We Are The Future

Volere Requirements Specification Document

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# Project Overview with Business Value

## Overview

Fujitsu Limited plans to enhance their current Managed Network Services capabilities so that they can provide enhanced functionalities to their customers along with better Mean time to repair (MTTR). Fujitsu is looking to enhance their operation with a new Circuit Resource Management (CrM) Solution. Ericsson will provide the Circuit Resource Management (CrM). This solution will focus on Fujitsu’s need to manage their Network Operations Center (NOC) infrastructure and enable more efficient management of resources in the network.

## Business Value

This project will be a value for Fujitsu. It will save them time and money because the old way is not as efficient due to the old process wanted to update the inventory manually. And now, the system would be automated to reduce labor and cost and increase efficiency.

A screenshot of a cell phone

Description automatically generated

# Interview Plan, Questions, and Notes

## Plan

The Interview Plan will consist of two Requirement Engineers and any other relevant stakeholders that will conduct an Interview Workshop. The Interview Workshop will include a summary and list of gathered requirements up until that point and will be presented to the relevant stakeholders.

We have 10 sections and are going to separate the interview process into 5 sections a week, totaling 2 weeks. The process will include the Core Team of stakeholders asking the majority of the questions as well as all of Fujitsu and Ericsson’s relevant resource operator’s necessary for that specific line of questioning.

The purpose of the Interview plan is to generate scenarios, improve current requirements by being more specific and avoid discrepancies. Questions will be generated based on the current requirements. These questions will help improve the conciseness and reduce ambiguity of the current requirements. Scenario-based questions and open-ended questions will be recorded and documented in order to trawl the requirements.

## Questions & Notes

**User Interface:**

For the user interface, will you require a login interface for both the Admin client and User Client?

* Yes, the first thing the users should see is a user login interface. The login interface should also have the capabilities of resetting their password and remembering their username.

 What should be the first thing the Inventory Admin/User see when entering the application?

* The user should be able to see the GUI inventory and the option to view Inventory database info with different graphical formats.
* The user will have the ability to view different aspects of the inventory in detail as well as change graphical formats on a whim.

 Will users be able to customize their profiles to their preference?

* Yes, users will be able to store preferred views, favorite equipment, etc.

**GUI Inventory and Topology Views:**

What does “drill-down” mean in the context of the project?

* The user will be able to view the topology views from a high-level view, all the way to a detailed view
* The same goes for the various equipment

**API Integration:**

How many users can be subscribed to JMS?

* About 1,000

What type of events would prompt JMS to inform external systems?

* Whenever a critical piece of inventory gets to dangerously low levels, such as splice boxes

**Inventory GUI Customizations:**

For the Inventory GUI Customization, will every action be logged made by the admin?

* Yes, we would like to log every action made to the database and stored in a metadata folder
* Actions made will be logged automatically instead of manually entered by the admin

With the proposed system ability to view and customize map representations by the user, will these customized representations be able to be stored for future use?

* Yes, the maps created by the user will be able to be stored and saved.
* Saved maps will be associated by the user profile and be retrieved when the user is logged in

**Inventory Discovery and Reconciliation Module:**

What should be the set time frames for the Sweep Modules when set to ‘periodically’?

* The Sweep Modules can be scheduled to a variety of time frames; once a day, once a week, per month/etc.
* The Sweep Modules can also be run manually whenever desired by the admin.

Who is able to run the Sweep Modules when scheduled to run once or periodically?

* The only users that have this access will be the administrators as well as the testing department for debugging purposes.
* Each sweep should be logged and documented for any changes and stored in a metadata file

Documentation states that the reconciliation jobs can be initiated by “another application”. What is the ‘another application’ that the document is referring to?

* The reconciliation jobs will be able to be initiated by other applications that have support and have been integrated into the proposed system. Current applications that we have may be implemented as well as future apps as well.

Can the Discovery jobs and Reconciliation jobs run simultaneously?

* Yes, and they will be triggered by specific events

The Discovery Adapters use various protocols to communicate with Network Elements and EMS/NMS systems. Are the protocols allowed to run concurrently?

* Yes, multiple protocols can run based off the triggers

Should the discovery and reconciliation module implement machine learning on top of automatic

* No, ML should not be needed for the module

Can the discovery or reconciliation jobs have their periodic basis adjusted?

* Yes, admins can change how often the jobs must be ran as they see fit

Adaptive Inventory is specified to support “assisted” inventory reconciliation, what would this encompass?

* The user should be in complete control the whole time, where automation only only happens when dealing with tedious operations or if desired by user

**Hardware Configuration Planning:**

How many users are expected to be using the system?

