



Economic Commission for Europe**Inland Transport Committee****Working Party on Customs Questions affecting Transport****Group of Experts on Conceptual and
Technical Aspects of Computerization of the TIR Procedure****First session**

Geneva, 27–29 January 2021

Item 7 (b) of the provisional agenda

eTIR conceptual, functional and technical documentation version 4.3:**eTIR Concepts****eTIR concepts - Version 4.3
(formerly e-Business requirements)****Note by the secretariat****Introduction - Mandate**

The Inland Transport Committee during its eighty-second session (23–28 February 2020) approved (ECE/TRANS/294, para. 84¹) the establishment of the Group of Experts on Conceptual and Technical Aspects of Computerization of the TIR Procedure (WP.30/GE.1) and endorsed its ToR² (ECE/TRANS/WP30/2019/9 and ECE/TRANS/WP.30/2019/9/Corr.1) pending approval by UNECE Executive Committee (EXCOM). EXCOM during its Remote informal meeting of members of the Executive Committee (20 May 2020) approved the establishment of the Group of Experts on Conceptual and Technical Aspects of Computerization of the TIR Procedure (WP.30/GE.1) until 2022, based on the terms of reference included in document ECE/TRANS/WP.30/2019/9 and Corr.1, as contained in document ECE/TRANS/294 (ECE/EX/2020/L.2, para 5(b)).³

¹ Decision of the Inland Transport Committee para. 84 / ECE/TRANS/294
www.unece.org/fileadmin/DAM/trans/doc/2020/itc/ECE-TRANS-294e.pdf

² Terms of reference of the newly established Group approved by the Inland Transport Committee and the Executive Committee (EXCOM) of UNECE
www.unece.org/fileadmin/DAM/trans/bcf/wp30/documents/2019/ECE-TRANS-WP30-2019-09e.pdf
and corrigendum www.unece.org/fileadmin/DAM/trans/bcf/wp30/documents/2019/ECE-TRANS-WP30-2019-09c1e.pdf

³ Decision of EXCOM, ECE/EX/2020/L.2 / para. 5(b)
www.unece.org/fileadmin/DAM/commission/EXCOM/Agenda/2020/Remote_informal_mtg_20_05_2020/Item_4_ECE_EX_2020_L.2_ITC_Sub_bodies_E.pdf



The terms of reference of the Group stipulate that the Group should focus its work on preparing a new version of the eTIR specifications, pending the formal establishment of TIB. More specifically the Group should (a) prepare a new version of the technical specifications of the eTIR procedure, and amendments thereto, ensuring their alignment with the functional specifications of the eTIR procedure; (b) prepare a new version of the functional specifications of the eTIR procedure, and amendments thereto, ensuring their alignment with the conceptual specifications of the eTIR procedure; (c) prepare amendments to the conceptual specifications of the eTIR procedure, upon requests by WP.30.

This document presents the eTIR concepts.

1. High-level description of the eTIR project

As elaborated in the introduction to the eTIR conceptual, functional and technical documentation 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 it should, ultimately, be aimed at replacing the current paper TIR Carnet without changing the basic philosophy of the TIR Convention. In order to streamline the work towards this challenging objective, the Working Party agreed (and later confirmed) that the approach of the computerization process should be focused on the establishment of an international, centralized database, whose aim is to allow the management by customs of data on guarantees and the exchange of information between customs authorities, being two elements of the TIR Carnet life cycle not computerized so far.

Holders will be required to send their advance TIR data/declaration only to countries of departure of the TIR Transports. The holder can send his declaration directly to the country of departure using the national declaration mechanisms. Alternatively, the holder can use the national customs system in his country of residence to send declarations to third countries (this functionality is optional for customs systems), use the declaration web service in the eTIR international system or use other private services. Moreover, the eTIR project defines a standard declaration message. Other elements falling outside the scope of the eTIR project concern the approval of international organizations, national associations, transport operators and vehicles, the organization and functioning of the guarantee system, the management of a control system under Annex 10 and the administration of the TIR Convention.

The first part of this document aims at providing a high-level description of the international, centralized database, the eTIR international system, whose aim is to complement developments and achievements at the national and private level relating to the computerization of the TIR Carnet life cycle. It also provides general guidelines for the smooth transition from the current paper-based system to full computerization. The second part of this document describes the functioning of the eTIR international system by means of use cases and activity diagrams.

1.1 Actors and roles

This section describes the different tasks and obligations related to the actors and their roles.

1.1.1 Customs authorities

Customs authorities can perform the following roles:

- Customs office of departure
- Customs office of destination
- Customs office of entry (en route)
- Customs office of exit (en route)
- Customs office of discharge.

1.1.2 *eTIR international system*

The eTIR international system interfaces with the guarantee chain and will ensure the management by customs of data on guarantees at international level. Moreover, in view of the fact that, within the eTIR system, electronic direct exchange of information between the customs administrations located in the different Contracting Parties is neither currently feasible nor enforceable, it will facilitate the secure circulation of standardized information between customs administrations.⁴

1.1.3 *Holder*

The holder performs the TIR transport and is responsible for providing the related declaration data electronically and for presenting the goods to the relevant Custom offices referred to in Chapter 1.1.1 above.

1.1.4 *Guarantee Chain*

The guarantee chain as described in this document is composed of an international organization, authorized by AC.2 to take on responsibility for the effective organization and functioning of an international guarantee system in accordance with the provisions of Article 6.2bis of the Convention and national associations, approved by Contracting Parties in accordance with the provisions of Article 6 and Annex 9, Part II of the Convention to act as guarantors. The guarantee chain provides the holder with an international guarantee i.e. a guarantee recognized by each of the Contracting Parties involved in the TIR transport.

1.2 **Fundamental principles**

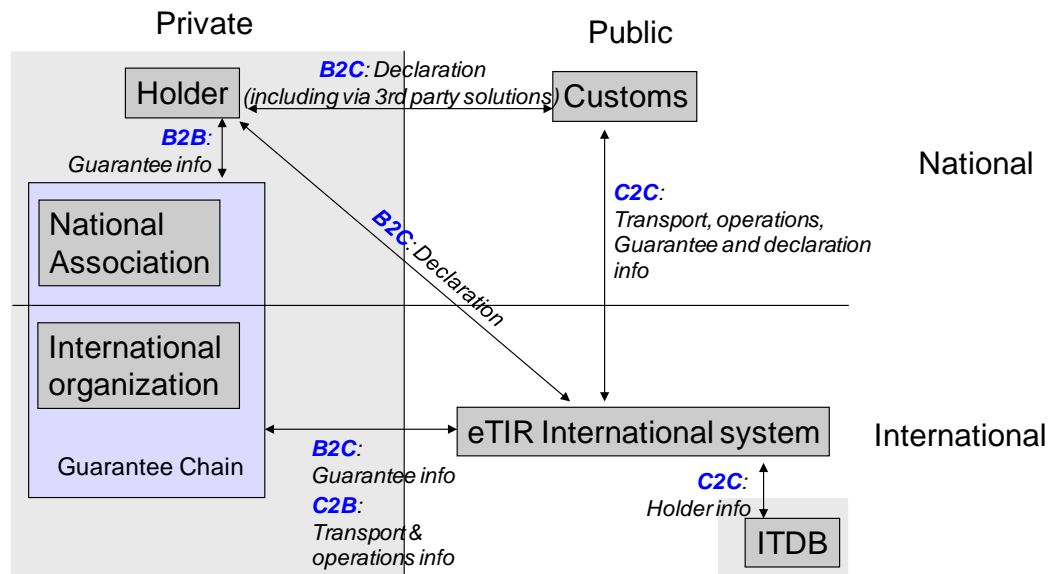
1.2.1 *eTIR international system brief*

The eTIR international system is devised to allow the management by customs of data on guarantees and the secure exchange of data between national customs systems related to the international transit of goods, vehicles and/or containers according to the provisions of the TIR Convention.

Therefore, only a part of the information flow required for the functioning of the TIR procedure is managed by the eTIR international system. The following picture graphically represents the information exchange between the actors. It also shows that the eTIR international system does not communicate with the holder. It is important to recall that the management of claims and the information to be provided by customs authorities to authorized associations (under Article 42ter and an international organization (under Article 6.2bis) as provided for by Annex 10 of the TIR Convention are outside the scope of the eTIR project (see figure below).

⁴ In accordance with the instructions by the WP.30 at its 106th session, the eTIR system administration shall be established on the basis of an international, centralized database whose aim it is to facilitate the secure exchange of data between national Customs systems (TRANS/WP.30/212, para. 26).

Figure 1
The new public private partnership



On the one hand, the guarantee chain transmits, to the eTIR international system, information on the guarantees it has issued to the holders so that they can be registered in the eTIR international system. The guarantee chain can also query at any time the status of guarantees it has issued and obtain related TIR transport information. On the other hand, customs authorities use the eTIR international system to check the status of guarantees and to exchange information related to the TIR transport and to TIR operations.

The management by customs of the data on guarantees and the secure exchange of data between national customs systems in relation to TIR transport information are therefore the two fundamental features of the eTIR international system. Guidelines will also be provided to promote harmonization, especially in the context of the dialogue between the holder and customs authorities.

Communication, security and fallback solutions constitute other key features of the system.

1.2.2 Management by customs of data on guarantees

The management by customs of data on guarantees requires a strong relationship between the guarantee chain and the eTIR international system. The guarantee chain sends information on each issued guarantee to the eTIR international system. The recording of this information in the eTIR international system is conditional on checks made against the International TIR database (ITDB) concerning authorized holders.

1.2.2.1 Registration of the guarantee

After having issued a guarantee to the holder, the guarantee chain shall register it in the eTIR international system by sending a standard electronic message.

a. Elements comprising the registration of the guarantee

i) *Holder (M)*⁵

Information on the physical or legal person to whom the guarantee has been issued.

ii) *Guarantee chain (M)*

Information on the guarantee chain.

⁵ M: Mandatory; O: Optional; C: Conditional.

iii) *Guarantee (M)*

Information on the guarantee (guarantee reference number, validity date, guarantee type, ...)

1.2.2.2 *Cancellation of a guarantee*

Once a guarantee has been registered in the eTIR international system, the guarantee chain may cancel any guarantee which has not yet been used. It may also cancel the validity of a guarantee which is in use but only for the TIR operations which have not yet started. Such cancellation will, however, only become effective at the start of the first consecutive TIR operation.

1.2.2.3 *Verification of the guarantee*

The data on guarantees will be accessible to all customs offices. If a holder presents to customs a declaration covered by a guarantee which is not recorded in the eTIR international system or has been cancelled by the guarantee chain, then customs authorities shall not accept it.

1.2.2.4 *Querying guarantee status*

Once a guarantee has been registered in the eTIR international system, the guarantee chain can query at any time the status of guarantees it has issued.

1.2.2.5 *Transmission of TIR transport and TIR operation data*

The eTIR international system notifies the guarantee chain of new information on TIR transports and TIR operations related to the guarantees it has issued, other than information which is restricted to customs.

1.2.3 *Exchange of TIR transport and TIR operation information*

1.2.3.1 *Data handling at the beginning of the TIR transport*

Once the customs office of departure accepts the declaration, according to national procedures, it will send a message containing that information, together with additional customs data, to the eTIR international system, in line with agreed requirements. The latter will then store the declaration information and link it with the guarantee information. This information is then sent to all customs authorities involved in the TIR transport.

a. Recording of the elements comprising the TIR transport (and its subsequent updates)

The elements required for the TIR transport recording are those of the TIR operation 'start information' (see point 1.2.3.2.a(i)) plus all the elements provided in the declaration(s) (see 1.2.4.2.a).

1.2.3.2 *Data handling related to TIR operations*

a. Elements composing the TIR operation registration

i) *TIR operation start information*

The customs office of departure/entry provides the following information:

- Operation Reference Number and date of start (M)
- Seals (C)

Information on the seal(s) affixed to the vehicle(s) and/or container(s) if seals are affixed, changed or removed.

- Results of checks
- Time limit for transit (O)

Time limit for the TIR operation

- National itinerary (O)

Customs office(s) at which the road vehicle, the combination of vehicles or the container together with the load have to be produced.

- Customs office (M)

ii) *TIR operation termination information*

The customs office of destination/exit provides the following information:

- Date of termination (M)
- Seals (C)

Information on the seal(s) affixed to the vehicle(s) and/or container(s) if seals are affixed, changed or removed.

