



National University Of Computer and Emerging Sciences



OpenBravo - Alerts Subscription

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Table of Contents

Abstract.....	8
Introduction.....	9
Goals and objectives.....	10
Scope of the project.....	10
Literature Survey.....	10
System Requirements.....	12
1.1 Functional Requirement.....	12
1.2 Non-Functional Requirements.....	26
1.3 Hardware and Software Requirements.....	27
1.3.1 Hardware Requirements.....	27
1.3.2 Software Requirements.....	27
Detailed Design and Architecture.....	28
Test Plan and Test cases.....	30
1.4 Scope of Testing.....	30
1.5 Test Plan Strategy.....	30
1.5.1 Unit Testing.....	31
1.5.2 Functional Testing.....	31
1.5.3 Integration Testing.....	31
1.6 Test Environment.....	32
1.7 Test Results.....	33
References.....	38
Glossary.....	39

List of Tables

List of Figures

Figure 1 System Architecture Diagram Alerts.....	11
Figure 2 Subscription through SMS(Sample Message).....	25

Abstract

The project is part of a research initiative being conducted at SERC to study and understand the open-source development processes and incorporate them in the dissemination of Software Engineering Education. This has the potential of producing better software engineers who are better trained in professional development through hands-on experience of working on real-life software applications.

To this effect we are participating in the development of Openbravo (<http://www.openbravo.com>).

Openbravo is an open-source ERP system for small and medium size enterprises, providing an integrated approach for managing their businesses. Openbravo provides a rich feature-set including but not limited to production and procurement management, inventory control, centralized sales management, financial planning and control and basic reporting and analysis tools; thus all the capabilities necessary to manage daily operations, optimize business processes and improve customer satisfaction. Openbravo is a web-based solution built using Java Servlets Technology.

The Modules on which we worked during the Project are described below. The practices like reverse engineering the application, building an understanding of the domain and then participation in the actual development through understanding the actual coding principle of Openbravo ERP and enhancements in the application were all performed on these modules.

Openbravo has a functionality of sending alerts through email and SMS. Alerts are the way Openbravo ERP informs users about virtually any event that happens in the system. Through this way, users are able to get updated to the information. But the problem occurs when user gets those alerts also in which he has no interest or he does not want to get. So he might need a way to get only those alerts in which he is interested and avoid others.

This project is about subscription and unsubscription of Alerts so that users have the right to get desired alerts only. Users can subscribe/unsubscribe to alerts through web-based application, mobile application and by sending SMS. User will have a list of all authorized alerts on the web or on mobile application. User will select the required one and deselect the undesired alerts under the Alerts Subscription module. User will also be able to send SMS to the OpenBravo system to subscribe or unsubscribe alerts. Through this way users will get only desired alerts through email and SMS.

Introduction

Enterprise resource planning (ERP) is an enterprise-wide information system designed to coordinate all the resources, information, and activities needed to complete business processes such as order fulfillment or billing. An ERP system is based on a common database and a modular software design. The common database can allow every department of a business to store and retrieve information in real-time. The information should be reliable, accessible, and easily shared.

Openbravo an open source, web based interface where the user can keep track of all the activities in a company. Its modules include

- *Procurement management*
- *Production management*
- *Warehouse management*
- *Sales management*
- *Finance management.*

Openbravo ERP is now the leading fully functional, integrated web-based open source, professional ERP. Openbravo ERP has been specifically designed to help businesses improve their performance. Its functional coverage expands to all kinds of key areas. Openbravo ERP is for small and medium size enterprises, providing an integrated approach for managing their businesses. It provides a rich feature-set including production and procurement management, inventory control, centralized sales management, financial planning and control and basic reporting and analysis tools; thus all the capabilities necessary to manage daily operations, optimize business processes and improve customer satisfaction. Openbravo is a web-based solution built using Java Servlets Technology.

Openbravo has a functionality of sending alerts through email. Alerts are the way Openbravo ERP informs users about virtually any event that happens in the system.

This project is about subscription and unsubscription of Alerts through web, mobile application and through SMS

In this project we provide a filter or subscription system that user can subscribe alerts from the list of all authorize alerts because there will be some alerts that are less important for this user even user has not any concern with this type of alerts so users did not want to see these alerts in their notification box. There is section where user can see all the authorize alerts and select the alerts which they want to see in there notification box. Beside this, we also give option if they want to see these subscribe alerts on there mobile phone or not via SMS. And also by mobile phone user can select that which alerts they want to subscribe so that they can get instant notification via on there mobile phone via SMS. Also they can unsubscribe these alerts from mobile phone as well as from web interface.

Goals and objectives

The project is part of a research initiative being conducted at SERC to study and understand the open-source development processes and incorporate them in the dissemination of Software Engineering Education. This has the potential of producing better software engineers who are better trained in professional development through hands-on experience of working on real-life software applications.

To this effect we are participating in the development of Openbravo (<http://www.openbravo.com>) – an Opensource ERP system.

The nature of participation initially involved reverse engineering the application, building an understanding of the domain and then participation in the actual development through enhancements in the application. Hence the goals and objectives of this project to learn the software engineering practices by working on Opensource projects and add some modules to these projects so that we could get some experience in working on an industrial-strength project.

To achieve our goals we choose Openbravo ERP system and add some features in this system. The feature that we add is about subscription and unsubscription of Alerts so that users have the right to get desired alerts only. Users can subscribe/unsubscribe to alerts through web-based application, mobile application and by sending SMS. User will have a list of all authorized alerts on the web or on mobile application. User will select the required one and deselect the undesired alerts under the Alerts Subscription module. User will also be able to send SMS to the OpenBravo system to subscribe or unsubscribe alerts. Through this way users will get only desired alerts through email and SMS

Scope of the project

This document contains the details of the features and corresponding non-functional requirements of adding subscription and unsubscription of Alerts service in Openbravo and enlists the conditions (assumptions) which are considered must for the enhancement to work as it is mentioned in this document. This provides all the details about how the user can interact with the system and the responses by the system and also contain the GUIs which show how the user will be interacting with the system.

It also contains the details of the features and corresponding non-functional requirement of the mobile enhancement of Openbravo which is the SMS Alerts, and enlists the conditions (assumptions) which are considered must for the mobile enhancement to work as it is mentioned in this document.

Literature Survey

As we mention earlier in goals and objective section that this is a research project under SERC to teach student how to work on a real time industrial project by following software engineering practices, so 05 batch was also part of this project, a team from this batch also work on a part of SMS alert system.

They made an architecture through which all alerts are sent to the user by SMS. They use an Opensource software SMS gateway Kannel to send SMS to user.

We use these configurations and apply some modifications so that we can use according to our own requirements. So work of Hafeez-ur-Rehman and Nida Shakeel (both were from batch 05) really help us.

The architecture that they made is given below.

