending on the technological options selected. Table 3 presents the minimum and maximum estimated initial costs for each option. They include, but are not limited to, purchasing facilities, hardware and software, as well as training and recruitment activities.

Table VI.3

Initial costs

(United States dollars)

	<i>Min</i>	<i>Max</i>
At premises	1 255 000	1 450 000
UNOG	681 500	792 500
UNICC	632 000	743 000
IaaS	632 000	743 000
PaaS	142 000	183 000
SaaS	10 000	15 000

VI.2.5.3. Operational and hosting costs

Operating and maintaining the eTIR international system will imply annual costs. Most of those costs depend on the number of TIR transports that will be handled by the system. The costs will also vary greatly, depending on the technological options selected. Table 4 presents the minimum and maximum estimated annual variable costs for each option, in case 3 million TIR transport would be handled by the system. Variable costs include, depending on the option, costs for testing, backup, staff, training, audit, insurance and management as well as fees paid to cloud operators.

Table VI.4

Annual operational and cloud costs

(United States dollars)

	<i>Min</i>	<i>Max</i>
At premises	340 419	526 059
UNOG	194 739	243 259

	<i>Min</i>	<i>Max</i>
UNICC	167 719	257 059
IaaS	113 402	153 126
PaaS	159 116	180 816
SaaS	1 500 000	3 000 000

By dividing the above-mentioned costs by 3 million, a unit cost operational and cloud cost per TIR transport has been calculated. On that basis, the annual variable costs for each scenario have been estimated.

VI.2.5.4. Helpdesk costs

The eTIR Reference Model requires only a minimal helpdesk, the main function of which it is to assist countries in connecting their IT systems to the eTIR international system. Such a helpdesk would be composed of 2 IT specialists, working 40 hours a week. The initial costs to establish such a helpdesk would range from 24,500 to 44,000 US\$. The operating and personnel costs have been estimated between 126,180 and 216,600 US\$ per annum.

VI.2.5.5. Costs to adapt national applications

It is assumed that countries already have, or will, develop IT systems that process TIR operations nationally or regionally. Therefore, the only costs that have been assessed are aimed at;

- (a) ensuring that all information required by the eTIR international system can be entered and stored in the national IT system;
- (b) integrating eTIR web services in the national applications handling TIR operations and
- (c) developing the interfaces (web services) required by the eTIR international system.

On the basis of an estimated project plan, adapting national Customs IT system would cost between 120,000 and 150,000 US\$ per country.

VI.2.5.6. Other costs

The consultants have considered that there would be no other costs, including from the trader/transport community.

VI.2.6. Benefits

A fully computerized TIR system will generate direct annual benefits for Customs, the guarantee chain and holders. The various benefits have been estimated independently, before calculating the average benefits of computerization per TIR transport.

VI.2.6.1. For Customs

The direct benefits for Customs have been derived from the comparison between the time required to process a paper based TIR Carnet and the estimated time it would take to process the equivalent electronic information, once the system would be fully computerized. Taking also into account that some Customs administrations already receive information in an electronic form and that not all time reductions lead to actual saving in personnel costs, the savings for Customs administrations are estimated at 4,311,428 US\$ per annum, if 3 million TIR transports are computerized.

VI.2.6.2. For the guarantee chain

The guarantee chain's costs related to printing, distribution and archiving of TIR Carnets are estimated at 2 US\$ per TIR Carnet, resulting in potential savings of 6 million US\$ per year, in case the entire TIR system becomes paperless.

VI.2.6.3. For the holders

The benefits for the holders, resulting from the reduction in time to begin a TIR transport (i.e. difference between the time to fill in a paper TIR Carnet and the time to input data electronically) as well as the reduction in time spent at borders could reach 16,437,504 US\$ per annum.

VI.2.7. Results of the CBA

In order to include a factor of incertitude (inherent to such a large scale project) into the analysis, a 20 per cent risk ratio to both costs and benefits has been introduced, i.e. costs have been increased by 20 per cent and benefits decreased by 20 per cent. On the basis of the risk-adjusted and discounted costs and benefits, the annual cash flows, ROI and NPV have been calculated for each technological option and for both scenarios over a 12-years period. Tables 5 and 6 present the final results of the CBA of the eTIR system.