- Results of checks
- Reservations (M)

In case of doubts with regard to the TIR operation, the customs office of destination or exit indicates that it has terminated the TIR operation with reservations.

- Customs office (M)

iii) *TIR operation discharge information*

The customs office of discharge is responsible for discharging the TIR operation and providing the following information:

- Date of discharge (M)
- Customs office (M)

1.2.4 *Other aspects*

1.2.4.1 *Issuance of guarantees*

The holder requests a guarantee from the guarantee chain, which will, on the basis of international, national and internal rules, decide if the guarantee can be issued to the holder. The guarantee chain will then provide the holder with a guarantee reference number for that specific guarantee. This procedure is outside the scope of the development of the eTIR international system but is a prerequisite for its well functioning.

The guarantee chain registers the guarantee internationally as foreseen in point 1.2.2.1.

1.2.4.2 *Declaration/ Advance TIR data*⁶

The holder submits the advance TIR data by electronic means to the customs office of departure, making reference to a guarantee issued by a guarantee chain, using authentication mechanisms. The advance TIR data shall be submitted prior to the presentation of the goods at the customs office of departure. Alternatively, the holder can make use of declaration mechanisms provided by the eTIR international system, the customs system of his country of residence (if available) or third-party solutions provided by the private sector (including by the guarantee chains). National customs systems and authorized international private sector declaration systems can use the declaration web service of the eTIR international system to forward the declaration to the country of departure.

⁶ For a detailed explanation see Annex I.

Customs authorities shall, if satisfied, validate and accept the customs declaration and transmit the declarations data to the eTIR international system. The eTIR international system forwards this information to the following customs authorities involved in the TIR transport.

The following elements shall be provided in the declaration since these elements are also part of the registration of the TIR transport information (see 1.2.3.1.a).

- a. Elements comprising the declaration
 - i) *Holder (M)*

Information on the physical or legal person who is responsible for transporting the goods and submitting the declaration.
 - ii) *Guarantee (M)*

The guarantee reference number under which the TIR transport will be undertaken.
 - iii) *Goods (M)*

Information on the goods transported (e.g.: type, quantity, identifications, customs office of departure, customs office of destination, ...).
 - iv) *Mean of Transport/Containers (M)*

Information on the mean of transport and/or containers used to transport and /or carry the goods.
 - v) *Attached documents (O)*

Reference to all documents, paper or electronic, which are attached to the declaration/advance TIR data.
 - vi) *Consignee (O)*

Information on the physical or legal persons to whom goods are shipped.
 - vii) *Intended itinerary (Country level) (M)*

Countries intended to be involved in the TIR transport.
 - viii) *Consignor (O)*

Information on the physical or legal persons from whom goods are shipped.
 - ix) *[Subcontractors (O)]*

Information on the physical or legal person who performs the transport or a part of the transport on behalf of the holder.]⁷

1.2.4.3 *Pre-arrival information*

One of the objectives of the eTIR international system, as defined by the Contracting Parties, is to provide customs authorities with information prior to the arrival of cargos. This applies to information provided by the private sector as well as to information exchanged between customs authorities. Therefore, the eTIR international system forwards to customs authorities all information as soon as it is received (push principle).

⁷ The concept of subcontractors is still under discussion.

1.2.5 *Data exchange*

1.2.5.1 *Central platform*

The eTIR international system is built around a central platform, which is composed of hardware and software, including databases and web services. The databases serve to store and make the information available and act as a repository for all information concerning the TIR system, whereas the web services allow for an efficient and secure interfacing between the Contracting Parties, the guarantee chain and the central platform. The eTIR international system shall store and archive data for a minimum period of ten [10] years.

1.2.5.2 *Communication*

The eTIR international system may use secure Internet connections to exchange messages.

1.2.5.3 *Standard messages*

The exchange of data with the eTIR international system is achieved by means of a set of predefined standard messages. All messages needed to ensure the functioning of the eTIR international system are described in the functional specifications document.

1.2.6 *Security*

1.2.6.1 *The elements of security from the TIR Convention*

1.2.6.2 *Controlled access*

Controlled access remains a major principle of the TIR system (TIR Convention, Annex 9, Part II). The ITDB will be fully used to ensure that only authorized holders use the TIR system.

1.2.6.3 *Security data elements*

Data elements concerning supply chain security are contained in the functional specifications document.

1.2.6.4 *eTIR international system security*

The eTIR international system is secured with security methods applicable to systems communicating via the Internet. Messages are encrypted and access is restricted to authorize users. The system is available 24/7.

1.2.7 *Accompanying document / Certified report*

An accompanying document, printed by the customs office of departure, provides all information regarding the TIR transport. This document also covers the need in case of accidents and incidents and replaces the certified report.

1.2.8 *Fallback solutions* *Fallback solutions*

In case, once a TIR transport has begun, customs administrations are not in a position to communicate with the eTIR international system, they will rely on the accompanying document to obtain or provide the required information.

Detailed fallback solutions for individual use cases are contained in the functional specifications document.

1.3 Deliverables

1.3.1 National deliverables

1.3.1.1 National management of data

The national computer systems of the countries process electronically the data from and to the eTIR international system. The national applications are primarily focused on reception and validation of the electronic declaration as well as on the management of the TIR operations.

1.3.1.2 Bridges to the eTIR international system

National computer systems communicate with the eTIR international system using a predefined set of standard messages and technology.

1.3.1.3 User manuals and training

Customs administrations provide their customs officers with the necessary documentation and training to ensure the proper use of the national parts of the eTIR international system. They can also provide documentation for holders.

1.3.2 International deliverables

1.3.2.1 Central databases

The central platform is based on a central database system, which stores the data and contains the functional rules that allow the functioning of the eTIR international system⁸.

The databases contain information on the data on guarantees and their coverage and link the issued guarantees with the holder. Moreover, they contain all data regarding the TIR transports linking them to the guarantee information.

1.3.2.2 Web services

Web services implemented on the central platform allow authorized computer systems to interact securely with the eTIR international system. The web services provide, in a standard format, the functions which allow querying and updating the central database, as well as the centralized submission of advance TIR data.

1.3.2.3 eTIR website

The eTIR website is an information platform which contains all the relevant information for all the actors to connect to the eTIR international system.

1.3.2.4 Definitions of standard messages

All messages sent to or received from the eTIR international system are defined and listed in the functional specifications document.

1.3.2.5 Technical documentation

The technical documentation will ensure that the customs authorities and the guarantee chain can develop their specific applications connected to the eTIR international system.

⁸ The eTIR international system, as introduced in 1.1.2, is composed of central databases and web services.

1.3.2.6 User manuals and training for trainers

The user manuals and the training for trainers serve as basis for the development of national user manuals and national training programs. They describe the procedures, the best practices as well as all tools available in the eTIR international system.

1.3.2.7 Helpdesk

A helpdesk is available to customs authorities and the guarantee chain to support the implementation of the eTIR international system.

1.3.2.8 Countries database

A database containing information on all countries involved in the eTIR system.

1.3.2.9 Authentication database

In order to technically restrict access to the eTIR international system to those users who have been authorized, an authentication database is used. This database is used to secure the web services. Consequently, it will contain the credentials of the IT systems of guarantee chains as well as the customs central systems. Furthermore, holders who would request the use of the centralized declaration mechanism will also have their credentials included.

1.3.3 Other required systems

1.3.3.1 Authorized access database

To ensure that guarantees are only issued to authorized holders, the eTIR international system links to the ITDB.

1.3.3.2 Customs offices database

To check that customs offices are approved for eTIR, the eTIR international system retrieves the necessary information from ITDB using a web service. In version v4.3, no error messages will be sent after these checks.

1.3.4 Languages and character sets

The eTIR international system will allow for the translation of all coded information in order to ensure maximum transparency. In order to allow the transmission and display of all languages, the character set used by the eTIR international system is Unicode.

In case of textual descriptions, the language of the country where the information has been provided shall be used. Nevertheless, translations in other languages can also be provided and are sometimes required.

2 Step-by-step implementation

The eTIR international system as defined in Chapter 1 is subdivided in two major modules: management by customs of data on guarantees and data exchange, which should be developed simultaneously in order to obtain maximum benefits.

The full computerization of the TIR procedure depends on the complete implementation of both modules by all parties involved. Transitional steps will be required before all Contracting Parties of the Convention exchange electronic information. In view of the wide geographical coverage of the TIR Convention and the different levels of technological development of the countries concerned, the duration of the transition may vary from country to country.

2.1 Management by customs of data on guarantees module

The management by customs of data on guarantees module, as described in Chapter 1.2.2, allows the guarantee chain to electronically register all guarantees issued to the holders

in the eTIR international system. Moreover, it enables customs authorities to check the validity of the guarantee in the course of a TIR transport and before each TIR operation.

Introducing the management by customs of data on guarantees into the eTIR international system will increase the security of the TIR system by making available, at any time, information on the validity of the guarantees. Moreover, by linking the consultation of the status of the guarantee to the ITDB, it will further secure the system by ensuring that unauthorized holders will not be allowed to perform TIR transports. Logically, it will also further discourage attempts to falsify the TIR Carnet.

The cornerstone of the management by customs of data on guarantees module is the registration of the guarantee by the guarantee chain. It implies the development of the eTIR international system with all related functionalities and the development or the amendment of a tool allowing for real-time transmission by the guarantee chain of guarantee data to the eTIR international system.

2.2 Data exchange module

The second module of the eTIR project focuses on developing the TIR transport and TIR operations information exchange combining them with the guarantee information provided by the guarantee chain.

In view of the fact that not all customs offices will immediately have access to the eTIR international system, the use of present paper TIR Carnet will be maintained and remains mandatory. Nevertheless, all eTIR compatible customs offices will already be in a position to have access to and update the central system with TIR transport/TIR operation information.

It can be envisaged that one or more pilot projects concerning the exchange of data between Contracting Parties can be initiated, in line with the mandate provided by WP.30 (TRANS/WP.30/212, para. 21).

2.3 Abolition of the present TIR Carnet: a geographical expansion

Before being able to completely abandon the present paper TIR Carnet, all parties involved in a TIR transport will have to be able to securely exchange electronic information on the TIR transport, the TIR operations and on the guarantee. To enable a smooth transition towards a fully computerized TIR system, the use of the present paper TIR Carnet will be discontinued for itineraries where all customs offices will be linked to the eTIR international system.

As a result, for those TIR transports where the TIR Carnet will no longer be required, the full implementation of the second phase of the eTIR project will become mandatory for all customs offices involved. Issues with regard to rerouting are addressed in the functional and technical specifications documents.

2.4 Parallel projects

2.4.1 Declaration mechanisms

In parallel to the development and implementation of the eTIR international system (including a web service for submitting advance TIR data and advance amendment data), national and international electronic declaration mechanisms will also have to be developed, aided by guidelines established in the eTIR specifications.

2.5 Schedule

The eTIR sub-projects imply developments at public and private level. Moreover, the public developments will be of both an international and national nature.⁹

⁹ The same might apply to the private sector development but it is not the aim of this project to provide the private sector with instructions on how their systems will have to be developed or updated in order to meet the requirements of the eTIR project.

The following schedule does not provide any timeframe; it only aims at showing the dependencies between the various projects in their different phases of development. The national implementations of the projects by Contracting Parties will certainly not be achieved simultaneously. Therefore, the schedule below considers three different timeframes, covering the possibilities for countries to develop their projects at their own speed.

Table 1
Step-by-step implantation schedule

<i>Sub-projects</i>	<i>Steps¹⁰</i>			
<i>eTIR project</i>				
Public international	I	E	C	T
Public national				
Contracting Party 1	<i>E</i>	<i>C</i>	<i>T</i>	
Contracting Party 2		<i>E</i>	<i>C</i>	T
Contracting Party 3			<i>E</i>	<i>C</i>
Private ^{11,12}	<i>E</i>	<i>C</i>	<i>T</i>	
<i>Parallel projects</i>				
National declaration mechanism				
Contracting Party 1	<i>E</i>	<i>C</i>	<i>T</i>	
Contracting Party 2		<i>E</i>	<i>C</i>	T
Contracting Party 3			<i>E</i>	<i>C</i>
Private ¹³	<i>E</i>	<i>C</i>	<i>T</i>	
<i>Paper to electronic step-by-step transition</i>	1	2	3	4

2.5.1 Paper to electronic step-by-step transition

The transition from the paper TIR Carnet to the eTIR system will be achieved progressively, with the completion and implementation of the projects at the national and international level. In the schedule above, four major steps are identified:

1: Before the eTIR international system will be in place, allowing the exchange of information between the guarantee chain and the eTIR international system as well as allowing countries to exchange data, the paper TIR Carnet and the actual private or public systems will remain the only possible tool for the management of the TIR procedure.

