Work package WP2 Research

Report on iQTool Evaluation Component Requirements

Table of Contents

1. Executive Summary

The iQTool project develops an innovative content and software tool to support quality of vocational training and eLearning. In order to meet this goal, several quality assurance systems had to be identified and their applicability to the institutions dealing with eLearning had to be studied. Moreover, in order to ensure the fulfilment of the project's aim, research work had be done in order to develop a quality assurance methodology that will be further used in order to develop appropriate training material for the project's target groups. iQTool will develop a software tool for the evaluation of the training materials in LMS according to the quality assurance methodology. The software tool to be developed will be integrated with an appropriate open source LMS and should be general enough and appropriately designed so that it could be integrated with other LMS in the future.

This report documents the results of the requirement analysis made with respect to the iQTool evaluation component. The work reported was carried out in the context of task 2.5 "Evaluation of the results" of work package WP2 taking into account the research work on quality assurance and open source LMS selection. Through successive rounds of discussions with the project partners, the desirable functionality of the evaluation component was specified and documented with use cases that are presented in this document. Two major subsystems were identified with respect to the evaluation component: The Evaluation Component Interface and the Evaluation Component Repository and the conceptual architecture was specified. The analysis also revealed four user roles, namely, the *administrator*, the *quality assurance manager*, the *publisher* and the *evaluator*. All relevant user tasks were identified and documented through the use cases.

The above analysis is one of the most important outputs of work package WP2 and it will be used in the context of WP3 as the starting point of iQTool evaluation component design and implementation.

2.Introduction

This document presents the results of the requirement analysis conducted by the iQTool partners with respect to the necessary functionality of the software tool for the evaluation of training materials. The analysis is presented in the form of use cases that capture the major aspects of the functionality of the software tool from a user perspective. The presentation starts with the overall picture of the tool to be developed and proceeds with detailed descriptions of the identified use cases. In order to help the reader grasp the main concepts necessary to understand the analysis tool used (use cases), let us begin with a small introduction to their meaning and usage.

2.1 Notion and usage of use cases[1]

A use case is a description of a system's behaviour as it responds to a request that originates from outside of that system. The use case technique is used in software and systems engineering to capture the functional requirements of a system.

Use cases describe the interaction between a primary actor—the initiator of the interaction—and the system itself, represented as a sequence of simple steps. Actors are something or someone which exists outside the system under study, and that take part in a sequence of activities in a dialogue with the system, to achieve some goal: they may be end users, other systems, or hardware devices. Each use case is a complete series of events, described from the point of view of the actor.

Each use case describes how the actor will interact with the system to achieve a specific goal. One or more scenarios may be generated from each use case, corresponding to the detail of each possible way of achieving that goal. Use cases typically avoid technical jargon, preferring instead the language of the end user or domain expert. Use cases are often co-authored by systems analysts and end users. The UML use case diagram can be used to graphically represent an overview of the use cases for a given system and a Use-case analysis can be used to develop the diagram.

An actor is anything having behaviour. An actor might be a person, a company or organization, a computer program or a computer system, hardware or software or both. A more correct word would be "role". A "role" would mean the role that a particular person is playing when they use the system. The word "actor" seems to imply to most people a particular person, when it really means someone or something playing an active part in the operation of a system.

Actors come in four flavours:

- *The system under discussion itself.* The system under discussion itself is an actor, a special one. It will not be a primary actor, or a secondary actor. It is just an actor, which we can take advantage of, at certain times.

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[1] The introductory text that follows has been mainly taken from wikipedia.

- *The subsystems of the system under discussion, as internal actors.* An individual object in the software is also an internal actor. In some situations use cases are written so that the system under discussion is an unopened (black) box and internal actors are carefully not mentioned especially if they are not known at the time the requirements are being written. However, there are times when the system under discussion is presented not as a black box and use the use case writing style to describe how the pieces of the system work together to deliver the externally visible behaviour. Such use case are called "white box" use cases.

- *The primary actor of a use case.* The one and only primary actor of a use case is the external actor whose goal the use case is trying to satisfy, the actor whose action initiates the use case activity.

- *The secondary actor of a use case.* A secondary actor of a use case is an external actor which provides a service to the system under discussion. We collect secondary actors to identify the external interfaces the system will use, and the protocol that crosses that interface. An external actor might be a secondary actor on one use case and a primary actor on another use case.

Summarizing the above description, we can say that a use case captures a contract between the stakeholders of a system about its behaviour. It describes the system's behaviour under various conditions as the system responds to a request from one of the stakeholders, called the primary actor. The primary actor initiates an interaction with the system to accomplish some goal. The system responds, protecting the interests of all the stakeholders. Different sequences of behaviour, or scenarios, can unfold, depending on the particular requests made and the conditions surrounding the requests. The use case gathers those different scenarios together.

Each use cases in this document are presented using a tabular form that contains the following elements:

1. The number of the use case and its title.

2. The 'goal context' which is the goal of the primary actor when he interacts with the system.

3. Scope & level: Scope refers to the system under discussion, i.e. the system that the primary actor interacts with. The level may be summary, primary task or sub-function. Summary level use cases (or strategic use cases) describe a complex interaction and set the context for lower level use cases. Primary task use cases describe ordinary interactions that usually are done in one session. Finally, sub-functions, the third level of use cases, describe tasks required to carry out primary tasks.

4. Preconditions: What must be true before the use case runs?

5. Success end condition: What must be true after the use case runs successfully?

6. Failed end condition: What must be true in case the use case runs unsuccessfully?

7. Actors: Who are the primary and who the secondary actors of the use case? What are the internal actors (if any)?

8. Trigger: What event causes this use case to start running?

9. Description: This is the so called the 'Main success scenario', the case when nothing goes wrong. Each step is given a number. In case there is a reference to another use case, the referenced use case is underlined.

10. Extensions: What can happen differently during the main success scenario? Numbers in the extensions refer to the step numbers in the main success scenario at which each different situation is detected (e.g. steps 2a and 2b indicate two different conditions that can show up at step 2). In case there is a reference to another use case, the referenced use case is underlined.

11. Sub-variations: What can be done in alternative ways?

12. Open issues: Things that remain open and should be clarified during the design of the system.

2.2 Structure of the document

The structure of the rest of this document is as follows: Section 3 presents the overall picture of the functionality of the iQTool software tool for the evaluation of training materials. Section 4 presents the detailed description of the identified use cases.

3. Overall picture of the functionality of the iQTool software tool for the evaluation of training materials

According to the iQTool technical annex, one of the major aims of the project is to develop an innovative software tool to support quality of vocational training and eLearning. This tool will be integrated with an appropriate open source LMS and should be general enough and appropriately designed so that it could be integrated with other LMS in the future. The software will offer the functionality to create questionnaires for the evaluation of training materials, to store answers given to these questionnaires related to the quality of training materials and will offer to developers and teachers an opportunity to display statistically the results to help to evaluate them.

In order to elaborate further the above general statements, the project partners identified the major user roles (actors in the use cases' terminology) in order to effectively support the envisioned quality assurance procedure that consists of certain distinct steps such as the creation of questions, the publishing of questions so that they are validated and could be further used in questionnaires, the creation of questionnaires, the publishing of questionnaires so that they are validated and could be further used for training material evaluation, the evaluation of training material using published questionnaires and recording the answers given to the questions of these questionnaires, the statistical analysis of the above answers to infer the actual quality of the evaluated training material and give directions for their improvement.

3.1 User roles and use cases

The identified user roles are the following:

1. *Administrator:* This actor is responsible for the administration of the system and is able to confirm user registrations (i.e. confirm the creation of new accounts), remove users and remove data (such as questionnaires and answers) that are not valid.

2. *Evaluator:* This actor is responsible for the evaluation of certain training materials. The evaluation is done through appropriate questionnaires that this actor should fill in after reviewing the corresponding training materials.

3. *Quality Assurance Manager:* This actor is responsible for the creation of questionnaires as well as for the creation of statistical indicators that can be used to process the evaluation results in order to facilitate decisions regarding the improvement of training materials or the training processes. He is also responsible for the definition of parameters for evaluations (questionnaires to be used, Evaluators to be engaged etc.).

4. *Publisher:* This actor mediates between Quality Assurance Managers and Evaluators. Its task is to review questionnaires that have been created by Quality Assurance Managers and publish them. Published questionnaires

are then used by the authorized evaluators in order to evaluate the training materials.

