

Software Architecture Document

Internet provider “Wind”

Solution Information

Information	
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Solution Acronym	WB
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Definitions, Acronyms and Abbreviations

UML: Unified Modeling Language

SI: Service Instance

SL:Service Location

RI: Resource Inventory

SO: Service Order

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Purpose

The purpose of this document is to define the detailed Solution Architecture for “WindBoreas”. This system provide ability full-cycle service provisioning with the usage of self-service portal. The document ensures that the Solution Architecture is in compliance with enterprise application architecture principles, best practices, and conceptual target application architectures.

1. Solution Overview

The system is solution for internet providers. The system allows you to arrange a convenient interface between you and your customers, have a pleasant and intuitive interface, which allows ordinary Internet users to take advantage of your services. You can provide information on the tariff plan, quickly implement an internet connection to your customers, establish a feedback from them, organize technical support. This will allow your customers receive the highest level of service. You can receive automatically generated reports on the state of the system . This is a good tool for the successful organization and business automation. In the system can exist 5 roles: Administrator, Customer Support Engineer, Provisioning Engineer, Installation Engineer, Customer User. Basic operation items are Service Instance, Service Order.

2. Architectural Goals and Constraints

This section describes the software requirements and objectives that have some significant impact on the architecture.

2.1 Architectural Assumptions and out of scope

One user have only one role. System uses English language for text and graphical screens.

2.2 Technology

Name	Solution	Description
Server	GlassFish 4.0	GlassFish Server is the world's first implementation of the Java Platform, Enterprise Edition (Java EE). Built using the GlassFish Server Open Source Edition, GlassFish Server delivers a flexible, lightweight, and production-ready Java EE 6 application server.
Databases	OracleXE 10g	Oracle Database 10g Express Edition (Oracle Database XE) is an entry-level, small-footprint database. It's free to develop, deploy, and distribute; fast to download; and simple to administer.
Technologies	Servlet	Servlets used to extend the applications hosted by web servers, so they can be thought of as Java applets that run on servers instead of in web browsers.

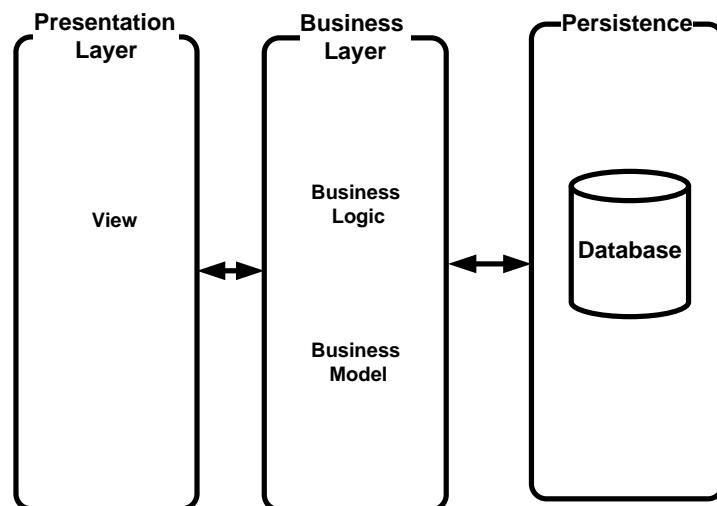
	JavaMail API + Apache James	The JavaMail API provides a platform-independent and protocol-independent framework to build mail and messaging applications. Apache James is an open source SMTP and POP3 mail transfer agent and NNTP news server written entirely in Java.
	JAAS	Java Authentication and Authorization Service, or JAAS, is the Java implementation of the standard Pluggable Authentication Module (PAM) information security framework. The main goal of JAAS is to separate the concerns of user authentication so that they may be managed independently.
	jXLS	jXLS is a small and easy-to-use Java library for writing Excel files using XLS templates and reading data from Excel into Java objects using XML configuration.
Additional APIs	Google Maps API	The Google Maps API is free for commercial use, provided that the site on which it is being used is publicly accessible and does not charge for access, and is not generating more than 25 000 map accesses a day.
Pagination	Display tag library	The display tag library is an open source suite of custom tags that provide high-level web presentation patterns which will work in an MVC model. The library provides a significant amount of functionality

while still being easy to use.

3. Application Architecture

3.1 Logical View

The application is divided into layers based on the 3-tier architecture



This strategy improves system development and maintenance.

3.2 User Interface

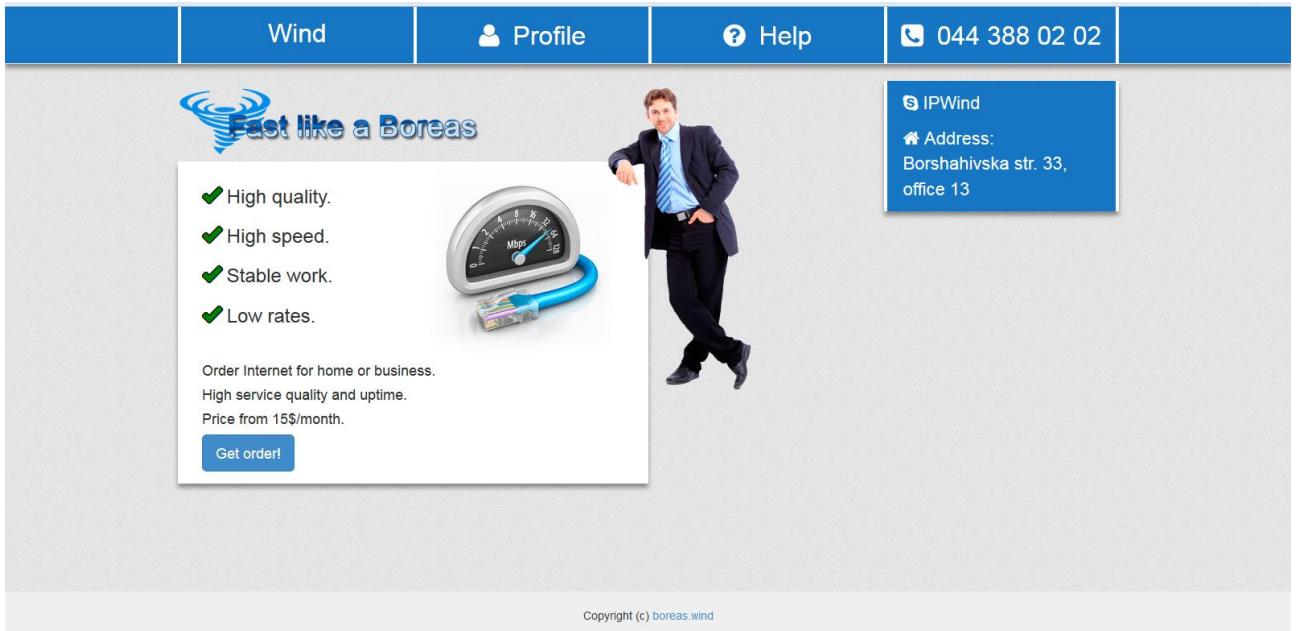


Figure 1 – Main page

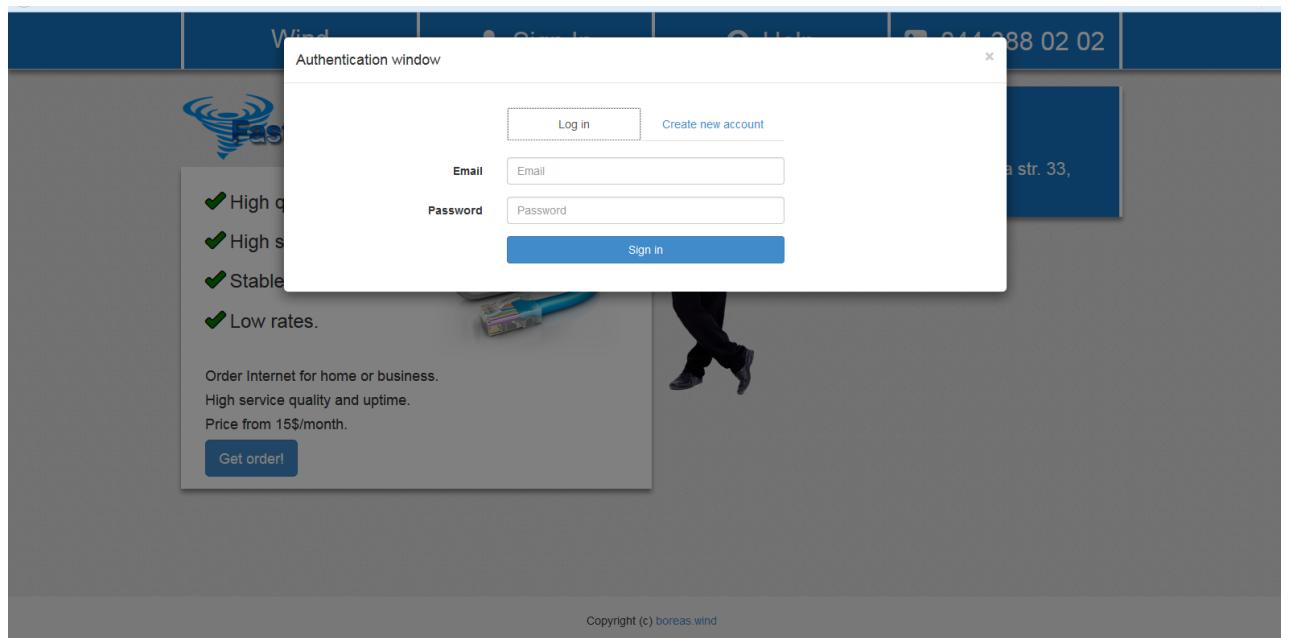


Figure 2 – Authentication page

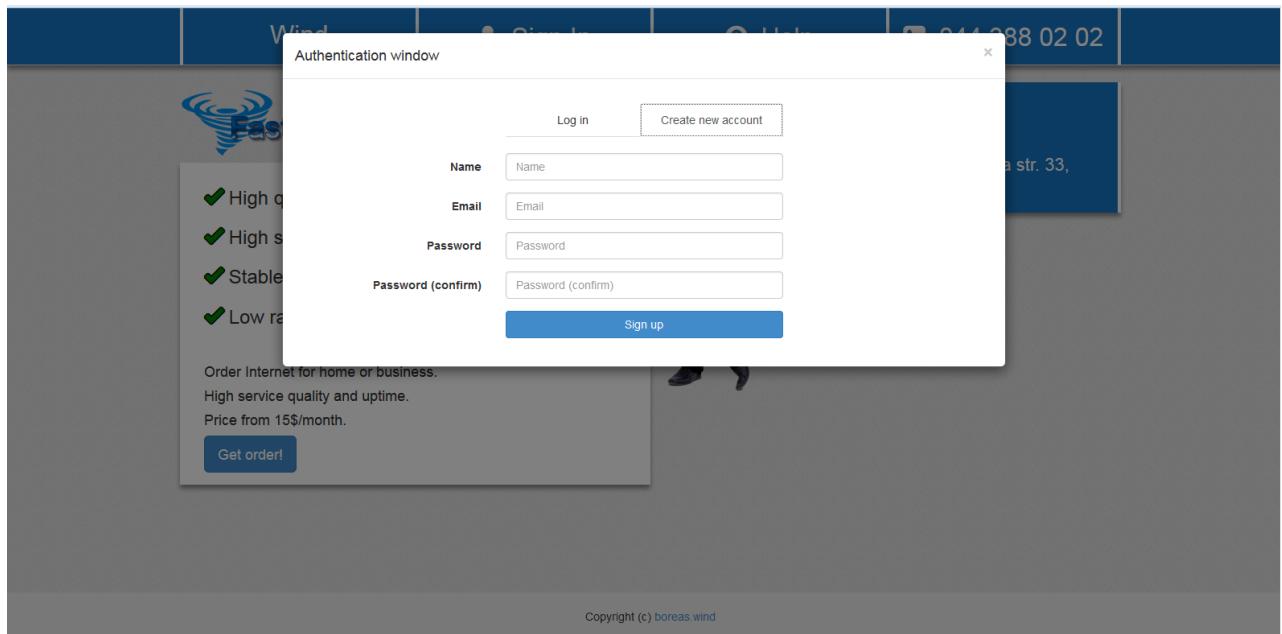


Figure 3 – Registration page

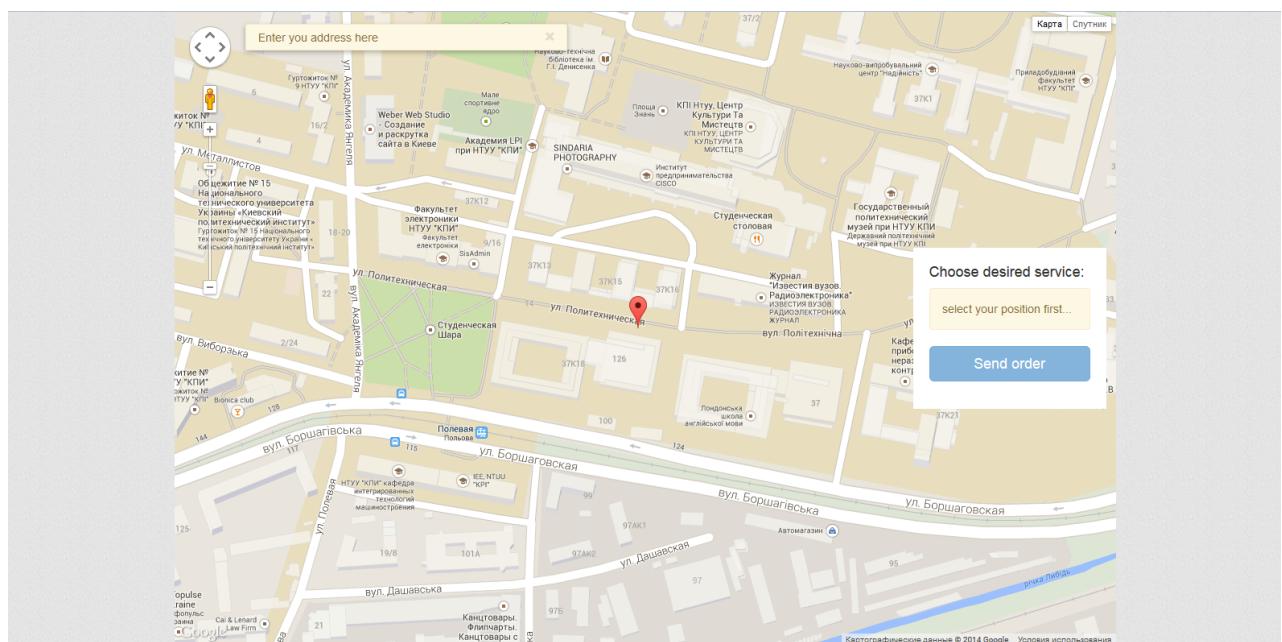


Figure 4 – Get order page

Customer user's dashboard

Logged in as **user545** (usr545@i.ua) [Logout](#)

user545	
User's id	545
e-mail	usr545@i.ua

[Orders](#)

[Service instances](#)

Copyright (c) boreas.wind

Figure 5 – Customer user's dashboard

Customer user's dashboard

Logged in as **user545** (usr545@i.ua) [Logout](#)

Service info	
ID:	545
Status:	ACTIVE
Service:	gold internet
Price	40 \$
Location	
Provider Location	Larysy Rudenko St, 17 Kyiv, Kyiv city, Ukraine (PoznyakiLoc)

Select new service [business internet - 15 \\$](#) [Modify instance](#) [Disconnect instance](#)

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Figure 6 – User's page for review Service Instance

The screenshot shows the 'Installation Engineer's dashboard' with a blue header bar containing the 'Wind' logo, 'Profile', 'Help', and a phone number '044 388 02 02'. The main area has a light gray background. At the top left is a 'Logout' button. Below it, a message says 'Logged in as iengineer (iengineer@i.ua)' with a gear icon. To the right is a user profile section for 'iengineer' with fields for 'User's id' (1003) and 'e-mail' (iengineer@i.ua). On the left, there are two vertical navigation menus: 'Tasks' (New tasks, Active tasks, Completed tasks) and 'Reports' (Routers' utilization, Routers' profitability). A copyright notice 'Copyright (c) boreas.wind' is at the bottom.

Figure 7 – Instalation engineer's dashboard

The screenshot shows the 'Provisioning Engineer's dashboard' with a blue header bar containing the 'Wind' logo, 'Profile', 'Help', and a phone number '044 388 02 02'. The main area has a light gray background. At the top left is a 'Logout' button. Below it, a message says 'Logged in as engineer (engineer@i.ua)' with a gear icon. To the right is a user profile section for 'engineer' with fields for 'User's id' (1001) and 'e-mail' (engineer@i.ua). On the left, there are two vertical navigation menus: 'Tasks' (New tasks, Active tasks, Completed tasks) and 'Reports' (Impact Propagation Tree). A copyright notice 'Copyright (c) boreas.wind' is at the bottom.

Figure 8 – Provisioning engineer's dashboard

Wind | Profile | Help | 044 388 02 02

Customer Support Engineer's dashboard

Logged in as **supporter** (supporter@i.ua) [Logout](#)

supporter	
User's id	1002
e-mail	supporter@i.ua

Customers
+ Add customer

Tasks
New tasks
Active tasks
Completed tasks (1001)

Reports
New orders
Disconnect orders
Profit

Figure 9 – Customer support engineer's dashboard

Wind | Profile | Help | 044 388 02 02

Administrator's dashboard

Logged in as **admin** (admin@i.ua) [Logout](#)

admin	
User's id	1004
e-mail	admin@i.ua

Users
+ Add user

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Figure 10 – Administrator's dashboard

The screenshot shows a software interface for managing customer service. On the left, there are three main navigation sections: 'Customers' (with an 'Add customer' button), 'Tasks' (listing 'New tasks', 'Active tasks', and 'Completed tasks' with 1001 items), and 'Reports' (listing 'New orders', 'Disconnect orders' (selected), and 'Profit'). Below these are two date input fields: 'Date from' set to '2014-05-01' and 'Date to' set to '2014-05-31'. A large blue 'Generate' button is centered below the dates. To the right, a table titled 'Disconnect orders per period: 2014-05-01 - 2014-05-31' displays 100 items found, ranging from item 1 to 15. The table has columns for 'Service order', 'Provider location', 'Service location', 'Service name', and 'Complete date'. The data shows various service orders (e.g., Service_order1001 to Service_order1015) at different locations (e.g., NyvkiLoc, Location52 to Location80) with different service names (e.g., business internet, silver internet) and completion dates (e.g., 2014-05-26 to 2014-05-27). Navigation links at the top of the table allow for 'First', 'Prev', '1' (selected), '2', '3', '4', '5', '6', '7', 'Next', and 'Last'. An 'Export' button is located at the bottom left of the table.

Service order	Provider location	Service location	Service name	Complete date
Service_order1001	NyvkiLoc	Location52	business internet	2014-05-26
Service_order1002	NyvkiLoc	Location54	business internet	2014-05-27
Service_order1003	NyvkiLoc	Location56	business internet	2014-05-27
Service_order1004	NyvkiLoc	Location58	business internet	2014-05-27
Service_order1005	NyvkiLoc	Location60	business internet	2014-05-27
Service_order1006	NyvkiLoc	Location62	business internet	2014-05-27
Service_order1007	NyvkiLoc	Location64	business internet	2014-05-27
Service_order1008	NyvkiLoc	Location66	business internet	2014-05-27
Service_order1009	NyvkiLoc	Location68	business internet	2014-05-27
Service_order1010	NyvkiLoc	Location70	business internet	2014-05-27
Service_order1011	NyvkiLoc	Location72	silver internet	2014-05-27
Service_order1012	NyvkiLoc	Location74	silver internet	2014-05-27
Service_order1013	NyvkiLoc	Location76	silver internet	2014-05-27
Service_order1014	NyvkiLoc	Location78	silver internet	2014-05-27
Service_order1015	NyvkiLoc	Location80	silver internet	2014-05-27

Figure 11 – Reports page

3.3 Supported Business Processes

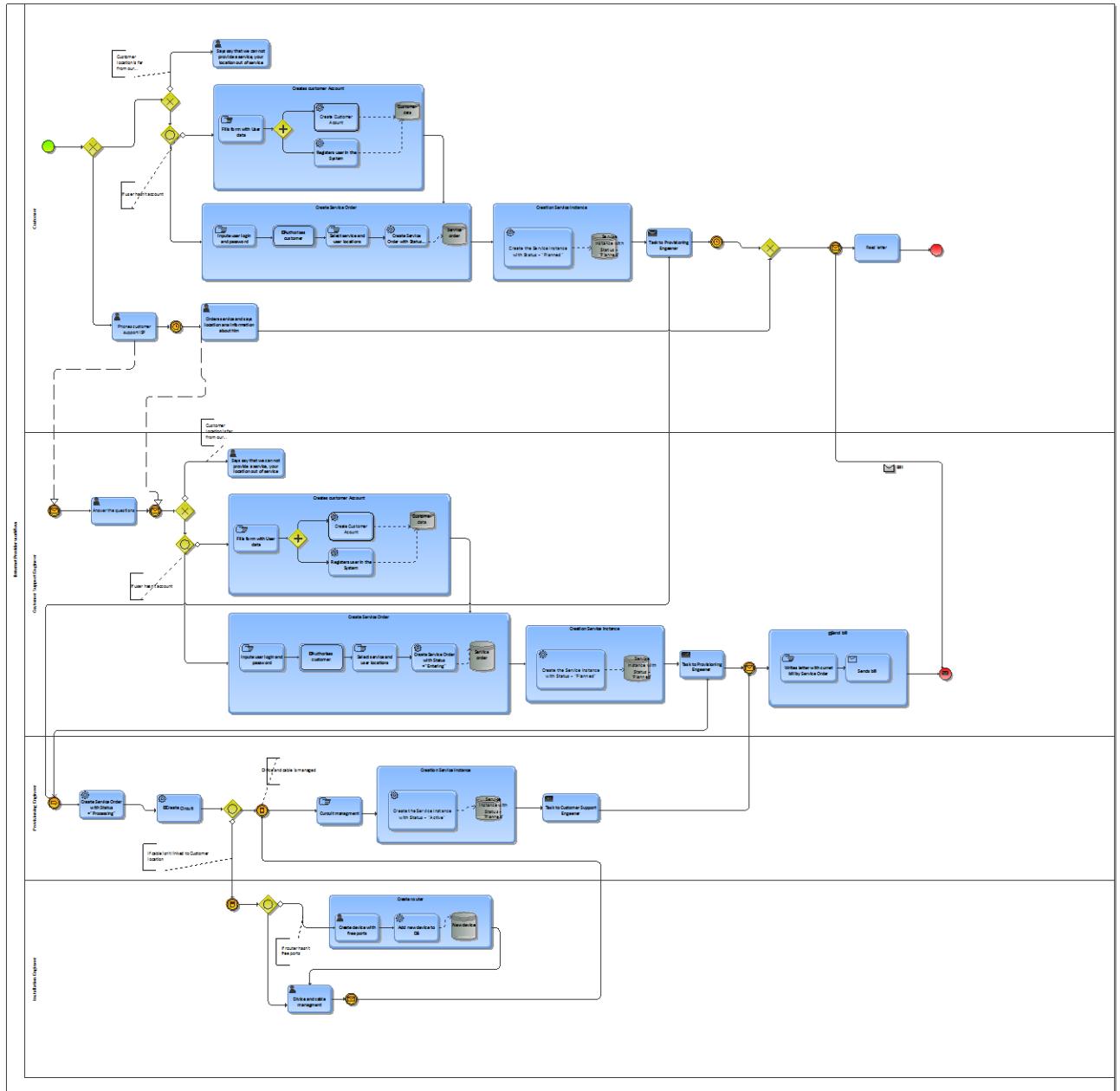


Figure 12 – Business processes creating and processing order BPMN 2.0

3.3.1 Creating Employee Account

3.3.1.1. *Description*

Use Case ID	WIND.UC.001
Use Case Name	Creating Employee Account
Description	Administrator create Employee Account
Activate	Administrator has initiated the process of creation employee account.
Pre-conditions	—
Post-conditions	Employee Accounts is created and Employee is Registered

