COS 301 Software Documentation

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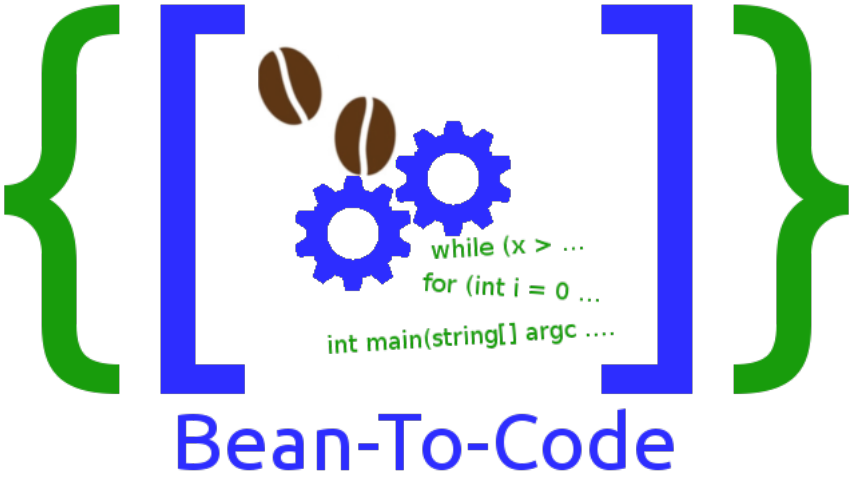
Version 1.0
GitHub link: https://github.com/RudigerRoach/301_main_emma.git



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1 Vision and Scope

1.1 Vision

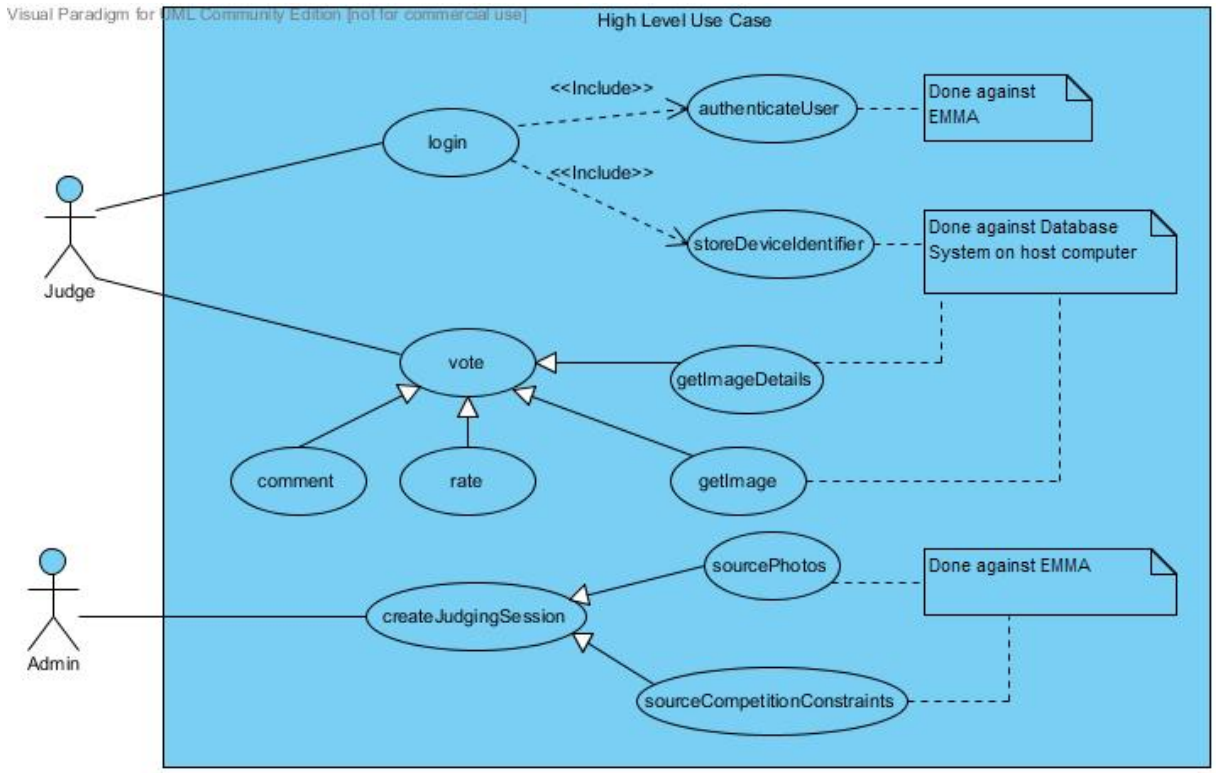
Our client creates software for camera club event management. A big part of an event comprises of an image judging process. Currently the process is completed by using Infra-red remotes and receivers, but this configuration is limited in terms of usability and the amount of judges that can judge concurrently.