System Architecture Diagram

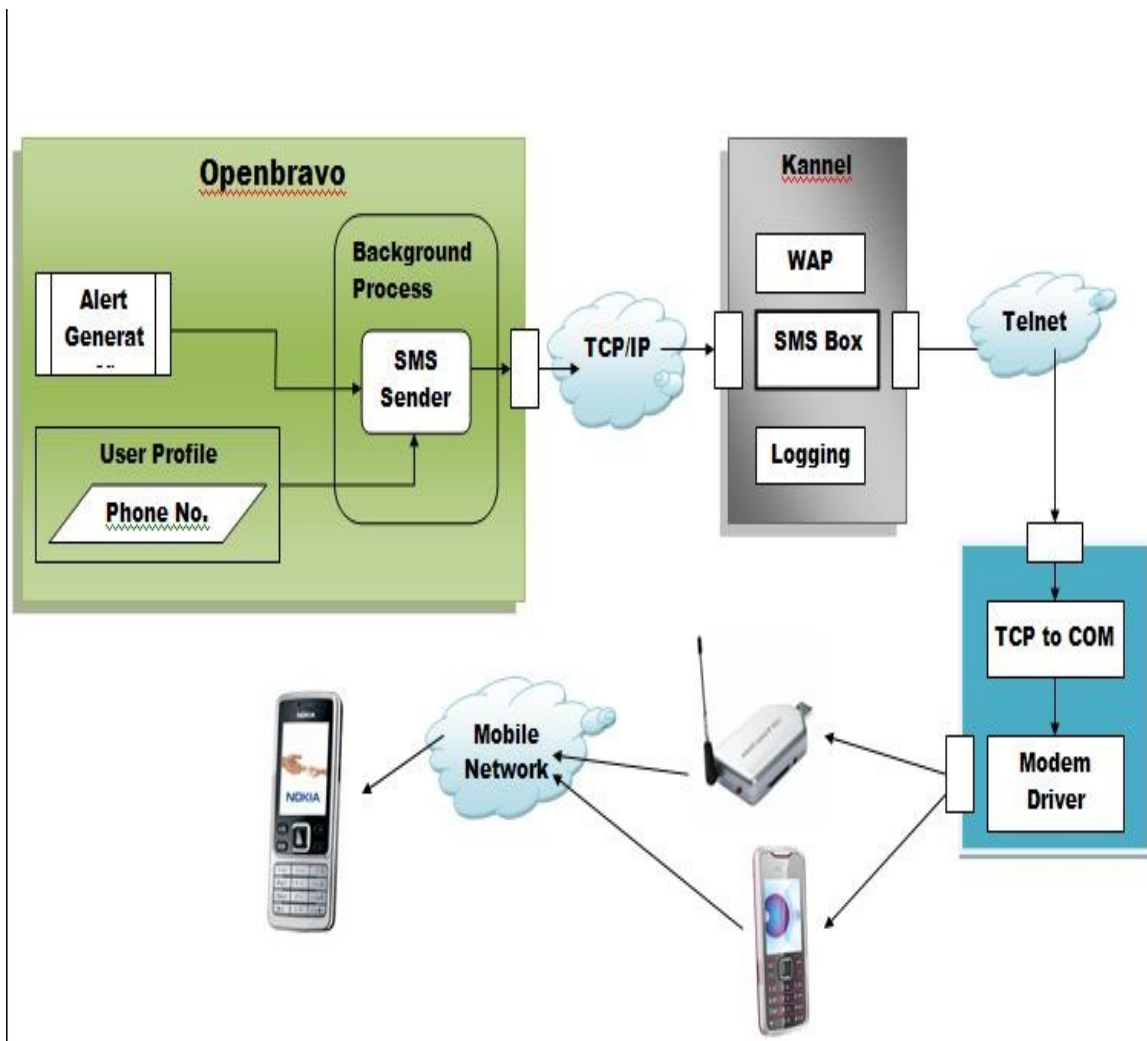


Figure 1 System Architecture Diagram Alerts

System Requirements

Enhancement in the application “Openbravo”, proposed by us was the implementation of the **Alerts Subscription** facility which sends only those alerts as SMS or Email which user wants to receive.

