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Technical aspects of Computerization of the TIR Procedure

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ACTIVITIES OF THE INFORMAL AD HOC EXPERT GROUP

Reference Model of the TIR Procedure

Chapter 2 – E-Business Requirements

Note by the secretariat

I. BACKGROUND

1. At its fourth session, the Informal Ad hoc Expert Group on Conceptual and Technical aspects of Computerization of the TIR Procedure (further referred as “the Expert Group”) held first considerations with regard to preparing a high-level description of the eTIR Project (Informal document ExG/COMP/2004/10, paras. 15-17). At its seventh session, the Group continued its consideration on the basis of Informal document ExG/COMP/2004/23 drafted by the secretariat and of a presentation made by the European Commission. The Expert Group requested the secretariat to collaborate with the Commission to prepare a new document for its next session combining the ideas from the Commission's presentation and elements of Informal document ExG/COMP/2004/23.

2. At their first meeting, the European Commission and the secretariat were of the view that it would be more effective to devise not one but two separate documents. The first document should present the general ideas on how the eTIR system would replace all functionalities integrated in the TIR Carnet with the aim of presenting it for endorsement to the WP.30 at its October 2005 session. The second document, intended for the Expert Group, should elaborate the ideas, contained in the first document, in the form of high-level functional specifications.

3. At the eighth session, the experts from Customs authorities extensively discussed document TRANS/WP.30/GE.1/2005/2 prepared by the secretariat with the assistance of the European Commission and taking into account the guidelines provided by the Working Party in Informal document No. 9 (2005). They updated the document and requested the secretariat to prepare and distribute a revised version before 25 November 2005. They also mandated the secretariat to continue its work on the basis of the revised document and to draft for its ninth session a document on the possible steps that would lead to a fully computerized eTIR system.

4. At its ninth session the Expert Group proposed to combine document TRANS/WP.30/GE.1/2005/2/Rev.1 with document TRANS/WP.30/GE.1/2006/3, containing a proposal of a step-by-step implementation of the eTIR project, and present this as the high level description of the eTIR project, to be included in the Reference Model at the next session of WP.30 for endorsement.

5. At its tenth session the Expert Group extensively discussed document ECE/TRANS/WP.30/GE.1/2006/9, containing a proposal for the e-Business Requirement Chapter of the Reference Model, as prepared by the group of Customs experts, which had met in Ankara. The Expert Group agreed that, subject to a number of specific amendments, the document was providing the necessary information for inclusion as Chapter 2 of the Reference Model. It requested the secretariat to prepare and distribute a new document, containing the complete Chapter 2 of the Reference Model, which would combine and align the introduction contained in document ECE/TRANS/WP.30/2006/8 with the revised document ECE/TRANS/WP.30/GE.1/2006/9.

6. The annex to this document contains the proposed Chapter 2 of the Reference Model of the computerization of the TIR Procedure. These specifications are compliant with the general ideas contained in WP.30 Informal document No. 9 (2005) prepared jointly by the secretariat and the European Commission whose principles had been endorsed by WP.30 at its one-hundred-and-eleventh session (TRANS/WP.30/222, para. 33).

II. E-BUSINESS REQUIREMENT OF THE eTIR SYSTEM

7. The e-business requirements Chapter starts with a high level description of the eTIR system providing an overview of the system on which the future functional and technical specifications of the project will be based. It provides not only a general view, but also establishes guidelines allowing for a smooth transition from the paper-based system to a computerized system.

8. The Chapter follows with presenting the requirements in the form of a use case analysis of the two modules of the system: the international Customs management of guarantees and the exchange of information regarding TIR transports among Customs authorities.

III. FINAL CONSIDERATIONS

9. The Expert Group may wish to discuss and amend the Annex and possibly request its submission to WP.30 for endorsement. The requirements presented in this Chapter will be the guideline for the future work of the Expert Group: Chapter 3 (Analysis) and Chapter 4 (Design).

Annex

TABLE OF CONTENTS

2.	E-BUSINESS REQUIREMENTS	6
2.1.	HIGH-LEVEL DESCRIPTION OF THE ETIR SYSTEM	6
2.1.1.	<i>Actors and roles</i>	6
2.1.1.1.	Customs authorities.....	6
2.1.1.2.	eTIR international system.....	6
2.1.1.3.	Operator.....	6
2.1.1.4.	Guarantor.....	7
2.1.2.	<i>Fundamental principles</i>	7
2.1.2.1.	eTIR International System brief.....	7
2.1.2.2.	Customs management of guarantees.....	8
2.1.2.2.1.	Registration of the guarantee.....	8
2.1.2.2.2.	Invalidation of a guarantee.....	9
2.1.2.2.3.	Verification of the guarantee.....	9
2.1.2.2.4.	Querying guarantee status.....	9
2.1.2.3.	Exchange of TIR transport information.....	9
2.1.2.3.1.	Data handling at the beginning of the TIR transport.....	9
2.1.2.3.2.	Data handling related to TIR operations.....	10
2.1.2.4.	Other aspects.....	11
2.1.2.4.1.	Issuance of guarantees.....	11
2.1.2.4.2.	Declaration.....	11
2.1.2.4.3.	Pre-arrival information.....	12
2.1.2.5.	Data exchange.....	12
2.1.2.5.1.	Central platform.....	12
2.1.2.5.2.	Communication.....	13
2.1.2.5.3.	Standard messages.....	13
2.1.2.6.	Security.....	13
2.1.2.6.1.	The elements of security from the TIR Convention.....	13
2.1.2.6.2.	Controlled access.....	13
2.1.2.6.3.	Security data elements.....	13
2.1.2.6.4.	eTIR system security.....	13
2.1.2.7.	Fallback solutions and certified report.....	13
2.1.3.	<i>Deliverables</i>	14
2.1.3.1.	National deliverables.....	14
2.1.3.1.1.	National management of eTIR data.....	14
2.1.3.1.2.	Bridges to the international eTIR system.....	14
2.1.3.1.3.	User manuals and training.....	14
2.1.3.2.	International deliverables.....	14
2.1.3.2.1.	Central databases.....	14
2.1.3.2.2.	Web services.....	14
2.1.3.2.3.	Definitions of standard exchange messages.....	14
2.1.3.2.4.	Technical documentation.....	15
2.1.3.2.5.	User manuals and training for trainers.....	15
2.1.3.2.6.	Helpdesk.....	15
2.1.3.3.	Other deliverables.....	15
2.1.3.3.1.	Customs offices database.....	15
2.1.3.3.2.	Countries database.....	15
2.1.3.3.3.	Authorized access database.....	15
2.1.3.3.4.	eTIR security database.....	15
2.1.3.4.	Languages and character sets.....	15
2.2.	STEP-BY STEP IMPLEMENTATION.....	16
2.2.1.	<i>Customs management of guarantees module</i>	16
2.2.2.	<i>Data exchange module</i>	17
2.2.3.	<i>Abolition of the present TIR Carnet: a geographical expansion</i>	17
2.2.4.	<i>Parallel projects</i>	17

2.2.4.1.	Declaration mechanisms	17
2.2.5.	<i>Schedule</i>	18
2.2.5.1.	Paper to electronic transition.....	19
2.3.	USE CASES ANALYSIS	20
2.3.1.	<i>Customs management of guarantees use case</i>	20
2.3.1.1.	Customs management of guarantees use case diagram	21
2.3.1.2.	Guarantee state chart diagram	21
2.3.1.3.	Register guarantor use case description	22
2.3.1.4.	Register guarantor activity diagram	23
2.3.1.5.	Register guarantee use case description	24
2.3.1.6.	Register guarantee activity diagram.....	25
2.3.1.7.	Cancel guarantee use case description	26
2.3.1.8.	Cancel guarantee activity diagram	27
2.3.1.9.	Accept guarantee use case description	28
2.3.1.10.	Accept guarantee activity diagram.....	29
2.3.1.11.	Get operator info use case description	30
2.3.1.12.	Get operator info activity diagram	31
2.3.1.13.	Query guarantee use case description	31
2.3.1.14.	Query guarantee activity diagram	32
2.3.2.	<i>Data exchange use case</i>	33
2.3.2.1.	Data exchange use case diagram	33
2.3.2.2.	Record consignment information use case description	34
2.3.2.3.	Record consignment information activity diagram	35
2.3.2.4.	Update consignment information use case description	36
2.3.2.5.	Update consignment information activity diagram	38
2.3.2.6.	Starting of TIR operation use case description.....	39
2.3.2.7.	Starting of TIR operation activity diagram	40
2.3.2.8.	Terminate TIR operation use case description	41
2.3.2.9.	Terminate TIR operation activity diagram	42
2.3.2.10.	Discharge TIR operation use case description	43
2.3.2.11.	Discharge TIR operation activity diagram	44
2.3.2.12.	Notify Guarantor use case description	45
2.3.2.13.	Notify guarantor activity diagram.....	45
2.3.2.14.	Notify subsequent Countries use case description	46
2.3.2.15.	Notify subsequent Countries activity diagram	47
2.4.	CLASS DIAGRAM	47

2. E-BUSINESS REQUIREMENTS

2.1. High-level description of the eTIR system

2.1.1. *Actors and roles*

2.1.1.1. 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].

The different tasks and obligations related to these roles are described in the various fundamental principles in Chapter 2.

2.1.1.2. eTIR international system

The eTIR international system interfaces with the guarantor and will ensure the proper management of the guarantee system at international level by the competent Customs authorities. 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.¹

2.1.1.3. Operator

The operator² performs the TIR transport³ and is responsible for providing the related declaration data electronically and for presenting the goods to the relevant Custom offices referred to in Chapter 2.1.1.1 above.

¹ 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).

² The role of the operator is comparable to the one of the TIR Carnet holder in the paper-based system.

³ The TIR transport is the transport of goods from a Customs office of departure to a Customs office of destination under a procedure, called the TIR procedure, laid down in the TIR Convention.

2.1.1.4. Guarantor

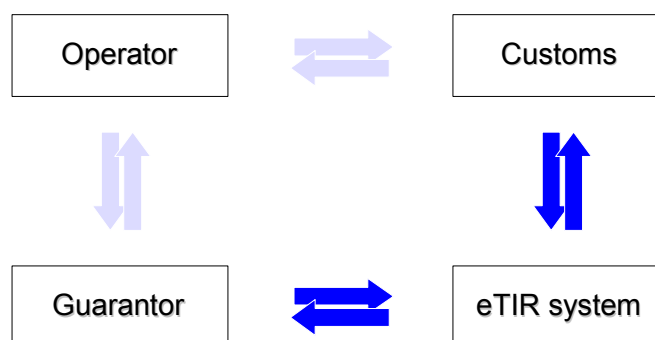
The guarantor^{4,5} provides the operator with a valid international guarantee i.e. a guarantee recognized by each of the Contracting Parties involved in the TIR transport. Moreover, the guarantor must have a legal representative in each country involved in the TIR transports it guarantees. Therefore, the guarantor constitutes de facto a guarantee chain.

