Home Inventory Management System

(HIMS)

RELEASE 01.00.00
PROJECT ID: HIMS1

SOFTWARE REQUIREMENTS SPECIFICATION

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Revision 0

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Review and Approval

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Contents

1 INTRODUCTION

1.1 Purpose

The purpose of the Software Requirements Specification (SRS) is to define and document the software requirements for the development of the Home Inventory Management System (HIMS). The intended audience is Information Systems (IS) and management.

1.2 Scope

The goal of HIMS is to provide our potential users with a dynamic and responsive website paired with a mobile application for capturing home inventory pictures and details. The website will be the main portal for the users to browse their inventory, finalize the details of certain possessions and initiate insurance and warranty claims. The web and mobile applications should seamlessly communicate with each other to provide our users with up-to-date information on each page. Users will be able to email the claims departments of their insurance companies for damaged/stolen items or initiate a warranty claim. An application programming interface (API) will be developed and exposed for retailers to integrate with the system. Other functionality will include the ability to find a nearby location for the purchase of a replacement item or return of an item.

Our objectives are:

- A responsive website for managing home inventory, initiating insurance and warranty claims, finding retailers, and retailer integrations.
- A mobile application for iPhone, Android and Windows devices that provides the same functionality of the website with the ability to perform minimal actions so that the more difficult tasks do not have to be completed on the mobile device.
- Login management for users of the system with the ability for users to update their profile.
- A page to add addresses and locations within addresses which are tied to homeowners or renters insurance companies.
- A page to add, edit, and delete inventory pictures, details, links and attachment then link that item to a location under an address.
- Functionality to browse or search for specific items on a whole or by address.
- Ability to initiate an insurance or warranty claim by providing the item's details.
- Functionality to find nearby or online retailers to purchase a replacement item or return an item.
- Integrations for retailers to add an item to a user's account upon purchase.
- Auto Detection of the smart devices by the app when connected to the user's home network. So, if the device go out of range of home network the user will receive an alert. User will also get an option to add a device to the inventory once it connected to

home network.
- The website should be load-balanced across multiple locations nationwide.
- The database should be held at a centralized location with data guard to standby database at other locations.
- Ability to generate ad-hoc as well as batch reports.

1.3 Definitions, acronyms, and abbreviations

1.3.1 Definitions

Smart Device	Any electronic device that can be connected to other devices and networks via different protocols such as WIFI, Bluetooth and 4G to exchange data.
Wireless System	A system on wireless local area network (LAN) that uses radio waves to connect to devices, networks or applications.
Location	Place that an item is located regularly and always comes with an address.
Retailer	Place where an item is bought from. Retailers sell goods from manufacturers with warranty but have their own return policy.
Report	A template filled with certain system data that are required by administrators with different searching parameters.
Admin	A person who is responsible for configuration and daily operation of the system and able to generate reports to supervise system performance.
Alert	A message sent to users to notify their lost item whenever their home items get disconnected from the wireless system they are associated to.
Claims	A request sent to an insurance company asking for payments to cover the value of lost items or to a manufacturer for a warranty related issue.
Inventory Items	Any valuable objects that a user owns at home.
Time	System generated time frame that automatically triggers events.
Payment Processor	Third party company that processes payments made by users for using HIMS.

1.3.2 Acronyms and Abbreviations

API	Application Programming Interface
HIMS	Home Inventory Management System
IEEE	Institute of Electrical and Electronics Engineers
IS	Information Services
IT	Information Technology
SMS	Short Messaging Service
SMTP	Simple Mail Transfer Protocol
SOW	Statement of work
SRS	Software Requirements Specification
TCP/IP	Transmission Control Protocol/Internet Protocol

1.4 References

- IEEE 802: Local and Metropolitan Area Networks
- IEEE Std 29148-2011, IEEE Recommended Practice for Software Requirements Specifications
- ISO 21500:2012 - Guidance on project management
  It provides high-level description of concepts and processes that are considered to form good practice in project management
- ISO 31000:2009 - Risk management
- ISO 10006:2003 - Quality management systems – Guidelines for quality management in projects
- ISO 10007:2003 - Quality management systems – Guidelines for configuration management

1.5 Overview

The contents of this document provide an overall description of and the specific requirements for, the software product that will be developed as a result of the HIMS project.
This SRS is organized using the format of **IEEE Std 29148-2011, Annex A-1 Template for Section 3.** The following tailoring has been applied, as permitted and provided by IEEE Std 29148-2011, section 5.0:

- Section 3.4 and parts of 3.5 will be covered by the software design specification.
- Section 1.6 has been added to provide additional information consistent with IS Software Process Improvement work practices.

1.6 Revision History

Revision	Date Modified	Author	Reason for Change
A	Nov 21, 2014	Himika	Issued for Review and Comments

2 OVERALL DESCRIPTION

2.1 Product Perspective

Thousands of homes are destroyed, damaged and burglarized each year. Most of these homeowners are not well prepared for dealing with their insurance agencies to replace their valuable possessions. The purpose of HIMS is to provide the general public with a useful and beneficial home inventory management system that will allow them to document their assets and take action if one is damaged, stolen, not working correctly or needs to be returned.

Currently, homeowners either track their inventory using paper methods or use systems that only store the information, but do not provide any functionality to submit claims or track smart devices. By using this system, users will be able to reduce the amount of paperwork is required to file a claim and can keep track of their smart devices automatically.

The goal of HIMS is to provide potential users with a dynamic and responsive website paired with a mobile application for capturing home inventory pictures and details. The website will be the main portal for the users to browse their inventory, finalize the details of certain possessions and initiate insurance and warranty claims. The web and mobile applications should seamlessly communicate with each other to provide our users with up-to-date information on each page. Users will be able to email the claims departments of their insurance companies for damaged/stolen items or initiate a warranty claim. An application programming interface (API) will be developed and exposed for retailers to integrate with the system. Other functionality will include the ability to find a nearby location for the purchase of a replacement item or return of an item.

2.1.1 User Interfaces

HIMS assumes two groups of user will need to interface with the system: general users and administrators. The general class of user will use HIMS to record and track their home inventory. This class of user is assumed to be familiar with web based interfaces. HIMS will use standard interface objects to make the user interface as consistent as possible across all screens and devices. Additionally, HIMS will use a tree structure approach to present the menus for navigation. Tree structure navigation is a standard navigation approach used by many web browsers and is expected to be easy to learn and use by this class of user.

The administrator class of user will use HIMS to manage user data and provide reporting to management. The administrator users will require full access to all objects and data within the system in order to provide customer service support and data validation and cleanup.

2.1.2 Hardware Interfaces

HIMS will be designed to run on a standard IIS 7.0 enabled web server. The database will

run on Oracle Database 12c Server. No special hardware is required.

2.1.3 Software Interfaces

HIMS will be designed to run on a standard Windows server architecture. HIMS will need access to the SMTP server to send emails and SMS Gateway for sending text alerts. HIMS will use standard Oracle JDBC drivers to communicate with the database. HIMS will need to communicate with wireless systems and smart devices across TCP/IP or Telnet. Inter-server communication will be required across the network of HIMS servers. An API will be designed for retailers to be able to push inventory to user accounts. HIMS will also need to receive payment confirmation from the payment processors.

2.1.4 Communication Interfaces

All customer communication will be handled across a standard HTTPS services. The server will need to communicate with the SMTP, SMS Gateway, Database and among the HIMS servers.

2.1.5 Memory

HIMS will be designed to run on servers with 16GB of memory or more. Client machines will require the minimum memory requirements to run a web browser.

2.1.6 Operations

Customer services will provide support for the basic functions of the system. Backup and recovery operations will be handled outside HIMS through approved procedures and processes. All application logic files will be localized to each instance of HIMS.

2.1.7 Site Adaptation Requirements

There are no site adaptations required to host the HIMS service beyond what is listed above.

2.2 Product Functions

There are eight major goals for HIMS:

- Record and track home inventory.
- Retailer's adding items upon purchase.
- Provide nearby retailers for convenient returns.
- Facilitate the submission of insurance claims for addresses, locations and/or items.
- Facilitate the submission of warranty claims for broken items.
- Add and track smart devices through home networks.
- Reports generated for analysis.
- Issue bills and record user payments.

To accomplish these goals HIMS will implement the following major functions:

2.2.1 Manage Addresses and Locations

HIMS will provide the ability for general users to add addresses to their account. Under addresses, general users will be able to create locations associated to an address. The addresses will be linked with insurance companies for when users submit claims. The locations will provide an intermediate association for items with addresses. When a user submits a claim the address will be brought in based on the location.

2.2.2 Manage Inventory Details

HIMS will provide the ability for general users to add inventory and the details associated with that inventory. Each inventory item will be associated with a location so that address and insurance information will be linked. General users will be able to associate many different types of details for an item. Users will be able to attach files and pictures with their items details as well.

2.2.3 API for retailers to add inventory

HIMS will provide the ability for retailers to submit an inventory item to a general user's account when that user purchases the item from the retailer. The retailer will be able to associate as many details, including files, with the item when it is submitted to the user's account. The general user will get the chance to accept the item into their inventory and associate that item with a location, which will thus also link it to an address.

2.2.4 Search ability to find item retailers

HIMS will provide the ability for general users to search for nearby or online retailers of a specific inventory item. This will allow users to find locations to return or exchange items that either no longer work or are unwanted. HIMS will provide the user with a map of nearby retailers and a listing of the retailers with basic information about location and open times.

2.2.5 Initiate an insurance claim

HIMS will provide the ability for general users to initiate an insurance claim on one or a group of inventory items. The insurance claim will compile the required information for submitting an insurance claim and will also allow the user to include additional information that is either attached to an item or is input upon creation of the claim. Claims will be sent through email to the insurance company's claims department email address. Once a claim is submitted, the HIMS system will no longer track the claim.

2.2.6 Initiate a warranty claim

HIMS will provide the ability for general user to initiate a warranty claim on one inventory item. The warrant claim will compile the required information for submitting a warranty claim and will also allow the user to include additional information that is either attached to the item or is input upon creation of the claim. Claims will be sent through email to the manufacturing company's warranty department email address. Once the claim is submitted, the HIMS system will no longer track the claim.

2.2.7 Add Wireless System

HIMS will provide the ability for general users to associate their home network (wireless system) with an address. HIMS will periodically communicate with the home network to check for new or missing smart devices. If a home network is unavailable, HIMS can send the user an alert notifying the user that their network cannot be reached based on the user's alert preferences.

2.2.8 Manage Smart Devices

HIMS will provide the ability for general users to add smart devices to their inventory. Smart devices can use the same API as retailers to automatically submit item details to a user's account. The smart device can then be approved by the user and associated with a location which will link the item to an address and wireless system. Based on user alert preferences, HIMS can periodically check for the smart device associated with an address and wireless system and can send an alert to the user if the device is not connected to the wireless system.

2.2.9 Reporting

HIMS will provide the ability for administrators to generate ad-hoc reports according to search criteria provided. HIMS will also have batch reports generated periodically for the administrators and general users to view. HIMS will also generate batch reports for general users.

2.2.10 Billing

HIMS will identify and send bill notice to the members who are subject to bill due periodically. The system payment processor has to be able to validate, process and confirm payment transactions. The users will be able to make a payment on the website as well as the mobile app. All payment history will be recorded and will be provided to the user upon request. The system will calculate the new account balance and issue receipt to the user after successful transaction.

2.3 User Characteristics

HIMS assumes the general users will know how to record and track their home inventory.

This class of user is assumed to be familiar with terms like insurance company, claim, warranty, etc. General users must also have an intermediate knowledge of web navigation and advanced functions such as uploading files, associating addresses, location and items, and linking wireless systems to an address.

2.4 Assumptions and Dependencies

2.4.1 Assumptions

2.4.1.1 Browsers and mobile devices will be able to access HIMS.
2.4.1.2 Retailer systems will be able to utilize the API.
2.4.1.3 HIMS will be able to communicate with home networks.
2.4.1.4 HIMS will be able to communicate with smart devices.

2.4.2 Dependencies

2.4.2.1 Services that interface with HIMS will be available 7/24.
2.4.2.2 All functionality requires at least one HIMS server to be available.
2.4.2.3 HIMS system must be able to communicate with wireless systems.

2.5 Apportioning of Requirements

All requirements identified will be completed in a single release.

3 SPECIFIC REQUIREMENTS

3.1 External Interface Requirements

3.1.1 User Interface

HIMS must provide all users with a standard interface that is similar across all user groups. Administrator rights require full access and cannot have any higher-elevated users.

	Requirement	RTM #
3.1.1.1	The system must provide users with a web-based interface	
3.1.1.2	The system must provide administrators with an interface	
3.1.1.3	The system must provide administrators with full access to all objects	
3.1.1.4	The system must provide administrators with full access to all data	

3.1.2 Software Interface

HIMS will interface with the following software:

	Requirement	RTM #
3.1.3.1	HIMS must communicate with SMTP server.	
3.1.3.2	HIMS must communicate with SMS gateway.	
3.1.3.3	HIMS must communicate with the Oracle Database 11g.	
3.1.3.4	HIMS must communicate with user wireless systems.	
3.1.3.5	HIMS must communicate with user smart devices.	
3.1.3.6	HIMS servers must communicate with each other.	
3.1.3.7	HIMS must communicate with external retailers.	
3.1.3.8	HIMS must communicate with external payment processors.	

3.2 Internal Functional Requirements

3.2.1 Registration

User will be able to register an account within HIMS.

	Requirement	RTM #
3.2.1.1	The system must validate the registration information with bank.	
3.2.1.2	The system must assign credentials to new registered users.	

3.2.2 Managing Addresses & Locations

HIMS shall provide the ability for users to manage their addresses, locations and wireless systems.

	Requirement	RTM #
3.2.2.1	The system must store address information	
3.2.2.2	The system must store location information	
3.2.2.3	The system must link locations to addresses	
3.2.2.4	The system must store customer wireless system information	
3.2.2.5	The system must record smart device information	
3.2.2.6	The system must allow users to view addresses only added by him/her.	
3.2.2.7	The system must allow users to edit addresses only added by him/her.	
3.2.2.8	The system must allow users to view locations only added by him/her.	
3.2.2.9	The system must allow users to edit a locations only added by him/her.	

3.2.3 Manage Items

HIMS shall provide the ability for users to manage their items, make returns and HIMS will periodically check for lost items.

	Requirement	RTM #
3.2.3.1	The system must have a template for users to put item information.	
3.2.3.2	The system must save item information to user's account.	
3.2.3.3	The system must associate item with a certain location.	
3.2.3.4	The system must be able to retrieve item information when users request.	
3.2.3.5	The system must periodically track 'smart devices' via an automated process.	
3.2.3.6	The system must sent alerts for devices which do not respond while periodic tracking process.	
3.2.3.7	The system must allow users to share items with other users.	
3.2.3.8	The system must allow users to view only items added to their profile.	

3.2.4 Manage Claims

HIMS shall provide the ability for users to submit insurance and warranty claims for their addresses and items.

	Requirement	RTM #
3.2.4.1	The system must record insurance claim submissions	
3.2.4.2	The system must record warranty claim submissions	
3.2.4.3	The system must submit insurance claims to the insurance companies	
3.2.4.4	The system must submit warranty claims to the manufacturers	

3.2.5 Billing

HIMS shall provide the users with timely bills and the ability to pay bills through a payment provider.

	Requirement	RTM #
3.2.5.1	The system must generate bill notice to the members who are subject to bill due periodically.	
3.2.5.2	The system must return messages sent by payment processor to the user.	
3.2.5.3	The system must calculate the new account balance after successful transaction.	
3.2.5.4	The system must issue receipts to the user after successful transaction.	
3.2.5.5	The system must save successful transactions in payment history.	
3.2.5.6	The system must provide payment history to the user upon request.	
3.2.5.7	The system must allow user to view only his/her own payment history.	

3.2.6 Reporting

HIMS shall provide periodic reports to general users and administrators. HIMS shall also allow administrators to create custom reports through specific parameters.

	Requirement	RTM #
3.2.6.1	The system must generate ad-hoc reports.	
3.2.6.2	The system must generate batch reports periodically for administrators.	
3.2.6.3	The system must generate user batch reports periodically for general users.	
3.2.6.4	The system must populate user batch reports only with his/her own saved data.	

3.3 Performance Requirements

The system is expected to respond as designed. This will be verified during the performance testing and documented in the performance test scripts. Any deviation or anomalies found during the test shall be evaluated and documented. Performance testing will be used to measure the response time of each transaction. Functions that may have different response times are uploading files, tracking of smart devices and wireless systems, and batch reports. Transaction processing will have deviations in elapsed time based on day and volume. 95% of transactions completed within 5 seconds will be an acceptable response time. Tracking of smart device can take up to 20 seconds for a user. Batch report generation varies between 20 sec to 3 minutes depending upon the data requested.

3.4 Design Constraints

The tracking of the smart devices will be done using users home wireless system using TCP/IP protocol.

3.5 Software System Attributes

3.5.1 Reliability

HIMS shall be written using IEEE and ISO standards to comply with application development practices. All processes within the system will be developed with controls to maintain consistency across all users and support similar use of the system by all users.

3.5.2 Availability

HIMS shall be load-balanced across multiple servers nationwide. Users will be routed to the closest, least busy, available server upon navigation to website.

3.5.3 Security

HIMS will not record any sensitive information except user contact and inventory details. All payments shall be processed by third-party payment processors and only billing and payment history, not details, will be recorded by HIMS. HIMS will use standard encryption protocols on passwords and will enforce password lockouts. HIMS will only provide users with access rights for data that they should be able to see in the system. HIMS will log all activity within the system.

3.5.4 Maintainability

HIMS will be developed in modules so as to limit the amount of recompiling and validation that will need to occur upon system enhancements, fixes and updates. The development team will utilize application life-cycle tools to track and record

changes to the application.