2: Once the eTIR international system is available and the guarantee chain interoperates with the system in order to provide the guarantee information, countries will start linking up to the eTIR international system, in order to obtain validation of the guarantees used by the holders.

3: When all Contracting Parties along a specific itinerary will have been computerized (the guarantee and data exchange modules as well as the declaration mechanisms), there will be no more need to use the present paper TIR Carnet for TIR transports along this itinerary. During this step, some TIR transports will continue to use paper TIR Carnets whereas others will be performed under cover of eTIR.

4: When all Contracting Parties of the TIR Convention will have implemented both modules as well as the appropriate declaration mechanisms, the present TIR Carnet will be completely abandoned.

¹⁰ The letters in the cells represent the different phases as identified in table 0.1 of the Reference Model (I: Inception, E: Elaboration, C: Construction, T: Transition). Steps in italics are performed at national level or at private sector level. Steps in bold need to be finalized before reaching the milestone (indicated by vertical lines).

¹¹ The well functioning of the private/public partnership is essential to successfully implement this project.

¹² The IRU emphasised that this part of the computerization has already been largely accomplished.

¹³ It is envisaged that the private sector will provide declaration mechanisms, in particular to authorize holders submitting declarations in a country other than their country of registration.

3 Use cases analysis

The elaboration of the use case analysis is based on the instruction by the WP.30 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 and that the management of the data on guarantees, once the guarantee chain had issued a guarantee to a holder, should lie with customs (ECE/TRANS/WP.30/226, para. 41).

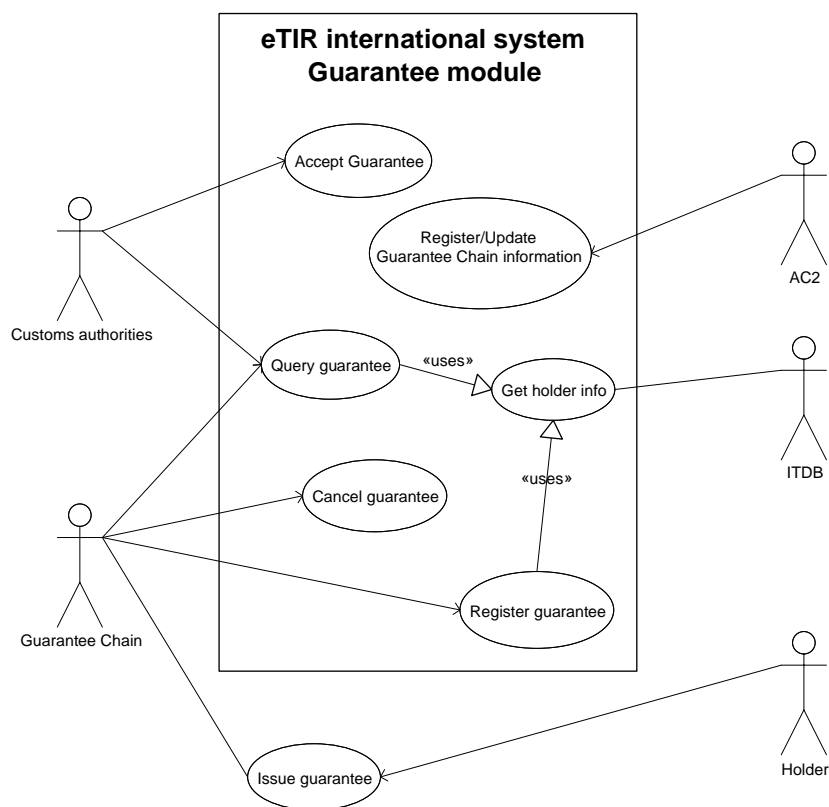
3.1 Management by customs of data on guarantees use case

The management by customs of data on guarantees requires that the guarantee chain updates the guarantees directly in the eTIR international system right after having issued them to holders.

3.1.1 Management by customs of data on guarantees use case diagram

Figure 2

Customs management of guarantees use case diagram



3.1.2 Guarantee state chart diagram

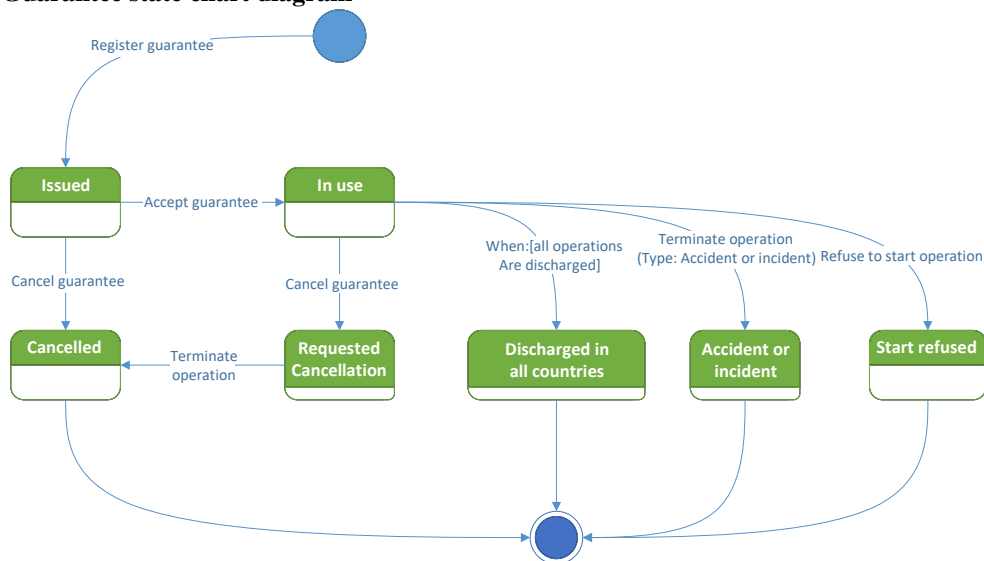
The guarantees registered in the eTIR international system will have their status updated all along the TIR transport. The following state chart diagram shows the various statuses as well as the transition even between them.

The guarantee status can be:

- Issued
- In use
- Proposed cancellation
- Cancelled
- Discharged in all countries

- Accident or incident
- Start refused

Figure 3
Guarantee state chart diagram



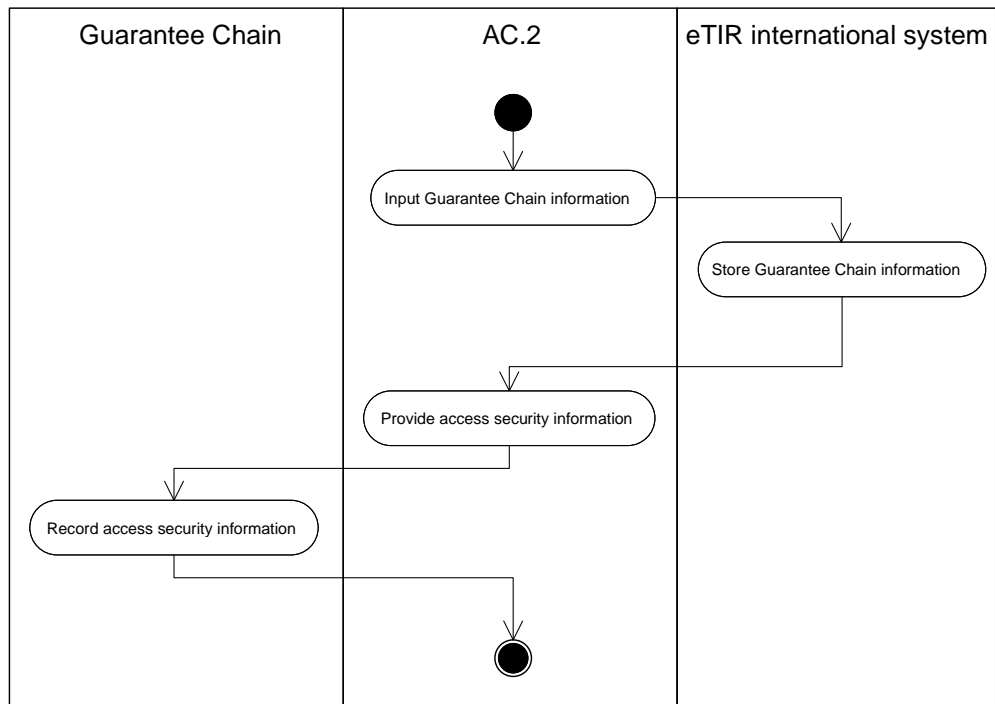
3.1.3 Register guarantee chain use case description

Table 2
Register/Update guarantee chain information use case description

Name	Register/Update guarantee chain information use case
Description	Once the guarantee chain has been authorized, it is registered in the eTIR international system.
Actors	AC.2
Performance Goals	Only authorized guarantee chains can register guarantees in the eTIR international system.
Preconditions	-
Postconditions	-
Scenario	<p>Registration</p> <p>The AC.2 authorizes an international organization to manage the guarantee chain in accordance with article 6.2bis of the TIR Convention. It records the guarantee chain in the eTIR international system and inserts the information on the type of guarantees it is allowed to register (including the geographical coverage of its guarantees). It also provides the necessary security information to the guarantee chain in order to allow it to access the system.</p>
Alternative Scenario	-
Special requirements	-
Extension Points	-
Requirements Covered	-

3.1.4 Register/Update guarantee chain information activity diagram

Figure 4

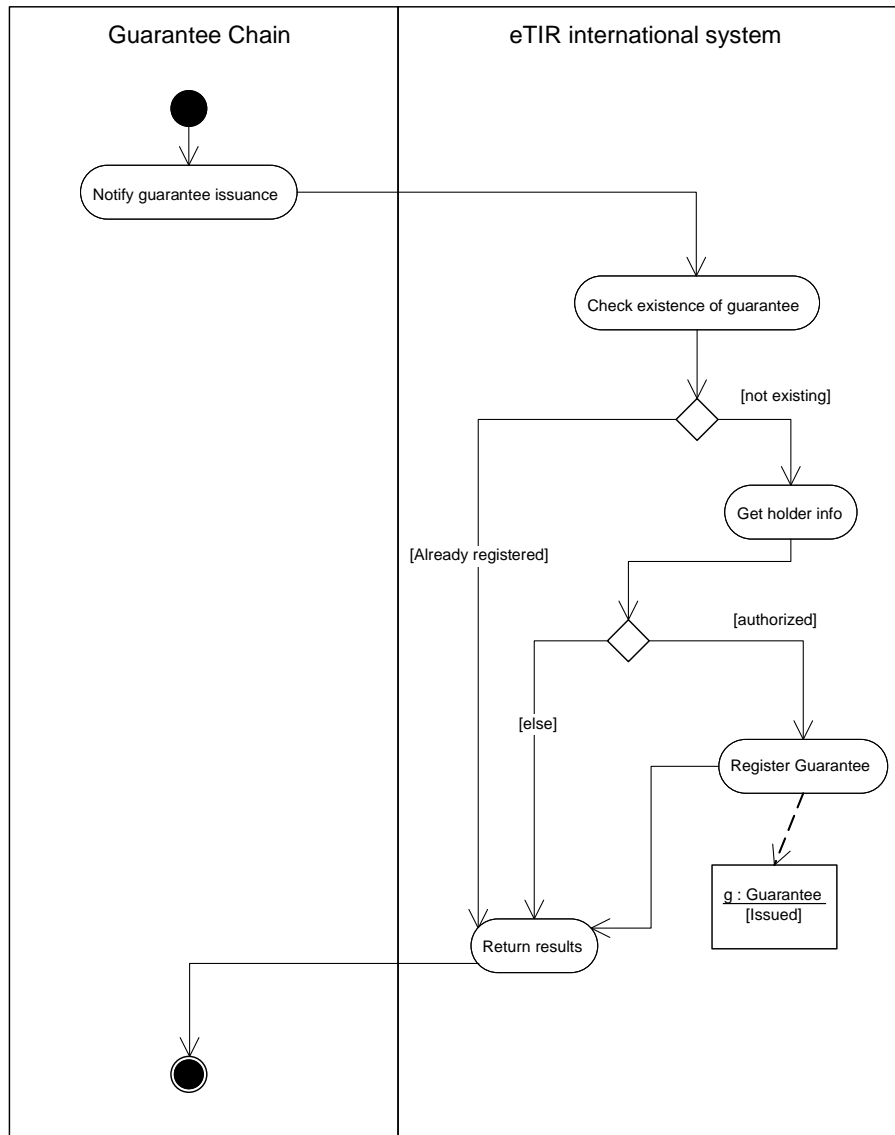
Register/Update guarantee chain information activity diagram