2.1.2. *Fundamental principles*

2.1.2.1. eTIR International System brief

The eTIR international system is devised primarily to allow the management of the guarantee by Customs and the exchange of Customs information 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 system does not communicate with the operator, and that Customs do not communicate directly with the guarantor. It is important to recall, at this stage, that the management of claims is outside the scope of the eTIR project. Dark arrows show the interactions with the eTIR systems, light ones depict interactions which will be dealt with at national or private sector level.



⁴ At present the IRU and the national guaranteeing associations are authorized to perform the role as international guaranteeing chain. It is envisaged that this role as a whole is equivalent to the role of the guarantor as described in this document.

⁵ In the TIR Convention (e.g. Article 6, Annex 9 part I), the term guarantor is used to describe the guaranteeing role of associations at national level. This document, however, uses the term guarantor to identify an international guarantee chain without reference to its organisational structure or the requirements with regard to authorization procedures at national or international level (see 2.1.2.2).

On the one hand, the guarantor interacts with the eTIR system to ensure that the guarantees he has issued to the operators are properly registered in the eTIR system. On the other hand, Customs authorities use the eTIR systems to check the guarantees but also to exchange information related to the TIR transport and to TIR operations.

The Customs management of guarantees and the exchange of TIR transport information are therefore the two major fundamental principles. For the time being, guidelines will also be provided to promote harmonization, especially in the context of the dialogue between the operator and Customs authorities. Other aspects might be dealt with at a later stage.

Agreement on communication, security and fallback solution will be other pillars of the system.

2.1.2.2. Customs management of guarantees

The Customs management of guarantees implies a strong relationship between the guarantor and the eTIR international system. The guarantor, or the guarantee chain, is composed of national affiliates, authorized by Customs administrations, and of an international organization authorized by the AC.2 to manage the guarantee chain. The international organization receives from its national affiliates information on the guarantees issued to the operators and sends this information to the Guarantee database, managed by the eTIR international system. The recording of this information in the Guarantee database is conditional on checks made against the International TIR database (ITDB) concerning authorized holders.

2.1.2.2.1. *Registration of the guarantee*

After having issued a guarantee to the operator, the guarantor shall register it in the eTIR international system by sending an appropriate agreed electronic message.

a. Elements composing the registration of the guarantee⁶

(i) *Operator (M)*⁷

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

(ii) *Guarantor (M)*

Information on the guarantor.

⁶ The mandatory or optional status of the information contained in the messages in this document will be discussed at a later stage.

⁷ M: Mandatory; O: Optional.

(iii) *Guarantee (M)*

Information on the guarantee (Guarantee Reference Number (GRN), validity, max. n° of operations, access code, ...)

2.1.2.2.2. *Invalidation of a guarantee*

Once a guarantee has been registered in the eTIR international system, the guarantor can invalidate any guarantee which has not yet been used. It can also cancel the validity of a guarantee currently 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.

2.1.2.2.3. *Verification of the guarantee*

The information about the guarantee will be accessible to all Customs offices. If an operator presents to Customs a declaration covered by a guarantee, which is not recorded in the guarantee database or invalid, then the Customs authorities shall not accept it.

2.1.2.2.4. *Querying guarantee status*

Once a guarantee has been registered in the eTIR international system, the guarantor can query at any time the status of the guarantee and obtain the TIR transport information attached to it. An automated notification system from the eTIR international system to the guarantor and Customs authorities will also be established.

2.1.2.3. Exchange of TIR transport information

2.1.2.3.1. *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 available, upon request, to all Customs offices.

a. Recording of the elements composing 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 2.1.2.3.2.a(i)) plus all the elements provided in the declaration(s) (see 2.1.2.4.2.a). In addition, the Customs office of departure provides the following elements:

(i) *Seals*

Information on the seal(s) affixed to the vehicle(s) and/or container(s).

2.1.2.3.2. *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 at least the following information:

Operation Reference Number and date of start (M)

Time limit for transit (O)

Time limit for the TIR operation.

National itinerary (O)

Customs office(s) at which the cargo has to be produced.

Customs office/officer (M)

(ii) *TIR operation termination information*

The Customs office of destination/exit provides at least the following information:

Date of termination (M)

Reservations (O)

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

Customs office/officer (M)

(iii) *TIR operation discharge information*

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

Date of discharge (M)

Customs office/officer (M)

2.1.2.4. Other aspects

2.1.2.4.1. *Issuance of guarantees*

The operator requests a guarantee from the guarantor, who will, on the basis of international, national and internal rules, decide if the guarantee can be issued to the operator. The guarantor will then provide a guarantee reference number (GRN) for that specific guarantee, associate an access code to it, and provide both to the operator. This procedure is outside the scope of the development of the eTIR international system but is a prerequisite for its well functioning.

The guarantor registers the guarantee internationally as foreseen in point 2.1.2.2.1.

2.1.2.4.2. *Declaration*

The operator submits the eTIR declaration by electronic means to the Customs office of departure, making reference to a guarantee issued by a guarantor. The eTIR international system takes care of forwarding the information to the following Customs authorities involved in the TIR Transport. The declaration shall be submitted prior to the presentation of the goods at the Customs office of departure.

The declaration is dealt with at national level between the operator and the Customs Authorities. Nevertheless, it is advised that the following elements are provided in the declaration since these elements are also part of the registration of the TIR transport information (see 2.1.2.3.1.a).

a. Elements composing the declaration

(i) *Operator (M)*

Information on the physical or legal person who is responsible for transporting the goods and submitting the declaration, together with an electronic signature.

(ii) *Guarantee (M)*

The GRN of the guarantee 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, ...) as well as other accompanying data. Optionally the value of the goods can also be provided.

(iv) *Vehicles/Containers (M)*

Information on the vehicles and/or containers used to carry the goods.

(v) *Accompanying documents (O)*

Reference to all documents, paper or electronic, which are accompanying the declaration.

(vi) *Consignee ([O])*

Information on the physical or legal persons to whom goods are shipped.

(vii) *Itinerary (Country level) (M)*

Countries involved in the TIR transport.

(viii) *Electronic signature (M)*

Element ensuring the identity of the operator submitting the advance declaration and certifying its contents has not been updated since the signature has been created.

(ix) *Consignor (M)*

Information on the physical or legal persons from whom goods are shipped.

(x) *[Subcontractors*

Information on the physical or legal person who performs the transport or a part of the transport on behalf of the operator.] *under discussion*

2.1.2.4.3. *Pre-arrival information*

[One of the objectives of the eTIR 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 makes all information available to all authorized Customs offices concerned. If requested, automated messages could be sent from the eTIR international system to Customs authorities as soon as information is received.] *to be discussed*

2.1.2.5. Data exchange

2.1.2.5.1. *Central platform*

The eTIR system is built around a central platform, the eTIR international system, which is a composed of hardware and software, including databases and web services. The databases serve to store and make the information available and acts as repository for all information concerning eTIR, whereas the web services allow for an efficient and secure interfacing between the Contracting parties and the central platform.

2.1.2.5.2. *Communication*

The eTIR system may use the Internet to exchange messages.

2.1.2.5.3. *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 system are described in the functional and technical specifications.

2.1.2.6. Security

2.1.2.6.1. *The elements of security from the TIR Convention*

2.1.2.6.2. *Controlled access*

Controlled access is a major principle of the TIR system. The ITDB will be fully used to ensure that only authorized operators use the TIR system.

2.1.2.6.3. *Security data elements*

In line with international recommendations concerning supply chain security, a number of data elements may have to be added to increase the security of the eTIR system.

2.1.2.6.4. *eTIR system security*

The eTIR international system is secured with the latest security methods applicable to systems communicating via the Internet. All messages are encrypted and the access is restricted to authorized users. The system is set up to function 24/7.

2.1.2.7. Fallback solutions and certified report

In case of problems in the course of a TIR transport, 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.

In the future, the access to the TIR transport information by other authorities like police will be made available by means of portable technologies such as those embarked in modern cell phones or PDAs.

2.1.3. Deliverables

2.1.3.1. National deliverables

2.1.3.1.1. National management of eTIR data

The national computer systems of the countries connected to the eTIR system 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.

2.1.3.1.2. Bridges to the international eTIR system

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

2.1.3.1.3. 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 system.

2.1.3.2. International deliverables

2.1.3.2.1. Central databases

The eTIR platform is based on a central database system. The databases store the data and contain the functional rules that allow the proper functioning of the eTIR international system.

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

2.1.3.2.2. Web services

The eTIR web services implemented on the central platform allow authorized computer systems to interact securely with the eTIR system. The web services provide, in a standard format, the functions which allow querying and updating the eTIR database.

2.1.3.2.3. Definitions of standard exchange messages

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

2.1.3.2.4. *Technical documentation*

The technical documentation will help Customs authorities and the private sector to develop their specific applications connected to the eTIR international system. It mainly describes the web services and the standard messages.

2.1.3.2.5. *User manuals and training for trainers*

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

2.1.3.2.6. *Helpdesk*

The helpdesk is available to Customs authorities and the private sector to help in the implementation of specific parts of the eTIR system.

2.1.3.3. Other deliverables

Other elements which may be necessary for the functioning of the eTIR system are not necessarily integrated into the eTIR international system.

2.1.3.3.1. *Customs offices database*

A database in which information on all Customs offices involved in the eTIR system is stored.

2.1.3.3.2. *Countries database*

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

2.1.3.3.3. *Authorized access database*

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

2.1.3.3.4. *eTIR security database*

In order to technically restrict access to the eTIR international system to those users who have been authorized, the eTIR systems uses a security database.

2.1.3.4. Languages and character sets

The eTIR system will allow for the translation of all coded information in order to ensure the maximum transparency. In order to allow the transmission and display of all languages, the character set used by the eTIR system is Unicode (UTF-16).

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.

2.2. Step-by step implementation

The eTIR system as defined in Chapter 2.1 is subdivided in two major parts: Customs management of guarantees and data exchange. When implemented, at the international level, in the given order, these two parts progressively bring the advantage of a fully computerized eTIR system, while, at the same time, gradually replacing the present paper TIR Carnet.