The proposed solution will replace the hardware remote with a software application to run on a mobile device. The mobile application should alleviate all of the issues caused by the current setup, and should be developed with a server component that plugs into the existing EMMA system.

1.2 Scope

Create a software solution that:

- Runs on IOS and Android mobile devices.
- Allows as many as 20+ judges on the night.
- Allows judges to register against the event (in order to score) by capturing an email address.
- Remembers the scoring device for future meetings such that registration is not required again.
- Caters for realtime scoring.
- Can display a thumbnail image of that currently being judged.
- Caters for simple score entry bound within a variable range, as well as pluggable scoring methods that could include boolean scoring.
- Reports meaningful error messages, in a clear way.
- Allows for quick correction and re-capture.
- Can notify a judge of outstanding scores.



High Level Use Case Diagram

2 Architecture requirements

2.1 Architecture requirements

2.1.1 Architectural scope

- Provide an infrastructure for a judge to rate photos on a mobile device.
- Provide a database to link a judge's phone id to his email address.

2.1.2 Quality requirements

- Usability
  99 % of users should be able to use the system with little to no prior training.
- Scalability
  The deployed system must be able to operate effectively under the load of 50 concurrent users. The 50 users will be handled by Jetty which creates a thread for each person that connects to certain servlet at a point in time thus it will be able to handle the concurrency. It will be tested by creating a thread pool of 50 threads and doing 50 unit tests concurrently. If further scalability is needed it could be achieved since jetty supports clustering.
- Installability
  It should be easy to install the server side component and the effort to get it running each club night should be minimal. There will be a computer at the event running the EMMA server component and our server should be installed on it. The application should also be easy to download and install on the judges phone.
- Performance requirements
  All operations on application should respond within less than 1 second.
- Testability
  All services offered must be accompanied by unit tests. The tests should ensure that all pre-conditions are met before the service is delivered and that all post-conditions are met after the service has been delivered.
- Security
  The systems functionality should be only available to users who can be authenticated through the EMMA system. The users email address will only be used with no password. New users have to create an account before being granted access to the application if the sessions is closed. If the session is opened any person should be allowed to use it.

2.1.3 Integration and access channel requirements

- Integration requirement
  The production version of this application will need to integrate with EMMA. EMMA is Java a based application.

- Access channels
  The mobile application will have to go through a web-service which will be the public interface for the server-side component. It uses HTTP communication between then mobile and the server Jetty component.

2.1.4 Architectural constraints

- The mobile application should run on Android and iOS operating systems.
- The PC's that will be running the server side of the application and EMMA component will generally not be the latest technology(limited memory and processing power).
- There will be limited to no internet connection.
- The communication between the mobile device and server PC will be done over a wifi network.
- The server side component of this project should be able to run on Windows and OS X operating systems.

2.2 Use of reference architectures and frameworks

- JIRA Framework for the SCRUM agile method.
- Appcelerator Titanium framework which is an open-source software development kit for cross-platform mobile development.
- Jetty for hosting server and servlet handling.
- Jasmine framework to run javascript unit testing in the Titanium framework.
- JUnit for java unit testing framework.

