Time Monitor Tool
Use-Case-Realization Specification

Version <5.0>

Revision History

Date	Version	Description	Author
15/01/2001	1.0	First Version	Sandra Lee
15/01/2001	2.0	Added Objects Diagrams	Sandra Lee
06/02/2001	3.0	Modified content to fit the new Use-Case Diagrams	Sandra Lee
30/03/2001	4.0	Adding Validate Timestamps Functionality	James Prevost
05/04/2001	5.0	Adding Classes: ShowWindow and CloseWindow. Revised Objects Diagrams.	Sandra Lee

Preface

The following case study has been modified from its original content. The case study is meant to be used as a starting point to help you understand how to use the artifact. Thus, information has been shrunk to avoid navigating an enormous document (in size and pages).

You can also refer to the related template (in HTML format or WORD format) in the UPEDU Artifacts Templates Analysis & Design Section.

Regards,

Unified Process for Education Team

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Use-Case-Realization Specification

1. Introduction

1.1 Purpose

This document provides a comprehensive overview of the system, using a number of different diagrams for representing the system functions.

1.2 Scope

The Time Monitoring Tool system allows developers working within a defined software development process to record the time spent on the various activities, in a database. The TMT will also allow a manager to derive analyses and produce reports based on the data entered in the system. This Use Case Realization document provides an overview of the use cases developed in Time Monitoring Tool.

1.3 Definitions, Acronyms, and Abbreviations

See Glossary, document upedu_ex_gloss.doc

1.4 References

1. **TMT - Glossary**
2. **TMT - Use Case Specification**
3. **TMT - Supplementary Specification**
4. **TMT - Iteration Plan**

1.5 Overview

The sections of the Use-Case Realization document describes use cases in terms of their flow of events, participant objects and corresponding diagrams.

1. USE CASE <Load MCM >

1.1 Brief Description

This Use-Case defines how the MCM is loaded allowing the Administrator to manage the application through the Internet Browser.

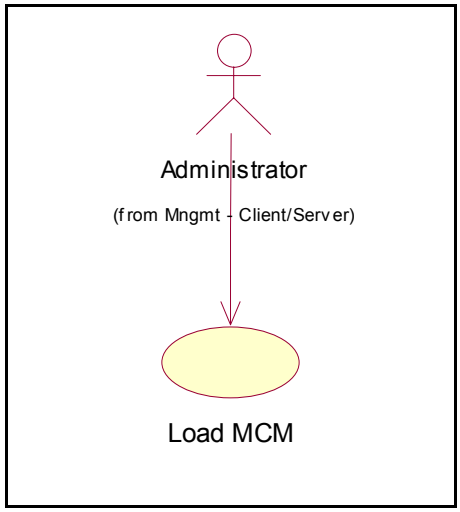

Figure 1 : Load MCM

1.2 Flow Events

Upon logging in the system, the Administrator implicitly makes a Load MCM query which is received by the Browser, then executed.

1.3 Interaction Diagrams

- **The Administrator launches the Load MCM query.**
- **The Internet Browser receives the query and loads the module.**

1.3.1. Sequence Diagrams

This Sequence Diagram shows Actors and Objects messages exchange in the Use-Case < Load MCM >.

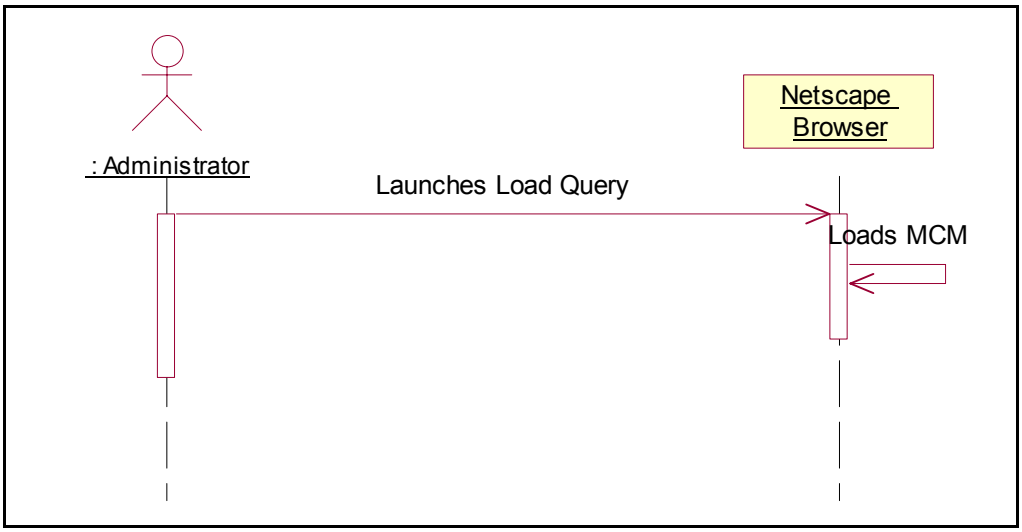

Figure 2 : Sequence Diagram : Load MCM

1.3.2 Collaboration Diagrams

This Collaboration Diagram shows the static structure of the Use-Case < Load MCM >.

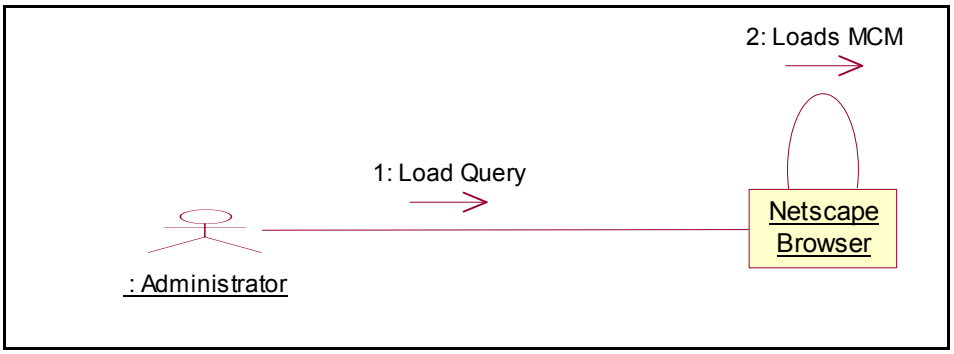

Figure 3 : Collaboration Diagram : Load MCM

1.6 Participating Objects

The following objects collaborate and define the Use-Case < Load MCM > Behavior:

Netscape Browser — **This object represents the visible part of the application and allows the Administrator to load his module.**

1.7 Object Diagram

The following Object Diagram shows the relations and constraints between Classes and Objects involved in the Use-Case.

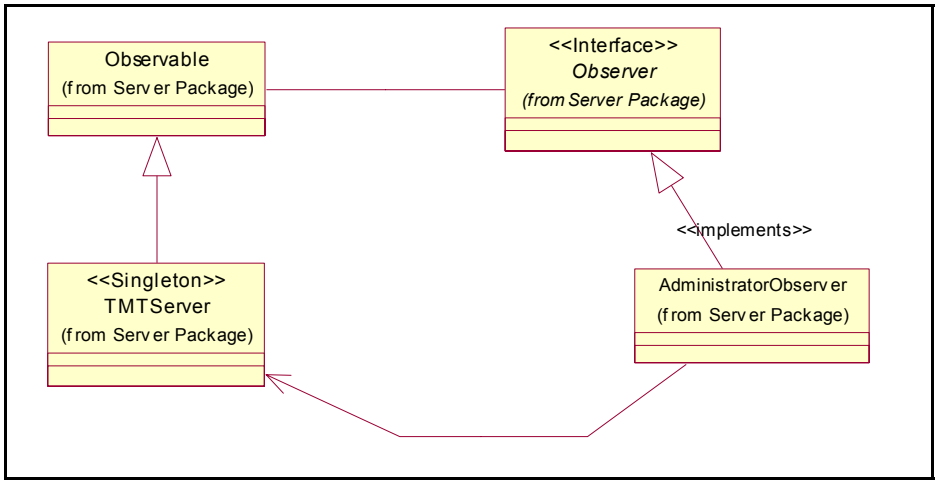

Figure 4 : Object Diagrams : Load MCM

2. USE CASE <Load DCM >

2.1 Brief Description

This Use-Case defines how the DCM is loaded allowing the Developer to timestamp his work hours through the Internet Browser.

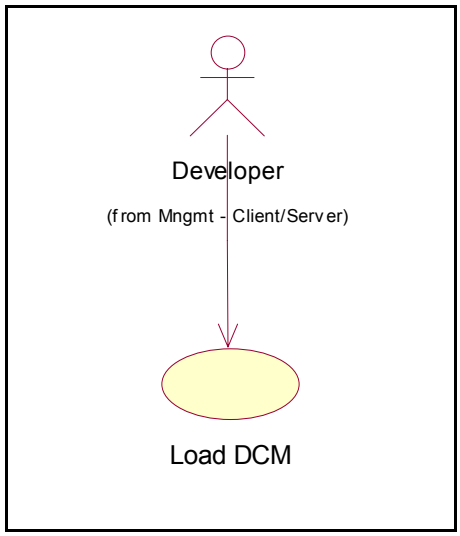

Figure 5 : Load DCM

2.2 Flow Events

Upon logging in the system, the Developer implicitly makes a Load DCM query which is received by the Browser, then executed.

2.3 Interaction Diagrams

- **The Developer launches the Load DCM query.**
- **The Internet Browser receives the query and loads the module.**

2.3.1 Sequence Diagrams

This Sequence Diagram shows Actors and Objects messages exchange in the Use-Case < Load DCM >.

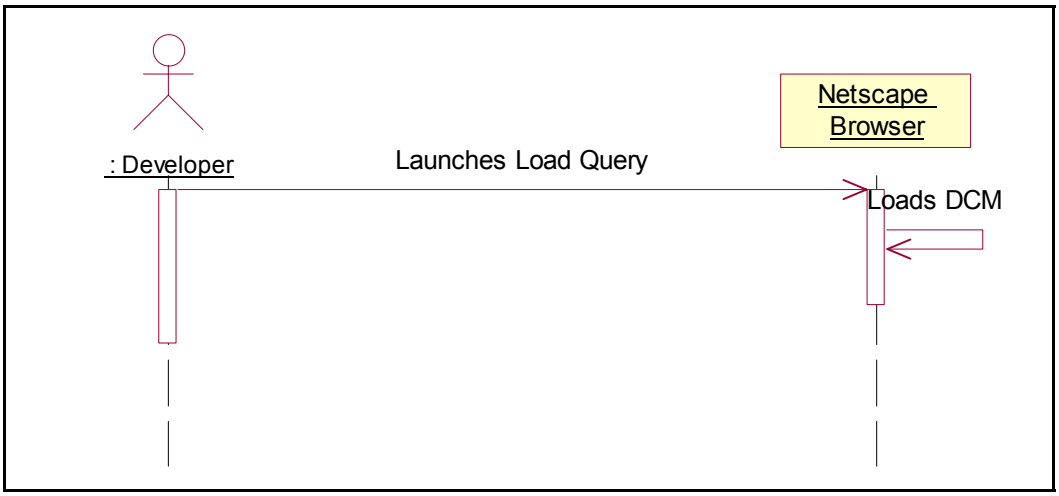

Figure 6 : Sequence Diagram : Load DCM

2.3.2 Collaboration Diagrams

This Collaboration Diagram shows the static structure of the Use-Case -<Load DCM>.

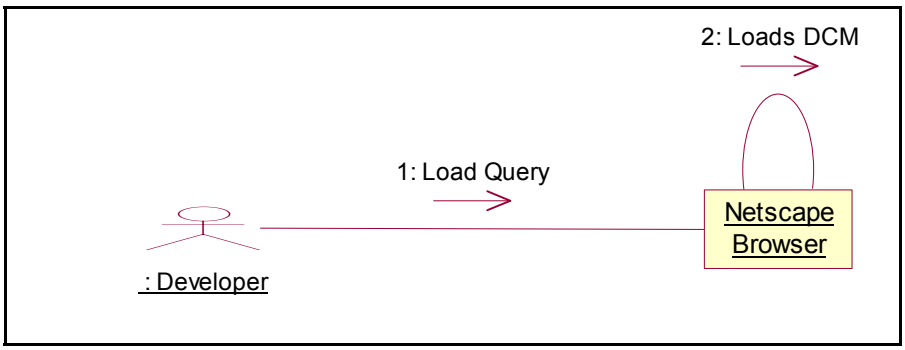

Figure 7 : Collaboration Diagram : Load DCM

2.4 Participating Objects

The following objects collaborate and define the Use-Case < Load DCM > Behavior:

Netscape Browser	**This object represents the visible part of the application and allows the Developer to load his module.**

2.5 Object Diagram

The following Object Diagram shows the relations and constraints between Classes and Objects involved in the Use-Case.