1.1 Functional Requirement

SCENARIO ONE: ALERTS SUBSCRIPTION THROUGH WEB APPLICATION

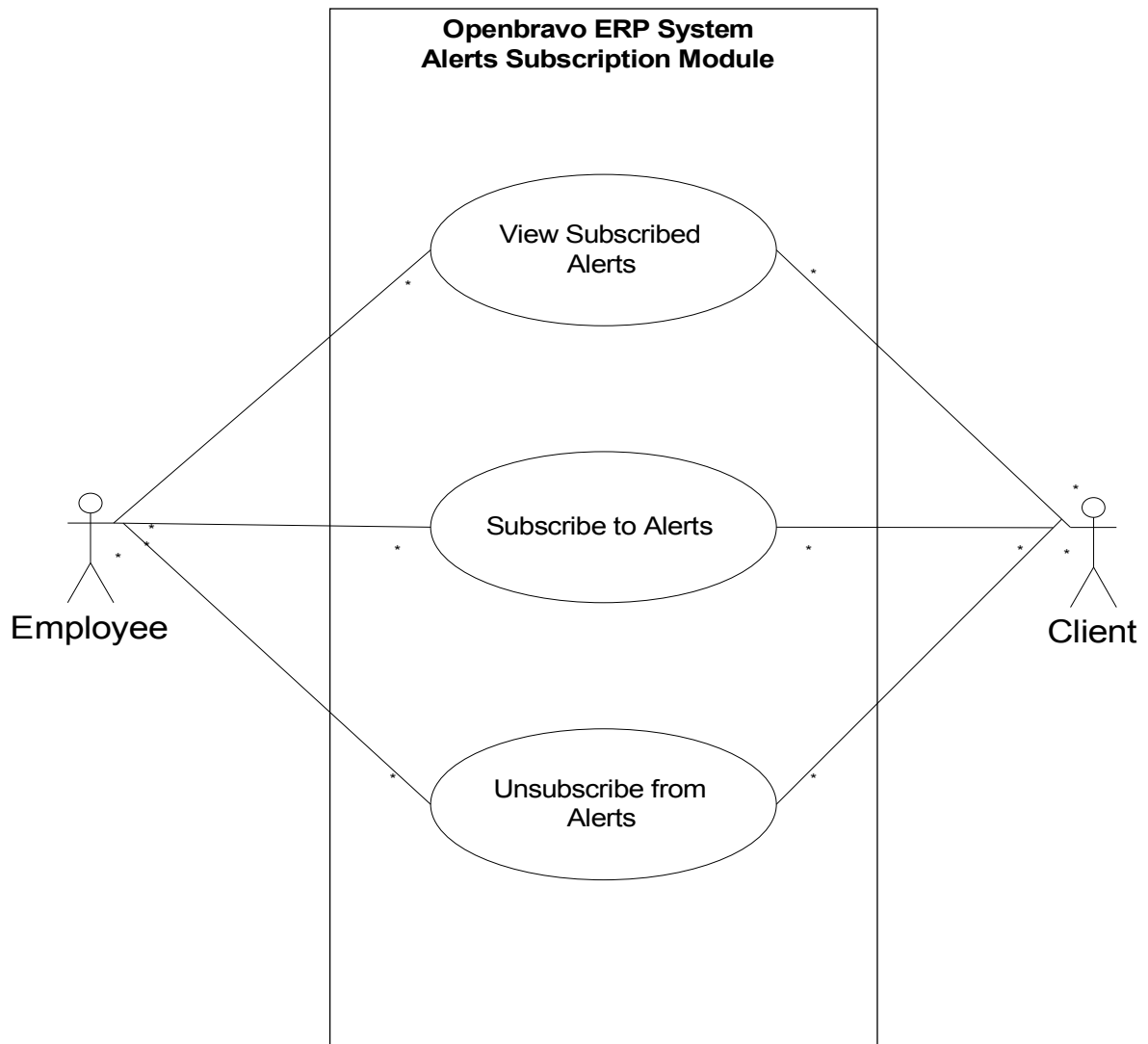


Figure 2 Alerts Subscription through Web

<Use case Id: 01 > View Subscribed Alerts	
Actors: <i>Employees, Clients</i>	
Description: <i>This use case provides the Employees and clients with the functionality to view his/her authorized subscribed alerts.</i>	
Use case Id:	<i>01</i>
Pre-condition:	<ul style="list-style-type: none"> ▪ <i>Employees and clients should be logged into the system.</i> ▪ <i>Employees and clients should be authorized to use the</i>

<i>Subscription facility.</i>		
Main Flow		
Step #	Action	Software Reaction
1.	Employees and clients clicks on the “Alerts” icon in the left panel.	A new window will appear in the right pane which will be showing a dropdown containing all the alert rules which the Employees and clients have already subscribed.
2.	User will select the alert rule and press the “Search” button.	Information about the selected alert rule will be shown below.
Alternate Scenarios:		
1a: If the Employees and clients are getting login to the system for the first time, then they will be shown all authorized alerts.		
Post Conditions		
1.	Employees and clients will now be able to view all the alerts for which he\she has been subscribed.	
Use Case Cross referenced	N/A	
User interface reference	N/A	

<Use case Id: 02> Subscribe To Alert
Actors: <i>Employees, Clients</i>
Description: <i>This use case provides the Employees and Clients with the functionality to subscribe to alerts to which he/she has been authorized. In this way the Employees and clients will be able to receive only desired alerts on their mobile devices.</i>

Use case Id:	02	
Pre-condition:	<ul style="list-style-type: none"> ▪ <i>Employees and clients should be logged into the system.</i> ▪ <i>Employees and clients should be authorized to use the Subscription facility.</i> 	
Main Flow		
Step#	Action	Software Reaction
1.	The user will click on the “Alert Subscription” tab in the left pane of the window.	The table containing all the authorized alerts with the option for ‘SMS’ and ‘Email’, will be shown in the window.
2.	The user will check the alerts which he wants to subscribe in the first two columns. First column is for subscription to get alerts through SMS and second is to get alerts through Email. (by default all the check boxes will be marked)	The system will check the alerts according to the user’s input.
3.	The user will click on the SAVE button at the bottom of the window to save the subscription of the alerts to the system.	System will update the user subscription information in the database and a success message will be shown to the user.
Alternate Scenarios:		
<p>2a: If the user selects the option of sending the alert through email or SMS and his/her email or mobile number is not available in the system, the system will send an email to the user to provide the required information to the system.</p>		
Post Conditions		
1.	The user has been subscribed to the desired alerts for each specific method (email or SMS).	
Use Case Cross referenced	Use Case: 01	
User Interface reference	N/A	

<Use case Id: 03> Unsubscribe from Alert
Actors: <i>Employees, Clients</i>
Description: <i>This use case provides the Employees and Clients with the functionality to unsubscribe from alerts to which he/she has been authorized. In this way the Employees and clients will be able to avoid undesired alerts on their mobile devices.</i>

Use case Id:	03	
Pre-condition:	<ul style="list-style-type: none"> ▪ <i>Employees and clients should be logged into the system.</i> ▪ <i>Employees and clients should be authorized to use the Subscription facility.</i> 	
Main Flow		
Step#	Action	Software Reaction
1.	The user will click on the “Alert Subscription” tab in the left pane of the window.	The table containing all the authorized alerts with the option for ‘SMS’ and ‘Email’, will be shown in the window.
2.	The user will uncheck the alerts which he wants to unsubscribe in the first two columns. First column is for subscription to get alerts through SMS and second is to get alerts through Email. (by default all the check boxes will be marked)	The system will uncheck the alerts according to the user’s input.
3.	The user will click on the SAVE button at the bottom of the window to save the un-subscription of the alerts to the system.	System will update the user subscription information in the database and a success message will be shown to the user.
Alternate Scenarios:		
<p>2a: If the user selects the option of sending the alert through email or SMS and his/her email or mobile number is not available in the system, the system will send an email to the user to provide the required information to the system.</p>		
Post Conditions		
1.	The user has been subscribed to the desired alerts and unsubscribed to the undesired alerts for specific method (email or SMS).	
Use Case Cross referenced	Use Case: 01	
User Interface reference	N/A	

SCENARIO TWO: ALERTS SUBSCRIPTION THROUGH MOBILE INTERFACE:

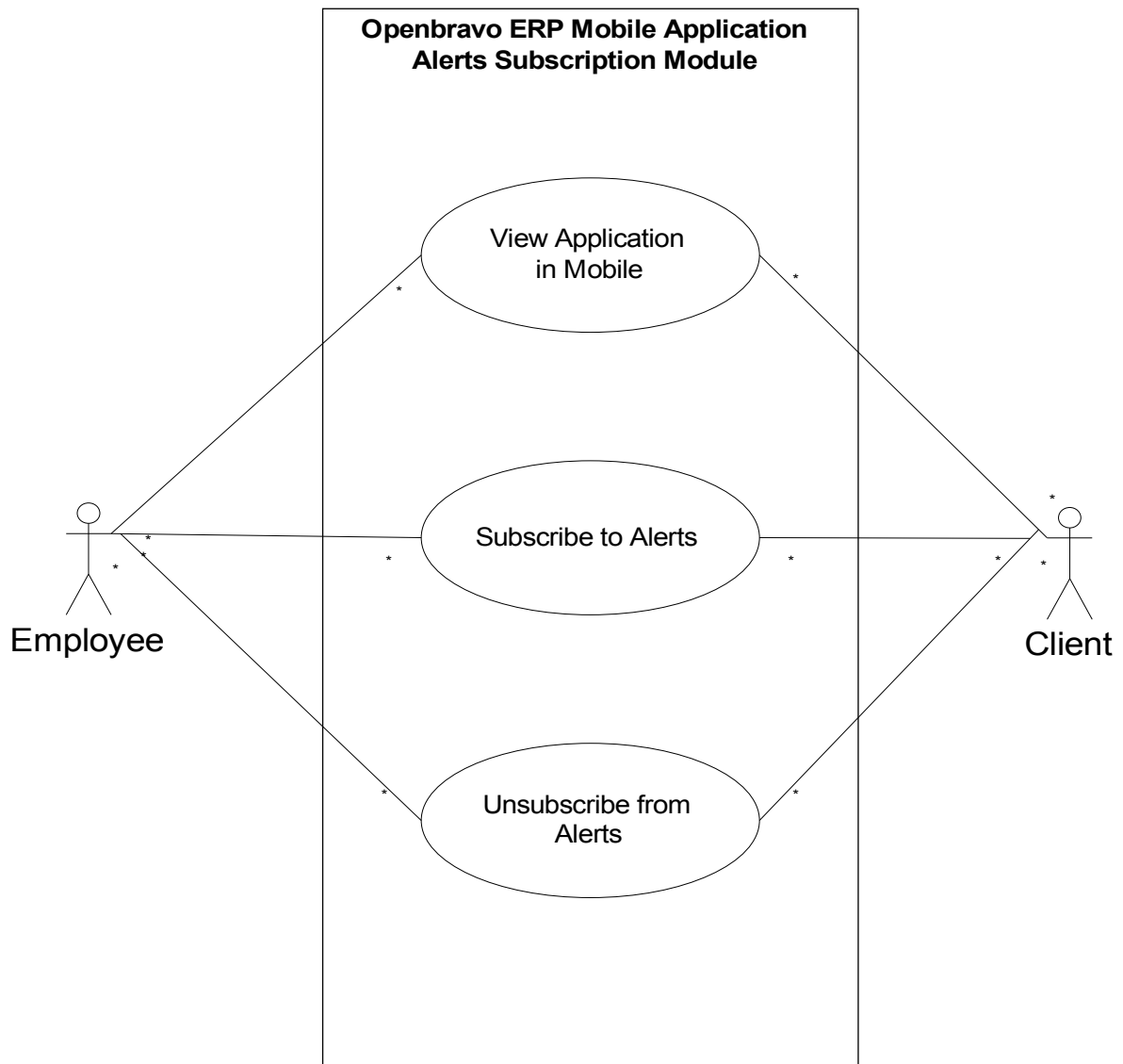


Figure 3 Alerts Subscription through Mobile Application

<Use case Id: 04> View Mobile Application		
Actors: <i>Employees, Client</i>		
Description: <i>This use case opens up the Alerts Subscription module in the application already installed in the mobile phone of the user and provides the functionality to view the authorized alerts list through a mobile device.</i>		
Use case Id:	<i>04</i>	
Pre-condition:	<ul style="list-style-type: none"> ▪ <i>A User Profile should exist, which contains all the details of a particular user (mobile number, email id, etc).</i> ▪ <i>User should have the Openbravo Subscription Alerts Application installed on his/her phone.</i> 	
Scenarios:		
Step#	Action	Software Reaction
1.	The user opens the folder in mobile device where the Openbravo mobile application has been installed.	The mobile device will open up Mobile Application interface which will be showing a list containing the alerts which the user has subscribed and can subscribe/unsubscribe to.
Alternate Scenarios:		
N/A		
Post Conditions		
1.	The user will be able to view alerts and subscribe/unsubscribe the alerts.	
Use Case Cross referenced	N/A	
User Interface reference	<i>GUI : 001</i>	

<Use case Id: 05 > Subscribe To Alert		
Actors: <i>Employees, Clients</i>		
Description: <i>This use case provides the user with the functionality to subscribe to alerts which are authorized by the Openbravo mobile Application. In this way the user will be able to receive the required alerts on his/her mobile device.</i>		
Use case Id:	05	
Pre-condition:	<ul style="list-style-type: none"> ▪ <i>The Use Case 04 is executed</i> 	
Main Flow		
Step#	Action	Software Reaction
1.	The user clicks on the desired alerts from the list displayed by checking into the check Boxes for alerts. User can select one or multiple alerts.	The mobile device will mark the selected alerts.
2.	User clicks on the “SAVE” option in the menu button to update the information in the system.	The mobile device will save the selected alerts for the user in the SMS Alert database by sending the information to Openbravo system.
Alternate Scenarios:		
2a: User clicks on the “VIEW” option in the menu button to view the selected Alert rules.		
2b: If the user has selected no alert from the list the mobile device will prompt a warning message “Do you want to continue? You have not subscribed for any alert. Click ‘Yes’ to continue and ‘No’ to subscribe”.		
Post Conditions		
1.	The Openbravo system will send a confirmation message on the mobile device “You have subscribed for the following alerts”.	
Use Case Cross referenced	<i>Use Case:06</i>	
User Interface reference	<i>GUI: 001</i>	

<Use case Id: 06 > Unsubscribe From Alert		
Actors: <i>Employees, Clients</i>		
Description: <i>This use case provides the user with the functionality to unsubscribe to alerts which are authorized by the Openbravo mobile Application. In this way the user will be able to avoid the reception undesired alerts on his/her mobile device.</i>		
Use case Id:	06	
Pre-condition:	<ul style="list-style-type: none"> ▪ <i>The Use Case 04 is executed</i> 	
Main Flow		
Step#	Action	Software Reaction
1.	The user unchecks the undesired alerts from the list displaying all the authorized alerts. User can deselect one or multiple alerts.	The mobile device will unmark the deselected alerts.
2.	User clicks on the "SAVE" option in the menu button to update the information in the system.	The mobile device will save the information for deselected alerts for the user in the SMS Alert database by sending the information to Openbravo system.
Alternate Scenarios:		
2a: User clicks on the "VIEW" option in the menu button to view the selected Alert rules.		
2b: If the user has deselected no alert from the list the mobile device will prompt a warning message "Do you want to continue? You have not subscribed for any alert. Click 'Yes' to continue and 'No' to subscribe".		
Post Conditions		
1.	The Openbravo system will send a confirmation message on the mobile device "You have subscribed for the following alerts".	
Use Case Cross referenced	<i>Use Case:06</i>	
User Interface reference	<i>GUI: 001</i>	

SCENARIO THREE: MOBILE ALERTS THROUGH SMS:

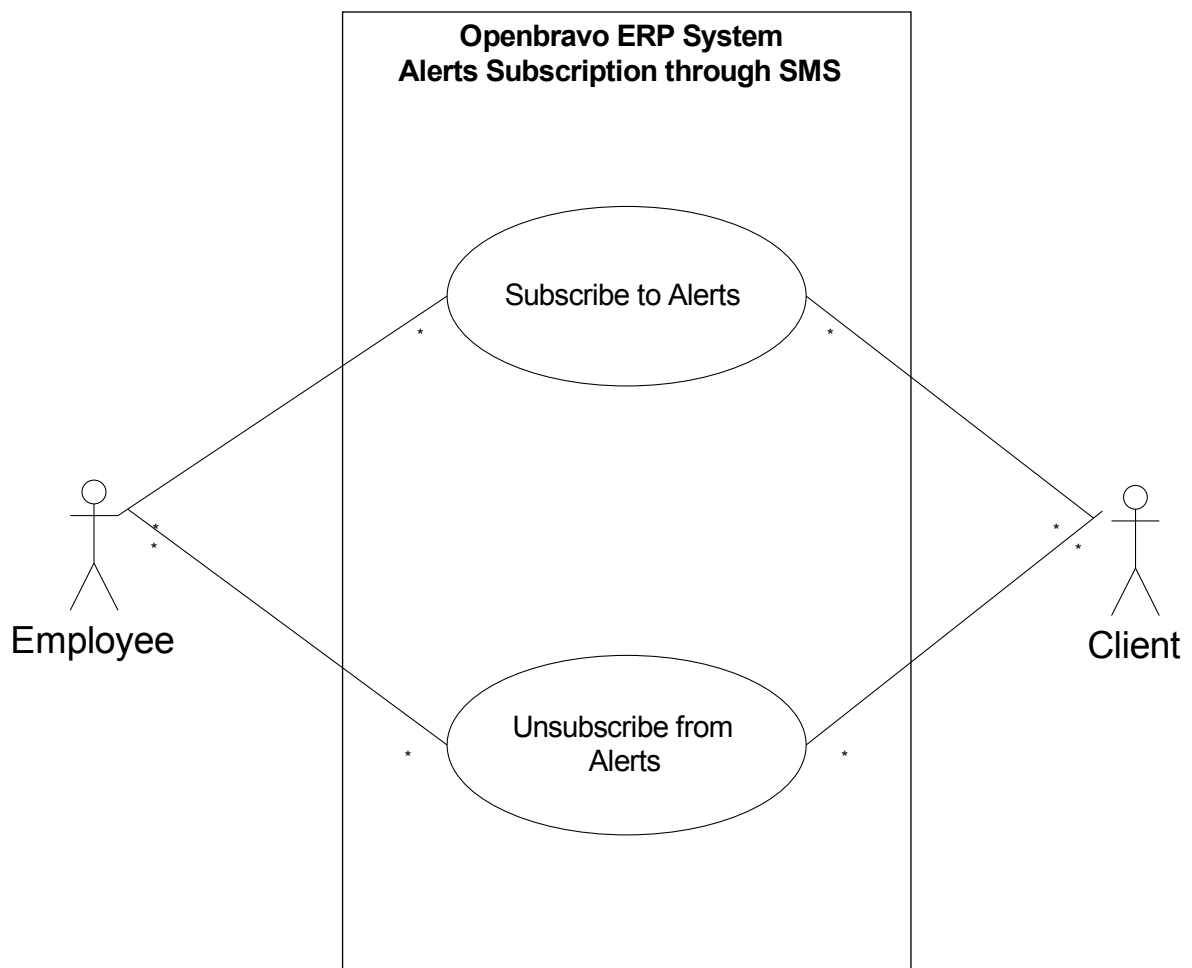



Figure 4 Alerts Subscription through SMS

<Use case Id: 07> Subscribing To Alert		
Actors: <i>Employees, Clients</i>		
Description: <i>This use case provides the User with the functionality to subscribe desired alerts by sending an SMS to Openbravo system. In this way the user will be able to receive alerts on his/her mobile device in case of emergency situations when the Internet isn't available or the user is not near the system.</i>		
Use case Id:	07	
Pre-condition:	<ul style="list-style-type: none"> ▪ <i>User should be authorized to use the SMS Alert facility.</i> ▪ <i>User will also know the service number as to where to send the message and the code of the alert rule.</i> 	
Main Flow		
Step #	Action	Software Reaction
1.	User uses the SMS facility from his/her Mobile phone to type a message <i>SUB <Alert Identification Number></i> In order to request for subscription	
2.	The user Sends the SMS to "Openbravo SMS Service Number"	Mobile device will send a message to the Openbravo System. The Openbravo System will verify the information and update it in the system.
Alternate Scenarios:		
2a: If the Syntax of the Text message is incorrect the System (OpenBravo) will send an error message "Unrecognized Command", and the user will have to follow the Step#1of the Main Flow again.		
2b: If the User by mistake types an incorrect Alert Identification Number, the System (OpenBravo) will send an error message " Invalid Identification", and the user will have to flow Step#1of the Main Flow again.		
2c: If the User resends the requests for the subscription of the already subscribed alert the system (OpenBravo) will send an error message "Request Already Posted".		
Post Conditions		
1.	The Openbravo system will send a confirmation message on the mobile device "You have subscribed for the following alert".	
Use Case Cross referenced	N/A	
User Interface reference	GUI: 002	

<Use case Id: 08> Unsubscribe From Alert		
Actors: <i>Employees, Clients</i>		
Description: <i>This use case provides the User with the functionality to unsubscribe undesired alerts by sending an SMS to Openbravo system. In this way the user will not be able to receive alerts on his/her mobile which he doesn't want.</i>		
Use case Id:	08	
Pre-condition:	<ul style="list-style-type: none"> ▪ <i>User should be authorized to use the SMS Alert facility.</i> ▪ <i>User will also know the service number as to where to send the message and the code of the alert rule.</i> 	
Main Flow		
Step #	Action	Software Reaction
1.	User uses the SMS facility from his/her Mobile phone to type a message <i>USUB <Alert Identification Number></i> In order to request for subscription	
2.	The user Sends the SMS to "Openbravo SMS Service Number"	Mobile device will send a message to the Openbravo System. The Openbravo System will verify the information and update it in the system.
Alternate Scenarios:		
<p>2a: If the Syntax of the Text message is incorrect the System (OpenBravo) will send an error message "Unrecognized Command", and the user will have to flow Step#1of the Main Flow again.</p> <p>2b: If the User by mistake types an incorrect Alert Identification Number, the System (OpenBravo) will send an error message " Invalid Identification", and the user will have to flow Step#1of the Main Flow again.</p> <p>2c: If the User resends the requests for the un-subscription of the already unsubscribed alert the system (OpenBravo) will send an error message "Request Already Posted".</p>		
Post Conditions		
1.	The Openbravo system will send a confirmation message on the mobile device "You have been unsubscribed for the following alert".	
Use Case Cross referenced	N/A	
User Interface reference	N/A	

Graphical User Interfaces

<01: Alerts Subscription/Un-Subscription using Mobile Interface>	
Interface Id.	001
Use case Reference	Use Case 05 , Use Case 06
Snapshot	
	
Figure 5 Mobile Application Interface	
Data Dictionary: Refer to Appendix	

<02: Subscription through SMS>	
Interface Id.	002
Use case Reference	Use Case 07
Snapshot	
	
Figure 2 Subscription through SMS(Sample Message)	
Data Dictionary: Refer to Appendix	

1.2 Non-Functional Requirements

NFR01: Availability

NFR01-01	This web based application will be available 24hrs a day.
NFR01-02	User may access it from any part of the world
NFR01-03	Internet connectivity on mobile device (GPRS, WAP or Wi-Fi etc) for installing and subscribing the mobile application is needed
NFR01-04	A working Computer with installed Windows XP.