3.5.5 Portability

HIMS will be designed to run on a standard Windows server with IIS support. All web portions of HIMS will be designed to transfer to other systems while the communication with wireless systems and smart devices may be developed with specific objects relating to Windows functions and systems.

3.6 Other Requirements

None

4 APPENDICES

4.1 Use Case Diagrams

4.2 Data-flow Diagrams

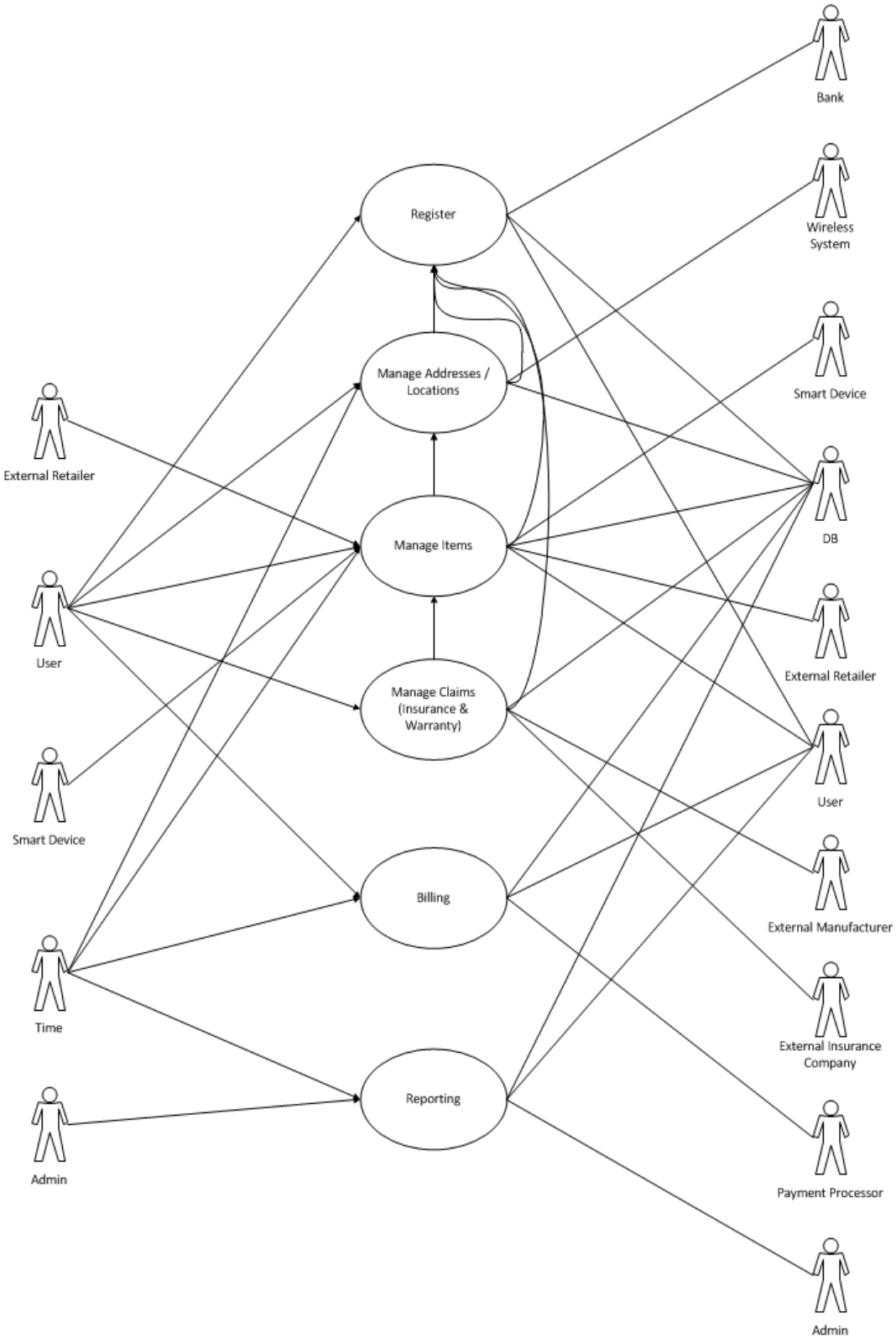
4.3 Entity Relationship Diagram

4.3.1 Conceptual ERD
4.3.2 Fully Attributed ERD

4.4 Security Models

4.4.1 Internal Threats Security Model
4.4.2 External Threats Security Model
4.4.3 Acts of God Security Model

Appendix 4.1.1 – HIMS Use Case



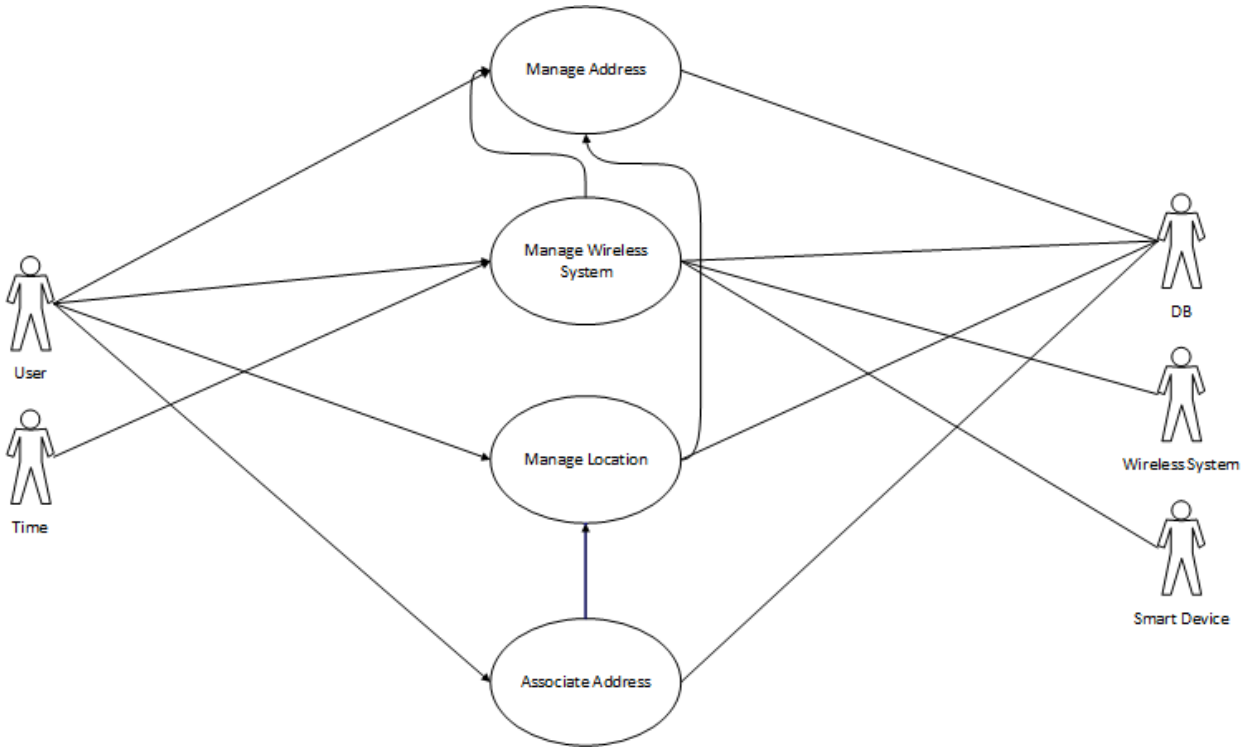
Appendix 4.1.2 – Register Use Case

Author (s): Himika Rastogi **Date:** 10/20/2014
Version: 1.0

USE CASE NAME:	Register	
USE CASE ID:	HIMS001	Business Requirements: ☑
PRIORITY:	High	System Analysis: ☐
SOURCE:	Functional Analyst	
PRIMARY BUSINESS ACTOR	User Bank Admin	
PRIMARY SYSTEM ACTOR	User	

OTHER PARTICIPATING ACTORS:	Database	
OTHER INTERESTED STAKEHOLDERS:		
DESCRIPTION:	This use case describes the event of user trying to register	
PRE-CONDITION:	The user is not yet registered.	
TRIGGER:	This use case is initiated when the user selects the register link.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	Step 1: The user types registration information	**Step 2**: The system validates the registration information
		Step 3: The system sends the user info. for bank validation
		Step 4: The system receives the bank confirmation
	Step 5: The user is registered and receives the credentials	
ALTERNATE COURSES:	**Alt-Step 1:** If the actor enters an invalid name and/or password, the system displays an error message. The actor can choose to either return to the login setup or cancel the login, at which point the use case ends. **Alt-Step 2:** If the user is already registered, the system will not let the user register again with the same credentials. **Alt-Step 3:** If the bank doesn't validate the payment information the user is allowed to provide an alternate payment option.	
CONCLUSION:	This use case concludes when the user is able to login using the username and password chosen by him/her.	
POST-CONDITION:	The user is registered in the system	
BUSINESS RULES	• Every user should have unique and different username • Every user should have one upper case and one numerical character in the password • Every user has to choose at least one payment option.	
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS		
ASSUMPTIONS:	The user should not be already registered in the system.	
OPEN ISSUES:	None	

Appendix 4.1.3 – Manage Address/Location Use Case

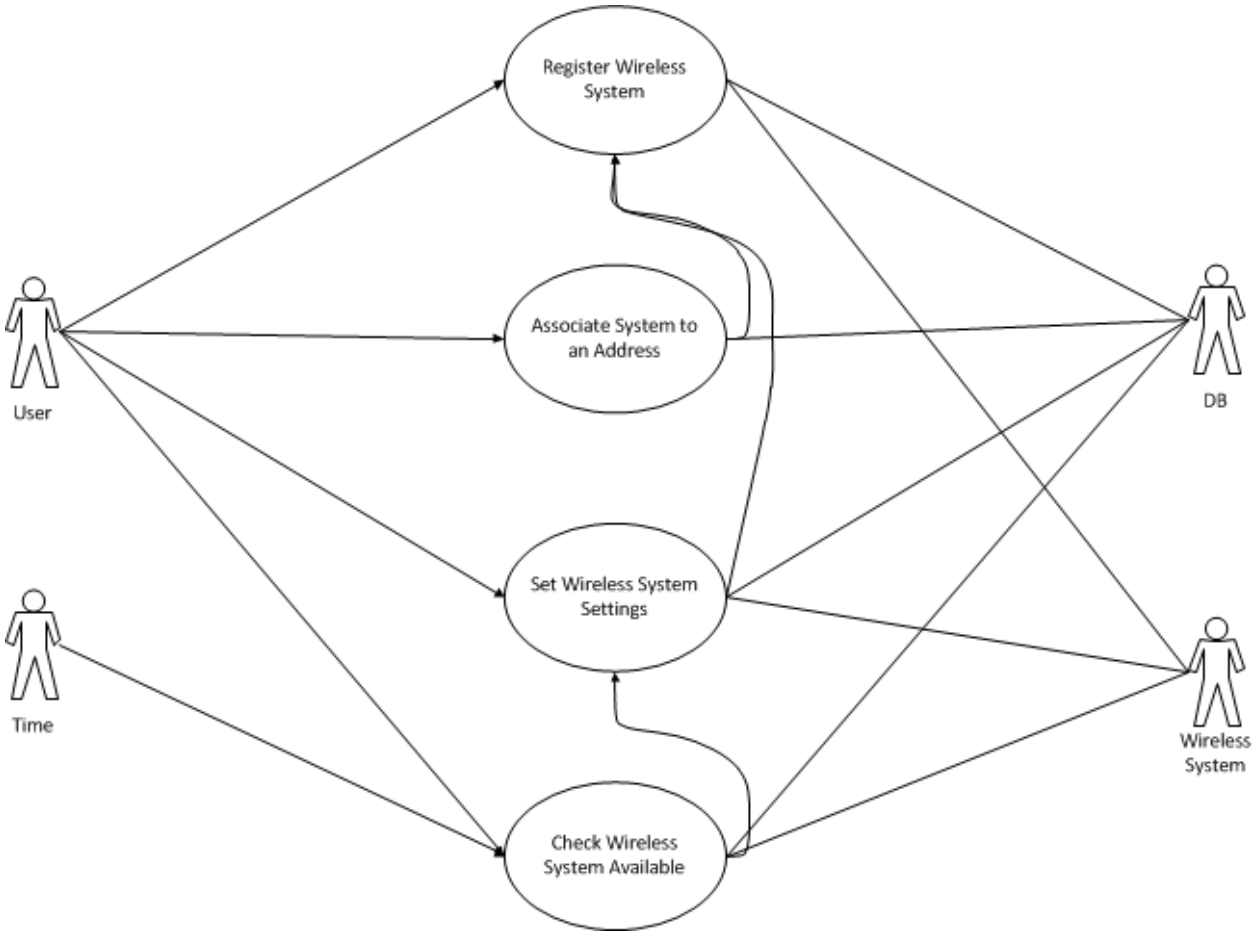


Author (s): __Himika Rastogi___ **Date:** _10/20/2014__
Version:____1.0_____

USE CASE NAME:	Add Address	
USE CASE ID:	HIMS002	Business Requirements: ☑
PRIORITY:	High	System Analysis: □
SOURCE:	Functional Analyst – HIMS001	
PRIMARY BUSINESS ACTOR	User	
PRIMARY SYSTEM ACTOR	User	
OTHER PARTICIPATING ACTORS:	Database	
OTHER INTERESTED STAKEHOLDERS:	Admin	
DESCRIPTION:	This use case describes the event of user trying to add address to the account	
PRE-CONDITION:	The user is registered.	
TRIGGER:	This use case is initiated when the user selects "add address".	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	Step 1: The user types address information	**Step 2**: The system validates the address information
		Step 3: The system receives the confirmation

		Step 4: The user address is linked with his/her account
ALTERNATE COURSES:	**Alt-Step 1:** If the actor enters an invalid zip code, City, or State; the system displays an error message. The actor can choose to either retype the correct info. or abort, at which point the use case ends.	
CONCLUSION:	This use case concludes when the user is able to see address on the system	
POST-CONDITION:	The database successfully records the address	
BUSINESS RULES	• Every user should be able to add address. • Every user can have multiple address • Every user should have one valid address	
IMPLEMENTATION CONTRAINTS AND SPECIFICATIONS	None	
ASSUMPTIONS:	The user is registered.	
OPEN ISSUES:	None	

Appendix 4.1.4 – Manage Wifi System Use Case

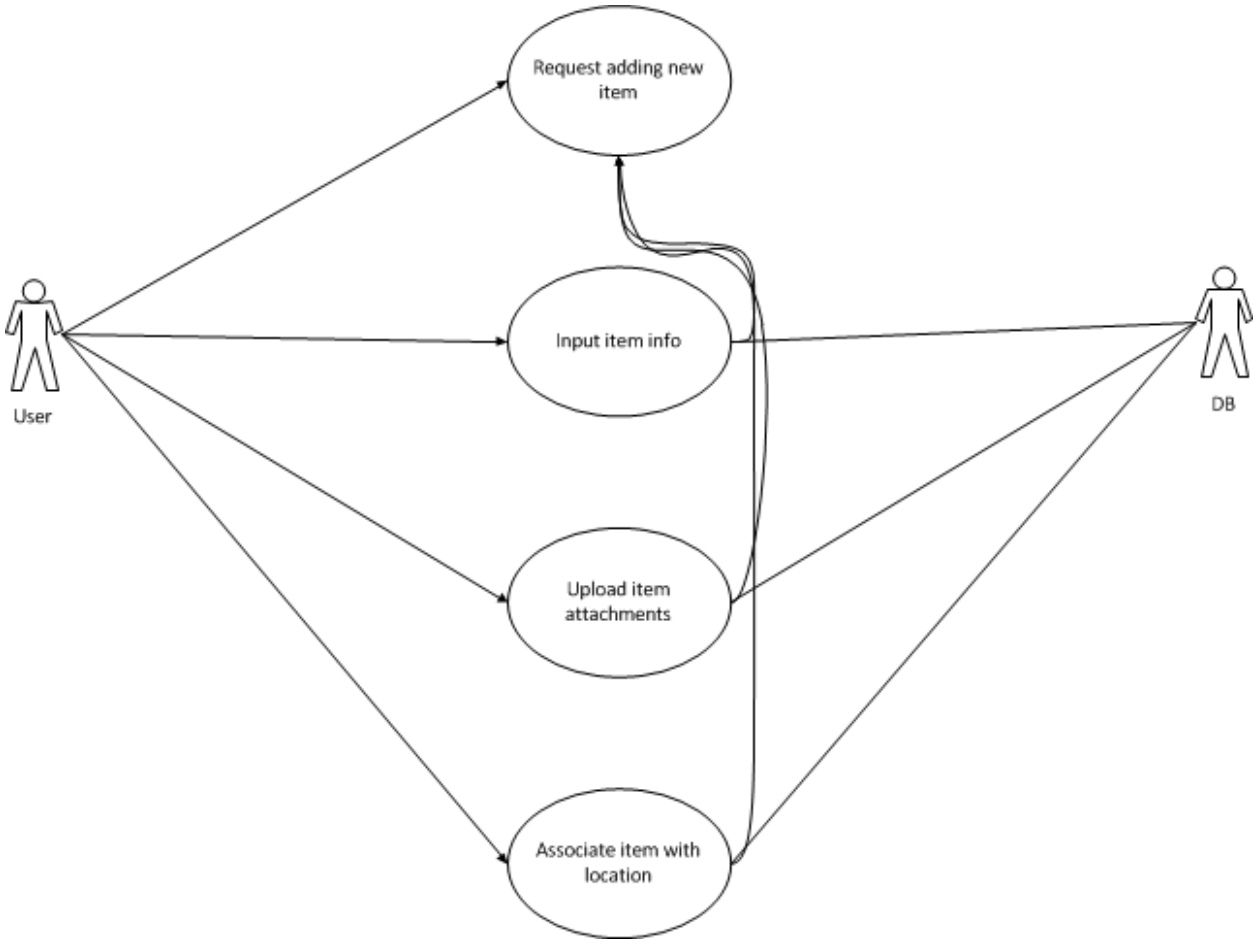


Author: David Hart **Date: 10/15/2014**
Version: 1.0

USE CASE NAME:	Manage Wireless System	**USE CASE TYPE** Business Requirements: ☑ System Analysis: □
USE CASE ID:	HIMS003	
PRIORITY:	Medium	
SOURCE:	Functional Analyst	
PRIMARY BUSINESS ACTOR	Database	
PRIMARY SYSTEM ACTOR	User	
OTHER PARTICIPATING ACTORS:	Wireless System and Smart Device	
OTHER INTERESTED STAKEHOLDERS:	Administrator	
DESCRIPTION:	This use case describes how the user can add a wireless system to an address..	
PRE-CONDITION:	The user needs an address before a wireless system can be added.	