Table VI.5

Costs, Benefits, ROI and NPV for scenario 1

(United States dollars)

	<i>Premises</i>	<i>UNOG</i>	<i>UNICC</i>	<i>PAAS</i>	<i>IAAS</i>	<i>SAAS</i>
Development costs	1 127 000	1 127 000	1 127 000	1 127 000	1 127 000	–
Initial costs	1 450 000	792 500	743 000	183 000	743 000	15 000
Oper. + Hosting costs	2 981 001	1 378 468	1 456 668	1 024 624	867 717	17 000 000
Sub-total costs	5 558 001	3 297 968	3 326 668	2 334 624	2 737 717	17 015 000
Help Desk costs	2 210 000	2 210 000	2 210 000	2 210 000	2 210 000	2 210 000
National App costs	8 550 000	8 550 000	8 550 000	8 550 000	8 550 000	8 550 000
Total Costs	16 318 001	14 057 968	14 086 668	13 094 624	13 497 717	27 775 000
Total Costs (incl. 20% risk factor)	19 581 601	16 869 561	16 904 001	15 713 549	16 197 260	33 330 000
Discounted Costs (incl. risk factor)	14 979 069	12 941 676	12 950 077	12 391 640	12 470 894	23 464 073
Benefits for Customs (incl. 20% risk factor)	19 550 000	19 550 000	19 550 000	19 550 000	19 550 000	19 550 000
Total Benefits (incl. 20% risk factor)	121 210 000	121 210 000	121 210 000	121 210 000	121 210 000	121 210 000
Discounted Customs Benefits (incl.risk factor)	13 255 247	13 255 247	13 255 247	13 255 247	13 255 247	13 255 247
Discounted Overall Benefits (incl.risk factor)	82 182 532	82 182 532	82 182 532	82 182 532	82 182 532	82 182 532
ROI for Customs	-12%	2%	2%	7%	6%	-44%
Overall ROI	449%	535%	535%	563%	559%	250%
Net present value	67 203 464	69 240 856	69 232 456	69 790 892	69 711 639	58 718 460

Table VI.6

Costs, Benefits, ROI and NPV for scenario 2

(United States dollars)

	<i>Premises</i>	<i>UNOG</i>	<i>UNICC</i>	<i>PAAS</i>	<i>IAAS</i>	<i>SAAS</i>
Development costs	1 127 000	1 127 000	1 127 000	1 127 000	1 127 000	–

	<i>Premises</i>	<i>UNOG</i>	<i>UNICC</i>	<i>PAAS</i>	<i>IAAS</i>	<i>SAAS</i>
Initial costs	1 450 000	792 500	743 000	183 000	743 000	15 000
Oper. + Hosting costs	2 981 001	668 962	706 912	497 244	421 098	8 250 000
Sub-total costs	5 558 001	2 588 462	2 576 912	1 807 244	2 291 098	8 265 000
Help Desk costs	2 210 000	2 210 000	2 210 000	2 210 000	2 210 000	1 286 300
National App costs	8 550 000	8 550 000	8 550 000	8 550 000	8 550 000	8 550 000
Total Costs	16 318 001	13 348 462	13 336 912	12 567 244	13 051 098	18 101 300
Total Costs (incl. 20% risk factor)	19 581 601	16 018 155	16 004 295	15 080 693	15 661 317	21 721 560
Discounted Costs (incl. risk factor)	14 979 069	12 362 151	12 337 675	11 543 030	12 523 940	15 492 843
Benefits for Customs (incl. 20% risk factor)	9 487 500	9 487 500	9 487 500	9 487 500	9 487 500	9 487 500
Total Benefits (incl. 20% risk factor)	58 822 500	58 822 500	58 822 500	58 822 500	58 822 500	58 822 500
Discounted Customs Benefits (incl.risk factor)	6 406 022	6 406 022	6 406 022	6 406 022	6 406 022	6 406 022
Discounted Overall Benefits (incl.risk factor)	39 717 335	39 717 335	39 717 335	39 717 335	39 717 335	39 717 335
ROI for Customs	-57%	-48%	-48%	-45%	-49%	-59%
Overall ROI	165%	221%	222%	244%	217%	156%
Net present value	24 738 266	27 355 184	27 379 660	28 174 305	27 193 395	24 224 492

Finally, the profitability of the project for single Customs administration has been assessed, indicating that, from when approximately 30,000 TIR operations per year are fully computerized, the investment in both the eTIR international system and the costs to adapt a national IT system become profitable.