2.3 Technologies and languages

- Java
- JavaScript
- XML
- db40 Object database
- JavaFX

3 Functional requirements and application design

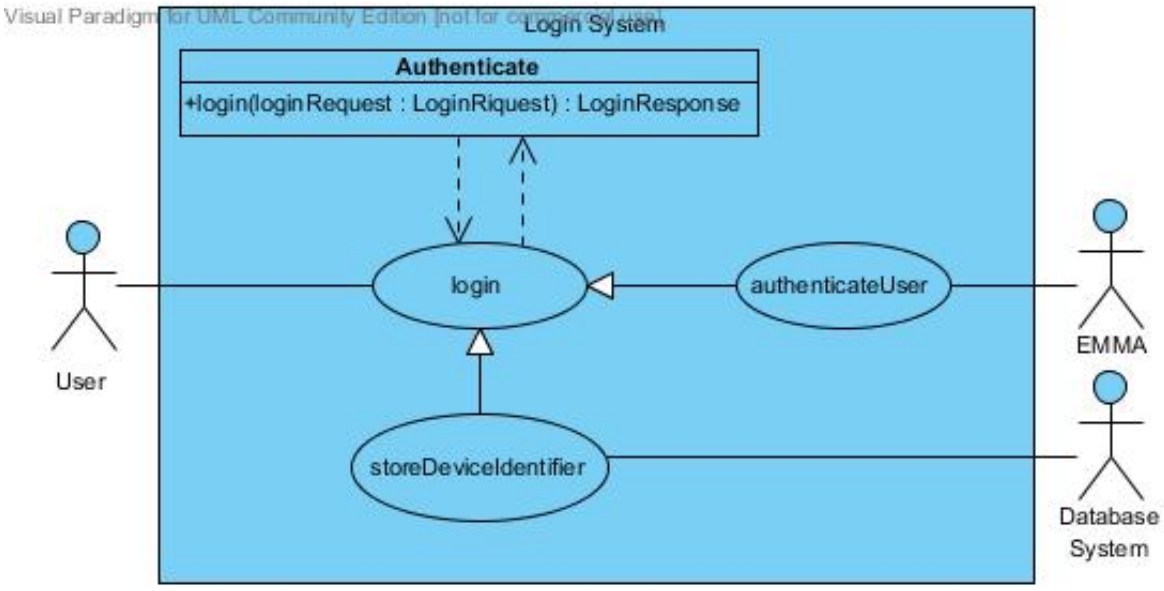
3.1 Introduction

This section discusses the functional requirements for the mobile judging system.

3.2 Required Functionality

3.2.1 Login and Auto Login

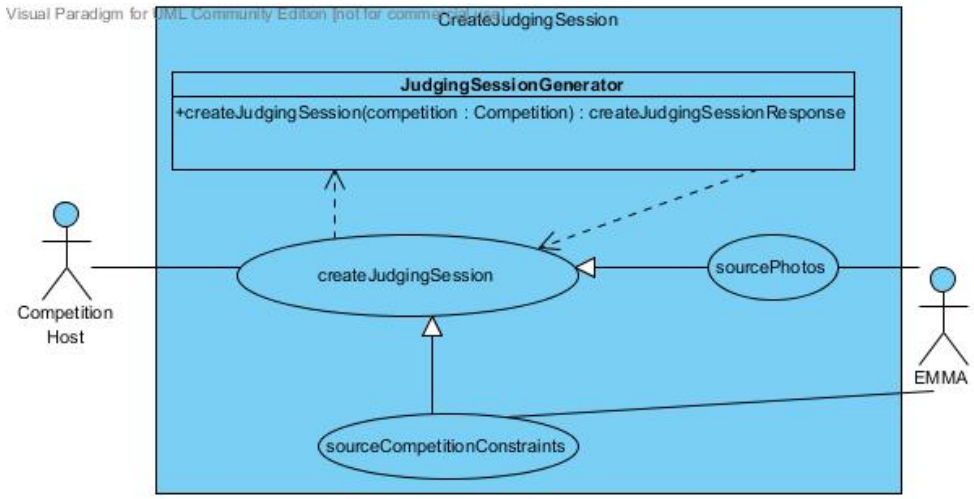
To login for the first time a user will have to enter his email address. The email provided will be authenticated by EMMA. If login fails the user will be informed that he is not registered to be a judge for the current session. If login is successful the device's unique identifier will be sent to the server to be stored in the database so that the device can be remembered on the system. This will allow for auto login - if a user attends a session where he is able to judge his phone will automatically be logged into the system when he enters the application. The user will then be able to use the rest of the system.



Login Use Case Diagram

3.2.2 Create Judging Session

When the server is started, it will request that the session's photos as well as all the competition constraints be sent to it. The constraints will contain the type of session (Open event, Closed event, Yes/No, Winner), the range for a valid score and if comments are enabled.