TRIGGER:	User selects to add a wireless system to an address.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	Step 1: The user enters the information required to add their wireless system.	Step 2: The database records the wireless system information
	Step 3: The user selects an address for the wireless system	Step 4: The database records the relationship between the address and wireless system.
	Step 5: The user submits any additional settings and information about the wireless system.	Step 6: The database records the additional information.
		Step 7: The system checks that the wireless system can be reached.
ALTERNATE COURSES:	4A: The system returns an error if the address is already registered with a wireless system.	
	7A: If the wireless system is unavailable then a message is sent to the user.	
CONCLUSION:	The use case concludes when the wireless system has been registered.	
POST-CONDITION:	The wireless system will be ready for periodic checking for availability and lost item checking	
BUSINESS RULES		
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	Communication between the system and wireless systems can be handled many different ways.	
ASSUMPTIONS:	Wireless systems will be able to communicate in a desired way with HIMS	
OPEN ISSUES:	Determine the actual design strategy for this communication	

Appendix 4.1.5 – Add Item by Users Use Case

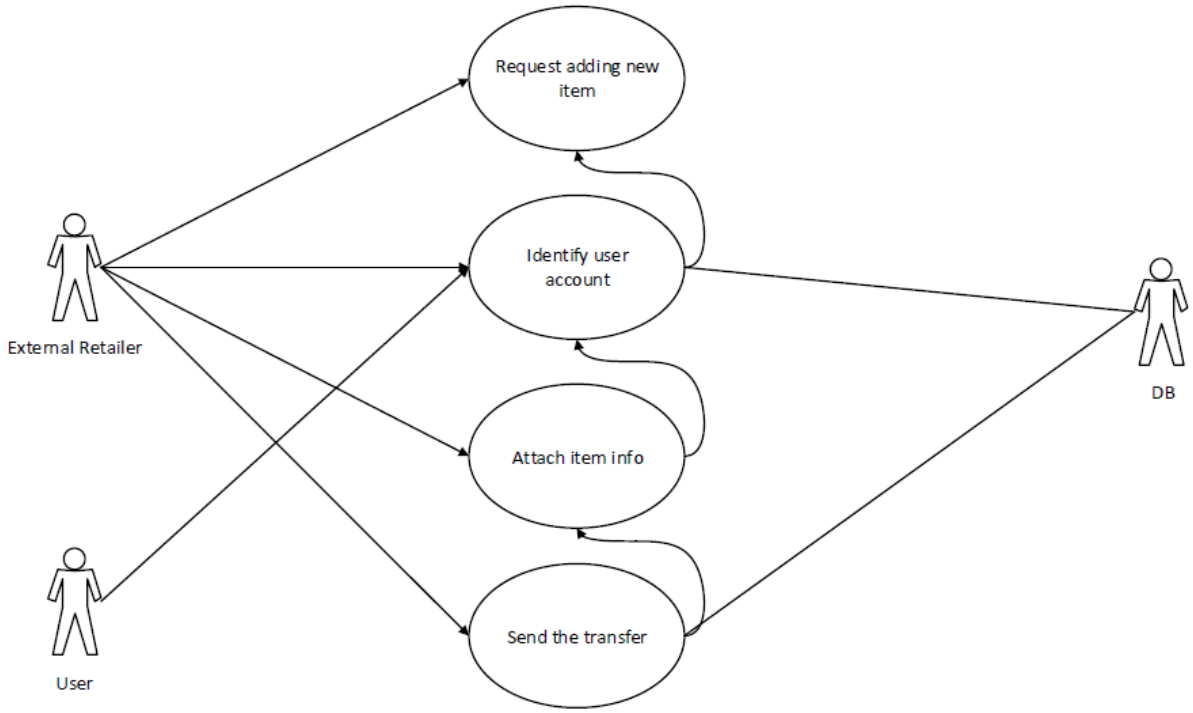


Author (s): Fan Wang **Date: 10/20/2014**
Version: 1.0

USE CASE NAME:	Add New Item by User	**USE CASE TYPE** Business Requirements: ☑ System Analysis: □
USE CASE ID:	HIMS004	
PRIORITY:	High	
SOURCE:	HIMS001	
PRIMARY BUSINESS ACTOR	User	
PRIMARY SYSTEM ACTOR	User	
OTHER PARTICIPATING ACTORS:	DB	
OTHER INTERESTED STAKEHOLDERS:	Admin	
DESCRIPTION:	Users enter new items into their system account by manually inputting all item information.	

PRE-CONDITION:	User has already added an address and at least one location	
TRIGGER:	The user clicks "Add an item"	
TYPICAL COURSE	Actor Action	System Response
		Step 1: System provides new item fill-out form
	Step 2: User inputs item information	**Step 3:** System stores item information
	Step 4: User upload item's attachments	**Step 5:** System stores item attachment
	Step 6: User adds item's address/location	**Step 7:** System stores item's address/location
ALTERNATE COURSES:	**7A:** The system adds the address/location to the system if it's new	
CONCLUSION:	This use case concludes when user receives "Item successfully added!" message	
POST-CONDITION:	The new item is successfully added in the database.	
BUSINESS RULES	1. Address has to be in valid format	
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	● One item can only be associated with one address at a time. ● One item can only be associated with one location at a time.	
ASSUMPTIONS:	Item information is available.	
OPEN ISSUES:	Fraud prevention: verify the authenticity of user input information.	

Appendix 4.1.6 – Add Item by Retailers Use Case

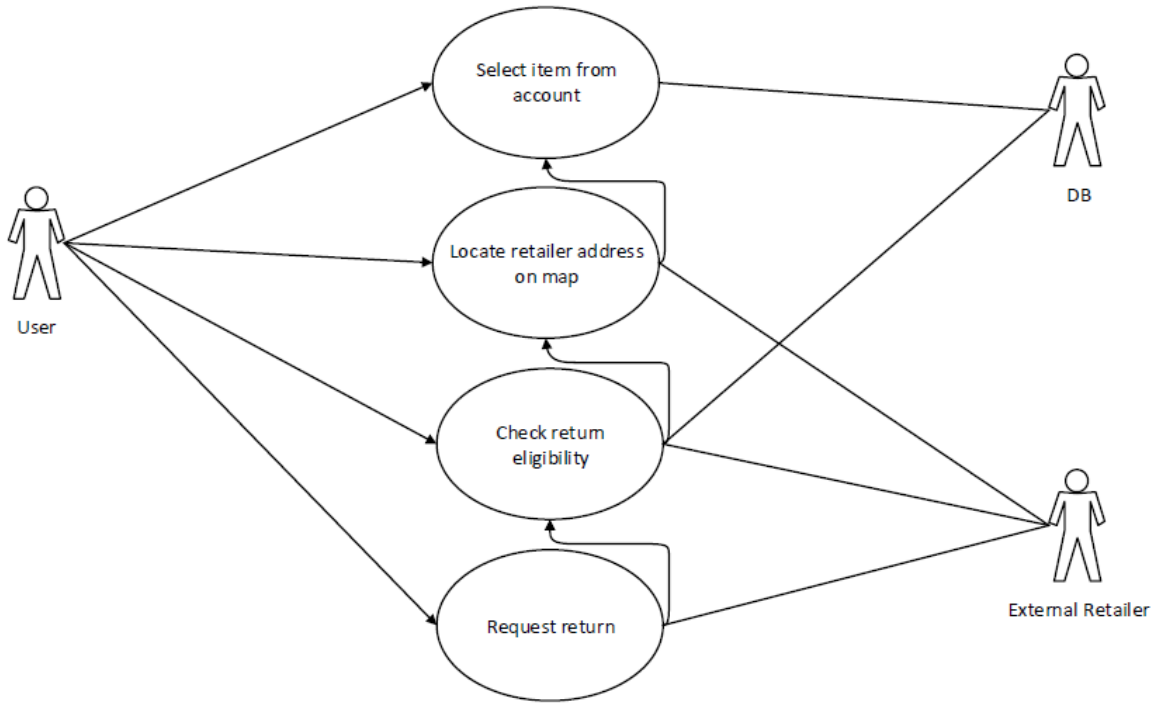


Author (s): Fan Wang **Date:** 10/20/2014
Version: 1.0

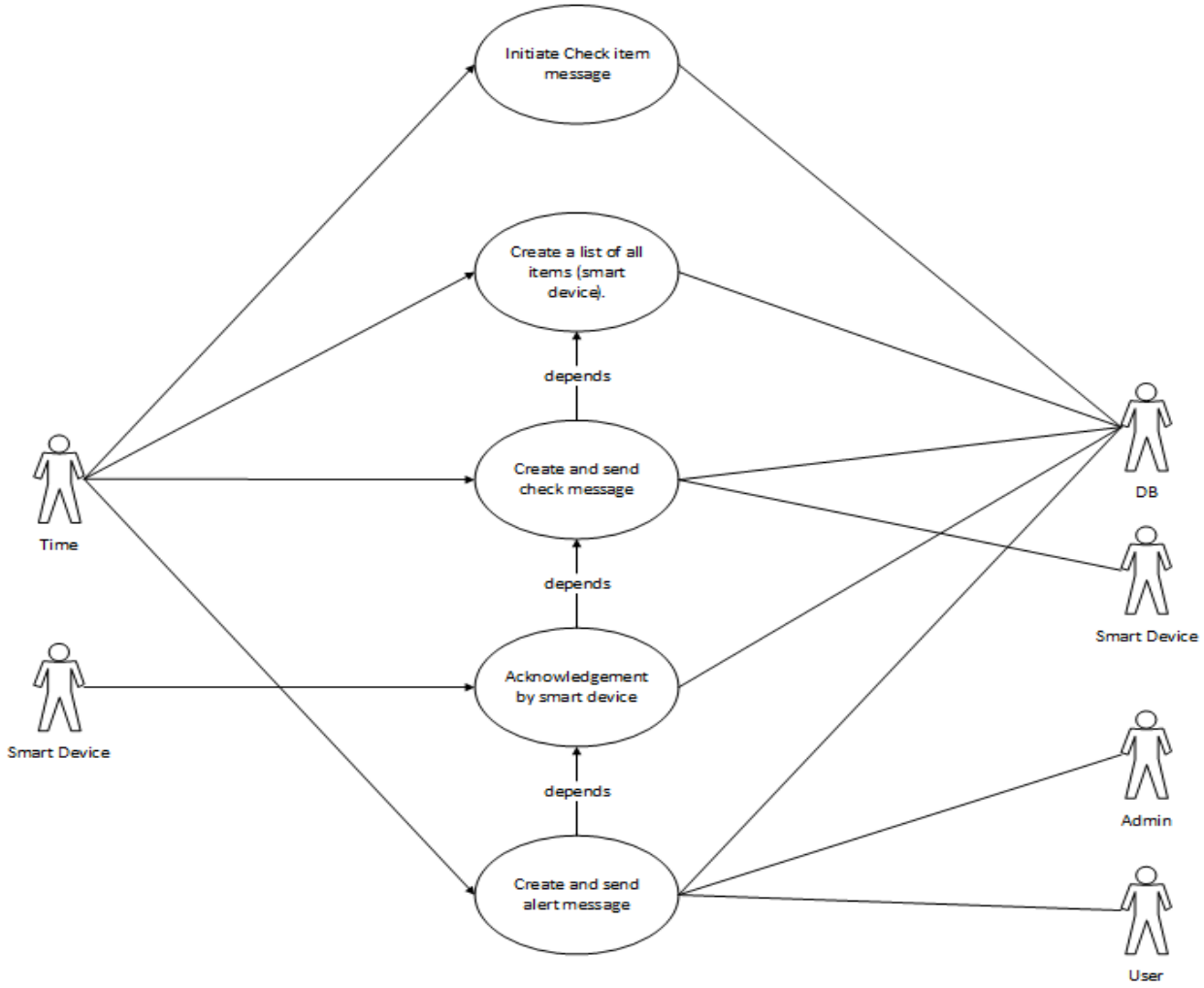
USE CASE NAME:	Add New Item by Retailer	**USE CASE TYPE** Business Requirements: ☑ System Analysis: □
USE CASE ID:	HIMS005	
PRIORITY:	High	
SOURCE:	HIMS001	
PRIMARY BUSINESS ACTOR	User	
PRIMARY SYSTEM ACTOR	Retailer	
OTHER PARTICIPATING ACTORS:	DB	
OTHER INTERESTED STAKEHOLDERS:		
DESCRIPTION:	The use case describes an item is added by the retailer to the user's account.	
PRE-CONDITION:	1. User is at a valid registered member 2. Retailer has the HIMS API system that sends item transfer info to HIMS.	
TRIGGER:	The cashier clicks "Transfer an item to a new account".	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	Step 1: Cashier requests adding a new item to customer's account	**Step 2**: System provides item transfer form.
	Step 3: Cashier inputs user's	

	account number or email address associated with the account.	
	Step 4: Cashier attaches item info.	
	Step 5: Cashier confirms and sends the transfer.	**Step 6:** The system accepts the item transfer form
		Step 7: The system adds the item to the user's account.
ALTERNATE COURSES:	**Alt-3**: The procedure ends if no valid user account number is added.	
CONCLUSION:	This use case concludes when the user receives an item successfully added notification	
POST-CONDITION:	The item is under the user's account.	
BUSINESS RULES	• The notification might be delayed due to various reasons.	
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	API for the retailer has to be as simple as possible and easy to install.	
ASSUMPTIONS:	• Retailer's web service will get all the necessary item information.	
OPEN ISSUES:	Needs to have the retailers implement the API to their existing system.	

Appendix 4.1.7 – Return Item Use Case



Appendix 4.1.8 – Check Lost Items Use Case

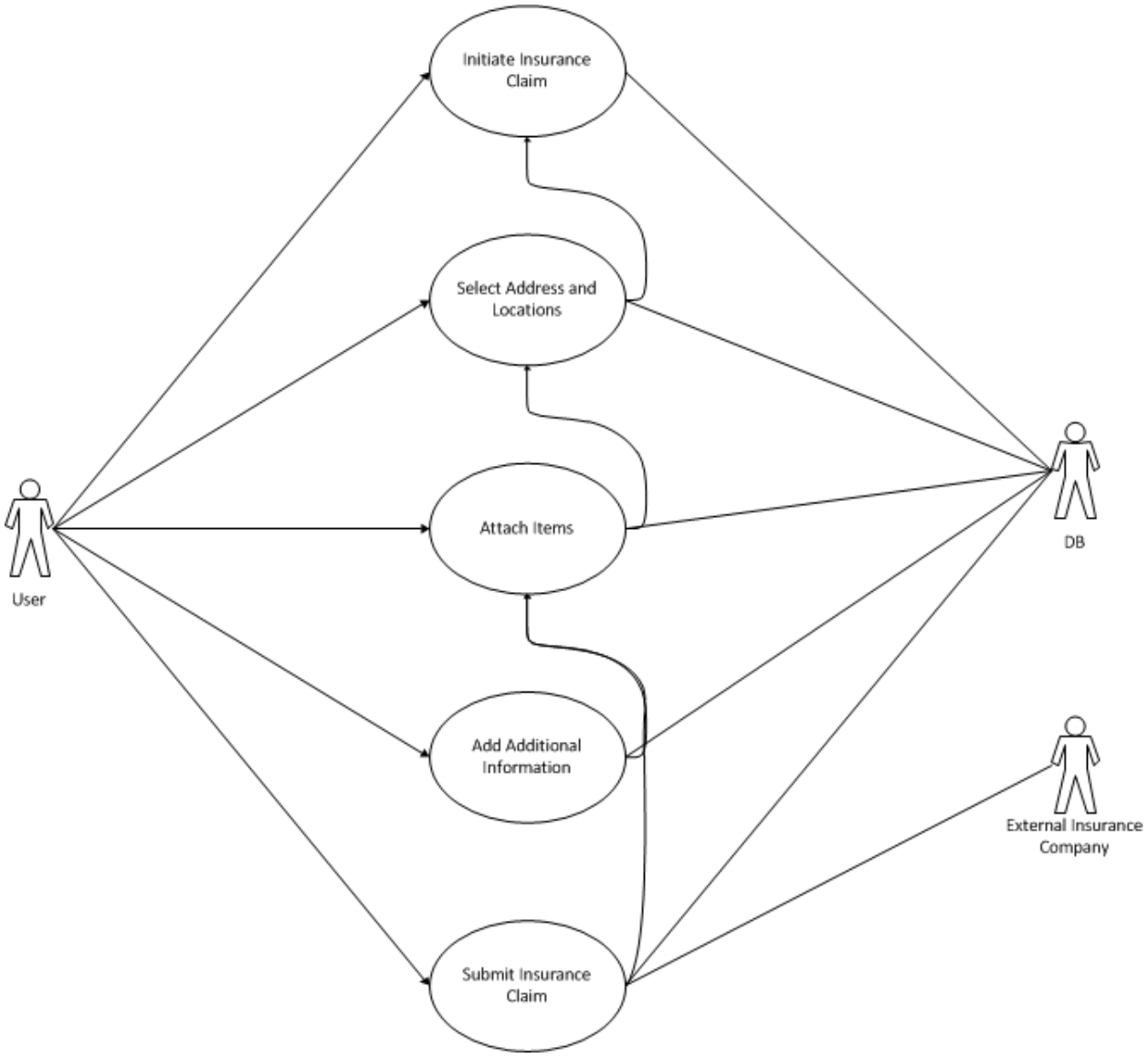


Author: Sameep Kodia **Date: 10/20/2014**
Version: 1.0

USE CASE NAME:	Check Lost Items	**USE CASE TYPE** Business Requirements: ☑ System Analysis: □
USE CASE ID:	HIMS007	
PRIORITY:	High	
SOURCE:	Functional Analyst	
PRIMARY BUSINESS ACTOR	User	
PRIMARY SYSTEM ACTOR	Time, Smart Device	
OTHER PARTICIPATING ACTORS:	Database, Administrator	
OTHER INTERESTED STAKEHOLDERS:		