* The system will have an average of around 10,000 users concurrently.
* Peak hours are in the average 15,000 users concurrently.

With the proposed system, what existing technology does this need to interface with(i.e. Databases, applications, etc.)?

* The proposed system will be an overhaul of our current system and methodology
* Data Migration will be collaborative effort between Ericsson and Fujitsu with the migration of Fujitsu’s network and relevant data of its current operational environments
* Proposed system will work with current Wireless Networks; LTE, CDMA, GSM, 3G, 4G and TETRA
* Proposed system will work with the current Wireline; MPLS, IP, SDH/SONET, etc.
* Generic equipment (many vendors): routers, broadband aggregators, MSC, RNC, etc.

What would be expected average order volume?

* Can be roughly around 10,000

Between all the wireless networks, is there a preference for a particular one?

* 4G is preferred, but given the complexity of the project, any of the networks supported by the Adaptive inventory are acceptable

For generic equipment such as routers and optic fibers, is there a preferred vendor?

* No, that is something we will leave to the discretion of the engineers

**Remote Connectivity Planning:**

Which mode would be preferred when it comes to Remote Connectivity of the project?

* A Dedicated line would be preferred to enable remote technical support

**Security & Authorization:**

What form of credential retrieval would work best when credentials are forgotten(i.e. Email, admin, etc.)?

* Best form of credential retrieval will be through email. Backup information will be setup when creating the user profile.
* Admin will also be able to reset user info if necessary, but as a last resort.

What can admins do exactly regarding “user privileges profiles”

* Admins can grant/revoke specific users’ access to certain parts of the network, and admins can grant/revoke certain functionalities to user

In order to access proposed functionalities, are users required to have a user profile?

* Yes, in order to access any component, the user must have the correct credentials and correct authorization

In the event an admin’s or users account has been compromised, can other admins do anything?

* Admins can terminate or freeze another admin or user’s account

In the event an admin’s or users account has been compromised, can other admins do anything?

* Admins can terminate or freeze another admin or user’s account

**Fail-Safe:**

If the network that powers the CRM goes offline, how should the CRM be handled?

* The CRM is constantly being saved offline, so if it does crash, it can pick up where it left off.

The topology view automatically handles the matching for floor layout to site, what type of back-up should there be, if any?

* Admins should have the ability to manually override the mapping in case of mismatch

**Non-Functional Requirements:**

How important is the quality attribute of scalability for this project? That is, should the CRM be able to easily expand to contain additional facilities and users in the future?

* Scalability is critical, as Fujitsu plans to continue its rapid expansion, and definitely not downscale, so maintaining the current heavy load is also crucial

EAI is stated to be a successor of the Granite Inventory system, should this project also prioritize the quality attribute of evolvability so it may be updated to a new architecture in the future?

* Evolvability is also imperative, as Fujitsu will be rapidly developing new architectures to replace old ones to keep up with competition and expansion

# Stakeholder Analysis and Map

## Map

A picture containing text, map

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## Volere Stakeholder Analysis

A close up of a piece of paper

Description automatically generated

# Context Diagram

A picture containing text, map

Description automatically generated

# List of Constraints and Assumptions

## Solution Constraints

1. Fujitsu’s Existing Software Architecture Inventory System must support Fujistsu’s current customers/users and expect order volumes and peak hours consideration.
2. The Inventory Core Database Server runs on Sun Solaris or HP-UX or Hp Itanium platforms.
3. The Ericsson Proposed Inventory Management Solution is composed of two Ericsson OSS Products; Ericsson Adaptive inventory (EAI) and Ericsson Discovery and Reconciliation. This software must be implemented and adapted into proposed solution Architecture.
4. The Inventory Management Solution database is required to run on an Oracle 11g RDBMS. The inventory database can also support Oracle RAC for WebLogic and Sun Configurations.
5. Ericsson must include current Fujistsu supported Inventory Database architectural design and data format.

## Project Constraints

1. Financial - We allocated CDRM’s budget at 15% of $3,007,655. So, we cannot go over $450,000 for that specific expense.
2. Scope - Any change request or Milestone reached needs to go through proper channels. Following procedure 9.4 of the SoW stating that all will be reviewed and accepted accordingly following 3 main guidelines.
3. Quality & Resources - Ericsson must create the environments needed in order for test and production to begin in a timely manner. Installation services that Ericsson must provide are Installation planning, Environment verification planning, and On-site installation of the Ericsson licensed software on the hardware platform.
4. Risk - The Data Migration Assessment should be detailed and reviewed by Fujistsu and Ericsson completely as to avoid any potential loss of data between the installation of the new proposed solution.
5. Training/Maintenance - Fujitsu requires in contract that they will have to have 7x24x365 customer service so their training and maintenance of the new system must be followed by criteria in 6.2.1 and 7.6 of SoW, stating...