3.3.1.2. Flow diagram

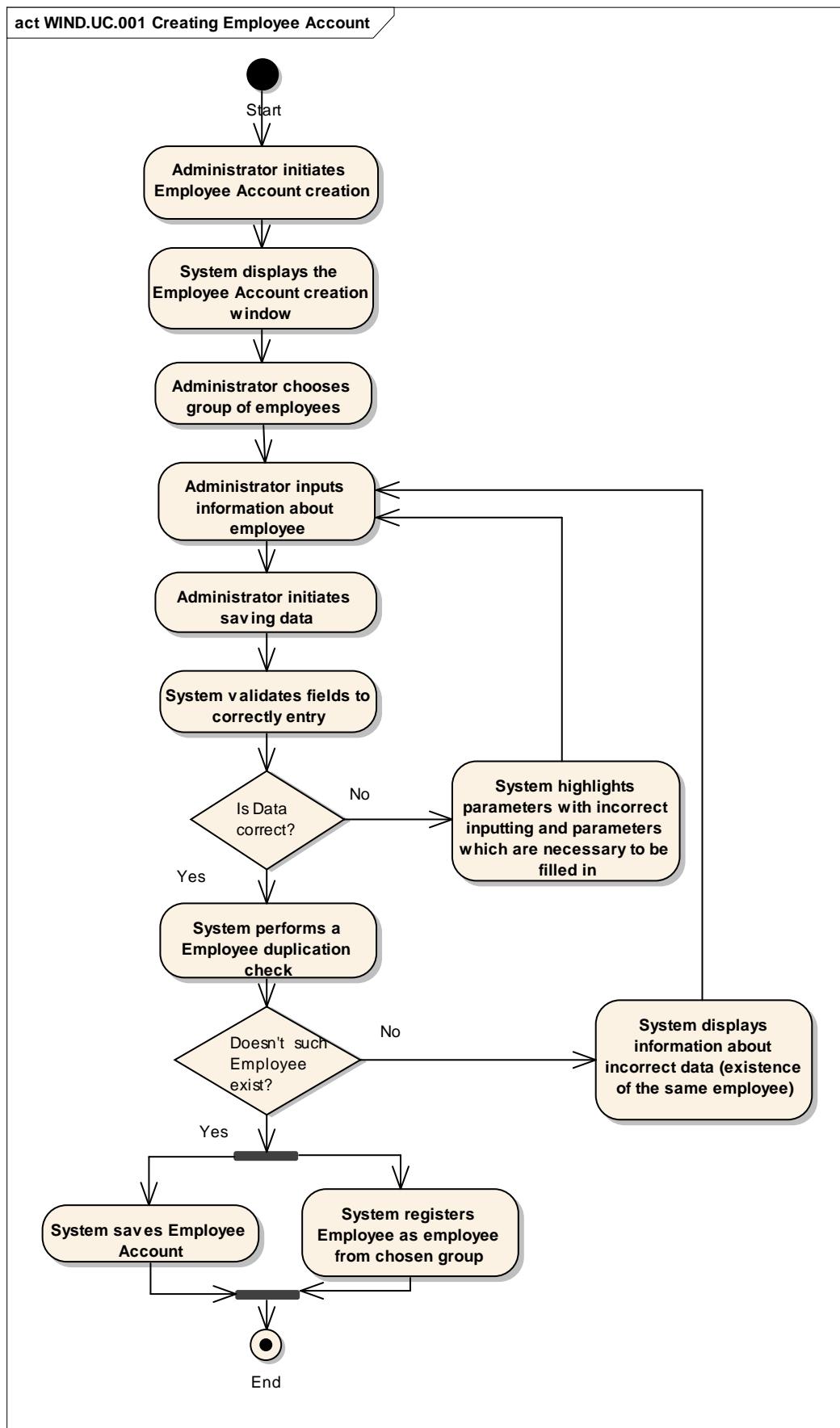


Figure 13– Creating Customer Account Flow Diagram

3.3.1.3. *Base Flow*

Step #	Actor	Action	Description
1	Administrator	Initiate Employee Account Creation	Administrator initiates Employee Account creation.
2	System	Display The Employee Account Creation Window	System displays the Employee Account creation window.
3	Administrator	Choose Group Of Employees	Administrator chooses group of employees
4	Administrator	Input Information About Employee	Administrator inputs information about employee
5	Administrator	Initiate Saving Data	Administrator initiates saving data
6	System	Validates Fields	System validates fields to correctly entry
7	System	Perform a Employee Duplication Check	System performs a Employee duplication check
8.1 8.2	System	Save Employee Account & Register Employee As Employee From Chosen Group	System saves Employee Account & System registers Employee as employee from chosen group

3.3.1.4. *Alternative Flow 1*

Step#	Actor	Action	Description
			Entry Point: Step #6 of the Base Flow: Validates Fields
1	System	Highlights Parameters	System highlights parameters with incorrect inputting and parameters which are necessary to be filled in
			Join: Step #4 of the Base Flow: Input Information About Employee

3.3.1.5. *Alternative Flow 2*

Step#	Actor	Action	Description
			Entry Point:

Step#	Actor	Action	Description
			Step #6 Perform a User Duplication Check
1	System	Displays Information About Incorrect Data	System displays information about incorrect data (existence of the same employee)
			Join: Step #4 of the Base Flow: Input Information About Employee

3.3.2. Creating Customer Accounts

3.3.2.1. *Description*

Use Case ID	WIND.UC.002
Use Case Name	Creating Customer Account
Description	Describes the process of Customer registration and Customer Account creation
Activate	User has initiated the process of registration and creation account.
Pre-conditions	Unregistered User
Post-conditions	Customer Account is created and Registered User as Customer

3.3.2.2. Flow diagram

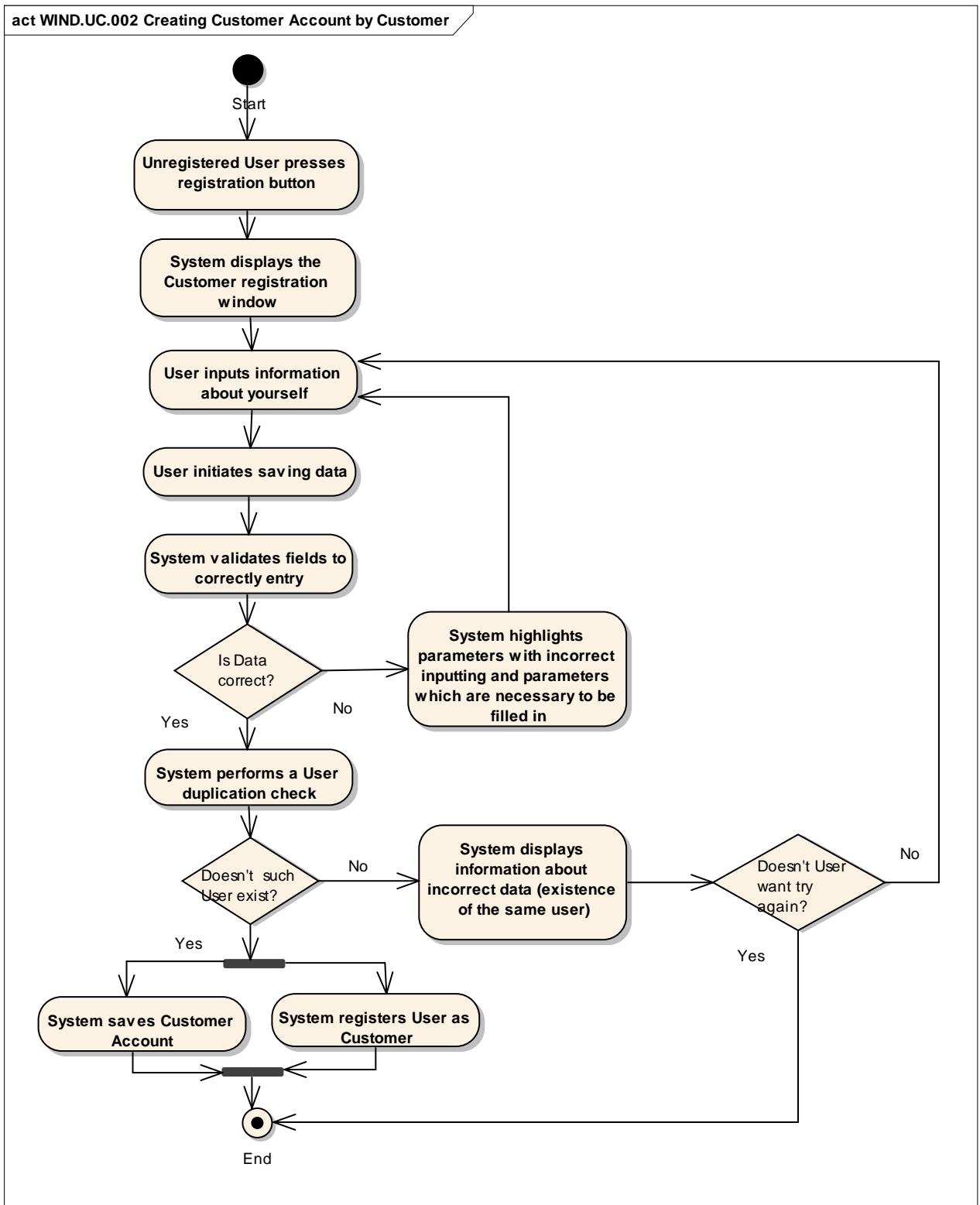


Figure 14– Creating Customer Account by Customer Flow Diagram

3.3.2.3. Base Flow

Step #	Actor	Action	Description
1	User	Presses Registration Button	Unregistered User presses registration button.

Step #	Actor	Action	Description
2	System	Display Customer Registration Window	System displays the Customer registration window
3	User	Inputs Information	User inputs information about yourself
4	User	Initiate Saving Data	User initiates saving data
5	System	Validates Fields	System validates fields to correctly entry
6	System	Perform a User Duplication Check	System performs a User duplication check
7.1 7.2	System	Save Customer Account& Registers User As Customer	System saves Customer Account & System registers User as Customer

3.3.2.4. Alternative Flow 1

Step#	Actor	Action	Description
			Entry Point: Step #5 of the Base Flow: Validates Fields
1	System	Highlights Parameters	System highlights parameters with incorrect inputting and parameters which are necessary to be filled in
			Join: Step #3 of the Base Flow: Inputs Information

3.3.2.5. Alternative Flow 2

Step#	Actor	Action	Description
			Entry Point: Step #6 Perform a User Duplication Check
1	System	Displays Information About Incorrect Data	System displays information about incorrect data (existence of the same)
			Join: Step #3 of the Base Flow: Inputs Information

3.3.2.6. *Alternative Flow 3*

Step#	Actor	Action	Description
			Entry Point: Step #6 Perform a User Duplication Check
1	System	Displays Information About Incorrect Data	System displays information about incorrect data (existence of the same)
			Join: End

3.3.3. Blocking Accounts

3.3.3.1. *Description*

Use Case ID	WIND.UC.003
Use Case Name	Blocking Accounts
Description	Describes the process of Blocking Accounts by Administrator
Activate	Administrator has initiated the process of blocking accounts.
Pre-conditions	—
Post-conditions	Customer Account is created and Registered User as Customer

3.3.3.2. *Flow diagram*

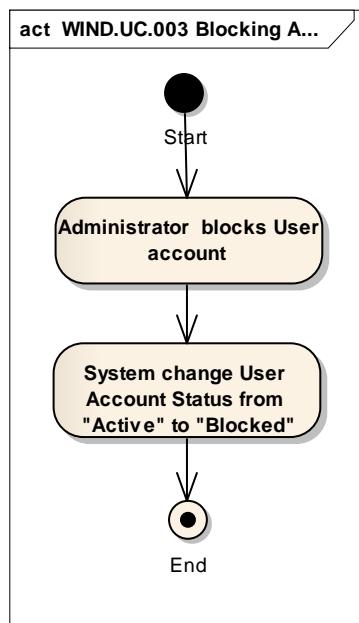


Figure 15— Blocking Accounts Flow Diagram

3.3.3.3. *Base Flow*

Step #	Actor	Action	Description
1	Administrator	Block User Account	Administrator blocks User account.
2	System	Change User Account Status	System change User Account Status from "Active" to "Blocked"

3.3.4. Changing Customer Password

3.3.4.1. *Description*

Use Case ID	WIND.UC.004
Use Case Name	Changing Customer Password
Description	Describes the process of Changing Customer Password by Customer User
Activate	Customer User has initiated the process of changing his password.
Pre-conditions	Customer User forgets own password
Post-conditions	Customer Password is changed

3.3.4.2. Flow diagram

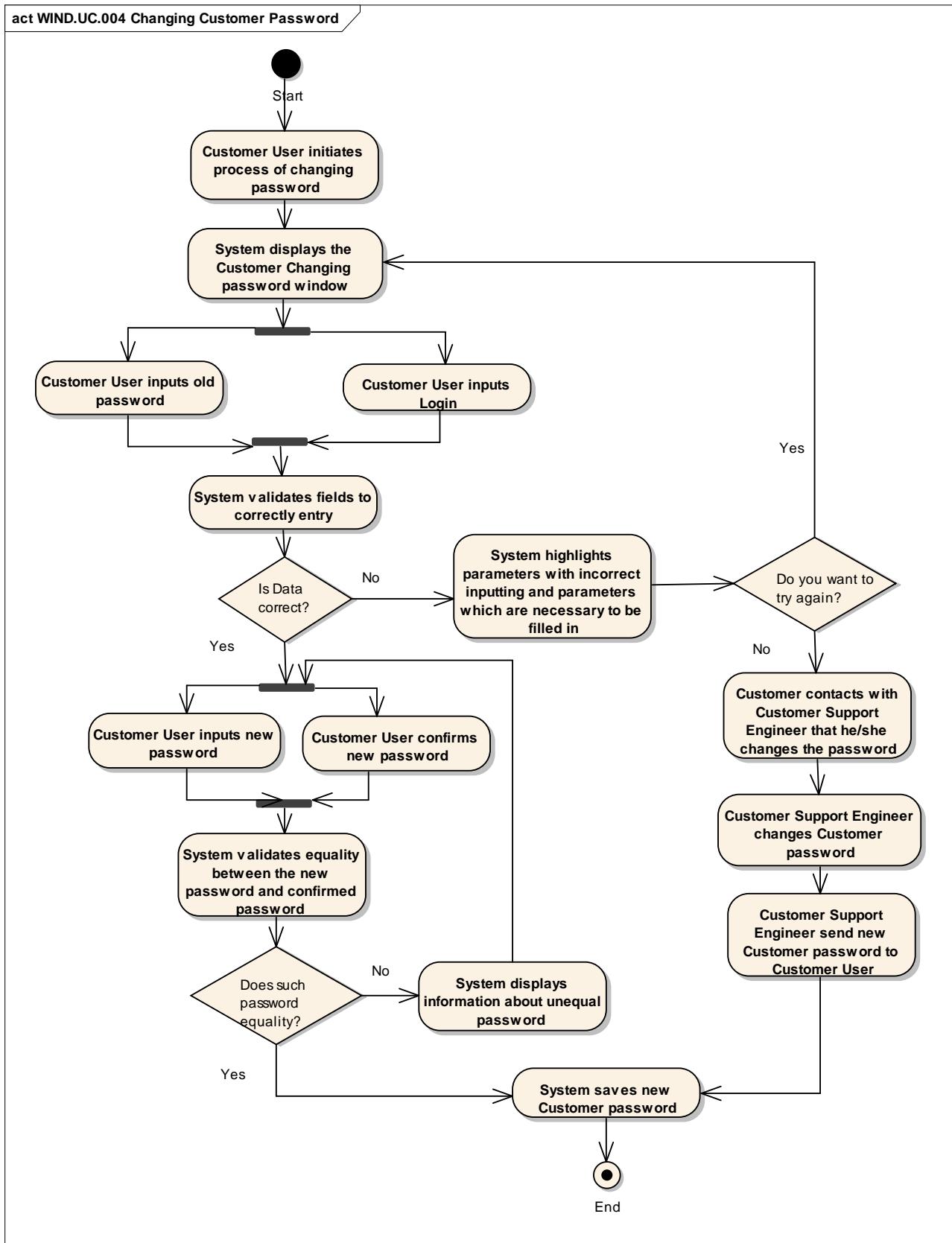


Figure 16 – Changing Customer Password Flow Diagram

3.3.4.3. *Base Flow*

Step #	Actor	Action	Description
1	Customer User	Presses Changing Password button	Customer User initiates process of changing password
2	System	Display Customer Changing Password Window	System displays the Customer Changing password window
3	Customer User	Inputs Login & Password Information	User inputs Login & Password information
4	System	Validates Fields	System validates fields to correctly entry
5	Customer User	Inputs & Confirms new Password Information	Customer User inputs & confirms new password
6	System	Validates new Password Fields	System validates equality between the new password and confirmed password
7	System	Saves new Customer Password	System saves new Customer password

3.3.4.4. *Alternative Flow 1*

Step#	Actor	Action	Description
			Entry Point: Step #6 of the Base Flow: Validates new Password Fields
1	System	Displays information about unequal password	System displays information about unequal password
			Join: Step #3 of the Base Flow: Inputs & Confirms new Password Information

3.3.4.5. *Alternative Flow 2*

Step#	Actor	Action	Description
			Entry Point: Step #4 of the Base Flow: Validates Fields
1	System	Highlights parameters	System highlights parameters with incorrect inputting and parameters which are necessary to be filled in

Step#	Actor	Action	Description
2	Customer User	Approves Inputting his Login/password Data second time	Customer User approves, that he want to Input his Login/password Data second time
			Join: Step #2 of the Base Flow: Display Customer Changing Password Window

3.3.4.6. *Alternative Flow 3*

Step#	Actor	Action	Description
			Entry Point: Step #1 of the Alternative Flow 2: Validates Fields
1	Customer User	Disapproves Inputting his Login/password Data second time	User disapproves, that he want to Input his Login/password Data second time
2	Customer User	Contacts with Customer Engineer about password changing	Customer contacts with Customer Support Engineer that he/she changes the password
3	Customer Support Engineer	Changes Customer Password	Customer Support Engineer changes Customer password
4	Customer Support Engineer	Sends new Customer Password to user	Customer Support Engineer send new Customer password to Customer User
			Join: Step #7 of the Base Flow: Display Customer Changing Password Window

3.3.5. Review Service Instance

3.3.5.1. *Description*

Use Case ID	WIND.UC.005
Use Case Name	Review Service Instance
Description	Describes the process of Reviewing Service Instance by Customer Support Engineer
Activate	Customer Support Engineer has initiated the process of reviewing service instance.
Pre-conditions	Service Instance existed in the System
Post-conditions	Service Instance is reviewed.

3.3.5.2. *Flow diagram*

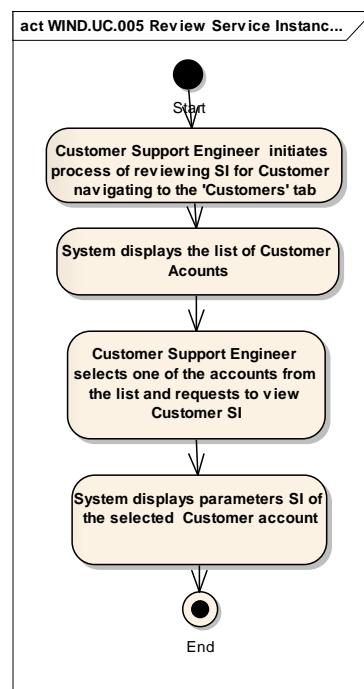


Figure 17—Review Service Instance Flow Diagram

3.3.5.3. *Base Flow*

Step #	Actor	Action	Description
1	Customer Support Engineer	Initiates process of reviewing SI	Customer Support Engineer initiates process of reviewing SI for Customer User navigating to the 'Customers' tab
2	System	Displays List of existing	System displays the list of existing Customer Accounts

Step #	Actor	Action	Description
		Customer Accounts	
3	Customer Support Engineer	Selects one of the Accounts & Requests to view SI	Customer Support Engineer selects one of the accounts from the list and requests to view Customer SI
4	System	Displays parameters SI of the selected Accounts	System displays parameters SI of the selected Customer account

3.3.6. Review Service Order

3.3.6.1. *Description*

Use Case ID	WIND.UC.006
Use Case Name	Review Service Order
Description	Describes the process of Reviewing Service Order by Customer Support Engineer
Activate	Customer Support Engineer has initiated the process of reviewing service order.
Pre-conditions	Service Order in the System
Post-conditions	Service Order is reviewed.

3.3.6.2. Flow diagram

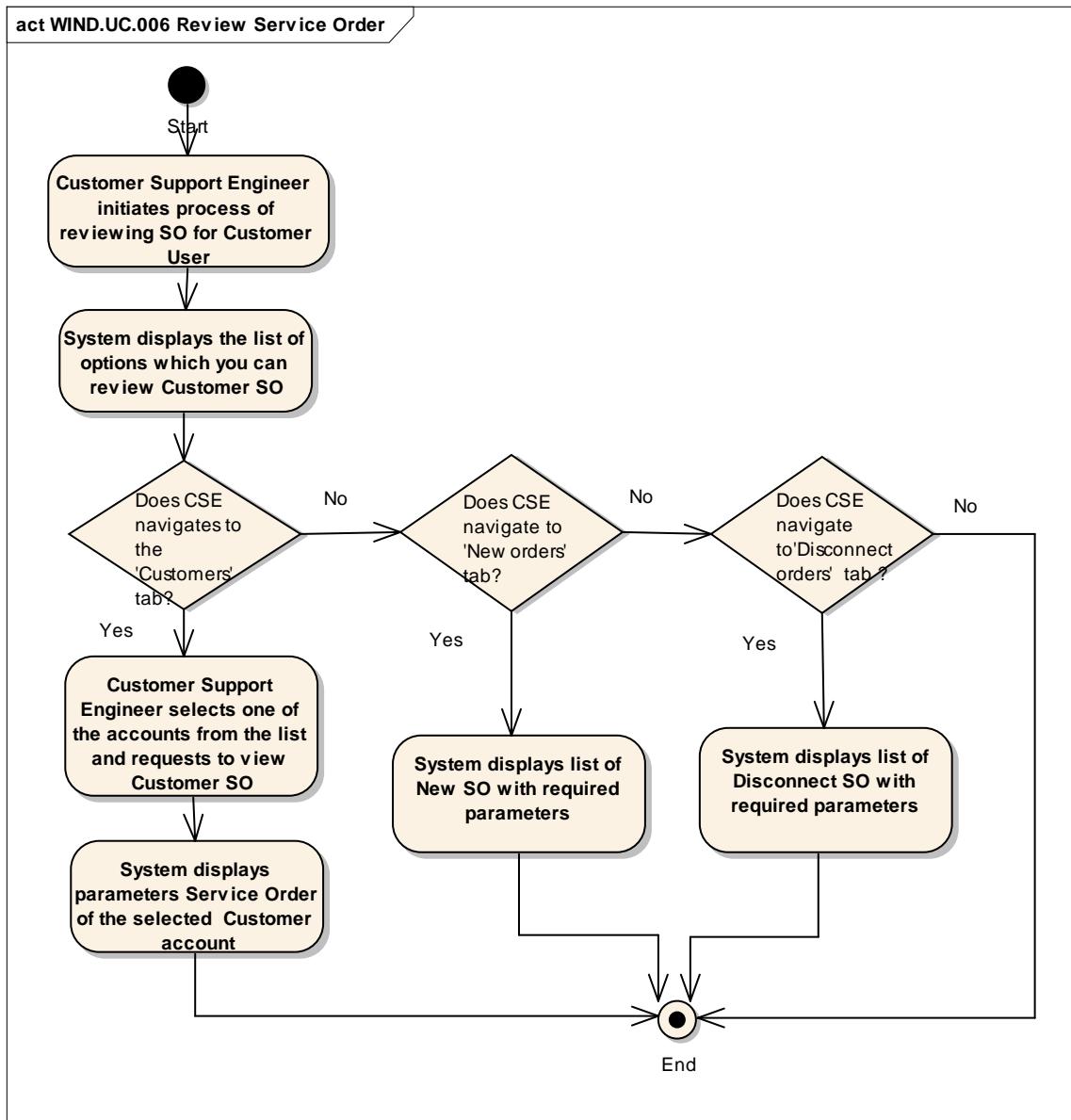


Figure 18—Review Service Order Flow Diagram

3.3.6.3. Base Flow

Step #	Actor	Action	Description
1	Customer Support Engineer	Initiates process of reviewing SO	Customer Support Engineer initiates process of reviewing SO for Customer User
2	System	Displays List, which can review Customer SO	System displays the list of options which you can review Customer SO
3	Customer Support Engineer	Selects one of the Accounts & Requests to view SO	Customer Support Engineer selects one of the accounts from the list and requests to view Customer SO
4	System	Displays parameters SO	System displays parameters SO of the selected Customer account

Step #	Actor	Action	Description
		of the selected Account	

3.3.6.4. Alternative Flow 1

Step#	Actor	Action	Description
			Entry Point: Step #2 of the Base Flow: Displays List, which can review Customer SO
1	System	Displays list of New SO	System displays list of New SO with required parameters

3.3.6.5. Alternative Flow 2

Step#	Actor	Action	Description
			Entry Point: Step #2 of the Base Flow: Displays List, which can review Customer SO
1	System	Displays list of Disconnect SO	System displays list of Disconnect SO with required parameters

3.3.7. Creating Service Order

3.3.7.1. Description

Use Case ID	WIND.UC.007
Use Case Name	Creating Service Order
Description	Describes the process of Customer Service Order
Activate	User has initiated the process of creation account Service Order.
Pre-conditions	—
Post-conditions	Service Order is created