DESCRIPTION:	This use case describes how at a fixed time interval the HIMS system will send a message to smart devices and expect an acknowledgement from them and if the acknowledgement is not received the user is altered about it. This will happen for each user registered in the system.	
PRE-CONDITION:	The network system should be setup and added to the user account.	
TRIGGER:	At a fixed interval 'Check Items' process is instantiated.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
		Step 1: List of all users is retrieved from database and given to the system.
		Step 2: The system queries for addresses and locations and smart devices for each user.
		Step 3: List of all addresses and location and smart devices for a user is returned to the system.
		Step 4: System starts sending message to smart device for each user, address, location.
	Step 5: Smart device responds back with acknowledgement.	Step 6: The message is stored in the system.
	Step 7: The user 'time' reads all the messages received by the smart devices and checks if any smart devices did not respond.	Step 8: The user is altered about all the missing items.
ALTERNATE COURSES:	4a. If no items are returned for a particular user the system goes for the next user and so on till the last user.	
	4b. If the system is not able to send the message to the wi-fi system an exception message is sent back to the system.	
	7a. If all smart devices respond back successfully, no alert is sent and the process moves to the next user.	
CONCLUSION:	The use case concludes when all users are altered of all the missing smart devices. This process occurs at a fixed interval.	
POST-CONDITION:	The system must wait till the fixed time interval has elapsed to re-start the same process.	
BUSINESS RULES	This process should initiate as soon as the system is started.	
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	This will require to identify what kind of network related hard ware devices the system will have to interface with.	
ASSUMPTIONS:	None	
OPEN ISSUES:	There is no clarity of type of commutation and the communication standards required for interfacing to the network devices at the user's home	

Appendix 4.1.9 – Manage Insurance Claims Use Case

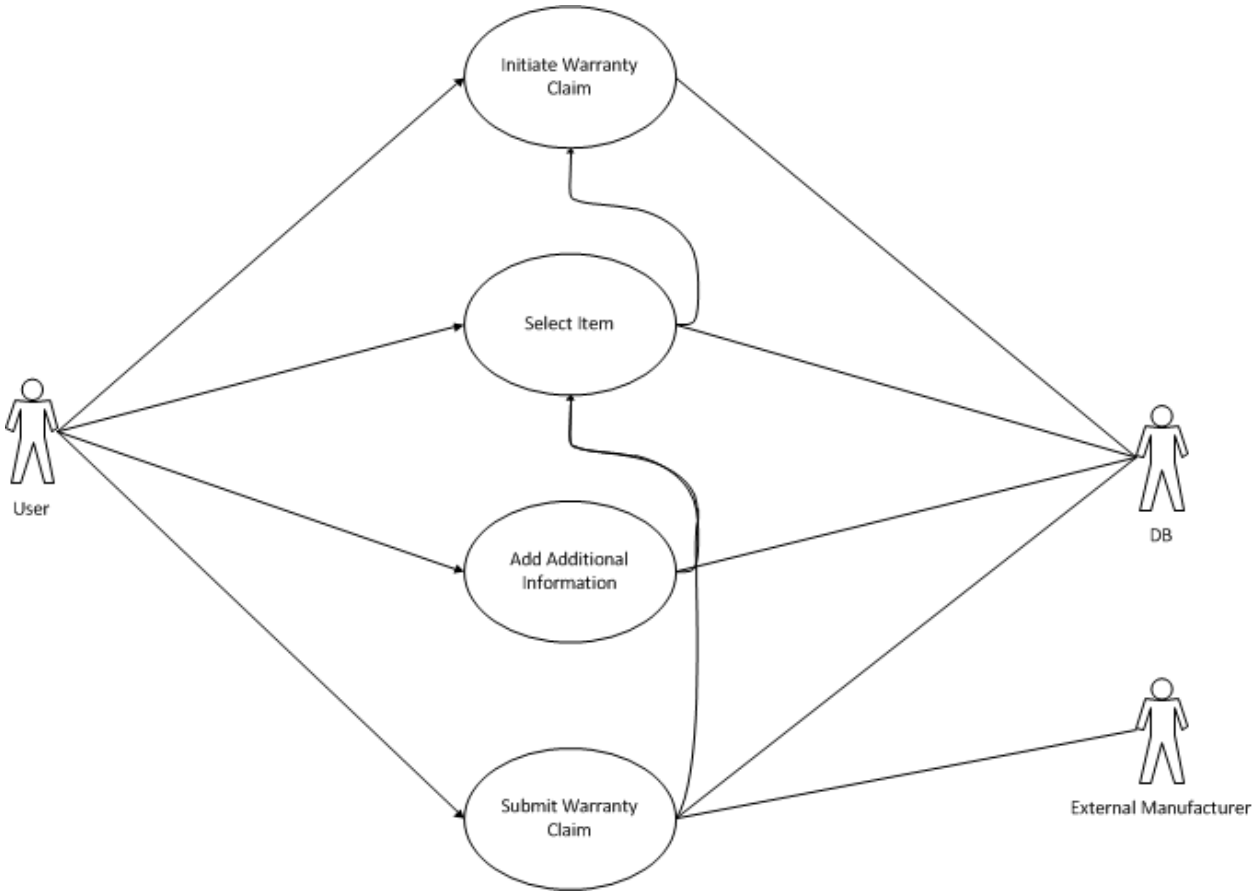


Author: David Hart **Date: 10/17/2014**
Version: 1.0

USE CASE NAME:	Manage Insurance Claims	**USE CASE TYPE**
USE CASE ID:	HIMS008	Business Requirements: ☑
PRIORITY:	High	System Analysis: □
SOURCE:	Functional Analyst	
PRIMARY BUSINESS ACTOR	Database	
PRIMARY SYSTEM ACTOR	User	

OTHER PARTICIPATING ACTORS:	External Insurance Company	
OTHER INTERESTED STAKEHOLDERS:	Administrator	
DESCRIPTION:	This use case describes how the user can submit a claim to the insurance company.	
PRE-CONDITION:	The user should have at least one address and at least one item included under that address.	
TRIGGER:	An event occurs which creates the need for the user to submit an insurance claim on a item(s).	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	Step 1: User initiates the creation of an insurance claim	Step 2: The database collects user information and sends the claim creation form to the user
	Step 3: User selects and address and location (if applicable)	Step 4: The database determines the insurance company and items for the user to select
	Step 5: The user selects the items to include in the claim	
	Step 6: The user adds additional information to the form as required	Step 7: The database saves the claim and submits the claim to the insurance company
ALTERNATE COURSES:	1A: The disappearance of a smart device on the wireless system can initiate a claim	2A: The database sends an error message if there are no addresses
		4A: The database returns an error message if there is no insurance company or items
		7A: The database may return an error if the insurance company cannot be reached
CONCLUSION:	The use case concludes when the claim has been submitted	
POST-CONDITION:	The user will have an active claim until marked as resolved	
BUSINESS RULES	All address, item and insurance company information must be complete before the claim can be submitted	
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	Submission of the claim may be handled in many different ways including web, email, phone and fax. A submission format should be determined which supports all potential details	
ASSUMPTIONS:	The insurance companies can handle the different forms of submission of claims	
OPEN ISSUES:		

Appendix 4.1.10 – Manage Warranty Claims Use Case

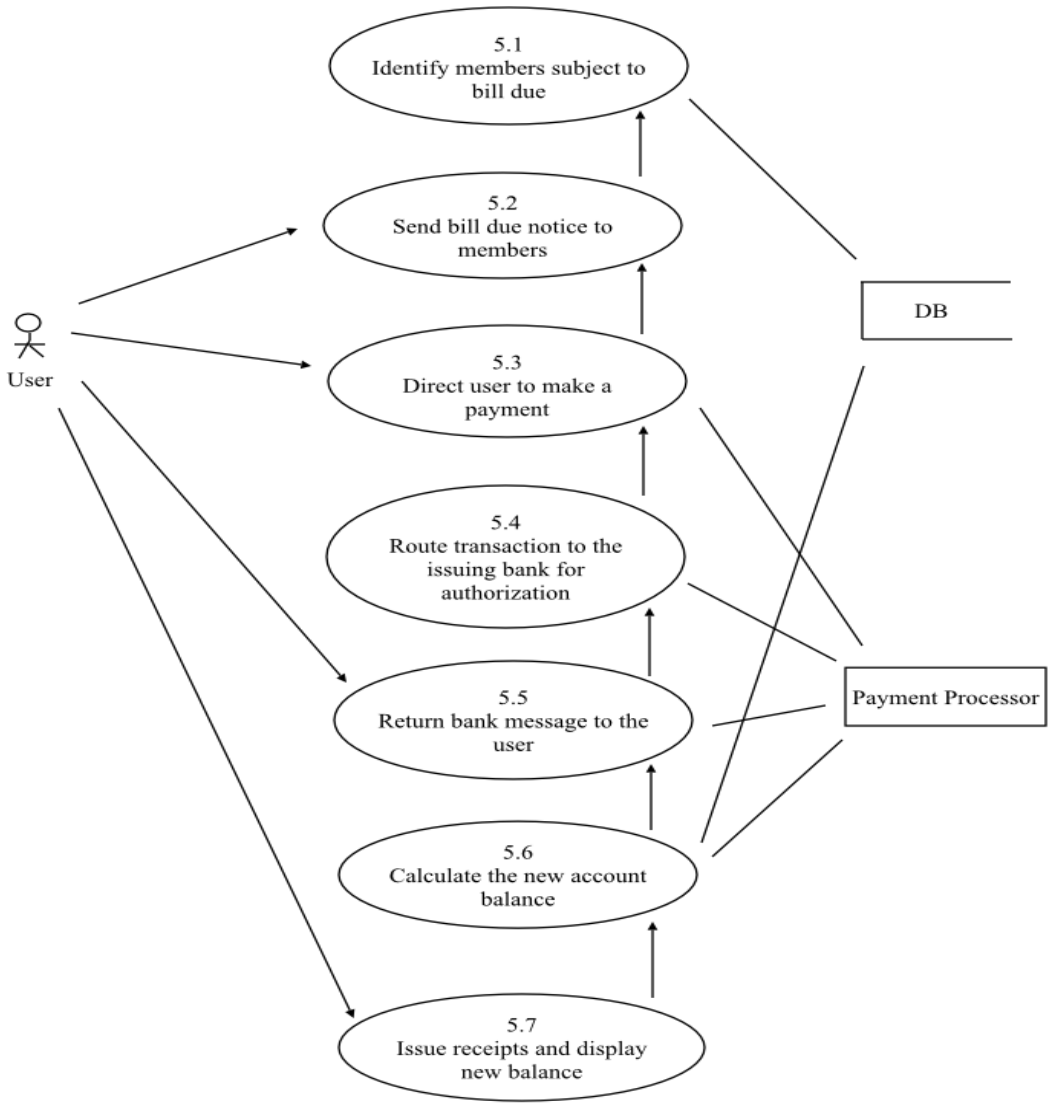


Author: David Hart **Date: 10/17/2014**
Version: 1.0

USE CASE NAME:	Manage Warranty Claims	**USE CASE TYPE** Business Requirements: ☑ System Analysis: □
USE CASE ID:	HIMS009	
PRIORITY:	High	
SOURCE:	Functional Analyst	
PRIMARY BUSINESS ACTOR	Database	
PRIMARY SYSTEM ACTOR	User	
OTHER PARTICIPATING ACTORS:	External Manufacturer	
OTHER INTERESTED STAKEHOLDERS:	Administrator	
DESCRIPTION:	This use case describes how the user can submit a claim to a manufacturing company.	
PRE-CONDITION:	The user needs an item with warranty and manufacturer information.	
TRIGGER:	An event occurs which creates the need for the user to submit an warranty claim	

	on an item.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	Step 1: The user initiates a warranty claim	Step 2: The database collects user information and requests which item to associate to the warranty claim
	Step 3: The user selects an item for the warranty claim	
	Step 4: The user can add additional information that is pertinent to the warranty claim	
	Step 5: The user submits the warranty claim	Step 6: The database then saves the warranty claim and submits the claim to the manufacturer
ALTERNATE COURSES:	1A: A smart device can initiate a warranty claim if it identifies an issue and need for repair	2A: The database sends an error message if there are no items with warranty information
		6A: The database may return an error if the manufacturer cannot be reached
CONCLUSION:	The use case concludes when the claim has been submitted	
POST-CONDITION:	The user will have an active claim until marked as resolved	
BUSINESS RULES	All item and warranty information must be complete before the claim can be submitted	
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	Submission of the claim may be handled in many different ways including web, email, phone and fax. A submission format should be determined which supports all potential details.	
ASSUMPTIONS:	The manufacturer can handle the different forms of submission of claims	
OPEN ISSUES:		

Appendix 4.1.11 – Billing Use Case



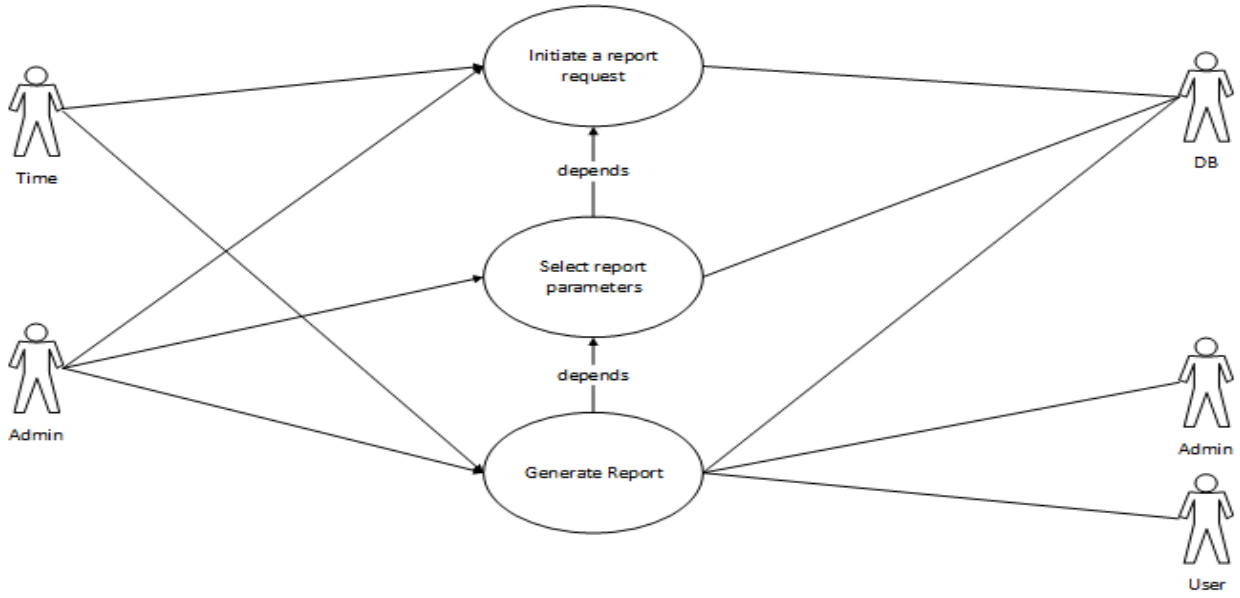
Author (s): Roger_Chen **Date:** 11/07

Version: 1.0

USE CASE NAME:	Manage Billing	**USE CASE TYPE** Business Requirements: ☑ System Analysis: □
USE CASE ID:	HIMS010	
PRIORITY:	High	
SOURCE:	HIMS001	
PRIMARY BUSINESS ACTOR	User	
PRIMARY SYSTEM ACTOR	Payment Processor	

OTHER PARTICIPATING ACTORS:	• DB • Time	
OTHER INTERESTED STAKEHOLDERS:	• Bank	
DESCRIPTION:	This user case is specifically for initiating billings and processing payments. The system will bill the users regularly and collect payment information.	
PRE-CONDITION:	Users have to be registered.	
TRIGGER:	The use case is initiated when the regular bill is due.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
		Step 1: As the bill is due, the system finds the existing members in the DB and sends bill notice to them.
	Step 2: Upon receiving bill notice, the user clicks "make a payment".	**Step 3:** The system directs the user to a new page to make a payment.
	Step 4: The user enters and submits payment info.	**Step 5:** The system asks for confirmation of the payment info.
	Step 6: The user confirms the payment info.	**Step 7:** The payment processor routes transaction to the issuing bank for authorization. The system then returns the message from the bank to the user.
	Step 8: The user repeats step 6 if the previous transaction is rejected or unsuccessful.	**Step 9:** Step 7 is repeated until the transaction is approved.
		Step 10. The payment processor recalculates the balance
		Step 11. The system sends out receipts and displays new balance.
ALTERNATE COURSES:	**Alt-Step 2:** The user ignores bill notice.	
	Alt-Step 6: The user edits and confirms payment info.	
CONCLUSION:	The user case concludes when the payment transaction is successful approved.	
POST-CONDITION:	The user's payment transaction is recorded in the account history.	
BUSINESS RULES	• The company also provides other options to make a payment: checks, phone. • If the payment is overdue for more than 15 days, 15% of the overdue amount will be applied. • If the payment is overdue for more than 30 days, the user will be restricted to any services on the website unless proper payment transactions are made.	
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	• The system records the user's payment information, and provides an option to use previous payment information to the user for the next payment. • Overdue amount and date is also displayed. Due amount is accumulated from previous balances.	
ASSUMPTIONS:	• Issuing banks are in business relationship with the company.	
OPEN ISSUES:		