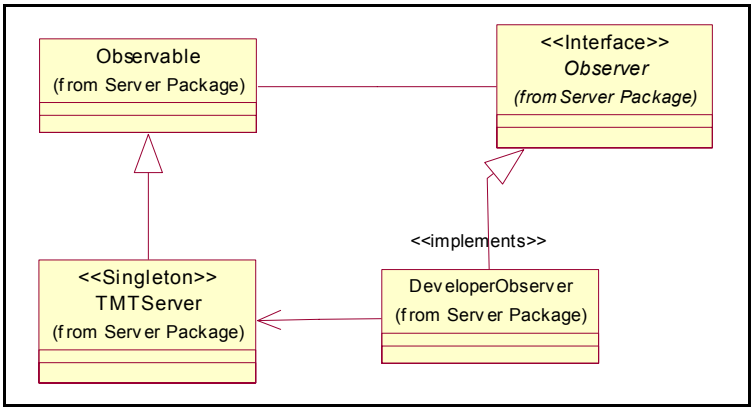

Figure 8 : Class Diagram : Load DCM

3. USE CASE <Login>

3.1 Brief Description

This Use-Case defines how users are logged into the system and get access to their respective functionalities.

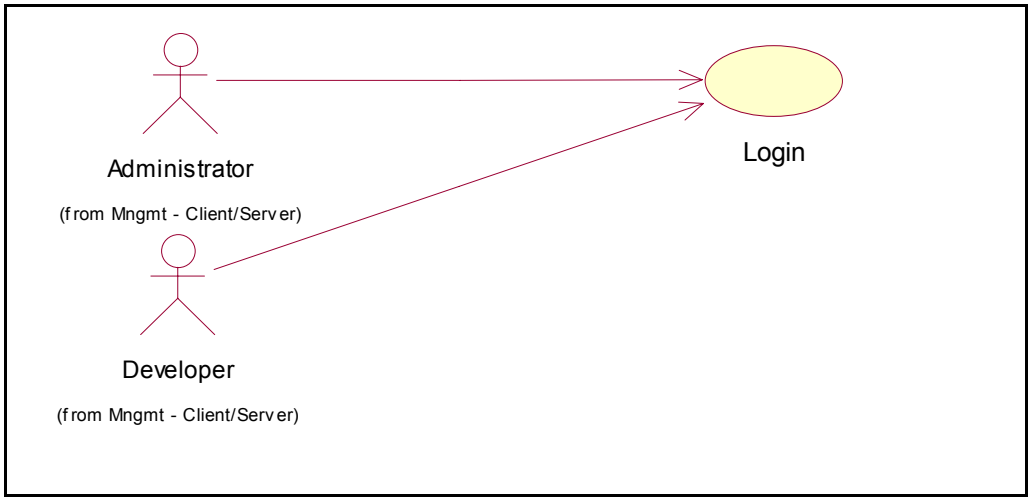

Figure 8: Login

3.2 Flow Events

The user provides his username and password and submits the form. Data is validated and login process is activated.

3.3 Interaction Diagrams

- **The user enters his username and password and submits the data**
- **Query is received by the MCM or DCM and transmitted to the SM**
- **The SM validates, executes and accesses the database for login confirmation.**
- **The DBMS returns confirmation to the SM which transmits it to the MCM.**

3.3.1 Sequence Diagrams

These Sequence Diagrams show Actors and Objects messages exchange in the Use-Case < Login>.

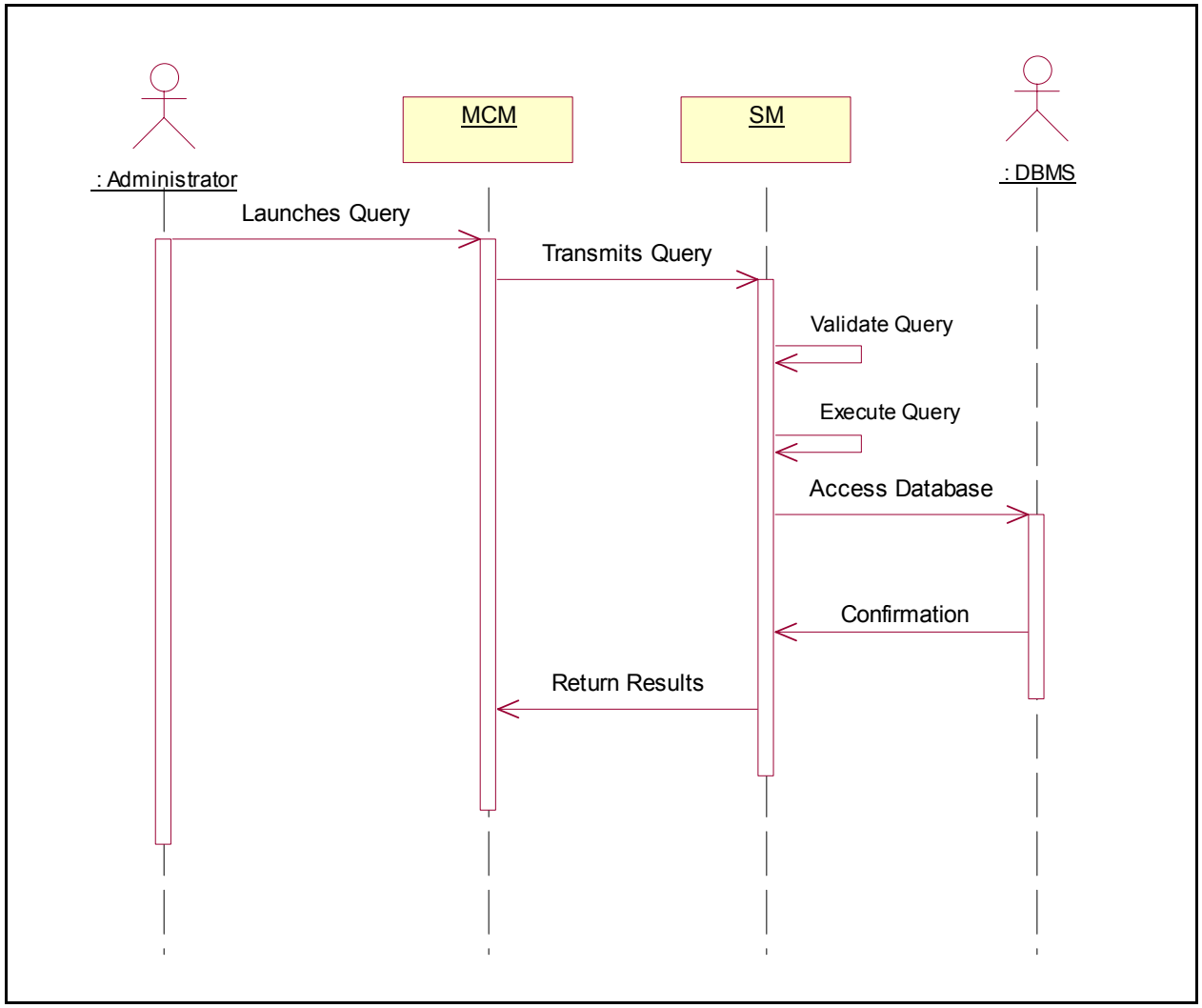

Figure 9 : Sequence Diagram : Login(Administrator)

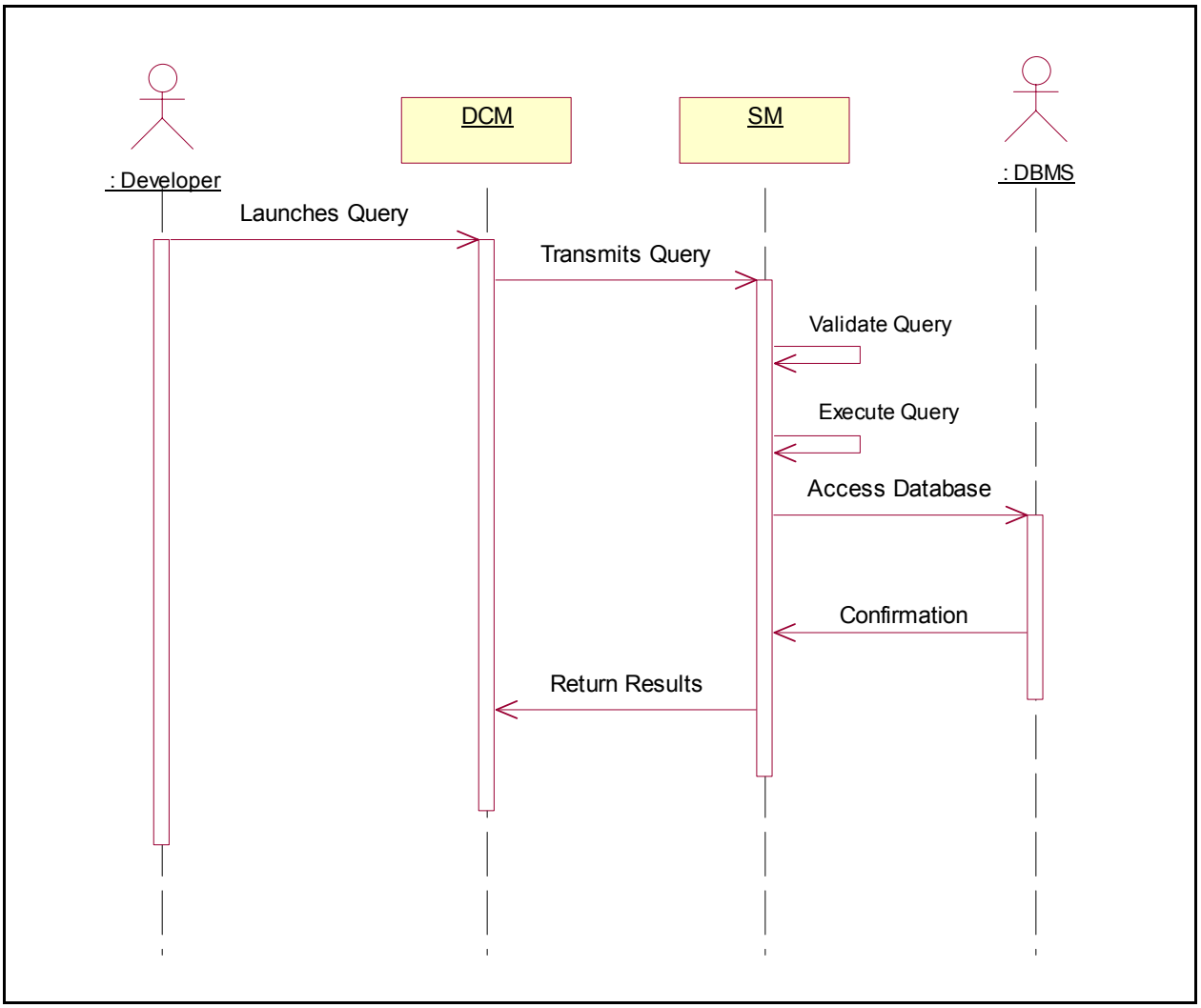

Figure 10 : Sequence Diagram : Login(Developer)

3.3.2 Collaboration Diagrams

This Collaboration Diagram shows the static structure of the Use-Case <login>.