3.1.5 Register guarantee use case description

Table 3
Register guarantee use case description

<i>Name</i>	<i>Register guarantee use case</i>
Description	The guarantee chain registers each guarantee issued to a holder in the eTIR international system by sending an electronic message.
Actors	Guarantee chain
Performance Goals	Any guarantee, issued to a holder, shall be registered in the eTIR international system before it can be used by a holder to accompany a declaration.
Preconditions	The holder, to whom the guarantee chain has issued a guarantee, must be authorized and registered in the ITDB and the eTIR international system should not contain a prior registration of the guarantee.
Postconditions	The guarantee information is stored in the eTIR international system with status “issued”.
Scenario	<p>Registration</p> <p>The guarantee chain issues a guarantee to a holder and sends a secure electronic message with all information regarding the guarantee to the eTIR international system. The eTIR international system checks if the guarantee has not yet been registered. Then it gets holder information, including its current status. In case the guarantee has not yet been registered and the holder is authorized, the system registers the guarantee and notifies the results of the registration of the guarantee to the guarantee chain. If the registration fails for any reason, the guarantee chain is informed accordingly.</p>
Alternative Scenario	<p>Fallback scenario</p> <p>If electronic messages cannot be sent to the eTIR international system by means of the web services, no functional fallback is foreseen, and the information should be sent as soon as it is possible.</p>
Special requirements	The guarantee chain cannot update any information it has registered in the eTIR international system. Only the cancellation of the guarantee is possible.
Extension Points	-
Requirements Covered	-

3.1.6 Register guarantee activity diagram

Figure 5
Register guarantee activity diagram

3.1.7 *Cancel guarantee use case description*

Table 4

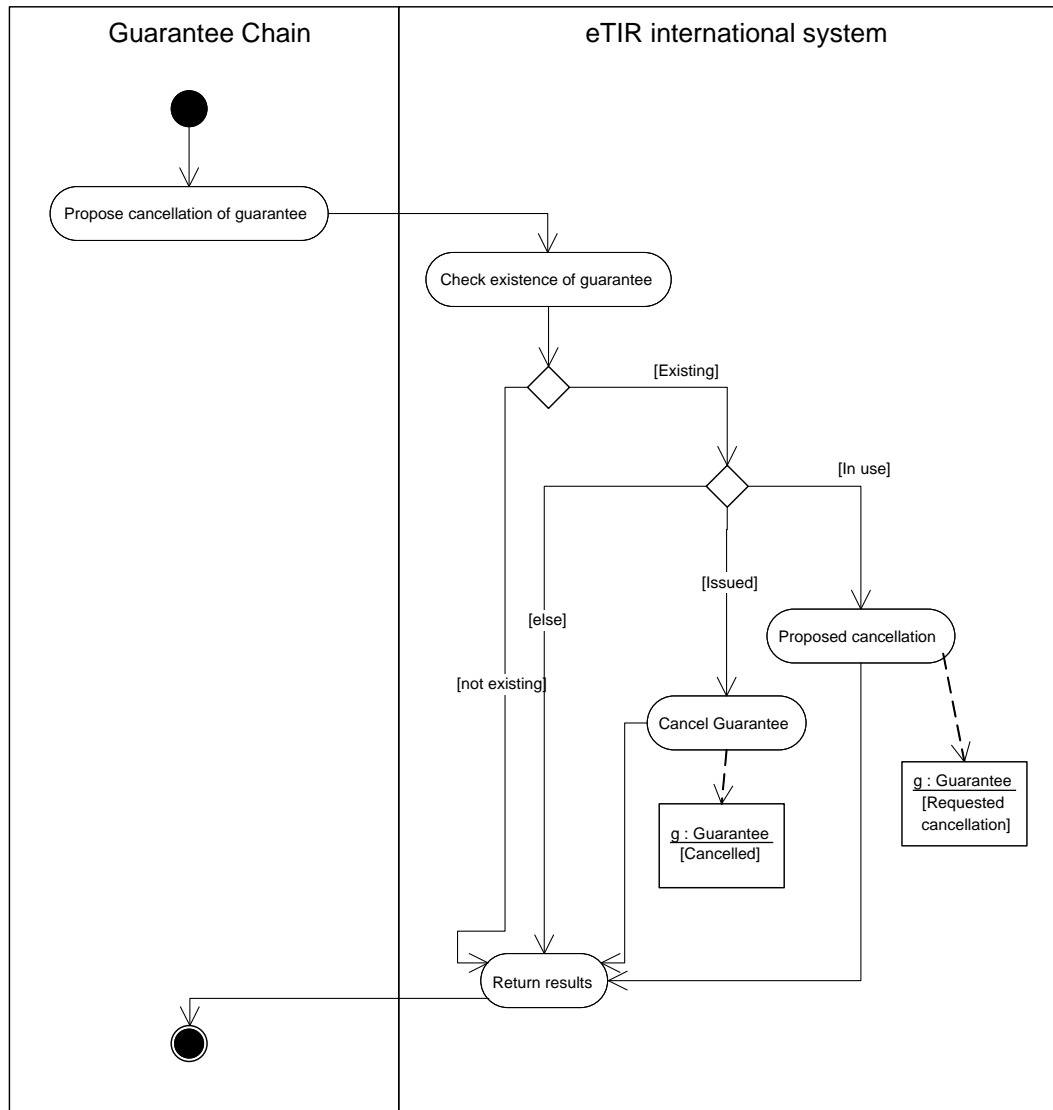
Cancel guarantee use case description

<i>Name</i>	<i>Cancel guarantee use case</i>
Description	The guarantee chain cancels a guarantee after it has been issued to a holder by sending an electronic message to the eTIR international system.
Actors	Guarantee chain
Performance Goals	-
Preconditions	The guarantee must have been registered and have the status “issued”. The guarantee can also have the status “in use”.
Postconditions	The guarantee status is changed to “cancelled”, “requested cancellation” or remains in its current status.
Scenario	<p>Cancellation</p> <p>The guarantee chain sends a secure electronic message to the eTIR international system to request the cancellation of a guarantee. First the eTIR international system checks that the guarantee is registered. Then in case the guarantee status is “issued”, the eTIR international system changes the guarantee status to “cancelled”. If the guarantee status is “in use”, its status is turned to “requested cancellation”.</p>
Alternative Scenario	<p>Fallback scenario</p> <p>If electronic messages cannot be sent to the eTIR international system by means of the web services, the guarantee chain should contact the eTIR helpdesk to transmit the cancellation information.</p>
Special requirements	
Extension Points	-
Requirements Covered	-

3.1.8 Cancel guarantee activity diagram

Figure 6

Cancel guarantee activity diagram



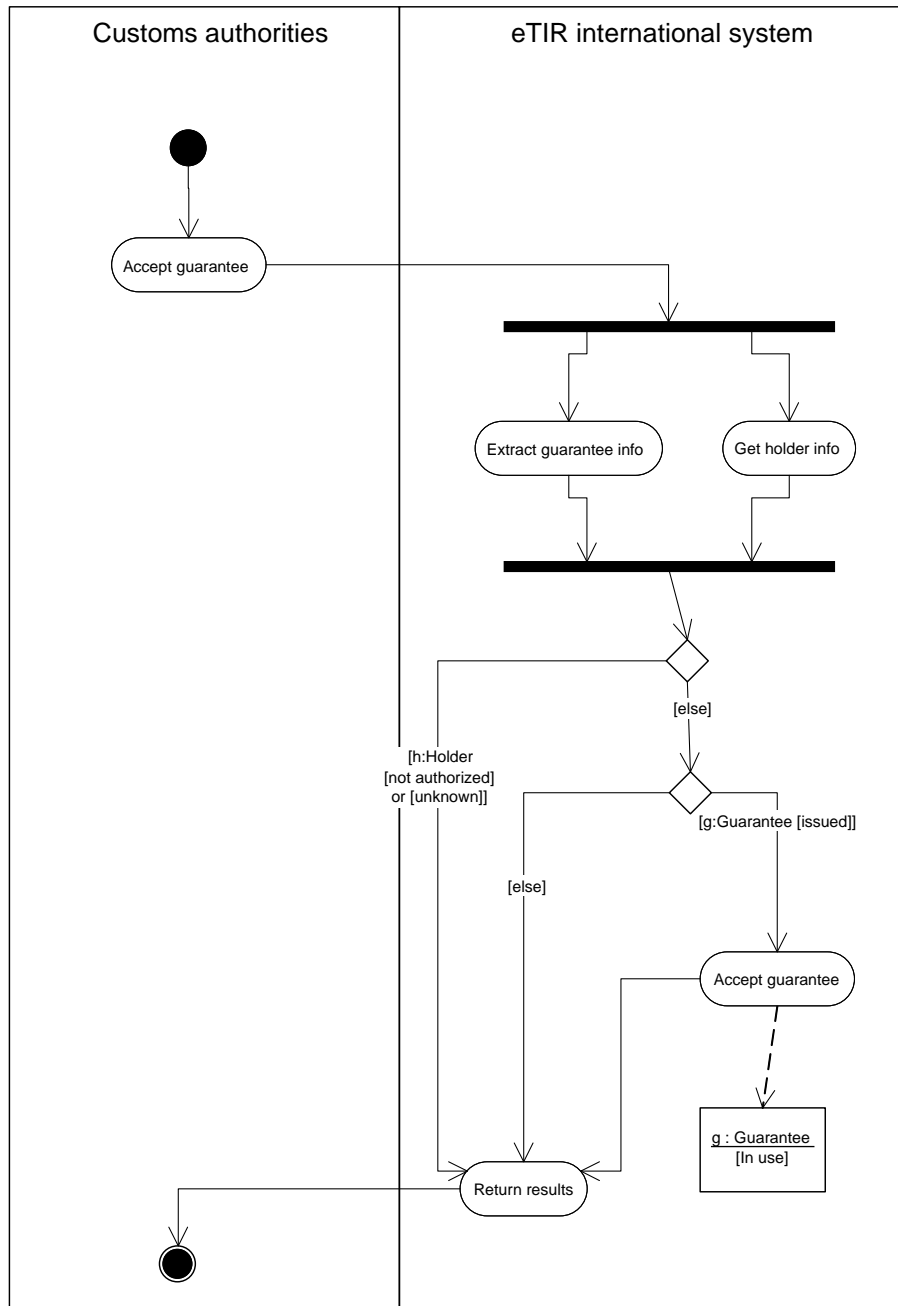
3.1.9 *Accept guarantee use case description*

Table 5
Accept guarantee use case description

<i>Name</i>	<i>Accept guarantee use case</i>
Description	The customs authorities notify the eTIR international system that the guarantee has been accepted.
Actors	Customs authorities
Performance Goals	-
Preconditions	The guarantee must be registered and its status must be “issued”. The customs authorities at departure must also have received a TIR declaration. The holder must be registered in ITDB and authorized.
Postconditions	The guarantee status is changed to “in use” or remains at its current status.
Scenario	<p>Accept guarantee</p> <p>Customs authorities send a secure electronic message to the eTIR international system informing that the guarantee has been accepted for a TIR transport.</p>
Alternative Scenario	<p>Fallback scenario</p> <p>If electronic messages cannot be sent to the eTIR international system by means of the web services, the accompanying document will serve as a proof that the guarantee has been accepted.</p>
Special requirements	-
Extension Points	-
Requirements Covered	-