NFR02: Security

NFR02-01	Every SMS that is generated from the Openbravo ERP shall be logged. Its time, sender, content, recipient shall also be logged.
NFR02-02	Whenever a user make changes to the alerts (subscription) information, its time, content shall also be logged.

NFR03: Usability

NFR03-01	Openbravo SMS Alerts Subscription functionality will be incorporated into the Openbravo ERP as a separate module using the Openbravo Modularity feature.
NFR03-02	Coding conventions and standards for the Openbravo will be followed according to the coding guidelines available on Openbravo Wikipedia (wiki.openbravo.com)

1.3 Hardware and Software Requirements

1.3.1 Hardware Requirements

- i. 1 GB RAM
- ii. 40 GB Hard disk
- iii. Intel Pentium 4
- iv. Processor speed: 1.76 GHz
- v. GSM Modem

1.3.2 Software Requirements

- i. Apache Tomcat
- ii. Ant
- iii. Windows XP
- iv. JDK 1.6
- v. Mantis
- vi. Postgres SQL
- vii. Eclipse Ganymede IDE
- viii. Tortoise SVN
- ix. Mozilla Firefox
- x. KANNEL

Detailed Design and Architecture

OBJECT MODEL DIAGRAM

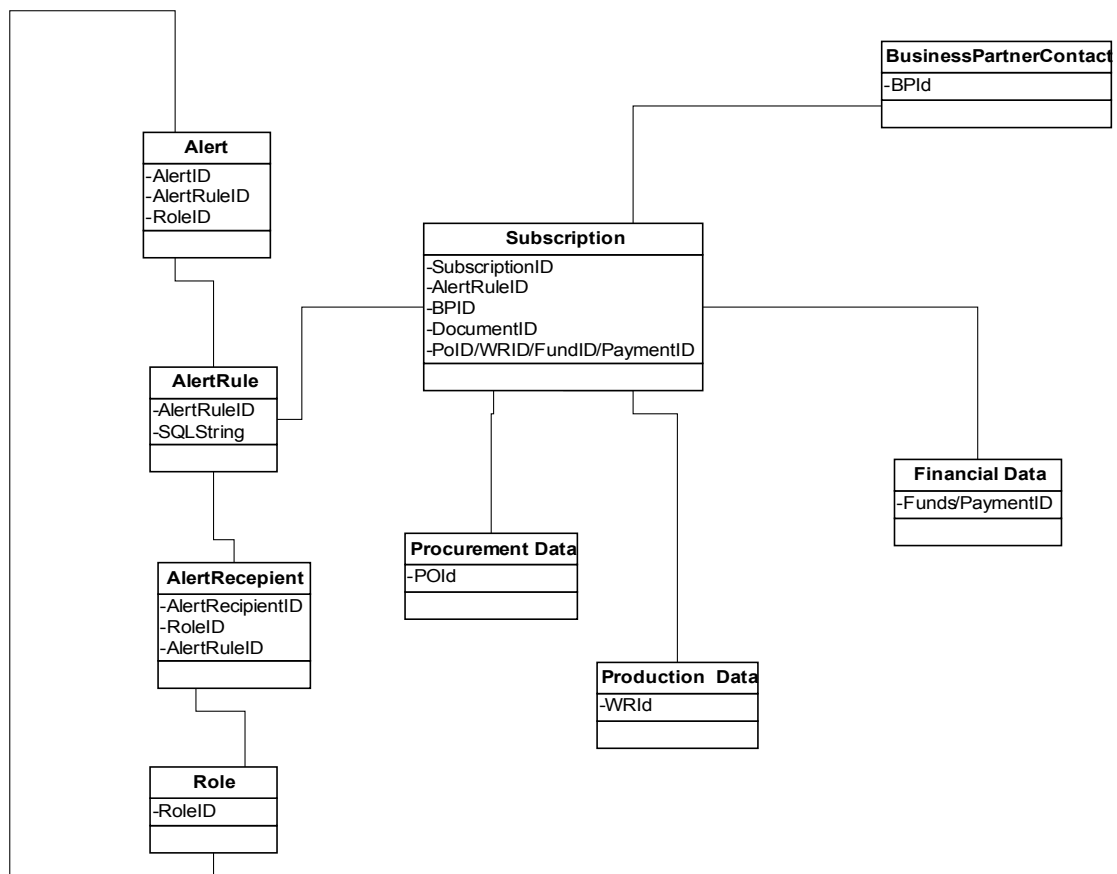


Figure 7 Alerts Subscription Object Model

SMS-ALERT DESIGN DIAGRAM

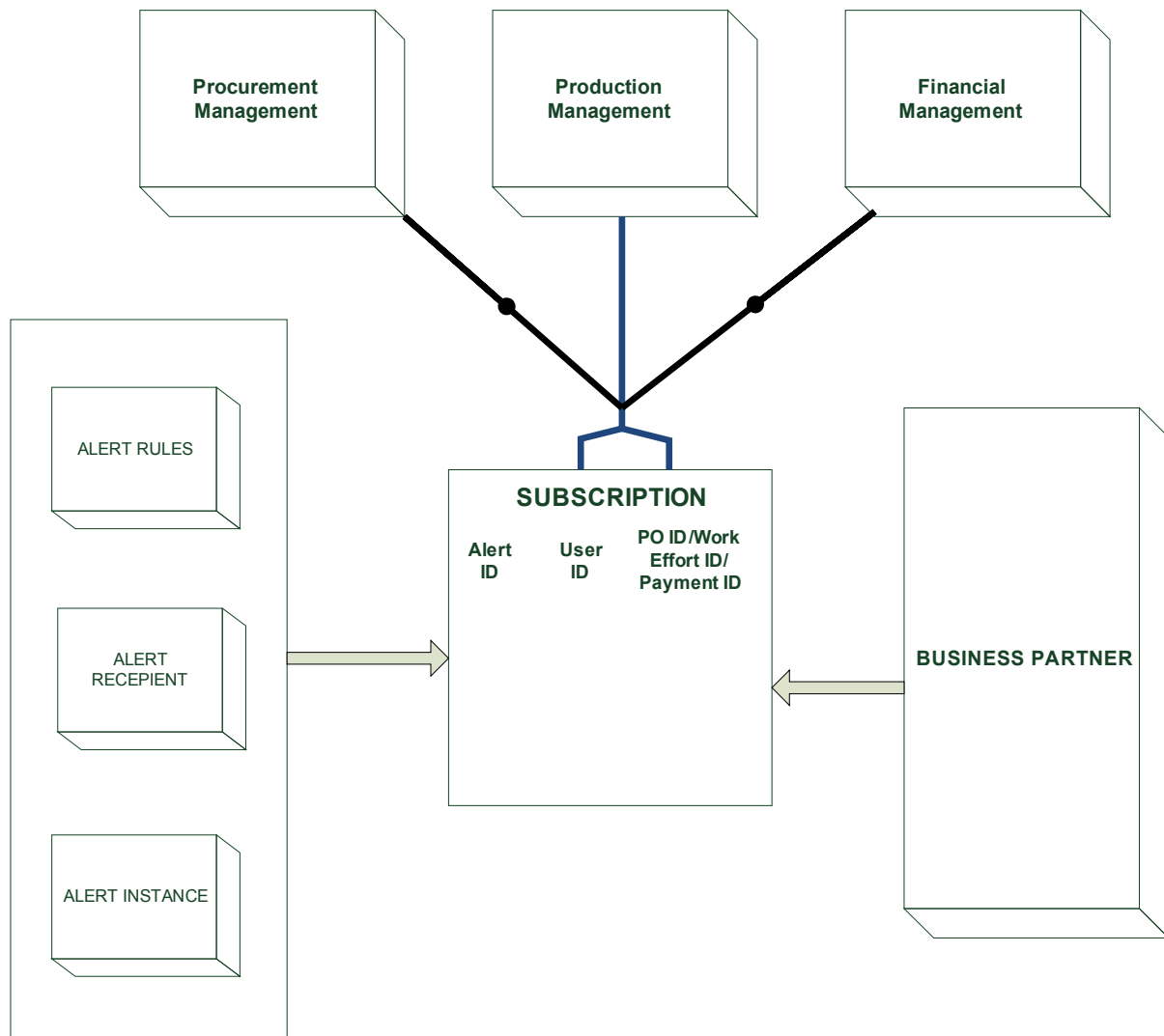


Figure 8 Alerts Subscription Design

Test Plan and Test cases

1.4 Scope of Testing

Testing must ensure that:

- User can subscribe the alerts.
- User can unsubscribe the alerts.
- User is able to receive the subscribed alerts.
- User is not getting the unsubscribed alerts.

1.5 Test Plan Strategy

The objective of this test plan is to ensure that there is a uniform understanding among anyone who reads the test plan, regarding the test methodology as well as the number of resources and schedules being utilized to execute the tests.

Since the development approach being used is Test Driven Development, team would first write the test cases. Through these test cases, unit testing will be performed by the team. With the completion of unit testing, SQA team would start doing the functional testing using same test cases to test the complete functionality of the system built. After all defects have been uncovered and fixed, components will be integrated together and the 'interfacing' will be verified using integration testing. System testing is NOT possible because the Openbravo community doesn't allow the project team to deploy the code in actual environment.

Unit testing will be a white box testing done manually. Functional testing will be conducted towards the end of the development phase. Functional and Integration testing are going to be manual black box testing.