The full computerization of the TIR procedure depends on the complete implementation of both modules of the computerization by all parties involved. Therefore, transitional steps will be required after the implementation of each module at the international level before all Contracting Parties of the Convention will be in a position to 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 steps may vary from country to country.

2.2.1. *Customs management of guarantees module*

The Customs management of guarantees module, as described in Chapter 2.1.2.2, allows the guarantor to electronically register in the eTIR international system all guarantees issued to the operators. 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 Customs management of guarantees into the eTIR 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 operators will not be allowed to perform TIR transports. Logically, it will also further discourage attempts to falsify the TIR Carnet.

The implementation of the Customs management of guarantees module will not lead to the abolition of the present paper TIR Carnet because the data transmission role of the TIR Carnet will continue to exist.

The corner stone of the Customs management of guarantees module is the registration of the guarantee by the guarantor. 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 guarantor of guarantee data to the eTIR international system. Once both systems are in place, Customs administrations can progressively start implementing and aligning their internal procedures and systems.

A transition phase will be required to ensure that all Contracting Parties, as of a certain moment, will make use of the Customs management of guarantees module.

2.2.2. *Data exchange module*

The second step of the eTIR project will be to develop the TIR transport and TIR operations information exchange, building on the already developed Customs management of guarantees module.

Once the data exchange module will be functional at the international level, national Customs system can transmit and obtain information via the central system.

In view of the fact that not all Customs offices will immediately have access to the eTIR system, the use of present paper TIR Carnet will be maintained and remain 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, with a view to accelerate the initiation of this step, one or more pilot projects concerning the exchange of data between Contracting Parties can be initiated in parallel to step 1, in line with the mandate provided by WP.30 (TRANS/WP.30/212, para 21).

2.2.3. *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 compatible with the eTIR 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 will become mandatory for all Customs offices involved. Issues with regard to rerouting will need to be addressed during the analysis and design phases.

2.2.4. *Parallel projects*

2.2.4.1. Declaration mechanisms

In parallel to the implementation of the eTIR international system, standard eTIR national electronic declaration mechanisms will also have to be developed, aided by guidelines established in the analysis of the second module. In this context, it can also be envisaged that standard declaration mechanisms are facilitated by developments from Customs administrations or from the private sector, nationally or internationally.

2.2.5. *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.⁸

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

⁸ 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.

Sub-projects	Steps⁹					
<i>Customs management of guarantees</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>	<i>T</i>	
Contracting Party 3				<i>E</i>	<i>C</i>	<i>T</i>
Private ^{10,11}	<i>E</i>	<i>C</i>	<i>T</i>			
<i>Data exchange</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>	<i>T</i>	
Contracting Party 3				<i>E</i>	<i>C</i>	<i>T</i>
Private 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>	<i>T</i>	
Contracting Party 3				<i>E</i>	<i>C</i>	<i>T</i>
<i>Paper to electronic step-by-step transition</i>						
	1	2	3a	3b	4	

2.2.5.1. Paper to electronic transition

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

⁹ 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).

¹⁰ The well functioning of the private/public partnership is essential to reach the milestone.

¹¹ The IRU emphasised that this part of the computerization has already been largely accomplished.

¹² The private part of the data exchange module aims at providing tools allowing the consultation (and, possibly, reception) by the guarantor of data exchanged between Customs authorities.

1: Before the Customs management of guarantees module will be in place, allowing the exchange of information between the guarantor and the eTIR international system, 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 guarantee information is available in the eTIR international system, countries will start linking up to the eTIR international system, in order to validate the guarantees provided by the operators. This second step ends when the eTIR international system and, at least, one country have implemented the second step.

3a: Once the data exchange module is implemented at international and national level, at least in one country, Customs authorities will start updating and consulting the eTIR international system, possibly in combination with nationally or privately developed declaration mechanisms. Because the information in the central database will not be complete until all Customs authorities involved in a TIR transport have become eTIR compatible, the paper TIR Carnet will remain the main reference.

3b: 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: Only 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.

2.3. 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 guarantor had issued a guarantee to an operator, should lie with Customs (ECE/TRANS/WP.30/226, para. 41).

2.3.1. *Customs management of guarantees use case*

The Customs management of guarantees requires that the Guarantor updates the guarantees directly in the eTIR international system right after having issued them to operators.

2.3.1.1. Customs management of guarantees use case diagram

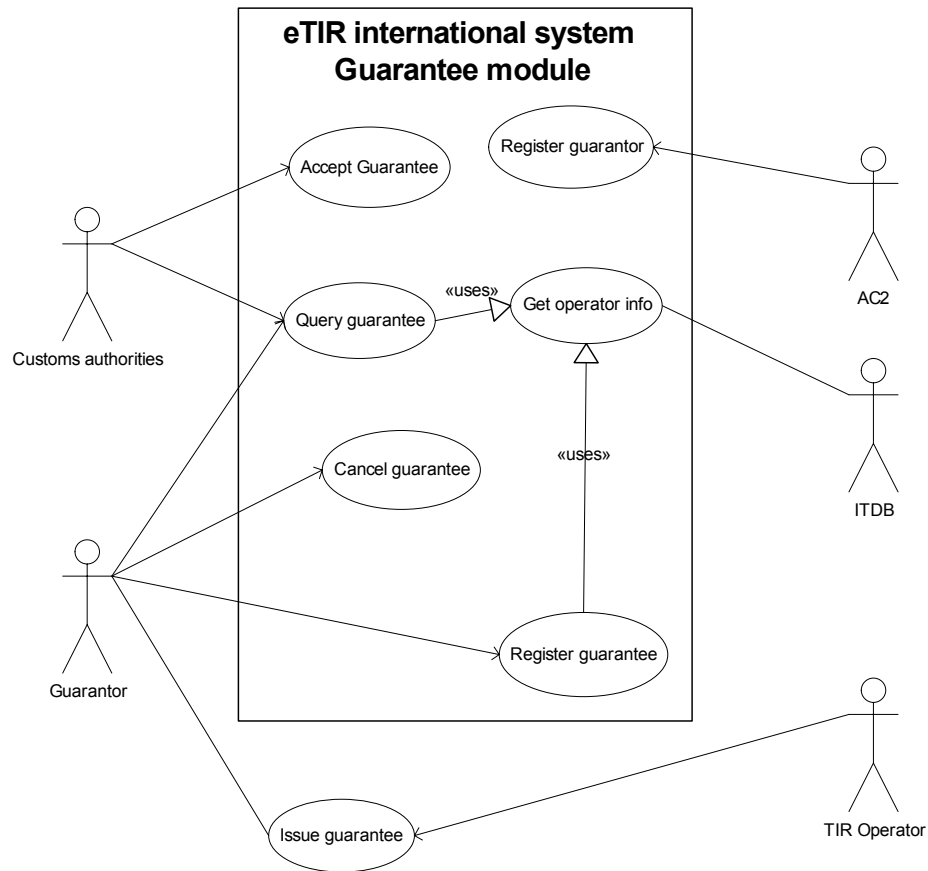


Figure 2.1 Customs management of guarantees use case diagram

2.3.1.2. 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
- Released

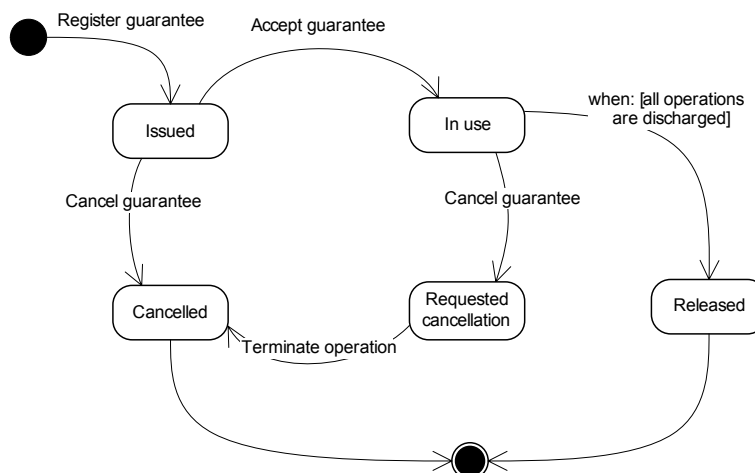


Figure 2.2 Guarantee state chart diagram

2.3.1.3. Register guarantor use case description

Name	Register guarantor use case
Description	Once the AC.2 has authorized a guarantor to manage a guarantee chain, the guarantor is registered in the eTIR international system.
Actors	AC.2
Performance Goals	Only authorized guarantors can be authorized to register guarantees in the eTIR international system.
Preconditions	-
Postconditions	-
Scenario	Registration The AC.2 authorizes a guarantee chain to perform the role of guarantor. It records the guarantor 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 guarantor in order to allow it to access the system.
Alternative Scenario	-
Special requirements	-
Extension Points	-
Requirements Covered	-