Create Judging Session Use Case Diagram

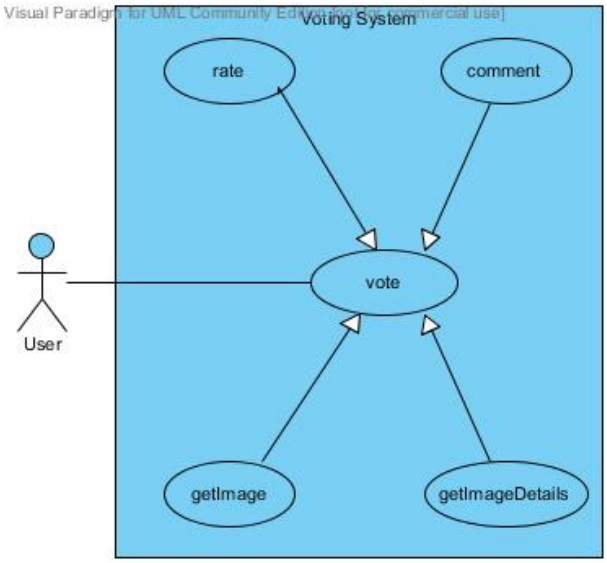
3.2.3 Voting

If a user logs in before the event starts, a loading screen will be displayed until the event starts. The server will inform the user's application when the event starts. The server will then pass through the first image and the details about the image. The details will contain the image name, the bottom and top score ranges as well as if comments must be enabled. The users will vote for the image and will be able to leave a comment if the comments are enabled. The server will either have a time limit per image or the server will check if all users have submitted their vote. If not all users have submitted their vote, the server will notify those users. If all users have submitted their vote, the next image and its details will be displayed. This will continue until all images have been scored. The user will be notified that voting is done.

Number based scoring
The server sends the image name, current image path, the bottom and top score ranges as well as if comments must be enabled to the application. The user can choose to move the slider to change the score or he can click on the score text area to change the score by typing in the score on the on-screen keyboard. When the user is satisfied with the score he gave, he should click on the submit button. The server will then receive the score and the following image will be send to the application when ready or the user will be notified that the session is complete. If the session is complete the user will be logged out and taken to the login screen.

Elimination round
The server sends the image name, current image path as well as if comments must be enabled to the application. The user can click on the Yes or No button. When the user is satisfied with his choice, he should click on the submit button. The server will then receive his choice and the following image will be send to the application when ready or the user will be notified that the session is complete. If the session is complete the user will be logged out and taken to the login screen.

Choose a winner
The server sends a list of image names as well as an array containing all the image paths to the application. The user can swipe through the images on his own time and select any image as the winner. When the user is satisfied with his choice, he should click on the submit button. The server will then receive his choice and the following image will be send to the application when ready or the user will be notified that the session is complete. If the session is complete the user will be logged out and taken to the login screen.