* 31 days prior the scheduled start of course is free of charge.
* 15-30 days prior the scheduled start of course is 50% off course fee.
* 0-14 days prior the scheduled start of course is 100% off course fee.

# Business Event List with Business Use Case

## Summary

Using our Business Use Case (BUC) event list above, we describe each one and how it uses a discrete amount of functionality which happens in its own timeframe and is separate from other parts of the work. Our scenarios are a way to describe what happens inside each BUC inside a series of steps which will accentuate the functionality of each event.

\*\*Reference: BUC 1 corresponds with PUC 1-3; BUC 2 with PUC 4-6; and BUC 3 with PUC 7-9

## Event List

1. Service Provider (end-user) wants to see the network topology

2. CRM user wants to save their circuit design

3. CRM user experiences an issue with the CRM

# Business Use Case Scenarios

**Event 1)**

1. **Business Event**: Service Provider (End User) wants to see the network topology
2. **Business Use Case Name**: mapping and providing a topology of the network topology.
3. **Trigger**: Scheduled Network Review,
4. **Preconditions**: Scheduled Review.
5. **Interested Stakeholders**: Network Architect.
6. **Active Stakeholders**: Network Architect.

**The Scenario:**

1. The Network Architect wants to review the updated network topology
2. CRM conducts a mapping of the network topology and provides a visualization of it.
3. CRM provide this visualization to the Network Architect

**Event 2)**

1. **Business Event**: CRM user wants to save their design
2. **Business Use Case Name**: Storing Design
3. **Trigger**: Customer clicks save design button
4. **Preconditions**: Design must be created
5. **Interested Stakeholders**: CRM customer
6. **Active Stakeholders**: CRM customer

**The Scenario:**

1. The customer finishes creating their design
2. The customer clicks on the save button.
3. The CRM calls the CIMS (Customer Information Management System) to retrieve the user profile.

**Event 3)**

1. **Business Event**: CRM Customer user calls technical support
2. **Business Use Case Name**: Technical support fixes the issue
3. **Trigger**: Customer experience an issue with the CRM system
4. **Preconditions**: N/A
5. **Interested Stakeholders**: The Customer.
6. **Active Stakeholders**: The Customer, the Technical support operator.

**The Scenario:**

1. While the Customer is using the CRM system, he encounters an issue with the system
2. Customer calls technical support and reports the issue.
3. Technical support fixes the issue either through telling the customer what to do to fix it himself, or through accessing the computer through remote access.

# Product Use Case List

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PUC #** | **PUC Name** | **Actors** | **Input** | **Output** |
| 1 | CRM requests users network topology | End user, CRM system), CIMS (system) | Design request | Network topology view |
| 2 | Network Topology view created by CRM | End user | The inventory | The topology of the network |
| 3 | CRM displays network topology to user | End user | Network topology | Visualization of the network topology. |
| 4 | User creates a Circuit Design using CRM tools | End user | End user design | Circuit design layout |
| 5 | CRM saves circuit data | CRM, CRM user | Circuit design | Circuit design saved |
| 6 | CRM requests user profile from CIMS to save the design under their profiles | End user | End user credentials | Circuit design saved under the user profile. |
| 7 | CRM asks user to fill out ticket with technical issue | CRM user, CRM, Technical Support | User info, Issue description | Ticket |
| 8 | CRM sends ticket to Ericsson Technical Support System | CRM user, CRM, Technical Support | Ticket | Technical Support Queue Response |
| 9 | CRM receives patch or response from tech support | CRM, Technical Support | Response or Patch | Update the user |

# Product Use Case Scenarios

**1. PUC Name: CRM requests user network topology**

**Trigger:** user requests their network topology

**Preconditions:** network topology is already stored

**Interested Stakeholders:** CRM user

**Active Stakeholders:** CRM user

**Actor:** CRM user

1. The product connects to the CIMS.
2. The product retrieves the user profile
3. The product requests for the design topology

**Outcome:** The product ends up requesting the network topology stored from the user profile in the CIMS.

**2. PUC Name: Network topology view created by the CRM**

**Trigger:** request from the CRM

**Preconditions:** user has already requested the network topology

**Interested Stakeholders:** CRM user, CIMS, Adaptive Inventory System

**Active Stakeholder:** CRM System

**Actor:** CRM System

1. The product will request the Adaptive Inventory system
2. The product will retrieve available inventory
3. The product will label which inventory is available or missing
4. The product will follow the design created by the user.