2.3.1.4. Register guarantor activity diagram

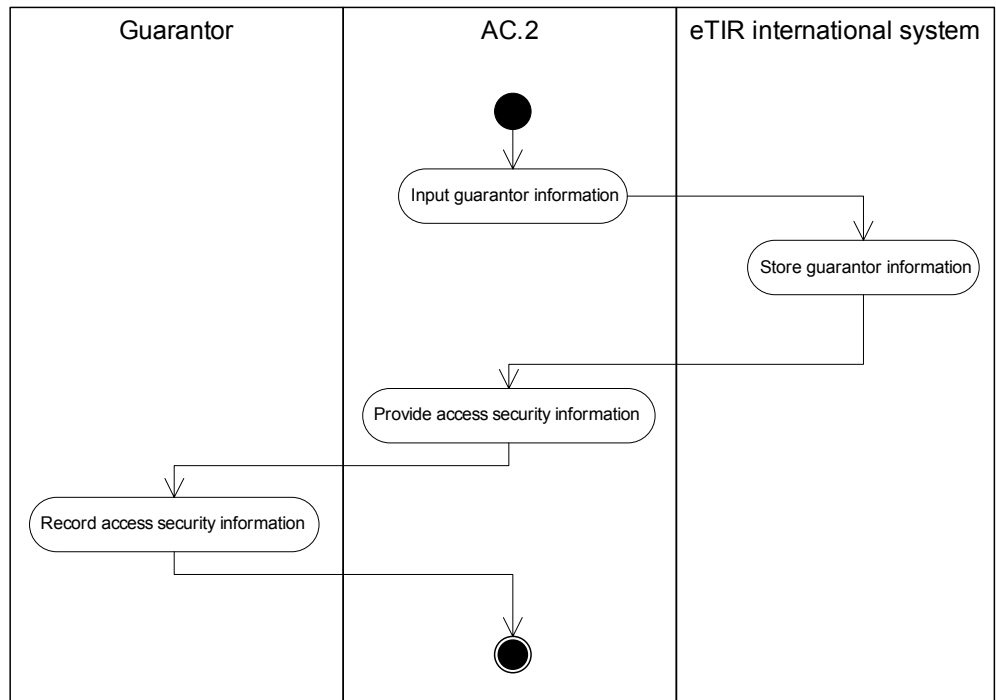


Figure 2.3 Register guarantor activity diagram

2.3.1.5. Register guarantee use case description

Name	Register guarantee use case
Description	The guarantor registers each guarantee issued to an operator in the eTIR international system by sending an electronic message.
Actors	Guarantor
Performance Goals	Any guarantee, issued to an operator, shall be registered in the eTIR international system before it can be used by an operator to accompany a declaration.
Preconditions	The operator, to whom the guarantor 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 guarantor issues a guarantee to an operator 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 operator information, including its current status. In case the guarantee has not yet been registered and the operator is authorized, the system registers the guarantee and notifies the results of the registration of the guarantee to the guarantor. If the registration fails for any reason, the guarantor is informed accordingly.</p>
Alternative Scenario	<p>Fallback scenario</p> <p>If electronic messages cannot be sent to the eTIR international system, the information can also be provided via a secured web interface. If both the electronic messaging and web interface are unavailable, the information can also be sent by other secure means of communication.</p>
Special requirements	The guarantor cannot update any information he has registered in the eTIR international system. Only the cancellation of the guarantee is possible.
Extension Points	-
Requirements Covered	-

2.3.1.6. Register guarantee activity diagram

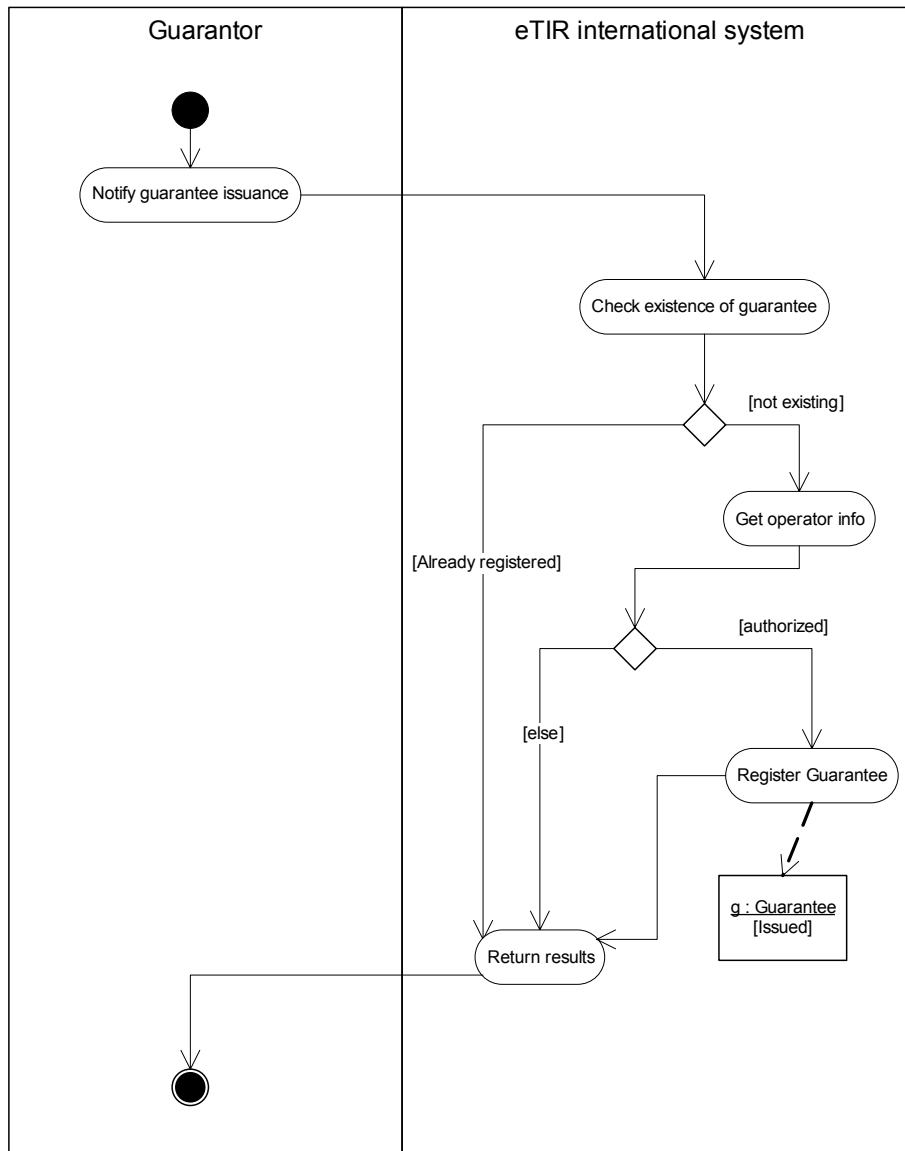


Figure 2.4 Register guarantee activity diagram

2.3.1.7. Cancel guarantee use case description

Name	Cancel guarantee use case
Description	The guarantor cancels a guarantee after it has been issued to an operator by sending an electronic message to the eTIR international system.
Actors	Guarantor
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	Cancellation The guarantor 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”. [Pending further discussion in this and other fora]
Alternative Scenario	Fallback scenario If electronic messages cannot be sent to the eTIR international system, the information can also be provided via a secured web interface. If both the electronic messaging and web interface are unavailable, the information can also be sent by other secure means of communication.
Special requirements	
Extension Points	-
Requirements Covered	-

2.3.1.8. Cancel guarantee activity diagram

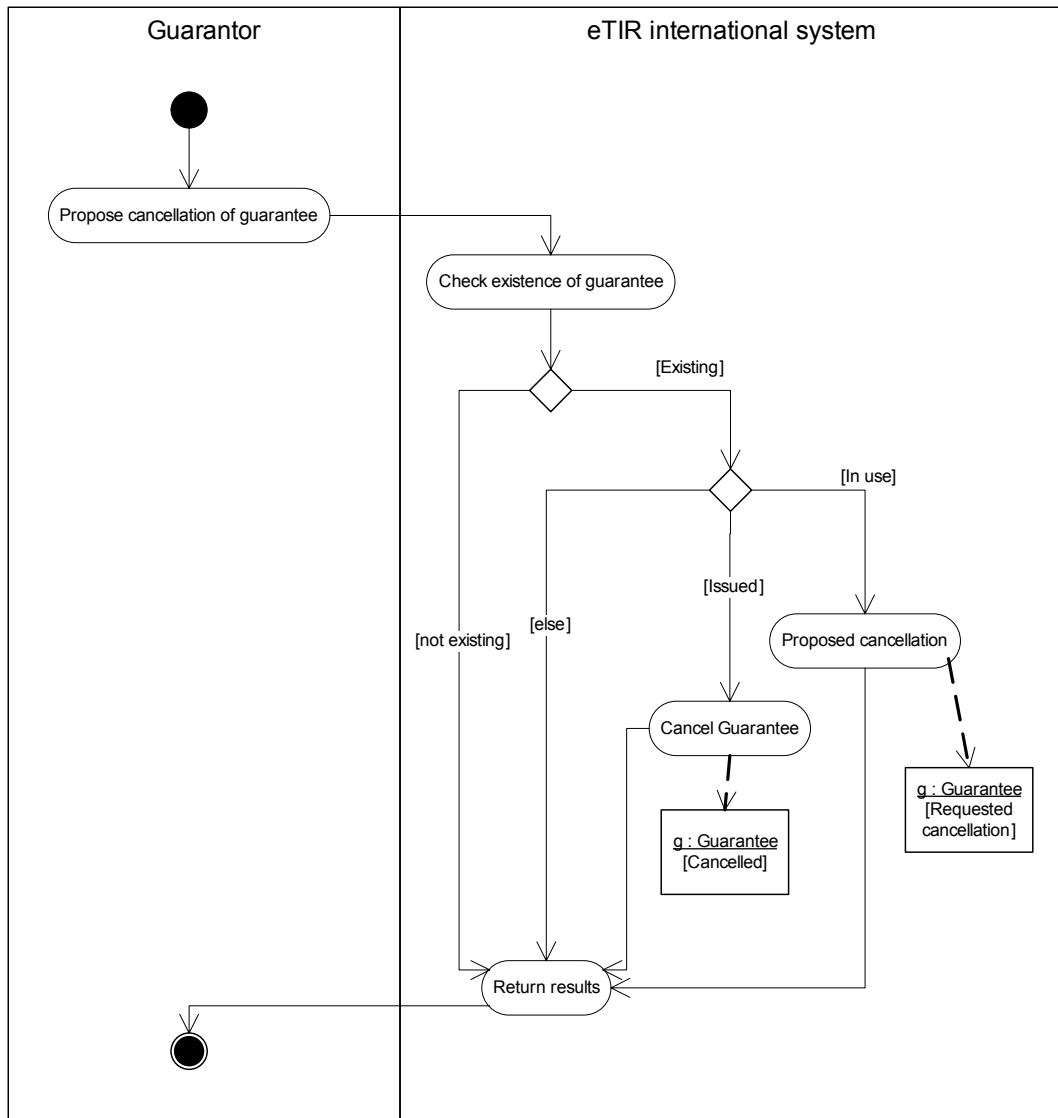


Figure 2.5 Cancel guarantee activity diagram

2.3.1.9. Accept guarantee use case description

Name	Accept guarantee use case
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 “under consideration” or “issued”. The Customs authorities at departure must also have received a TIR declaration.
Postconditions	The guarantee status is changed to “in use” or remains at its current status.
Scenario	Accept guarantee Customs authorities send a secure electronic message to the eTIR international system informing that the guarantee has been accepted for a TIR transport.
Alternative Scenario	Fallback scenario If electronic messages cannot be sent to the eTIR international system, the information can also be provided via a secured web interface. If both the electronic messaging and web interface are unavailable, the information can also be sent by other secure means of communication.
Special requirements	-
Extension Points	-
Requirements Covered	-