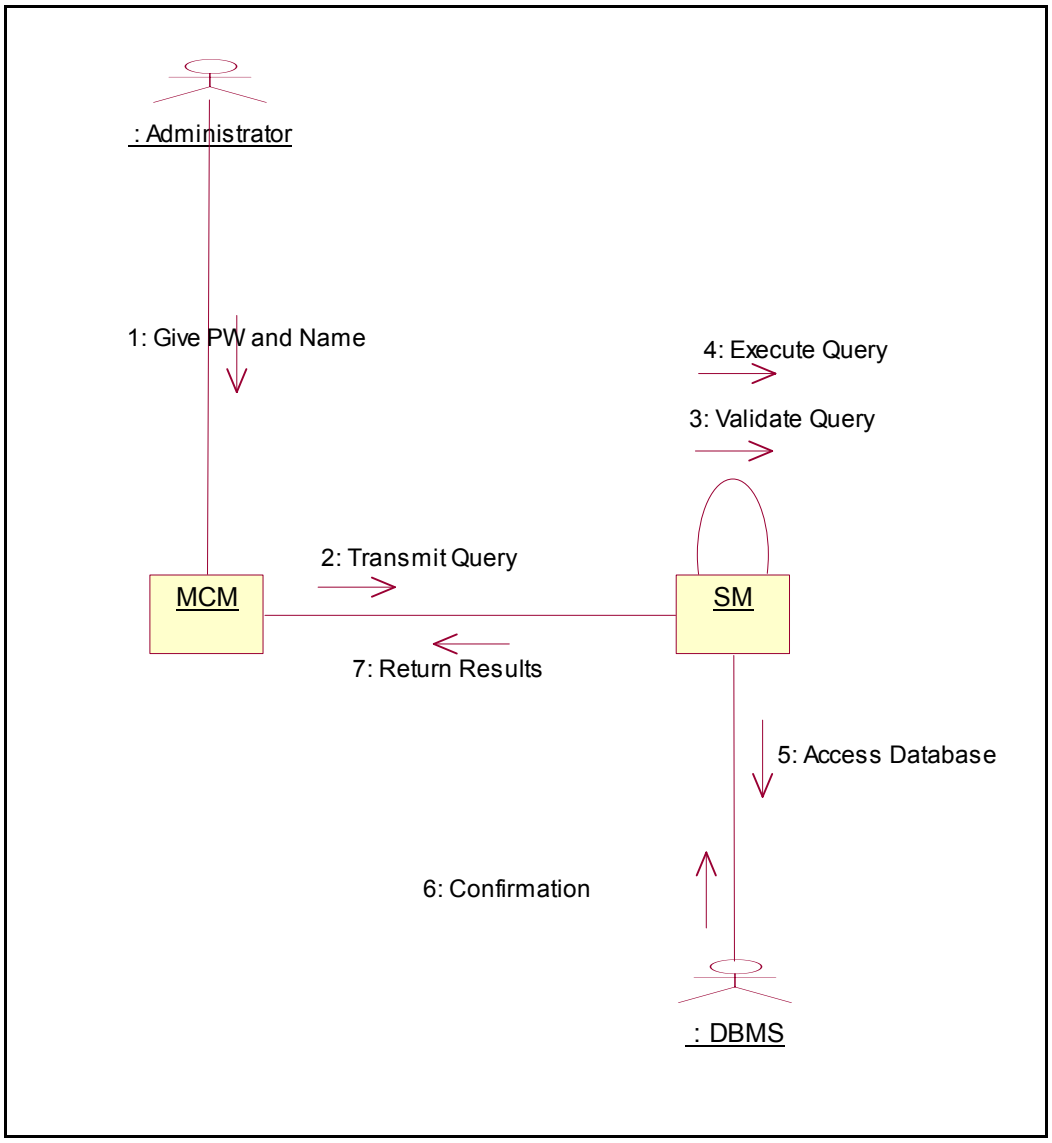

Figure 11 : Collaboration Diagram : Login (Administrator)

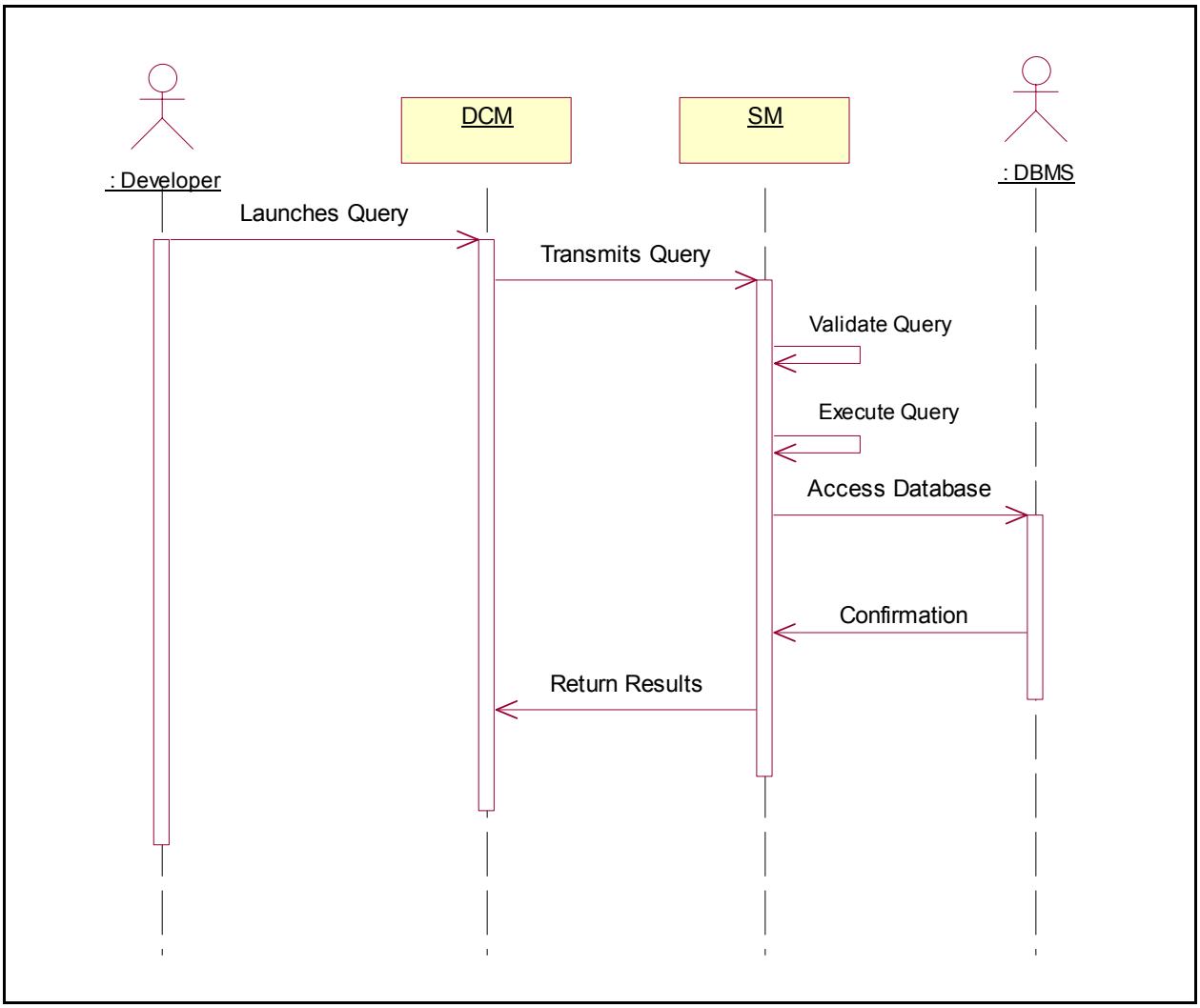

Figure 12 : Collaboration Diagram : Login (Developer)

3.4 Participating Objects

The following objects collaborate and define the Use-Case <login> :

MCM	**This object represents the visible part of the application and allows the Administrator to login to the system.**
DCM	**This object represents the visible part of the application and allows the Developer to login to the system.**
SM	**This object executes and validates the Login query by communicating with the Database.**

3.5 Object Diagram

The following Object Diagram shows the relations and constraints between Classes and Objects involved in the Use-Case.

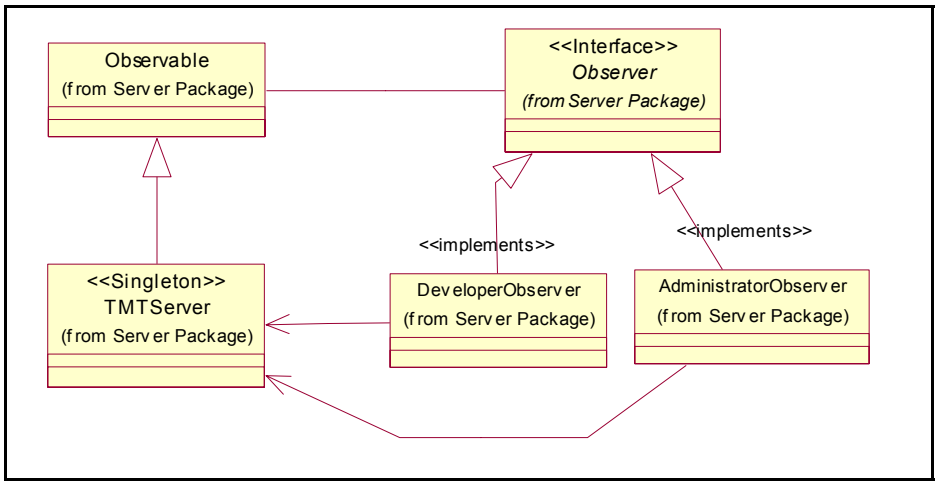

Figure 13 : Object Diagram : Login

4. USE CASE <Logout>

4.1 Brief Description

This Use-Case defines how users are logged out from system and exit the application normally.

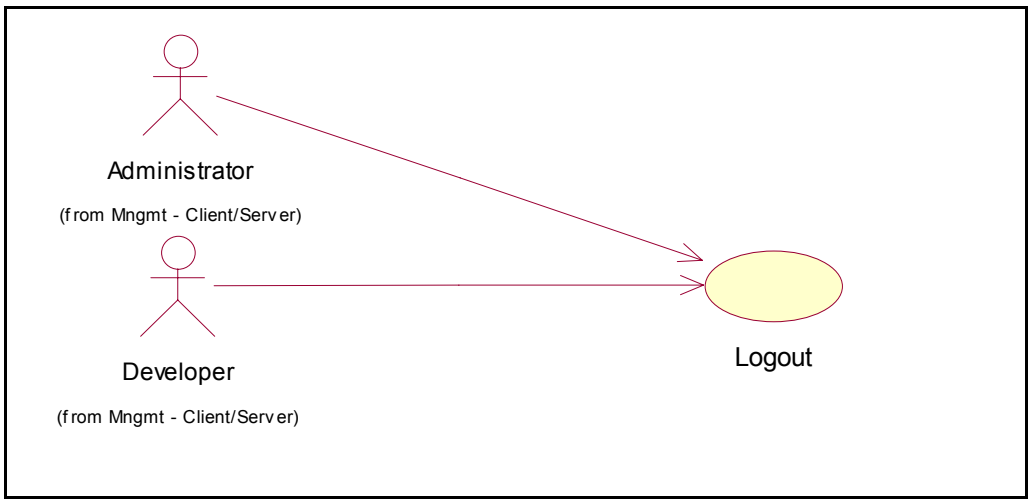

Figure 14 : Logout

4.2 Flow Events

The user exits the application by using the appropriate End Session button. Query is validated and logout process is activated.

4.3 Interaction Diagrams

- **The user clicks the End Session Button**
- **Query is received by the MCM or DCM and transmitted to the SM**
- **The SM validates, executes and accesses the database for logout confirmation.**
- **The DBMS returns confirmation to the SM which transmits it to the MCM.**

4.3.1 Sequence Diagrams

These Sequence Diagrams show Actors and Objects messages exchange in the Use-Case < Logout>.