The responsibilities of each user role (primary actors of the system) can be more clearly described with respect to the use cases that each user role is associated with. The following UML use case diagram depicts these associations. Note that the use cases have been grouped into functional packages that represent basic components of the iQTool software tool.
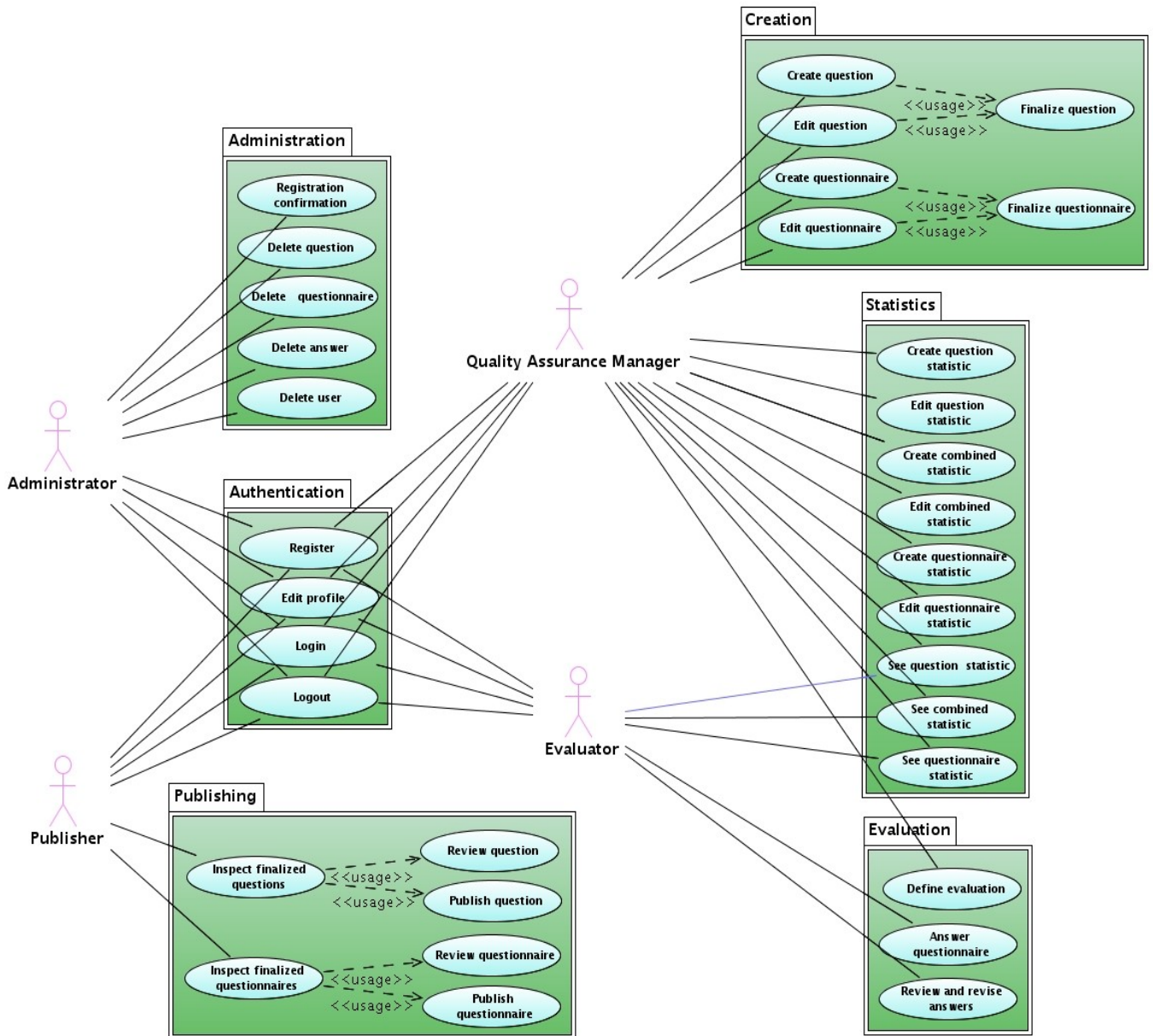
Figure 1: UML Use Case Diagram for iQTool software tool functionality

It is apparent from the previous figure that there is a set of use cases (those in the Authentication package) common to all user roles. These use cases refer to user registration, profile edition, login and logout.

Administrators are associated with administration use cases that refer to user registration confirmation (we assume that after user registration it may be necessary to confirm the creation of a new user account by a human – i.e. the administrator), deletion of non valid questionnaires and questions as well as deletion of user accounts.

Evaluators are associated with use cases that refer to the actual evaluation of the training materials according the specific questionnaire(s). Evaluators may give answers to questionnaires and also review and revise the answers that they have already given, if this is allowed. The can also see statistical results computed for statistics defined in way that allows their usage from Evaluators.

Quality Assurance Managers are associated with use cases that refer to the creation of questionnaires and to the creation and usage of statistics.

- o Creation of questionnaires involves creation of questions, edition of existing questions, finalization of questions (i.e. finishing of question editing and forwarding of questions to publishers for reviewing and publishing), creation of questionnaires by selecting appropriate (published) questions, edition of existing questionnaires and finalization of questionnaires (i.e. finishing of questionnaire editing and forwarding of questionnaire to publishers for reviewing and publishing). Note that editing can be done only on non-finalized questions and questionnaires.

- o Creation of statistics refers to creation and editing of simple statistics that refer to one question, combined statistics that refer to two or more questions (similar to pivot tables used in spreadsheet applications), and summary statistics for whole questionnaires. Usage of statistics refers to the functionality offered to see statistical results computed for statistics defined.

- o Definition of evaluation parameters refer to the usage of certain questionnaires to evaluate specific training material from appropriate Evaluators.

Publishers are associated with publishing use cases. They can inspect finalized questions that have not been published yet, review them and publish them so that the can be further used for the creation of questionnaires. The can also inspect finalized questionnaires that have not been published yet, review them and publish them so that they can be further used for the evaluation of training materials by evaluators.

3.2 Summary table

The following table presents in brief the use cases identified so far. Detailed descriptions for each one of these use cases is given in the following subsection.

Use Case #	Primary Actor	Goal (use case title)	Package	Brief Description
1	Administrator Quality Assurance Manager Publisher Evaluator	Register	Authentication	The user fills a form with his personal data in order to create a new account.

Use Case #	Primary Actor	Goal (use case title)	Package	Brief Description
2	Administrator Quality Assurance Manager Publisher Evaluator	Edit profile	Authentication	The user reviews and revises his personal data.
3	Administrator Quality Assurance Manager Publisher Evaluator	Login	Authentication	The user logs in order to start using the system.
4	Administrator Quality Assurance Manager Publisher Evaluator	Logout	Authentication	The user logs out after using the system.
5	Administrator	Registration confirmation	Administration	The Administrator confirms a pending registration request and the new user account is created.
6	Administrator	Delete question	Administration	The Administrator deletes a question that is no longer valid.
7	Administrator	Delete questionnaire	Administration	The Administrator deletes a questionnaire that is no longer valid.
8	Administrator	Delete answer	Administration	The Administrator deletes the answers given to a questionnaire by an Evaluator that are no longer valid. Massive deletion is also allowed.
9	Administrator	Delete user	Administration	The Administrator removes a user account.
10	Quality Assurance Manager	Define Evaluation	Evaluation	The Quality Assurance Manager defines the parameters of an

Use Case #	Primary Actor	Goal (use case title)	Package	Brief Description
				evaluation (i.e. the evaluation context (training material), the evaluators that will make the evaluation, the possibility to revise the evaluator's answers, and the evaluation period).
11	Evaluator	Answer questionnaire	Evaluation	The evaluator answers a questionnaire in order to evaluate a specific training material.
12	Evaluator	Review and revise answers	Evaluation	The evaluator reviews and may revise the answer he gave to a questionnaire in order to evaluate a specific training material. Revision may not be allowed depending on various parameters (e.g. if the evaluation process has been closed).
13	Quality Assurance Manager	Create question	Creation	The Quality Assurance Manager creates a new question to be used in the development of questionnaires
14	Quality Assurance Manager	Edit question	Creation	The Quality Assurance Manager edits a previously created question that has not been finalized.
15	Quality Assurance Manager	Finalize question	Creation	The Quality Assurance Manager finalizes a question so that a Publisher can review and publish it.
16	Quality Assurance Manager	Create questionnaire	Creation	The Quality Assurance Manager creates a new questionnaire by selecting appropriate published

Use Case #	Primary Actor	Goal (use case title)	Package	Brief Description
				questions, organizing them into sections and defining navigation rules between the sections.
17	Quality Assurance Manager	Edit questionnaire	Creation	The Quality Assurance Manager edits a previously created questionnaire that has not been finalized.
18	Quality Assurance Manager	Finalize questionnaire	Creation	The Quality Assurance Manager finalizes a questionnaire so that a Publisher can review and publish it.
19	Publisher	Inspect finalized questions	Publishing	The Publisher sees a list of finalized questions that have not been published yet in order to review and publish them.
20	Publisher	Review question	Publishing	The Publisher reviews a selected finalized (not yet published) question.
21	Publisher	Publish question	Publishing	The Publisher publishes a selected finalized (not yet published) question in order to be further used for the creation of questionnaires.
22	Publisher	Inspect finalized questionnaires	Publishing	The Publisher sees a list of finalized questionnaires that have not been published yet in order to review and publish them.
23	Publisher	Review questionnaire	Publishing	The Publisher reviews a selected finalized (not yet published) questionnaire.
24	Publisher	Publish questionnaire	Publishing	The Publisher publishes a selected finalized (not yet published) questionnaire in order to be further used

Use Case #	Primary Actor	Goal (use case title)	Package	Brief Description
				by evaluators to evaluate training materials
25	Quality Assurance Manager	Create question statistic	Statistics	The Quality Assurance Manager creates a new statistic for an individual question.
26	Quality Assurance Manager	Edit question statistic	Statistics	The Quality Assurance Manager edits a previous created statistic for an individual question.
27	Quality Assurance Manager	Create combined statistic	Statistics	The Quality Assurance Manager creates a new combined statistic for two or more questions. Combined statistics are similar to pivot tables in spreadsheet applications.
28	Quality Assurance Manager	Edit combined statistic	Statistics	The Quality Assurance Manager edits a previous created combined statistic for two or more questions in a questionnaire.
29	Quality Assurance Manager	Create questionnaire statistic	Statistics	The Quality Assurance Manager creates a summary statistic for a questionnaire.
30	Quality Assurance Manager	Edit questionnaire statistic	Statistics	The Quality Assurance Manager edit a previously created summary statistic for a questionnaire.
31	Quality Assurance Manager Evaluator	See question statistic	Statistics	The Quality Assurance Manager or the Evaluator can see the results of a statistic for a question. He has the possibility to narrow the set of Evaluators' answers used to compute the statistic by defining appropriate conditions on the Evaluators' profile attributes.

Use Case #	Primary Actor	Goal (use case title)	Package	Brief Description
32	Quality Assurance Manager Evaluator	See combined statistic	Statistics	The Quality Assurance Manager or the Evaluator can see the results of a combined statistic for two or more questions in a questionnaire. He has the possibility to narrow the set of Evaluators' answers used to compute the statistic by defining appropriate conditions on the Evaluators' profile attributes.
33	Quality Assurance Manager Evaluator	See questionnaire statistic	Statistics	The Quality Assurance Manager or the Evaluator can see the results of a summary statistic for a questionnaire. He has the possibility to narrow the set of Evaluators' answers used to compute the statistic by defining appropriate conditions on the Evaluators' profile attributes.

3.3 Internal actors

As already stated, the Administrator, Evaluator, Quality Assurance Manager and Publisher user roles correspond to actors (in the use cases' terminology) that usually initiate specific use cases acting as primary actors. Apart from those actors, the following major subsystems of the system under discussion (internal actors) have been identified:

- *Evaluation Component Interface – ECI:* It is the client side part of the Evaluation Component that implements a graphical user interface to the users (i.e. Administrator, Evaluator, Quality Assurance Manager and Publisher) of the system.