2.3.1.10. Accept guarantee activity diagram

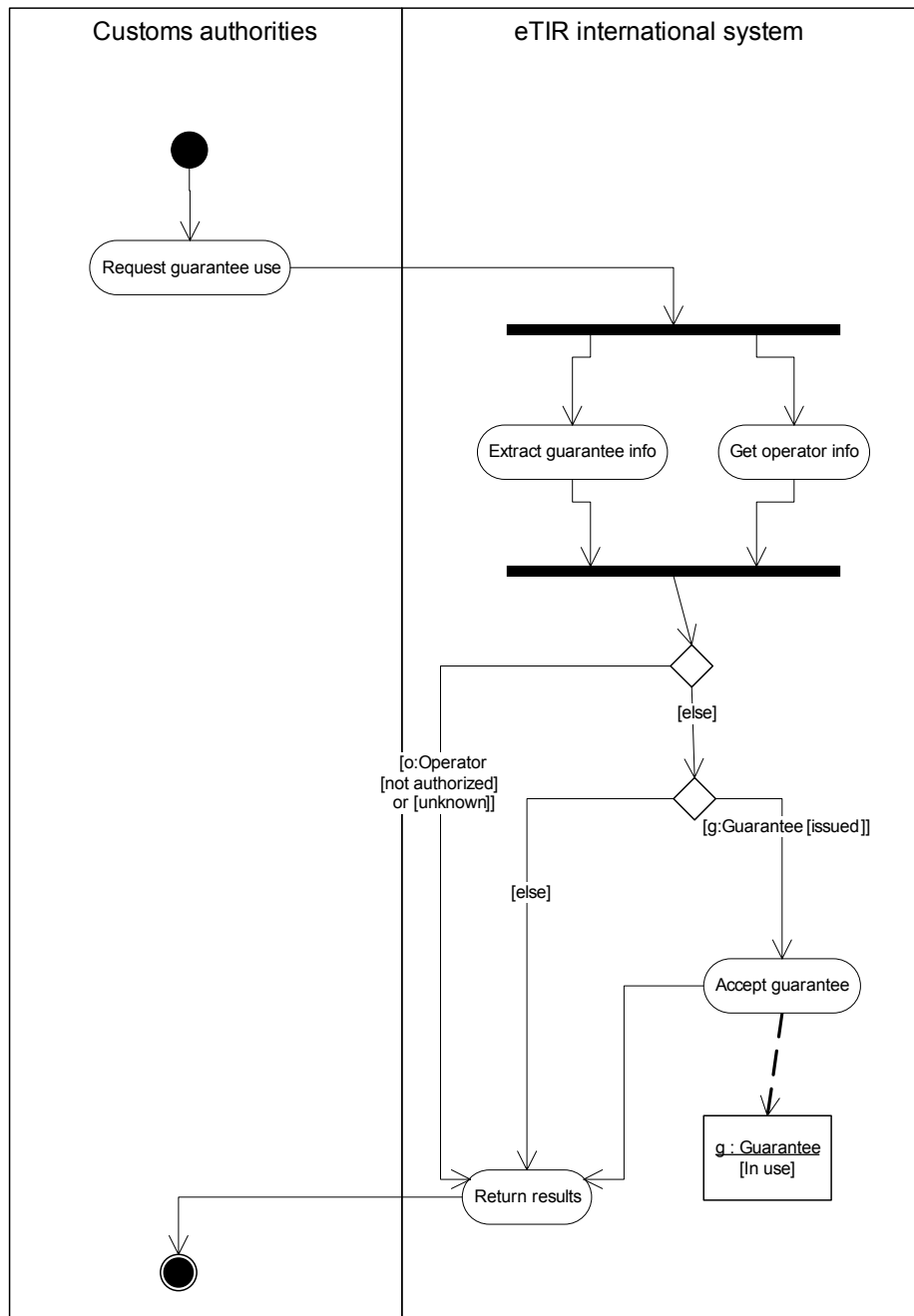


Figure 2.9 Accept guarantee activity diagram

2.3.1.11. Get operator info use case description

Name	Get operator info use case
Description	The eTIR international system queries the ITDB and receives data on an operator.
Actors	ITDB
Performance Goals	-
Preconditions	-
Postconditions	-
Scenario	The eTIR international system sends a query to the ITDB about an operator. The ITDB returns the data about this operator or sends a message indicating that the operator is unknown.
Alternative Scenario	Fallback scenario The operator 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 <p>The operator status can be:</p> <ul style="list-style-type: none"> – “unknown” – “authorized” – “not authorized” <ul style="list-style-type: none"> ▪ Withdrawn ▪ Permanently withdrawn ▪ Excluded ▪ End of activity – “not available”
Extension Points	-
Requirements Covered	-

2.3.1.12. Get operator info activity diagram

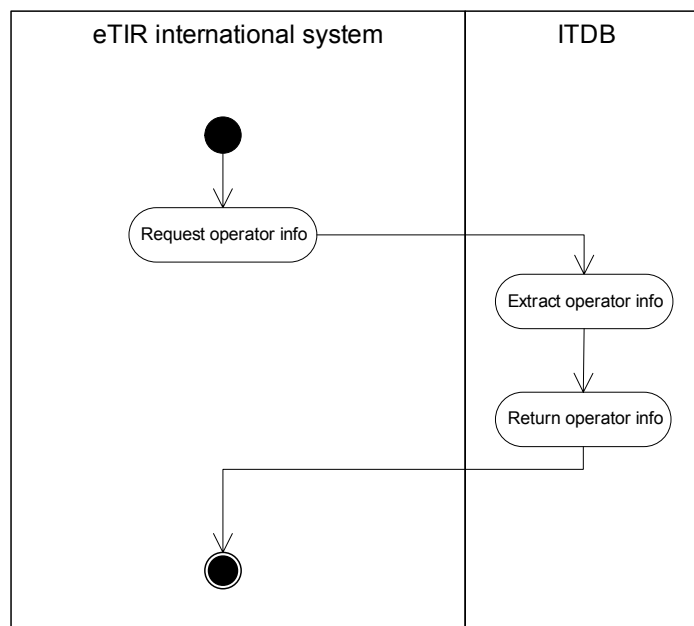


Figure 2.10 Get operator info activity diagram

2.3.1.13. Query guarantee use case description

Name	Query guarantee use case
Description	Customs authorities or a guarantor request the eTIR international system information on issued guarantees.
Actors	Guarantor, Customs authorities
Performance Goals	-
Preconditions	-
Postconditions	-
Scenario	<p>Query the guarantee</p> <p>A guarantor 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 operator (get operator info) and sends all information to Customs authorities or to the guarantor. If the guarantee has not yet been registered, the Customs authorities or the guarantor are informed accordingly.</p>

Alternative Scenario	Fallback scenario Since Customs authorities and the guarantor are automatically notified of all updates regarding guarantees, no fallback procedure is foreseen in case the eTIR international system is temporarily down. They will have to try again at a later stage.
Special requirements	A guarantor can only query information on those guarantees which he has issued and which have been registered by the eTIR international system. The eTIR international system also provides him with information on TIR transports attached to the guarantees issued by him.
Extension Points	-
Requirements Covered	-