**Outcome**: The product will have created the design based off the available inventory and created a list of missing inventories

**3. PUC Name: CRM displays network topology to user**

**Trigger:** design has finished creating

**Preconditions:** CRM user has requested network topology design

**Interested Stakeholders:** CRM user, CRM

**Active Stakeholders:** CRM user

**Actor:** CRM user

1. The product will display the design requested by the user
2. The product will display a list of missing inventory read by the Adaptive Inventory System

**Outcome:** The product has displayed the network topology design that the user has saved and requested along with the inventory missing.

**4. PUC Name: User creates a Circuit Design using CRM tools**

**Trigger:** User wants to add a new circuit design to his profile

**Preconditions:** CRM user must have a login and profile

**Interested Stakeholders:** CRM user, CRM admin

**Actor:** CRM user

1. CRM user logs in
2. CRM user request to design a circuit.
3. CRM system opens a page where there are tools to design and create a circuit and the ability to import an already existing circuit design.

**Outcome:** CRM User finishes his design

**5. PUC Name: CRM saves circuit data**

**Trigger:** CRM saves circuit design

**Preconditions:** Circuit design already finished

**Interested Stakeholders:** CRM user

**Actor:** CRM system

1. CRM user requests to save his circuit design .
2. CRM establishes connection to the system database.
3. CRM pushes the circuit design data to the system database.

**Outcome:** CRM saves the circuit design data to the database.

**6. PUC Name: CRM requests user profile from CIMS saving the design under their profiles**

**Trigger:** CRM receives data from the CIMS

**Preconditions:** There is data received, and a circuit design is valid.

**Interested Stakeholders:** CRM user, CRM admin, Fujitsu, Ericsson

**Actor:** CRM system

1. CRM user receives circuit design from CIMS.
2. CRM validates that the circuit design and user profile received is a correct match
3. CRM stores the circuit design along with the user profile.

**Outcome:** CRM saves the circuit design to the customer profile.

**7. PUC Name: CRM asks user to fill out ticket with technical issue**

**Trigger**: Issue is found in the system by user

**Preconditions**: user must already have access to the system

**Interested Stakeholders**: CRM user,  Ericsson Technical Support system

**Actor**: CRM user

1. The product asks the user what is the issue
2. The product stores the issue into the log
3. The product sends the issue to Ericsson technical support
4. The product displays a message stating that the issue has been sent

**Outcome**: the passenger issue is recorded and sent to technical support to be reviewed.

**8. PUC Name: CRM sends ticket to Ericsson Technical Support Systems**

**Trigger:** CRM receives a ticket from Ericsson Technical Support Systems

**Preconditions:** User has filled out and sent a ticket

**Interested Stakeholders:** CRM users, Ericsson Technical Support, CRM System

**Actor:** Ericsson Technical Support

1. CRM sends Technical support the ticket
2. Technical support reviews the ticket
3. Technical support updates ticket status to reviewed(but not resolved)

**Outcome**: Technical support has reviewed the ticket

**9. PUC Name: CRM receives patch or response from technical support system**

**Trigger:** Issue has been resolved or tech support needs more information.

**Preconditions:** Ticket has been received by tech support system

**Interested Stakeholders:** CRM users, Ericsson Technical Support, CRM System

**Actor:** Ericsson Technical Support System

1. Ericsson Technical Support System sends response to CRM for ticket
2. CRM forwards response to user
3. CRM applies patch to the system if one is received