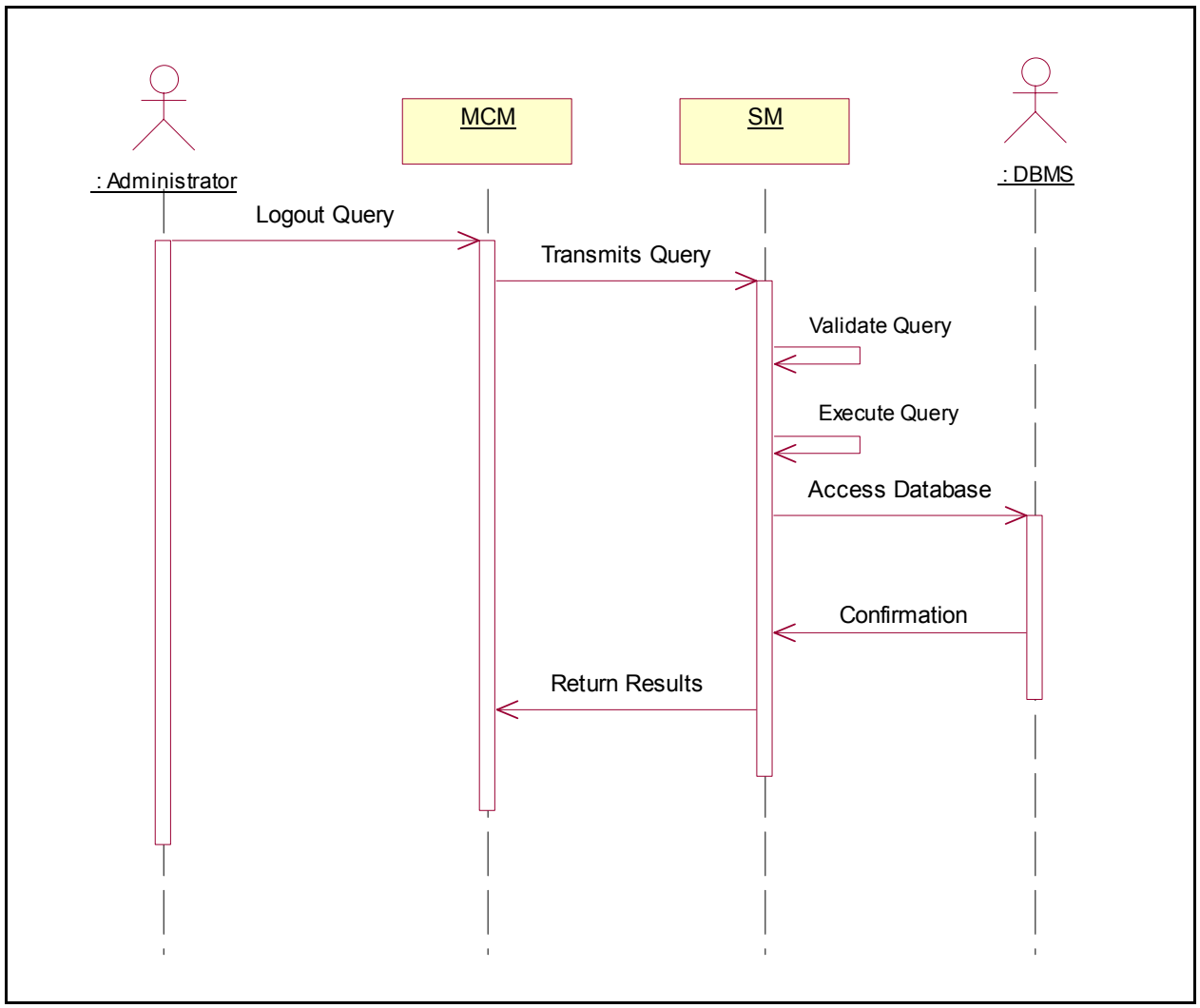

Figure 15 : Sequence Diagram : Logout (Administrator)

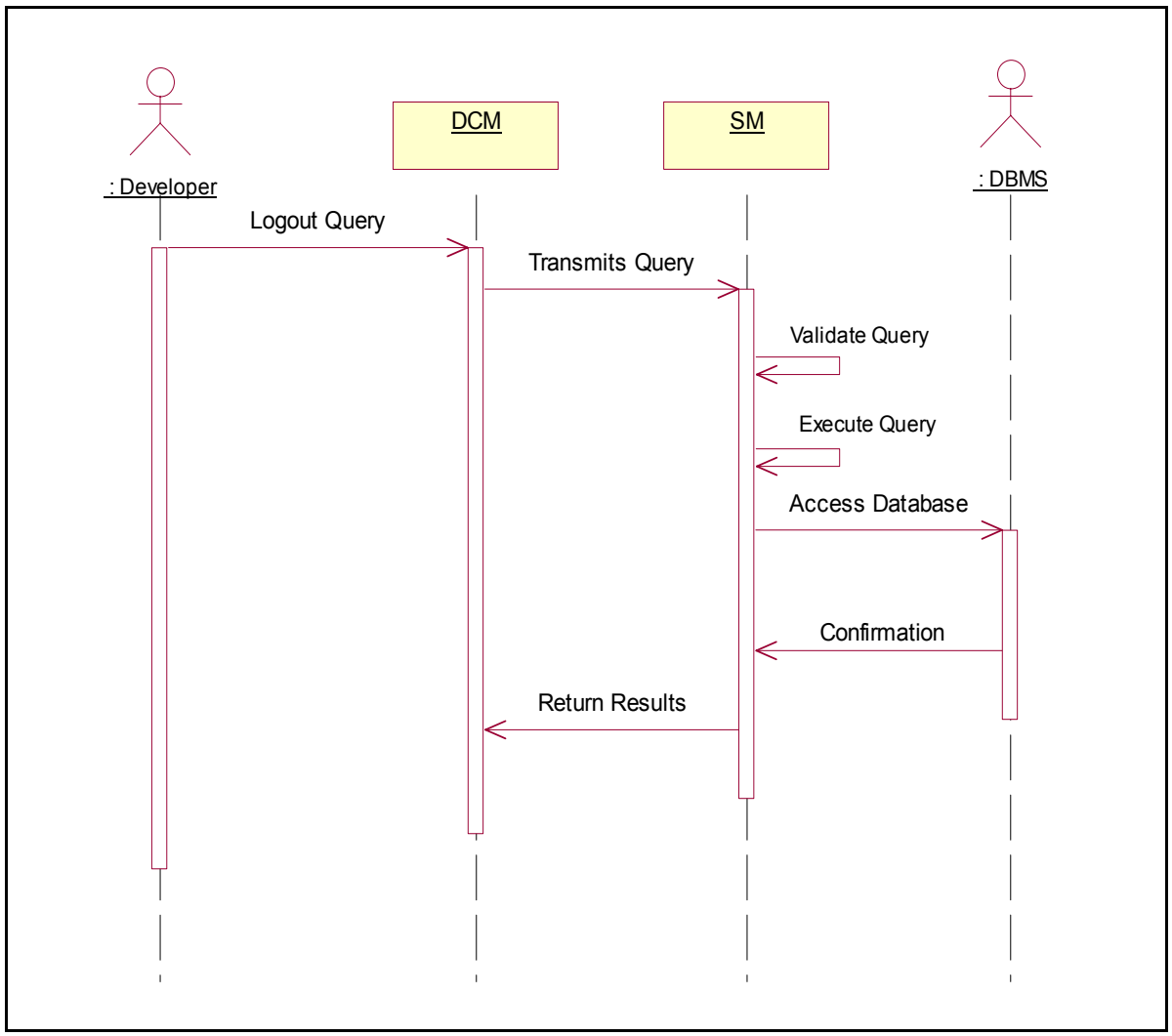

Figure 16 : Sequence Diagram : Logout (Developer)

4.3.2 Collaboration Diagrams

This Collaboration Diagram shows the static structure of the Use-Case <Logout>

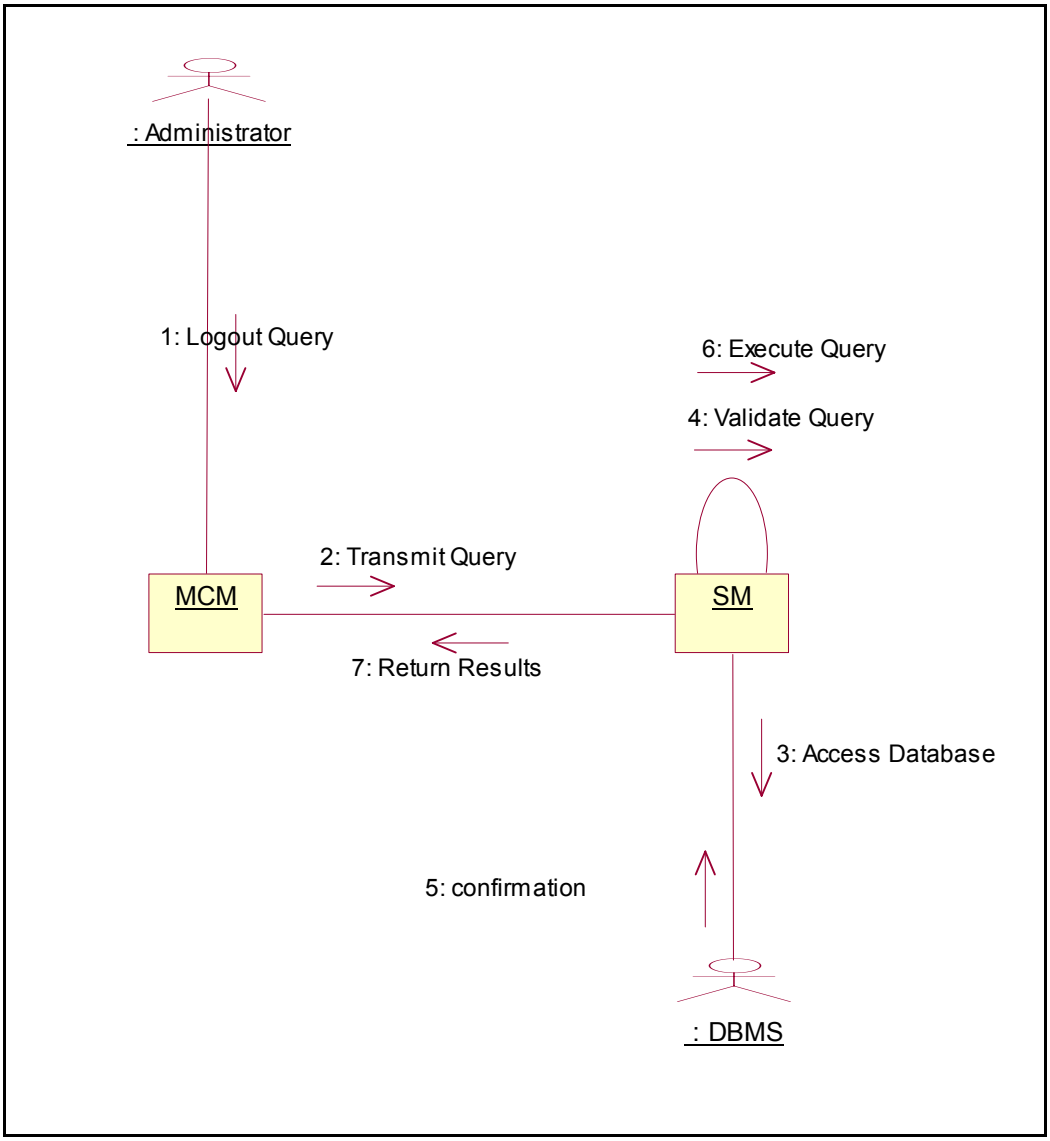

Figure 17 : Collaboration Diagram : Logout (Administrator)

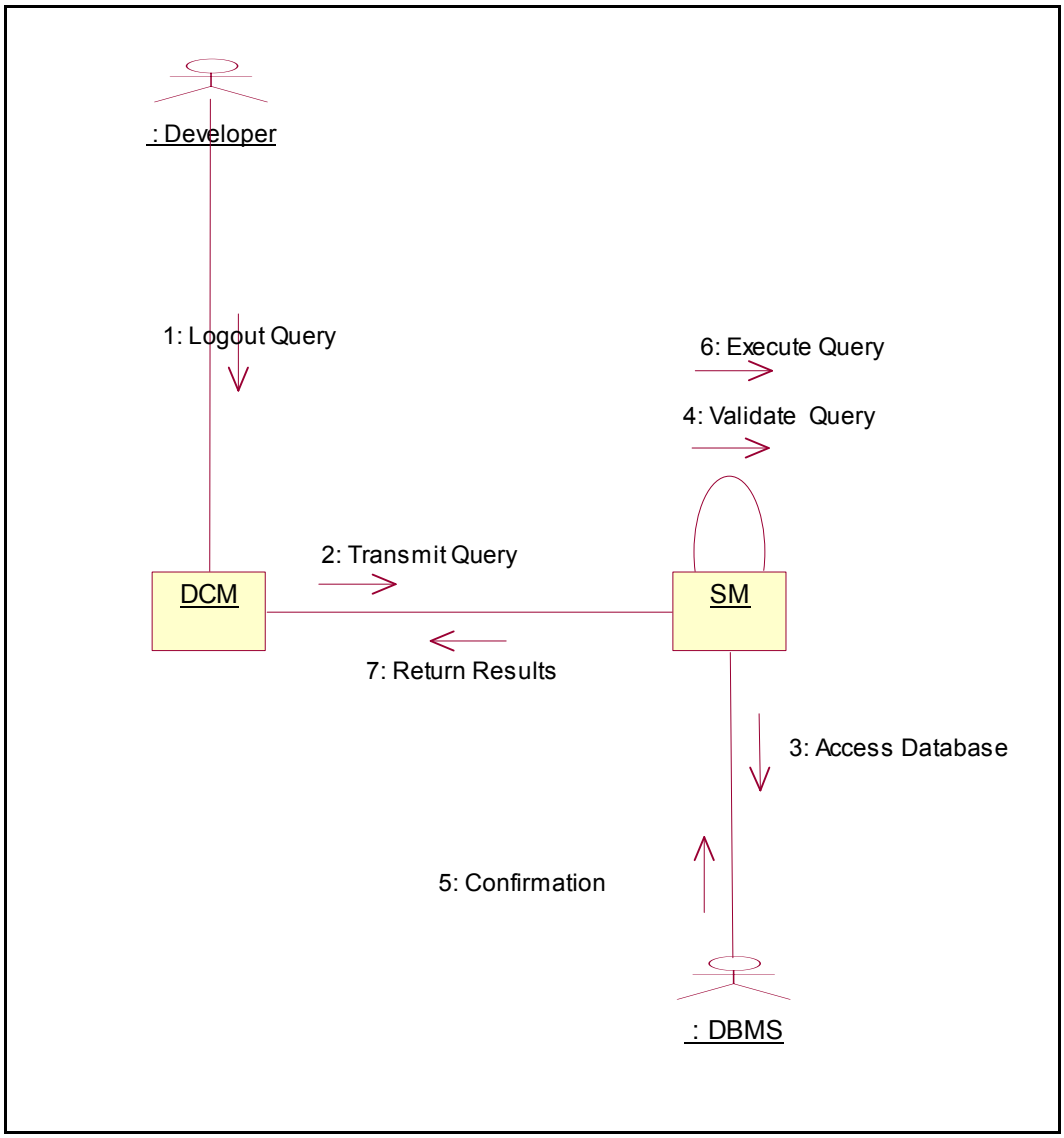

Figure 18 : Collaboration Diagram : Logout (Developer)

4.4 Participating Objects

The following objects collaborate and define the Use-Case <Logout> :

MCM	**This object represents the visible part of the application and allows the Administrator to logout from the system.**
DCM	**This object represents the visible part of the application and allows the Developer to logout from the system.**
SM	**This object executes and validates the Logout query by communicating with the Database.**

4.5 Object Diagram

The following Object Diagram shows the relations and constraints between Classes and Objects involved in the Use-Case.