Appendix 4.1.12 – Reporting Use Case

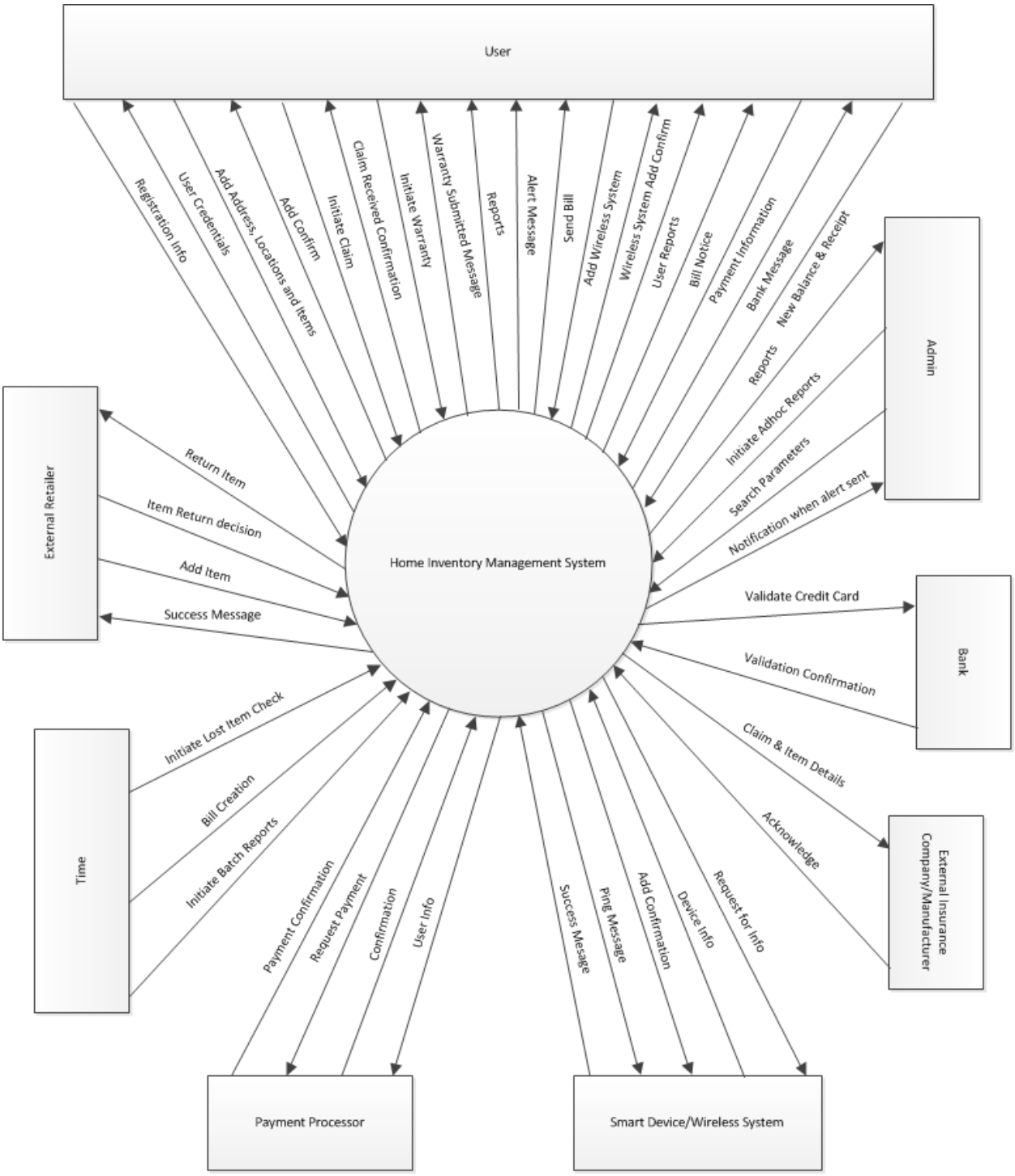


Author: Sameep Kodia **Date: 07/11/2014**
Version: 1.0

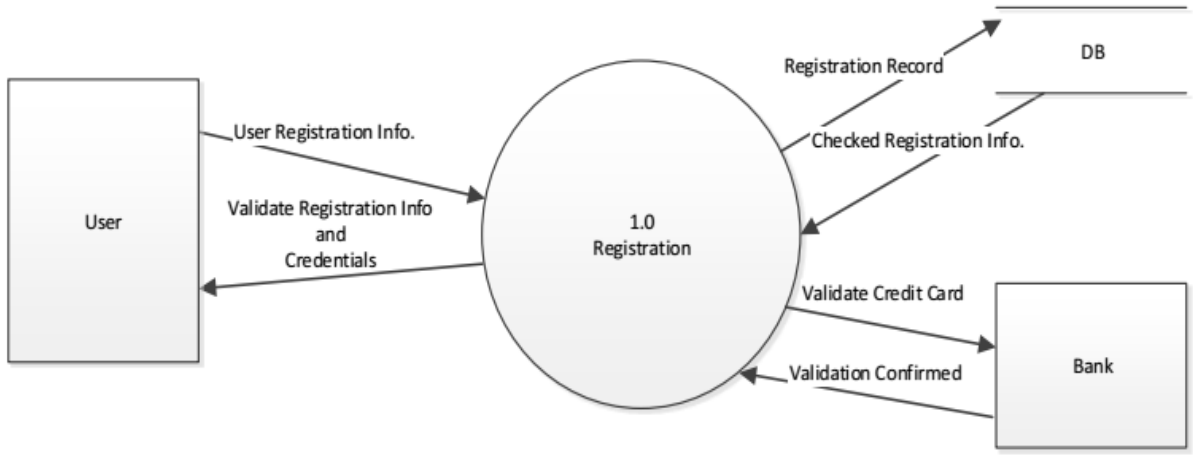
USE CASE NAME:	Reporting	**USE CASE TYPE** Business Requirements: ☑ System Analysis: □
USE CASE ID:	HIMS011	
PRIORITY:	Low	
SOURCE:	Functional Analyst	
PRIMARY BUSINESS ACTOR	Administrator	
PRIMARY SYSTEM ACTOR	Time	
OTHER PARTICIPATING ACTORS:	Database	
OTHER INTERESTED STAKEHOLDERS:		
DESCRIPTION:	This use case describes how at a fixed time interval the HIMS system generates pre-defined reports for administrator.	
PRE-CONDITION:	The system should be up and running.	
TRIGGER:	At a fixed interval 'Reporting' process is instantiated.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
		Step 1: Load all pre- defined reports
		Step 2: Load the data according to the pre-defined reports.
		Step 3: The report is generated.
		Step 4: Generated report is stored at the pre-defined location.
ALTERNATE COURSES:	3a. The report generation fails.	

	3b. An exception message is logged. 4a. The generated report does get saved fails since location does not exist or there is not enough space to save the report. 4b. An exception message is logged.	
CONCLUSION:	The use case concludes when all reports are generated and stored in fixed destination.	
POST-CONDITION:	The system must wait till the fixed time interval has elapsed to re-start the same process of regenerating the reports.	
BUSINESS RULES	1.The system must generate report at fixed interval time. 2.The system must sort generated reports in pre- defined designated area	
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS		
ASSUMPTIONS:	None	
OPEN ISSUES:	None	

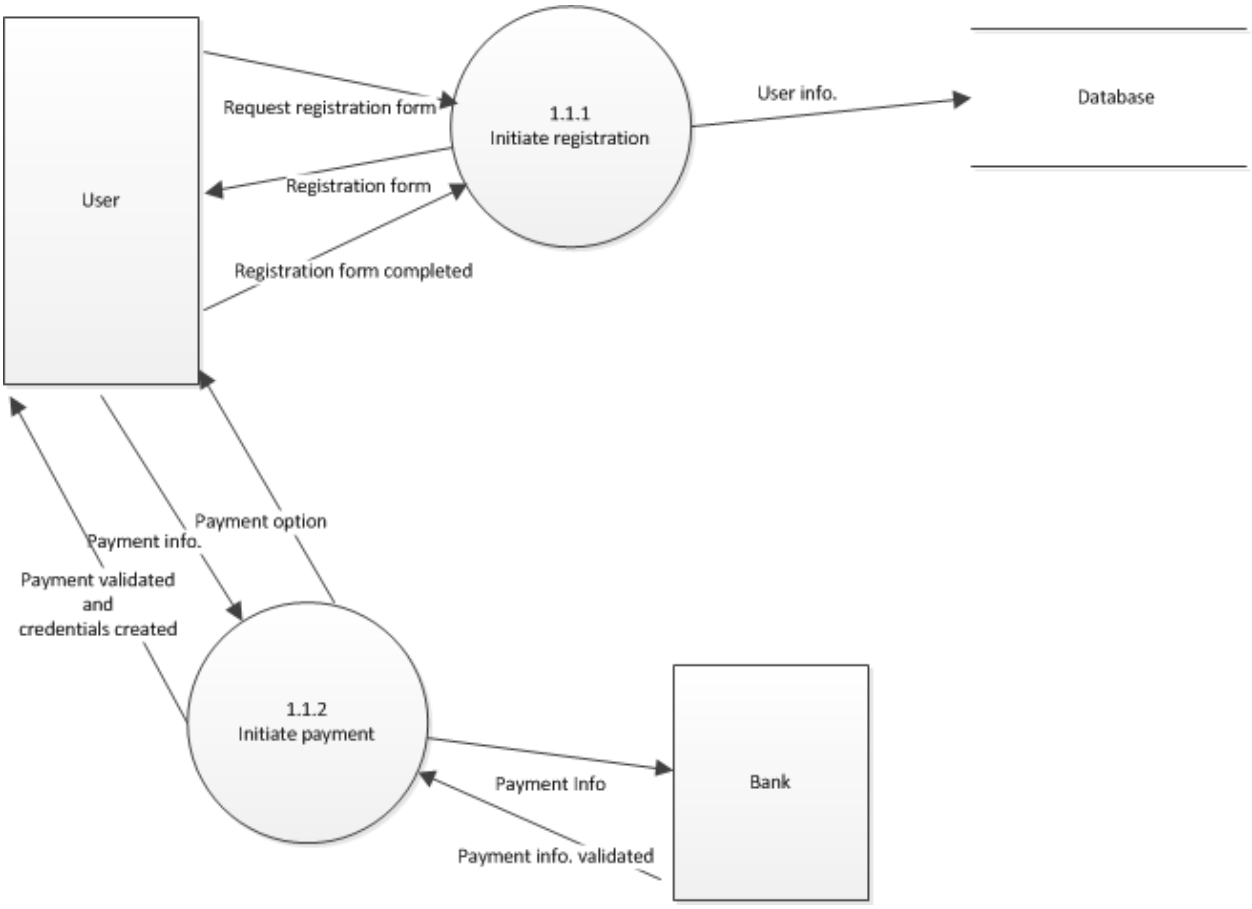
Appendix 4.2.1 – Context Diagram



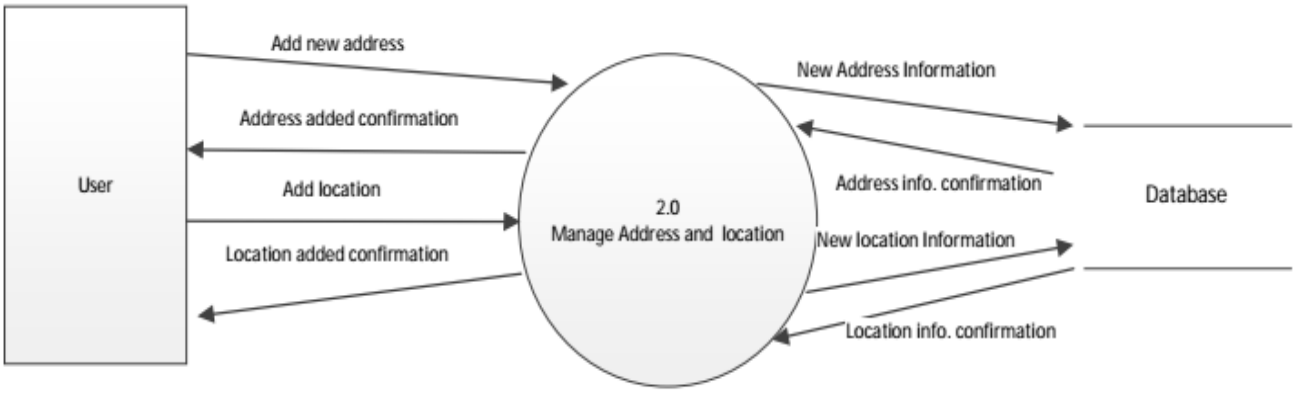
Appendix 4.2.2 – Level 0 DFD, Register



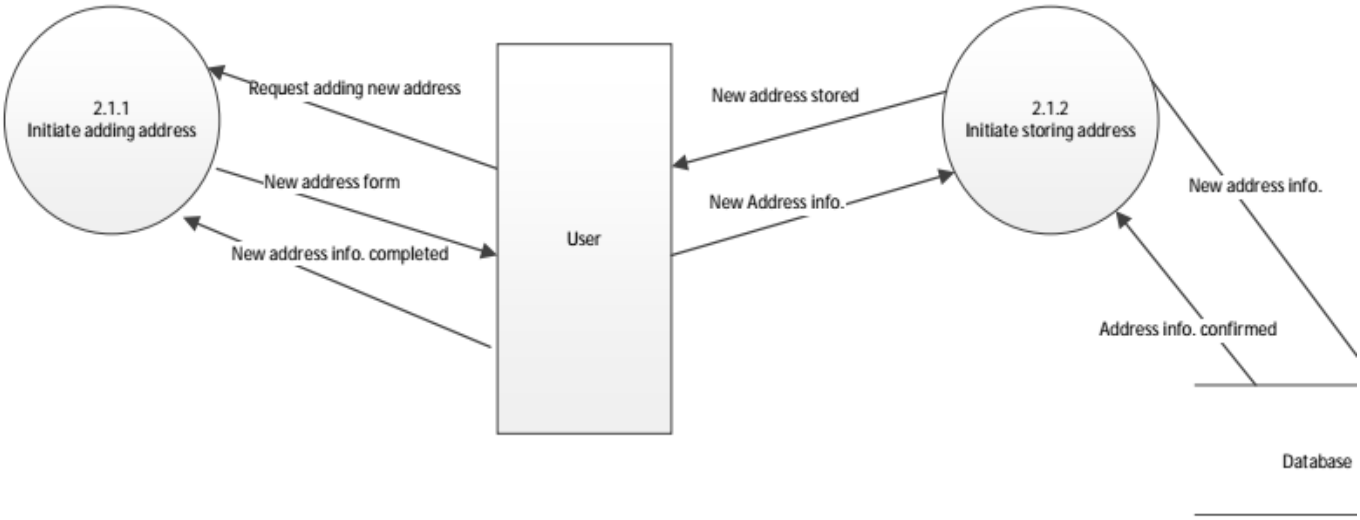
Appendix 4.2.3 – Level 1 DFD, Register



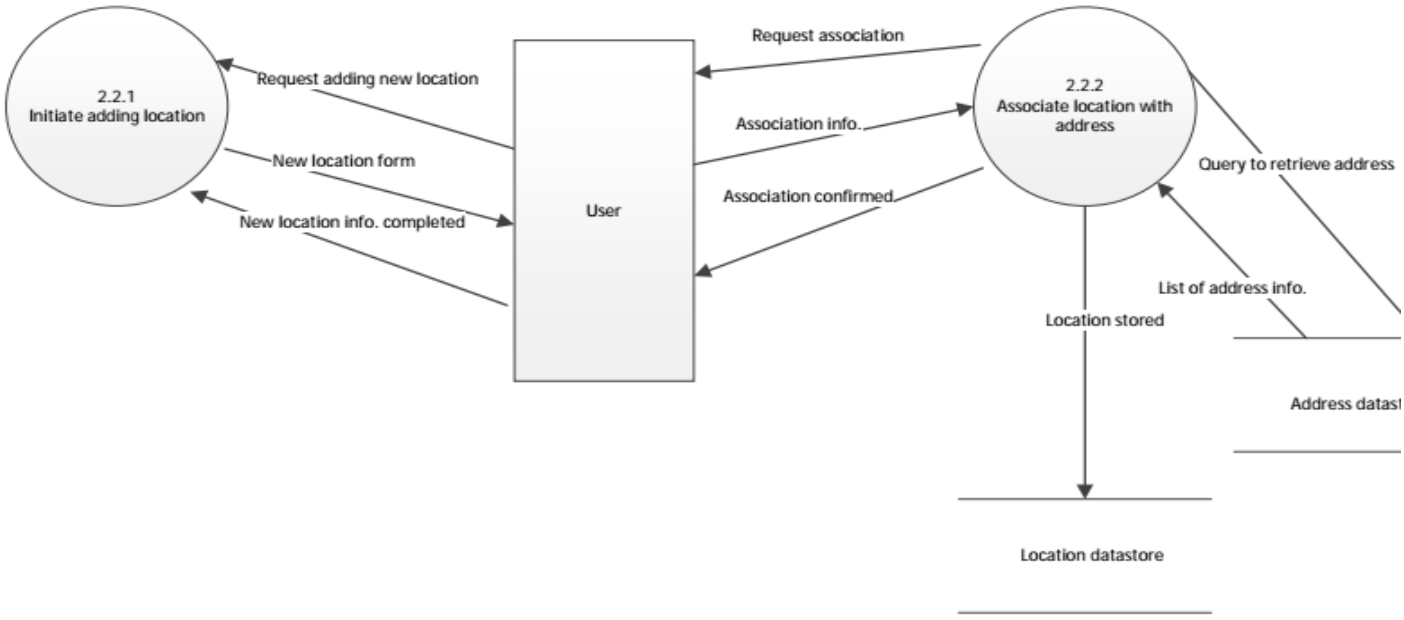
Appendix 4.2.4 – Level 0 DFD, Manage Address/Location