- *Evaluation Component Repository – ECOR:* It is the server-side part of the Evaluation Component that is responsible for the storage and retrieval of questions, questionnaires, user answers, definitions of statistics as well as for the statistical processing of the user answers.

Apart from the above two internal actors, we should also mention that the final implementation will also include an *Evaluation Plug-in – EP* which will be an appropriate plug-in (or package) to be developed in the open source LMS selected that will provide integration with the Evaluation Component. We do not mention this part in the use cases. We leave it for the design phase of WP3 to specify the details of the functionality to be offered by the EP taking into account the details of the offered extensibility features of the selected open source LMS.

4. Detailed description of the use cases

This subsection contains the detailed descriptions of the identified use cases. Use cases are grouped into the functional packages already mentioned.

4.1 Authentication Package

This package contains the use cases that refer to user registration, profile edition, login and logout.

USE CASE #1		Register
Goal in Context		Register into the iQTool Evaluation Component
Scope & Level		Primary Task
Preconditions		The user is not registered
Success End Condition		Successful user registration
Failed End Condition		The user is not registered. The iQTool Evaluation Component remains in a consistent state
Actors		Primary Actors: User (Quality Assurance Manager, Evaluator, Publisher) Internal Actors: ECI, ECOR
Trigger		The user wants to register into the iQTool Evaluation Component in order to be able to use its services.
DESCRIPTION	**Step**	**Action**
	1	The user accesses the tool
	2	The ECI presents the login page giving an option for the user to register
	3	The user selects the register option
	4	The ECI presents a form with the necessary fields for user registration (username, password etc.)
	5	The user fills in the form
	6	The ECI sends the registration information to the ECOR in order to create a new user profile
	7	The ECOR creates a new user profile and notifies the tool
	8	The ECI presents a confirmation message
	9	The ECI returns to the login page
EXTENSIONS	**Step**	**Branching Action**

	5α	The selected username already exists. 5a1. The ECI invites the user to select a new username 5a2. Go back to step 4
	6a	Registrations of users that want to be registered as Quality Assurance Managers should be confirmed by the Administrator. In this case, if the selected user type is "Quality Assurance Manager" the following steps are taken. 6a1. The ECOR stores the new user profile in a pending state waiting for the confirmation of the Administrator 6a2. The ECI sends a message to the user informing him that a confirmation from the Administrator is necessary. 6a3. Go to step 9
SUB-VARIATIONS	**Step**	**Branching Action**
NOTES		**NOTES**

	4	Required fields
		    1. username
		    2. password (2 times for confirmation)
		    3. name
		    4. surname
		    5. E-mail
		    6. user role(s): {Quality Assurance Manager, Evaluator, Publisher).
		Optional fields
		    1. Address
		    2. City
		    3. Country
		    4. Telephone

USE CASE #2		Edit profile
Goal in Context		The user reviews and revises his personal data.
Scope & Level		Primary task
Preconditions		The user has already registered.
Success End Condition		Successful change of user's personal data.
Failed End Condition		The user profile remains unchanged.
Actors		Primary actors: User (Administrator, Evaluator, Quality Assurance Manager, Publisher) Internal actors: ECI
Trigger		The user wants to edit his profile in order to change some of his personal data.
DESCRIPTION	**Step**	**Action**
	1	The user selects to edit his profile.
	2	The ECI presents an editable form with the current values of the personal data of the user.
	3	The user changes the desired fields.
	4	The user selects to store the updated profile.
	5	The ECI sends the updated profile to the ECOR for storage
	6	The ECOR updates the profile and sends an acknowledgment to the ECI
	7	The ECI presents a confirmation message to the user
SUB-VARIATIONS	**Step**	**Branching Action**
	3	The fields that can be changes are the following • Password (given two times for confirmation) • Name • Surname • E-mail • User role: Evaluator, Quality Assurance Manager, Publisher. • Address • City • Region/Country • Phone

USE CASE #3	Login	
Goal in Context	The user logs in order to start using the system.	
Scope & Level	Sub function	
Preconditions	The user has already registered	
Success End Condition	Successful login.	
Failed End Condition	User cannot login. System's functionality is unavailable.	
Actors	Primary actors: User (Administrator, Evaluator, Quality Assurance Manager, Publisher) Internal actors: ECI, ECOR	
Trigger	The user wants to login in order to use the system.	
DESCRIPTION	**Step**	**Action**
	1	The user selects to login.
	2	The ECI presents a form to the user to give his username and password.
	3	The user gives his username and password.
	4	The ECI send the provided username and password to the ECOR for validation
	5	The ECOR validates the username and password
	6	The ECI presents the initial personal page of the user.
EXTENSIONS	**Step**	**Branching Action**
	5a	The provided username and/or password are invalid: 5a1. The ECOR returns an appropriate error message to the ECI. 5a2. The ECI informs the user. 5a2. Go to step 2.

USE CASE #4		Logout
Goal in Context		The user logs out after using the system.
Scope & Level		Sub function
Preconditions		The user has already login
Success End Condition		Successful logout.
Failed End Condition		-
Actors		Primary actors: User (Administrator, Evaluator, Quality Assurance Manager, Publisher) Internal actors: ECI, ECOR
Trigger		The user wants to logout in order to stop using the system.
DESCRIPTION	Step	Action
	1	The user selects to logout.
	2	The ECI terminates the current session.
	3	The ECI presents the default page so that the user can login again later.
EXTENSIONS	Step	Branching Action
EXTENSIONS	Step	Branching Action
NOTES	Step	Comment

4.2 Administration Package

This package refers to functionality offered to Administrators in order to be able to confirm user registrations, delete users, questionnaires, questions and answers.

USE CASE #5		Registration confirmation
Goal in Context		The Administrator confirms a pending registration request.
Scope & Level		Primary task
Preconditions		The Administrator has already login. In his home page he can see a list of pending registrations in order to review and confirm them.
Success End Condition		Successful registration confirmation.
Failed End Condition		The registration is not confirmed. The new user account is not created.
Actors		Primary actors: Administrator Internal actors: ECI, ECOR
Trigger		The Administrator wants to confirm registration.
DESCRIPTION	Step	Action
	1	The Administrator selects a pending registration
	2	The ECI asks from the ECOR to retrieve information about the pending registration
	3	The ECOR send the information
	4	The ECI presents the registration information
	5	The Administrator reviews the presented information
	6	The Administrator confirms the registration
	7	The ECI asks the ECOR to change the state of the new user account in his profile
	8	The ECI sends a confirmation message to the new user
EXTENSIONS	Step	Branching Action
SUB-VARIATIONS	Step	Branching Action
NOTES	Step	Comment

USE CASE #6		Delete question
Goal in Context		The Administrator deletes a question that is no longer valid.
Scope & Level		Primary task
Preconditions		The Administrator has already login. Only deletable questions are subject to deletion, i.e. questions that are either not published or have not associated answers with them. To delete a published question with answers associated with it, the Administrator must first delete the corresponding answers and then the question.
Success End Condition		Successful deletion of questions
Failed End Condition		The questions are not deleted.
Actors		Primary actors: Administrator Internal actors: ECI, ECOR
Trigger		The Administrator wants to delete questions that are either not published or have not associated answers with them.
DESCRIPTION	**Step**	**Action**
	1	The Administrator selects to delete questions.
	2	The ECI asks the ECOR to retrieve all deletable questions
	3	The ECOR sends a list with all deletable questions to the ECI
	4	The ECI presents the list of deletable questions to the Administrator
	5	The Administrator browses the list of deletable questions
	6	The Administrator reviews and selects one or more questions
	7	The Administrator selects to delete the selected questions
	8	The ECI asks the Administrator to confirm the deletion
	9	The Administrator confirms
	10	The ECI asks from the ECOR to delete the selected questions
	11	The ECOR deletes the questions and notifies the ECI
	12	The ECI notifies the Administrator
EXTENSIONS	**Step**	**Branching Action**
	9a	The Administrator does not confirm the deletion 9a1. Go to step 4 or end the use case

USE CASE #7		Delete questionnaire
Goal in Context		The Administrator deletes a questionnaire that is no longer valid.
Scope & Level		Primary task
Preconditions		The Administrator has already login. Questionnaires that are published and have associated answers with them cannot be deleted unless the corresponding answers are deleted first.
Success End Condition		Successful deletion of questionnaires
Failed End Condition		The questionnaires are not deleted.
Actors		Primary actors: Administrator Internal actors: ECI, ECOR
Trigger		The Administrator wants to delete questionnaires that are either not published or have not associated answers with them.
DESCRIPTION	Step	Action
	1	The Administrator selects to delete questionnaires
	2	The ECI asks the ECOR to retrieve all deletable questionnaires
	3	The ECOR sends a list with all deletable questionnaires to the ECI
	4	The ECI presents the list of deletable questionnaires to the Administrator
	5	The Administrator browses the list of questionnaires questions
	6	The Administrator reviews and selects one or more questionnaires
	7	The Administrator selects to delete the selected questionnaires
	8	The ECI asks the Administrator to confirm the deletion
	9	The Administrator confirms
	10	The ECI asks from the ECOR to delete the selected questionnaires
	11	The ECOR deletes the questionnaires and notifies the ECI
	12	The ECI notifies the Administrator
EXTENSIONS	Step	Branching Action
	9a	The Administrator does not confirm the deletion 9a1. Go to step 4 or end the use case

USE CASE #8	Delete answer	
Goal in Context	The Administrator deletes the answers given to a questionnaire by an Evaluator that are no longer valid.	
Scope & Level	Primary task	
Preconditions	The Administrator has already login.	
Success End Condition	Successful deletion of answers	
Failed End Condition	The answers are not deleted.	
Actors	Primary actors: Administrator Internal actors: ECI, ECOR	
Trigger	The Administrator wants to delete answers to questionnaires from Evaluators.	
DESCRIPTION	**Step**	**Action**
	1	The Administrator selects to delete answers.
	2	The ECI asks the ECOR to retrieve all information regarding answers to questionnaires.
	3	The ECOR sends the information to the ECI.
	4	The ECI presents a searchable list of answers to questionnaires.
	5	The Administrator browses the searchable list.
	6	The Administrator reviews and selects one or more answers.
	7	The Administrator selects to delete the selected answers.
	8	The ECI asks the Administrator to confirm the deletion.
	9	The Administrator confirms.
	10	The ECI asks from the ECOR to delete the selected answers.
	11	The ECOR deletes the answers and notifies the ECI.
	12	The ECI notifies the Administrator.
EXTENSIONS	**Step**	**Branching Action**
	9a	The Administrator does not confirm the deletion: 9a1. Go to step 4 or end the use case.