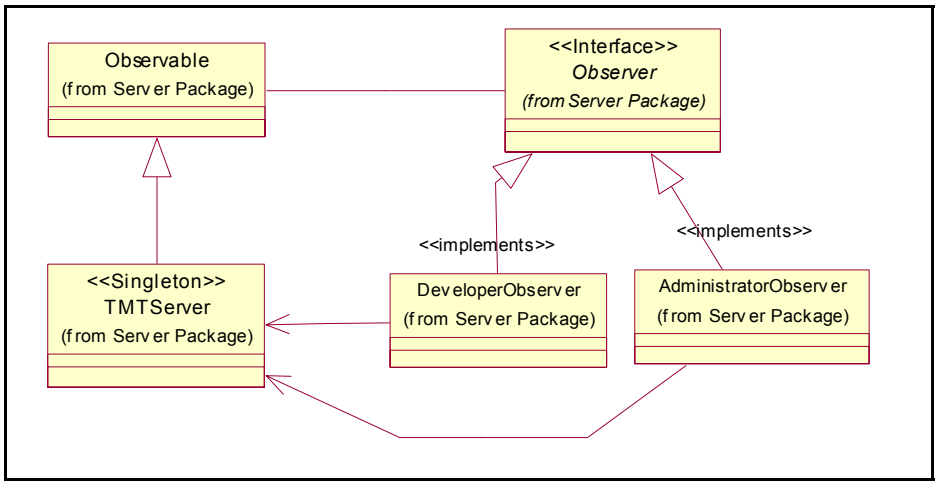

Figure 19 : Object Diagrams : Logout

5. USE CASE <Show TMT Status >

5.1 Brief Description

This Use-Case defines how the TMT Status is displayed to the user.

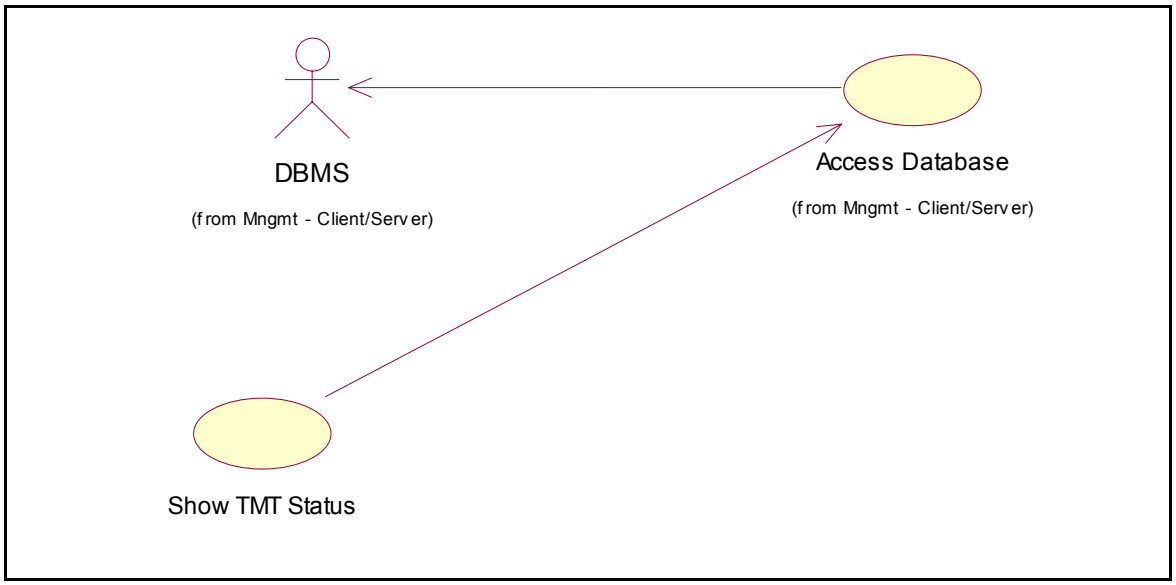

Figure 20 : Show TMT Status

5.2 Flow Events

The TMT status is constantly verified by the Server Module. If the status is abnormal, error details and comments will be displayed, else the normal TMT Window content is displayed.

5.3 Interaction Diagrams

- **The SM verifies the status**
- **The SM shows the status**

5.3.1 Sequence Diagrams

These Sequence Diagrams show Actors and Objects messages exchange in the Use-Case < Show TMT Status>.

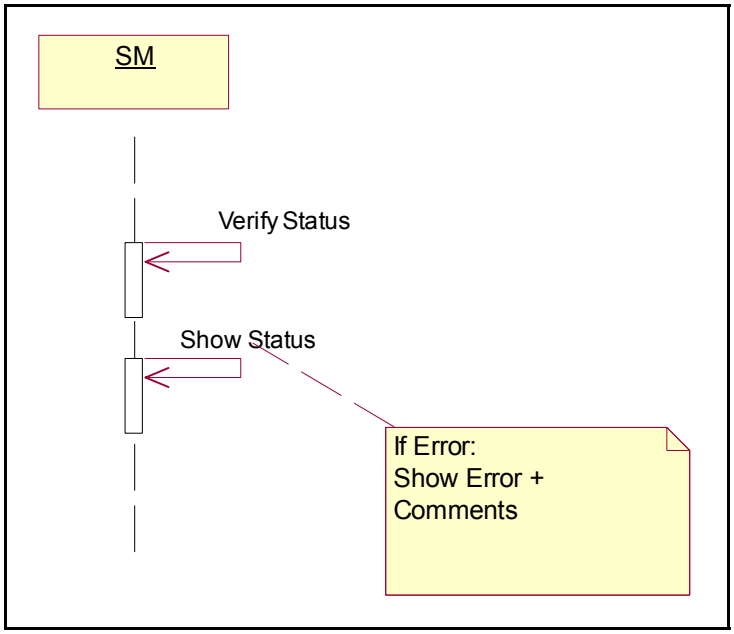

Figure 21 : Sequence Diagram : Show TMT Status

5.3.2 Collaboration Diagrams

This Collaboration Diagram shows the static structure of the Use-Case <Show TMT Status>.

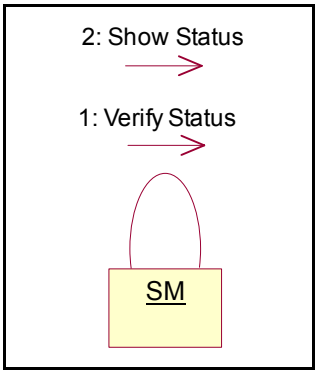

Figure 22 : Collaboration Diagram : Show TMT Status

5.4 Participating Objects

The following objects collaborate and define the Use-Case < Show TMT Status > :

SM	**This object interacts with the database and the Internet Browser in order to determine the current status of the TMT.**

5.5 Object Diagram

The following Object Diagram shows the relations and constraints between Classes and Objects involved in the Use-Case.

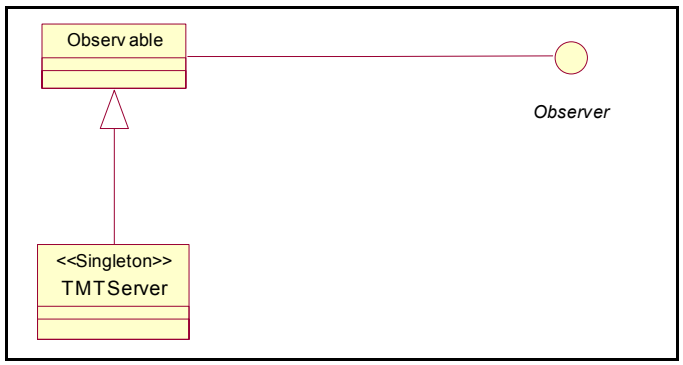

Figure 23 : Object Diagrams : Show TMT Status

6. USE CASE <Identify Errors >

6.1 Brief Description

This Use-Case defines the TMT status error identification process

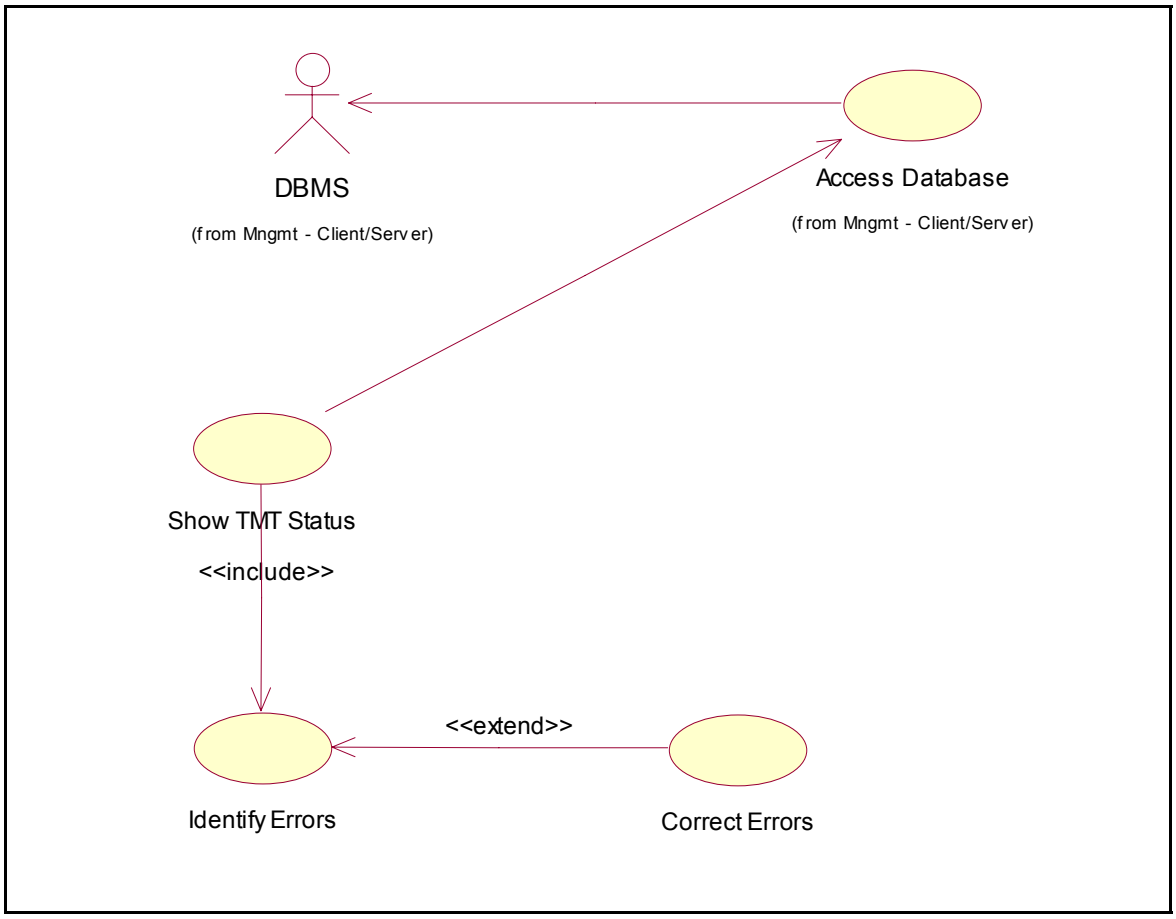

Figure 24 : Identify Errors

6.2 Flow Events

Upon each TMT status verification, the SM must detect any error presence (Execution, Communication, Validation, others).