2.3.1.14. Query guarantee activity diagram

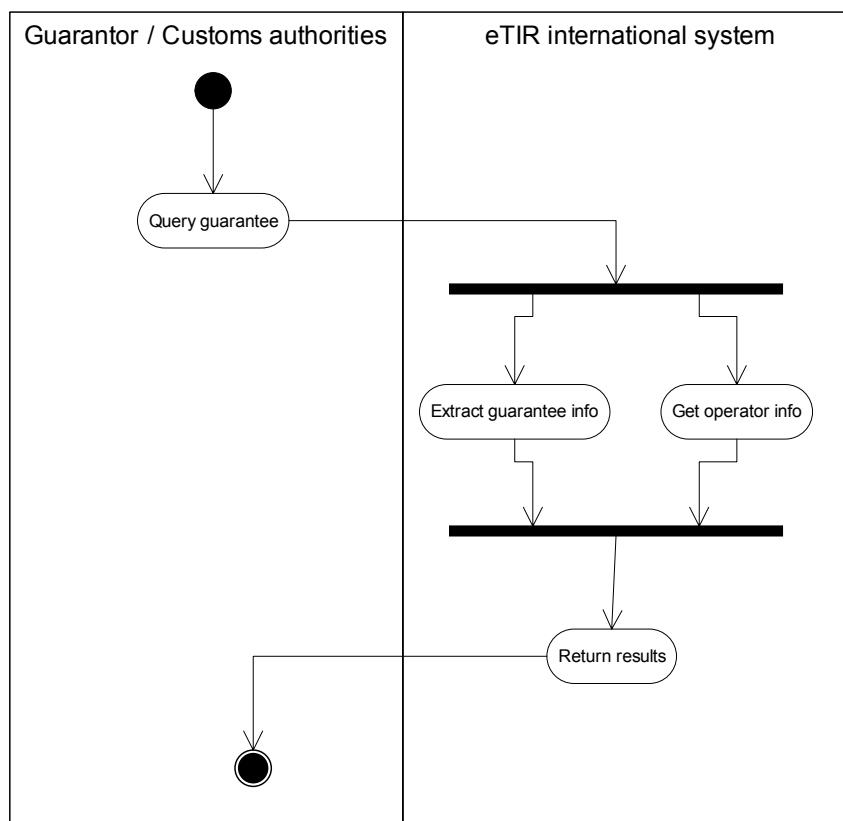


Figure 2.11 Query guarantee activity diagram

2.3.2. *Data exchange use case*

2.3.2.1. Data exchange use case diagram

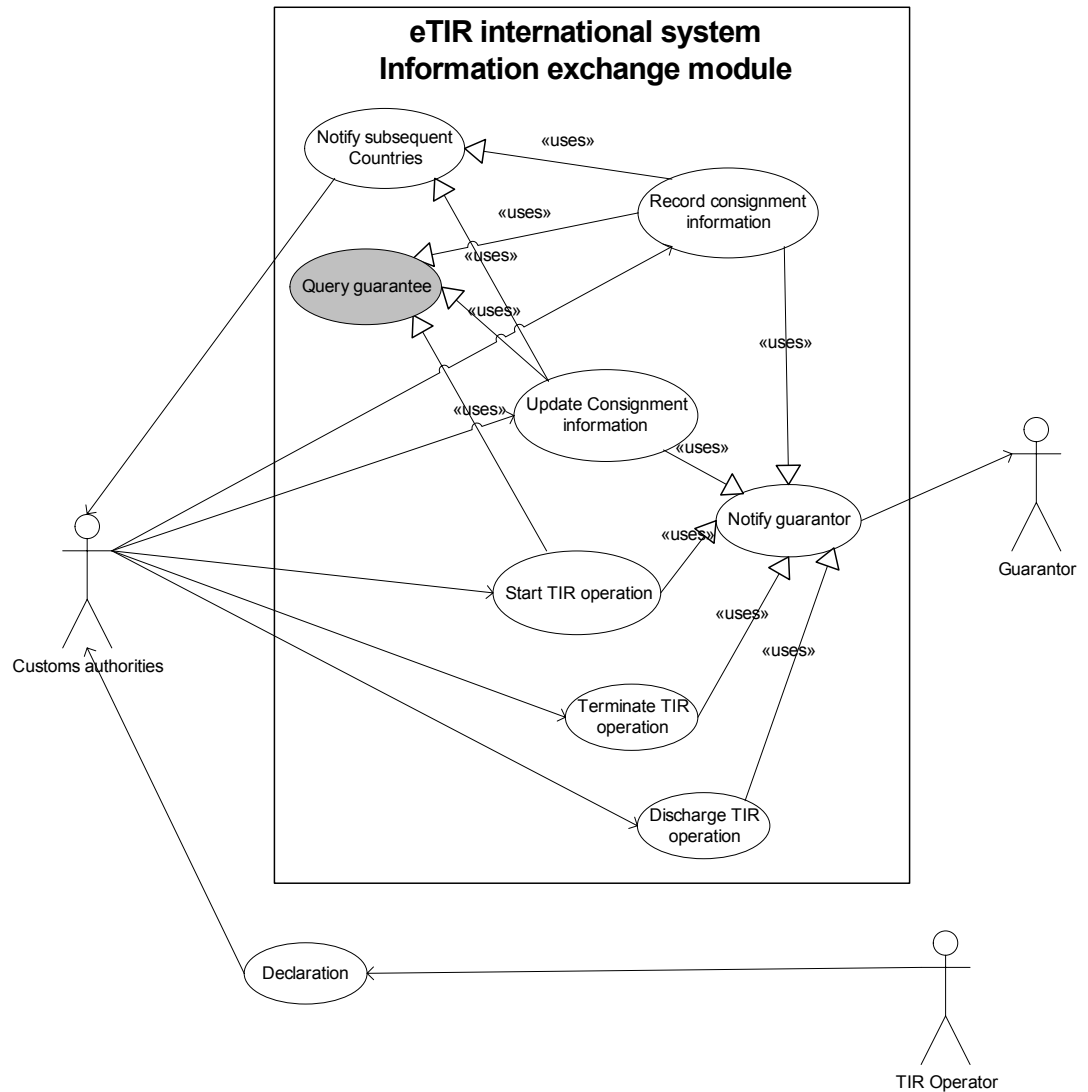


Figure 2.12 Data exchange use case diagram¹³

¹³ Use cases in grey are defined in chapter 2.3.1.

2.3.2.2. Record consignment information use case description

Name	Record consignment information use case
Description	Information about the consignment is centrally stored.
Actors	Customs authorities
Performance Goals	
Preconditions	The guarantee must have been accepted (status “in use”). 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 guarantor with the information. Customs authorities will provide the operator 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 transport operator to start the TIR transport. Customs authorities will transmit the electronic data to the eTIR international system at the first opportunity.
Special requirements	
Extension Points	-
Requirements Covered	-

2.3.2.3. Record consignment information activity diagram

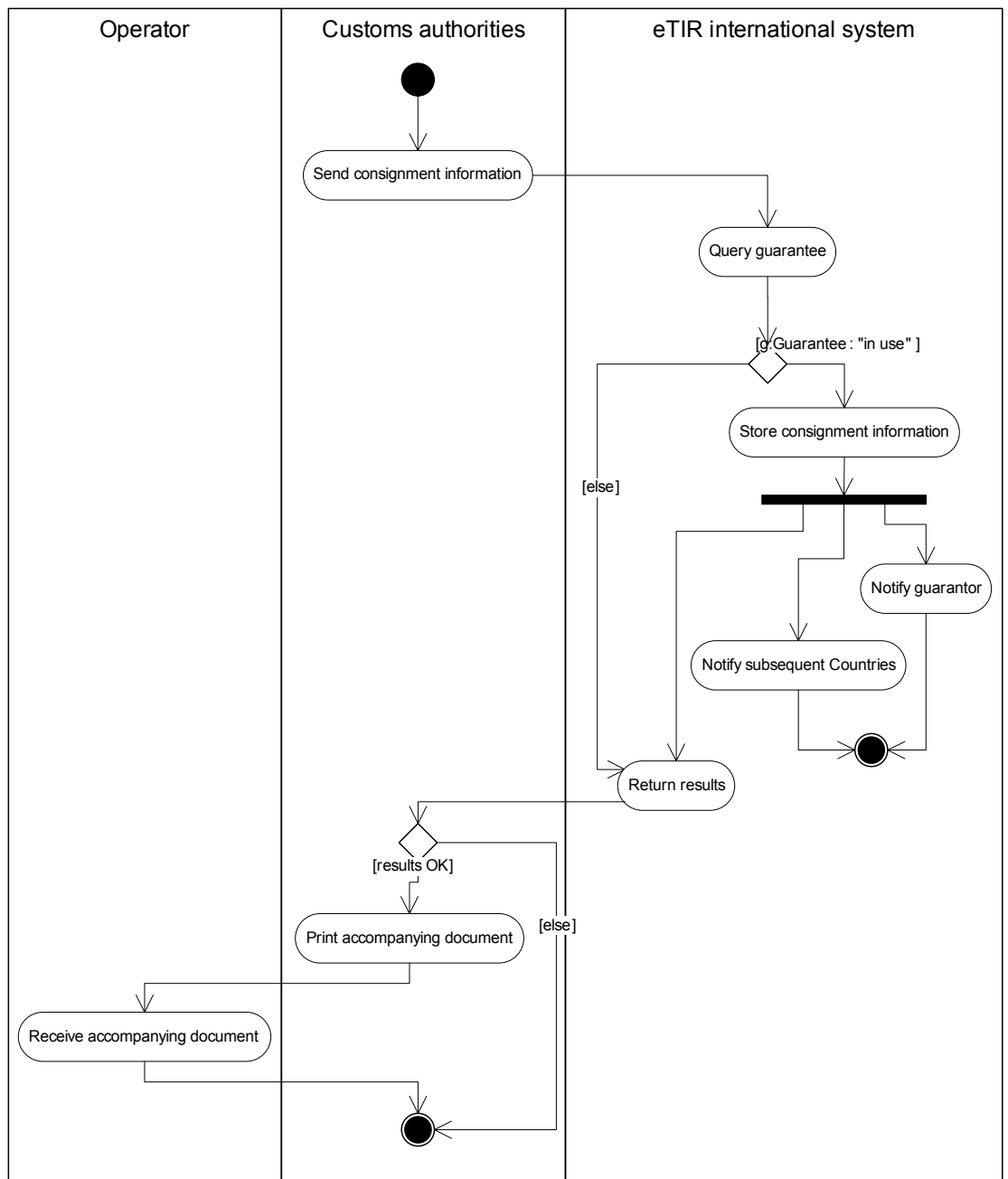


Figure 2.13 Record consignment information activity diagram

2.3.2.4. Update consignment information use case description

Name	Update consignment information use case
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, Operator
Performance Goals	
Preconditions	The declaration updates have been accepted by Customs Authorities.
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 guarantor 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 guarantor with the updated information. Customs authorities provide the operator 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 guarantor with the updated information. Customs authorities provide the operator with an updated accompanying paper document.</p> <p>Change of itinerary</p>

	<p>After having been informed by the operator 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 guarantor 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 operator with an updated accompanying paper document.</p> <p>Vehicles change</p> <p>After having been informed by the operator that a new vehicle (usually the tractor unit) will be used, Customs authorities send a message to 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 guarantor 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 operator with an updated accompanying paper document.</p> <p>Fallback scenario</p> <p>In case the transmission of information to the eTIR international system fails, the Customs authorities nevertheless accept the transport operator to start the TIR transport. Customs authorities will transmit the electronic data to the eTIR international system at the first opportunity.</p>
Special requirements	
Extension Points	-
Requirements Covered	-