3.1.10 *Accept guarantee activity diagram*

Figure 7

Accept guarantee activity diagram

3.1.11 *Get holder info use case description*

Table 6

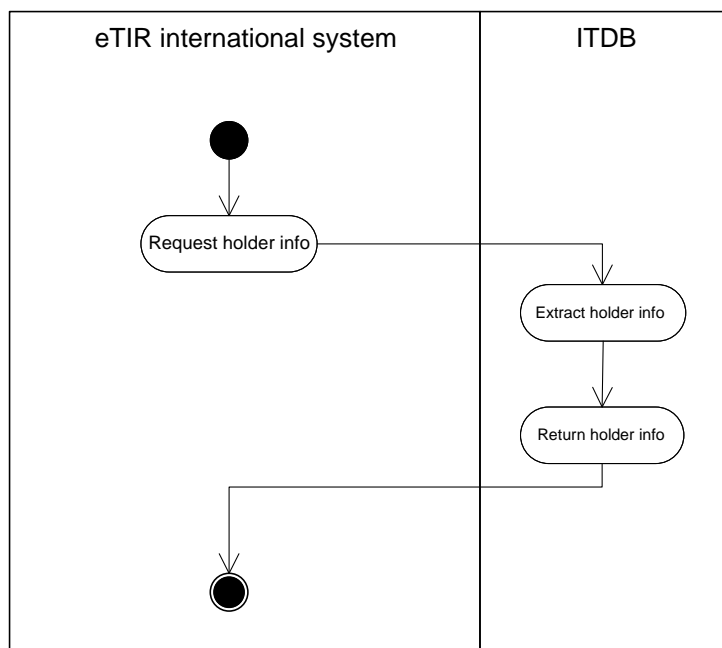
Get holder info use case description

<i>Name</i>	<i>Get holder info use case</i>
Description	The eTIR international system queries the ITDB and receives data on a holder.
Actors	ITDB
Performance Goals	-
Preconditions	-
Postconditions	-
Scenario	The eTIR international system sends a query to the ITDB about a holder. The ITDB returns the data about this holder or sends a message indicating that the holder is unknown.
Alternative Scenario	Fallback scenario The holder status is returned as “not available”.
Special requirements	This use case is internal to the system and is used in the following use cases: <ul style="list-style-type: none"> • Register guarantee • Query guarantee • Accept guarantee The holder status can be: <ul style="list-style-type: none"> – “unknown” – “authorized” <ul style="list-style-type: none"> ▪ Withdrawn from date x to date y ▪ Excluded from date x to date y in country z – “not authorized” <ul style="list-style-type: none"> ▪ Permanently withdrawn ▪ End of activity – “not available”
Extension Points	-
Requirements Covered	-

3.1.12 *Get holder info activity diagram*

Figure 8

Get holder info activity diagram



3.1.13 Query guarantee use case description

Table 7

Query guarantee use case description

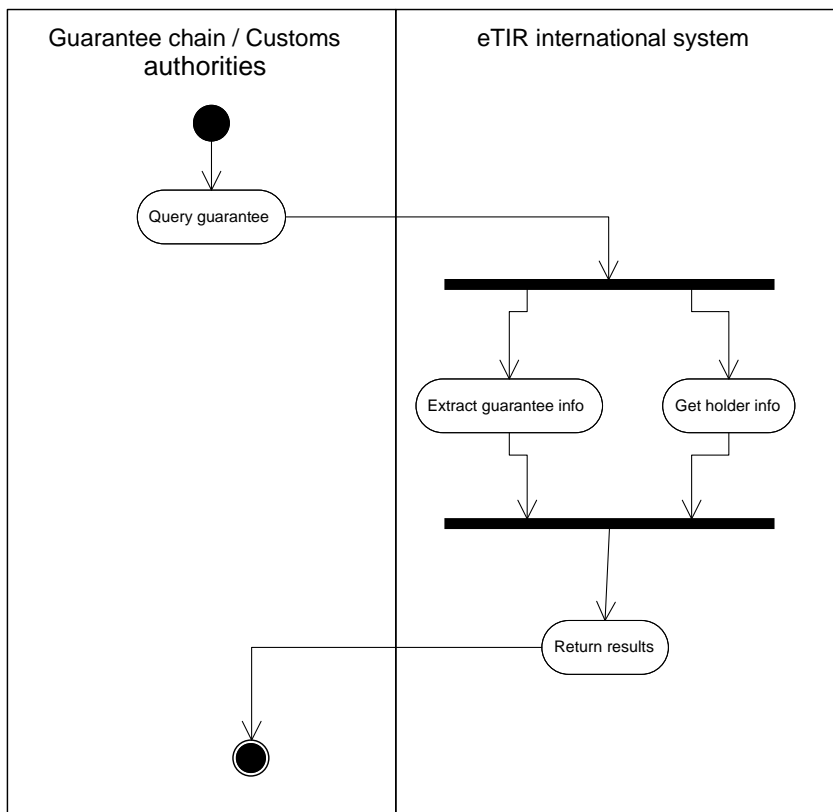
Name	Query guarantee use case
Description	Customs authorities or a guarantee chain request the eTIR international system information on issued guarantees.
Actors	Guarantee chain, Customs authorities
Performance Goals	-
Preconditions	-
Postconditions	-
Scenario	<p>Query the guarantee</p> <p>A guarantee chain or customs authorities send a secure electronic query to the eTIR international system. The eTIR international system extracts all data from the database concerning the guarantee and combines them with data on the holder (get holder info) and sends all information to customs authorities or to the guarantee chain. If the guarantee has not yet been registered, the customs authorities or the guarantee chain are informed accordingly.</p>
Alternative Scenario	<p>Fallback scenario</p> <p>Customs authorities can obtain information about the transport from the accompanying document and can use the web services or consult the web application developed by the guarantee chain.</p>
Special requirements	A guarantee chain can only query information on those guarantees which it has issued and which have been registered by the eTIR international system. The eTIR international system also provides the guarantee chain with information on TIR transports attached to the guarantees it has issued.
Extension Points	-

Name	Query guarantee use case
Requirements Covered	-

3.1.14 Query guarantee activity diagram

Figure 9

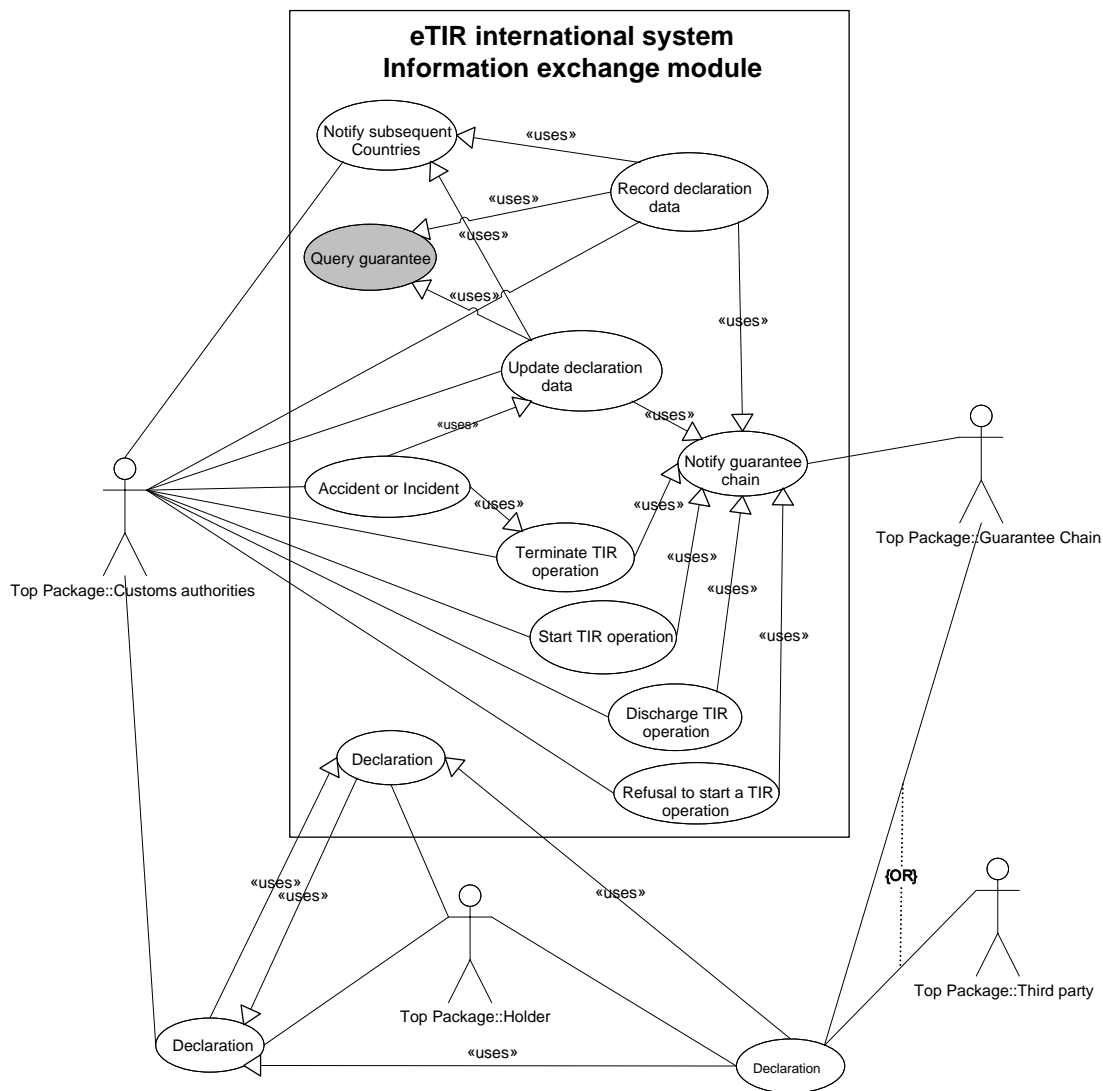
Query guarantee activity diagram



3.2 Data exchange use case

3.2.1 Data exchange use case diagram

Figure 10
Data exchange use case diagram¹⁴



¹⁴ Use cases in grey are defined in chapter 3.1.