3.3.7.2. Flow diagram

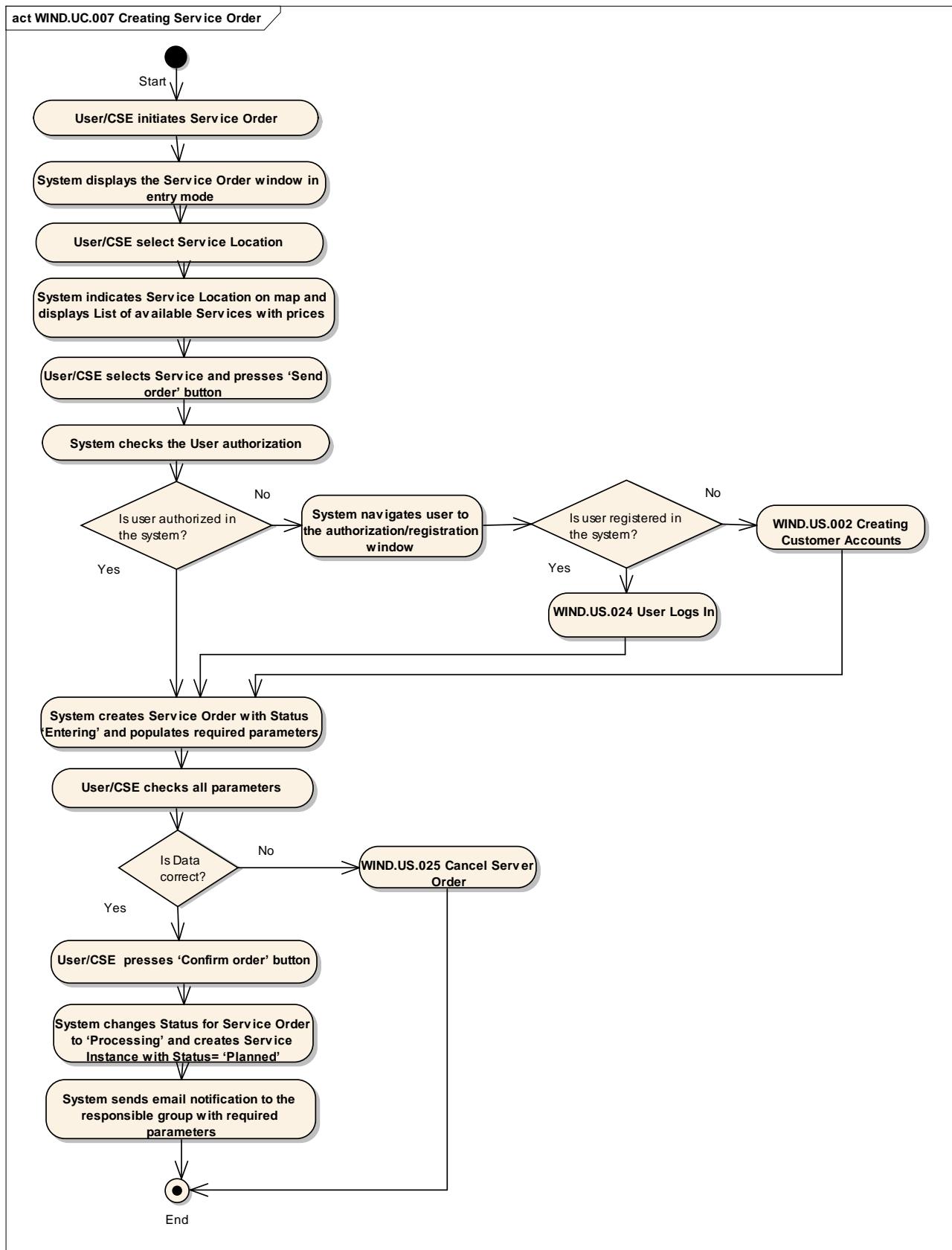


Figure 19– Creating Customer Account Flow Diagram

3.3.7.3. *Base Flow*

Step #	Actor	Action	Description
1	User/CSE	Initiates Service Order creation	
2	System	Displays The Service Order Window In Entry Mode	
3	User/CSE	Selects Service Location	
4	System	Indicates Service Location On Map and displays List of available Services with prices	
5	User/CSE	Selects Service and presses 'Proceed' button	
6	System	<p>Checks user authorized or not:</p> <ol style="list-style-type: none"> 1. If user authorized in the system, the system: <ul style="list-style-type: none"> - Creates Service Order with Status 'Entering' - Populates the next parameters: Order ID, User ID, Order ID, User ID, Service ID, Service Instance ID, Service Location ID, Provider Location ID, status, scenario, Enterdata 2. If user didn't authorize in the system, the system navigates user to the authorization/registration window (go to Alternative Flow 1) 	
7	User/CSE	Checks all parameters	
8	User/CSE	Presses 'Confirm order' button	If all SO parameters satisfy User and correct then User/CSE presses 'Confirm order' button else go to Alternative Flow 3
9	System	<ol style="list-style-type: none"> 1. Changes Status for Service Order to 'Processing' and creates Service Instance with Status= 'Planned' Changes Status for Service Order to 'Pending for Activation'. 2. Sends email notification to the responsible group with the next parameters: Task ID, User ID, Type, Status, Role_ID, Service_order_id 	

3.3.7.4. Alternative Flow 1

Step#	Actor	Action	Description
			Entry Point: Step #6 of the Base Flow: Checks the User authorization
1	System	Navigates user to the authorization/registration window	System navigates user to the authorization/registration window
2			If user registered in the system then WIND.US.024 User Logs In else Alternative flow 2
			Join: Step #7 of the Base Flow: Checks all parameters

3.3.7.5. Alternative Flow 2

Step#	Actor	Action	Description
			Entry Point: Step #1 of the Alternative Flow 1: Navigates user to the authorization/registration window
1			WIND.US.002 Creating Customer Accounts
			Join: Step #7 of the Base Flow: Checks all parameters

3.3.7.6. Alternative Flow 3

Step#	Actor	Action	Description
			Entry Point: Step # 7 of the Base Flow: Checks all parameters
1			WIND.US.025 Cancel Server Order
			Join: END

3.3.8. Creating Customer Account by Customer Support Engineer

3.3.8.1. *Description*

Use Case ID	WIND.UC.008
Use Case Name	Creating Customer Account by Customer Support Engineer
Description	Describes the process of Creating Customer Account by Customer Support Engineer
Activate	Client contacts with Customer Support Engineer that he/she create him/her Customer Account
Pre-conditions	—
Post-conditions	Customer Support Engineer created new Customer Account.

3.3.8.2. Flow diagram

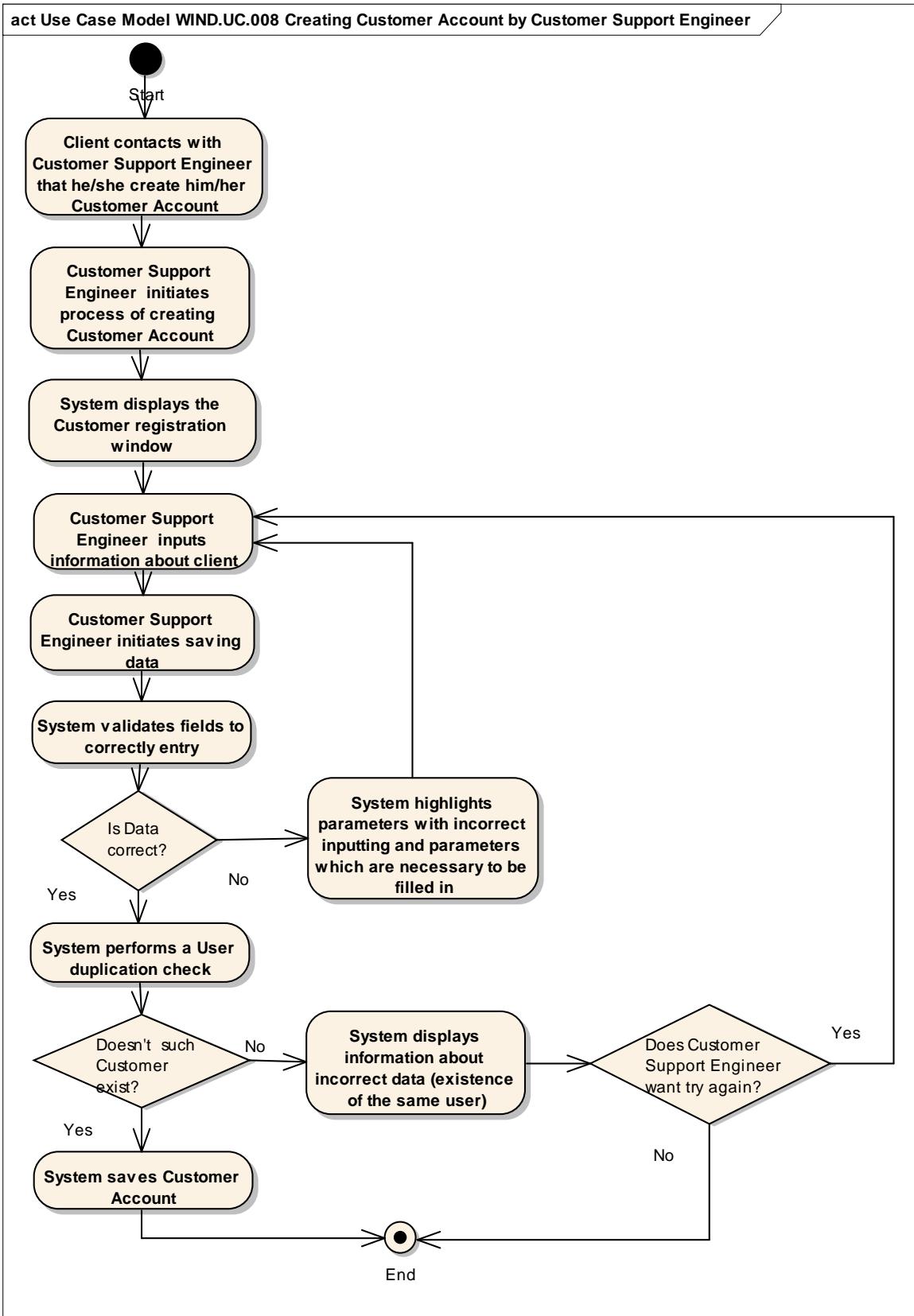


Figure 20— Creating Customer Account by Customer Support Engineer Flow Diagram

3.3.8.3. *Base Flow*

Step #	Actor	Action	Description
1	User	Contacts with Customer Support Engineer for Customer Account creation	User contacts with Customer Support Engineer that he creates him Customer Account
2	Customer Support Engineer	Initiates process of creating Customer Account	Customer Support Engineer initiates process of creating Customer Account
3	System	Displays the Customer registration window	System displays the Customer registration window
4	Customer Support Engineer	Inputs information about client	Customer Support Engineer inputs information about client
5	Customer Support Engineer	Initiates saving data	Customer Support Engineer initiates saving data
6	System	Validates fields	System validates fields to correctly entry
7	System	Performs a User duplication check	System performs a User duplication check
8	System	Saves Customer Account	System saves customer account

3.3.8.4. *Alternative Flow 1*

Step#	Actor	Action	Description
			Entry Point: Step #6 of the Base Flow: Validates fields
1	System	Highlights parameters which are necessary filled in & inputted incorrect	System highlights parameters with incorrect inputting and parameters which are necessary to be filled in
			Join: Step #4 of the Base Flow: Inputs Information about Client

3.3.8.5. Alternative Flow 2

Step#	Actor	Action	Description
			Entry Point: Step #7 of the Base Flow: Performs a User duplication check
1	System	Displays information about incorrect data	System displays information about incorrect data (existence of the same user)
			Join: Step #4 of the Base Flow: Inputs Information about Client

3.3.8.6. Alternative Flow 3

Step#	Actor	Action	Description
			Entry Point: Step #7 of the Base Flow: Performs a User duplication check
1	System	Displays information about incorrect data	System displays information about incorrect data (existence of the same user)

3.3.9. Service Order Processing

3.3.9.1. *Description*

Use Case ID	WIND.UC.009
Use Case Name	Service Order Processing
Description	Describes Service Order Processing
Activate	System generates tasks for responsible group.
Pre-conditions	Service Order is created
Post-conditions	Service Order is completed

3.3.9.2. Flow diagram

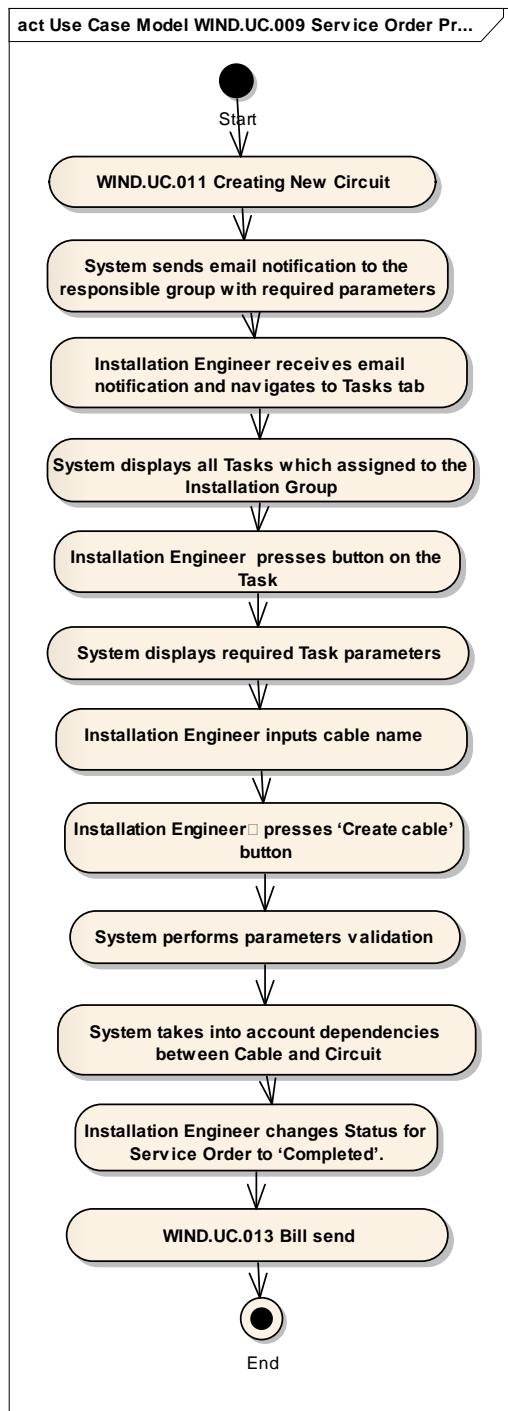


Figure 21– Creating Customer Account Flow Diagram

3.3.9.3. Base Flow

Step #	Actor	Action	Description
1			WIND.UC.011 Creating New Circuit
2	System	Sends email notification to the responsible group with the next parameters: Task ID, Type, Status	System sends email notification to the responsible group with the next parameters: Task ID, Type,

Step #	Actor	Action	Description	
		Status		
3	Installation Engineer	Receives email notification and navigates to Tasks tab	Installation Engineer receives email notification and navigates to Tasks tab	
4	System	Displays all Tasks which assigned to the Installation Group	System displays all Tasks which assigned to the Installation Group	
5	Installation Engineer	Presses button on the Task	Installation Engineer presses button on the Task	
6	System	System displays required Task parameters	System displays the next Task parameters: Task ID, User ID, Type, Status, Role_ID, Service_order_id	
7.1 7.2	Installation Engineer	1. Inputs cable name 2. Presses 'Create cable' button	1. Installation Engineer inputs cable name 2. Installation Engineer presses 'Create cable' button	
8	Installation Engineer	Presses 'Complete' button	Installation Engineer presses 'Complete' button	
9	System	1. Performs parameters validation 2. Takes into account dependencies between Cable and Circuit Sends email notification to the Customer with the service instance and service order parameters	1. System performs parameters validation 2. System takes into account dependencies between Cable and Circuit Sends email notification to the Customer with the service instance and service order parameters	
10	Installation Engineer	Changes Status for Service Order to 'Completed'.	Installation Engineer changes Status for Service Order to 'Completed'.	
11			WIND.UC.013 Bill send	

3.3.10. Creating New Router in System

3.3.10.1. *Description*

Use Case ID	WIND.UC.010
Use Case Name	Creating New Router in System
Description	Describes the process of Creation New Router in System
Activate	
Pre-conditions	User/CSE initiated New Router creation process
Post-conditions	New Router is created.

3.3.10.2. *Flow diagram*

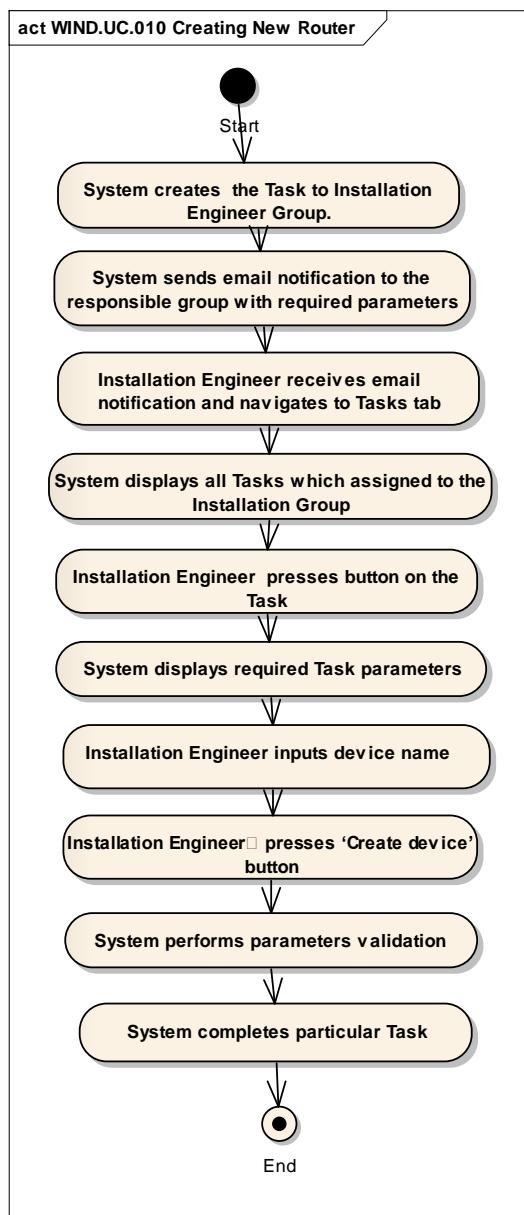


Figure 22– Creating New Router in System Flow Diagram

3.3.10.3. Base Flow

Step #	Actor	Action	Description
1	System	Creates Task to Installation Engineer Group	System creates the Task to Installation Engineer Group.
2	System	Sends email notification to the responsible group with the next parameters: Task ID, Type, Status	System sends email notification to the responsible group with the next parameters: Task ID, Type, Status
3	Installation Engineer	Receives email notification and navigates to Tasks tab	Installation Engineer receives email notification and navigates to Tasks tab
4	System	Displays all Tasks which assigned to the Installation Group	System displays all Tasks which assigned to the Installation Group
5	Installation Engineer	Presses button on the Task	Installation Engineer presses button on the Task
6	System	System displays required Task parameters	System displays the next Task parameters: Task ID, User ID, Type, Status, Role_ID, Service_order_id
7.1 7.2	Installation Engineer	1. Inputs device name 2. Presses 'Create device' button	1. Installation Engineer inputs device name 2. Installation Engineer presses 'Create device' button
8	System	Performs parameters validation	System performs parameters validation
9	System	Completes particular Task	System completes particular Task

3.3.11. Creating New Circuit in System

3.3.11.1. *Description*

Use Case ID	WIND.UC.011
Use Case Name	Creating New Circuit in System
Description	Describes the process of Creating New Circuit in System by Provisioning Engineer
Activate	System has initiated the process of creation new Circuit.
Pre-conditions	New Circuit in System task initialized
Post-conditions	New Circuit is created

3.3.11.2. Flow diagram

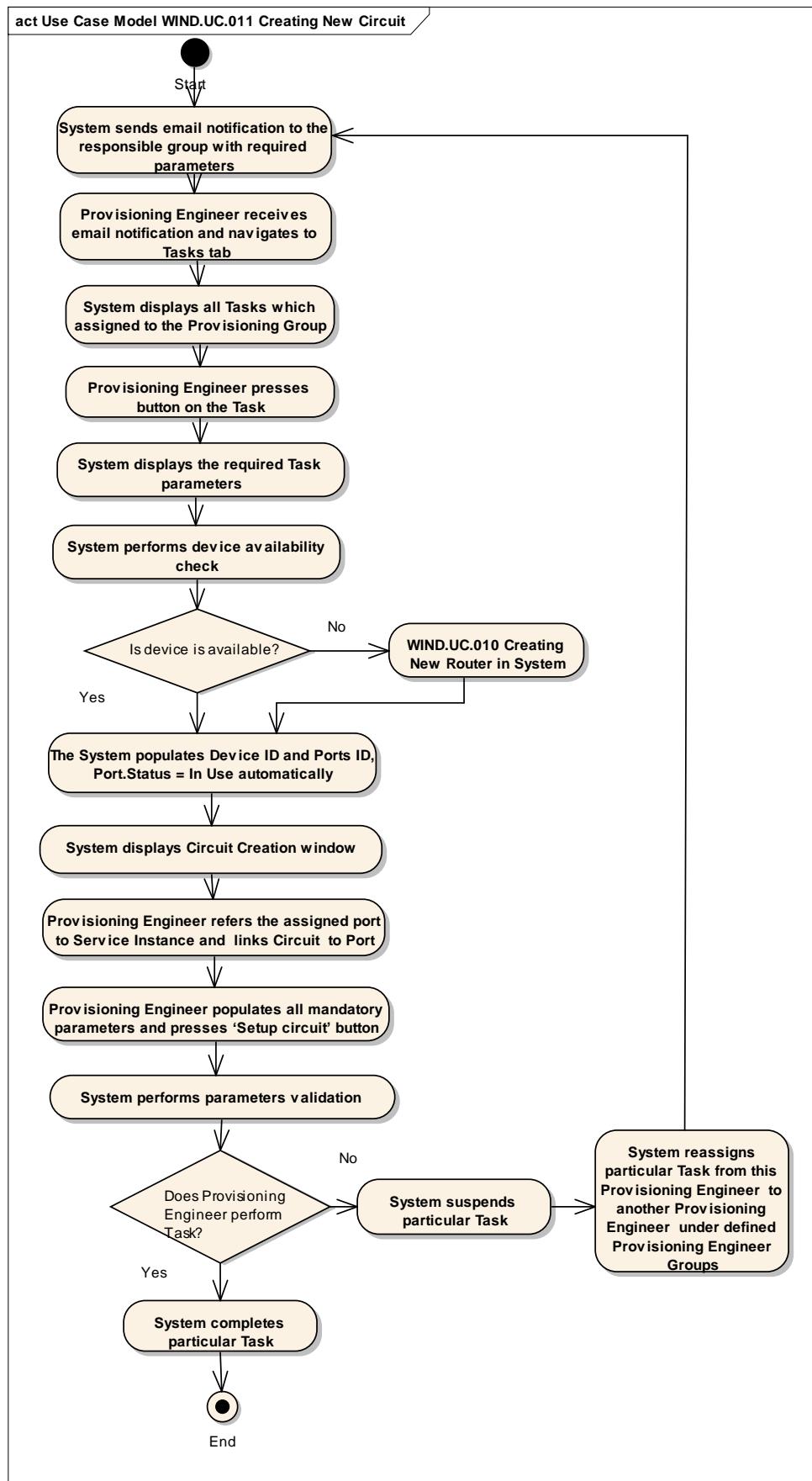


Figure 23 – Creating New Circuit in System Flow Diagram

3.3.11.3. Base Flow

Step #	Actor	Action	Description
1	System	Sends email notification to the responsible group with required parameters	System sends email notification to the responsible group with the next parameters: Task ID, User ID, Type, Status, Role_ID, Service_order_id
2	Provisioning Engineer	Receives email notification and navigates to Tasks tab	Provisioning Engineer receives email notification and navigates to Tasks tab
3	System	Displays all Tasks which assigned to the Provisioning Group	System displays all Tasks which assigned to the Provisioning Group
4	Provisioning Engineer	Presses button on the Task	Provisioning Engineer presses button on the Task
5	System	System displays the required Task parameters	System displays the next Task parameters: Task ID, User ID, Type, Status, Role_ID, Service_order_id
6.1 6.2	System	1. Performs device availability check 2. Populates Device ID and Ports ID, Port.Status = In Use automatically	Performs device availability check: 1. If device is available, the system populates Device ID and Ports ID, Port.Status = In Use automatically 2. If device is not available, the system displays popup window 'Device is not available for the current Location. Please create New Device' (go to Alternative Flow 1)
7	System	Displays Circuit Creation window	System displays Circuit Creation window
8	Provisioning Engineer	Refers the assigned port to Service Instance and links Circuit to Port	Provisioning Engineer refers the assigned port to Service Instance and links Circuit to Port
9	Provisioning Engineer	Populates all mandatory parameters and presses 'Setup circuit' button	Provisioning Engineer populates all mandatory parameters and presses 'Setup circuit' button
10	System	Performs parameters validation	System performs parameters validation (Does Provisioning Engineer perform Task?)