VI.2.8. Conclusions and recommendations

Combining their technical assessment with the results of the CBA, the consultants have made the following conclusions and recommendations:

- The eTIR system should be implemented as soon as possible to maximize its benefits;
- The best technical option to implement the eTIR international system is to use a Platform as a Service (cloud solution), closely followed by Iaas, UNICC and UNOG options;
- In scenario 2, even if the project does not have a positive ROI for Customs alone, it remains a very profitable project overall.
- Processing annually 30,000 TIR operations electronically is sufficient to justify the investment in eTIR for any single Customs administration.

VI.3. Assessment of the Cost Benefit Analysis by the secretariat

VI.3.1. Scope

VI.3.1.1. General

As highlighted by the Expert Group, when analysing earlier versions, the CBA does, unfortunately, not take into account any indirect benefits from the computerization of the TIR system. Indirect benefits can range from increased transport facilitation (due to the

availability of advance information) to, ultimately, increased security of the TIR system, which is beneficial to both Customs and the guarantee chain.

Furthermore, contrary to the consultants' assumption, both transport operators and the guarantee chain may incur costs from the introduction of the eTIR system.

VI.3.1.2. Technological options

The technological options in the CBA allow for a good comparison of the various hosting possibilities of the eTIR international system. Nevertheless, all analysed technological options are based on the development of the eTIR international system from scratch. The use (and configuration) of "off the shelf" solutions has not been considered, neither in the technical evaluation nor in the CBA.

VI.3.1.3. Scenarios

The two scenarios analysed by the consultants are relatively straightforward as they do not take into account any future political or economic developments. Over a decade, many factors may have a significant influence on the annual number of TIR transports. The following, non-exhaustive list, contains an overview of potential events, which may significantly influence the use of the TIR system and, thus, the eTIR international system:

- The ratification and use of the TIR Convention by new countries (e.g. China, Pakistan);
- The extension or creation of other transit agreements as alternatives to the TIR system (e.g. Turkey joining the Common Transit Convention);
- The creation or extension of Customs Unions (e.g. the Russian Federation-Belarus-Kazakhstan Customs Union);
- Variations in trade flows, which could significantly affect international road transport patterns;
- The fluctuation in energy prices, which has direct repercussions on the modal split of international transport.

It should be stressed that, although possibly important, the probabilities as well as the effects of such events occurring (as well as others) remain very difficult to estimate and require dedicated studies. The combined effects are even more difficult to analyse and, thus, it seems understandable that the consultants have not taken them into account in the CBA. However, the two scenarios proposed by the consultants allow comparing two significantly different patterns in the usage of the eTIR international systems and their influence on the profitability of the project.

VI.3.2. Assumptions

The consultants' assumptions are sound and generally based on concrete reference material.¹¹ However, considering that some of the favoured options envisage that the eTIR

¹¹ The functionalities of the eTIR system, taken into account by the consultants in the CBA, are those described in version 3.0 of the eTIR Reference Model (ECE/TRANS/WP.30/2011/4). In case Contracting Parties, when preparing for the introduction of a legal framework to enable the eTIR system, decide to introduce requirements which are new to or different from those described in the eTIR Reference Model, the results of the CBA might change or even lose relevance.

international system be hosted in an international data centre in Geneva, the labour costs, calculated as a weighted average of European wages, seem too low.

VI.3.3. Methodological aspects

VI.3.3.1. Function point analysis

The FPA, used for the estimation of the development costs of the three components of the eTIR international system, allows for a realistic assessment of the complexity of each function to be performed by each component and allows, therefore, a realistic estimation of the development efforts for the whole system.

VI.3.3.2. Costs

The consultants have undertaken a very detailed analysis of the costs attributable to the various technological options. They thoroughly listed and priced development, equipment, helpdesk and maintenance costs for a system that can handle 3 million TIR transport per year. On the basis of optimistic and pessimistic assumptions, they have calculated minimum and maximum costs. Yet, to be on the safe side, they considered only maximum costs and have increased them by a 20 per cent risk factor.

However, the assumption that total variable costs can be divided by the number of TIR transports in order to calculate unitary costs is questionable. Indeed, this may be a valid assumption for cloud solutions, but it does not take into account that, for some options, the variable costs are not fully scalable (e.g. personnel or infrastructure costs). Furthermore, some costs may be missing or underestimated, in particular those that relate to personnel costs (see III.2), as well as training costs.

VI.3.3.3. Benefits

The consultants' estimation of the benefits is purely based on the difference in time required to provide and process electronic information compared to paper, together with the consequences of reducing the processing time for Customs officers and the time spent at Customs offices for transport operators. To be on the safe side, any benefits have been decreased by a 20 per cent risk factor. Therefore, the consultants did indirectly take into account that the benefits of a computerized system may not automatically lead to savings in personnel costs and that some benefits are already present today, e.g. the obligation to provide advance information on incoming TIR transports in the EU.