USE CASE #9		Delete user
Goal in Context		The Administrator removes a user account.
Scope & Level		Primary Task
Preconditions		The user to be deleted should not be an Administrator
Success End Condition		Successful user deletion
Failed End Condition		The user is not deleted
Actors		Primary actors: Administrator Internal actors: ECI, ECOR
Trigger		The Administrator want to delete a user account.
DESCRIPTION	**Step**	**Action**
	1	The Administrator selects to delete users
	2	The ECI presents a list of the registered users along with information from their profile.
	3	The Administrator browses the list of registered users.
	4	The Administrator selects one or more users.
	5	The Administrator selects to delete the selected users.
	6	The ECI asks for confirmation.
	7	The Administrator confirms.
	8	The ECI asks the ECOR to delete the selected users and their personal data.
	9	The ECOR marks the users as deleted.
	10	The ECOR notifies the ECI about the successful deletion.
	11	The EDI notifies the Administrator.
EXTENSIONS	**Step**	**Branching Action**
	7a	The Administrator does not confirm the deletion: 7a1. Go to step 3 or end the use case.

4.3 Evaluation Package

This package contains the use cases that describe how Quality Assurance Managers define evaluation parameters using published questionnaires and how Evaluators answer questionnaires in order to evaluate training material.

USE CASE #10		Define evaluation
Goal in Context		The Quality Assurance Manager defines the parameters of an evaluation (i.e. the evaluation context (training material), the evaluators that will make the evaluation, the possibility to revise the evaluator's answers, and the evaluation period).
Scope & Level		Primary task
Preconditions		The Quality Assurance Manager has already login and has selected from the LMS the training material to be evaluated (one or more items).
Success End Condition		Successful definition of the evaluation.
Failed End Condition		No evaluation defined.
Actors		Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR
Trigger		The Quality Assurance Manager wants to define an evaluation.
DESCRIPTION	Step	Action
	1	The Quality Assurance Manager selects to define an evaluation.
	2	The ECI retrieves the identifiers of the selected training material.
	3	The ECI presents an editable form with the evaluation parameters.
	4	The Quality Assurance Manager specifies the evaluation parameters.
	5	The Quality Assurance Manager selects to store the evaluation.
	6	The ECI sends to the ECOR the evaluation parameters for storage.
	7	The ECOR stores the evaluation parameters.
	8	The ECI notifies the Quality Assurance Manager about successful storage of evaluation parameters.
EXTENSIONS	Step	Branching Action
	2a	The Quality Assurance Manager has no selected any training material 2a1. The ECI allows only to revise existing evaluations.
	3a	The Quality Assurance Manager wants to revise an existing evaluation: 3a1. The ECI presents a list of existing evaluations. 3a2. The Quality Assurance Manager selects an existing evaluation. 3a3. The ECI asks the Quality Assurance Manager if he wants to replace or extend existing evaluation's context (i.e. training material) with selected training material.

		3a4. The Quality Assurance Manager answers to this question. 3a5. The ECI asks the Quality Assurance Manager if he wants to delete or keep the answers already given to the existing evaluation. 3a6. The Quality Assurance Manager answers to this question. 3a7. The ECI presents an editable form with the parameters of the selected evaluation so that the Quality Assurance Manager can revise them.
	8a	If the Quality Assurance Manager is revising an existing evaluation and has selected to delete any existing answers: 8a1. The ECI asks the ECOR to delete previous answers. 6a2. The ECOR deletes previous answers. 6a3. The ECI notifies the Quality Assurance Manager about successful storage of evaluation parameters and deletion of existing answers.
SUB-VARIATIONS	**Step**	**Branching Action**
	4	The evaluation parameters, apart from the training material (context) that has been already specified, are the following: • *Evaluators:* The list of Evaluators that can participate in the evaluation. The can be specified also by a filter on profile attributes. • *Questionnaire:* The published questionnaire that will be used in the evaluation. • *Evaluation period:* The time period during which the evaluation will be open for answers. • *Answers revision mode:* A flag specifying is the Evaluators are able to revise their answers. No revisions can be made after the evaluation period.
NOTES	**Step**	**Comment**
	3	It may be necessary to attach a 'publishing priority' to each question in order to help the Publishers inspect high priority questions first.

USE CASE #11	Answer questionnaire	
Goal in Context	The Evaluator answers a specific questionnaire in context (i.e. with respect to a certain training material that is being evaluated).	
Scope & Level	Primary task	
Preconditions	The Evaluator has already login and has reviewed the training material that is being evaluated.	
Success End Condition	Evaluator's answers are stored.	
Failed End Condition	Evaluator's answers are not stored.	
Actors	Primary actors: Evaluator Internal actors: ECI, ECOR	
Trigger	The evaluator wants to answer a questionnaire in order to evaluate a specific training material.	
DESCRIPTION	**Step**	**Action**
	1	The Evaluator selects to evaluate a specific training material.
	2	The ECI asks the ECOR to retrieve the list of questionnaires that have been associated with the specific training material and are open for answering to the specific Evaluator.
	3	The ECOR retrieves the list of questionnaires.
	4	The ECI presents the list of questionnaires.
	5	The Evaluator browses the list of questionnaires and selects one in order to answer it.
	6	The ECI asks the ECOR to retrieve the selected questionnaire.
	7	The ECOR retrieves the questionnaire.
	8	The ECI selects to present the first section of the questionnaire.
	9	If the preconditions of the section to be presented are true, the ECI presents the section.
	10	The Evaluator answers the questions of the section.
	11	If the section is not the final section of the questionnaire, the ECI evaluates the branching rules of the section and selects the next section to be presented.
	12	If the section answered was not the final one in the questionnaire go to step 9.
	13	The ECI asks the Evaluator to confirm storage of the answers given.
	14	The Evaluator confirms.
	15	The ECI sends an appropriate representation of the answers to the

		ECOR for storage.
	16	The ECOR stores the answers.
	17	If more questionnaires are open and the Evaluator wants to answer any of them, go to step 5.
EXTENSIONS	**Step**	**Branching Action**
	9a	This is the first section of the questionnaire: 9a1. The section is presented.
	9b	At least one of the preconditions is false: 9b1. The ECI selects the next section in the sequence of questionnaire sections. 9b2. Go to step 9.
	10a	The Evaluator has not answered obligatory questions 10a1. The ECI presents the obligatory questions. 10a2. Go to step 10.
	11a	No branching rules are specified or none of the existing rules is true: 10a1. The ECI selects the next section in the sequence of questionnaire sections.

	13a	The Evaluator does not confirm to store the answers:
		13a1. The ECI asks the user if he wants to review the answers given before final confirmation.
		13a2. The Evaluator selects to review the answers.
		      13a2a. The Evaluator selects to discard the answers:
		      13a2a1. The ECI discards the answers given.
		      13a2a2. The use case terminates.
		13a3. Go to step 8.

NOTES	**Step**	**Comment**

USE CASE #12	Review and revise answers	
Goal in Context	The Evaluator wants to review the answers he gave to a specific questionnaire in context (i.e. with respect to a certain learning resource that is being evaluated).	
Scope & Level	Primary task	
Preconditions	The Evaluator has already login and has reviewed the training material that is being evaluated. The corresponding evaluation should give the possibility to revise Evaluator's answers.	
Success End Condition	Evaluator's answers are updated.	
Failed End Condition	Evaluator's answers are not updated.	
Actors	Primary actors: Evaluator Internal actors: ECI, ECOR	
Trigger	The Evaluator wants to review and revise answers given.	
DESCRIPTION	Step	Action
	1	The Evaluator selects to revise the evaluation of a specific training material with respect to a specific questionnaire.
	2	The ECI asks the ECOR to retrieve the selected questionnaire.
	3	The ECOR retrieves the questionnaire.
	4	The ECI selects to present the first section of the questionnaire.
	5	If the preconditions of the section to be presented are true, the ECI presents the section.
	6	The Evaluator updates the questions of the section.
	7	If the section is not the final section of the questionnaire, the ECI evaluates the branching rules of the section and selects the next section to be presented.
	8	If the section answered was not the final one in the questionnaire go to step 9.
	9	The ECI asks the Evaluator to confirm update of the answers updated.
	10	The Evaluator confirms.
	11	The ECI sends an appropriate representation of the answers to the ECOR for update.
	12	The ECOR updates the answers.
EXTENSIONS	Step	Branching Action
	5a	This is the first section of the questionnaire: 5a1. The section is presented.
	5b	At least one of the preconditions is false:

		5b1. The ECI selects the next section in the sequence of questionnaire sections. 5b2. Go to step 9.
	6a	The Evaluator has not answered obligatory questions 6a1. The ECI presents the obligatory questions. 6a2. Go to step 6.
	7a	No branching rules are specified or none of the existing rules is true: 7a1. The ECI selects the next section in the sequence of questionnaire sections.
	9a	The Evaluator does not confirm to update the answers: 9a1. The use case is terminated.
NOTES	**Step**	**Comment**

4.4 Creation Package

Before proceeding with the detailed description of the use cases in this package, we should first analyze the life cycle of a two kinds of objects: questions and questionnaires and the states that each object can be in.

- The first stage in the life cycle of a question or questionnaire is the editing stage during which the object's state is 'draft'. While such an object remains at 'draft' stage it is possible to further edit it.

- After finishing editing a question or questionnaire, the authorized user (Quality Assurance Manager) can finalize it and put it in 'final' state. This means that no further editing is allowed. However, the object cannot be used (i.e. if it is a question it cannot be used inside questionnaires, if it is a questionnaire it cannot be used yet from Evaluators to give answers). In order to be actually used, the object has to be published first. The authorized user can put a 'final' question or questionnaire back into the 'draft' state in order to further edit it. This is not allowed if in the meantime the object has been promoted to the published stage.