**Outcome**: Issue is resolved, or continuous correspondence needed.

# Atomic Requirements (Functional & Non-functional) Including Attributes on Snow Cards

|  |  |  |
| --- | --- | --- |
| **Atomic Requirements** | | |
| Requirement #: 1 | Requirement Type:  Security(NF) | PUC #: 7 |
| Description: The CRM shall only present a support ticket interface to those that are logged into the system. | | |
| Rationale: Those accessing from outside the system shouldn’t need to have support access as their work is not immediately a priority. | | |
| Originator: Po-Yu Liu, Dir. Support System | | |
| Fit Criterion: The Ericsson support ticket system logs should show tickets only from qualified logins and users of the CRM. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 1                                                                Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 2 | Requirement Type: Maintainability (NF) | PUC #: 7 |
| Description: The CRM support ticket interface shall be able increase support categories if future systems are integrated into the CRM. | | |
| Rationale: The CRM will eventually be scaled into a larger system with more components which may need additional support. | | |
| Originator: Po-Yu Liu, Dir. Support System | | |
| Fit Criterion: The Ericsson support ticket system logs should be able to successfully record issues of new categories that are introduced by the CRM. | | |
| Customer Satisfaction: N/A                             Customer Dissatisfaction: N/A | | |
| Priority: 2                                                           Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 3 | Requirement Type: Functional | PUC #: 7 |
| Description: The CRM support ticket interface shall be able to allow 50+ users to submit tickets at one time. | | |
| Rationale: The interface is connected to our CRM, therefore allowing downtime from too many users submitting tickets would be detrimental. | | |
| Originator: Po-Yu Liu, Dir. Support System | | |
| Fit Criterion: Users should be able to submit tickets with no interface issues at least 85% of the time. | | |
| Customer Satisfaction: N/A                             Customer Dissatisfaction: N/A | | |
| Priority: 2                                                           Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 4 | Requirement Type:  Functional | PUC #: 7 |
| Description: The CRM support ticket interface shall include contact information for the support team for emergencies listed by Ericsson. | | |
| Rationale: The support tickets may take time for issues that are too pressing for ticket queues. | | |
| Originator: Po-Yu Liu, Dir. Support System | | |
| Fit Criterion: Users should be able to contact Ericsson technical support for the specified emergencies at least 90% of the time. | | |
| Customer Satisfaction: N/A                             Customer Dissatisfaction: N/A | | |
| Priority: 1                                                           Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 5 | Requirement Type: Functional | PUC #: 7 |
| Description: The CRM support ticket interface shall allow users to fill out their issue and present the issue to the Ericsson support team. | | |
| Rationale: This is the intended purpose of the interface as it allows users to get their technical issues resolved. | | |
| Originator: Po-Yu Liu, Dir. Support System | | |
| Fit Criterion: Users should be able to resume work from technical issues within one business week. | | |
| Customer Satisfaction: N/A                             Customer Dissatisfaction: N/A | | |
| Priority: 1                                                           Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 6 | Requirement Type: Functional | PUC #: 4 |
| Description: The CRM Circuit Design page shall have a 3d modeling tool. | | |
| Rationale: a 3d modeling tool will immensely help the user in his circuit design creation | | |
| Originator: Ismael Al-Sabea, Sr. Electrical Engineer | | |
| Fit Criterion: Users should be able to rotate the circuit on 3 axis, and interact with the circuit components | | |
| Customer Satisfaction: N/A                             Customer Dissatisfaction: N/A | | |
| Priority: 1                                                           Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 7 | Requirement Type: Functional | PUC #:  4 |
| Description: The CRM Circuit Design page shall have PCB layouts like Single-Sided PCB, Rigid, Flex, as well as an empty one. | | |
| Rationale: this can help the user to start from a template rather than a an empty layout, so the user can create his circuit faster | | |
| Originator: Ismael Al-Sabea, Sr. Electrical Engineer | | |
| Fit Criterion: Circuit Templates should be done right and be editable, so the user can use them. | | |
| Customer Satisfaction: N/A                             Customer Dissatisfaction: N/A | | |
| Priority:   1                                               Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 8 | Requirement Type: Functional | PUC #:  4 |
| Description: The CRM Circuit Design page shall have a library of circuit components as well as having the ability to create a new component from scratch | | |
| Rationale: this will also aid the user to create his circuit design faster, and also he can be creative to create a new component. | | |
| Originator: Ismael Al-Sabea, Sr. Electrical Engineer | | |
| Fit Criterion: the user will be capable of using the components in the library as well as modify them, or, be able to create a new component from scratch. | | |
| Customer Satisfaction: N/A                             Customer Dissatisfaction: N/A | | |
| Priority: 4                                                          Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 9 | Requirement Type: Functional | PUC #:  4 |
| Description: The CRM Circuit Design page shall have a schematic Modeling tool | | |
| Rationale: Using this tool, the user shall be able to create a schema from scratch as well as using built-in schema templates and be able to view them visually (with wires and buses) as well as logically (without wires or buses). | | |
| Originator: Ismael Al-Sabea, Sr. Electrical Engineer | | |
| Fit Criterion: the user shall be able to create his schema either from scratch or from a template and be able to export it. In addition, he must be able to import schemas. | | |
| Customer Satisfaction: N/A                             Customer Dissatisfaction: N/A | | |
| Priority:  2                                               Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 10 | Requirement Type: Non-Functional | PUC #:  4 |
| Description: when adding components to the circuit design, the design shall be updated fast. | | |
| Rationale: the user needs to see the changes that he is making to his circuit, since he is designing one. | | |