Step #	Actor	Action	Description
			If PE does not perform Task go to Alternative Flow 2
11	System	Completes particular Task	System completes particular Task

3.3.11.4. Alternative Flow 1

Step#	Actor	Action	Description
			Entry Point: Step #6.1 of the Base Flow: Performs device availability check
1			WIND.UC.010 Creating New Router in System
			Join: Step #6.2 of the Base Flow: Populates Device ID and Ports ID, Port.Status = In Use automatically

3.3.11.5. Alternative Flow 2

Step#	Actor	Action	Description
			Entry Point: Step #10 of the Base Flow: Performs parameters validation
1	System	Suspends particular Task	System suspends particular Task
2	System	Reassigns particular Task between Provisioning Engineers	System reassigns particular Task from this Provisioning Engineer to another Provisioning Engineer under defined Provisioning Engineer Groups
			Join: Step #1 of the Base Flow: Sends email notification to the responsible group with required parameters

3.3.12. Removing the Circuit in System

3.3.12.1. *Description*

Use Case ID	WIND.UC.012
Use Case Name	Removing the Circuit in System
Description	Describes the process of Removing the Circuit in System by Provisioning Engineer
Activate	System has initiated the process of removing the Circuit.
Pre-conditions	Removing the Circuit in System task initialized
Post-conditions	The Circuit is removed

3.3.12.2. Flow diagram

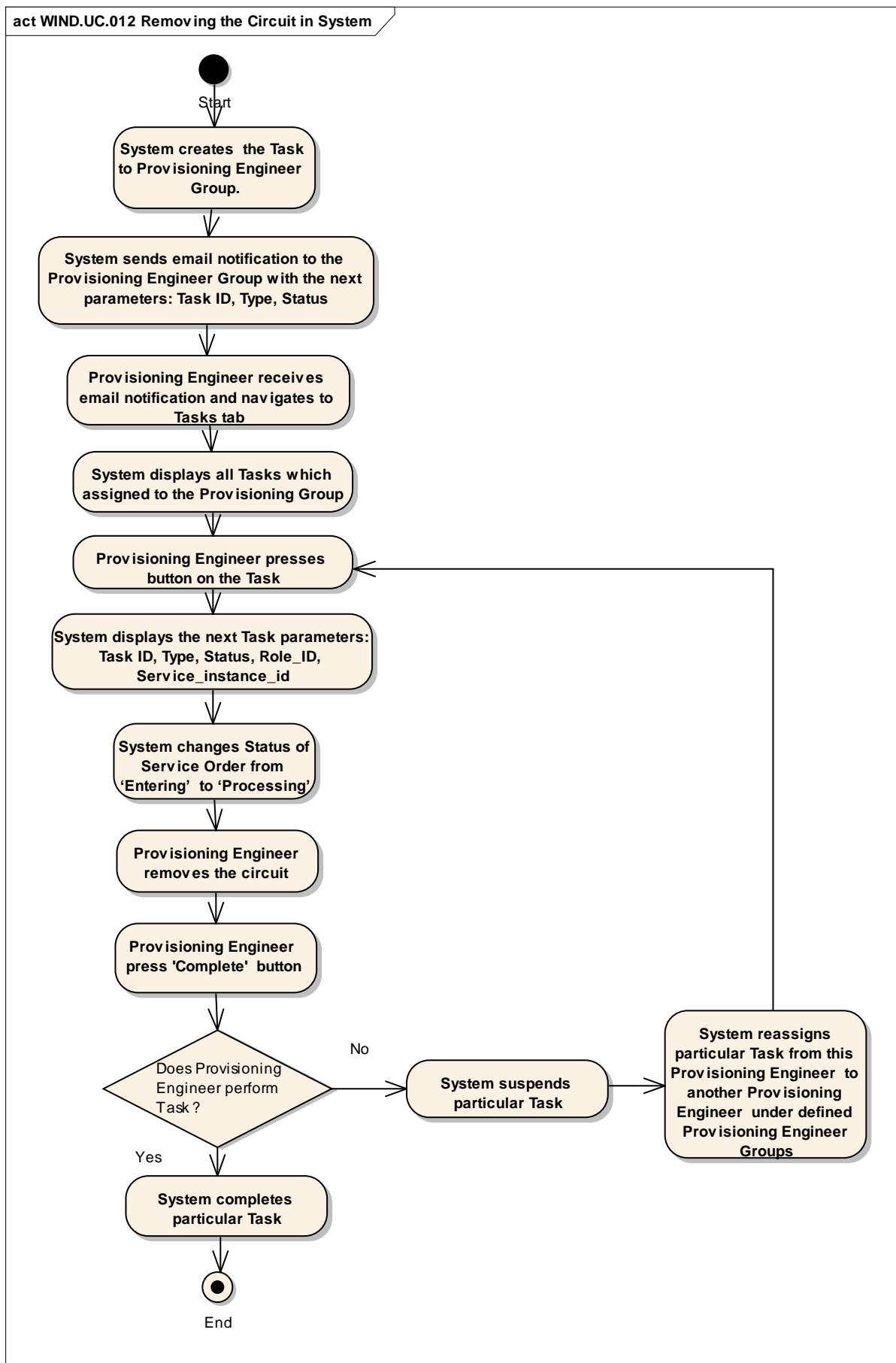


Figure 24 – Removing Circuit in System Flow Diagram

3.3.12.3. Base Flow

Step #	Actor	Action	Description
1	System	Creates Task to Provisioning Engineer Group	System creates the Task to Provisioning Engineer Group
2	System	<ul style="list-style-type: none"> - Sends email notification to the Provisioning Engineer group with the next parameters: Task ID, Type, Status 	<ul style="list-style-type: none"> - System sends email notification to the Provisioning Engineer group with the next parameters: Task ID, Type, Status
3	Provisioning Engineer	Receives email notification and navigates to Tasks tab	Provisioning Engineer receives email notification and navigates to Tasks tab
4	Provisioning Engineer	Provisioning Engineer Group presses button on the Task	Provisioning Engineer Group presses button on the Task
5	System	Displays the next Task parameters: Task ID, Type, Status, Role_ID, Service_instance_id	System displays the next Task parameters: Task ID, Type, Status, Role_ID, Service_instance_id
6	System changes	Status of Service Order from 'Entering' to 'Processing'	System changes Status of Service Order from 'Entering' to 'Processing'
7	Provisioning Engineer	Removes the circuit	Provisioning Engineer removes the circuit
8	Provisioning Engineer	Presses 'Complete' button	Provisioning Engineer presses 'Complete' button
9	System	Completes particular Task	System completes particular Task

3.3.12.4. Alternative Flow

Step#	Actor	Action	Description
			Entry Point: Step #8 of the Base Flow: Presses 'Complete' button
1	System	Suspends particular Task	System suspends particular Task
2	System	Reassigns particular Task between Provisioning Engineers	System reassigns particular Task from this Provisioning Engineer to another Provisioning Engineer under defined Provisioning Engineer Groups
			Join: Step #4 of the Base Flow: Provisioning Engineer Group presses button on the Task

3.3.13. Bill Sending

3.3.13.1. Description

Use Case ID	WIND.UC.011
Use Case Name	Bill Sending in System
Description	Describes the process of Bill Sending in System by Customer Support Engineer
Activate	System has initiated the process of sending the Bill.
Pre-conditions	Bill Sending task initialized
Post-conditions	The Bill sent

3.3.13.2. Flow diagram

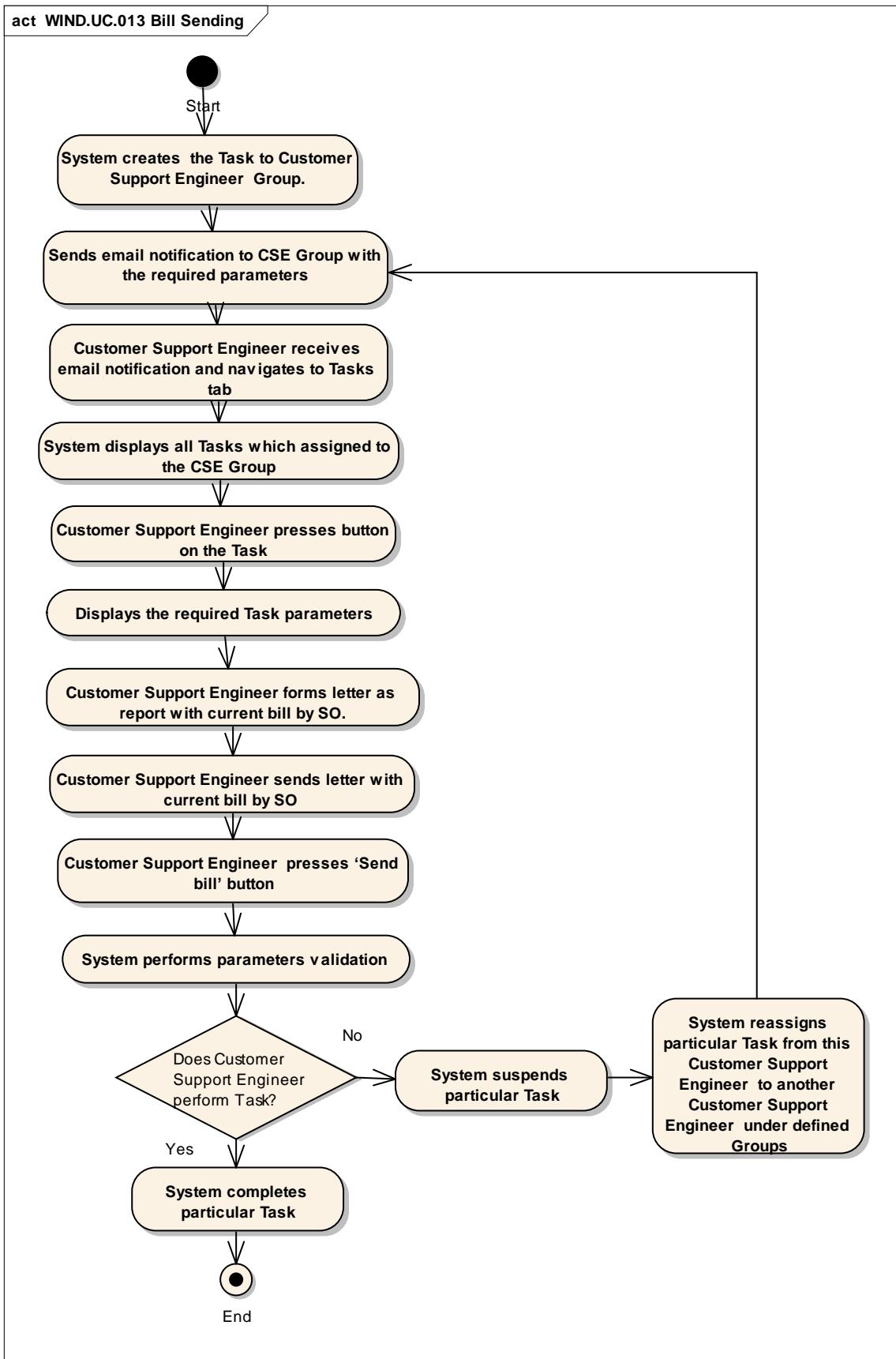


Figure 25 — Bill Sending in System Flow Diagram

3.3.13.3. Base Flow

Step #	Actor	Action	Description
1	System	Creates Task to Customer Support Engineer Group	System creates the Task to Customer Support Engineer Group
2	System	Sends email notification to CSE Group with the required parameters	System sends email notification to the responsible group with the next parameters: Task ID, Type, Status
3	Customer Support Engineer	Receives email notification and navigates to Tasks tab	Customer Support Engineer receives email notification and navigates to Tasks tab
4	System	Displays all Tasks which assigned to the Customer Support Engineer Group	System displays all Tasks which assigned to the Customer Support Engineer Group
5	Customer Support Engineer	Presses button on the Task	Customer Support Engineer presses button on the Task
6	System	System displays required Task parameters	System displays the next Task parameters: Task ID, User ID, Type, Status, Role_ID, Service_order_id
7	Customer Support Engineer	Forms letter as report with current Bill by SO	Customer Support Engineer forms letter as report with current bill by Service Order.
8	Customer Support Engineer	Sends letter with current Bill by SO	Customer Support Engineer sends letter with current bill by Service Order
9	Customer Support Engineer	Presses 'Complete' button	Installation Engineer presses 'Send bill' button
10	System	Performs parameters validation	System performs parameters validation (Does Provisioning Engineer perform Task?) If PE does not perform Task go to Alternative Flow
11	System	Completes particular Task	System completes particular Task

3.3.13.4. Alternative Flow

Step#	Actor	Action	Description
			<p>Entry Point:</p> <p>Step #10 of the Base Flow: Performs parameters validation</p>
1	System	Suspends particular Task	System suspends particular Task
2	System	Reassigns particular Task between Provisioning Engineers	System reassigns particular Task from this Provisioning Engineer to another Provisioning Engineer under defined Provisioning Engineer Groups
			<p>Join:</p> <p>Step #2 of the Base Flow: Sends email notification to CSE Group with the required parameters</p>

3.3.14. Creating Service Instance

3.3.14.1. *Description*

Use Case ID	WIND.UC.012
Use Case Name	Creating Service Instance
Description	Describes the process of Service Instance creation in System
Activate	System has initiated the process of Service Instance creation
Pre-conditions	Service Order created
Post-conditions	Service Instance created

3.3.14.2. *Flow diagram*

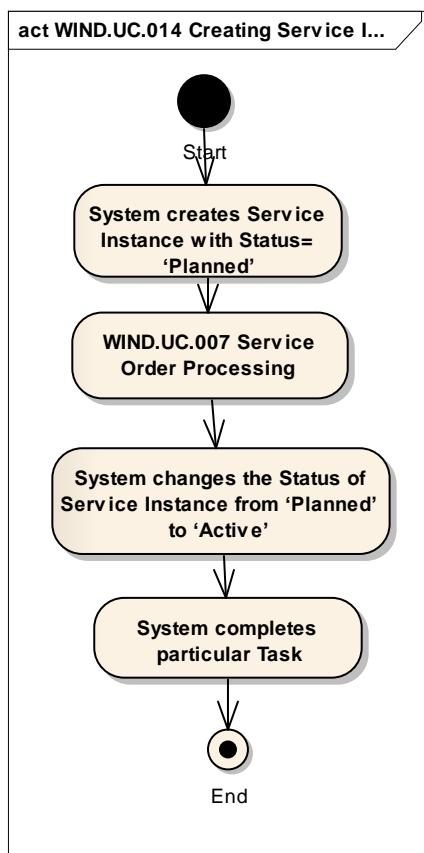


Figure 26 — Creating Service Instance Flow Diagram

3.3.14.3. *Base Flow*

Step #	Actor	Action	Description
1	System	Creates the Service Instance with Status = 'Planned'	System creates the Service Instance with Status = 'Planned'
2		Service Order Processing	WIND.UC.007 Service Order Processing

Step #	Actor	Action	Description
3	System	Changes the Status of SI to ‘Active’	System changes the Status of Service Instance from ‘Planned’ to ‘Active’
4	System	Completes particular Task	System completes particular Task

3.3.15. Modifying Parameters for Service Instance

3.3.15.1. *Description*

Use Case ID	WIND.UC.015
Use Case Name	Modifying Parameters for Service Instance
Description	Describes the process of Modifying Parameters for Service Instance in System
Activate	Customer User/CSE has initiated the process of Modifying Parameters for Service Instance
Pre-conditions	Customer User/CSE initiated modification for Service Instance
Post-conditions	Parameters for Service Instance modified

3.3.15.2. Flow diagram

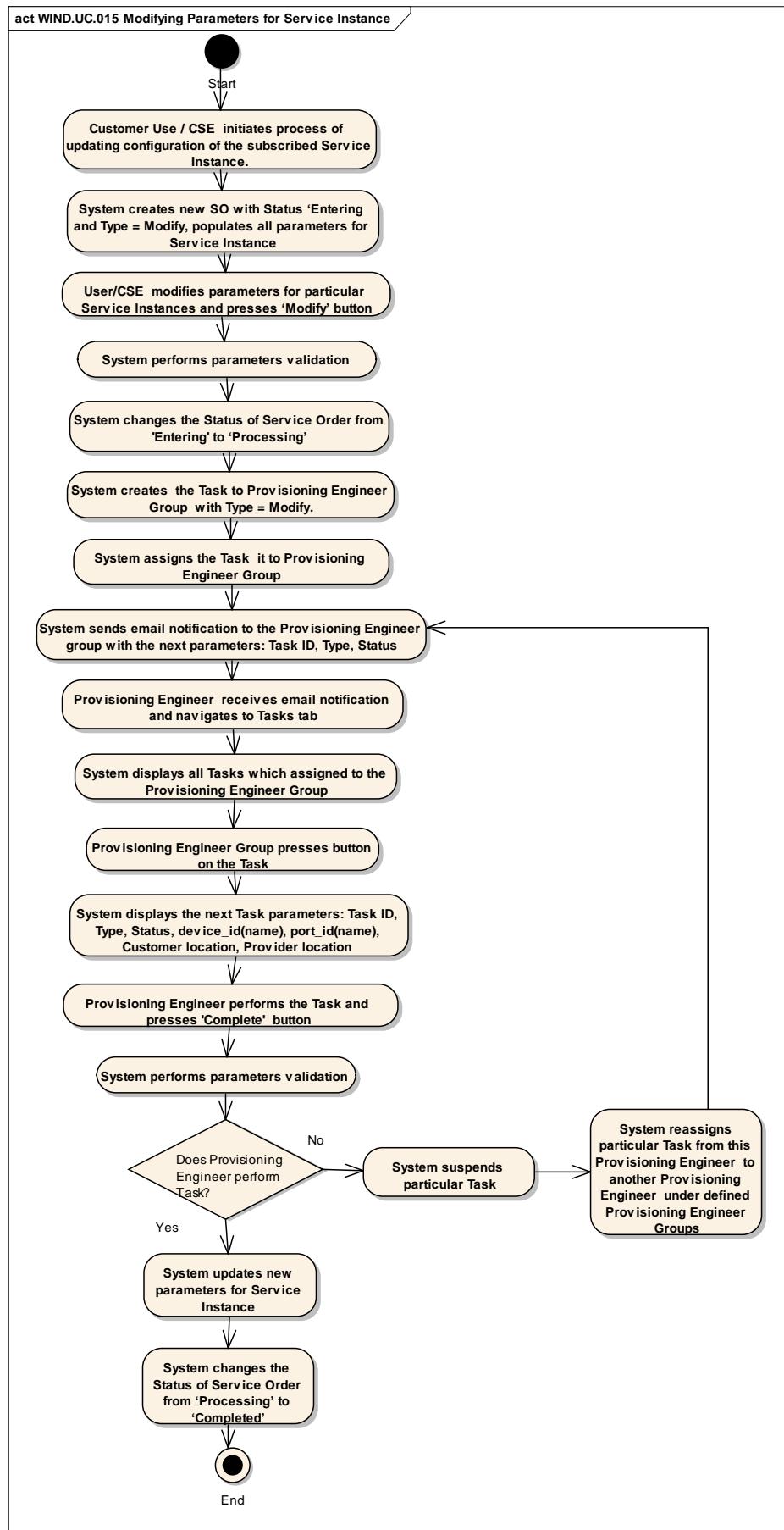


Figure 27 — Modifying Parameters for Service Instance Flow Diagram

3.3.15.3. Base Flow

Step #	Actor	Action	Description
1	Customer User/CSE	Initiates process of updating configuration of the subscribed SI.	Customer User initiates process of updating configuration of the subscribed Service Instance.
2.1 2.2	System	<ul style="list-style-type: none"> - Creates new SO with Status 'Entering' and Type = Modify - Populates all parameters for Service Instance 	System Creates new SO with Status 'Entering' and Type = Modify and populates all parameters for Service Instance
3.1 3.2	User/CSE	<ul style="list-style-type: none"> - Modifies parameters for particular Service Instances - Presses 'Modify' button 	User/CSE modifies parameters for particular Service Instances and presses 'Modify' button
4	System	Performs parameters validation	System performs parameters validation
5	System	Creates the Task to Provisioning Engineer Group	System creates the Task to Provisioning Engineer Group
6.1- 6.5	System	<ul style="list-style-type: none"> - Performs parameters validation - Changes the Status of Service Order from 'Entering' to 'Processing' - Creates the Task with Type = Modify - Assigns Task to Provisioning Engineer Group - Sends email notification to the Provisioning Engineer group with the next parameters: Task ID, Type, Status 	<ul style="list-style-type: none"> - System performs parameters validation - System changes the Status of Service Order from 'Entering' to 'Processing' - System creates the Task with Type = Modify - System assigns Task to Provisioning Engineer Group - System sends email notification to the Provisioning Engineer group with the next parameters: Task ID, Type, Status
7	Provisioning Engineer	Receives email notification and navigates to Tasks tab	Provisioning Engineer receives email notification and navigates to Tasks tab
8	Provisioning Engineer	Provisioning Engineer Group presses button on the Task	Provisioning Engineer Group presses button on the Task
9	System	Displays the next Task parameters: Task ID, Type, Status, device_id(name), port_id(name), Customer location, Provider location	System displays the next Task parameters: Task ID, Type, Status, device_id(name), port_id(name), Customer location, Provider location

Step #	Actor	Action	Description
10	Provisioning Engineer	<ul style="list-style-type: none"> - Performs the Task - Presses 'Complete' button 	Provisioning Engineer performs the Task and presses 'Complete' button
11.1	System	<ul style="list-style-type: none"> - Performs parameters validation 	
11.2		<ul style="list-style-type: none"> - Updates new parameters for Service Instance 	
11.3		<ul style="list-style-type: none"> - Changes Service Order Status to Completed 	

3.3.15.4. Alternative Flow

Step#	Actor	Action	Description
			<p>Entry Point:</p> <p>Step #11.1 of the Base Flow: Performs parameters validation</p>
1	System	Suspends particular Task	System suspends particular Task
2	System	Reassigns particular Task between Provisioning Engineers	System reassigns particular Task from this Provisioning Engineer to another Provisioning Engineer under defined Provisioning Engineer Groups
			<p>Join:</p> <p>Step #6.5 of the Base Flow: Sends email notification to the Provisioning Engineer group with the next parameters: Task ID, Type, Status</p>

3.3.16. Disconnect for Existing Service Instance

3.3.16.1. *Description*

Use Case ID	WIND.UC.016
Use Case Name	Disconnect for Existing Service Instance
Description	Describes the process of Disconnection for Existing Service Instance
Activate	Customer User/CSE has initiated the process of Disconnection for Existing Service Instance
Pre-conditions	Customer User/CSE initiated the process of disconnection for Existing Service Instance initialized
Post-conditions	Existing Service Instance disconnected

3.3.16.2. Flow diagram

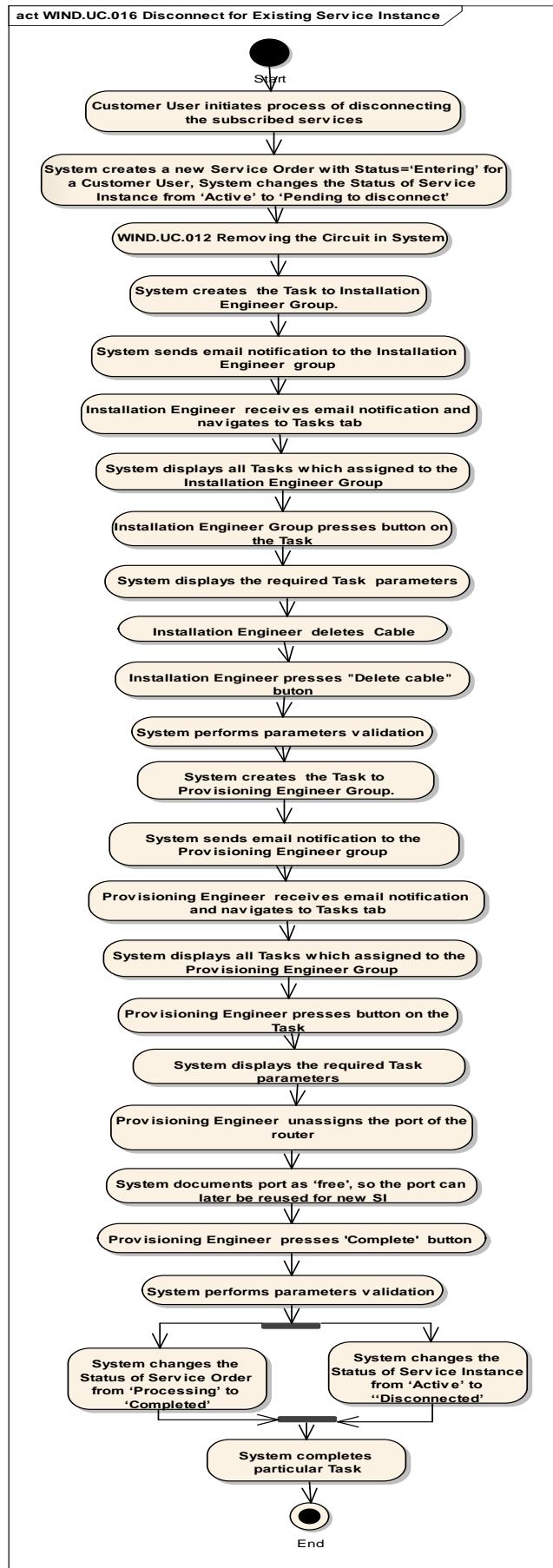


Figure 28 – Disconnect for Existing Service Instance Flow Diagram

3.3.16.3. Base Flow

Step #	Actor	Action	Description
1	Customer User	Initiates process of disconnection the subscribed products and services.	Customer User initiates process of disconnecting the subscribed products and services.
2	System	<ul style="list-style-type: none"> - Creates a new Service Order with Status='Entering' for a Customer User - Changes the Status of Service Instance from 'Active' to 'Pending to disconnect' 	System creates a new Service Order with Status='Entering' for a Customer User, System changes the Status of Service Instance from 'Active' to 'Pending to disconnect'
3			WIND.UC.012 Removing the Circuit in System
4	System	Creates the Task to Installation Engineer Group	System creates the Task to Installation Engineer Group.
5	System	<ul style="list-style-type: none"> - Sends email notification to the Installation Engineer group with the next parameters: Task ID, Type, Status 	<ul style="list-style-type: none"> - System sends email notification to the Installation Engineer group with the next parameters: Task ID, Type, Status
6	Installation Engineer	Receives email notification and navigates to Tasks tab	Installation Engineer receives email notification and navigates to Tasks tab
7	System	Displays all Tasks which assigned to the Installation Engineer Group	System displays all Tasks which assigned to the Installation Engineer Group
8	Installation Engineer	Presses button on the Task	Installation Engineer presses button on the Task
9	System	Displays the next Task parameters: Task ID, Type, Status, device_id(name), port_id(name), Customer location, Provider location	System displays the next Task parameters: Task ID, Type, Status, device_id(name), port_id(name), Customer location, Provider location
10	Installation Engineer	Deletes Cable	Installation Engineer deletes Cable
11	Installation Engineer	Presses "Complete" button	Installation Engineer presses "Complete" button
12	System	Performs parameters validation	System performs parameters validation
13	System	Creates the Task to Provisioning	System creates the Task to Provisioning