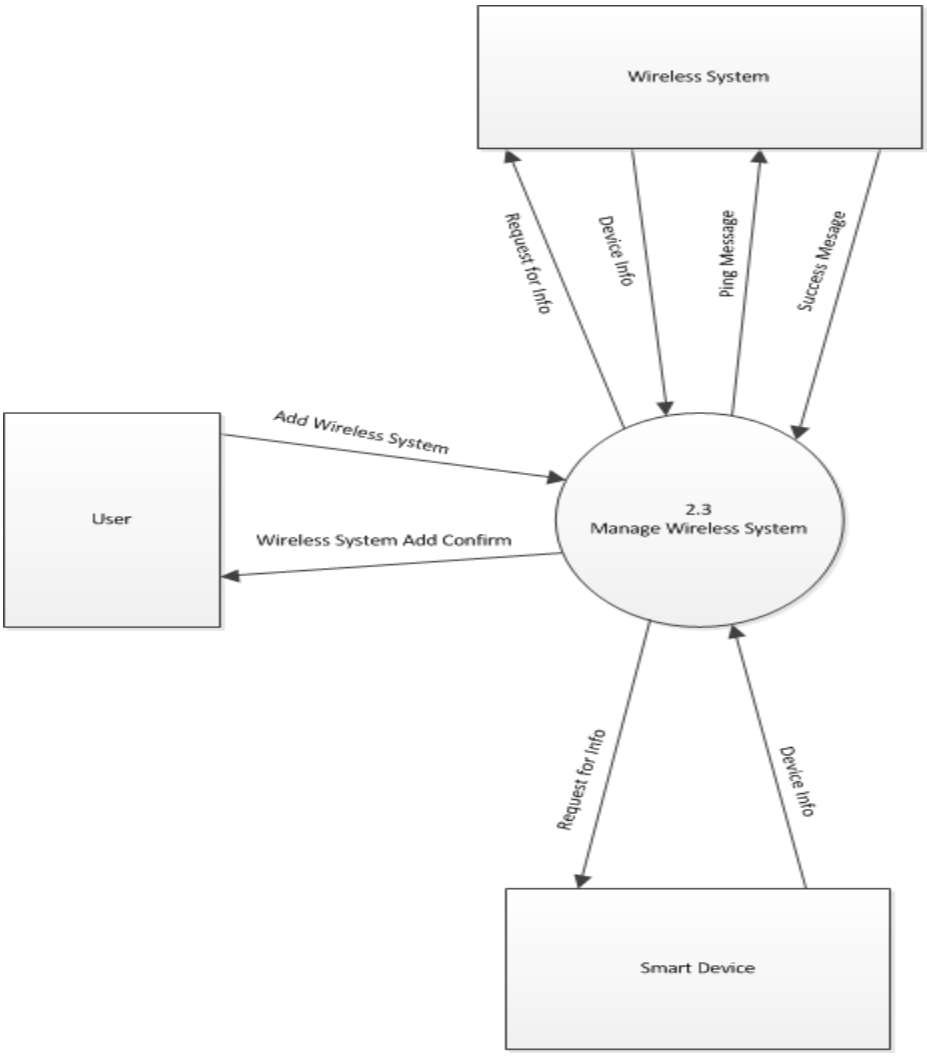
Appendix 4.2.5 – Level 1 DFD, Manage Address



Appendix 4.2.6 – Level 1 DFD, Manage Location

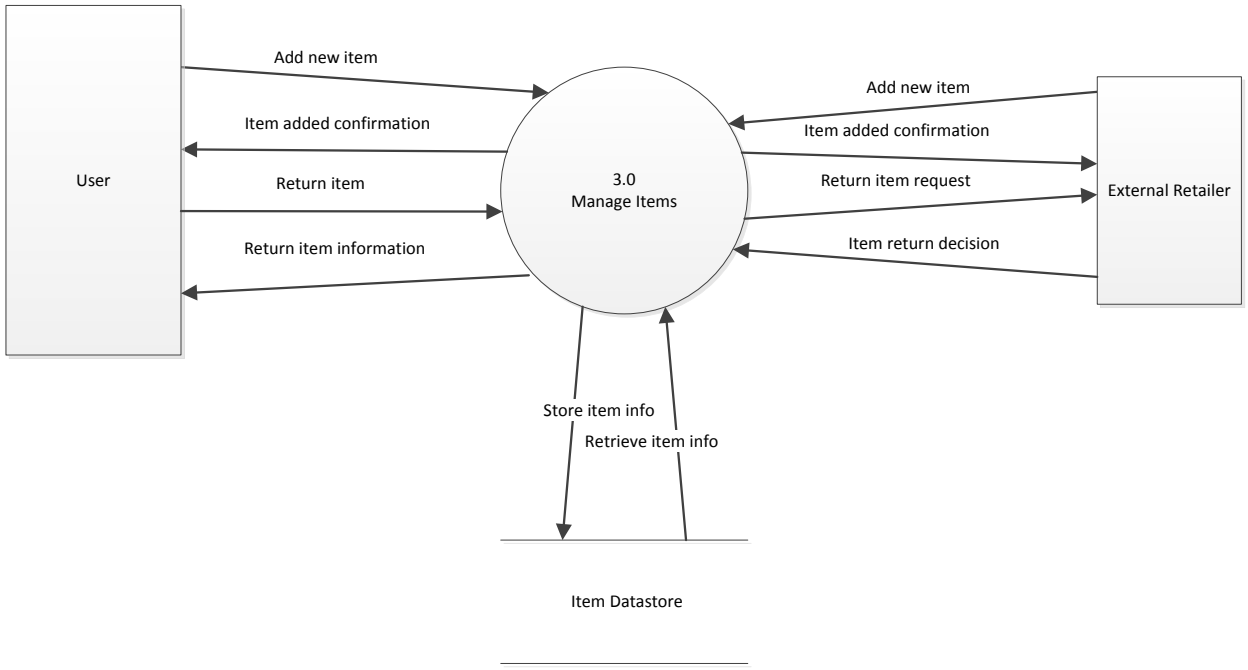


Appendix 4.2.7 – Level 0 DFD, Manage Wifi System

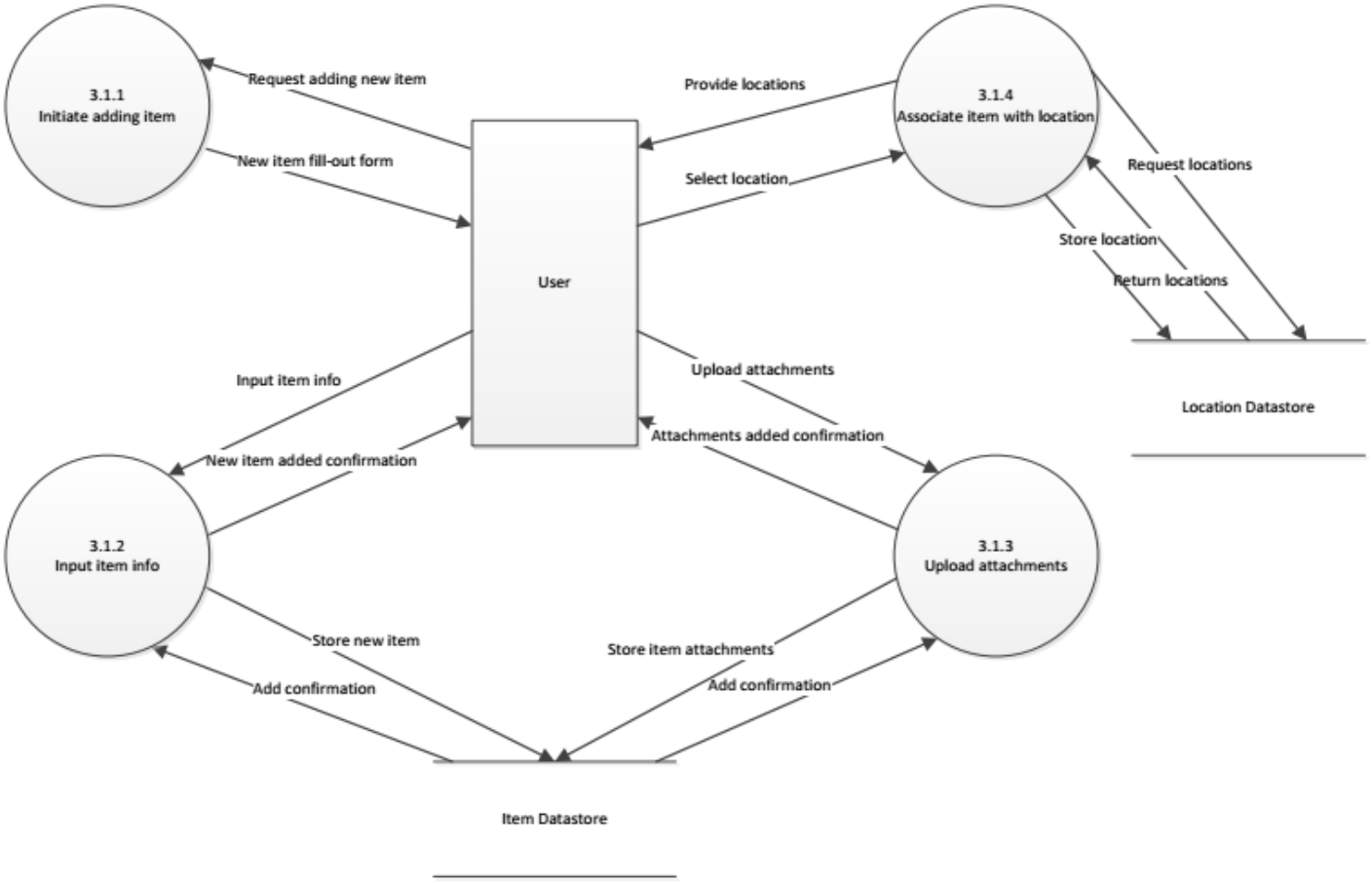


Appendix 4.2.8 – Level 1 DFD, Manage Wifi System

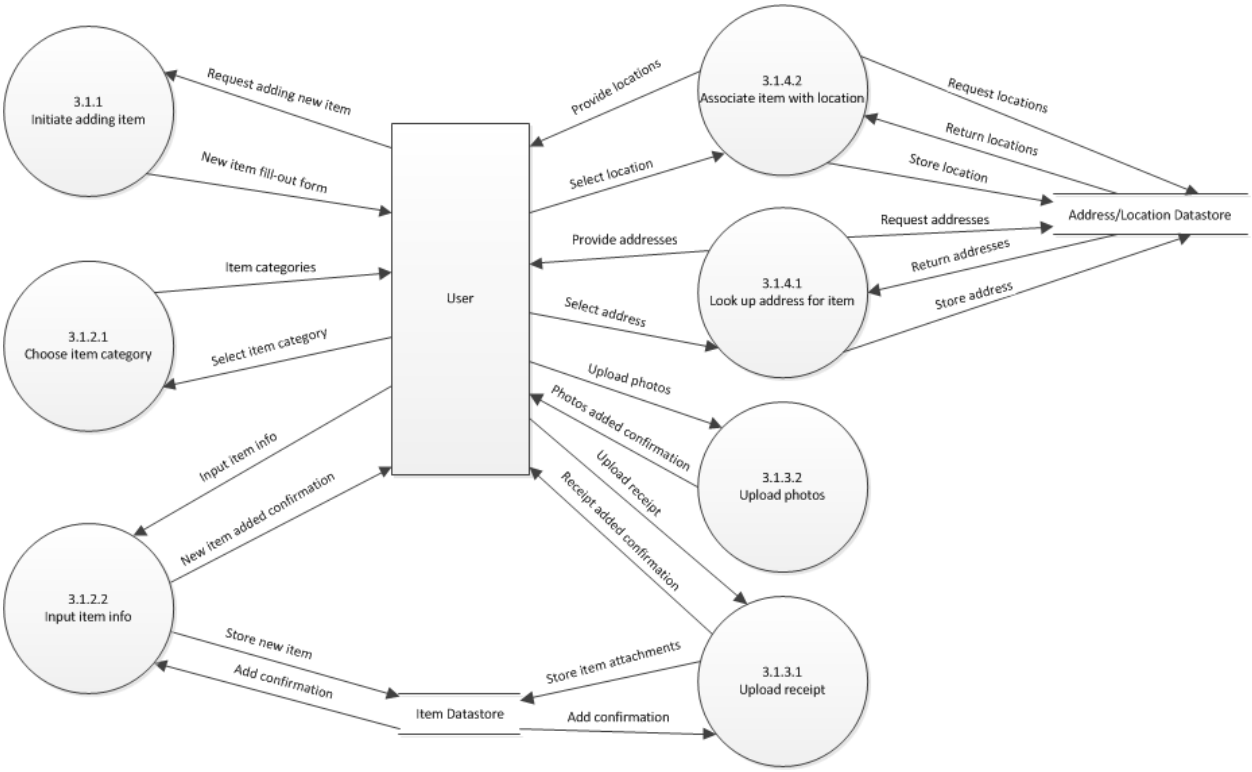
Appendix 4.2.9 – Level 0 DFD, Manage Items



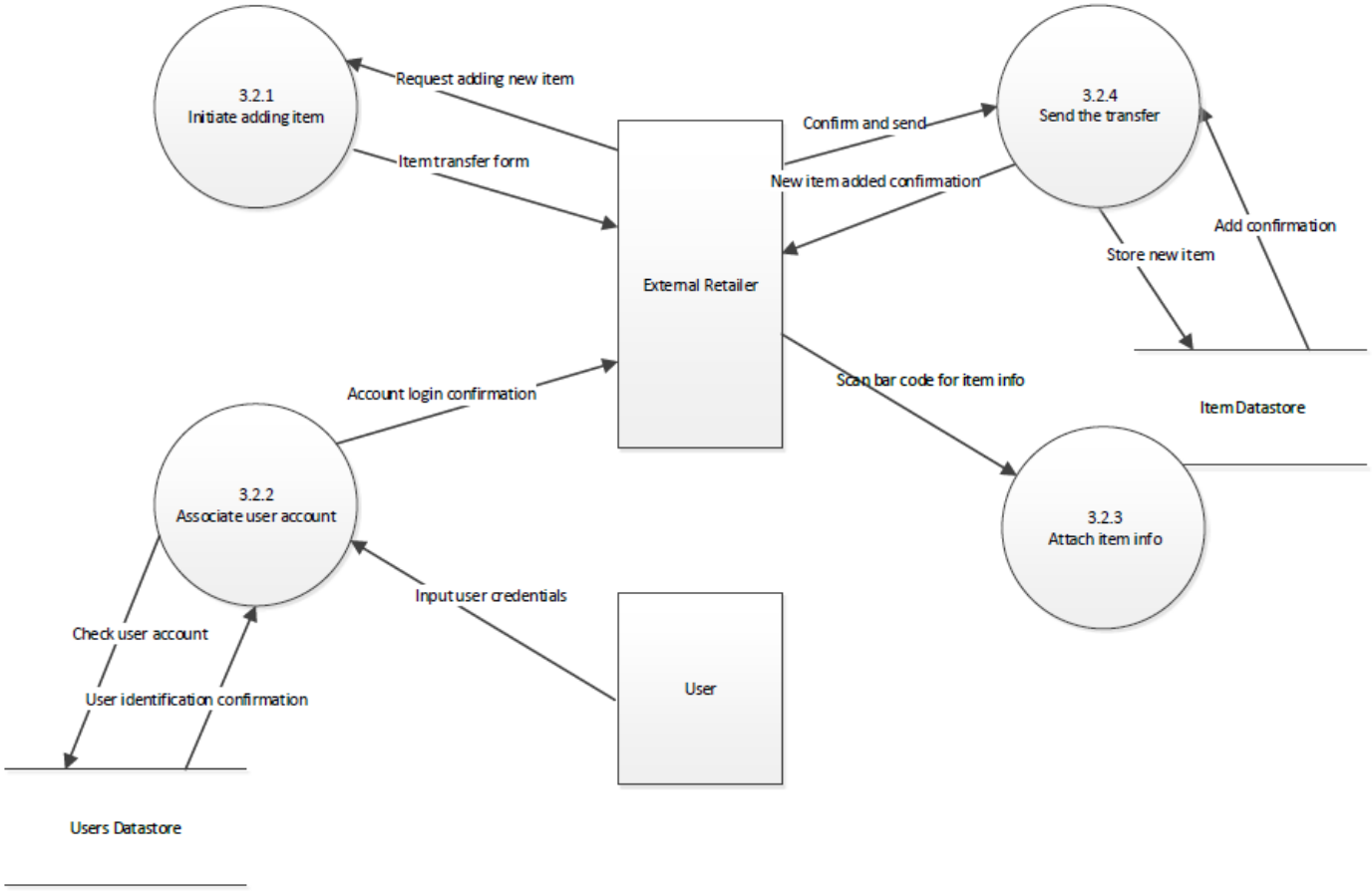
Appendix 4.2.10 – Level 1 DFD, Add Items by Users