- The third, and final, stage in the life cycle of a question or questionnaire is the published stage during which the object's state is 'unavailable' (meaning that it is not available to editing any more). Now it is possible to use it (i.e. If it is a question it can be used in questionnaires, if it is a questionnaire Evaluators can use it in order to answer it in certain contexts). To enter this state, the object should be reviewed and published by a Publisher.

In the rest of this subsection we give the detailed descriptions of the use cases in this package using the above mentioned states.

USE CASE #13		Create question
Goal in Context		The Quality Assurance Manager creates a new question to be used in questionnaires.
Scope & Level		Primary task
Preconditions		The Quality Assurance Manager has already login
Success End Condition		Successful creation of a new question
Failed End Condition		No question is created
Actors		Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR
Trigger		The Quality Assurance Manager wants to create a new question.
DESCRIPTION	Step	Action
	1	The Quality Assurance Manager selects the creation of new question.
	2	The ECI presents an editable form with the necessary fields to specify the characteristics of the question.
	3	The Quality Assurance Manager specifies the desired fields.
	4	The Quality Assurance Manager selects to store the question.
	5	The ECI sends an appropriate representation of the question and its state to the ECOR for storage.
	6	The ECOR stores the question.
	7	The ECOR notifies the ECI about successful storage.
	8	The ECI informs the user about successful storage.
	9	The Quality Assurance Manager may Finalize question.
EXTENSIONS	Step	Branching Action
	9a	The Quality Assurance Manager does not want to finalize the question: 9a1. The ECI keeps the question in 'draft' state.
NOTES	Step	Comment
	2	All necessary fields induced by the use of the QTI standard for questions and LOM for metadata are used. The form contains a varying part that contains the fields that depend on the question type. Possible types of questions that could be supported are the following: - Choice interaction - Order interaction - Associate interaction - Match interaction - Gap match interaction - Text entry interaction - Extended text interaction

USE CASE #14	**Edit question**	
Goal in Context	The Quality Assurance Manager edits a previously created question that has not been finalized.	
Scope & Level	Primary task	
Preconditions	The Quality Assurance Manager has already login. The question is in 'draft' or 'final' state.	
Success End Condition	Successful editing of a previously created question.	
Failed End Condition	The question remains the same, no update is made.	
Actors	Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR	
Trigger	The Quality Assurance Manager wants to edit a previously created question.	
DESCRIPTION	**Step**	**Action**
	1	The Quality Assurance Manager selects the edit questions.
	2	The ECI asks the ECOR to retrieve the list of 'draft' and 'final' questions created by the Quality Assurance Manager.
	3	The ECOR retrieves the desired questions and returns the list to the ECI.
	4	The ECI presents the list of retrieved questions.
	5	The Quality Assurance Manager browses the list and selects one question to edit it.
	6	The ECI presents an editable form with the necessary fields to update the characteristics of the question.
	7	The Quality Assurance Manager changes the desired fields.
	8	The Quality Assurance Manager selects to update the question.
	9	The ECI sends an appropriate representation of the question to the ECOR for update.
	10	The ECOR updates the question.
	11	The ECOR notifies the ECI about successful update.
	12	The ECI informs the user about successful update.
	13	The Quality Assurance Manager may <u>Finalize question</u>.
EXTENSIONS	**Step**	**Branching Action**
	5a	The Quality Assurance Manager wants to delete immediately the question: 5a1. The ECI asks the Quality Assurance Manager to confirm the deletion.

		5a2. The Quality Assurance Manager confirms the deletion. 5a3. The ECI asks the ECOR to delete the question. 5a4. The ECOR deletes the question.
	5b	The question is in 'final' state: 5b1. The Quality Assurance Manager selects to put the question in 'draft' state.
	5c	The question is in 'final' state: 5c1. The Quality Assurance Manager selects to copy the question and edit the copied one. 5c2. The ECI asks the ECOR to create a copy of the selected question in 'draft' state. 5c3. The ECOR creates a copy and returns it to the ECI for further editing.
	13a	The Quality Assurance Manager does not want to finalize the question: 13a1. The ECI keeps the question in 'draft' state.
NOTES	**Step**	**Comment**
	6	All necessary fields induced by the use of the QTI standard for questions and LOM for metadata are used. The form contains a varying part that contains the fields that depend on the question type. Possible types of questions that could be supported are the following: 1. Choice interaction 2. Order interaction 3. Associate interaction 4. Match interaction 5. Gap match interaction 6. Text entry interaction 7. Extended text interaction

USE CASE #15		Finalize question
Goal in Context		The Quality Assurance Manager finalizes a question so that a Publisher can review and publish it.
Scope & Level		Sub function
Preconditions		The Quality Assurance Manager has already login. The question is in 'draft' state.
Success End Condition		Successful change of the state of the question to 'final'.
Failed End Condition		The question remains in 'draft' state.
Actors		Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR
Trigger		The Quality Assurance Manager has finished editing a question and wants to finalize it.
DESCRIPTION	**Step**	**Action**
	1	The Quality Assurance Manager selects to put a specific question in 'final' state.
	2	The ECI asks the ECOR to change the state of the specified question to 'final'
	3	The ECOR changes the state of the question to 'final'.
EXTENSIONS	**Step**	**Branching Action**
	3a	The ECOR cannot change the state of the question (e.g. Because another Quality Assurance Manager is editing it): 3a1. The ECOR sends an error message to the ECI. 3a2. The ECI informs the user. 3a3. The use case terminates.
NOTES	**Step**	**Comment**

USE CASE #16		Create questionnaire
Goal in Context		The Quality Assurance Manager creates a new questionnaire by selecting appropriate published questions, organizing them into sections and defining navigation rules between the sections.
Scope & Level		Primary task
Preconditions		The Quality Assurance Manager has already login.
Success End Condition		Successful creation of a new questionnaire.
Failed End Condition		No questionnaire is created.
Actors		Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR
Trigger		The Quality Assurance Manager wants to create a new questionnaire to be used in evaluations.
DESCRIPTION	Step	Action
	1	The Quality Assurance Manager selects the creation of new questionnaire.
	2	The ECI presents an editable form with the necessary fields to specify the characteristics of the questionnaire.
	3	The Quality Assurance Manager specifies the desired fields.
	4	The Quality Assurance Manager selects to store the questionnaire.
	5	The ECI sends an appropriate representation of the questionnaire to the ECOR for storage.
	6	The ECOR stores the questionnaire.
	7	The ECOR notifies the ECI about successful storage.
	8	The ECI informs the user about successful storage.
	9	The Quality Assurance Manager may Finalize questionnaire.
EXTENSIONS	Step	Branching Action
	9a	The Quality Assurance Manager does not want to finalize the questionnaire: 9a1. The ECI keeps the questionnaire in 'draft' state.
NOTES	Step	Comment
	3	All necessary fields induced by the use of the QTI standard for questionnaire and LOM for metadata are used. Questionnaires are organized into sections, and each section contains certain questions. For each section, the Quality Assurance Manager has to specify the questions of the section, the preconditions that should be true in order to present the section during the evaluation, and the branching rules that specify the next section to be presented after finishing each section. Preconditions and branching rules will be specified by appropriate usage of the QTI standard.

USE CASE #17		Edit questionnaire
Goal in Context		The Quality Assurance Manager edits a previously created questionnaire that has not been finalized.
Scope & Level		Primary task
Preconditions		The Quality Assurance Manager has already login. The questionnaire is in 'draft' or 'final' state.
Success End Condition		Successful editing of a previously created questionnaire.
Failed End Condition		The questionnaire remains the same, no update is made.
Actors		Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR
Trigger		The Quality Assurance Manager wants to edit a questionnaire.
DESCRIPTION	Step	Action
	1	The Quality Assurance Manager selects the edit questionnaires.
	2	The ECI asks the ECOR to retrieve the list of 'draft' and 'final' questionnaires created by the Quality Assurance Manager.
	3	The ECOR retrieves the desired questionnaires and returns the list to the ECI.
	4	The ECI presents the list of retrieved questionnaires.
	5	The Quality Assurance Manager browses the list and selects one questionnaire to edit it.
	6	The ECI presents an editable form with the necessary fields to update the characteristics of the questionnaire.
	7	The Quality Assurance Manager changes the desired fields.
	8	The Quality Assurance Manager selects to update the questionnaire.
	9	The ECI sends an appropriate representation of the questionnaire for update.
	10	The ECOR updates the questionnaire.
	11	The ECOR notifies the ECI about successful update.
	12	The ECI informs the user about successful update.
	13	The Quality Assurance Manager may Finalize questionnaire.
EXTENSIONS	Step	Branching Action
	5a	The Quality Assurance Manager wants to delete immediately the questionnaire: 5a1. The ECI asks the Quality Assurance Manager to confirm the deletion.

		5a2. The Quality Assurance Manager confirms the deletion. 5a3. The ECI asks the ECOR to delete the questionnaire. 5a4. The ECOR deletes the question.
	5b	The questionnaire is in 'final' state: 5b1. The Quality Assurance Manager selects to put the questionnaire in 'draft' state.
	5c	**NOTES**
	13a	The Quality Assurance Manager does not want to finalize the questionnaire: 13a1. The ECI keeps the questionnaire in 'draft' state.
NOTES	**Step**	**Comment**
	6	All necessary fields induced by the use of the QTI standard for questionnaire and LOM for metadata are used. Questionnaires are organized into sections, and each section contains certain questions. For each section, the Quality Assurance Manager has to specify the questions of the section, the preconditions that should be true in order to present the section during the evaluation, and the branching rules that specify the next section to be presented after finishing each section. Preconditions and branching rules will be specified by appropriate usage of the QTI standard.

USE CASE #18		Finalize questionnaire
Goal in Context		The Quality Assurance Manager finalizes a questionnaire so that a Publisher can review and publish it.
Scope & Level		Sub function
Preconditions		The Quality Assurance Manager has already login. The questionnaire is in 'draft' state.
Success End Condition		Successful change of the state of the questionnaire to 'final'.
Failed End Condition		The question remains in 'draft' state.
Actors		Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR
Trigger		The Quality Assurance Manager has finished editing a questionnaire and he wants to finalize it.
DESCRIPTION	**Step**	**Action**
	1	The Quality Assurance Manager selects to put a specific questionnaire in 'final' state.
	2	The ECI asks the ECOR to change the state of the specified questionnaire to 'final'
	3	The ECOR changes the state of the questionnaire to 'final'.
EXTENSIONS	**Step**	**Branching Action**
	3a	The ECOR cannot change the state of the questionnaire (e.g. Because another Quality Assurance Manager is editing it): 3a1. The ECOR sends an error message to the ECI. 3a2. The ECI informs the user. 3a3. The use case terminates.
NOTES	**Step**	**Comment**

4.5 Publishing Package

This package contains use cases offered to the Publisher and refer to publishing of questions and questionnaires. Published questions can then be used for the creation of questionnaires. Published questionnaires can then be used for evaluations.