Considering that providing advance information to Customs and increasing security are major objectives of the eTIR project, it is unfortunate that the consultants have not even made an attempt to estimate those benefits. Those missing benefits would, most likely, largely offset the costs which remain missing or are underestimated.

VI.3.3.4. CBA

The consultants have used a standard cost benefit methodology, calculating the present value of future costs and benefits with a 5 per cent discount rate. The use of both ROI and NPV gives an approximate idea of the profitability and the actual value of the project, taking into account the various technological options. Most importantly, the ROI and NPV allow for an adequate comparison of the technological options for both scenarios.

VI.3.4. Conclusions

The CBA provides, for the various technological options, a good estimation of the profitability of the eTIR project as well as an approximation of the amounts that would be required to develop and maintain it. It shows that the profitability of the project for Customs alone depends significantly on the future usage of the system, but that the overall ROI remains highly positive, even if the system would only be used for a limited number of TIR transports.

Despite the fact that some assumptions of the CBA can be criticized for underestimating some costs and benefits, the methodology used remains solid and, therefore, the CBA demonstrates that the eTIR project could be greatly beneficial for all the actors involved in the TIR procedure, in particular transport operators.

VI.4. Recommendations

On the basis of the results of the CBA and its own expertise, the Expert Group is of the view that:

(a) Considering that the eTIR project seems to be highly profitable for all parties involved in the TIR procedure, it is recommended that the eTIR system should be implemented, including at national level, as soon as the legal provision would be prepared and ratified, the technical specification completed and a project road map agreed on;

(b) Considering the large benefits for TIR Carnet holders, a potential avenue to explore for the financing of the eTIR international system seems to be through a contributory system per TIR transport, similar to the one used for TIRExB;

(c) Considering the commercial sensibility of the data that will be handled by the eTIR international system and in view of the relatively small costs differences with the cloud solution recommended in the CBA, it is recommended that the eTIR international system be hosted at UNICC or UNOG data centres;

(d) Considering the availability of message broker software on the market, it is recommended to consider the use of “off the shelf” solutions, including open source, for the development of the eTIR international system.

Annex VII

Joint Statement on the computerization of the TIR procedure

Endorsed in Geneva, on 11 June 2015

We, the representatives of the Contracting Parties at the session of the Administrative Committee for the TIR Convention, 1975, on 11 June 2015,

Recognizing the significance of economic globalization and the role of transport and border crossing facilitation as a prerequisite for more efficient international trade and competitiveness,

Aware of the essential need for modern, efficient, and coordinated functions of both customs and transport operations at border crossings,

Conscious of the need to foster transport and border crossing facilitation by further enhancing of the existing legal framework offered by the TIR Convention,

Noting the decision of the ECE Inland Transport Committee of February 2014 to urge Contracting Parties to the TIR Convention to accelerate efforts to complete and launch the computerization of the TIR procedure,

Welcoming the progress made towards the finalization of the electronic TIR (eTIR) Reference Model,

Aware of the need to develop an appropriate legal framework that will allow the TIR procedure to function electronically,

Dedicated to further facilitate legitimate trade and transport, protect government revenues,

Emphasizing the importance of a systematic electronic exchange of information between customs administrations to further improve management and controls,

Considering the need to allow a step-by-step introduction of a computerized TIR procedure,

Convinced that the computerization will not only improve the TIR system but also allow it to expand beyond its current frontiers,

Recognizing that, in times where customs administrations have or are in the process to computerize all customs procedure, the TIR Convention would become even more attractive if computerized,

1. *Invite* all Contracting Parties to the TIR Convention, 1975 to support the computerization of the TIR system by:

(a) Constructively contributing to the development of a legal framework that would enable progressive implementation of a computerized TIR procedure;

(b) Considering the eTIR Reference Model and all relevant international standards when computerizing the management of TIR operation at the national level;

(c) Actively taking part in the finalization and implementation of the eTIR by means of an integrated approach, taking into account all technical, legal, administrative and financial aspects and, thus,

(d) Providing, to the extent possible, support to those Contracting Parties that wish to implement computerization by means of exchange of information and technical know-how.

2. *Invite* other United Nations Member States to join and implement the TIR Convention and in this way support customs transit facilitation, ensuring that the TIR Convention remains an effective, efficient transport and border crossing facilitation tool.

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