| Originator: Ismael Al-Sabea, Sr. Electrical Engineer | | |
| Fit Criterion: After the addition of any component to the PCB, changes shall be reflected on the visualization of the circuit design shown within 0.5 seconds. | | |
| Customer Satisfaction: N/A                             Customer Dissatisfaction: N/A | | |
| Priority:   4                                             Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| --- | --- | --- |
| **Atomic Requirements** | | |
| Requirement #: 11 | Requirement Type:  Non-Functional (Look and Feel) | PUC #: 3 |
| Description: The product shall appear minimalistic and clean | | |
| Rationale: Those viewing the Network topology should understand their topology as soon as they see it. | | |
| Originator: Jorge Gonzalez, Dir. Support System | | |
| Fit Criterion: The user will be able to understand the view upon the first 10 seconds of seeing the data. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 2                                                                Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 12 | Requirement Type:  Non-Functional (Performance) | PUC #: 3 |
| Description: The product shall be retrieved quickly | | |
| Rationale: Better performance will increase the usability of user interaction | | |
| Originator: Jorge Gonzalez, Dir. Support System | | |
| Fit Criterion: Retrieval of topology views shall be retrieved within .5 seconds 90% of the time | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 1                                                                Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 13 | Requirement Type:  Functional | PUC #: 3 |
| Description: The product shall let the user be able to view their topology view from their profile | | |
| Rationale:  Users are able to save their topology views for later use | | |
| Originator: Jorge Gonzalez, Dir. Support System | | |
| Fit Criterion: The retrieved topology view should be identical to the previously saved topology view | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 1                                                                Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 14 | Requirement Type:  Functional | PUC #: 3 |
| Description: The product shall be able to display network topology as the user drag and drops | | |
| Rationale:  Network topology view is necessary as a user tool | | |
| Originator: Jorge Gonzalez, Dir. Support System | | |
| Fit Criterion: The Network topology should be able update within .3 seconds of users adding to the Network topology | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 2                                                                Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 15 | Requirement Type:  Functional | PUC #: 3 |
| Description: The product shall be able to display up to 3 different views for the Network Topology | | |
| Rationale:  Users are able to change and view different Views of their topologies | | |
| Originator: Jorge Gonzalez, Dir. Support System | | |
| Fit Criterion: The CRM will maintain 100% consistency of the users saved views | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 1                                                                Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 16 | Requirement Type:  Non-Functional(Operational and Environmental) | PUC #: 1 |
| Description: The user can make a request for user network topology from any OS they choose. | | |
| Rationale:  Users may have many different OS’s that could be used, such as Windows, Linux, or Mac. | | |
| Originator: Saffi Zaidi, Sr. Software Engineer | | |
| Fit Criterion: A request is sent to the system that also displays from what OS it was sent from | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 2                                                                Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 17 | Requirement Type:  Non-Functional(Cultural) | PUC #: 1 |
| Description: The user can make their request for user network topology in any language they choose. | | |
| Rationale:  Fujitsu has offices in many different countries around the world, so the system must accommodate several different languages. | | |
| Originator: Saffi Zaidi, Sr. Software Engineer | | |
| Fit Criterion: A user can send their request in any language, and the system will be able to translate and be able to process the request. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 2                                                                Conflicts: N/A | | |
| Supporting Materials: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 18 | Requirement Type:  Functional | PUC #: 1 |
| Description: The User can specify which of the three different views they want for the network topology, otherwise the default is assumed. | | |
| Rationale:  There are different ways network topology can be viewed, all differing based on what purpose the user has | | |
| Originator: Saffi Zaidi, Sr. Software Engineer | | |
| Fit Criterion: The system will recognize each of the 3 types of network topologies and handle accordingly | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 1                                                                Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 19 | Requirement Type:  Functional | PUC #: 1 |
| Description: User credentials must be known to retrieve the right network topology | | |
| Rationale:  The system will store a lot of network topologies and have many users, so user credentials must be known to retrieve the right topology | | |
| Originator: Saffi Zaidi, Sr. Software Engineer | | |
| Fit Criterion: The system knows the user credentials and can see their user network topologies | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 1                                                                Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 20 | Requirement Type:  Functional | PUC #: 1 |
| Description: The CRM must be able to establish a connection to the CIMS | | |
| Rationale:  CRM cannot retrieve the network topology without connecting to the CIMS | | |
| Originator: Saffi Zaidi, Sr. Software Engineer | | |
| Fit Criterion: The CRM has connected to the CIMS, and the CIMS can ping the CRM to confirm | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 1                                                                Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 21 | Requirement Type: Usability and Humanity (NF) | PUC #: 9 |
| Description: The patch must consist of proper interface and directions in order for CRM to apply it to the system. | | |
| Rationale:  Without proper instructions, the CRM cannot properly apply the patch to the system. | | |
| Originator: Zachary Tarell, Ericsson Support Tech | | |