The figure below gives a simple test plan process.

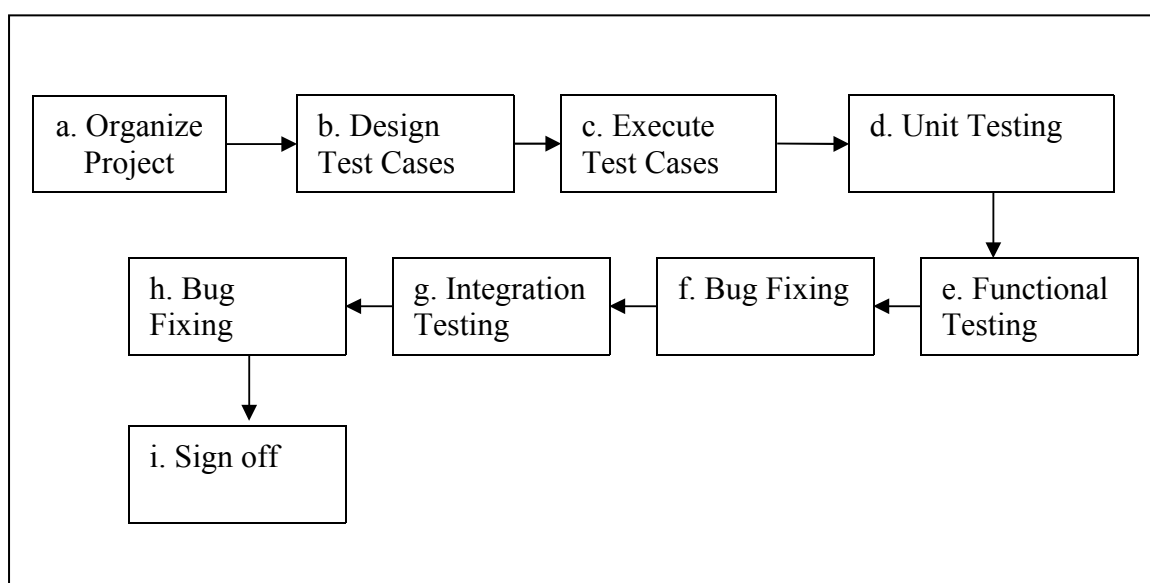


Figure 9 Test Plan**1.5.1 Unit Testing****Definition:**

Unit testing is a process of testing the individual subprograms, subroutines, or procedures in a program. That is, rather than initially testing the program as a whole, testing is first focused on the smaller building blocks of the program.

Participants:

- Shahram Javed
- Farah Khalid

Methodology:

- a. Unit Test will be conducted by the developers

1.5.2 Functional Testing**Definition:**

Functionality of the developed application is completely tested. It verifies that the application supplies what the users need. It emulates user actions to ensure that execution paths operate correctly and the appropriate responses are returned for the given requests.

Participants

- Farooq Ahmad (Senior Research Officer)
- Shahram Javed (Team Member)
- Farah Khalid (Team Member)

Methodology:

- a. Developer will complete the Unit Testing
- b. After Unit Testing, team members along with SQA team would start the functional testing

1.5.3 Integration Testing**Definition:**

Integration testing is the phase of software testing in which individual software modules are combined and tested as a group. It is usually performed after unit and functional testing.

Participants

- Farooq Ahmad (Senior Research Officer)
- Shahram Javed (Team Member)
- Farah Khalid (Team Member)

Methodology:

- a) After Unit Testing and Functional Testing are done, testing of integrated components will start.
- b) Each component will be integrated one-by-one.

1.6 Test Environment

Testing will be done on a system having following specifications:

- i. 1 GB RAM
- ii. 40 GB Hard disk
- iii. Intel Pentium 4
- iv. Processor speed: 2.0 GHz

Software's to be used are:

- i. Apache Tomcat
- ii. Ant
- iii. Windows XP
- iv. JDK 1.6
- v. Mantis
- vi. Postgres SQL
- vii. Eclipse Ganymede IDE
- viii. Tortoise SVN
- ix. Mozilla Firefox
- x. Linux
- xi. KANNEL

Control Activities

Meetings are conducted between the Senior Research Officer and Team. During these meetings Team would give the updates on progress they have made with respect to the test schedule and the number of test cases executed.

A joint meeting is also held every two weeks in which Senior Research Officer and Team Members participate to collectively discuss the issues and find the resolution strategies.