3.2.2 *Record declaration data use case description*

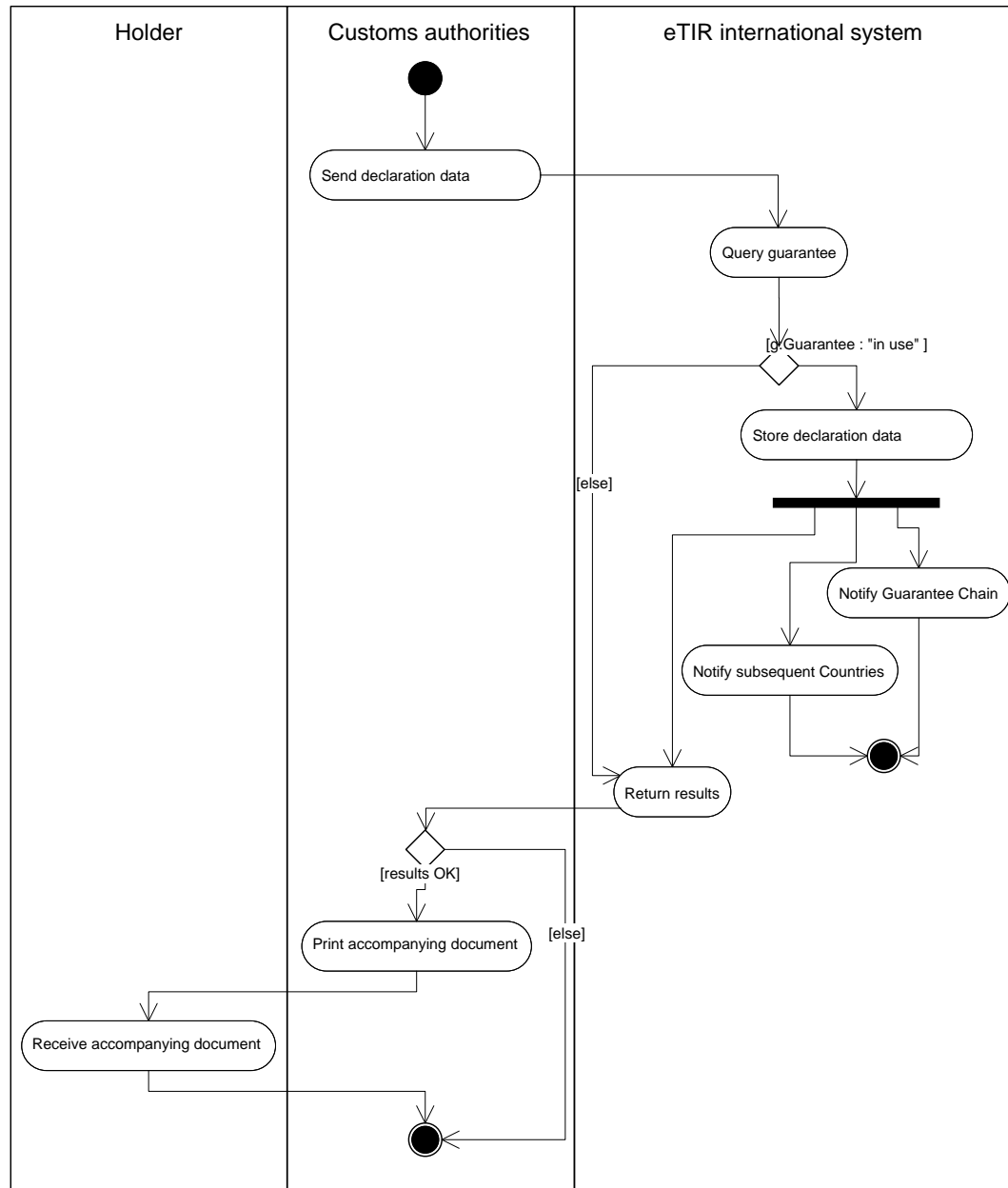
Table 8

Record declaration data use case description

<i>Name</i>	<i>Record declaration data use case</i>
Description	Information about the declaration is centrally stored.
Actors	Customs authorities
Performance Goals	
Preconditions	The guarantee must have been accepted (status “in use”). The holder should be authorized and not currently excluded from any country along the itinerary. The declaration has been accepted by customs authorities.
Postconditions	-
Scenario	The first customs office of departure will send all data contained in the electronic declaration together with the information on seals affixed to the eTIR international system after having accepted the declaration and sealed the loading unit. The eTIR international system provides all subsequent countries indicated in the itinerary and the guarantee chain with the information. Customs authorities will provide the holder with an accompanying paper document.
Alternative Scenario	Fallback scenario In case the transmission of information to the eTIR international system fails, the customs authorities nevertheless accept the holder to start the TIR transport. Customs authorities will transmit the electronic data to the eTIR international system at the first opportunity. In the meantime, other customs authorities will obtain the required information from the accompanying document.
Special requirements	
Extension Points	-
Requirements Covered	-

3.2.3 Record declaration data activity diagram

Figure 11

Record declaration data activity diagram

3.2.4 *Update declaration data use case description*

Table 9

Update declaration data use case description

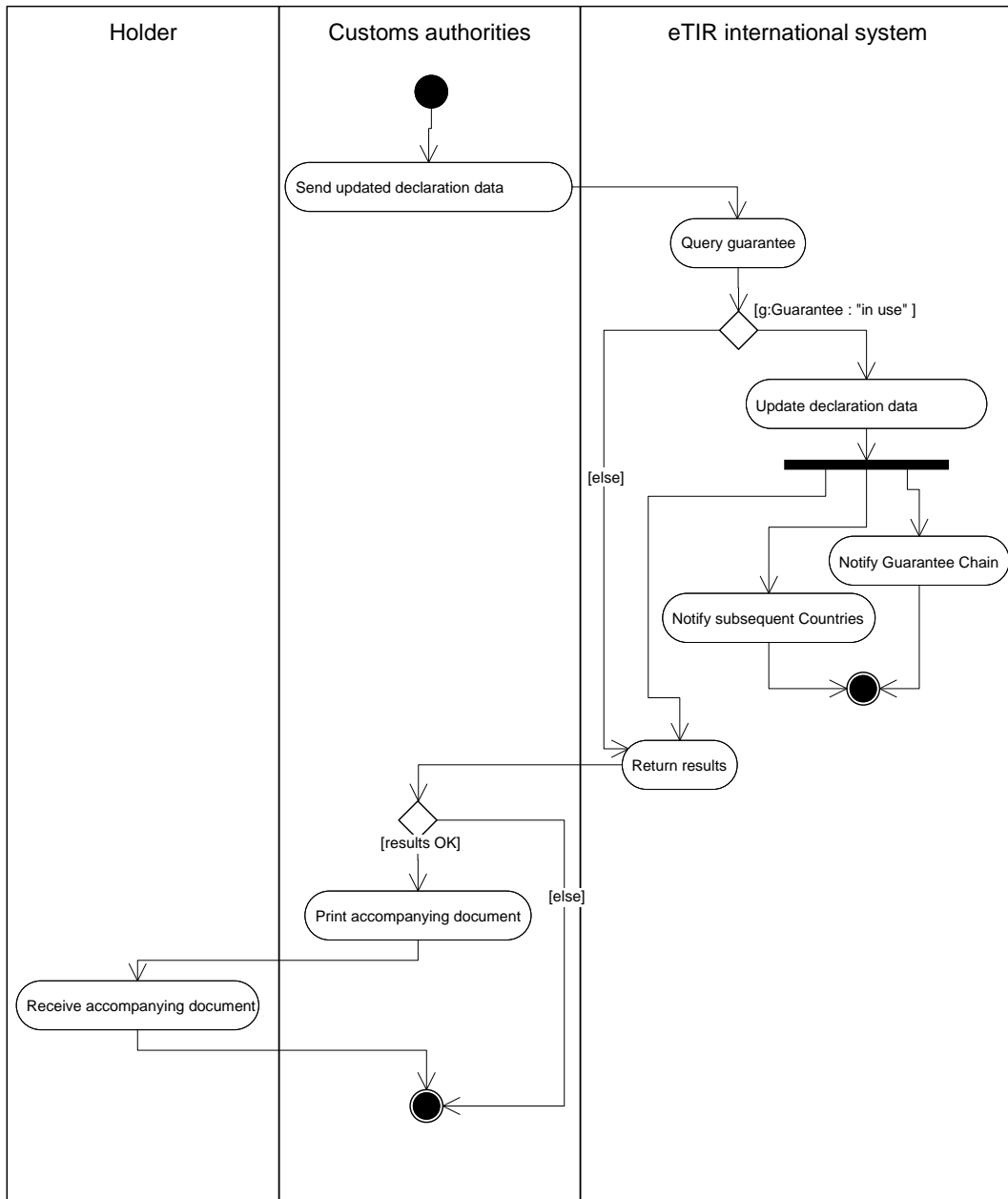
<i>Name</i>	<i>Update declaration data use case</i>
Description	The information related to a declaration is updated after subsequent loading or partial unloading, after the truck and/or the goods have been submitted to checks, after the itinerary has been changed or after the vehicle has been changed.
Actors	Customs authorities, holder
Performance Goals	
Preconditions	The declaration updates have been accepted by customs authorities. The holder should be authorized and not currently excluded from any country along the itinerary.
Postconditions	-
Scenario	<p>Intermediate loading points</p> <p>The intermediate customs office of departure will send all data contained in the declaration to the eTIR international system together with the information on the new seals, after having accepted the declaration and resealed the vehicle or container. The eTIR international system provides all subsequent countries indicated in the itinerary and the guarantee chain with the updated information.</p>
Alternative Scenario	<p>Intermediate Unloading points</p> <p>After having sent a termination message and unloaded the goods concerned, the intermediate customs office of destination will send information on the new seals affixed. The eTIR international system provides all subsequent countries indicated in the itinerary and the guarantee chain with the updated information. Customs authorities provide the holder with an updated accompanying paper document.</p> <p>Customs checks</p> <p>Having removed the seals from the vehicle or container, performed the necessary checks and resealed the vehicle or container, customs authorities send a message to provide the eTIR international system with information on the new seals affixed. The eTIR international system provides all subsequent countries indicated in the itinerary and the guarantee chain with the updated information. Customs authorities provide the holder with an updated accompanying paper document.</p> <p>Change of itinerary</p> <p>After having been informed by the holder that the routing of the transport has changed, customs authorities send a message to provide the eTIR international system with information on the new itinerary. The eTIR international system provides all subsequent countries indicated in the itinerary and the guarantee chain with the updated information. It also informs the countries removed from the itinerary that the TIR transport will not transit their country. Customs authorities provide the holder with an updated accompanying paper document.</p> <p>Vehicles change</p> <p>After having been informed by the holder that a new vehicle (usually the tractor unit) will be used, customs authorities send a message to</p>

<i>Name</i>	<i>Update declaration data use case</i>
<p>Special requirements</p> <p>Extension Points -</p> <p>Requirements -</p> <p>Covered</p>	<p>provide the eTIR international system with information on the new vehicle. The eTIR international system provides all subsequent countries indicated in the itinerary and the guarantee chain with the updated information.</p> <p>Fallback scenario</p> <p>In case the transmission of information to the eTIR international system fails, the customs authorities nevertheless accept the holder to continue the TIR transport. Customs authorities will transmit the electronic data to the eTIR international system at the first opportunity. In the meantime, other customs authorities will obtain the required information from the accompanying document.</p>

3.2.5 Update declaration data activity diagram

Figure 12

Update declaration data activity diagram



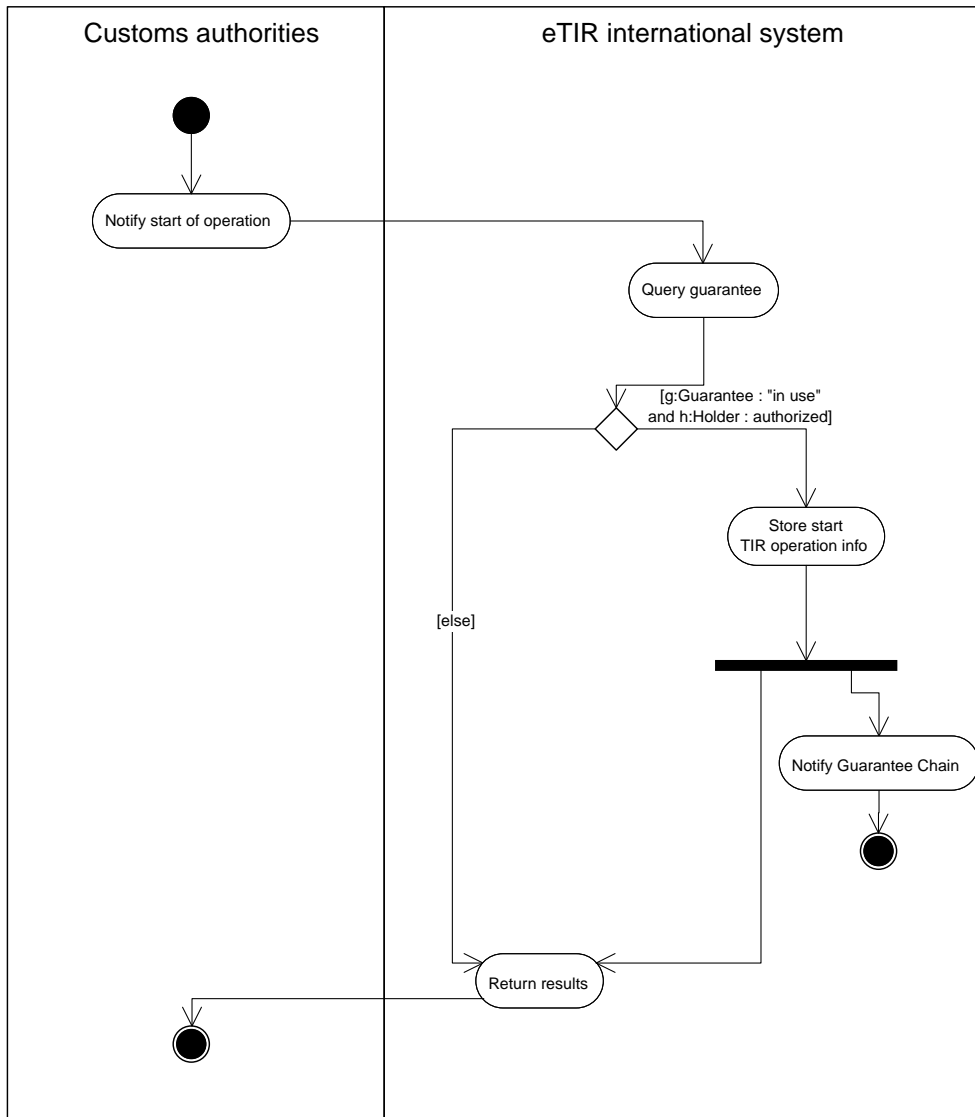
3.2.6 *Starting of TIR operation use case description*