| Fit Criterion: Patches may be installed either under programmed control or by a human programmer using an editing tool or a debugger. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority:  1                                                       Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 22 | Requirement Type: Legal (NF) | PUC #: 9 |
| Description: A permanent patch must have proper documentation and sign-offs included within the patch’s instructions. | | |
| Rationale: Patches may be permanent (until patched again) or temporary | | |
| Originator: Zachary Tarell, Ericsson Support Tech | | |
| Fit Criterion: Both Ericsson and Fujitsu must sign off on permanent patches | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority:  1                                                       Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 23 | Requirement Type: Functional | PUC #: 9 |
| Description: Ericsson support technician sends response to CRM | | |
| Rationale: After a patch is received, Ericsson sends a response to log into the CRM system. | | |
| Originator: Zachary Tarell, Ericsson Support Tech | | |
| Fit Criterion: Each patch (permanent or temporary) must be logged into the CRM system upon completion. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority:  1                                                       Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 24 | Requirement Type: Functional | PUC #: 9 |
| Description: Ericsson Support technician requests inventory of CRM System. | | |
| Rationale: Support must be able to check and have access to inventory to properly apply patches on all levels. | | |
| Originator: Zachary Tarell, Ericsson Support Tech | | |
| Fit Criterion: Includes Authorized and Unauthorized devices and software. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority:  1                                                       Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 25 | Requirement Type: Functional | PUC #: 9 |
| Description: Support conducts continuous vulnerability assessment and remediation. | | |
| Rationale: Conducting these assessments make it possible to know where vulnerabilities are to make proper patches and responses. | | |
| Originator: Zachary Tarell, Ericsson Support Tech | | |
| Fit Criterion: Support must be allowed secure configuration on both hardware and software devices. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority:  1                                                       Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 26 | Requirement Type: Functional | PUC #: 2 |
| Description: The product shall create a network topology based on information provided by the users(inventory). | | |
| Rationale: This is the intended use of the system, to create a network topology to show users. | | |
| Originator: Po-Yu Liu, Dir. Support System | | |
| Fit Criterion: The CRM will create a network topology based on given information to show the customers. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority:  1                                                       Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 27 | Requirement Type: Functional | PUC #: 2 |
| Description: The product shall provide an alternative such as an error message if a network topology is not able to be created. | | |
| Rationale: There will not always be a topology available. | | |
| Originator: Po-Yu Liu, Dir. Support System | | |
| Fit Criterion: The CRM will always provide a response 100% of the time, even with fault information. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 1                                                                  Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 28 | Requirement Type: Functional | PUC #: 5 |
| Description: The product shall have hot-key feature for saving the Circuit design | | |
| Rationale:  To make the life of the user easier by using hot keys instead of going to the drop down list and choosing to save, which takes more time and is a nuisance. | | |
| Originator:  Ismael Al-Sabea, Sr. Electrical Engineer | | |
| Fit Criterion: When the user presses the hot-key for save (ex: Ctrl + S ), the circuit design shall be saved and be stored in the database. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority:  4                                                       Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 29 | Requirement Type: Functional | PUC #: 5 |
| Description:  The product shall have a tab inside the user account where it shows user saved circuit designs. | | |
| Rationale: After the user creates his design, he can access it from that tab, and he can print it, edit it, remove it from the database. | | |
| Originator: Ismael Al-Sabea, Sr. Electrical Engineer | | |
| Fit Criterion: the tab shows all circuit designs saved by the user, and they should be accessible and editable and removable. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority:   1                                                     Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 30 | Requirement Type: Functional | PUC #: 5 |
| Description: The product shall have a history feature, which allows the CRM user to revert to a previous design | | |
| Rationale:  The CRM user can simply revert all their changes in the event that a design requires a complete overhaul back to a previous version | | |
| Originator:  Saffi Zaidi, Sr. Software Engineer | | |
| Fit Criterion:  When the user presses a “Revert to” button, they can see all their previous designs and can click to revert. | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority:  2                                                       Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 31 | Requirement Type: Functional | PUC #: 5 |
| Description: The product shall have the ability to link up to a CRM user’s cloud service, and make a copy of the circuit design in their cloud(Google Drive, Microsoft Cloud etc.) | | |
| Rationale: If the CRM user wants to have their own backup in case their local device or the Fujitsu servers, they can do so | | |
| Originator:  Saffi Zaidi, Sr. Software Engineer | | |
| Fit Criterion: The CRM user can see their circuit designs located in their cloud drive that they’ve given | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority:                    2                 Conflicts: N/A | | |
| Supporting Materials: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 32 | Requirement Type: Functional | PUC #: 5 |
| Description: When user submits the circuit, the circuit will be saved | | |
| Rationale: The product shall have ability to view and update the save circuits for later dates | | |
| Originator: Jorge | | |
| Fit Criterion: When the user submits the circuit, the circuit will be stored in the database 100% of the time | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority:   2                                                     Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