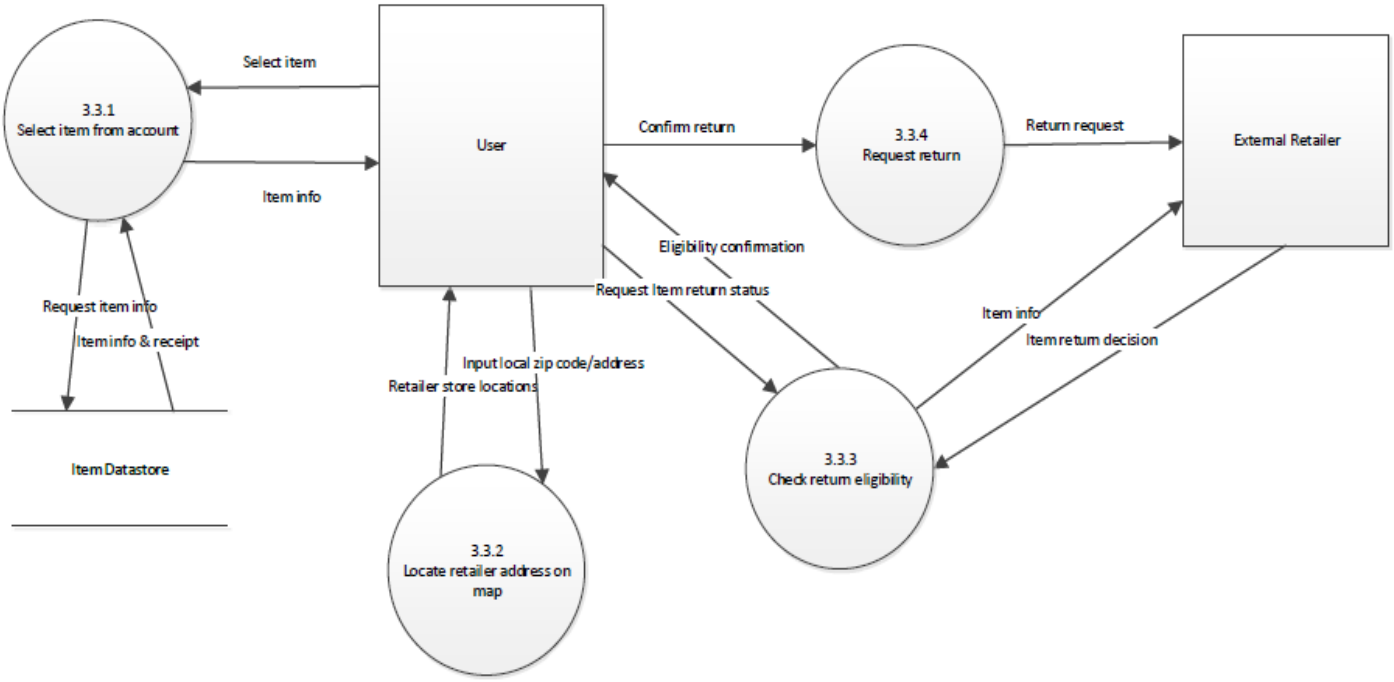
Appendix 4.2.11 – Level 2 DFD, Add Items Details



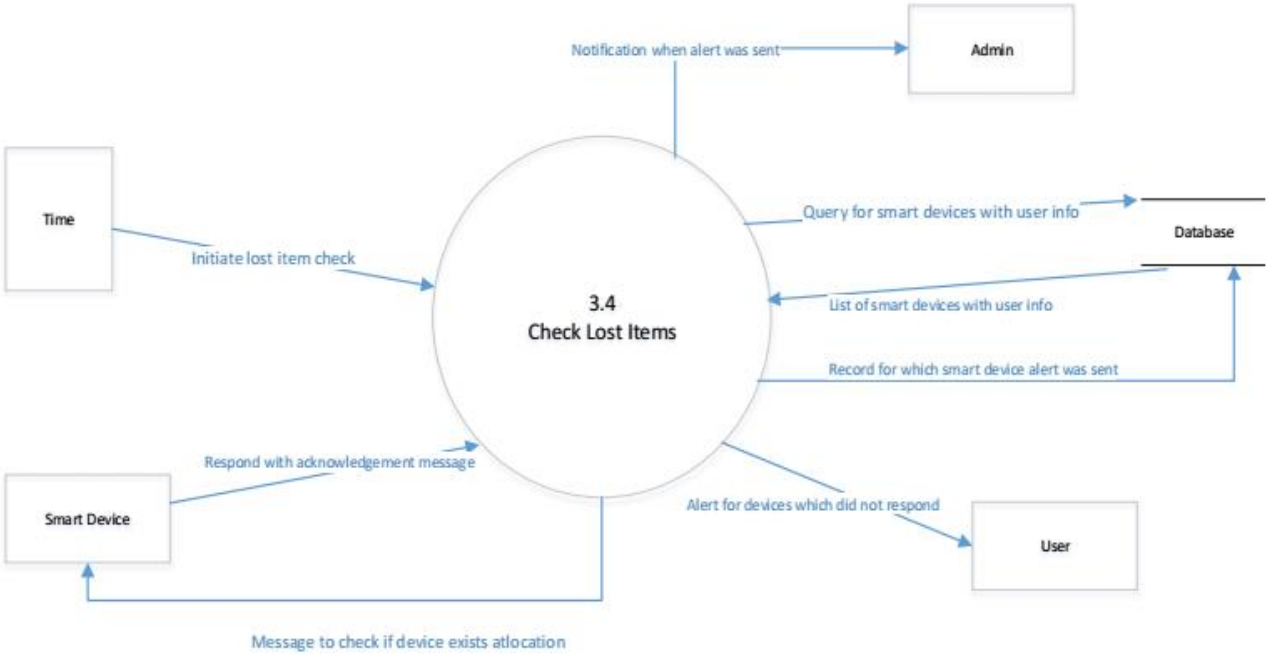
Appendix 4.2.12 – Level 1 DFD, Add Items by Retailers



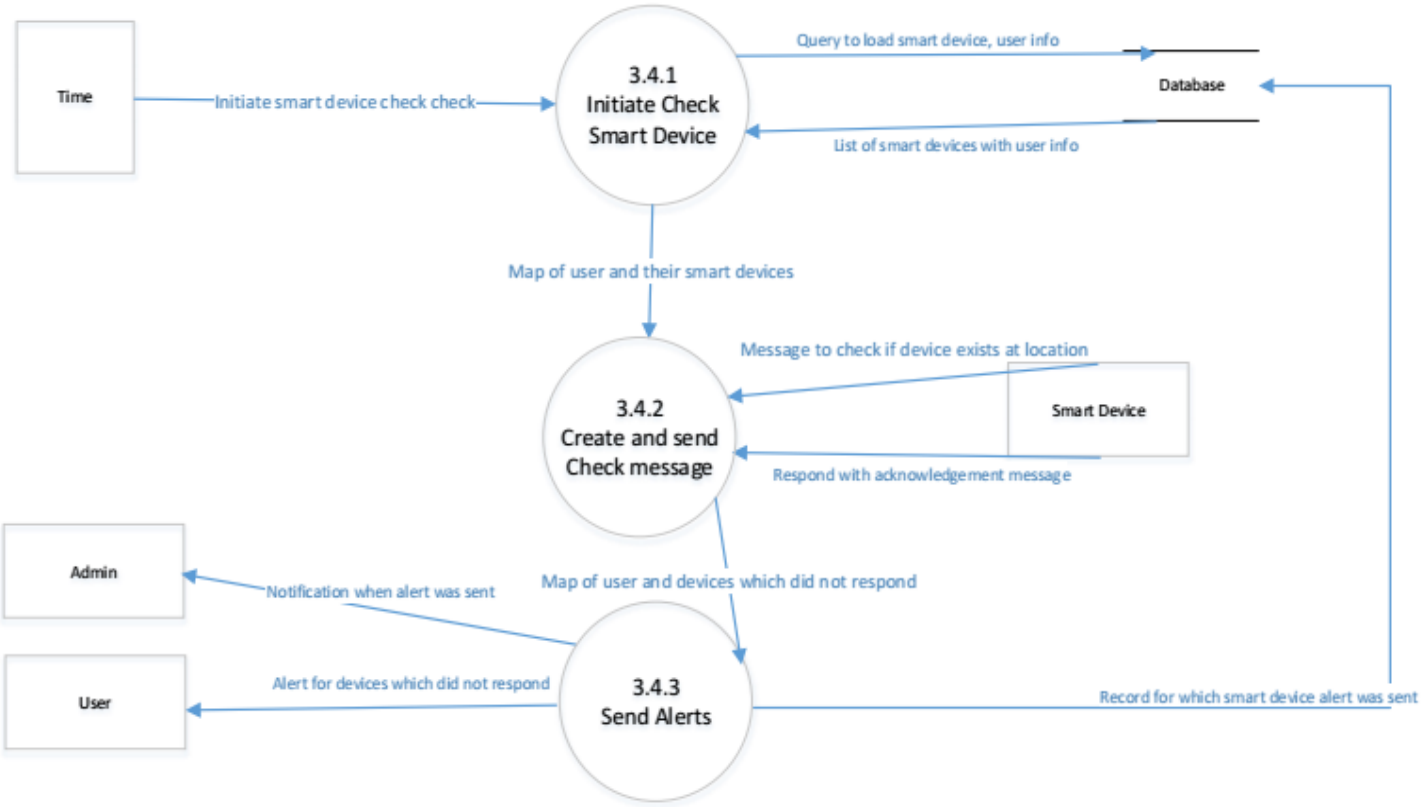
Appendix 4.2.13 – Level 1 DFD, Return Items



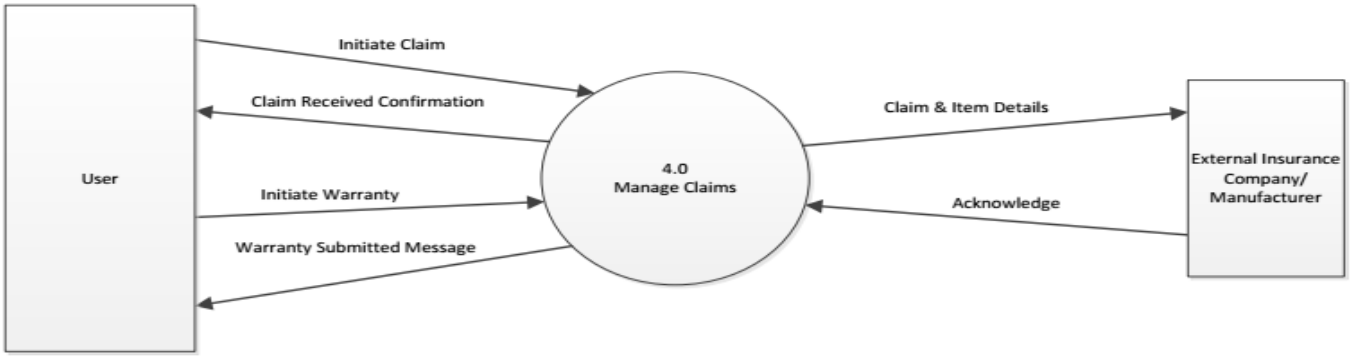
Appendix 4.2.14 – Level 0 DFD, Check Lost Items