Voting Use Case Diagram

3.2.4 Internationalisation

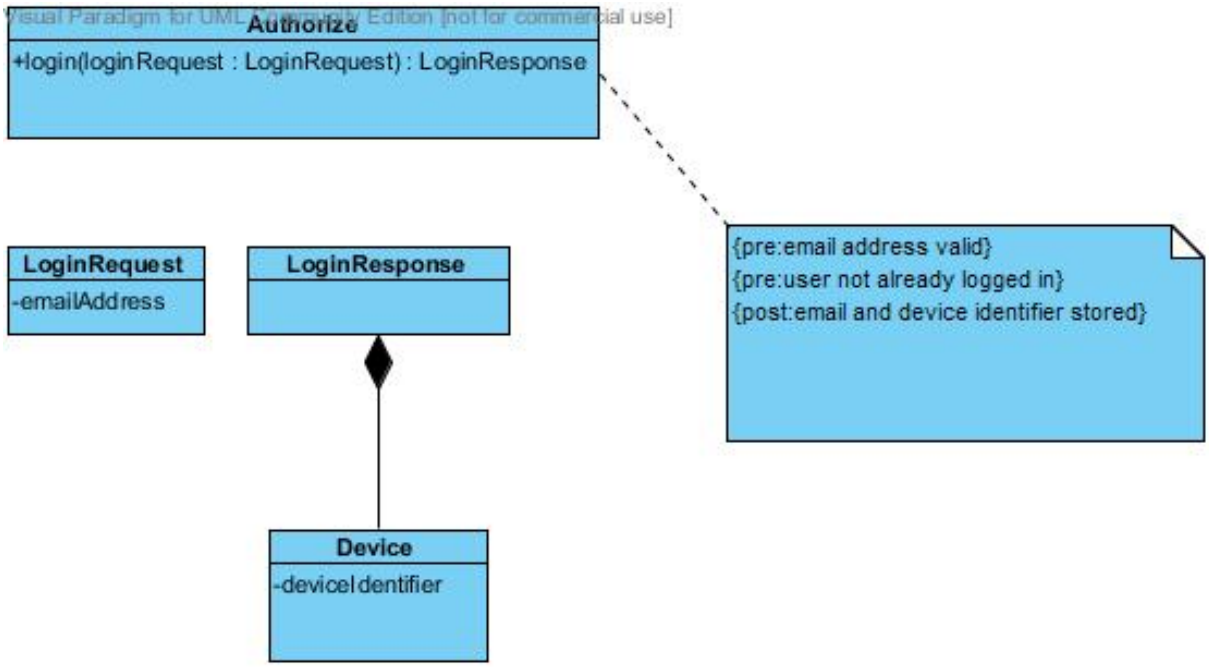
The application is able to handle different languages. The languages are device dependant, thus the application text will be displayed in the language that the device is currently set to. The default language is English, thus if the device is set to an unsupported language the application will default to English. The following languages are supported: English, Afrikaans, French and Dutch.

3.3 Use case prioritization

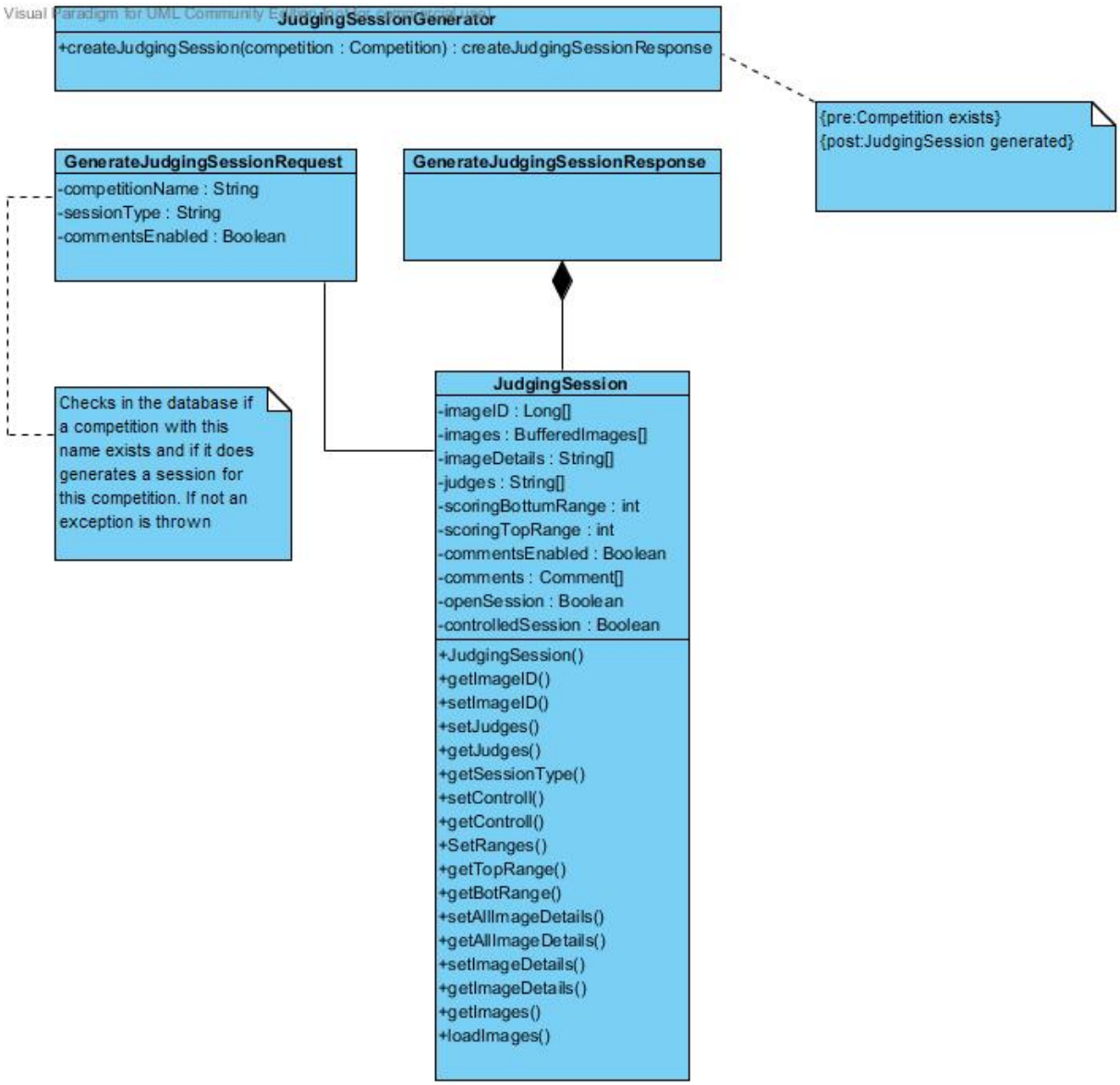
Critical Use Cases are the main cases that the system is made up of namely: Login, Create Judging Session and Voting. Without these cases the system will have limited to no functionality which will lead to a system that is not required by anyone.