2.3.2.5. Update consignment information activity diagram

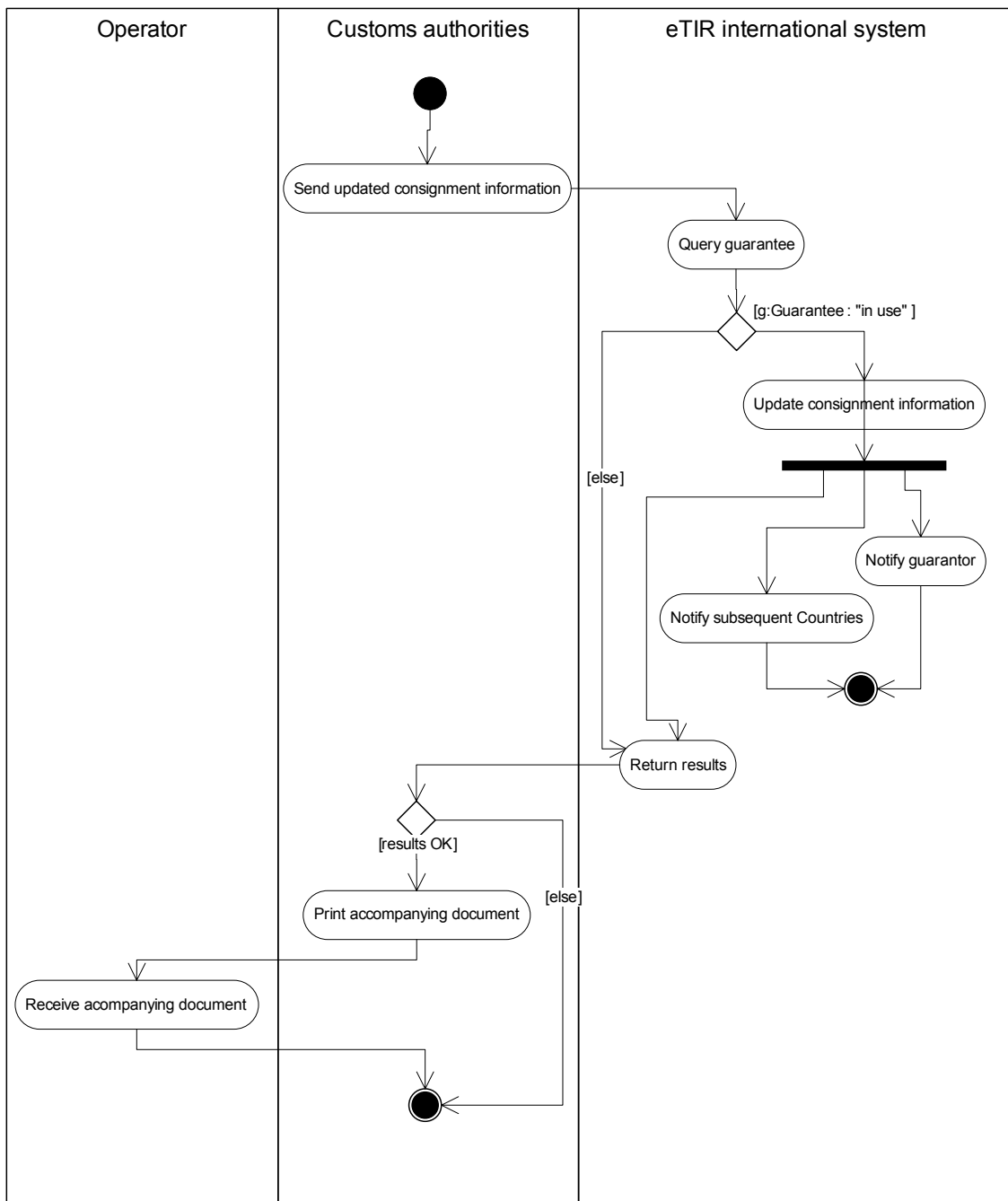


Figure 2.14 Update consignment information activity diagram

2.3.2.6. Starting of TIR operation use case description

Name	Starting of TIR operation use case
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 operator.
Postconditions	-
Scenario	Customs authorities send a message to the eTIR international system notifying that a TIR operation has started. If the operator is authorized and the guarantee status is "in use", the eTIR system saves the information and notifies the guarantor of the start of a TIR operation.
Alternative Scenario	Fallback scenario If electronic messages cannot be exchanged with the eTIR international system, the information can also be provided via a secured web interface. If both the electronic messaging and web interface are unavailable, the information regarding the start should be provided on paper to the operator and the status of the guarantee queried by other secure means of communication that will be made available. Customs authorities should nevertheless continue to try sending the start message at a later stage or from another Customs office.
Special requirements	-
Extension Points	-
Requirements Covered	-

2.3.2.7. Starting of TIR operation activity diagram

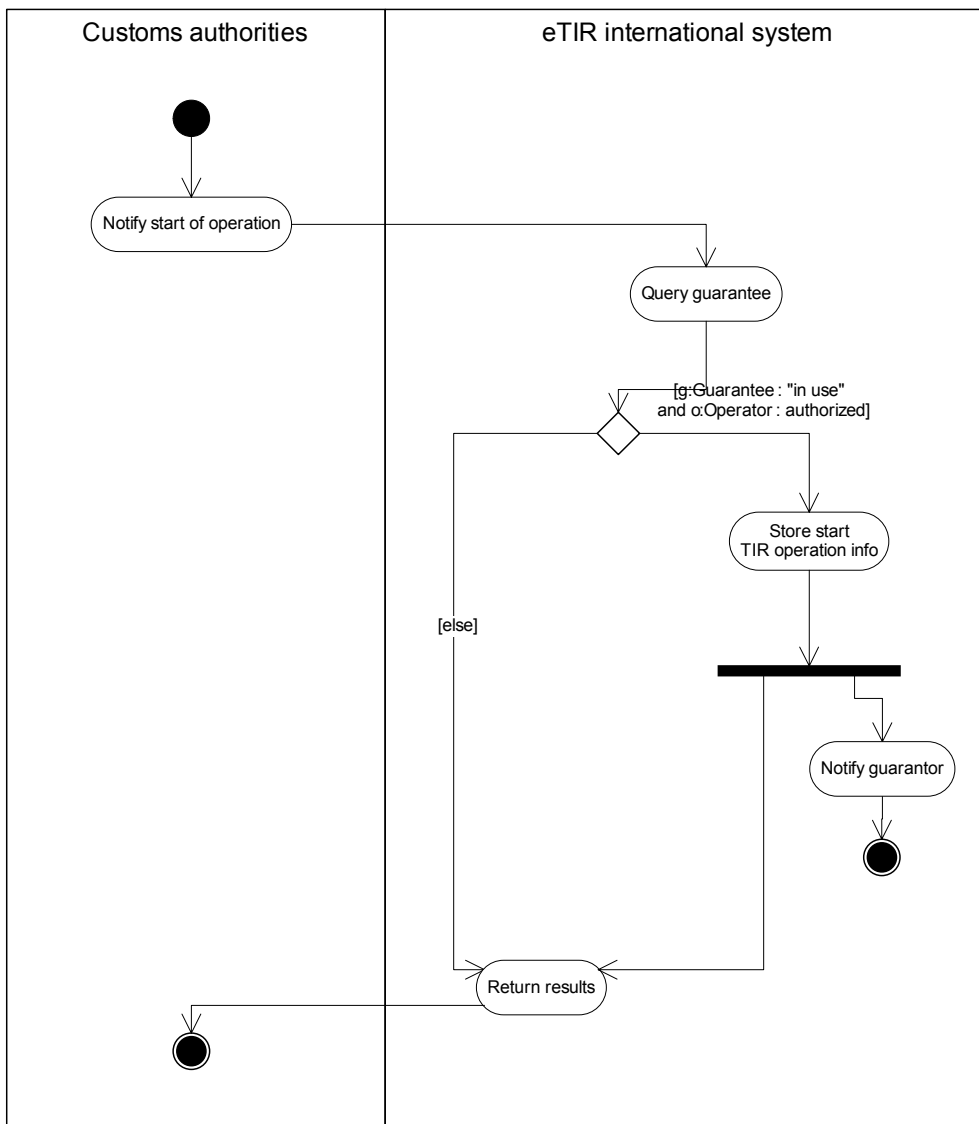


Figure 2.15 Starting of TIR operation activity diagram

2.3.2.8. Terminate TIR operation use case description

Name	Terminate TIR operation use case
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 guarantor has requested cancellation and notifies the guarantor of the termination of the TIR operation.
Alternative Scenario	Fallback scenario If electronic messages cannot be exchanged with the eTIR international system, the information can also be provided via a secured web interface. If both the electronic messaging and web interface are unavailable, the information regarding the termination should be provided on paper. Customs authorities should nevertheless continue to try sending the termination message at a later stage or from another Customs office.
Special requirements	Termination can be made with reservations.
Extension Points	-
Requirements Covered	-

2.3.2.9. Terminate TIR operation activity diagram

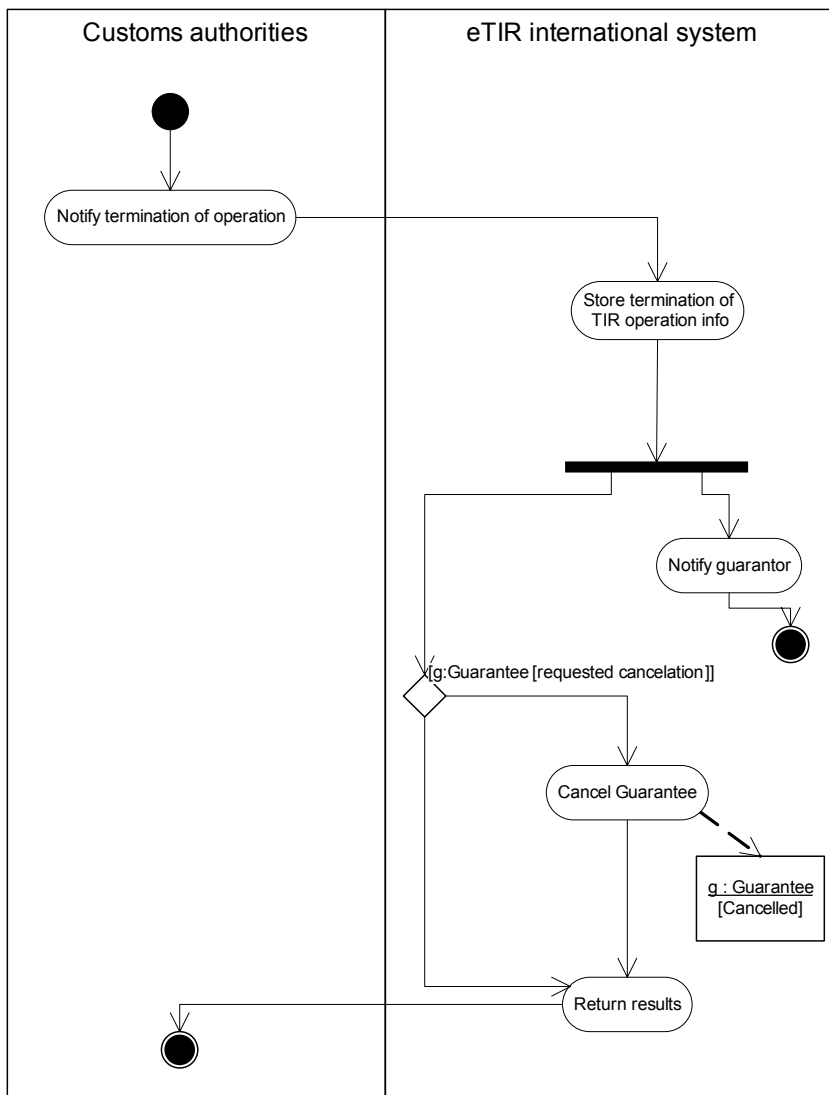


Figure 2.16 Terminate TIR operation activity diagram

2.3.2.10. Discharge TIR operation use case description

Name	Discharge TIR operation use case
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 guarantor of the discharge of the TIR operation. 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 “released”.
Alternative Scenario	Fallback scenario If electronic messages cannot be exchanged with the eTIR international system, the information can also be provided via a secured web interface. If both the electronic messaging and web interface are unavailable, Customs authorities should nevertheless continue to try sending the discharge message at a later stage or from another Customs office.
Special requirements	-
Extension Points	-
Requirements Covered	-