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| **Atomic Requirements** | | |
| Requirement #: 33 | Requirement Type: Functional | PUC #: 5 |
| Description: The product shall have the ability to store the circuit in the user’s local computer | | |
| Rationale: The user will want to have the portability of their data | | |
| Originator: Jorge | | |
| Fit Criterion: Saved files will be stored in the user’s computer | | |
| Customer Satisfaction: N/A                                  Customer Dissatisfaction: N/A | | |
| Priority: 3                                                                 Conflicts: N/A | | |
| Supporting Materials: N/A | | |
| History: N/A | | |

# Provide Traceability from Events to Atomic Requirements

A picture containing cabinet

Description automatically generated

A screen shot of a computer

Description automatically generated

A screen shot of a computer

Description automatically generated

# WireFrames

A screenshot of a cell phone

Description automatically generated

A screenshot of a cell phone

Description automatically generated

A screenshot of a cell phone

Description automatically generated

A close up of a map

Description automatically generated

A screenshot of a cell phone

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![A screenshot of a cell phone

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# List of Sources Used

[1] Ericsson launches telecom

<https://www.ericsson.com/en/press-releases/2012/2/ericsson-launches-telecom-crm>

[2] Example of a CRM requirements document <https://www.academia.edu/33654314/Sample_CRM_Requirements_Document>

[3] How to support a software?

<https://www.smashingmagazine.com/2011/10/supporting-product-providing-technical-support/>

[4] The Volere Process https://www.youtube.com/watch?v=WywPA6npWBU&list=PLjTp7GXaK0tYjCWzxjgEbRnHmXY47Oo2b&index=1

[5] What is a network topology?

<https://www.dnsstuff.com/what-is-network-topology>

[6] What is a wireframe?

<https://www.experienceux.co.uk/faqs/what-is-wireframing/>

# List of Business Terms

|  |  |
| --- | --- |
| Circuit Resource Management (CRM) | circuit bandwidth allocation and provisioning |
| EAI (Enterprise Application Integration | the use of software and computer systems' architectural principles to integrate a set of enterprise computer applications. |
| Granite Inventory System | comprehensive resource management and provisioning automation solution, Ericsson Adaptive Inventory serves as the window into resource inventory across all operational layers and technologies, streamlining every surrounding business process that depends on an accurate view of how customer services use network resources. |
| GUI (Graphical User Interface) | a system of interactive visual components for computer software. A GUI displays objects that convey information and represent actions that can be taken by the user. The objects change color, size, or visibility when the user interacts with them. |
| HP-UX or HP Itanium Platforms | HP-UX operating systems supports a variety of PA-RISC systems. The 11.0 added support for Integrity-based servers for the transition from PA-RISC to Itanium. HP-UX 11i v1.5 is the first version that supported Itanium. On the introduction of HP-UX 11i v2 the operating system supported both of these architectures |
| LTE, CDMA, GSM, 3G, 4G, and TETRA | wireless networks; carrier frequencies and bands |
| Mean Time To Repair (MTTR) | a basic measure of the maintainability of repairable items. It represents the average time required to repair a failed component or device. |
| MPLS, IP, SDH/SONET | refers to use multiple technologies to implement to fulfill user required network services like Internet Protocol, Ethernet, Multi-Protocol Label Switching, SONET, next generation connection-oriented transport technology |
| Network Operations Center (NOC) | a centralized location where IT support technicians can supervise, monitor and maintain client networks. |
| RAC (Real Application Clusters) | a computer-cluster database marketed by the Oracle corporation |
| RDBMS (Relational Database Management System) | An *RDBMS* is a DBMS designed specifically for relational databases. Therefore, RDBMSes are a subset of DBMSes. A relational database refers to a database that stores data in a structured format, using rows and columns. |
| Reconciliation Jobs | to efficiently measure and manage the transactions received to the company by their customers |
| Routers, Broadband Aggregators, MSC, RNC | the means by which connections are made among multiple technologies. These technologies include ISDN, DSL, cable, Ethernet, and wireless devices that are connected to corporate virtual private networks (VPNs), third-party applications, and the Internet. |
| Sun Solaris | *Solaris* is the computer operating system that *Sun* Microsystems provides for its family of Scalable Processor Architecture-based processors as well as for Intel-based processors. **Sun** has historically dominated the large UNIX workstation market. |
| WebLogic & Sun | BEA *WebLogic* Server running on *Sun* Cluster systems delivers a highly available platform for developing and deploying mission-critical e-commerce applications across distributed, heterogeneous application environments. |