Important Use Cases are the cases that improves the critical use cases and introduces a wider variety of functionality. These cases are Auto Login.

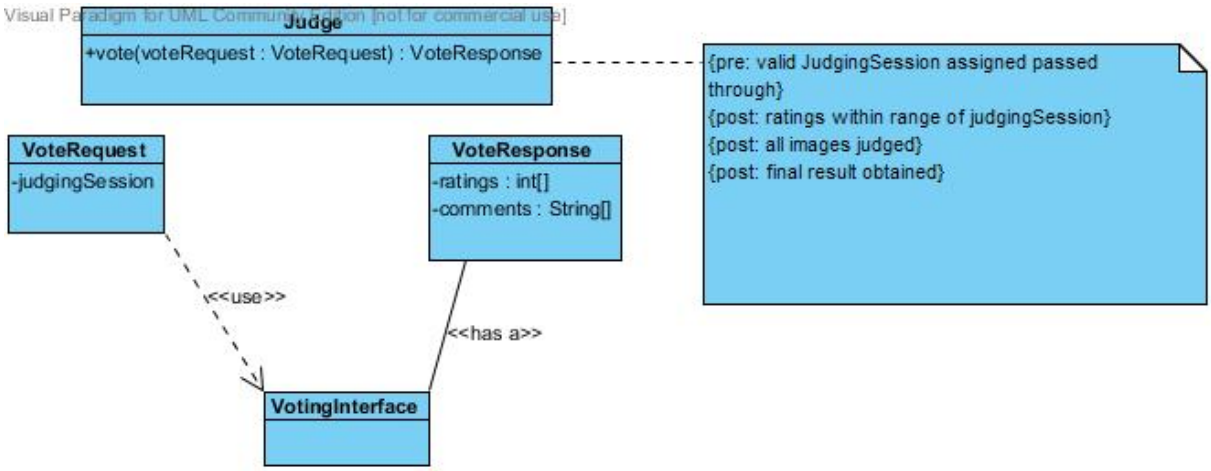
3.4 Use case/Services contracts