USE CASE #19		Inspect finalized questions
Goal in Context		The Publisher gets a list of non-published questions to review & publish them.
Scope & Level		Primary task
Preconditions		The Publisher has already login.
Success End Condition		Successful inspection of finalized questions.
Failed End Condition		The questions remain in a consistent state.
Actors		Primary actors: Publisher Internal actors: ECI, ECOR
Trigger		The Publisher wants to review and publish finalized questions.
DESCRIPTION	**Step**	**Action**
	1	The Publisher selects to inspect finalized questions.
	2	The ECI asks the ECOR to retrieve the list of questions in 'final' state.
	3	The Publisher browses the list.
	4	The Publisher selects one question from the list.
	5	The Publisher may Review question.
	6	The Publisher may Publish question.
	7	If the Publisher wants to continue, go to step 2.
EXTENSIONS	**Step**	**Branching Action**
	3a	The ECOR cannot change the state of the question: 3a1. The ECOR notifies the ECI about the problem. 3a2. The ECI notifies the Publisher. 3a3. The use case terminates.
SUB-VARIATIONS	**Step**	**Branching Action**
	3	During browsing, the Publisher is able to reorder the list of questions according to: 1. The name of the Quality Assurance Manager that created each question. 2. Creation date or date of last edition.
NOTES	**Step**	**Comment**
	3	It may be necessary to attach a 'publishing priority' to each question in order to help the Publishers inspect high priority questions first.

USE CASE #20		Review question
Goal in Context		The Publisher reviews a selected finalized (not yet published) question.
Scope & Level		Sub function
Preconditions		The Publisher has already login and he has selected a question in 'final' state to review it.
Success End Condition		Successful review of the question.
Failed End Condition		The question is not reviewed.
Actors		Primary actors: Publisher Internal actors: ECI, ECOR
Trigger		The Publisher wants to review a question that is in 'final' state in order to be able to publish it later.
DESCRIPTION	Step	Action
	1	The Publisher selects to review the selected question.
	2	The ECI asks the ECOR to retrieve the representation of the question.
	3	The ECOR retrieves the question and sends its representation to the ECI.
	4	The ECI presents the question to the Publisher.
	5	The Publisher reviews the question.
EXTENSIONS	Step	Branching Action
	3a	The ECOR cannot change the state of the question: 3a1. The ECOR notifies the ECI about the problem. 3a2. The ECI notifies the Publisher. 3a3. The use case terminates.
SUB-VARIATIONS	Step	Branching Action
	5	There are two modes for reviewing the questionnaire: 1. *Evaluator view:* The Publisher can see the question 'in action' the same way that it would be presented when an Evaluator answers it. The indicative answers given by the Publisher in order to review the question are not saved. 2. *Quality Assurance Manager view:* The Publisher can see the question the same way as it is shown during its editing from a Quality Assurance Manager so that he can see its full details. No editing is allowed to be made by the Publisher.
NOTES	Step	Comment
	5	It may be necessary to give the Publisher the possibility to send a message to the Quality Assurance Manager that created the question in order to propose to him changes that are necessary to the question before publishing it.

USE CASE #21		Publish question
Goal in Context		The Publisher publishes a selected finalized (not yet published) question in order to be further used for the creation of questionnaires.
Scope & Level		Sub function
Preconditions		The Publisher has already login and he has selected a question in 'final' state to publish it.
Success End Condition		Successful publishing of the question.
Failed End Condition		The question is not published.
Actors		Primary actors: Publisher Internal actors: ECI, ECOR
Trigger		The Publisher wants to publish a question in order to enable its use in questionnaires.
DESCRIPTION	Step	Action
	1	The Publisher selects to publish the selected question.
	2	DESCRIPTION
	3	The Publisher confirms.
	4	The ECI asks ECOR to change the state of the selected question from 'final' to 'unavailable'.
	5	The ECOR changes the state of the question to 'unavailable'.
	6	The ECOR notifies the ECI about the change.
	7	The ECI notifies the Publisher about successful publishing.
EXTENSIONS	Step	Branching Action
	3a	The Publisher does not confirm: 3a1. The use case terminates.
	5a	The ECOR cannot change the state of the question: 5a1. The ECOR notifies the ECI about the problem. 5a2. The ECI notifies the Publisher. 5a3. The use case terminates.
SUB-VARIATIONS	Step	Branching Action
NOTES	Step	Comment

USE CASE #22		Inspect finalized questionnaires
Goal in Context		The Publisher sees a list of finalized questionnaires that have not been published yet in order to review and publish them.
Scope & Level		Primary task
Preconditions		The Publisher has already login.
Success End Condition		Successful inspection of finalized questionnaires.
Failed End Condition		The questionnaires remain in a consistent state.
Actors		Primary actors: Publisher Internal actors: ECI, ECOR
Trigger		The Publisher wants to review and publish finalized questionnaires.
DESCRIPTION	**Step**	**Action**
	1	The Publisher selects to inspect finalized questionnaires.
	2	The ECI asks the ECOR to retrieve the list of questionnaires in 'final' state.
	3	The Publisher browses the list.
	4	The Publisher selects one questionnaire from the list.
	5	The Publisher may <u>Review questionnaire</u>.
	6	The Publisher may <u>Publish questionnaire</u>.
	7	If the Publisher wants to continue, go to step 2.
EXTENSIONS	**Step**	**Branching Action**
	3a	The ECOR cannot change the state of the questionnaire: 3a1. The ECOR notifies the ECI about the problem. 3a2. The ECI notifies the Publisher. 3a3. The use case terminates.
SUB-VARIATIONS	**Step**	**Branching Action**
	3	During browsing, the Publisher is able to reorder the list of questionnaires according to: ▪ Quality Assurance Manager name that created each questionnaire. ▪ Creation date or date of last edition.
NOTES	**Step**	**Comment**
	3	It may be necessary to attach a 'publishing priority' to each questionnaire in order to help the Publishers inspect high priority questionnaires first.

USE CASE #23		Review questionnaire
Goal in Context		The Publisher reviews a selected finalized (not yet published) questionnaire.
Scope & Level		Sub function
Preconditions		The Publisher has already login and he has selected a questionnaire in 'final' state to review it.
Success End Condition		Successful review of the questionnaire.
Failed End Condition		The questionnaire is not reviewed.
Actors		Primary actors: Publisher Internal actors: ECI, ECOR
Trigger		The Publisher wants to review a questionnaire that is in 'final' state in order to be able to publish it later.
DESCRIPTION	Step	Action
	1	The Publisher selects to review the selected questionnaire.
	2	The ECI asks the ECOR to retrieve the representation of the questionnaire.
	3	The ECOR retrieves the questionnaire and sends its representation to the ECI.
	4	The ECI presents the questionnaire to the Publisher.
	5	The Publisher reviews the questionnaire.
EXTENSIONS	Step	Branching Action
	3a	The ECOR cannot change the state of the questionnaire: 3a1. The ECOR notifies the ECI about the problem. 3a2. The ECI notifies the Publisher. 3a3. The use case terminates.
SUB-VARIATIONS	Step	Branching Action
	5	There are two modes for reviewing the questionnaire: • *Evaluator view:* The Publisher can see the questionnaire 'in action' the same way that it would be presented when an Evaluator answers it. The indicative answers given by the Publisher are used to navigate in the sections but they are not stored. • *Quality Assurance Manager view:* The Publisher can see the questionnaire the same way as it is shown during its editing from a Quality Assurance Manager so that he can see its full details. No editing is allowed to be made by the Publisher.
NOTES	Step	Comment
	5	It may be necessary to give the Publisher the possibility to send a message to the Quality Assurance Manager that created the questionnaire in order to propose to him changes that are necessary to the questionnaire before publishing it.

USE CASE #24		Publish questionnaire
Goal in Context		The Publisher publishes a selected finalized (not yet published) questionnaire in order to be further used by evaluators to evaluate training materials.
Scope & Level		Sub function
Preconditions		The Publisher has already login and he has selected a questionnaire in 'final' state to publish it.
Success End Condition		Successful publishing of the questionnaire.
Failed End Condition		The questionnaire is not published.
Actors		Primary actors: Publisher Internal actors: ECI, ECOR
Trigger		The Publisher wants to publish a questionnaire in order to enable its use for evaluations.
DESCRIPTION	**Step**	**Action**
	1	The Publisher selects to publish the selected questionnaire.
	2	The ECI asks the Publisher to confirm.
	3	The Publisher confirms.
	4	The ECI asks ECOR to change the state of the selected questionnaire from 'final' to 'unavailable'.
	5	The ECOR changes the state of the questionnaire to 'unavailable'.
	6	The ECOR notifies the ECI about the change.
	7	The ECI notifies the Publisher about successful publishing.
EXTENSIONS	**Step**	**Branching Action**
	3a	The Publisher does not confirm: 3a1. The use case terminates.
	5a	The ECOR cannot change the state of the questionnaire: 5a1. The ECOR notifies the ECI about the problem. 5a2. The ECI notifies the Publisher. 5a3. The use case terminates.
SUB-VARIATIONS	**Step**	**Branching Action**
NOTES	**Step**	**Comment**

4.6 Statistics

This package contains the use cases that refer to creation/editing/presentation of statistics that are computed using the answers of the Evaluators. All use cases in this package describe functionality offered to the Quality Assurance Manager user role.

Statistical measures that should be supported are of the following three categories:

- *Statistical measures for individual questions (question statistics)*: They are computed for individual questions taking into account the answers given to a certain question.

- *Statistical measures for questionnaires (questionnaire statistics)*: They are computed taking into account the information about a specific questionnaire (e.g. How many evaluators have answered it).