6.3 Interaction Diagrams

- **The SM verifies the TMT status**
- **The SM identifies errors, if any**

6.3.1 Sequence Diagrams

These Sequence Diagrams show Actors and Objects messages exchange in the Use-Case < Identify Errors>.

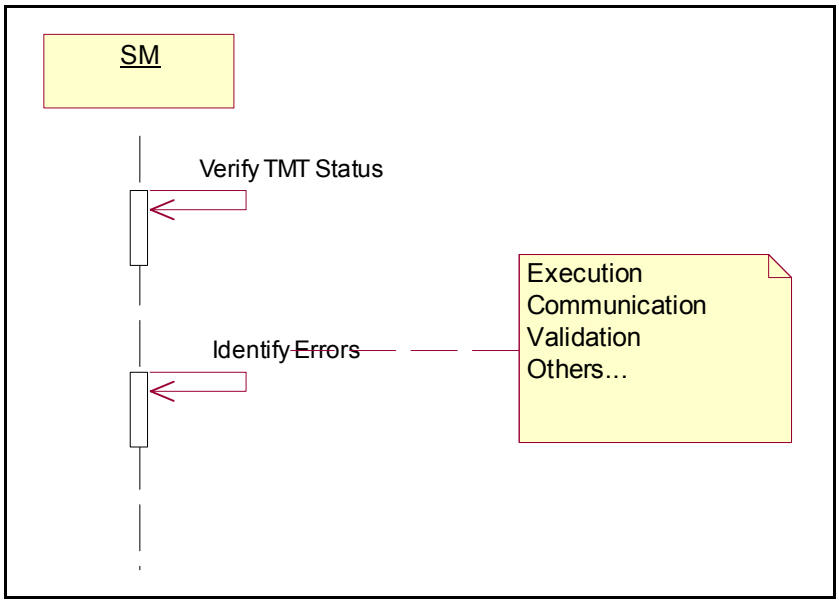

Figure 25 : Sequence Diagram : Identify Errors

6.3.2 Collaboration Diagrams

This Collaboration Diagram shows the static structure of the Use-Case <Identify Errors>.

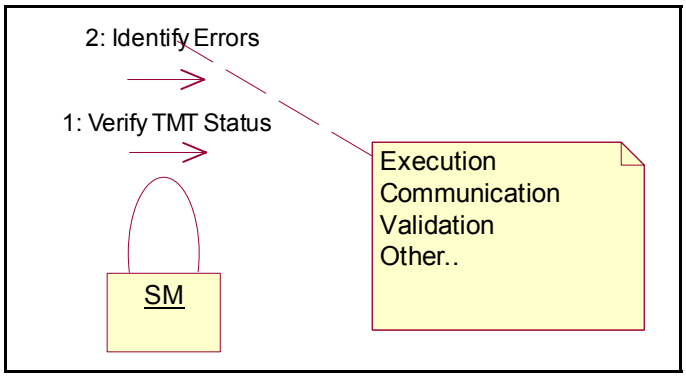

Figure 26 : Collaboration Diagram : Identify Errors

6.4 Participating Objects

The following objects collaborate and define the Use-Case < Identify Errors> :

SM	**This object interacts with the database and the Internet Browser in order to determine and detect error presence.**

6.5 Object Diagram

The following Object Diagram shows the relations and constraints between Classes and Objects involved in the Use-Case.

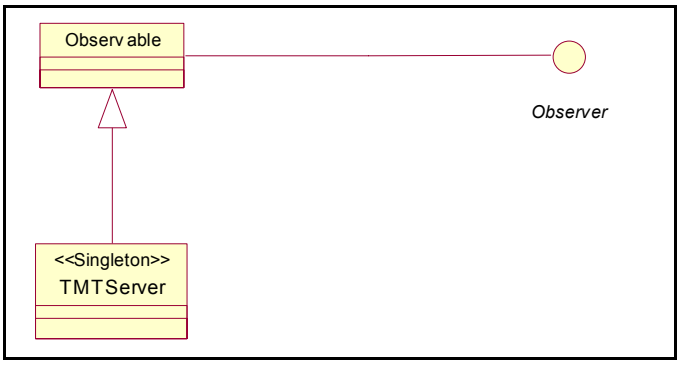

Figure 27 : Object Diagrams : Identify Errors

7. USE CASE < Correct Errors >

7.1 Brief Description

After Identifying errors, the SM must try to automatically correct the error, if possible. The error correction must remain transparent to the user and the application must follow its course of actions normally.

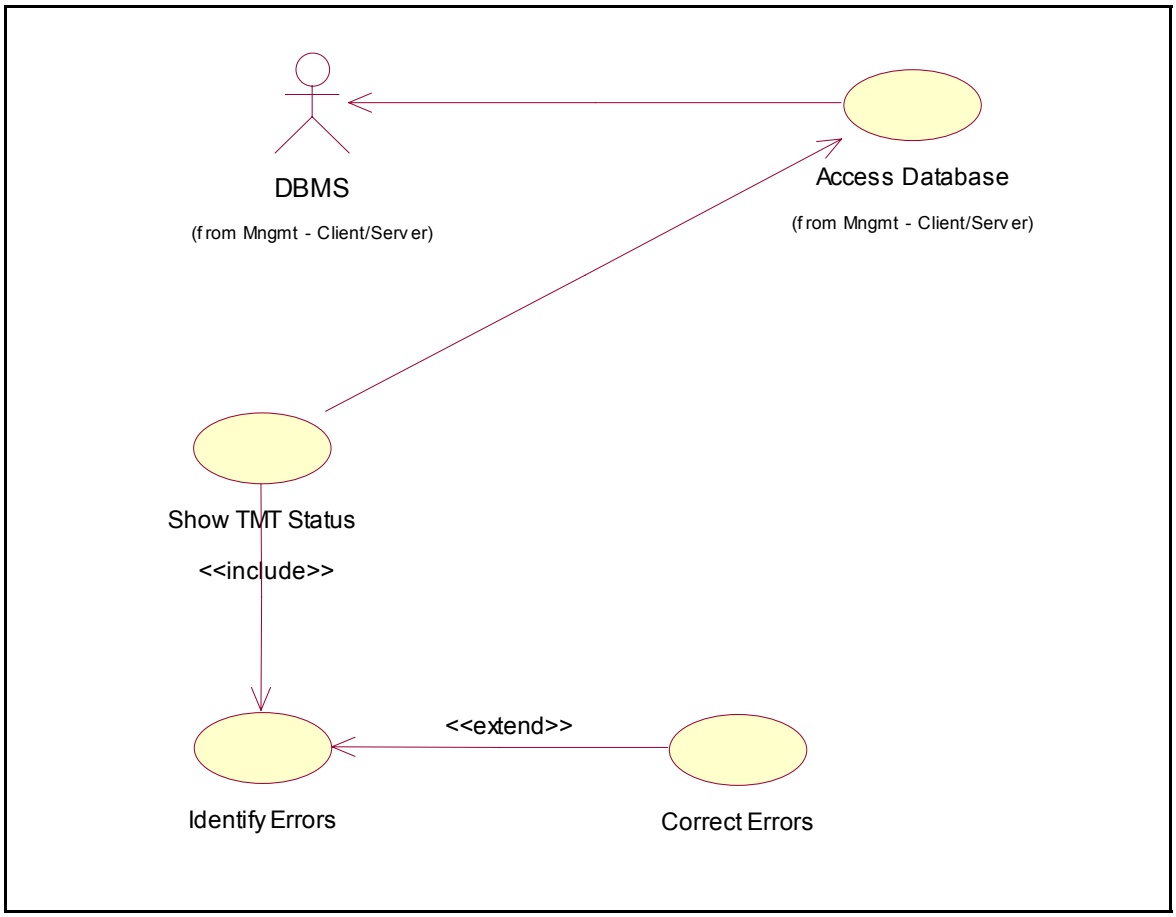

Figure 28 : Correct Errors

7.2 Flow Events

Upon each TMT status error identification, the SM must try to correct the error.

7.3 Interaction Diagrams

- **The SM gets the error information from its identification**
- **The SM tries to correct the error**
- **If the error is corrected, the SM restores the TMT last good status**
- **If the SM cannot correct the error, a special TMT status error message is displayed with appropriate comments**

7.3.1 Sequence Diagrams

These Sequence Diagrams show Actors and Objects messages exchange in the Use-Case < Correct Errors>.

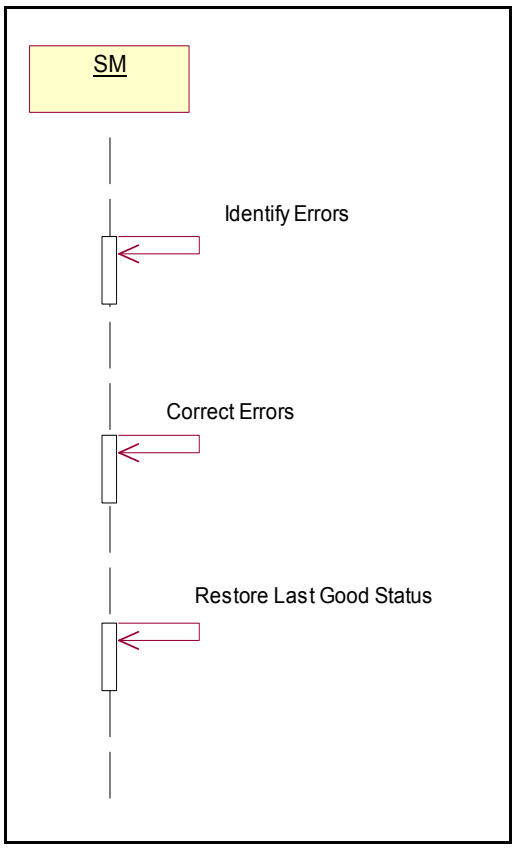

Figure 29 : Sequence Diagram : Correct Errors

7.3.2 Collaboration Diagrams

This Collaboration Diagram shows the static structure of the Use-Case <Correct Errors>.

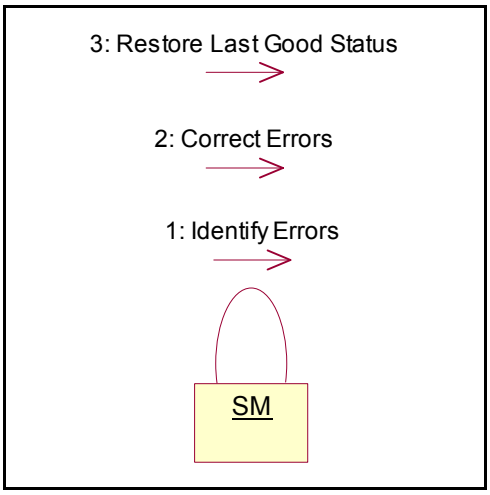

Figure 30 : Collaboration Diagram : Correct Errors

7.4 Participating Objects

The following objects collaborate and define the Use-Case < Correct Errors> :

SM	**This object interacts with the database and the Internet Browser in order to correct the errors.**

7.5 Object Diagram

The following Object Diagram shows the relations and constraints between Classes and Objects involved in the Use-Case.

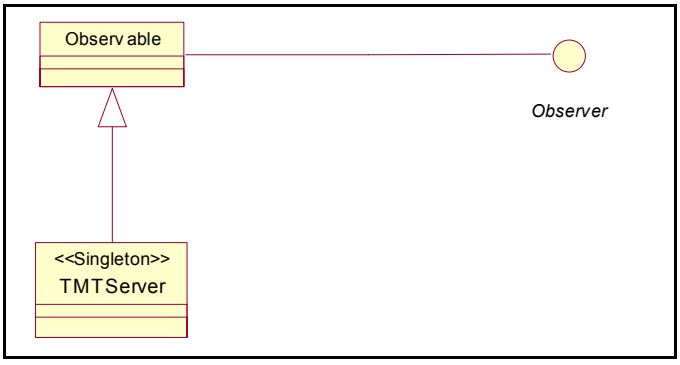

Figure 31 : Object Diagrams : Correct Errors

8. USE CASE < Show TMT Window >

8.1 Brief Description

This Use-Case defines how the appropriate TMT Window (Manager Client Window or Developer Client Window) is displayed on screen, using the data provided on the Login Screen (username and password).