Table 10
Starting of TIR operation use case description

<i>Name</i>	<i>Starting of TIR operation use case</i>
Description	Customs authorities provide the eTIR international system with information regarding the start of a TIR operation.
Actors	Customs authorities
Performance Goals	-
Preconditions	Ensure the validity of the guarantee and the authorization for the holder.
Postconditions	-
Scenario	Customs authorities send a message to the eTIR international system notifying that a TIR operation has started. If the holder is authorized and the guarantee status is “in use”, the eTIR system saves the information and notifies the guarantee chain of the start of a TIR operation.
Alternative Scenario	<p>Fallback scenario</p> <p>If electronic messages cannot be exchanged with the eTIR international system, the information regarding the start should be provided on the accompanying document. The status of the guarantee can be queried using the web services or the web application developed by the guarantee chain. Customs authorities will nevertheless send the start message at a later stage.</p>
Special requirements	-
Extension Points	-
Requirements Covered	-

3.2.7 Starting of TIR operation activity diagram

Figure 13
Starting of TIR operation activity diagram



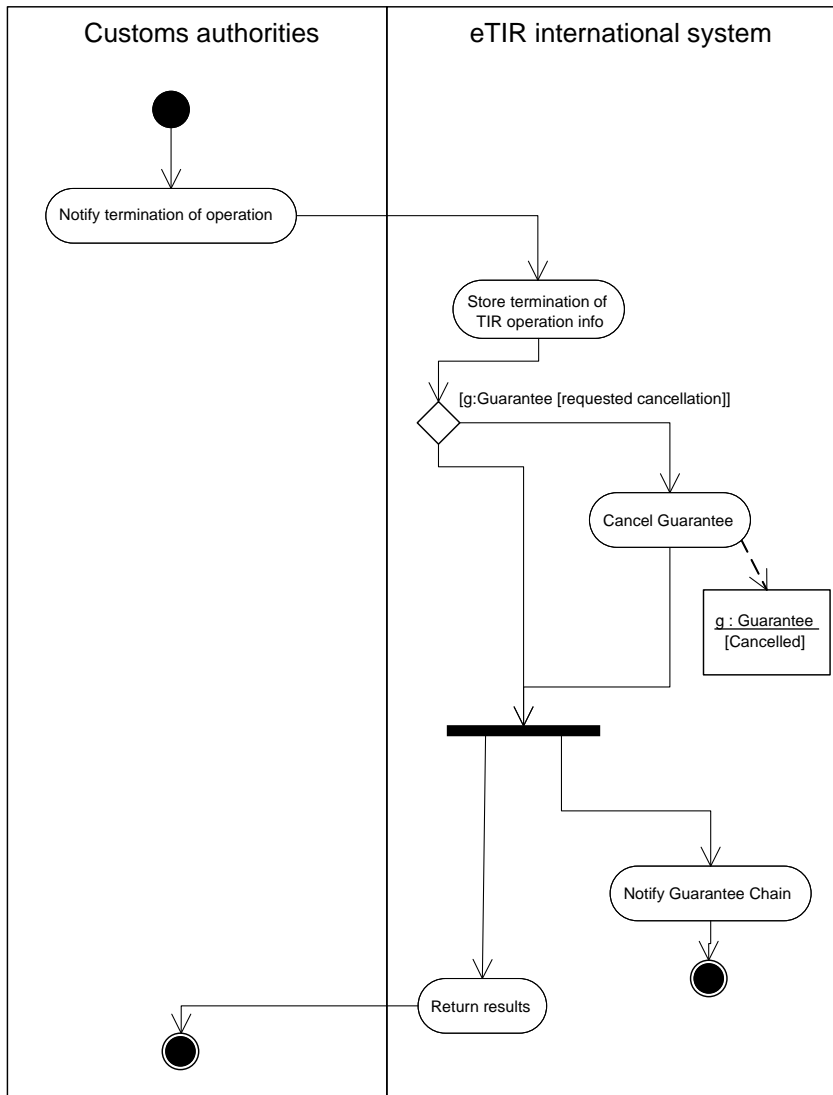
3.2.8 *Terminate TIR operation use case description*

Table 11
TIR operation use case description

<i>Name</i>	<i>Terminate TIR operation use case</i>
Description	Customs authorities provide the eTIR international system with information regarding the termination of a TIR operation.
Actors	Customs authorities
Performance Goals	-
Preconditions	-
Postconditions	-
Scenario	Customs authorities send a message to the eTIR international system notifying that a TIR operation has terminated. The eTIR system stores the information, changes the status of the guarantee to cancelled in case the guarantee chain has requested cancellation and notifies the guarantee chain of the termination of all TIR operations, including the final termination, providing the data as required by Annex 10 of the TIR Convention.
Alternative Scenario	Fallback scenario If electronic messages cannot be exchanged with the eTIR international system, the information regarding the termination should be provided on the accompanying document. Customs authorities will nevertheless send the termination message at a later stage.
Special requirements	Termination can be made with reservations.
Extension Points	-
Requirements Covered	-

3.2.9 Terminate TIR operation activity diagram

Figure 14
Terminate TIR operation activity diagram



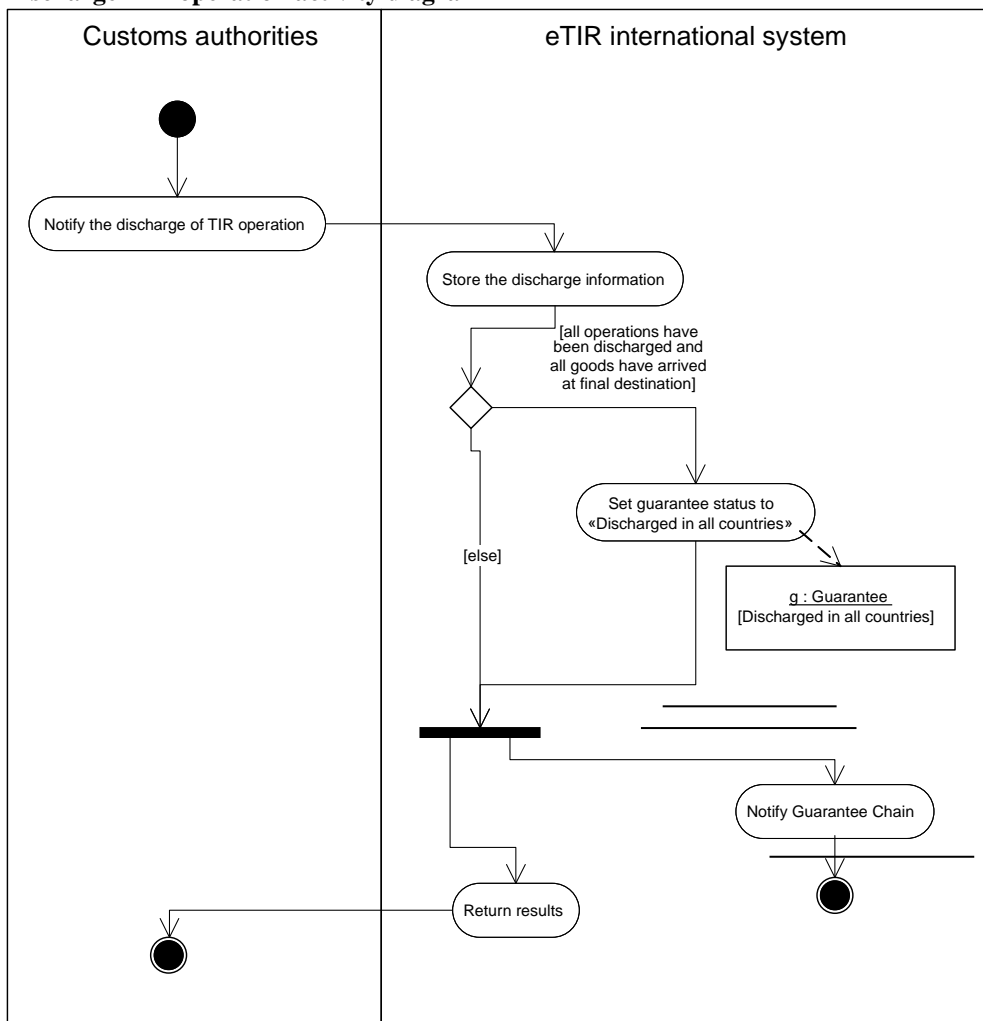
3.2.10 Discharge TIR operation use case description

Table	12
Discharge TIR operation use case description	

<i>Name</i>	<i>Discharge TIR operation use case</i>
Description	Customs authorities provide the eTIR international system with information regarding the discharge of a TIR operation.
Actors	Customs authorities
Performance Goals	
Preconditions	-
Postconditions	-
Scenario	Customs authorities send a message to the eTIR international system notifying that a TIR operation has been discharged. The eTIR international system stores the information and notifies the guarantee chain of the discharge of the TIR operations constituting a single TIR transport. When all goods have reached their final destination and all TIR operations covered by the guarantee have been discharged, the status of the guarantee is changed to “discharged in all countries”.
Alternative Scenario	Fallback scenario If electronic messages cannot be exchanged with the eTIR international system, customs authorities will nevertheless send the discharge message at a later stage.
Special requirements	-
Extension Points	-
Requirements Covered	-

3.2.11 Discharge TIR operation activity diagram

Figure 15
Discharge TIR operation activity diagram



3.2.12 *Notify guarantee chain use case description*

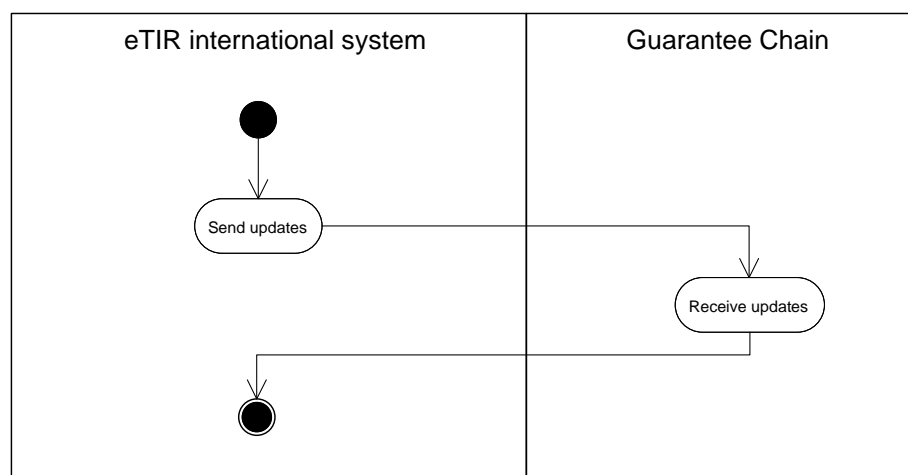
Table 13

Notify guarantee chain use case description

<i>Name</i>	<i>Notify guarantee chain use case</i>
Description	The eTIR international systems notifies the guarantee chain of changes in the information related to a guarantee it has issued.
Actors	Guarantee chain
Performance Goals	
Preconditions	-
Postconditions	-
Scenario	The eTIR international system notifies the guarantee chain of changes in the information related to a guarantee it has issued by sending an electronic message.
Alternative Scenario	Fallback scenario In case the computer system of the guarantee chain cannot be reached, the eTIR international system will continue to try sending the information. A monitoring system will detect problems and trigger prompt and appropriate reactions.
Special requirements	-
Extension Points	-
Requirements Covered	-

3.2.13 *Notify guarantee chain activity diagram*

Figure 16

Notify guarantee chain activity diagram

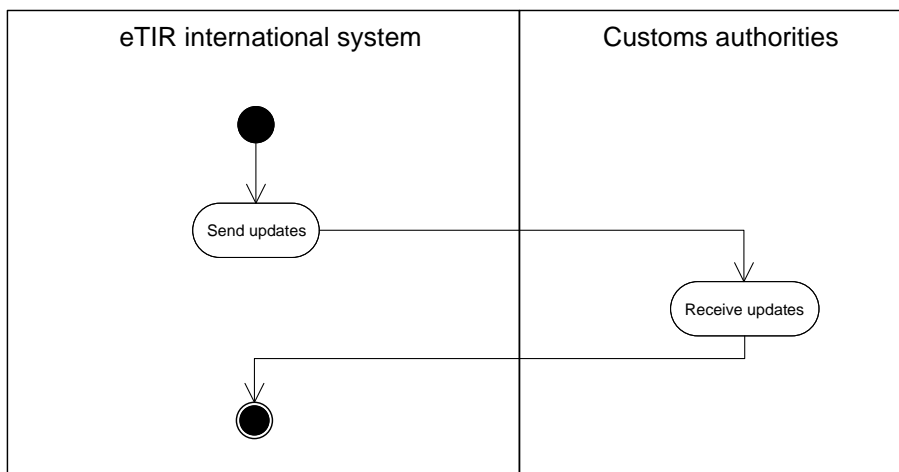
3.2.14 *Notify subsequent Countries use case description*