Step #	Actor	Action	Description
		Provisioning Engineer Group.	Engineer Group.
14	System	Sends email notification to the Provisioning Engineer group with the next parameters: Task ID, Type, Status	System sends email notification to the Provisioning Engineer group with the next parameters: Task ID, Type, Status
15	Provisioning Engineer	Receives email notification and navigates to Tasks tab	Provisioning Engineer receives email notification and navigates to Tasks tab
16	System	Displays all Tasks which assigned to the Provisioning Engineer Group	System displays all Tasks which assigned to the Provisioning Engineer Group
17	Provisioning Engineer	Presses button on the Task	Provisioning Engineer Group presses button on the Task
18	System	Displays the next Task parameters: Task ID, Type, Status, device_id(name), port_id(name), Customer location, Provider location	System displays the next Task parameters: Task ID, Type, Status, device_id(name), port_id(name), Customer location, Provider location
19	Provisioning Engineer	Unassigns the port of the router, brakes reference between the assigned port and Service Instance	Provisioning Engineer unassigns the port of the router, brakes reference between the assigned port and Service Instance
20	System	Documents port as 'free', so the port can later be reused for new SI	System documents port as 'free', so the port can later be reused for new SI
21	Provisioning Engineer	Presses 'Complete' button	Provisioning Engineer presses 'Complete' button
22	System	Performs parameters validation	System performs parameters validation
23	System	<ul style="list-style-type: none"> - changes the Status of SI to 'Disconnected' - changes the Status of SO to 'Completed' 	<ul style="list-style-type: none"> - System changes the Status of Service Instance from 'Active' to "Disconnected" - System changes the Status of Service Order from 'Processing' to 'Completed'
24	System	Completes particular Task	System completes particular Task

3.3.17. E-mail Notification

3.3.17.1. Description

Use Case ID	WIND.UC.017
Use Case Name	E-mail Notification
Description	Describes the process of E-mail Notification
Activate	System has initiated the process of E-mail Notification
Pre-conditions	-
Post-conditions	User notified by E-mail

3.3.17.2. Flow diagram

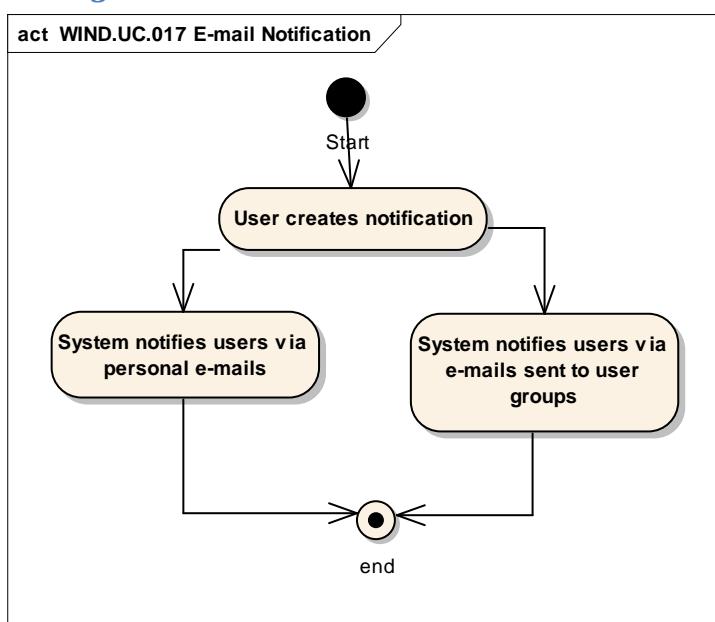


Figure 29 — E-mail Notification Flow Diagram

3.3.17.3. Base Flow

Step #	Actor	Action	Description
1	User	Creates notification.	User creates notification.
2	System	Notifies users via personal e-mails	System notifies users via personal e-mails

3.3.17.4. Alternative Flow 1

Step #	Actor	Action	Description
1	User	Creates notification.	User creates notification.

Step #	Actor	Action	Description
2	System	Notifies users via e-mails sent to user groups	System notifies users via e-mails sent to user groups

3.3.18. Creating RI Reports

3.3.18.1. *Description*

Use Case ID	WIND.UC.018
Use Case Name	Creating RI Reports
Description	Describes the process of RI Reports Creation
Activate	User has initiated the process of RI Reports Creation
Pre-conditions	-
Post-conditions	RI Report created

3.3.18.2. Flow diagram

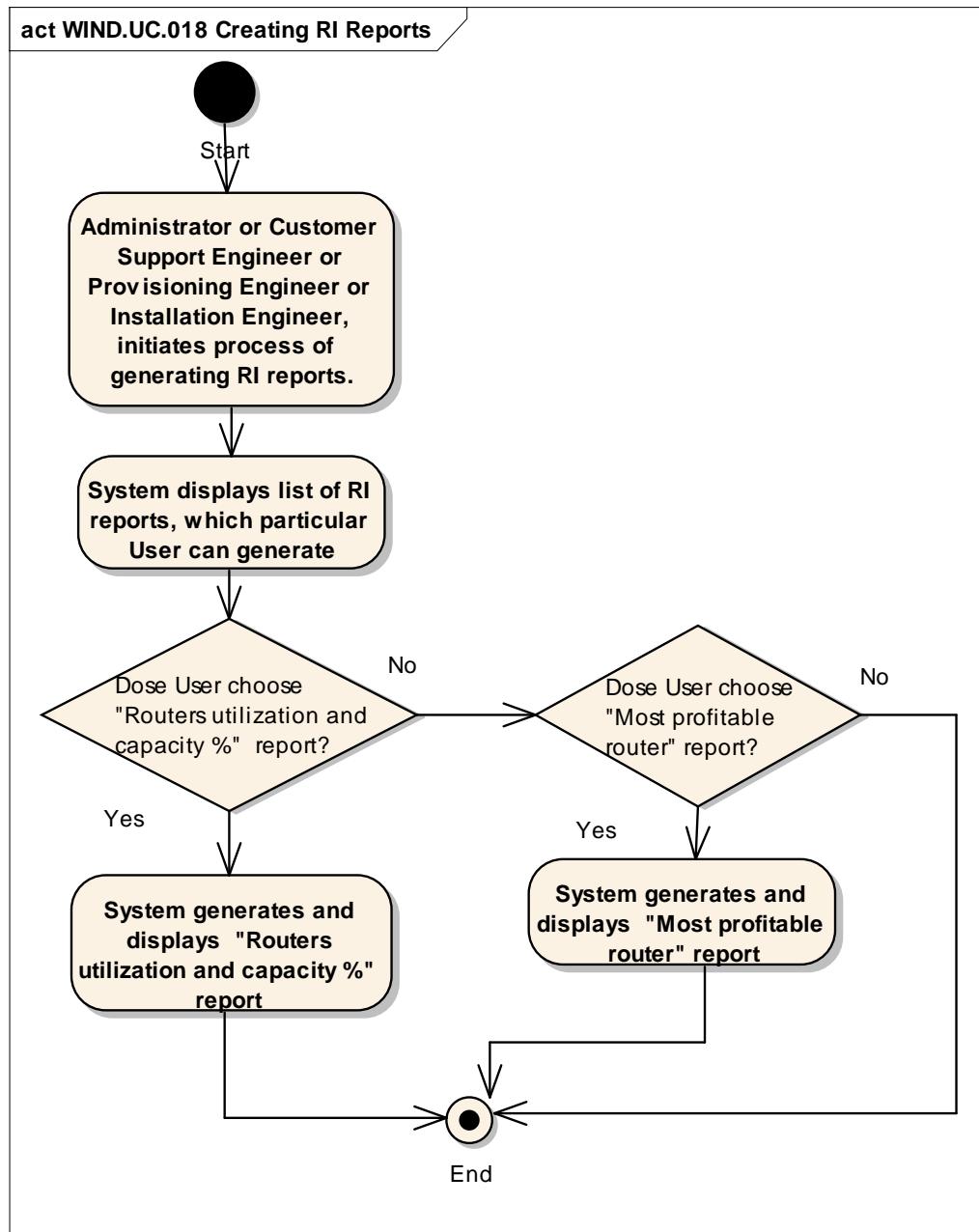


Figure 30 – Creating RI Reports Flow Diagram

3.3.18.3. Base Flow

Step #	Actor	Action	Description
1	Administrator, Customer Support Engineer, Provisioning Engineer, Installation Engineer	Initiates process of generating RI reports	Administrator or Customer Support Engineer or Provisioning Engineer or Installation Engineer initiates process of generating RI reports.
2	System	Displays list of RI reports for particular User	System displays list of RI reports, which particular User can generate

Step #	Actor	Action	Description
3	System	Generate and display “Routers utilization and capacity %” report	System generate and display “Routers utilization and capacity %” report

3.3.18.4. Alternative Flow 1

Step #	Actor	Action	Description
			Entry Point: Step #2 of the Base Flow: Displays list of RI reports for particular User
1	System	Generate and display “Most profitable router” report	System generate and display “Most profitable router” report

3.3.19. Creating SI Reports

3.3.19.1. Description

Use Case ID	WIND.UC.019
Use Case Name	Creating SI Reports
Description	Describes the process of SI Reports Creation
Activate	User has initiated the process of SI Reports Creation
Pre-conditions	-
Post-conditions	SI Report created

3.3.19.2. Flow diagram

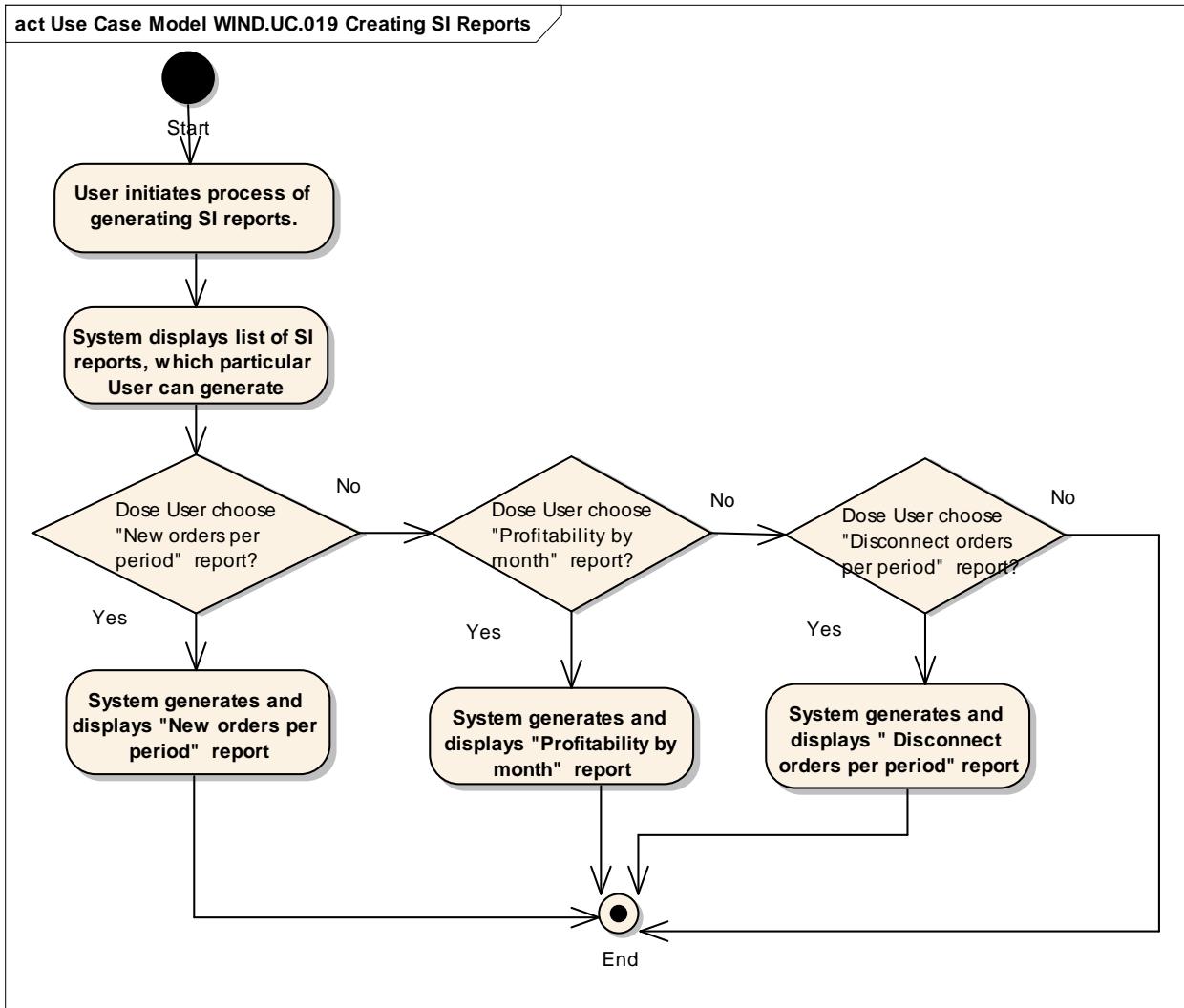


Figure 31 — Creating SI Reports Flow Diagram

3.3.19.3. Base Flow

Step #	Actor	Action	Description
1	User	Initiates process of generating SI reports	User initiates process of generating SI reports
2	System	Displays list of SI reports for particular User	System displays list of SI reports, which particular User can generate
3	System	Generate and display "New orders per period" report	System generate and display "New orders per period" report

3.3.19.4. Alternative Flow 1

Step #	Actor	Action	Description
			Entry Point: Step #2 of the Base Flow: Displays list of SI reports for particular User
1	System	Generate and display “Profitability by month” report	System generate and display “Profitability by month” report

3.3.19.5. Alternative Flow 2

Step #	Actor	Action	Description
			Entry Point: Step #2 of the Base Flow: Displays list of SI reports for particular User
1	System	Generate and display “Disconnect orders per period” report	System generate and display “Disconnect orders per period” report

3.3.20. Creating CIA Reports

3.3.20.1. Description

Use Case ID	WIND.UC.020
Use Case Name	Creating CIA Reports
Description	Describes the process of CIA Reports Creation
Activate	User has initiated the process of CIA Reports Creation
Pre-conditions	-
Post-conditions	CIA Report created

3.3.20.2. Flow diagram

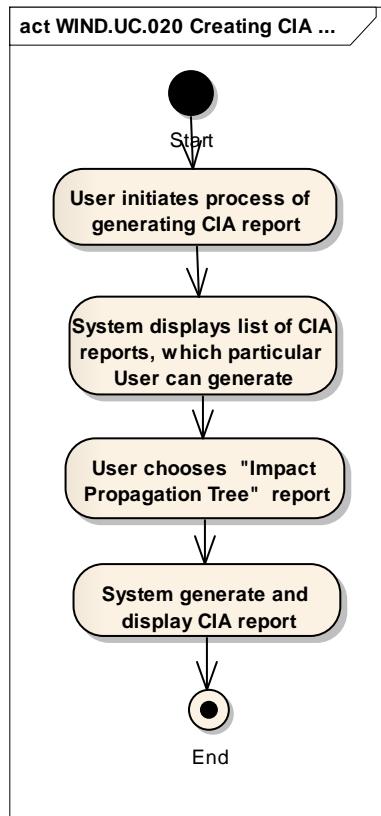


Figure 32 — Creating CIA Reports Flow Diagram

3.3.20.3. Base Flow

Step #	Actor	Action	Description
1	User	Initiates process of generating CIA reports	User initiates process of generating CIA report
2	System	Displays list of CIA reports for particular User	System displays list of CIA reports, which particular User can generate
3	User	Chooses "Impact Propagation Tree" report	User chooses "Impact Propagation Tree" report
4	System	Generate and display chosen CIA report	System generate and display chosen CIA report

3.3.21. Exporting Reports

3.3.21.1. *Description*

Use Case ID	WIND.UC.021
Use Case Name	Exporting Reports
Description	Describes the process of Reports Exporting
Activate	User has initiated the process of Reports Exporting
Pre-conditions	-
Post-conditions	Reports are exported

3.3.21.2. Flow diagram

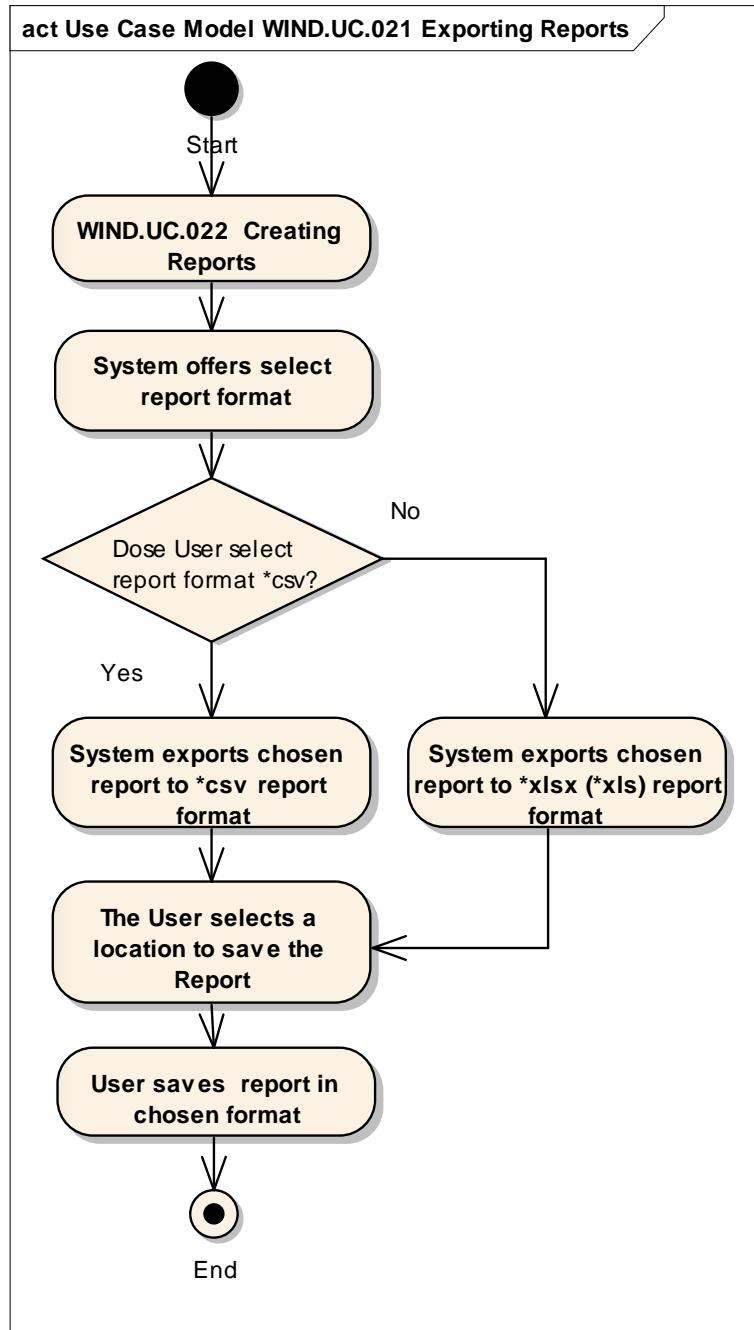


Figure 33 — Exporting Reports Flow Diagram

3.3.21.3. Base Flow

Step #	Actor	Action	Description
1		Creating Reports	WIND.UC.022 Creating Reports
2	System	Offers select report format	System offers select report format
3	System	Exports report to *csv format	System exports chosen report to *csv report format
4	User	Selects a location to save the report	User selects a location to save the report

Step #	Actor	Action	Description
5	User	Saves report in chosen format	User saves report in chosen format

3.3.21.4. Alternative Flow 1

Step #	Actor	Action	Description
			Entry Point: Step #2 of the Base Flow: Offers select report format
1	System	Exports report to *xls format	System exports chosen report to *xlsx (*xls) report format
			Join: Step #4 of the Base Flow: Selects a location to save the report

3.3.22. Creating Reports

3.3.22.1. Description

Use Case ID	WIND.UC.022
Use Case Name	Creating Reports
Description	Describes the process of Reports Creation
Activate	User has initiated the process of Reports Creation
Pre-conditions	-
Post-conditions	Reports are created

3.3.22.2. Flow diagram

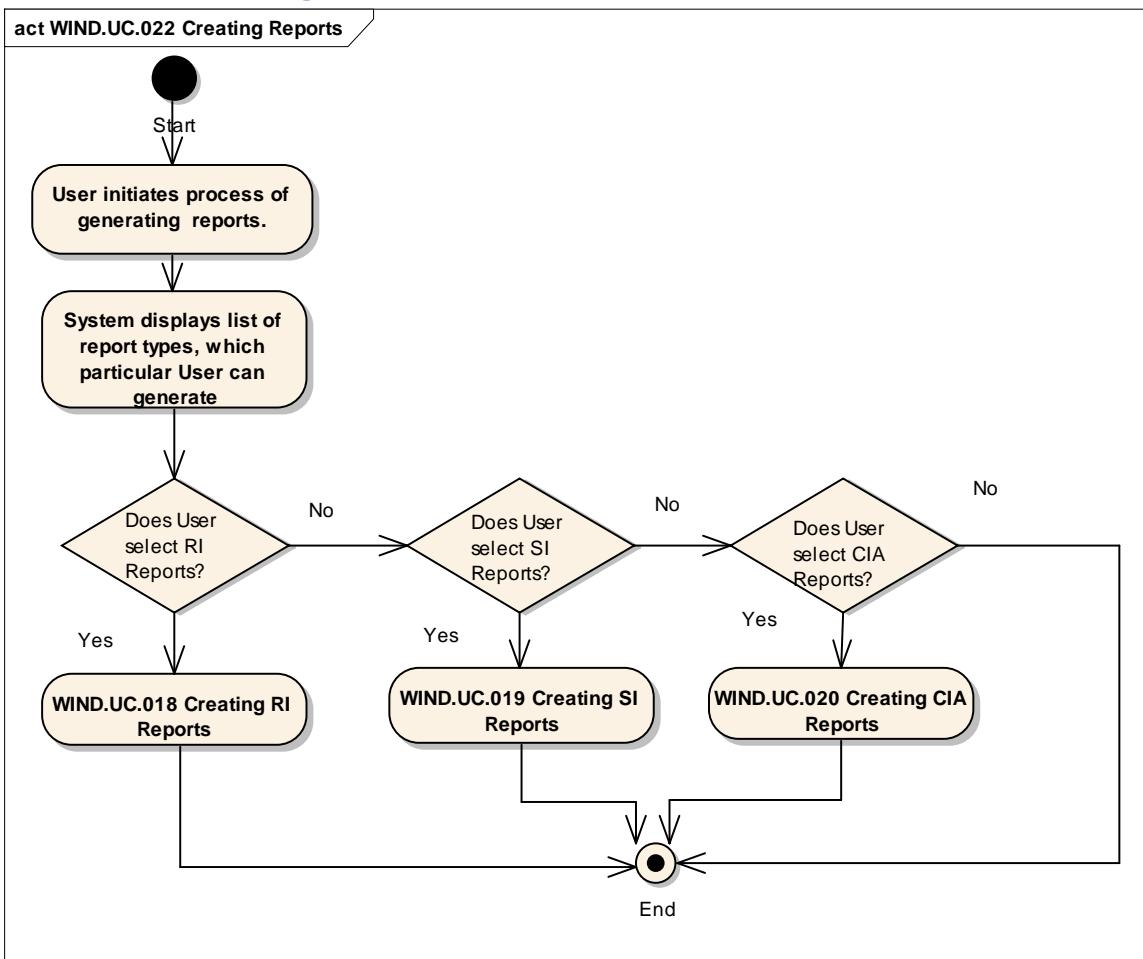


Figure 34 — Creating Reports Flow Diagram

3.3.22.3. Base Flow

Step #	Actor	Action	Description
1	User	Initiates process of generating reports	User initiates process of generating reports
2	System	Displays list of report types	System displays list of report types, which particular User can generate
3		Creating RI Reports	WIND.UC.018 Creating RI Reports

3.3.22.4. Alternative Flow 1

Step #	Actor	Action	Description
			Entry Point: Step #2 of the Base Flow: Displays list of report types
1		Creating SI Reports	WIND.UC.019 Creating SI Reports

3.3.22.5. Alternative Flow 2

Step #	Actor	Action	Description
			Entry Point: Step #2 of the Base Flow: Displays list of report types
1		Creating CIA Reports	WIND.UC.020 Creating CIA Reports