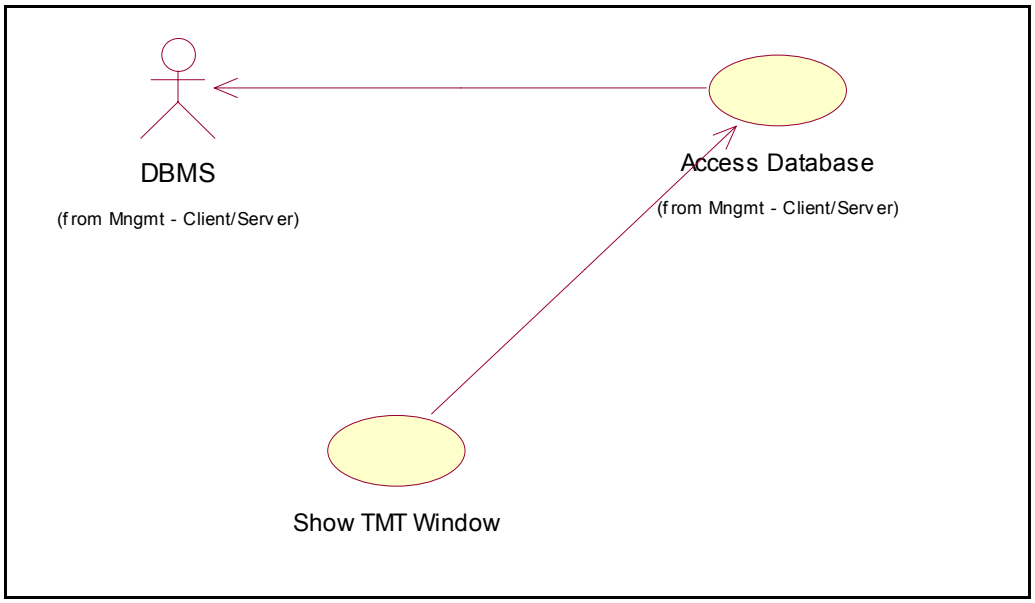

Figure 32 : Show TMT Window

8.2 Flow Events

After the username and password have been verified and validated, the SM provides the Manager Client Window to the MCM or provides the Developer Client Window to the DCM. Windows are displayed to the user (Administrator or Developer)

8.3 Interaction Diagrams

- **The SM confirms the Login**
- **The SM provides the appropriate Client Window to the Client Module**
- **The Client Module displays the window to the user.**

8.3.1 Sequence Diagrams

These Sequence Diagrams show Actors and Objects messages exchange in the Use-Case < Show TMT Window>.

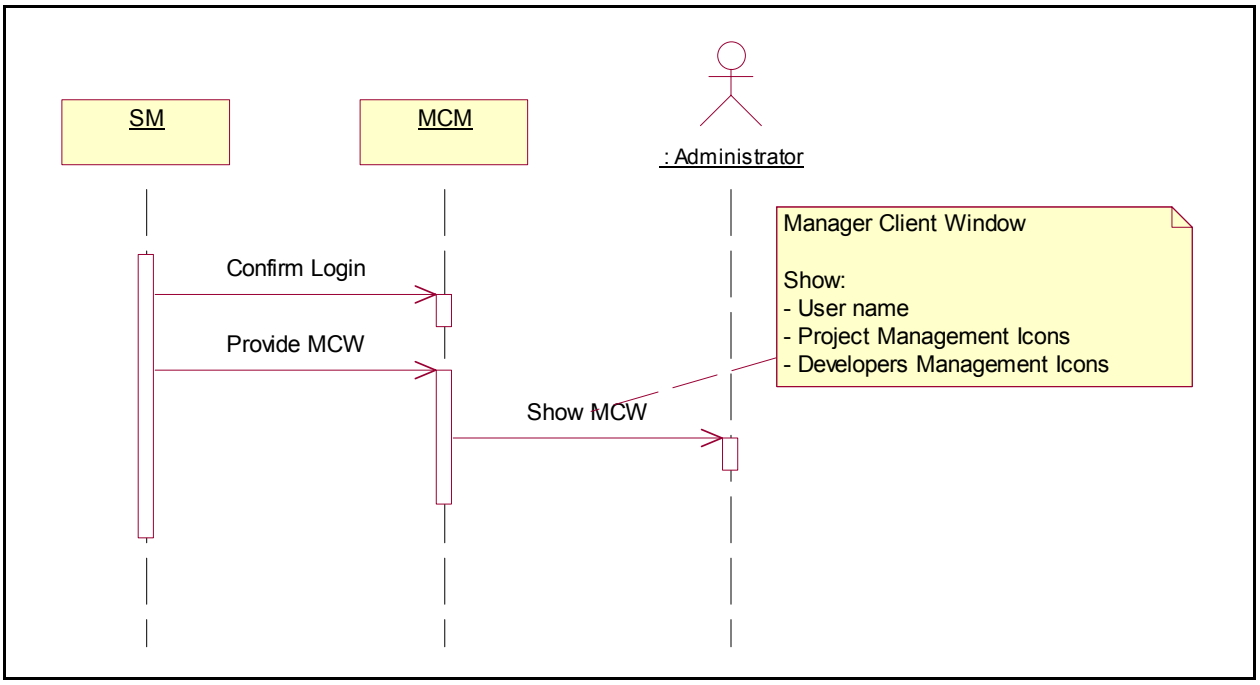

Figure 33 : Sequence Diagram : Show TMT Window (Administrator)

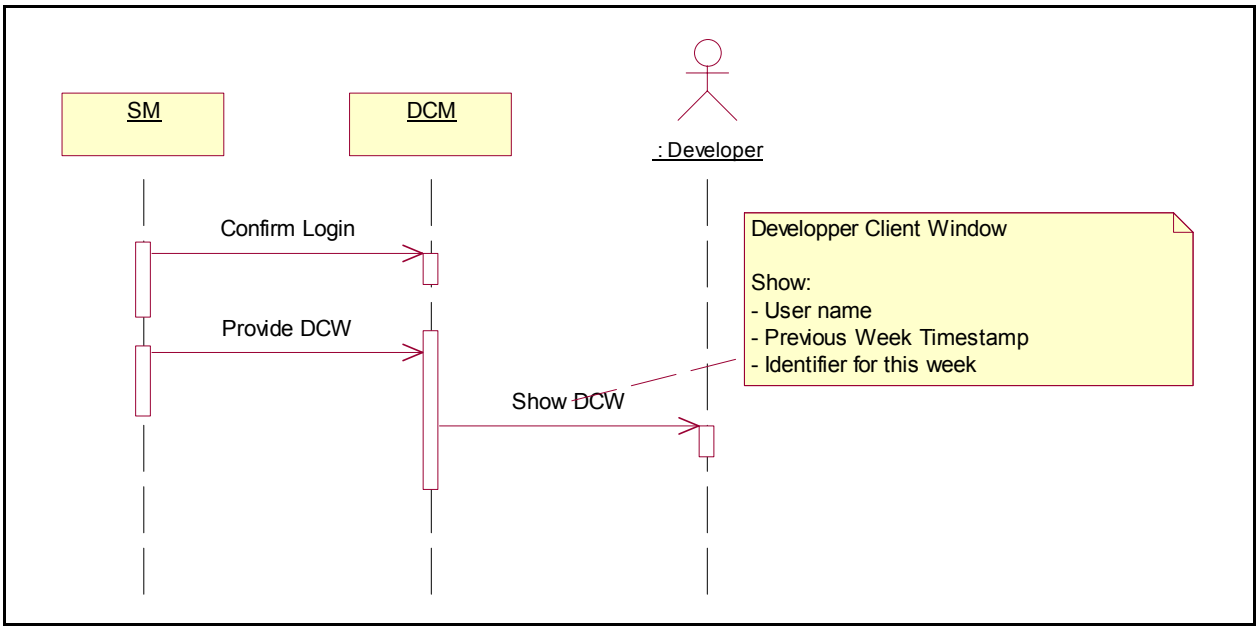

Figure 34 : Sequence Diagram : Show TMT Window (Developer)

8.3.2 Collaboration Diagrams

This Collaboration Diagram shows the static structure of the Use-Case <Show TMT Window>.

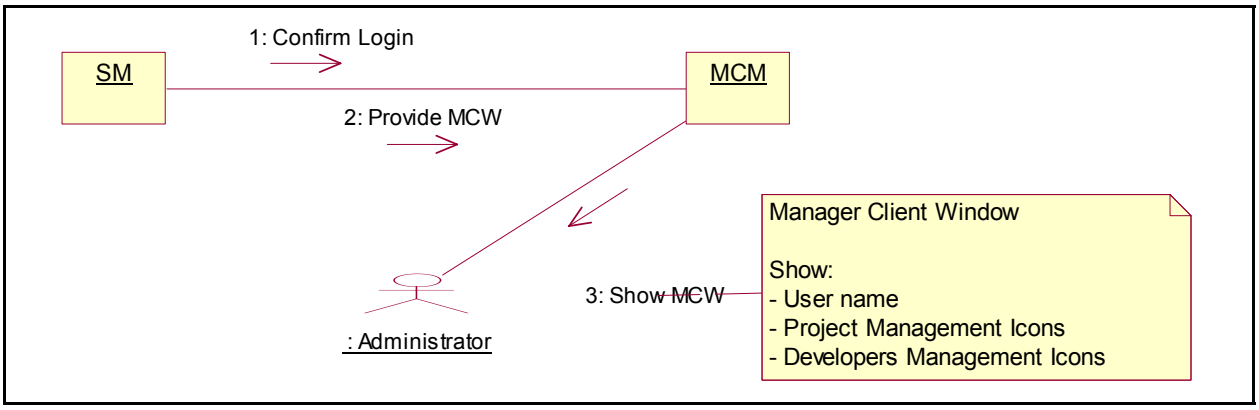

Figure 35 : Collaboration Diagram : Show TMT Window (Administrator)

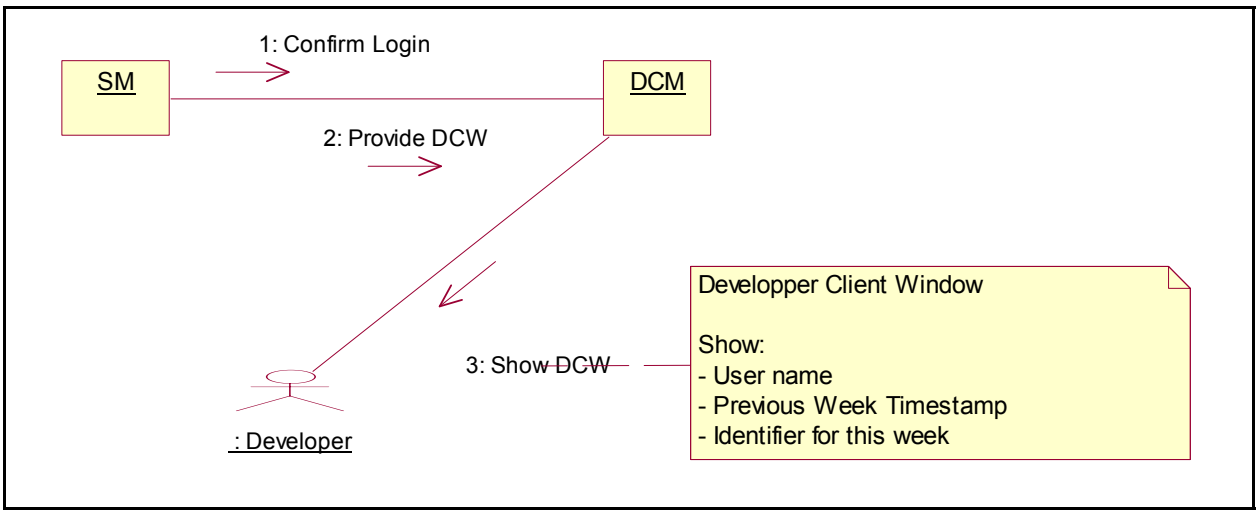

Figure 36 : Collaboration Diagram : Show TMT Window (Developer)

8.4 Participating Objects

The following objects collaborate and define the Use-Case < Show TMT Window> :

SM	**This object interacts with the Database and determines if the user is an Administrator or a Developer**
MCM	**This object interacts with the SM in order to display the TMT client window to the user (Administrator)**
DCM	**This object interacts with the SM in order to display the TMT client window to the user (Developer)**

8.5 Object Diagram

The following Object Diagram shows the relations and constraints between Classes and Objects involved in the Use-Case.