Resources

- Shahram Javed
- Farah Khalid
- Farooq Ahmad

1.7 Test Results

TEST CASES FOR USE CASE ID 01								
Id	Use case	Author	Purpose	Module	Pre-Requisites	Environment	Sequence of Steps	Expected Output
1	View Subscribed Alerts	Shahram & Farah	To ensure that user is able to view the "Alert" Window in order to see the subscribed alerts only.	Alerts Subscription	User should be logged into the system in order to view the Alert tab in the left pane	Desktop System, Firefox 2.0, Windows XP.	User clicks on "Alerts" tab in the left pane.	An 'Alert' window displaying all the subscribed alerts should appear in the right pane.
2	View Subscribed Alerts	Shahram & Farah	To ensure that user having different roles can see the "Alert" tab to view subscribed alerts.	Alerts Subscription	User is logged in into the system with different roles.	Desktop System, Firefox 2.0, Windows XP.	User logs into the Openbravo account with a different roles.	"Alert" tab should be visible.
3	View Subscribed Alerts	Shahram & Farah	When the user views the "Alert" Window, for the first time, all the authorized alerts should appear (every alert would be subscribed by default).	Alerts Subscription	User should not have subscribed to or unsubscribed from any alerts before.	Desktop System, Firefox 2.0, Windows XP.	User clicks on "Alert" tab in the left pane.	An 'Alert' window displaying all the subscribed alerts should appear in the right pane.

TEST CASES FOR USE CASE ID 02								
Id	Use case	Author	Purpose	Module	Pre-Requisites	Environment	Sequence of Steps	Expected Output
1	Subscribe to Alerts	Shahram & Farah	To ensure that the alerts subscribed by the user are saved into his records.	Alerts Subscription	User should be logged into the system in order to view the 'Alert Subscription' tab in the left pane.	Desktop System, Firefox 2.0, Windows XP.	User checks the desired alerts and clicks on the 'Save' Icon.	The checkboxes shall be checked in order to subscribe to an alert and saved in his record.
2	Subscribe to Alerts	Shahram & Farah	To ensure that no subscription is made and System redirects to main GUI of Open bravo when User presses the 'Cancel' button.	Alerts Subscription	User should be logged in to view the Alerts Subscription window.	Desktop System, Firefox 2.0, Windows XP.	User presses the 'cancel' button.	The system will be redirected to the main window.
3	Subscribe to Alerts	Shahram & Farah	To ensure that only subscribed SMS are sent to user.	Alerts Subscription	Log in as an Administrator and sent an alert for which the user has subscribed through Email and SMS.	Desktop System, Firefox 2.0, Windows XP.	Admin will create an alert and send it to its recipients.	The user will get the alert as a SMS or an Email (for which he has subscribed).

TEST CASES FOR USE CASE ID 03								
Id	Use case	Author	Purpose	Module	Pre-Requisites	Environment	Sequence of Steps	Expected Output
1	Un-Subscribe from Alerts	Shahram & Farah	To ensure that the alerts un-subscribed by the user are saved into his records.	Alerts Subscription	User should be logged into the system in order to view the 'Alert Subscription' tab in the left pane	Desktop System, Firefox 2.0, Windows XP.	User un-checks the alerts for which he don't want to subscribe and clicks on the Save Icon.	The checkboxes shall be un-checked in order to un-subscribe to an alert and saved in his record.
2	Un-Subscribe from Alerts	Shahram & Farah	To ensure that no un-subscription is made and System redirects to main GUI of Open bravo when User presses the 'Cancel' button.	Alerts Subscription	User should be logged in to view the Alerts Subscription window.	Desktop System, Firefox 2.0, Windows XP.	User presses the 'cancel' button.	The system will be redirected to the main window.
3	Un-Subscribe from Alerts	Shahram & Farah	To ensure that the user is not getting the alert for which he has cancelled the subscription.	Alerts Subscription	Log in as an Administrator and sent an alert for which the user has not been subscribed.	Desktop System, Firefox 2.0, Windows XP.	Admin will create an alert and send it to its recipients.	The user will not get the alert as a SMS or an Email (for which he has not subscribed).

TEST CASES FOR USE CASE ID 07								
Id	Use case	Author	Purpose	Module	Pre-Requisites	Environment	Sequence of Steps	Expected Output
1	Subscribe to Alerts	Shahram & Farah	To ensure that the alerts subscribed by the user through SMS are saved into his records in the system.	Alerts Subscription through SMS	User should know the Alert rule id of the alert which he wants to subscribe and the context of the SMS to subscribe.	Mobile phone	User writes the SMS according to format and sends to the Openbravo Service Number.	The User will get a SMS for the conformation of the subscription.
2	Subscribe to Alerts	Shahram & Farah	To ensure that the user is getting the alert for which he has subscribed through SMS.	Alerts Subscription through SMS	N/A	Mobile Phone	Admin will create that alert and send it to its recipients.	The user will get the alert as a SMS.
3	Subscription to Alerts	Shahram & Farah	To ensure that subscription with wrong ID or wrong format are not saved in the system.	Alerts Subscription through SMS	User does not know the rule id or format of the SMS.	Mobile Phone	User writes the SMS with wrong format and sends to the Openbravo Service Number.	The system will not get updated and the user will get a SMS regarding wrong format and it will prompt to send SMS again.

TEST CASES FOR USE CASE ID 08								
Id	Use case	Author	Purpose	Module	Pre-Requisites	Environment	Sequence of Steps	Expected Output
1	Un-Subscribe from Alerts	Shahram & Farah	To ensure that the alerts un-subscribed by the user through SMS are saved into his records in the system.	Alerts Subscription through SMS	User should know the Alert rule id of the alert which he wants to unsubscribe and the context of the SMS to unsubscribe.	Mobile phone	User writes the SMS according to format and sends to the Openbravo Service Number.	The User will get a SMS for the conformation of the un-subscription of the alert.
2	Un-Subscribe from Alerts	Shahram & Farah	To ensure that the user is not getting the alert for which he has un-subscribed through SMS.	Alerts Subscription through SMS	N/A	Mobile Phone	Admin will create that alert and send it to its recipients.	The user will not get the alert as a SMS.
3	Un-Subscribe from Alerts	Shahram & Farah	To ensure that un-subscription with wrong ID or wrong format are not saved in the system.	Alerts Subscription through SMS	User does not know the rule id or format of the SMS.	Mobile Phone	User writes the SMS with wrong format and sends to the Openbravo Service Number.	The system will not get updated and the user will get a SMS regarding wrong format and it will prompt to send SMS again.

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Glossary

Term	Description
SMS	Short Messaging Service
SERC	Software Engineering Research Center
WAD	Wizard for Application Development
ERP	Enterprise resource planning (ERP) is an enterprise-wide information system designed to coordinate all the resources, information, and activities needed to complete business processes such as order fulfillment or billing.
Software Architecture design (SAD)	This is a design which shows overall relation ship modules and sub parts of software.
Open Source License (OSL)	An open source license is a copyright license for computer software that makes the source code available under terms that allow for modification and redistribution without having to pay the original author..
Requirement Specification document	This is a document that shows all the requirements for which the software has to be developed.
Design document	A design document is a written outline of the development of a course or a description of a software product.
GUI	Graphical user interface