3.3.23. Review Service Instance by Customer

3.3.23.1. *Description*

Use Case ID	WIND.UC.023
Use Case Name	Review Service Instance by Customer
Description	Describes the process of Service Instance by Customer Reviewing
Activate	User has initiated the process of Service Instance by Customer Reviewing
Pre-conditions	-
Post-conditions	Service Instance by Customer reviewed

3.3.23.2. Flow diagram

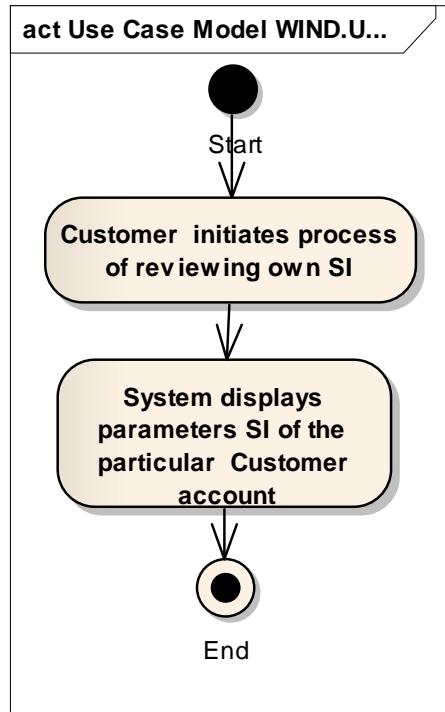


Figure 35—Review Service Instance by Customer Flow Diagram

3.3.23.3. Base Flow

Step #	Actor	Action	Description
1	Customer User	Initiates process of reviewing own SI	Customer User initiates process of reviewing own SI
2	System	Displays parameters SI of the particular Customer account	System displays parameters SI of the particular Customer account

3.3.24. User Logs In

3.3.24.1. Description

Use Case ID	WIND.UC.024
Use Case Name	User Logs In
Description	Describes the process of User's Logging In
Activate	User has initiated the process of Logging In
Pre-conditions	-
Post-conditions	User Logged In

3.3.24.2. Flow diagram

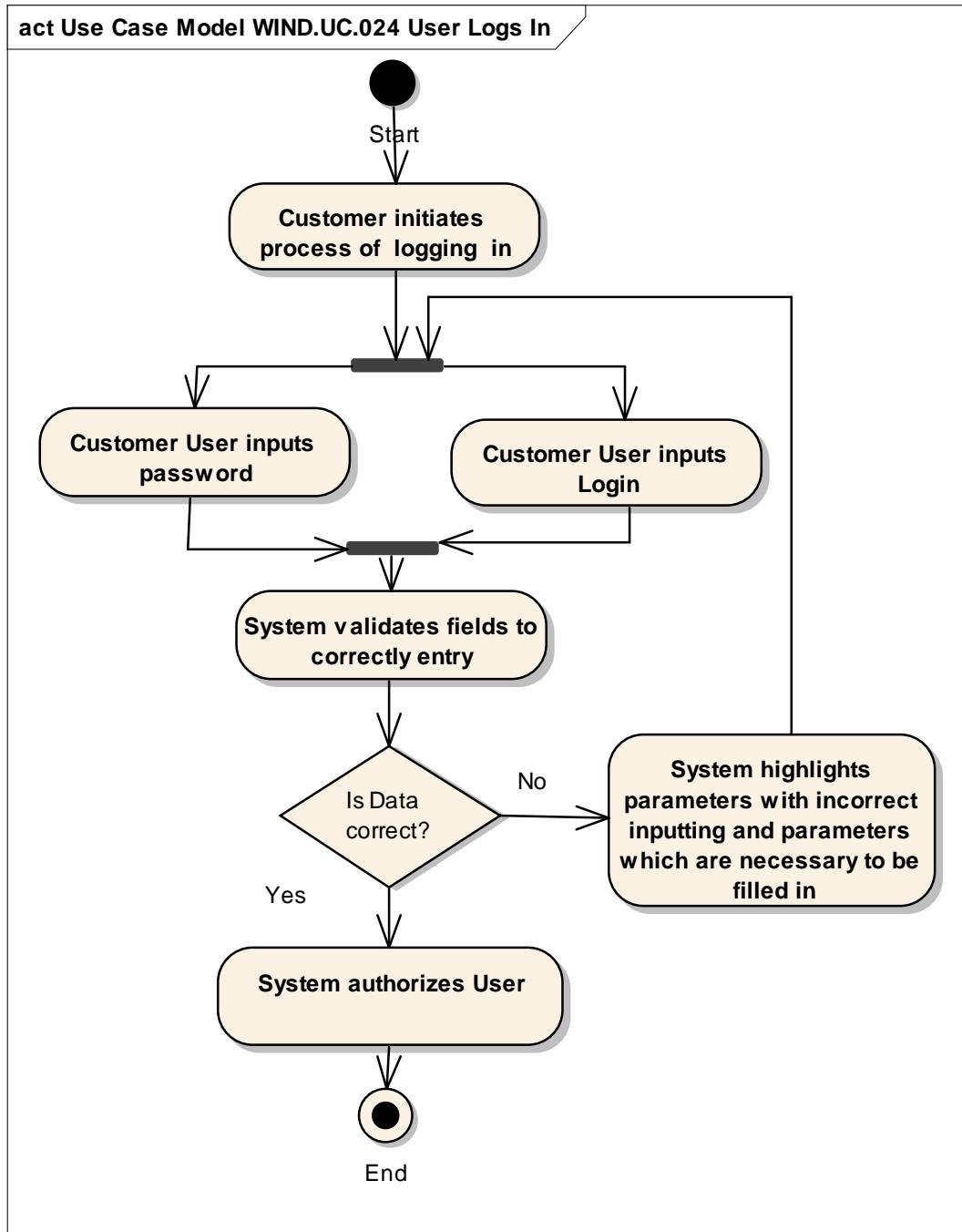


Figure 36—User Logs In Flow Diagram

3.3.24.3. Base Flow

Step #	Actor	Action	Description
1	Customer User	Initiates process of logging in	Customer User initiates process of generating reports
2	Customer User	Inputs personal data information	Customer User inputs Login & Password information
3	System	Validates fields to correctly entry	System validates fields to correctly entry

Step #	Actor	Action	Description
4	System	Authorizes User	System authorizes User

3.3.24.4. Alternative Flow 1

Step #	Actor	Action	Description
			Entry Point: Step #3 of the Base Flow: Validates fields to correctly entry
1	System	Highlights parameters with incorrect inputting	System highlights parameters with incorrect inputting and parameters which are necessary to be filled in
			Join: Step #2 of the Base Flow: Inputs personal data information

3.3.25. Cancel Service Order

3.3.25.1. *Description*

Use Case ID	WIND.UC.025
Use Case Name	Cancel Service Order
Description	Describes the process of Cancelling Service Order
Activate	User/CSE presses button 'Cancel Order'
Pre-conditions	Service Order is created with status “Entering”
Post-conditions	Service Order is cancelled

3.3.25.2. *Flow diagram*

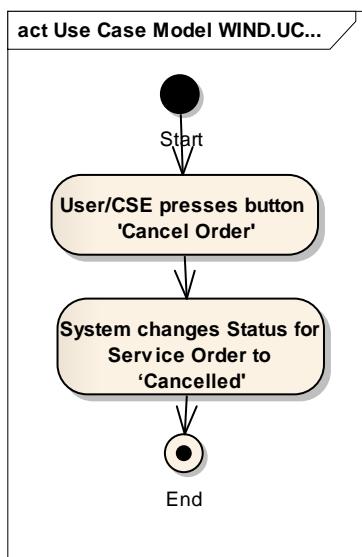


Figure 37—User Logs In Flow Diagram

3.3.25.3. *Base Flow*

Step #	Actor	Action	Description
1	User/CSE	Presses button 'Cancel Order'	User/CSE presses button 'Cancel Order'
2	System	Changes Status for Service Order to 'Cancelled'	System changes Status for Service Order to 'Cancelled'