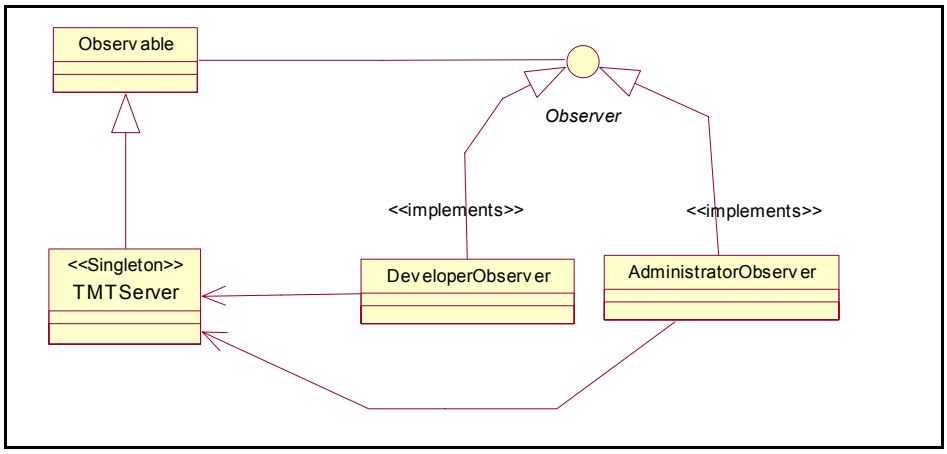

Figure 37 : Object Diagrams : Show TMT Window

9. USE CASE < Close TMT Window >

9.1 Brief Description

This Use-Case defines how the TMT Window is closed upon logging out.

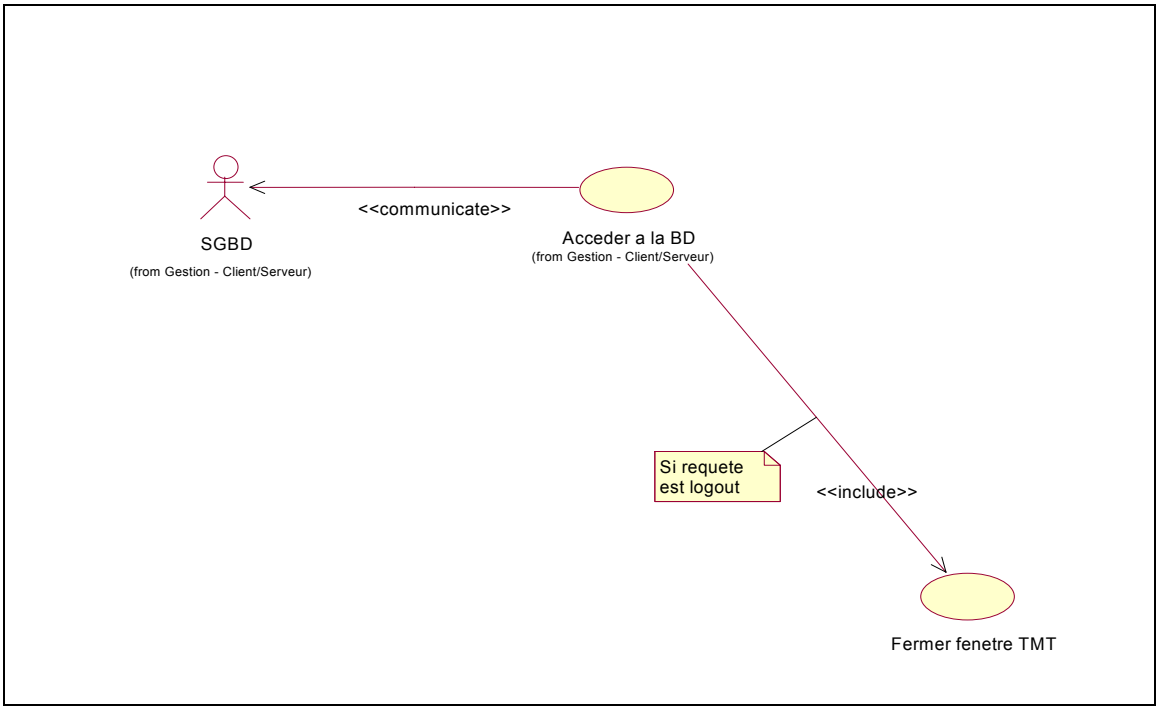

Figure 38 : Close TMT Window

9.2 Flow Events

After a logout query has been accepted and validated by the SM, the Client Modules (DCM or MCM) close the TMT client windows.

9.3 Interaction Diagrams

- **The SM confirms the Logout query**
- **The MCM or DCM closes the MCW or DCW (Manager or Developer Client Window)**

9.3.1 Sequence Diagrams

These Sequence Diagrams show Actors and Objects messages exchange in the Use-Case <Close TMT Window>.

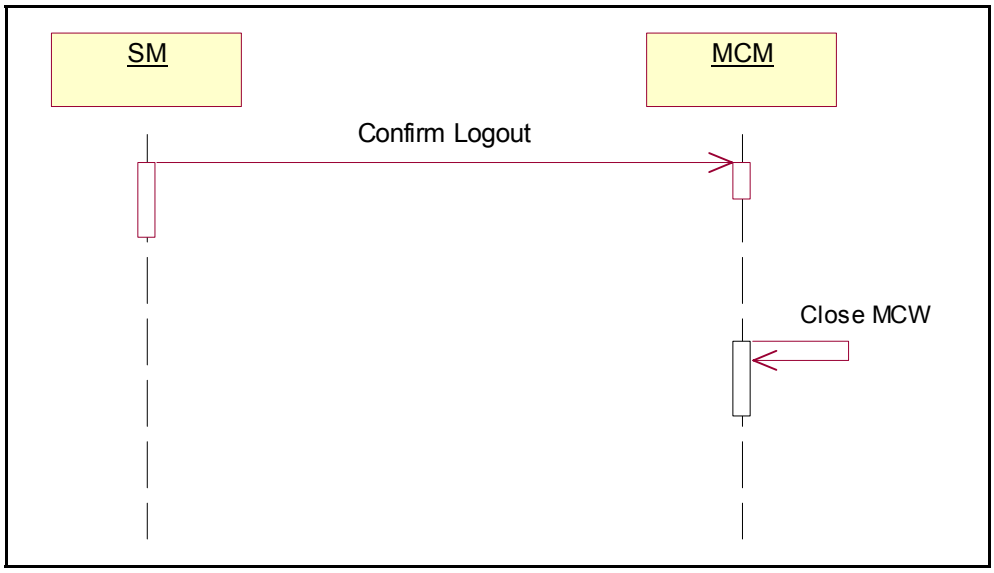

Figure 39 : Sequence Diagram : Close TMT Window (Administrator)

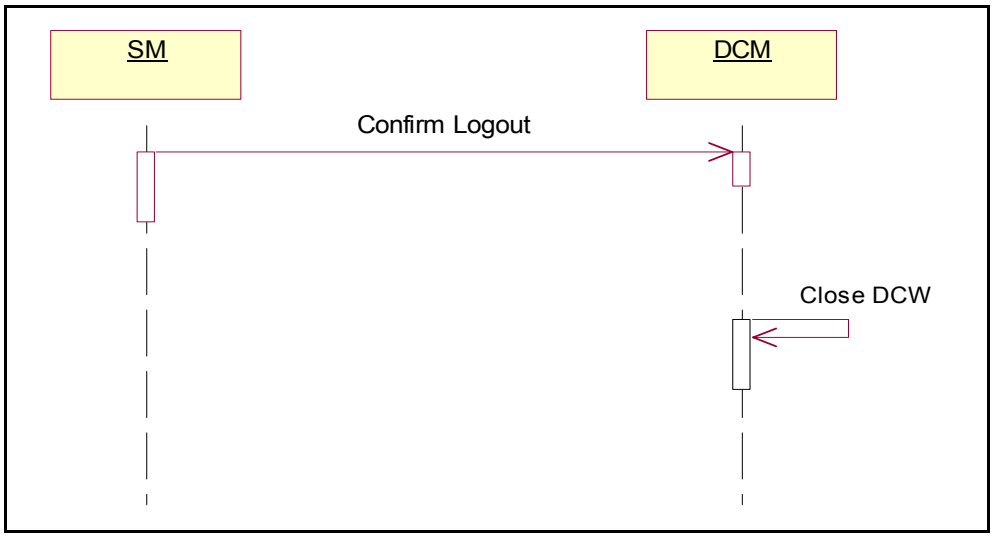

Figure 40 : Sequence Diagram : Close TMT Window (Developer)

9.3.2 Collaboration Diagrams

This Collaboration Diagram shows the static structure of the Use-Case <Close TMT Window>.

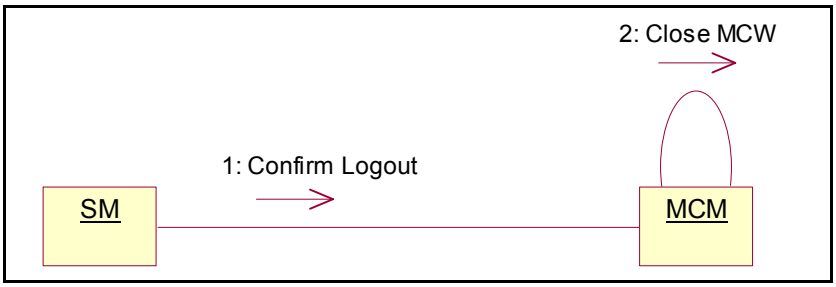

Figure 41 : Collaboration Diagram : Close TMT Window (Administrator)

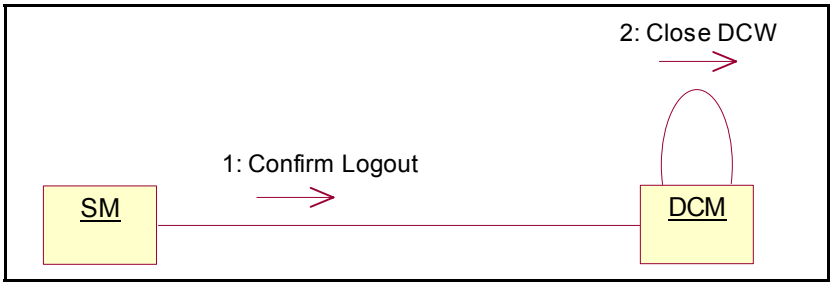

Figure 42 : Collaboration Diagram : Close TMT Window (Developer)

9.4 Participating Objects

The following objects collaborate and define the Use-Case < Close TMT Window> :

SM	**This object interacts with the Database and determines if the user is an Administrator or a Developer**
MCM	**This object interacts with the SM in order to close the TMT client window (Administrator)**
DCM	**This object interacts with the SM in order to close the TMT client window (Developer)**

9.5 Object Diagram

The following Object Diagram shows the relations and constraints between Classes and Objects involved in the Use-Case.

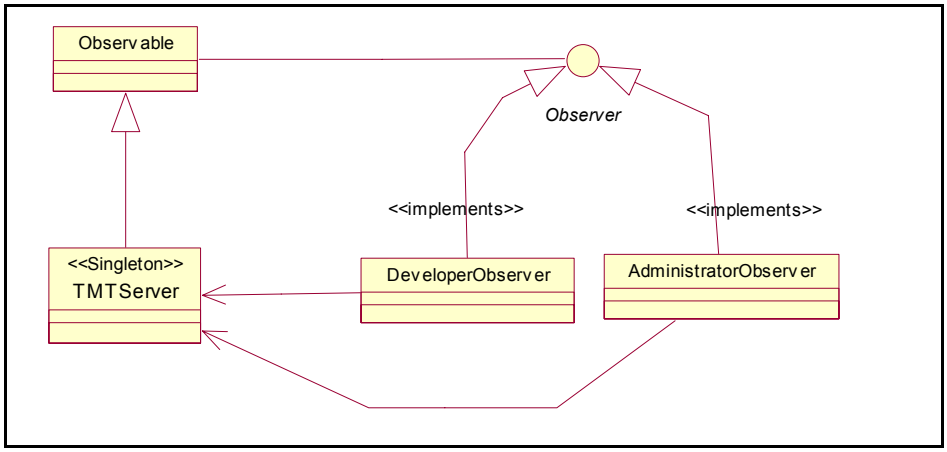

Figure 43 : Object Diagrams : Close TMT Window