- *Combined statistical measures (combined statistics):* They are computed for combinations of two or more individual questions that are all present in specific questionnaires in order to study possible correlations among the answers given to these questions.

For each statistical measure, various computation functions should be offered. In case of question statistics, the following functions are relevant:

- Count of answers given

- Mean value of answers

- Histogram of answers

- Percentage distribution (i.e. the histogram in percentages)

- Cumulative percentage distribution

- Time varying mean value: The change in mean value depending on the time of recording of successive answers

- Median

- Mode

- Spread

- Variance

- Standard deviation

Combined statistics, as already mentioned, combine the answers to two or more questions that are present in the same questionnaire or questionnaires (they are like pivot tables found in spreadsheet applications). One of the questions, called the *base question*, is used to compute a statistical measure such as mean value, variance, standard deviation etc. The other questions, called *grouping questions*, are used to group the answers to the base questions so that the corresponding statistical measure can be compute for each group.

The possible computation functions that can be used in the base question are the following:

- Count of answers: the count of answers that have been given to the base question per answers group.

- Mean: the mean value of the answers that have been given to the base question per answers group.

- Sum: the sum of the values of the answers that have been given to the base question per answers group.

- Maximum: the maximum value of the answers that have been given to the base question per answers group.

- Minimum: the minimum value of the answers that have been given to the base question per answers group.

- Variance: the variance of the answers that have been given to the base question per answers group.

- Standard deviation: the standard deviation of the answers that have been given to the base question per answers group.

The rest of this subsection contains the detailed descriptions of the use cases of the Statistics functional package.

USE CASE #25		Create question statistic
Goal in Context		The Quality Assurance Manager creates a new statistic for an individual question.
Scope & Level		Primary task
Preconditions		The Quality Assurance Manager has already login.
Success End Condition		Successful creation of a question statistic.
Failed End Condition		No statistic is created.
Actors		Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR
Trigger		The Quality Assurance Manager wants to create a question statistic.
DESCRIPTION	Step	Action
	1	The Quality Assurance Manager selects to create question statistics.
	2	The ECI asks ECOR to retrieve the list of questions used in questionnaires.
	3	The ECOR retrieves the list of questions used in questionnaires.
	4	The ECI presents the list of questions to the Quality Assurance Manager.
	5	The Quality Assurance Manager browses the list and selects one question.
	6	The ECI presents an editable form with the parameters to be defined for the question statistic.
	7	The Quality Assurance Manager fills in the desired parameters.
	8	The Quality Assurance Manager selects to store the new statistic.
	9	The ECI sends an appropriate representation of the statistic to the ECOR to store it.
	10	The ECOR notifies the ECI about successful storage.
	11	The ECI notifies the Quality Assurance Manager about successful creation.
EXTENSIONS	Step	Branching Action
	5a	The Quality Assurance Manager selects to quit: 5a1. The use case terminates.
	10a	The ECOR cannot store the statistic: 10a1. The ECOR notifies the ECI about the problem. 10a2. The ECI notifies the Quality Assurance Manager. 10a3. The use case terminates.

SUB-VARIATIONS	Step	Branching Action

NOTES	Step	Comment

	6	The parameters that should be specified during the creation of a question statistic are the following:
		1. The corresponding questionnaire.
		2. The computation function of the statistic (mean value, variance etc.).
		3. Access rights for the statistic (who will be able to see the statistical results computed). Three are the possible options:
		    1. All users.
		    2. Only the Quality Assurance Managers.
		    3. Only the Quality Assurance Manager that created it.

USE CASE #26		Edit question statistic
Goal in Context		The Quality Assurance Manager edits a previous created statistic for an individual question.
Scope & Level		Primary task
Preconditions		The Quality Assurance Manager has already login.
Success End Condition		Successful editing of a question statistic.
Failed End Condition		The statistic remains unchanged.
Actors		Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR
Trigger		The Quality Assurance Manager wants to edit a question statistic.
DESCRIPTION	Step	Action
	1	The Quality Assurance Manager selects to edit question statistics.
	2	The ECI asks ECOR to retrieve the list of question statistics created by the user.
	3	The ECOR retrieves the list of question statistics.
	4	The ECI presents the list to the Quality Assurance Manager.
	5	The Quality Assurance Manager browses the list and selects one question statistic to edit it.
	6	The ECI presents an editable form with the parameters to be defined for the question statistic.
	7	The Quality Assurance Manager fills in the desired parameters.
	8	The Quality Assurance Manager selects to update the statistic.
	9	The ECI sends an appropriate representation of the statistic to the ECOR to update it.
	10	The ECOR notifies the ECI about successful update.
	11	The ECI notifies the Quality Assurance Manager about successful update.
EXTENSIONS	Step	Branching Action
	5a	The Quality Assurance Manager selects to quit: 5a1. The use case terminates.

	5b	The Quality Assurance Manager selects to delete a statistic:
		5b1. The ECI asks the Quality Assurance Manager to confirm.
		5b2. The Quality Assurance Manager confirms.
		      5b2a. The Quality Assurance Manager does not confirm:
		      5b2a1. Go to step 5.
		5b3. The ECI asks the ECOR to delete the statistic.

		5b4. The ECOR deletes the statistic.
		    5b4a. The ECOR cannot delete the statistic:
		    5b4a1. The ECOR notifies the ECI about the problem.
		    5b4a2. The ECI informs the Quality Assurance Manager.
		    5b4a3. Go to step 5.
		5b5. Go to step 5.

	10a	The ECOR cannot update the statistic: 10a1. The ECOR notifies the ECI about the problem. 10a2. The ECI notifies the Quality Assurance Manager. 10a3. The use case terminates.
SUB-VARIATIONS	**Step**	**Branching Action**
NOTES	**Step**	**Comment**

	6	The parameters that should be specified during the editing of a question statistic are the following:
		  1. The corresponding questionnaire.
		  2. The computation function of the statistic (mean value, variance etc.).
		  3. Access rights for the statistic (who will be able to see the statistical results computed). Three are the possible options:
		      1. All users.
		      2. Only the Quality Assurance Managers.
		
		      3. Only the Quality Assurance Manager that created it.

USE CASE #27		Create combined statistic
Goal in Context		The Quality Assurance Manager creates a new combined statistic for two or more questions.
Scope & Level		Primary task
Preconditions		The Quality Assurance Manager has already login.
Success End Condition		Successful creation of a combined statistic.
Failed End Condition		No statistic is created.
Actors		Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR
Trigger		The Quality Assurance Manager wants to create a combined statistic.
DESCRIPTION	Step	Action
	1	The Quality Assurance Manager selects to create combined statistics.
	2	The ECI asks ECOR to retrieve the list of published questionnaires.
	3	The ECOR retrieves the list of published questionnaires.
	4	The ECI presents the list of published questionnaires to the Quality Assurance Manager.
	5	The Quality Assurance Manager browses the list and selects one questionnaire.
	6	The ECI asks ECOR to retrieve the representation of the selected questionnaire.
	7	The ECOR send the representation of the selected questionnaire to the ECI.
	8	The ECI presents the questions of the questionnaire to the Quality Assurance Manager in order to define the base question and the grouping questions for the combined statistic.
	9	The Quality Assurance Manager selects the base question and the grouping questions.
	10	The ECI presents an editable form with the additional parameters to be defined for the combined statistic.
	11	The Quality Assurance Manager fills in the desired parameters.
	12	The Quality Assurance Manager selects to store the new statistic.
	13	The ECI sends an appropriate representation of the statistic to the ECOR to store it.
	14	The ECOR notifies the ECI about successful storage.
	15	The ECI notifies the Quality Assurance Manager about successful

		creation.
EXTENSIONS	**Step**	**Branching Action**
	5a	The Quality Assurance Manager selects to quit: 5a1. The use case terminates.
	14a	The ECOR cannot store the statistic: 14a1. The ECOR notifies the ECI about the problem. 14a2. The ECI notifies the Quality Assurance Manager. 14a3. The use case terminates.
SUB-VARIATIONS	**Step**	**Branching Action**
NOTES	**Step**	**Comment**
	10	The additional parameters that should be specified during the creation of a combined statistic are the following: ▪ The computation function of the statistic (mean value, variance etc.). ▪ Access rights for the statistic (who will be able to see the statistical results computed). Three are the possible options: 1. All users. 2. Only the Quality Assurance Managers. 3. Only the Quality Assurance Manager that created it.

USE CASE #28c	Edit combined statistic	
Goal in Context	The Quality Assurance Manager edits a previous created combined statistic.	
Scope & Level	Primary task	
Preconditions	The Quality Assurance Manager has already login.	
Success End Condition	Successful editing of a question statistic.	
Failed End Condition	The statistic remains unchanged.	
Actors	Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR	
Trigger	The Quality Assurance Manager wants to edit a combined statistic.	
DESCRIPTION	**Step**	**Action**
	1	The Quality Assurance Manager selects to edit combined statistics.
	2	The ECI asks ECOR to retrieve the list of combined statistics created by the user.
	3	The ECOR retrieves the list of combined statistics.
	4	The ECI presents the list to the Quality Assurance Manager.
	5	The Quality Assurance Manager browses the list and selects one combined statistic to edit it.
	6	The ECI presents an editable form with the parameters to be defined for the question statistic.
	7	The Quality Assurance Manager fills in the desired parameters.
	8	The Quality Assurance Manager selects to update the statistic.
	9	The ECI sends an appropriate representation of the statistic to the ECOR to update it.
	10	The ECOR notifies the ECI about successful update.
	11	The ECI notifies the Quality Assurance Manager about successful update.
EXTENSIONS	**Step**	**Branching Action**
	5a	The Quality Assurance Manager selects to quit: 5a1. The use case terminates.

	5b	The Quality Assurance Manager selects to delete a statistic:
		5b1. The ECI asks the Quality Assurance Manager to confirm.
		5b2. The Quality Assurance Manager confirms.
		      5b2a. The Quality Assurance Manager does not confirm:
		      5b2a1. Go to step 5.
		5b3. The ECI asks the ECOR to delete the statistic.
		5b4. The ECOR deletes the statistic.