Table 14
Notify subsequent Countries use case description

Name	<i>Notify subsequent Countries use case</i>
Description	The eTIR international system notifies customs authorities of information related to a consignment that will transit their territory.
Actors	Customs authorities
Performance Goals	
Preconditions	-
Postconditions	-
Scenario	The eTIR international system notifies customs authorities of information related to consignments that will transit their territory by sending them electronic messages.
Alternative Scenario	Fallback scenario In case a national system is not available, the eTIR international system will continue to try sending the information. A monitoring system will detect problems and trigger prompt and appropriate reactions.
Special requirements	-
Extension Points	-
Requirements Covered	-

3.2.15 *Notify subsequent Countries activity diagram*

Figure 17
Notify subsequent Countries activity diagram



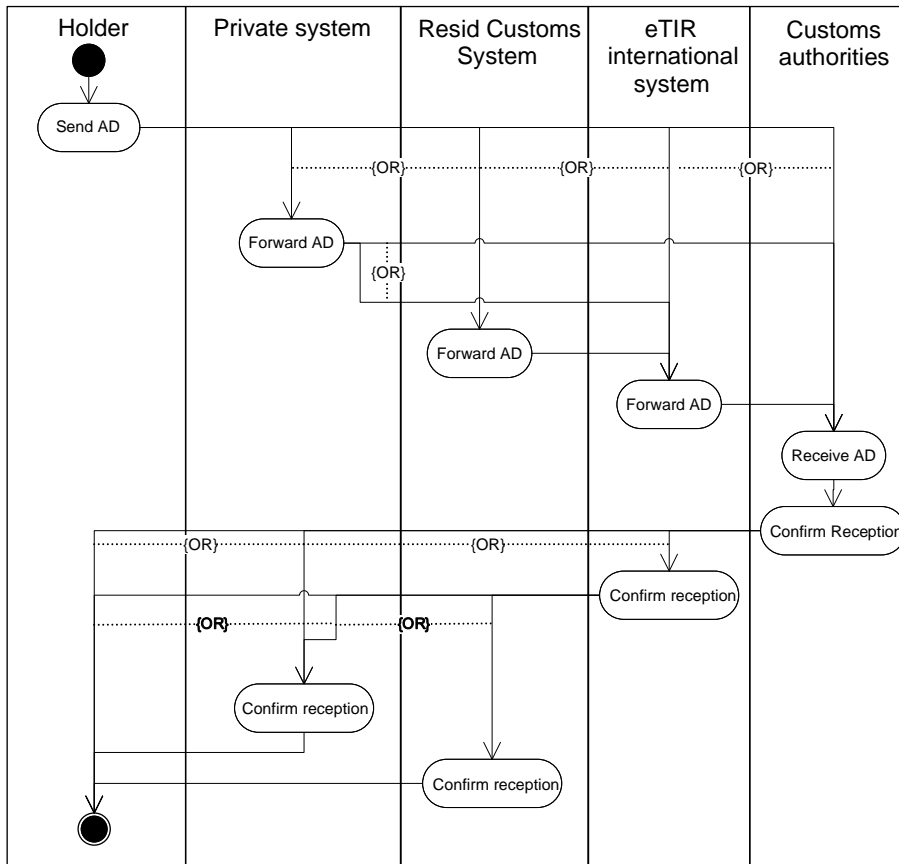
3.2.16 *Advance data use case description*

Table 15
Advance data use case description

<i>Name</i>	<i>Advance data use case</i>
Description	<p>Sending advance data covers 3 cases: sending the advance TIR data, sending the advance amendment data or cancelling the advance data.</p> <p>The holder transmits advance TIR data to the eTIR international system, either directly via a declaration mechanism provided by the customs authorities of his/her country of residence or a private international declaration mechanism, which will then forward the data to the customs authorities of the country of first customs office of departure.</p> <p>Before the declaration is accepted, the holder may transmit a cancel advance data to cancel the previously sent advance TIR data.</p> <p>Once the declaration has been accepted by customs, the holder may then transmit an advance amendment data to request an amendment to the accepted declaration data. The holder may then also transmit a cancel advance data to cancel the previously sent advance amendment data.</p>
Actors	Holder, Customs authorities, private provider of an international declaration services (e.g. guarantee chain).
Performance Goals	
Preconditions	The holder, the customs system of the country of residence of the holder or the private provider of an international declaration services is registered in the authentication database (see 1.3.2.9).
Postconditions	-
Scenario	.
Alternative Scenario	<p>Fallback scenario</p> <p>In case transmission by means of web services is not available, the holder should use other available declaration mechanisms.</p>
Special requirements	-
Extension Points	-
Requirements Covered	-

3.2.17 Advance data activity diagram

Figure 18
Advance data activity diagram



3.2.18 Refusal to start TIR operation use case description

Table 16
Refusal to start TIR operation use case description

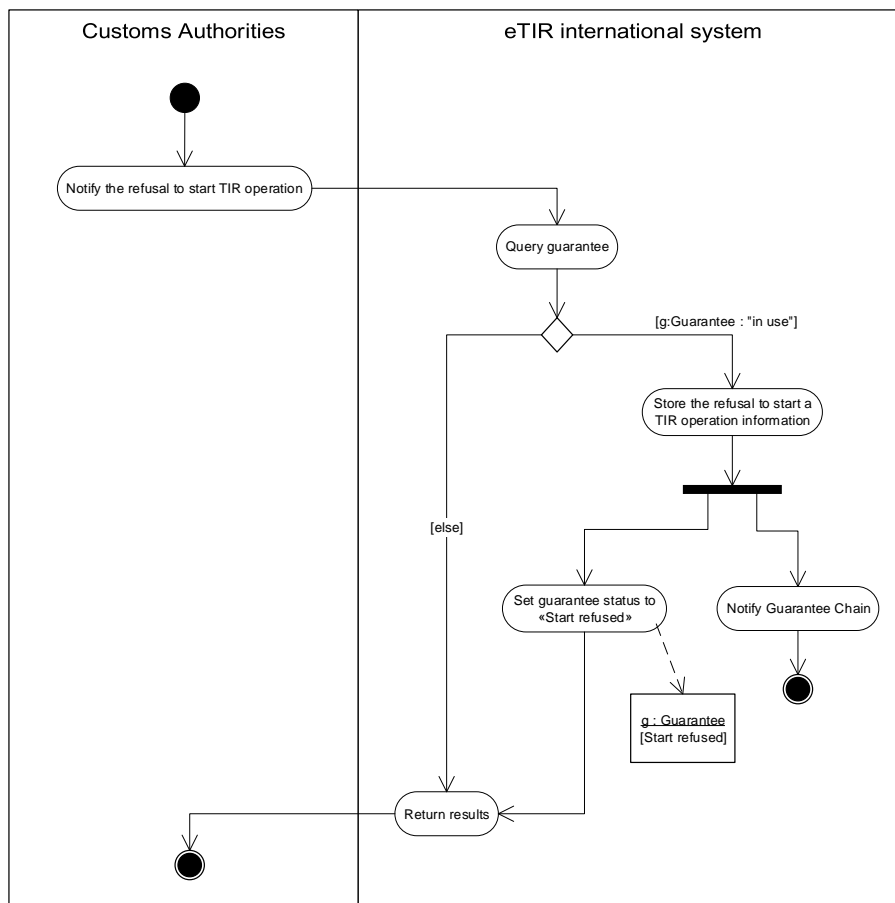
Name	Refusal to start a TIR operation use case
Description	Customs authorities provide the eTIR international system with information regarding the refusal to start a TIR operation.
Actors	Customs authorities
Performance Goals	-
Preconditions	-
Postconditions	-
Scenario	Customs authorities send a message to the eTIR international system notifying that they refused to start a TIR operation (including the reason). The eTIR international system saves the information and notifies the guarantee chain of the refusal to start a TIR operation.
Alternative Scenario	Fallback scenario If electronic messages cannot be exchanged with the eTIR international system, the information regarding the refusal to start a TIR operation should be provided on the accompanying document. Customs authorities will nevertheless send the refusal to start electronic message at a later stage.

<i>Name</i>	<i>Refusal to start a TIR operation use case</i>
Special requirements	-
Extension Points	-
Requirements Covered	-

3.2.19 Refusal to start TIR operation activity diagram

Figure 19

Refusal to start TIR operation activity diagram



3.2.20 Accident or incident use case description

Table 17

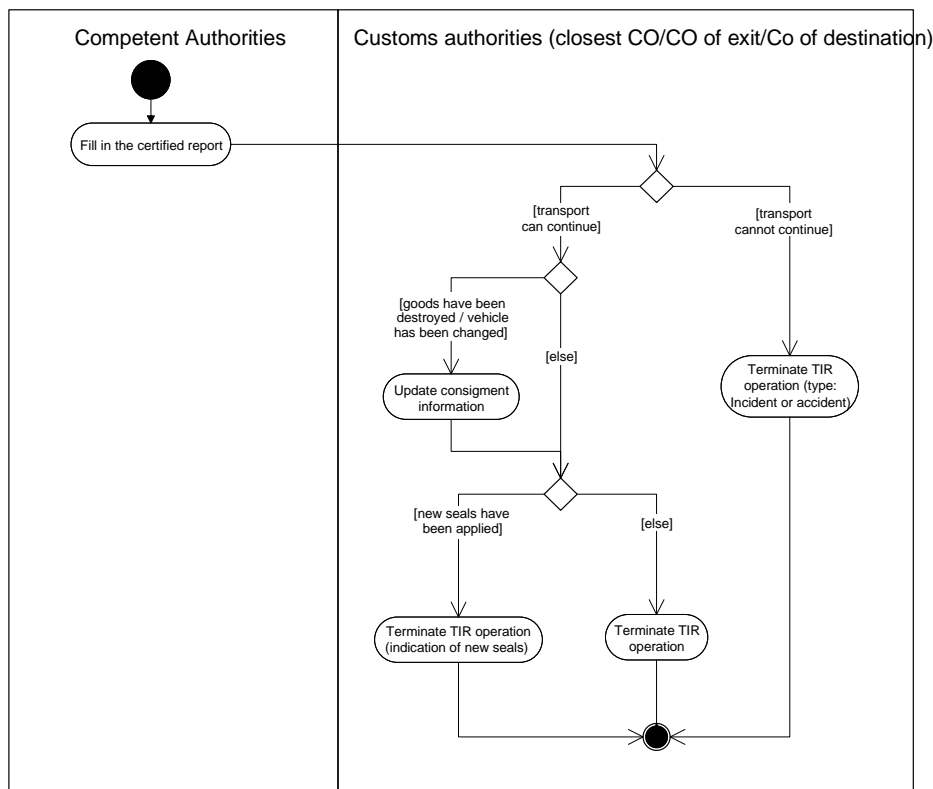
Accident or incident use case description

<i>Name</i>	<i>Accident or incident use case</i>
Description	accident or incident happens en route.
Actors	Customs authorities, other authorities en route (e.g. police)
Performance Goals	-
Preconditions	-
Postconditions	-

Name	<i>Accident or incident use case</i>
Scenario	Authorities en route fill in the certified report at the back of the accompanying document. At the first opportunity, customs authorities provide the eTIR international system with information regarding the accident or incident, either by updating the TIR transport information, if the TIR transport could continue, or by sending a termination message with type “Accident or incident” in case the TIR transport could not be resumed.
Alternative Scenario	Fallback scenario If electronic messages cannot be exchanged with the eTIR international system, information regarding the accident or incident is already available in the certified report and customs authorities shall amend the accompanying document accordingly. Customs authorities will nevertheless send the required electronic messages at a later stage.
Special requirements	-
Extension Points	-
Requirements Covered	-

3.2.21 *Accident or incident activity diagram*

Figure 20
Accident or incident activity diagram



4 Class diagram

The class diagram in Figure 21 is articulated around 3 main classes (in grey): the guarantee, the consignment and the TIR operation.

- The guarantee class, because the majority of information exchanged with the eTIR international system will be referenced by means of the GRN.
- The consignment class, because it links all information regarding the goods in transit.
- The TIR operation class, because it allows the exchange of information previously contained in the counterfoils.

Figure 21
General eTIR class diagram