3.4 Sequences

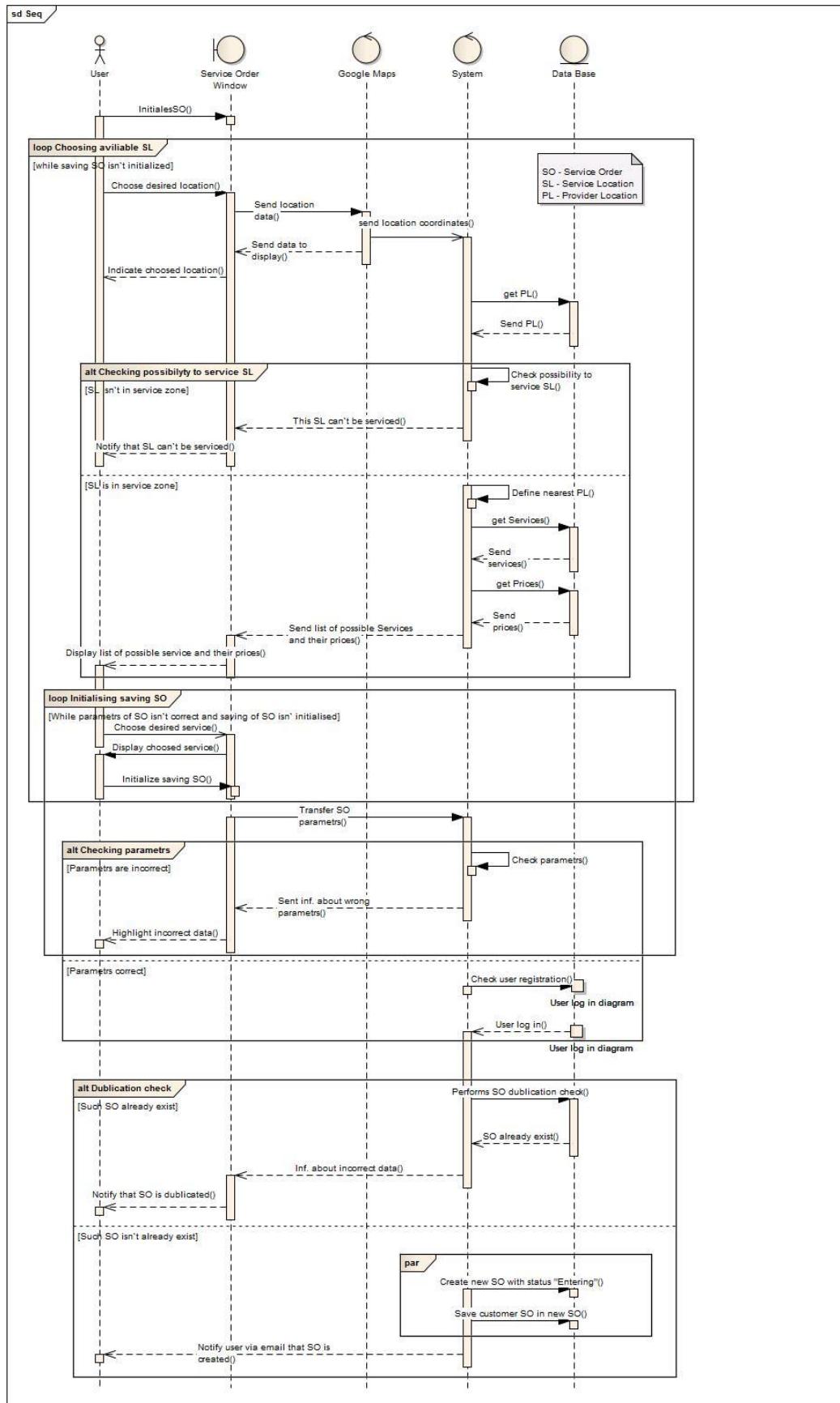


Figure 38 – Sequence diagram Service Order

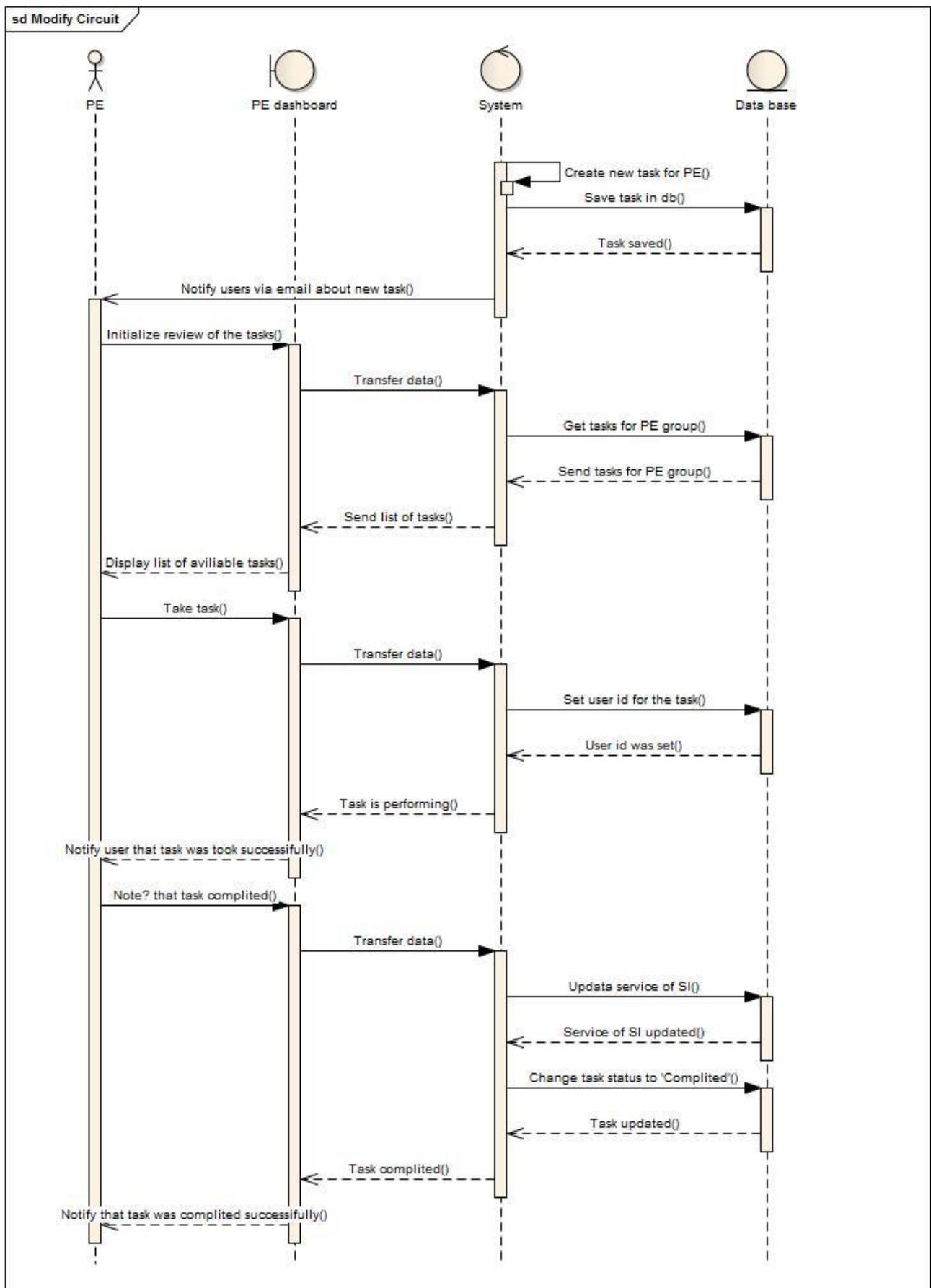


Figure 39 – Sequence diagram modify Circuit

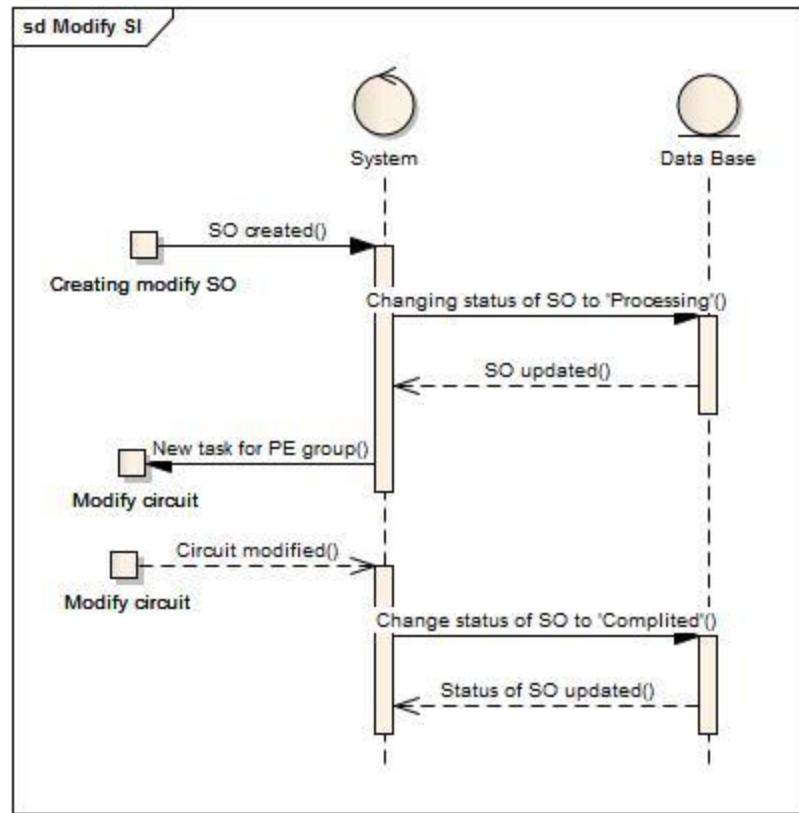


Figure 40 – Sequence diagram modify SI

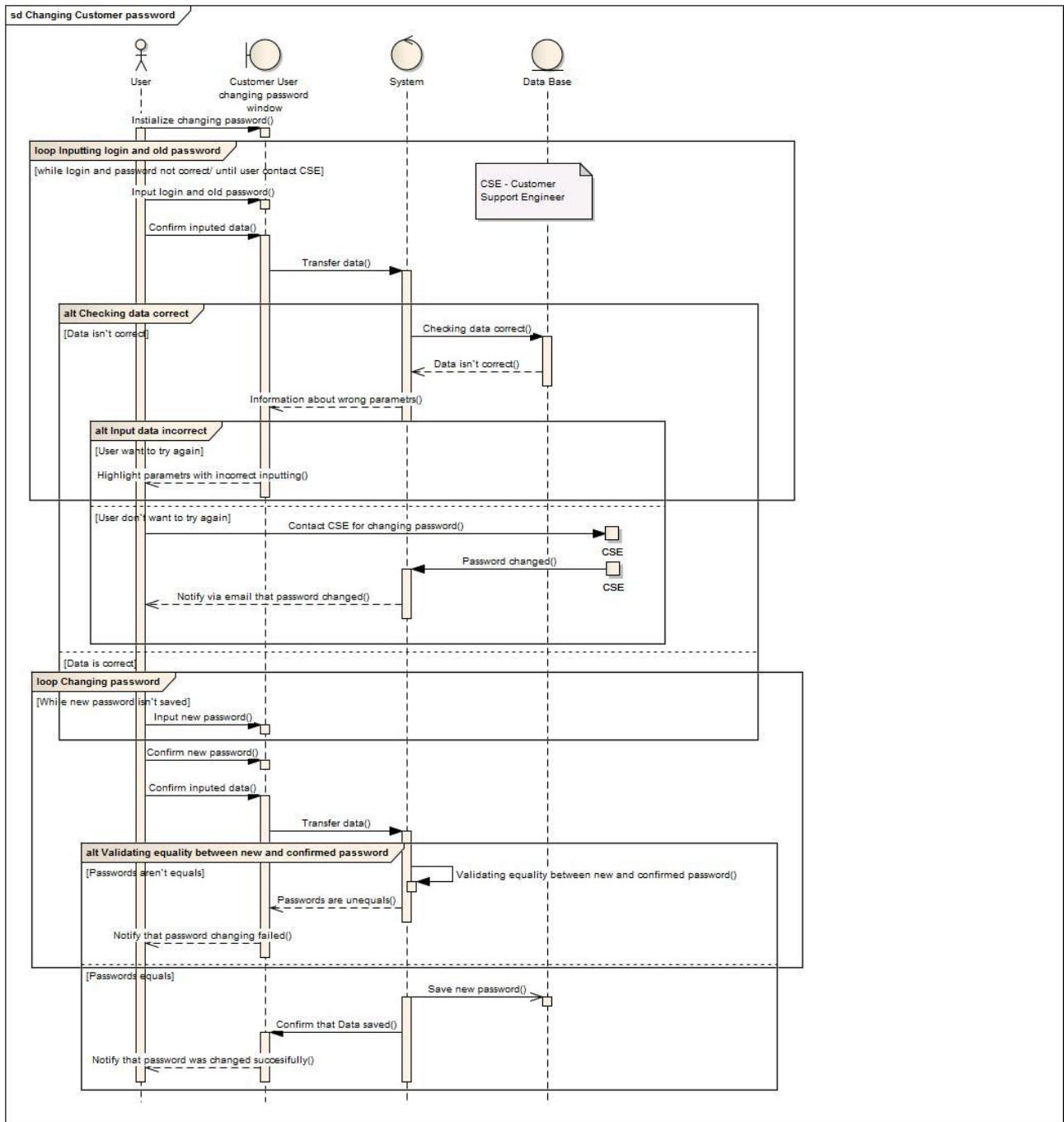


Figure 41 – Sequence diagram changing customer password

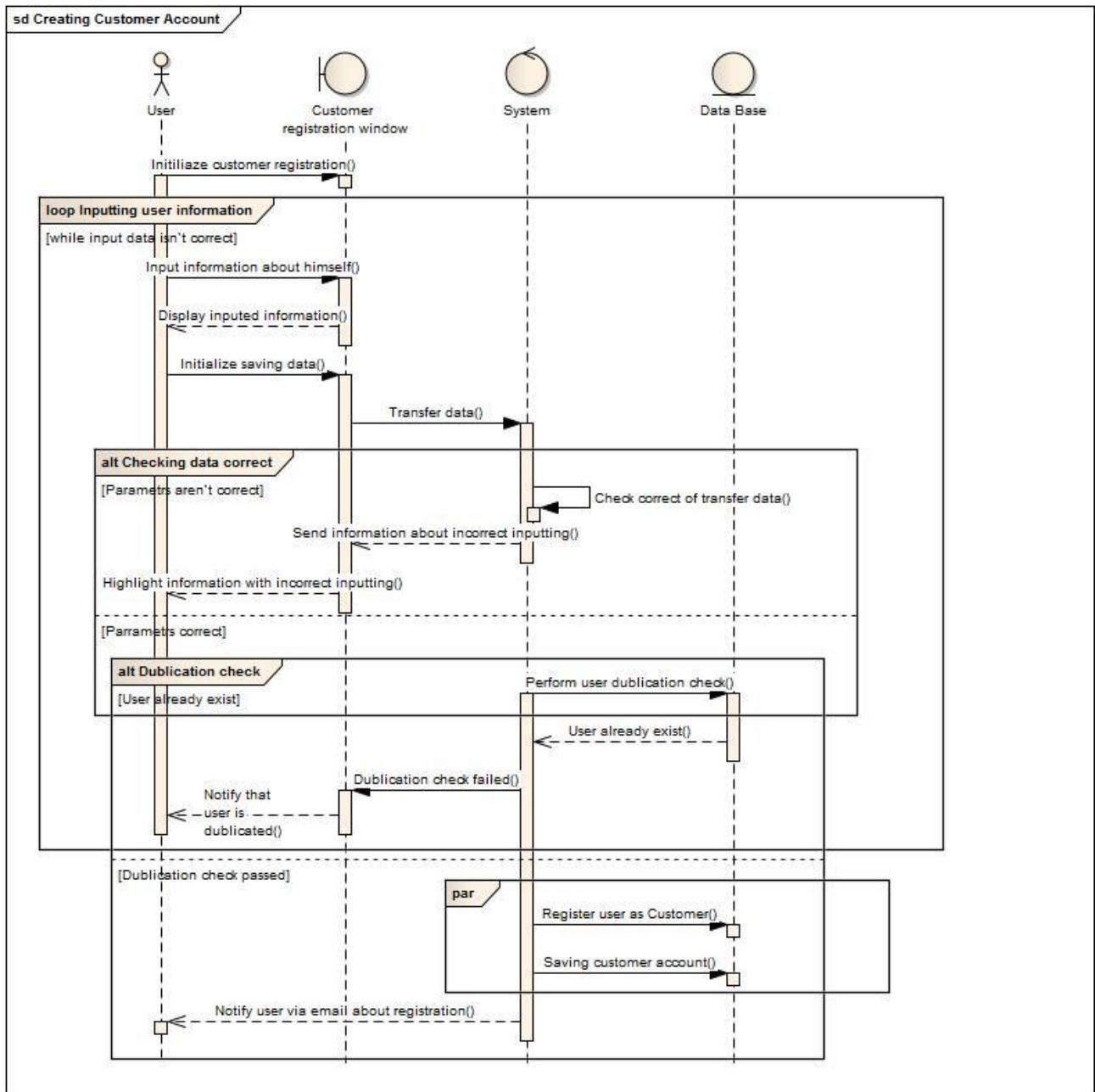


Figure 42 – Sequence diagram create customer account

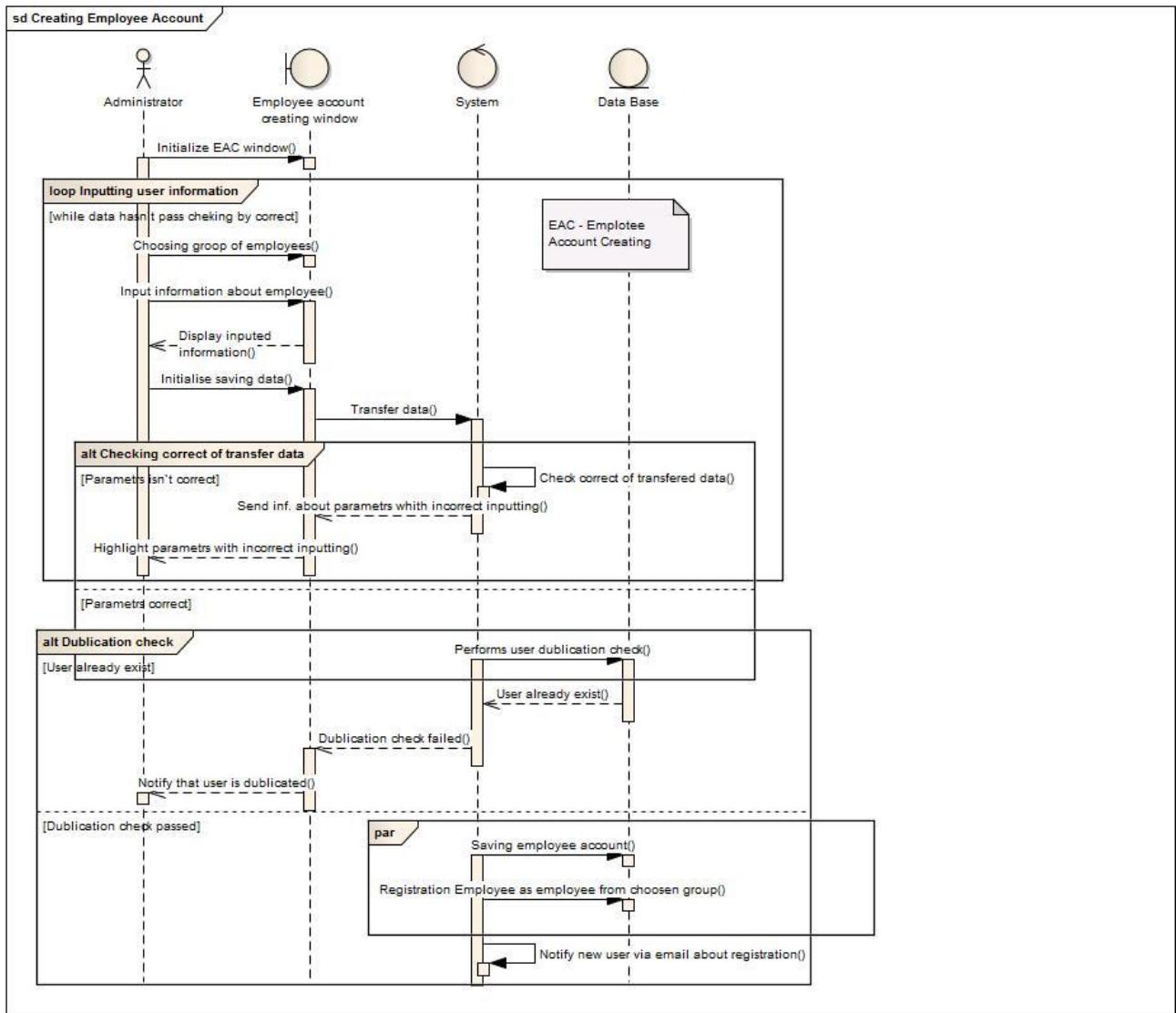


Figure 43 – Sequence diagram create employee account

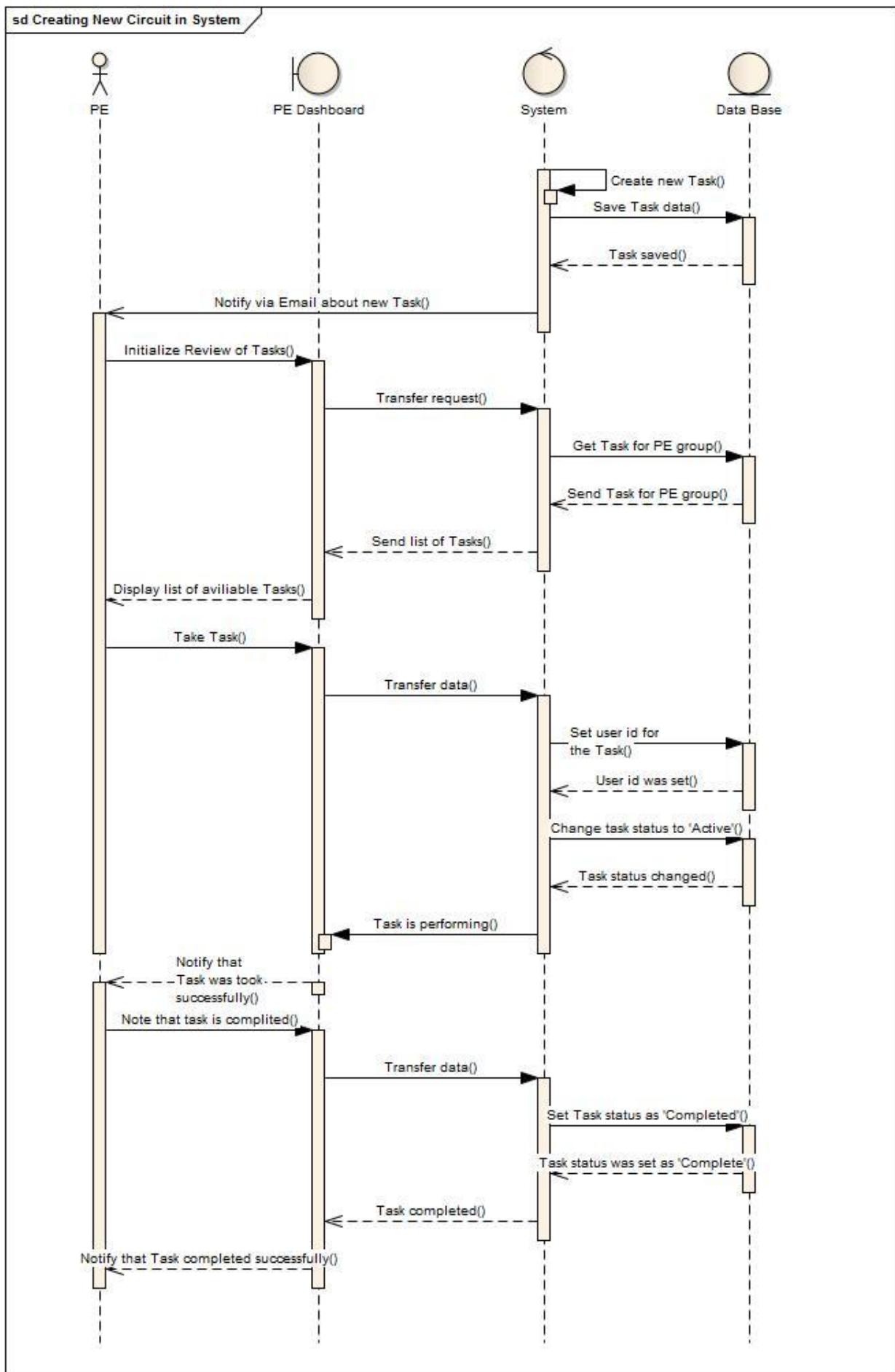


Figure 44 – Sequence diagram create new Circuit in system

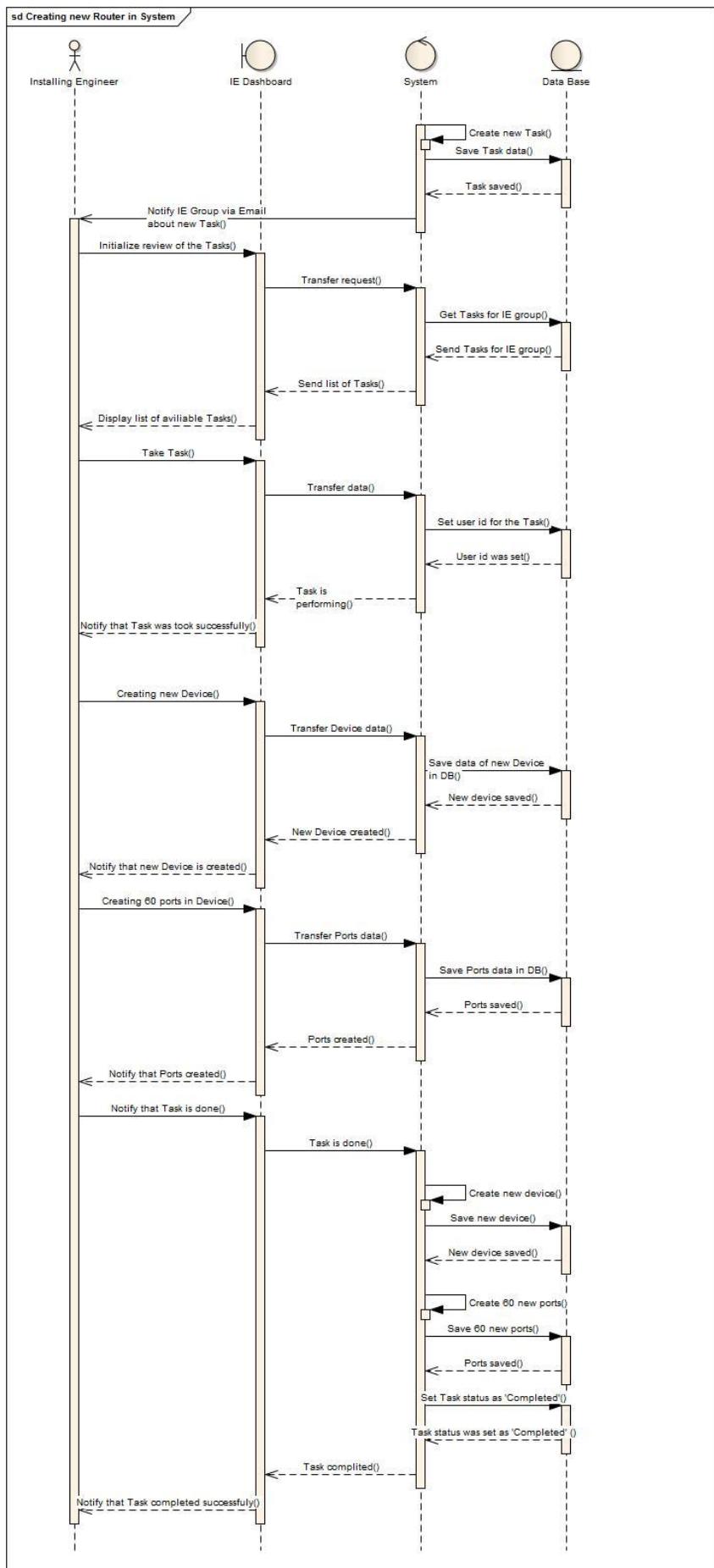


Figure 45 – Sequence diagram create new router in system

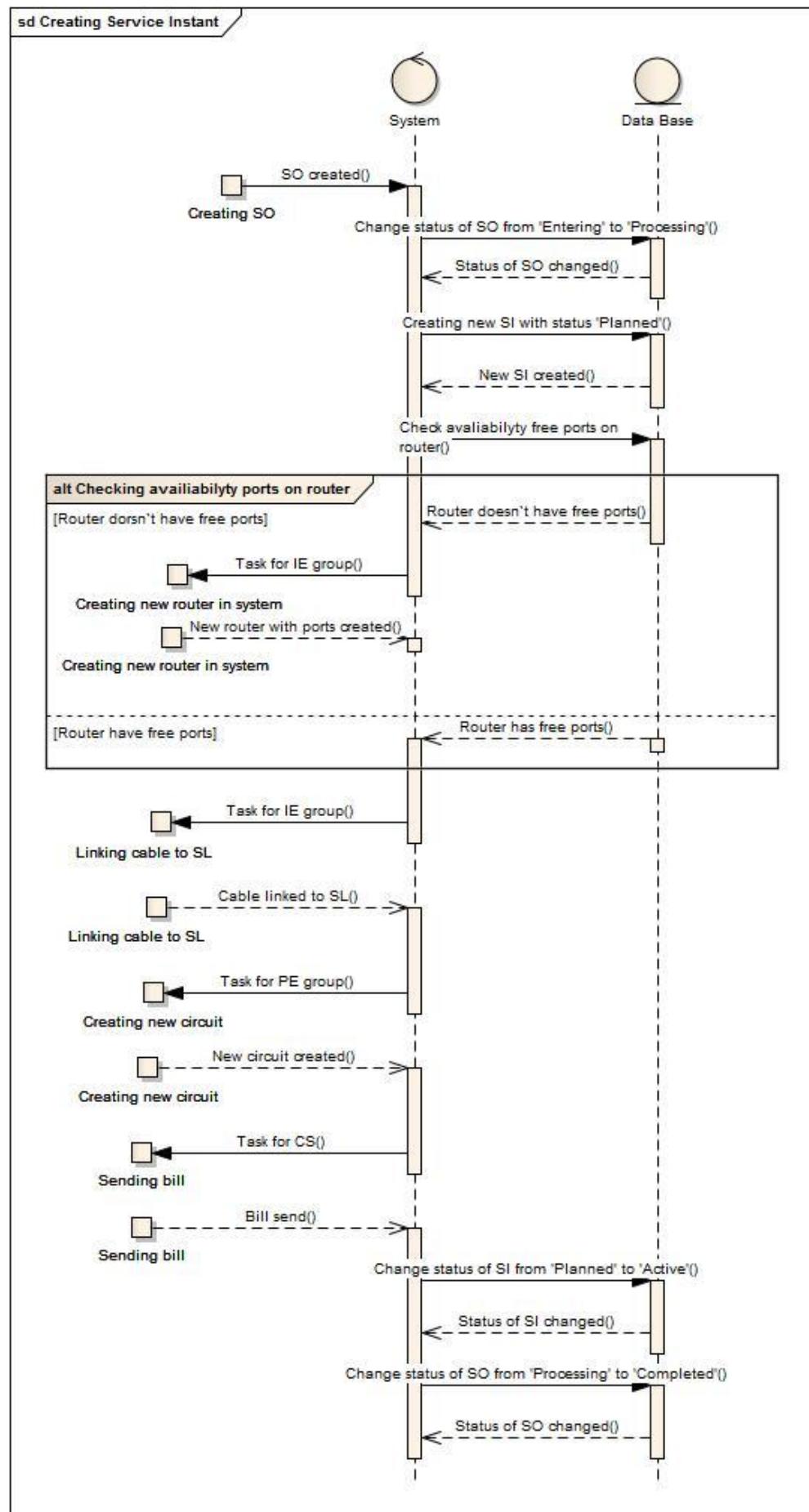


Figure 46 – Sequence diagram create Service Instance

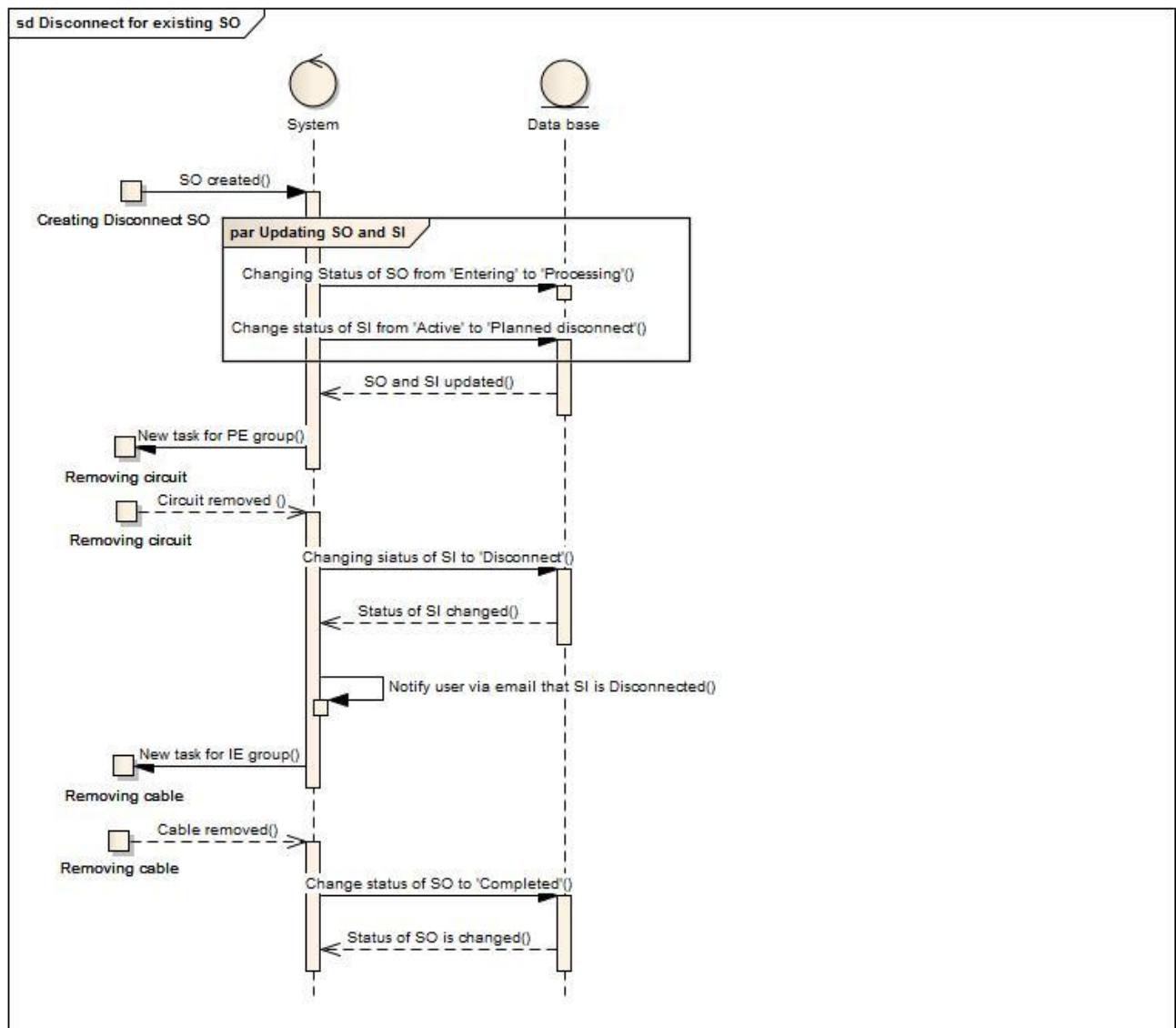


Figure 47 – Sequence diagram disconnect for existinf SI

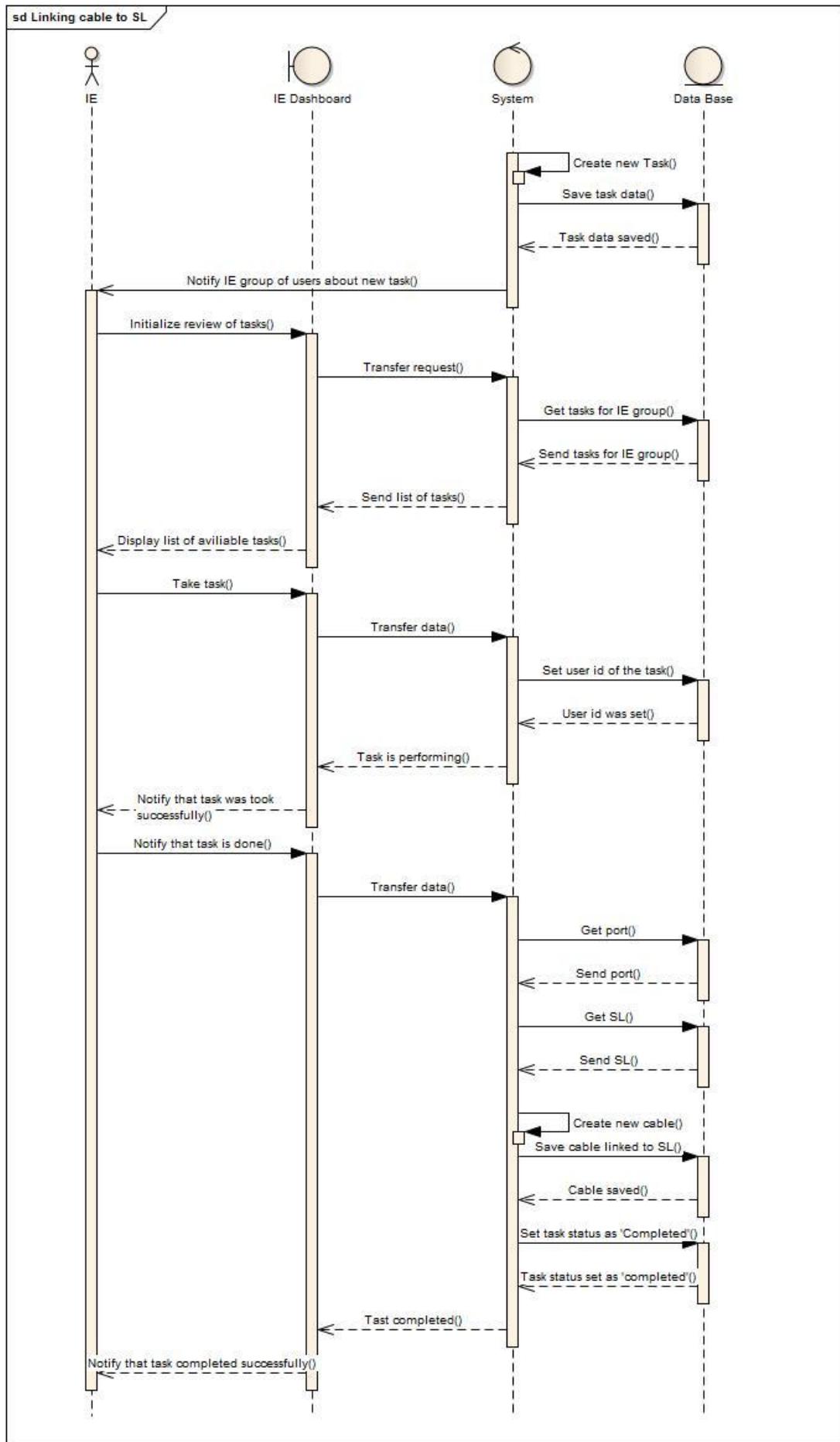


Figure 48 – Sequence diagram linking cable to SL

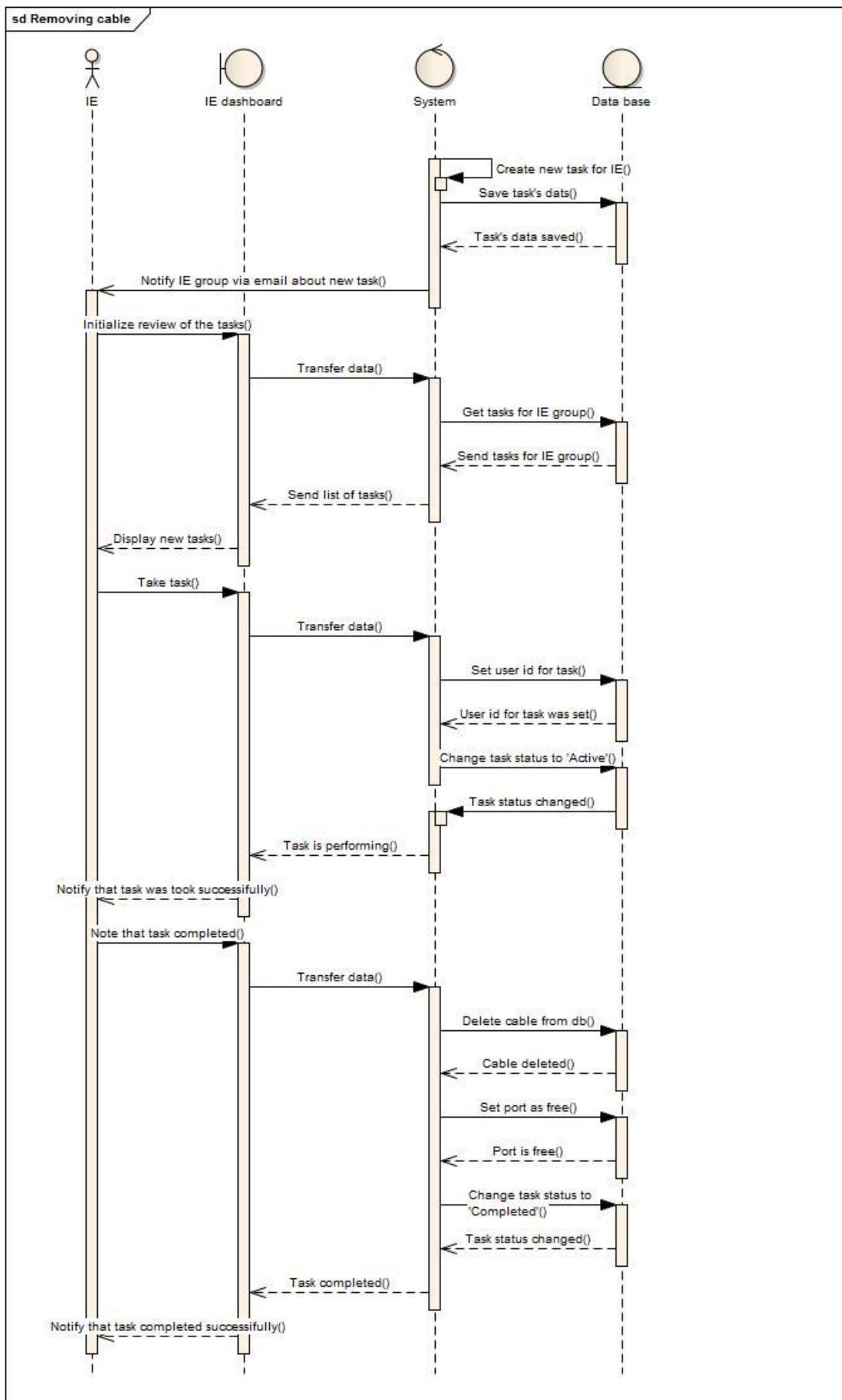


Figure 49 – Sequence diagram removing cable

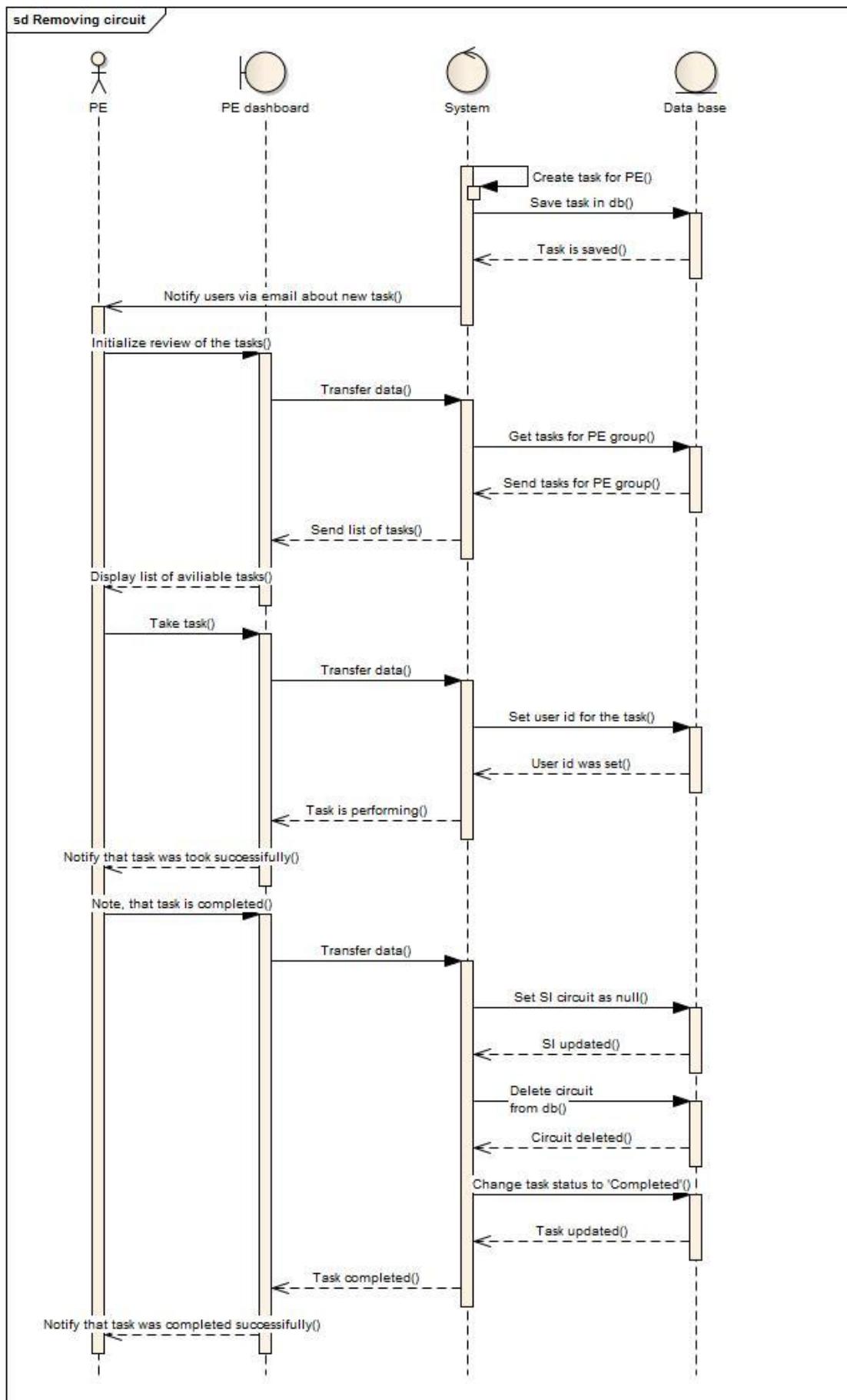


Figure 50 – Sequence diagram removing circuit

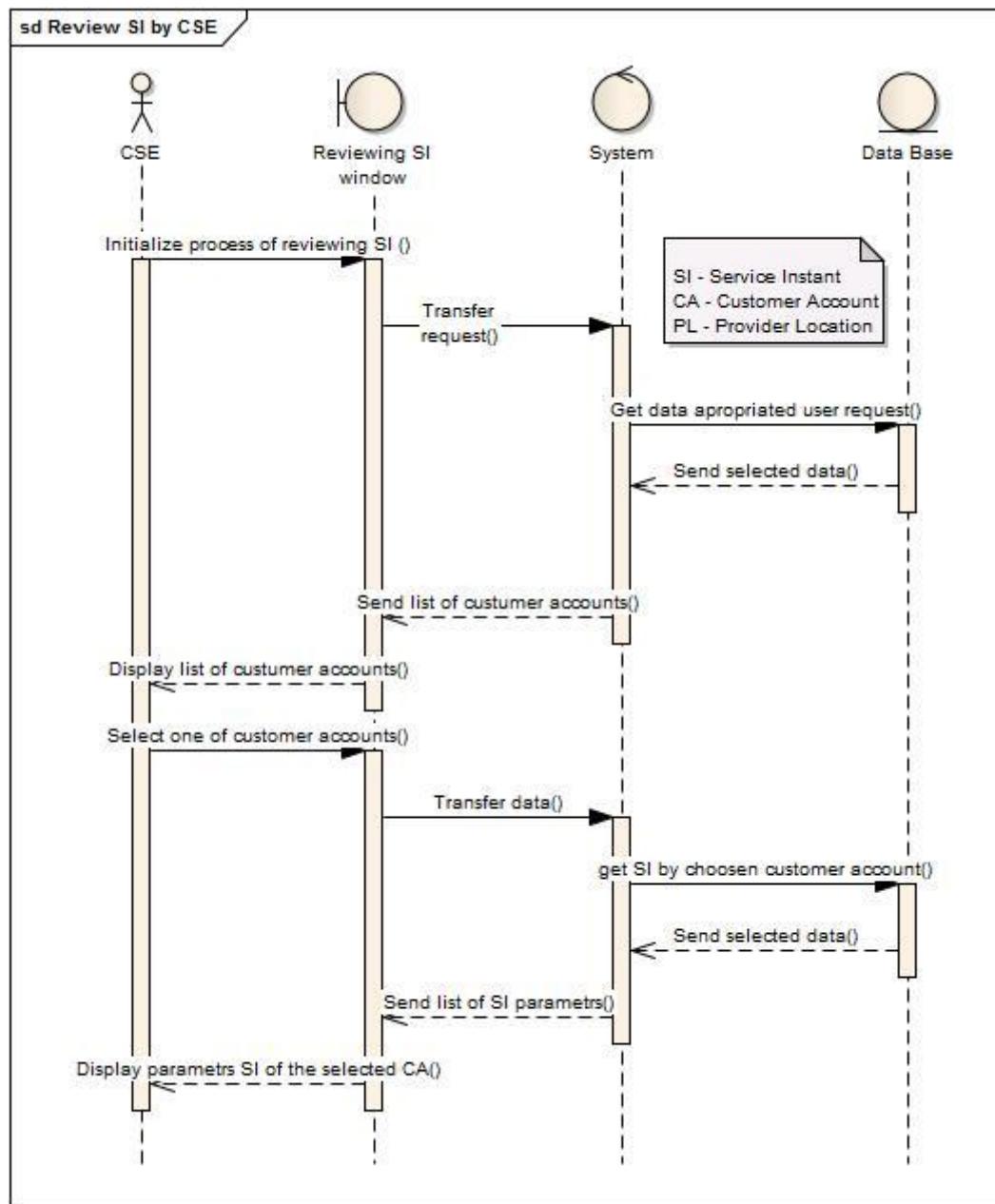


Figure 51 – Sequence diagram review SI by CSE

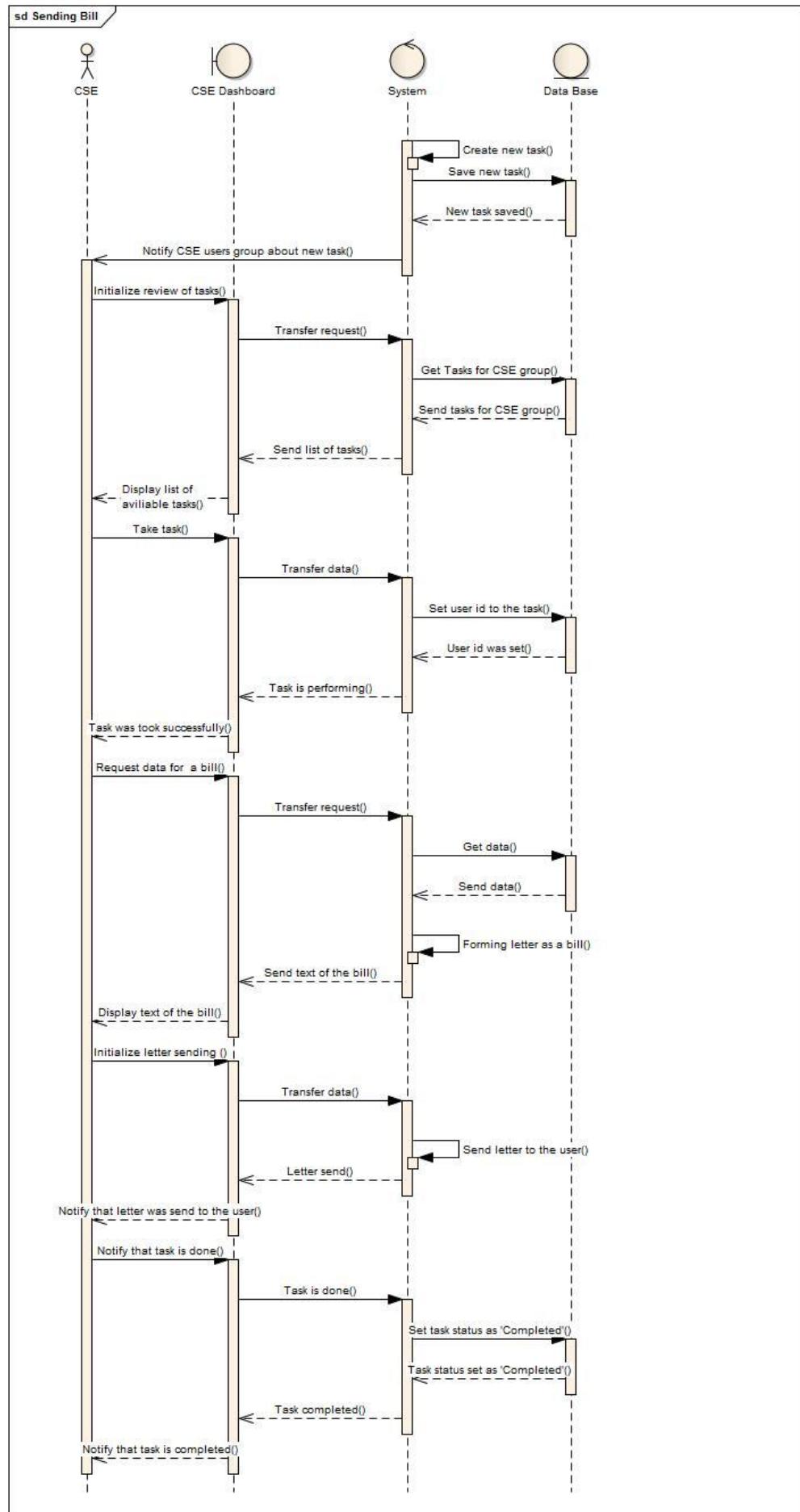


Figure 52 – Sequence diagram sending bill

3.5 Data management

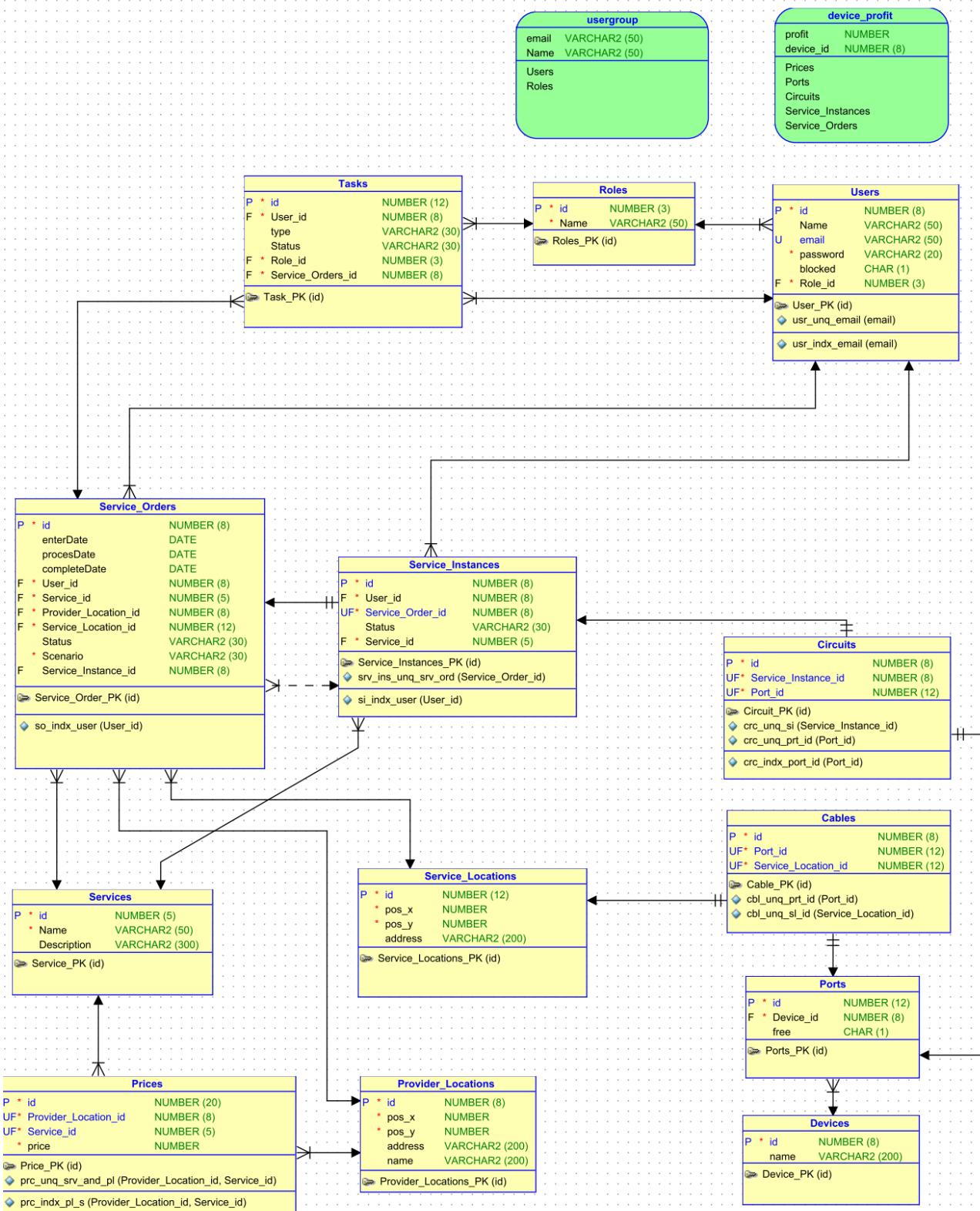


Figure 53 – ER-diagram

3.6. Security Architecture

The system allows to adjust the rights and roles to the user. Depending on the role, the system provides a different user interface and different rights.

Any user from internet can register in system as Customer User. Only Administrator can create employee accounts such as Customer Support Engineer, Provisioning Engineer, Installation Engineer. Only provider employee can perform administrative task.

Security matrix:

Roles Rights	Administrator	Customer Support Engineer	Provisioning Engineer	Installation Engineer	Customer User
Can create employee accounts	Yes	No	No	No	No
Can register in system himself	No	No	No	No	Yes
Can register customer user's accounts	Yes	Yes	No	No	No
Can block other accounts	Yes	No	No	No	No
Can select services based on SL	No	Yes	No	No	Yes
Can review own SI	No	No	No	No	Yes
Can disconnect own SI	No	No	No	No	Yes
Can create new SO for himself	No	No	No	No	Yes
Can create new SO for customer users	No	Yes	No	No	No
Can creatie Devices, Ports and Cables in the system	No	No	No	Yes	No

Can create the circuit and refer the assigned port to SI	No	No	Yes	No	No
Can modify SI	No	No	Yes	No	Yes
Can generate RI reports	No	No	No	Yes	No
Can generate SI reports	No	Yes	No	No	No
Can generate CIA reports	No	No	Yes	No	No
Can change own password	Yes	Yes	Yes	Yes	Yes
Can change customer user's password	Yes	No	No	No	No
Can review new task for CSE group	No	Yes	No	No	No
Can review new task for PE group	No	No	Yes	No	No
Can review new task for IE group	No	No	No	Yes	No
Can review list of customer user	Yes	Yes	No	No	No
Can review list of all user	Yes	No	No	No	No

Security for Internet provider “Wind” integrated with existing security mechanism Java Authentication and Authorization Service and GlassFish Security.

4. Reporting

The system provide a possibility to generate and to export reports to Excel, CSV format.

The system can generate:

1) RI reports:

- Routers utilization and capacity %
- Most profitable router

Reports are available to restricted user groups.

2) SI reports

- New orders per period
- Profitability by month
- Disconnect orders per period

3) CIA report

- Impact Propagation Tree

5 Resource Inventory

Resource Inventory includes resource topology, configuration, status, connectivity, and other information about it in a centralized store. Resource Inventory includes Physical and Logical Inventory, that provides modeling and management capabilities. The system can store information about devices, connected cables, installed ports, circiouts and their location. It is possible to add new devices.

6 Test Strategy

1. System description:

- Database Oracle XE;
- Application server Oracle Glassfish 4.0;
- Production server Amazon AWS.

2. Strategy description

Testing process includes 3 rounds. WIND.TC.SEC.004 test-case based on “white box” strategy for mandatory requirements control in system. Rest test-cases & test-sequences based on “black box” strategy. Some test-cases performed by one users group, but control of their result performs by other group.

3. Rounds of testing:

- Test-cases for security and access control testing execution;
- Test-cases for interoperability testing execution;
- Test-sequences for functional testing execution.

4. Start of testing criteria:

- Production server created;
- All mandatory functional requirements are completed;
- Software architecture and design documentation completed.

5. End of testing criteria:

- All test-cases and test-sequences are executed;
- System has less than 2 non-blocker and non-critical errors in test-cases based on optional requirements;
- System has no blocker and critical errors.

7 Product Testing

Action	Round 1. May 8-9, 2014	Round 2. May 10, 2014	Round 3. May 11, 2014
WIND.TC.026. Non-functional requirements – Positive Scenario 1	Completed	-	-
WIND.TC.023. SQL-injection – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.024. Viewing dashboards without right access – Positive Scenario 1	Completed	-	Completed
WIND.TC.025. Viewing reports without right access – Positive Scenario 1	Completed	-	Completed