		5b4a. The ECOR cannot delete the statistic: 5b4a1. The ECOR notifies the ECI about the problem. 5b4a2. The ECI informs the Quality Assurance Manager. 5b4a3. Go to step 5. 5b5. Go to step 5.
	10a	The ECOR cannot update the statistic: 10a1. The ECOR notifies the ECI about the problem. 10a2. The ECI notifies the Quality Assurance Manager. 10a3. The use case terminates.
SUB-VARIATIONS	**Step**	**Branching Action**
NOTES	**Step**	**Comment**

	6	The parameters that should be specified during the editing of a combined statistic are the following:
		1. The corresponding questionnaire along with the base question and the grouping questions of the combined statistic.
		2. The computation function of the statistic (mean value, variance etc.).
		3. Access rights for the statistic (who will be able to see the statistical results computed). Three are the possible options:
		    1. All users.
		    2. Only the Quality Assurance Managers.
		
		    3. Only the Quality Assurance Manager that created it.

	5a	The Quality Assurance Manager selects to quit: 5a1. The use case terminates.
	12a	The ECOR cannot store the statistic: 12a1. The ECOR notifies the ECI about the problem. 12a2. The ECI notifies the Quality Assurance Manager. 12a3. The use case terminates.
SUB-VARIATIONS	**Step**	**Branching Action**
NOTES	**Step**	**Comment**

	10	The parameters that should be specified during the creation of a questionnaire statistic are the following:
		1. The type of the statistic (number of answers given etc.).
		2. Access rights for the statistic (who will be able to see the statistical results computed). Three are the possible options:
		    1. All users.
		    2. Only the Quality Assurance Managers.
		    3. Only the Quality Assurance Manager that created it.

USE CASE #30		Edit questionnaire statistic
Goal in Context		The Quality Assurance Manager edits a previous created summary statistic for a questionnaire.
Scope & Level		Primary task
Preconditions		The Quality Assurance Manager has already login.
Success End Condition		Successful editing of a question statistic.
Failed End Condition		The statistic remains unchanged.
Actors		Primary actors: Quality Assurance Manager Internal actors: ECI, ECOR
Trigger		The Quality Assurance Manager wants to edit a questionnaire statistic.
DESCRIPTION	Step	Action
	1	The Quality Assurance Manager selects to edit questionnaire statistics.
	2	The ECI asks ECOR to retrieve the list of questionnaire statistics created by the user.
	3	The ECOR retrieves the list of questionnaire statistics.
	4	The ECI presents the list to the Quality Assurance Manager.
	5	The Quality Assurance Manager browses the list and selects one questionnaire statistic to edit it.
	6	The ECI presents an editable form with the parameters to be defined for the questionnaire statistic.
	7	The Quality Assurance Manager fills in the desired parameters.
	8	The Quality Assurance Manager selects to update the statistic.
	9	The ECI sends an appropriate representation of the statistic to the ECOR to update it.
	10	The ECOR notifies the ECI about successful update.
	11	The ECI notifies the Quality Assurance Manager about successful update.
EXTENSIONS	Step	Branching Action
	5a	The Quality Assurance Manager selects to quit: 5a1. The use case terminates.

	5b	The Quality Assurance Manager selects to delete a statistic:
		5b1. The ECI asks the Quality Assurance Manager to confirm.
		5b2. The Quality Assurance Manager confirms.
		     5b2a. The Quality Assurance Manager does not confirm:
		     5b2a1. Go to step 5.
		5b3. The ECI asks the ECOR to delete the statistic.

		5b4. The ECOR deletes the statistic.
		5b4a. The ECOR cannot delete the statistic:
		5b4a1. The ECOR notifies the ECI about the problem.
		5b4a2. The ECI informs the Quality Assurance Manager.
		5b4a3. Go to step 5.
		5b5. Go to step 5.
	10a	The ECOR cannot update the statistic:
		10a1. The ECOR notifies the ECI about the problem.
		10a2. The ECI notifies the Quality Assurance Manager.
		10a3. The use case terminates.
SUB-VARIATIONS	**Step**	**Branching Action**
NOTES	**Step**	**Comment**
	6	The parameters that should be specified during the editing of a questionnaire statistic are the following:
		▪ The type of the statistic (number of answers given etc.).
		▪ Access rights for the statistic (who will be able to see the statistical results computed). Three are the possible options:
		1. All users.
		2. Only the Quality Assurance Managers.
		3. Only the Quality Assurance Manager that created it.

USE CASE #31		See question statistic
Goal in Context		The Quality Assurance Manager or the Evaluator sees the results of a statistic for a question.
Scope & Level		Primary task
Preconditions		The Quality Assurance Manager or the Evaluator has already login.
Success End Condition		Successful presentation of a question statistic.
Failed End Condition		No presentation made.
Actors		Primary actors: User (Quality Assurance Manager or Evaluator) Internal actors: ECI, ECOR
Trigger		The User wants to see a question statistic. The corresponding evaluation is also known (i.e. the set of answers given in the context of a specific evaluation to assess certain training material).
DESCRIPTION	**Step**	**Action**
	1	The User selects to see statistics for a specific evaluation.
	2	The ECI asks ECOR to retrieve the list of available question statistics for the specific evaluation.
	3	The ECOR retrieves the list of available statistics.
	4	The ECI presents the list to the User.
	5	The User browses the list and selects one question statistic to see.
	6	The ECI asks the ECOR to compute the statistic selected for the specific evaluation.
	7	The ECOR send the results of the statistical computation to the ECI.
	8	The ECI presents the statistical information.
EXTENSIONS	**Step**	**Branching Action**
	5a	The User selects to quit: 5a1. The use case terminates.
	5b	The User selects to narrow the set of answers to be taken into account in the statistical computation: 5b1. The ECI presents a form to define conditions on certain profile attributes of Evaluators in order to use only answers given by Evaluators that their profile satisfies the given conditions. 5b2. The User specifies the desired conditions.
SUB-VARIATIONS	**Step**	**Branching Action**
NOTES	**Step**	**Comment**
	1	Do we need the possibility to compute statistics using the answers from more than one evaluation?

USE CASE #32		See combined statistic
Goal in Context		The Quality Assurance Manager or the Evaluator sees the results of a combined statistic.
Scope & Level		Primary task
Preconditions		The Quality Assurance Manager or the Evaluator has already login.
Success End Condition		Successful presentation of a combined statistic.
Failed End Condition		No presentation made.
Actors		Primary actors: User (Quality Assurance Manager or Evaluator) Internal actors: ECI, ECOR
Trigger		The User wants to see a combined statistic. The corresponding evaluation is also known (i.e. the set of answers given in the context of a specific evaluation to assess certain training material).
DESCRIPTION	**Step**	**Action**
	1	The User selects to see statistics for a specific evaluation.
	2	The ECI asks ECOR to retrieve the list of available combined statistics for the specific evaluation.
	3	The ECOR retrieves the list of available statistics.
	4	The ECI presents the list to the User.
	5	The User browses the list and selects one combined statistic to see.
	6	The ECI asks the ECOR to compute the statistic selected for the specific evaluation.
	7	The ECOR send the results of the statistical computation to the ECI.
	8	The ECI presents the statistical information.
EXTENSIONS	**Step**	**Branching Action**
	5a	The User selects to quit: 5a1. The use case terminates.
	5b	The User selects to narrow the set of answers to be taken into account in the statistical computation: 5b1. The ECI presents a form to define conditions on certain profile attributes of Evaluators in order to use only answers given by Evaluators that their profile satisfies the given conditions. 5b2. The User specifies the desired conditions.
SUB-VARIATIONS	**Step**	**Branching Action**
NOTES	**Step**	**Comment**
	1	Do we need the possibility to compute statistics using the answers from more than one evaluation?

USE CASE #33		See question statistic
Goal in Context		The Quality Assurance Manager or the Evaluator can see the results of a questionnaire statistic.
Scope & Level		Primary task
Preconditions		The Quality Assurance Manager or the Evaluator has already login.
Success End Condition		Successful presentation of a questionnaire statistic.
Failed End Condition		No presentation made.
Actors		Primary actors: User (Quality Assurance Manager or Evaluator) Internal actors: ECI, ECOR
Trigger		The User wants to see a questionnaire statistic. The corresponding evaluation is also known (i.e. the set of answers given in the context of a specific evaluation to assess certain training material).
DESCRIPTION	**Step**	**Action**
	1	The User selects to see statistics for a specific evaluation.
	2	The ECI asks ECOR to retrieve the list of available questionnaire statistics for the specific evaluation.
	3	The ECOR retrieves the list of available statistics.
	4	The ECI presents the list to the User.
	5	The User browses the list and selects one questionnaire statistic to see.
	6	The ECI asks the ECOR to compute the statistic selected for the specific evaluation.
	7	The ECOR send the results of the statistical computation to the ECI.
	8	The ECI presents the statistical information.
EXTENSIONS	**Step**	**Branching Action**
	5a	The User selects to quit: 5a1. The use case terminates.
	5b	The User selects to narrow the set of answers to be taken into account in the statistical computation: 5b1. The ECI presents a form to define conditions on certain profile attributes of Evaluators in order to use only answers given by Evaluators that their profile satisfies the given conditions. 5b2. The User specifies the desired conditions.
SUB-VARIATIONS	**Step**	**Branching Action**
NOTES	**Step**	**Comment**
	1	Do we need the possibility to compute statistics using the answers from more than one evaluation?

5. References

1. Cockburn, A. (1997) "Structuring Use Cases with Goals," Journal of Object-Oriented Programming, 9 (5), September/October, pp. 35-40, and 9 (6), November/December, pp. 56-62.

2. Cockburn, A. (2000) Writing Effective Use Cases. Reading, MA: Addison-Wesley.

3. Fowler, M. (1997) UML Distilled: Applying the Standard Object Modelling Language. Reading, MA: Addison-Wesley.

4. Jacobson, I. "Basic Use Case Modelling." Report on Object Analysis and Design. 1 (2): 15-19, 1994.

5. Jacobson, I. (1995) "The Use-Case Construct in Object-Oriented Software Engineering." In J. M. Carroll (ed.) Scenario-Based Design. NY: Wiley.

6. Kulak, D. and, Guiney, E.. Use Cases: Requirements in Context. Boston, MA: Addison-Wesley, 2000.

7. Wiegers, K. "Use Cases: Listening to the Customer's Voice," Software Development, 5 (3): 49-55, March 1997.

8. Wikipedia http://en.wikipedia.org