2.3.2.11. Discharge TIR operation activity diagram

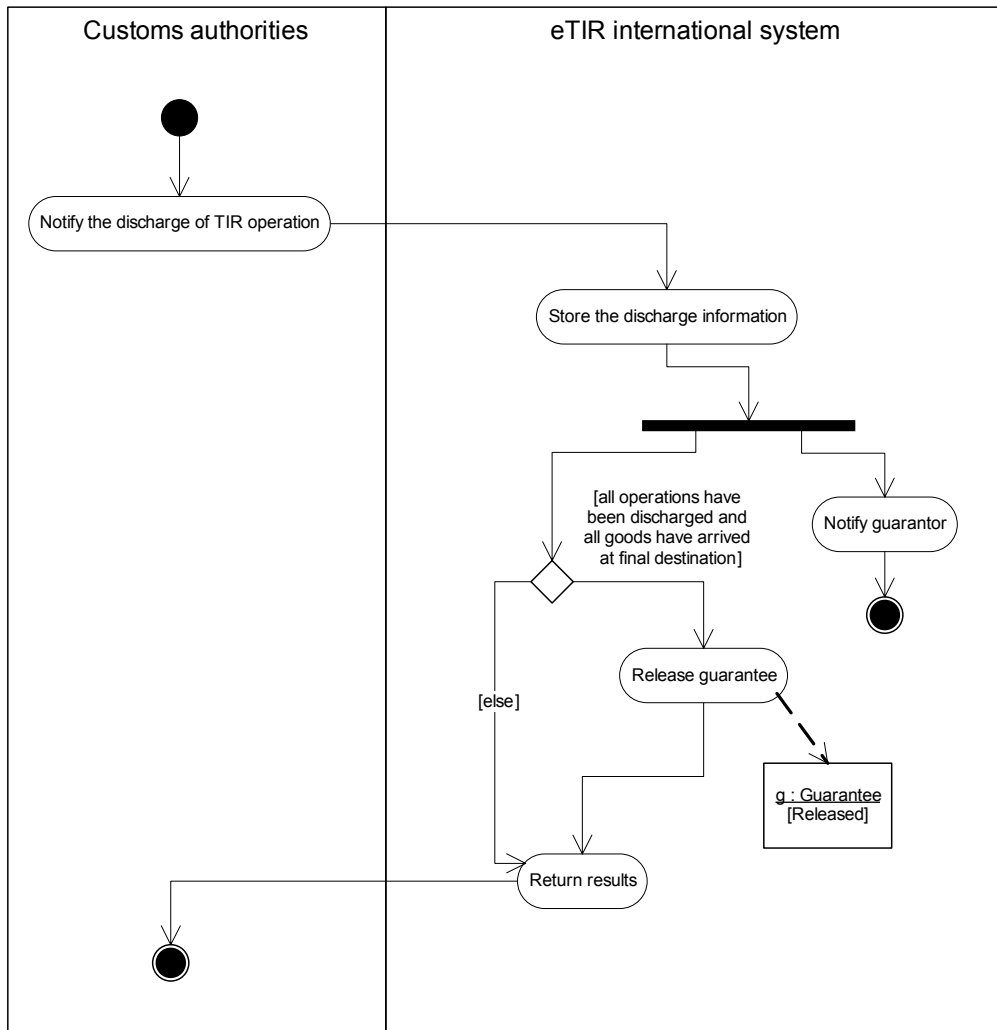


Figure 2.17 Discharge TIR operation activity diagram

2.3.2.12. Notify Guarantor use case description

Name	Notify guarantor use case
Description	The eTIR international systems notifies the guarantor of changes in the information related to a guarantee it has issued.
Actors	Guarantor
Performance Goals	
Preconditions	-
Postconditions	-
Scenario	The eTIR international system notifies the guarantor of changes in the information related to a guarantee it has issued by sending an electronic message.
Alternative Scenario	Fallback scenario In case a guarantor system cannot be reached, the eTIR international system will continue to try sending the information.
Special requirements	-
Extension Points	-
Requirements Covered	-

2.3.2.13. Notify guarantor activity diagram

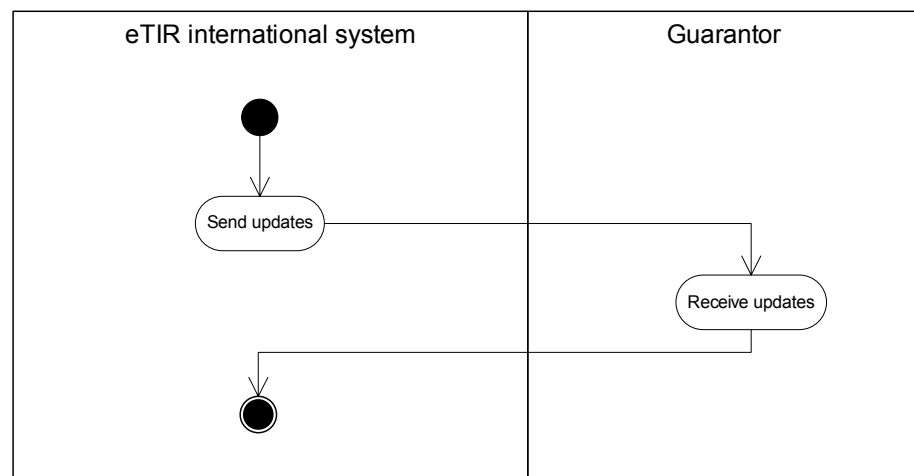


Figure 2.18 Notify guarantor activity diagram

2.3.2.14. Notify subsequent Countries use case description

Name	Notify subsequent Countries use case
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.
Special requirements	-
Extension Points	-
Requirements Covered	-

2.3.2.15. Notify subsequent Countries activity diagram

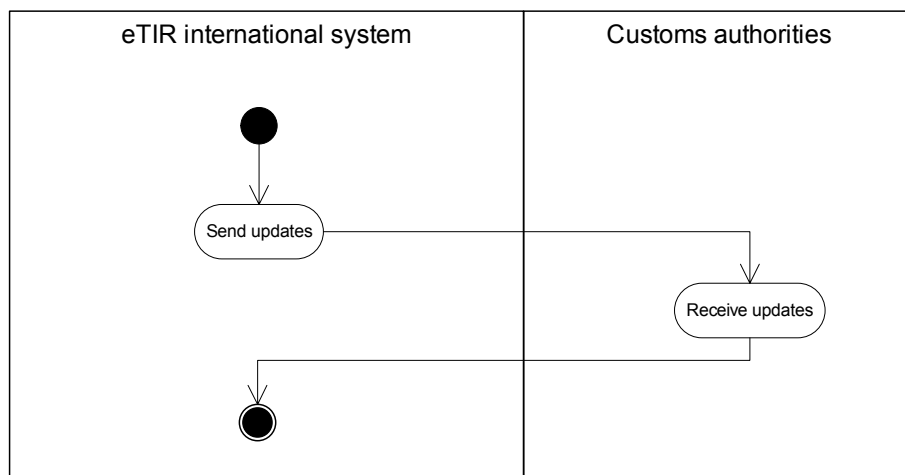


Figure 2.19 Notify subsequent Countries activity diagram

2.4. Class diagram

The class diagram in Figure 2.20 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.

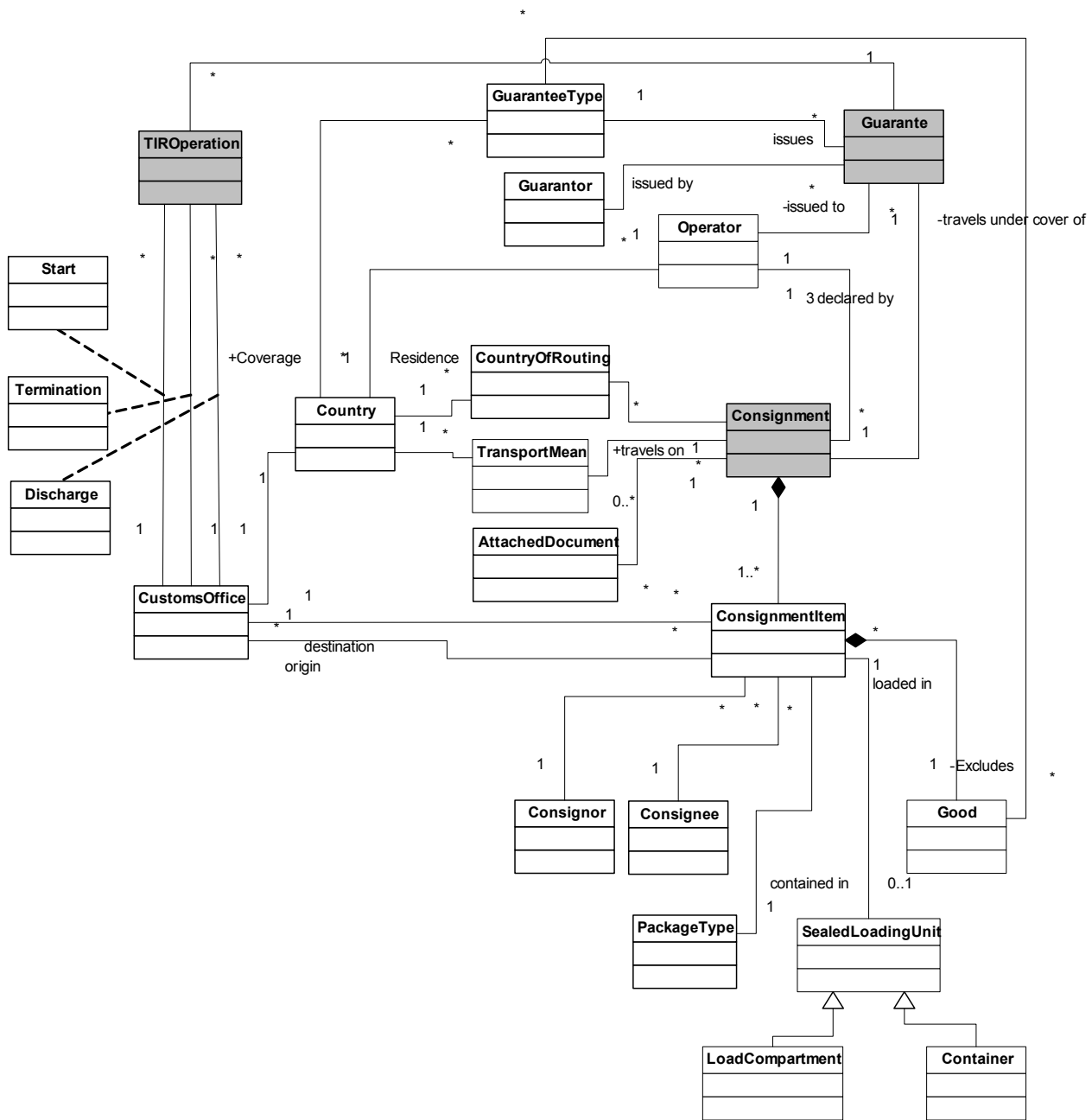


Figure 2.20 eTIR class diagram