Services contract for Login

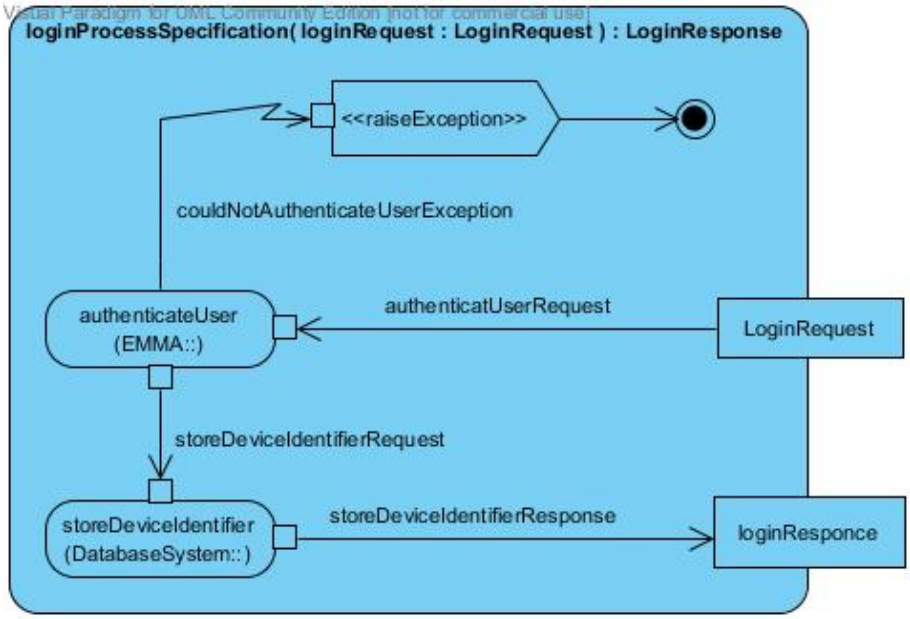


Services contract for Create Judging Session

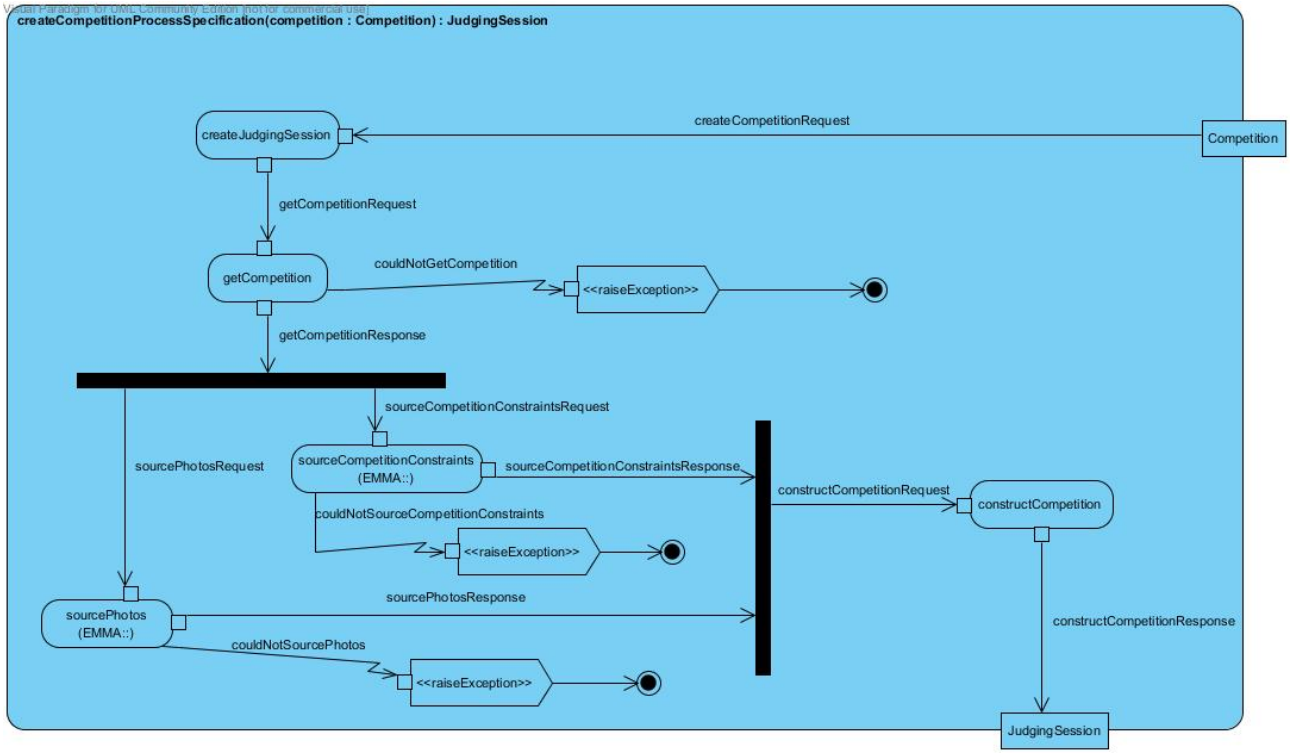


Services contract for Voting

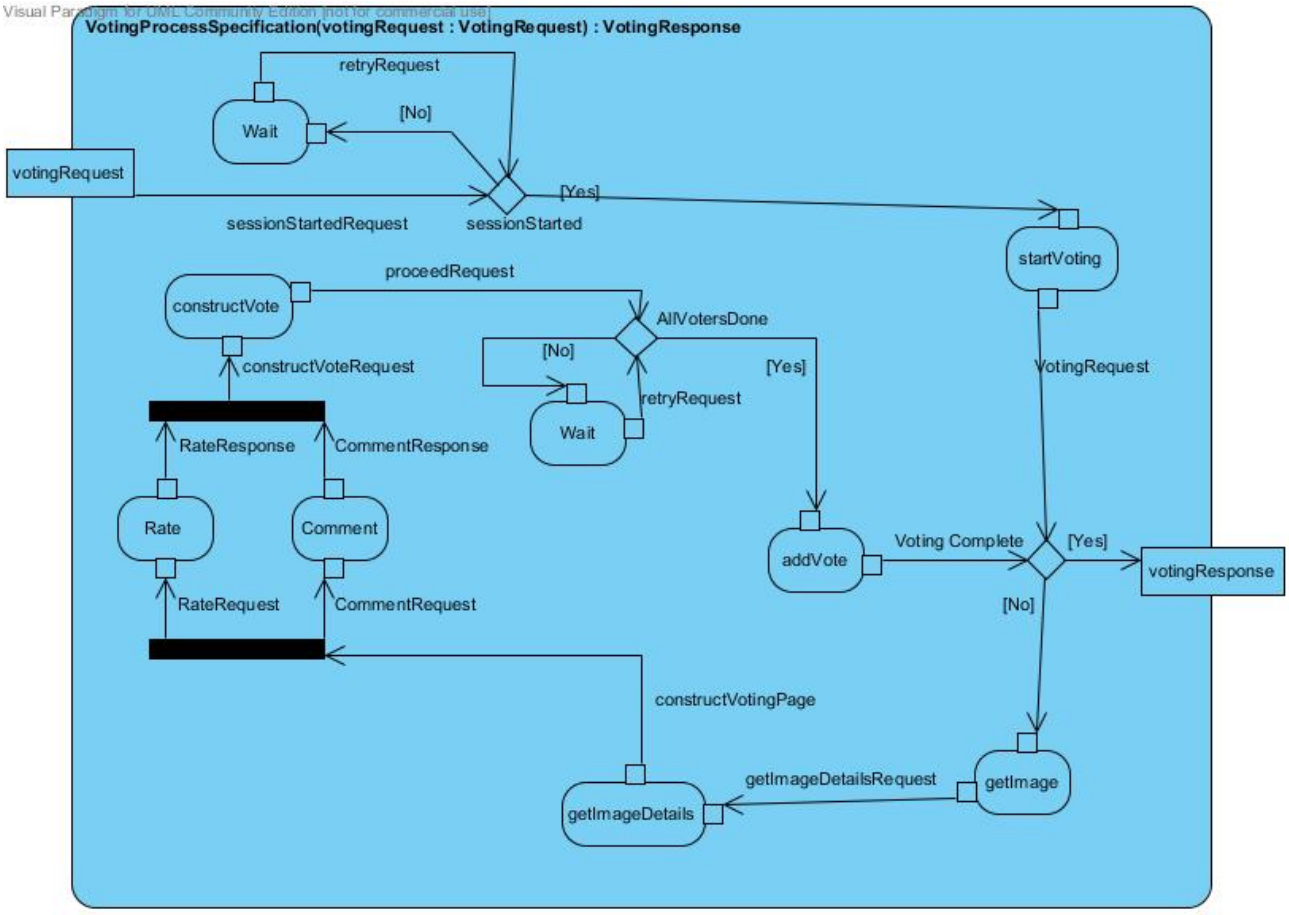
3.5 Process specifications



Login Activity Diagram



Create Judging Session Activity Diagram



Voting Activity Diagram

3.6 Domain objects

4 Glossary

EMMA - Entry and Member Management Application
His - Refers to his/her
He - Refers to he/she