WIND.TS.001. “New user's day” test-sequence	89% Completed	Completed	Completed
WIND.TC.027. Map Integration – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.009. Creating Service Order – Negative Scenario 1	Completed	Completed	Completed
WIND.TC.009. Creating Service Order – Negative Scenario 2	Completed	Completed	Completed
WIND.TC.009. Creating Service Order – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.002. Creating Customer Accounts – Negative Scenario 1	Completed	Completed	Completed
WIND.TC.002. Creating Customer Accounts – Negative Scenario 2	404 Error	Completed	Completed
WIND.TC.002. Creating Customer Accounts – Negative Scenario 3	Completed	Completed	Completed
WIND.TC.002. Creating Customer Accounts – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.017. E-mail Notification – Positive Scenario 1	Completed	Completed	Completed
WIND.TS.002. “Customer user's day” test-sequence	Completed	Completed	Completed
WIND.TC.022. User Logs In – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.004. Changing Customer Password – Negative Scenario 1	Completed	Completed	Completed
WIND.TC.004. Changing Customer Password – Negative Scenario 2	Completed	Completed	Completed
WIND.TC.004. Changing Customer Password – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.009. Creating Service Order – Negative Scenario 1	Completed	Completed	Completed
WIND.TC.009. Creating Service Order – Negative Scenario 2	Completed	Completed	Completed
WIND.TC.009. Creating Service Order – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.017. E-mail Notification – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.015. Modifying Parameters for Service Instance – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.016. Disconnect for Existing Service Instance – Positive Scenario 1	Completed	Completed	Completed
WIND.TS.003. “Installation Engineer's day” test-sequence	Completed	Completed	Completed
WIND.TC.022. User Logs In – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.007. Installing New Router in System – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.007. Installing New Router in System – Positive Scenario 2	Completed	Completed	Completed
WIND.TC.018-020. Creating Reports	Completed	Completed	Completed
WIND.TC.021. Exporting Reports – Positive Scenario 4	Completed	Completed	Completed
WIND.TC.013. Bill Sending – Positive Scenario 1	Completed	Completed	Completed
WIND.TS.004. “Provisioning Engineer's day” test-sequence	Completed	Completed	Completed
WIND.TC.022. User Logs In – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.011. Creating New Circuit in System – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.012. Removing the Circuit in System – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.001. Modifying Parameters for Service Instance – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.018-020. Creating Reports	Completed	Completed	Completed
WIND.TC.021. Exporting Reports – Positive Scenario 3	Completed	Completed	Completed
WIND.TC.013. Bill Sending – Positive Scenario 1	Completed	Completed	Completed
WIND.TS.005. “Customer Support Engineer's day” test-sequence	90 % Completed	Completed	Completed
WIND.TC.022. User Logs In – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.008. Creating Customer Account by Customer Support Engineer – Negative Scenario 1	Completed	Completed	Completed
WIND.TC.008. Creating Customer Account by Customer Support Engineer – Negative Scenario 2	404 Error	Completed	Completed

Action	Round 1. May 8-9, 2014	Round 2. May 10, 2014	Round 3. May 11, 2014
WIND.TC.008. Creating Customer Account by Customer Support Engineer – Negative Scenario 3	Completed	Completed	Completed
WIND.TC.008. Creating Customer Account by Customer Support Engineer – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.005. Review Service Instance – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.006. Review Service Order – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.018-020. Creating Reports	Completed	Completed	Completed
WIND.TC.021. Exporting Reports – Positive Scenario 2	Completed	Completed	Completed
WIND.TC.013. Bill Sending – Positive Scenario 1	Completed	Completed	Completed
WIND.TS.005. “Customer Support Engineer's day” test-sequence	Completed	Completed	Completed
WIND.TC.001. Creating Employee Account – Negative Scenario 1	Completed	Completed	Completed
WIND.TC.001. Creating Employee Account – Negative Scenario 2	Completed	Completed	Completed
WIND.TC.001. Creating Employee Account – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.001. Creating Employee Account – Positive Scenario 2	Completed	Completed	Completed
WIND.TC.001. Creating Employee Account – Positive Scenario 3	Completed	Completed	Completed
WIND.TC.003. Blocking Accounts – Positive Scenario 1	Completed	Completed	Completed
WIND.TC.003. Blocking Accounts – Positive Scenario 2	Completed	Completed	Completed
WIND.TC.003. Blocking Accounts – Positive Scenario 3	Completed	Completed	Completed
WIND.TC.003. Blocking Accounts – Positive Scenario 4	Completed	Completed	Completed
WIND.TC.003. Blocking Accounts – Negative Scenario 1	Completed	Completed	Completed
WIND.TC.003. Blocking Accounts – Negative Scenario 2	Completed	Completed	Completed
WIND.TC.003. Blocking Accounts – Negative Scenario 3	Completed	Completed	Completed
WIND.TC.003. Blocking Accounts – Negative Scenario 4	Completed	Completed	Completed
WIND.TC.018-020. Creating Reports	Completed	Completed	Completed
WIND.TC.021. Exporting Reports – Positive Scenario 1	Completed	Completed	Completed
Overall	99 % Completed, 2 bugs	Completed, 0 bugs	Completed, 0 bugs