Appendix 4.2.15 – Level 1 DFD, Check Lost Items

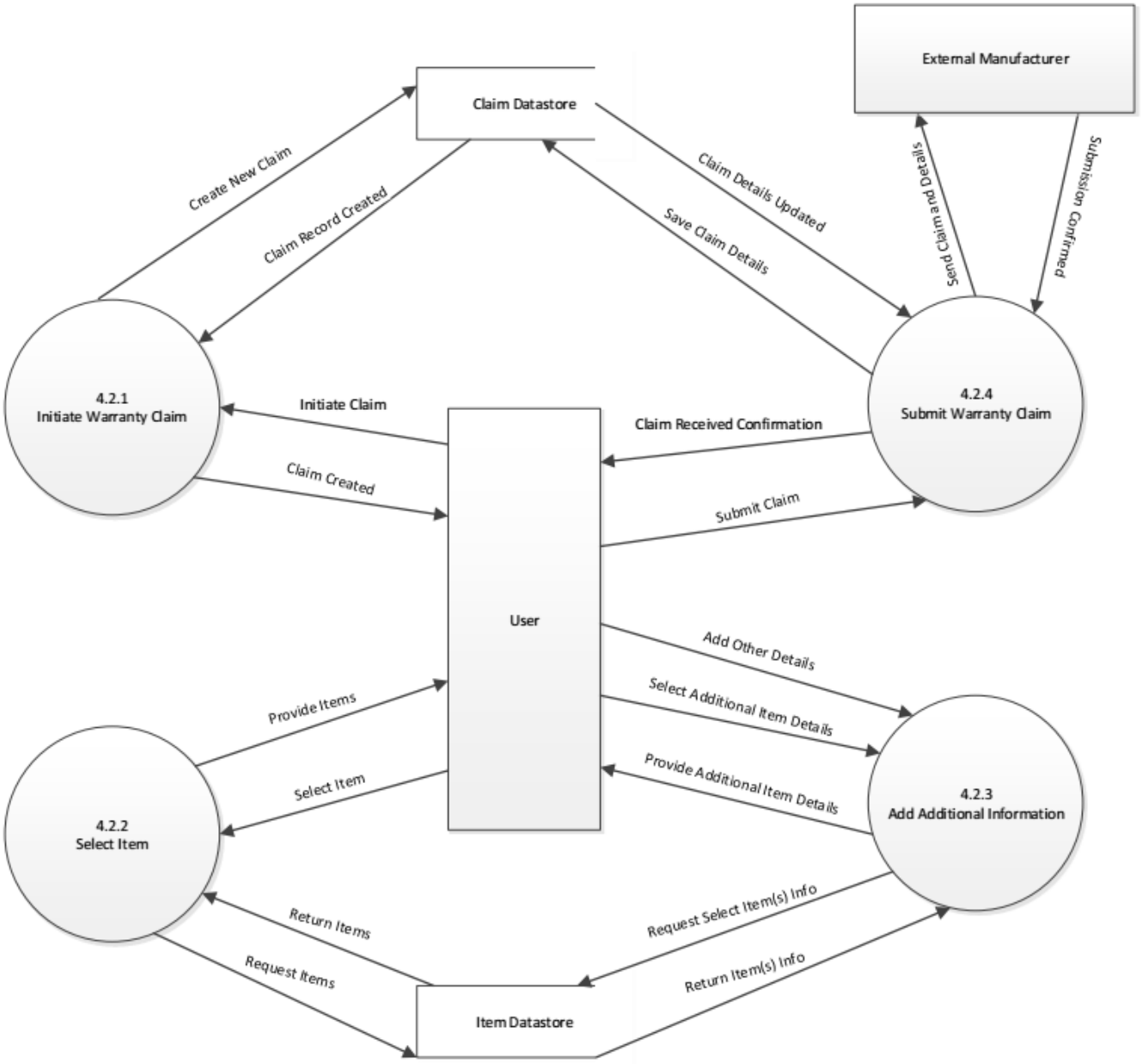


Appendix 4.2.16 – Level 0 DFD, Manage Claims

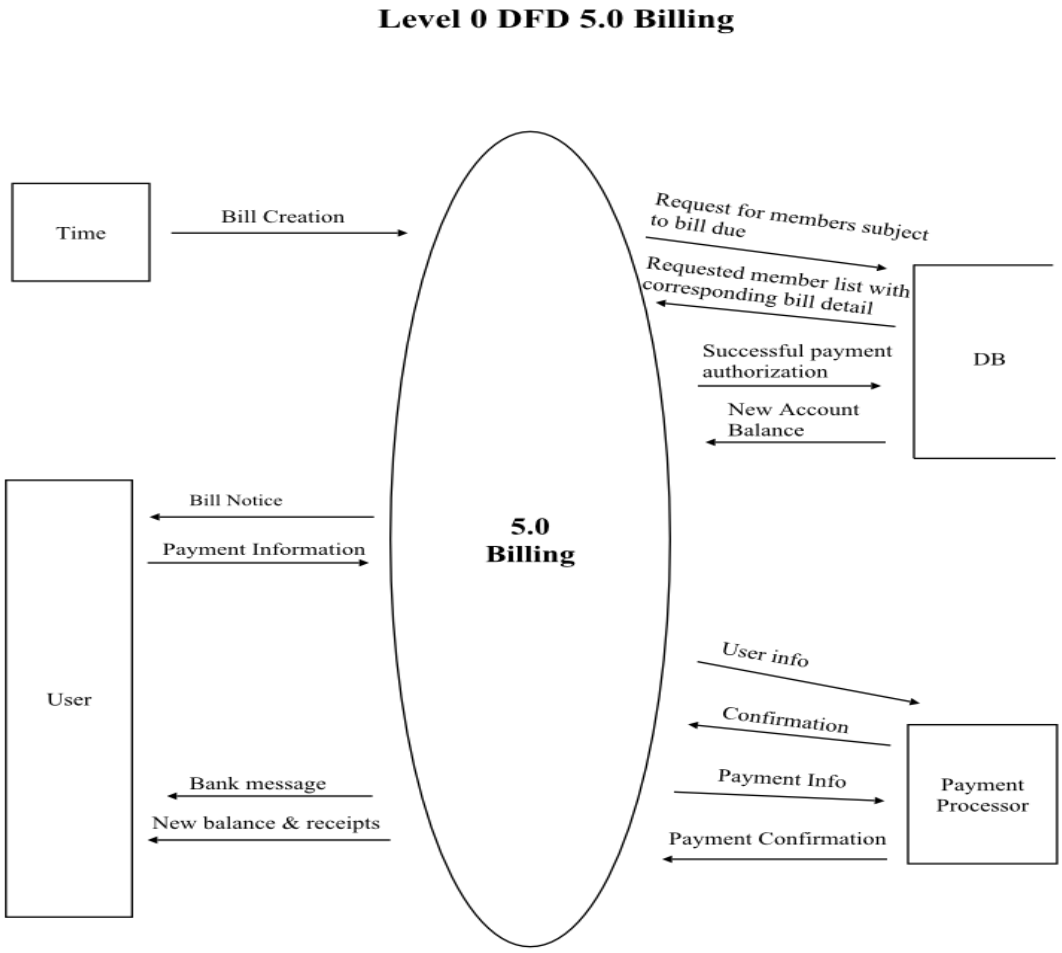


Appendix 4.2.17 – Level 1 DFD, Manage Insurance Claims

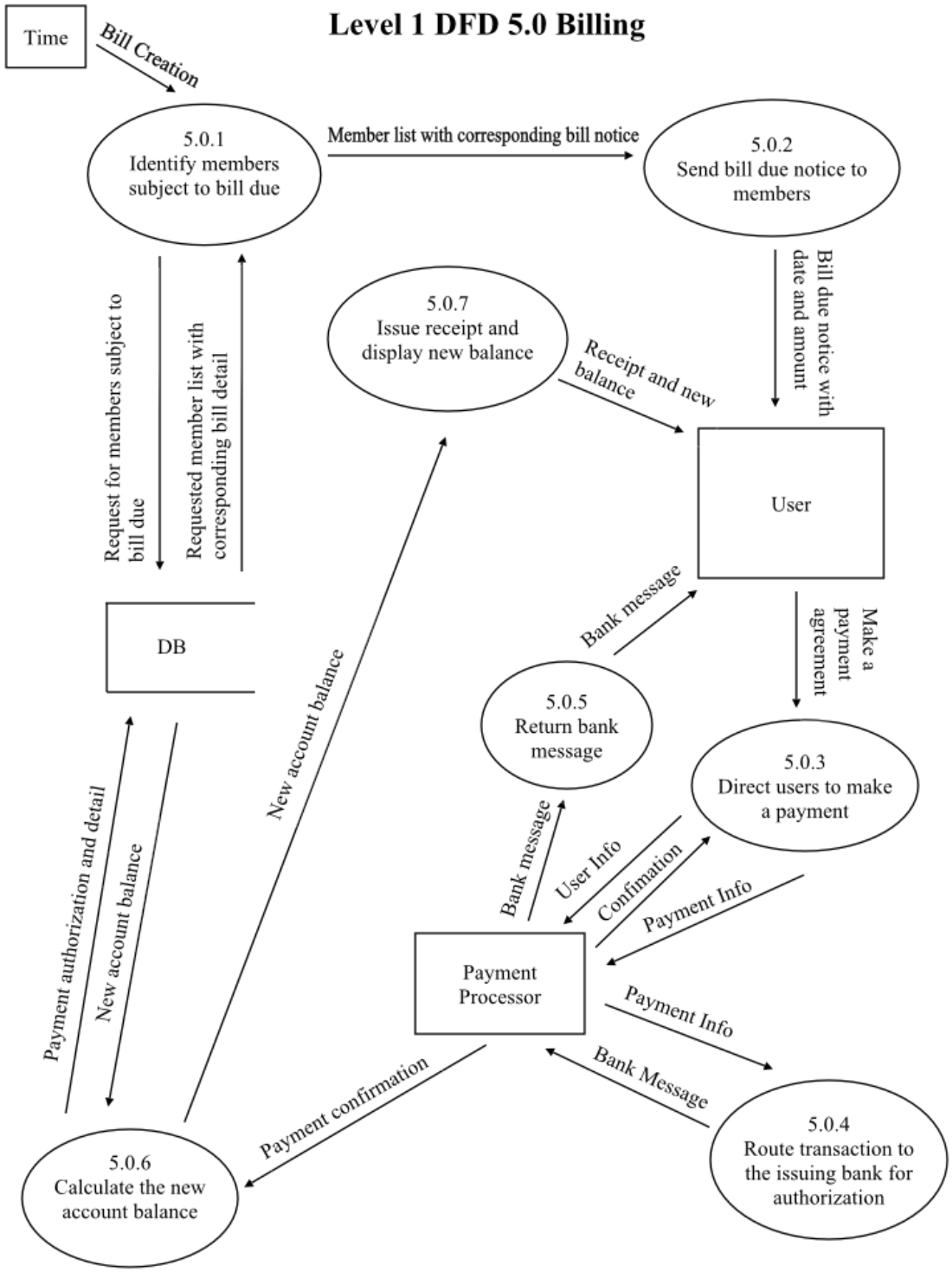
Appendix 4.2.18 – Level 1 DFD, Manage Warranty Claims



Appendix 4.2.19 – Level 0 DFD, Billing

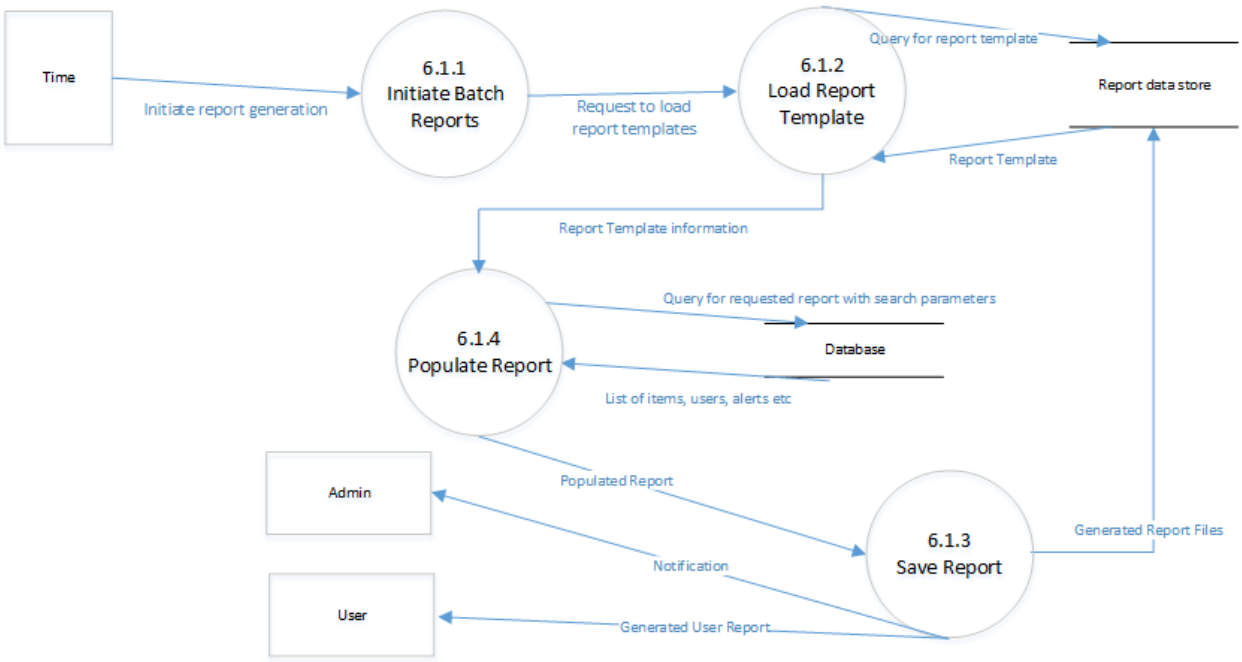


Appendix 4.2.20 – Level 1 DFD, User Billing

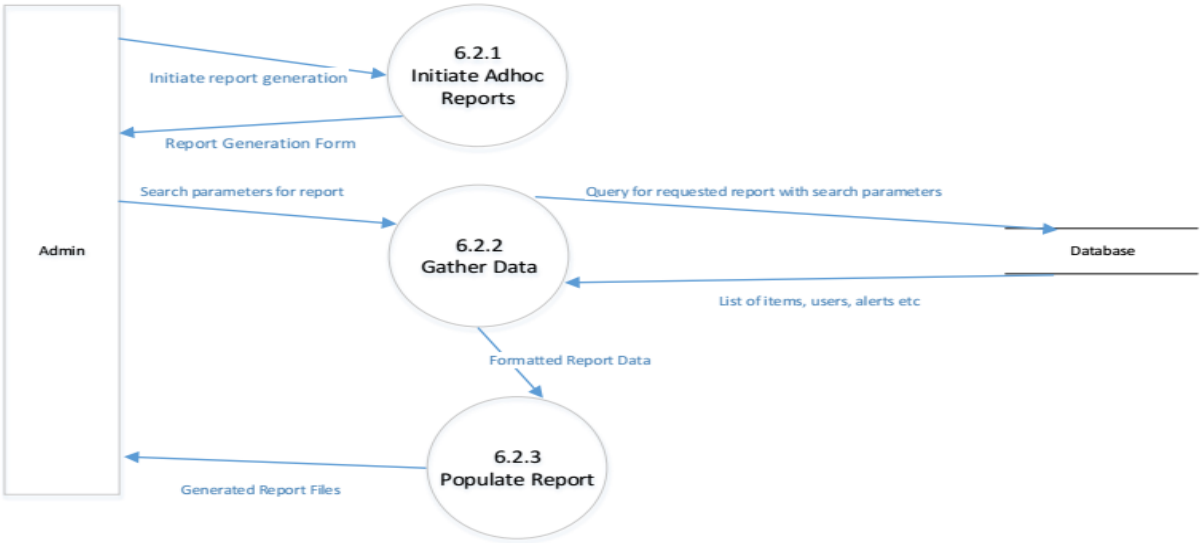


Appendix 4.2.21 – Level 0 DFD, Reporting

Appendix 4.2.22 – Level 1 DFD, Batch Reporting



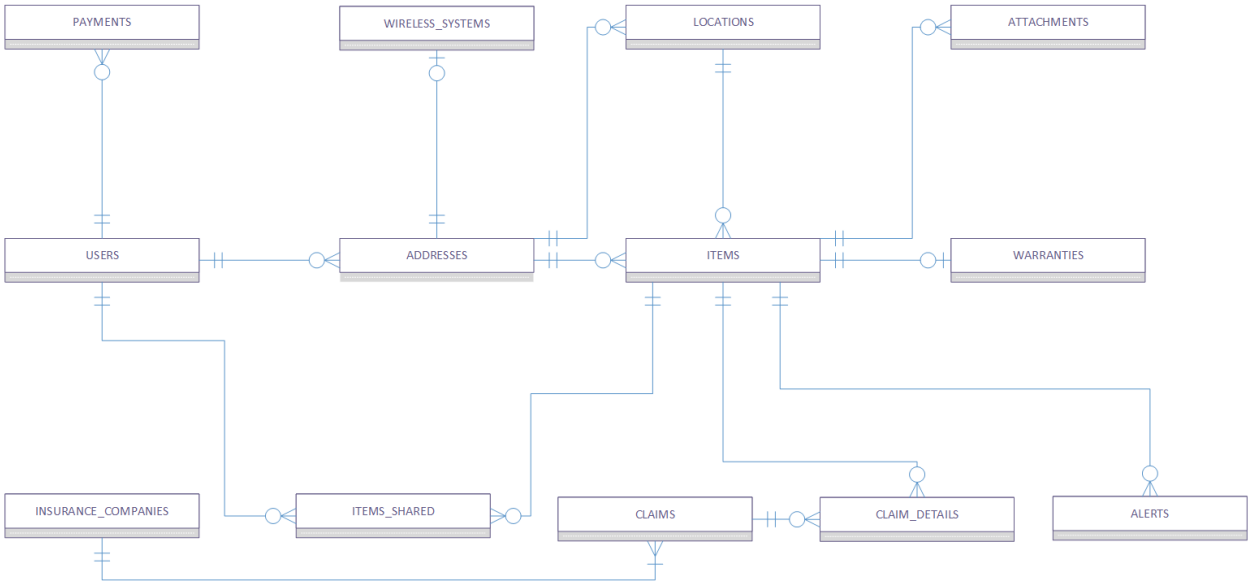
Appendix 4.2.23 – Level 1 DFD, Adhoc Reporting



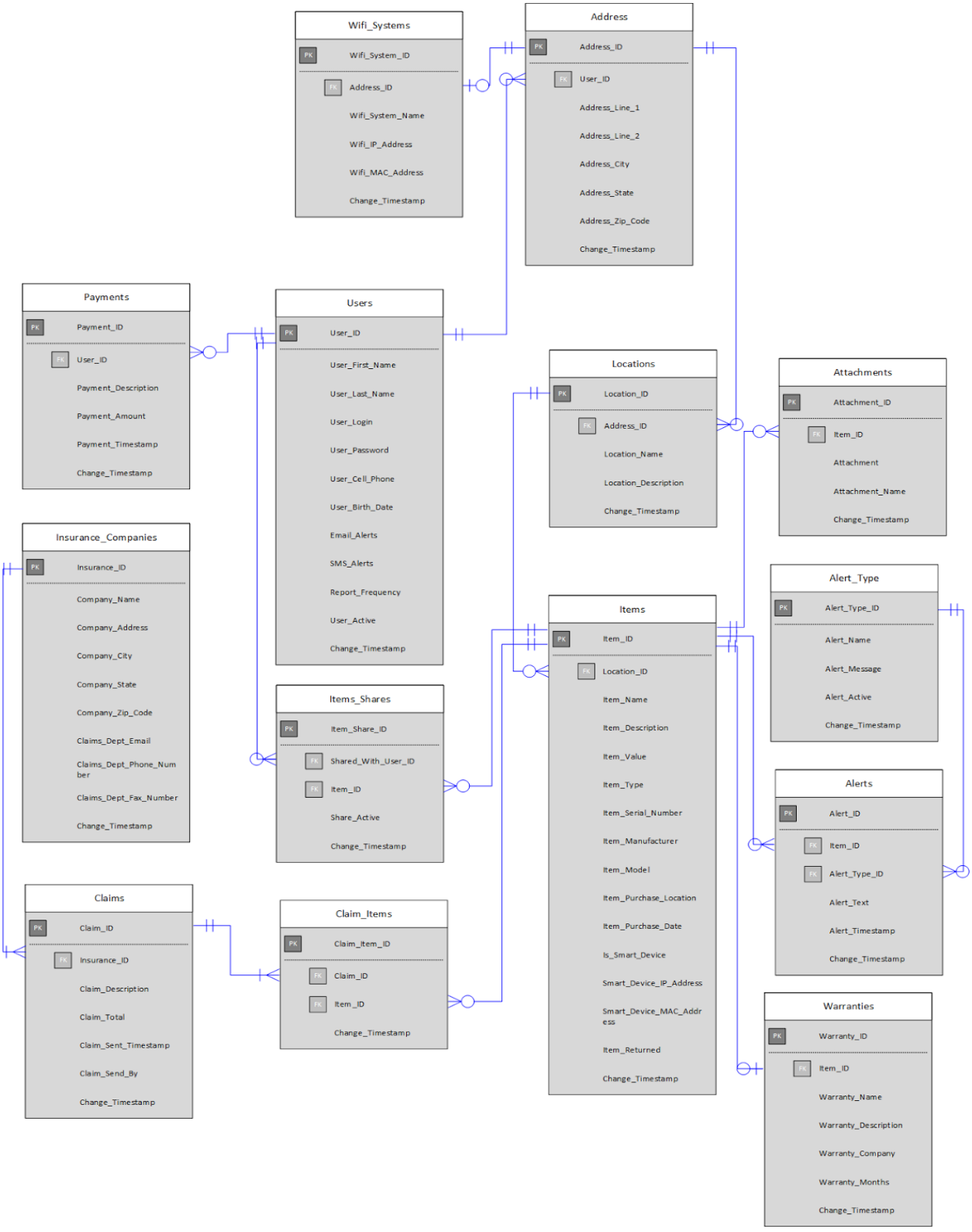
Appendix 4.3.1 – Conceptual ERD

Basic Business Rules:

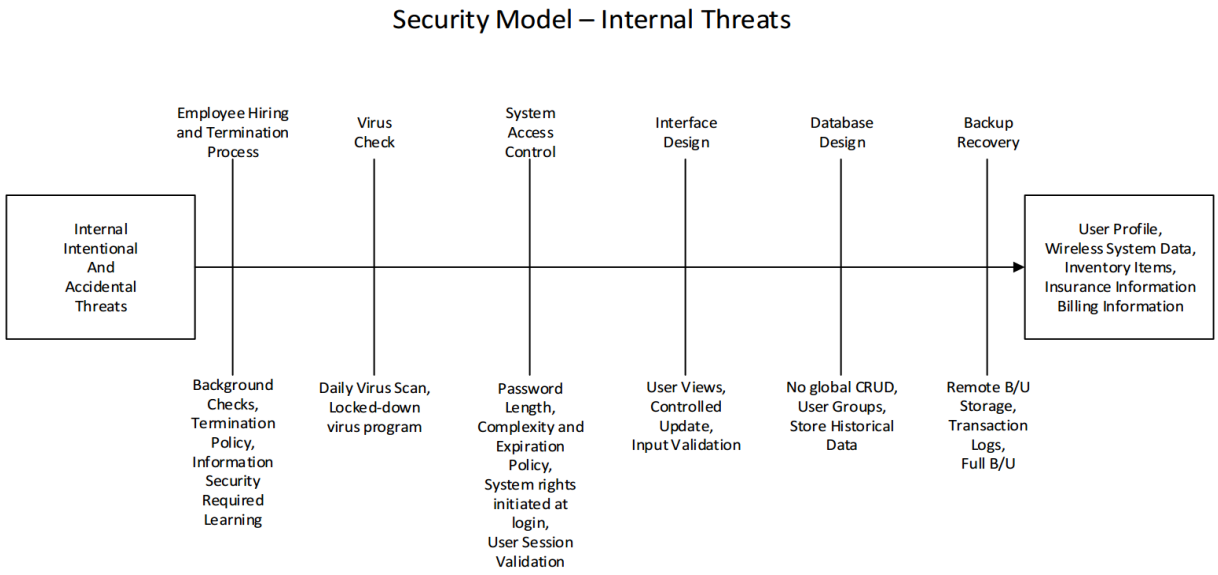
1. Each user payment done belongs to one and only one user.
2. Each claim done can be made to one and only one insurance company.
3. An alert is created for one and only one item.
4. A location can have zero to many items stored in it.
5. A user may have zero to many addresses.
6. Each user can have zero to many payments recorded.
7. Each wireless system can be associated with one and only one address.
8. Each address can have zero or one wireless system.



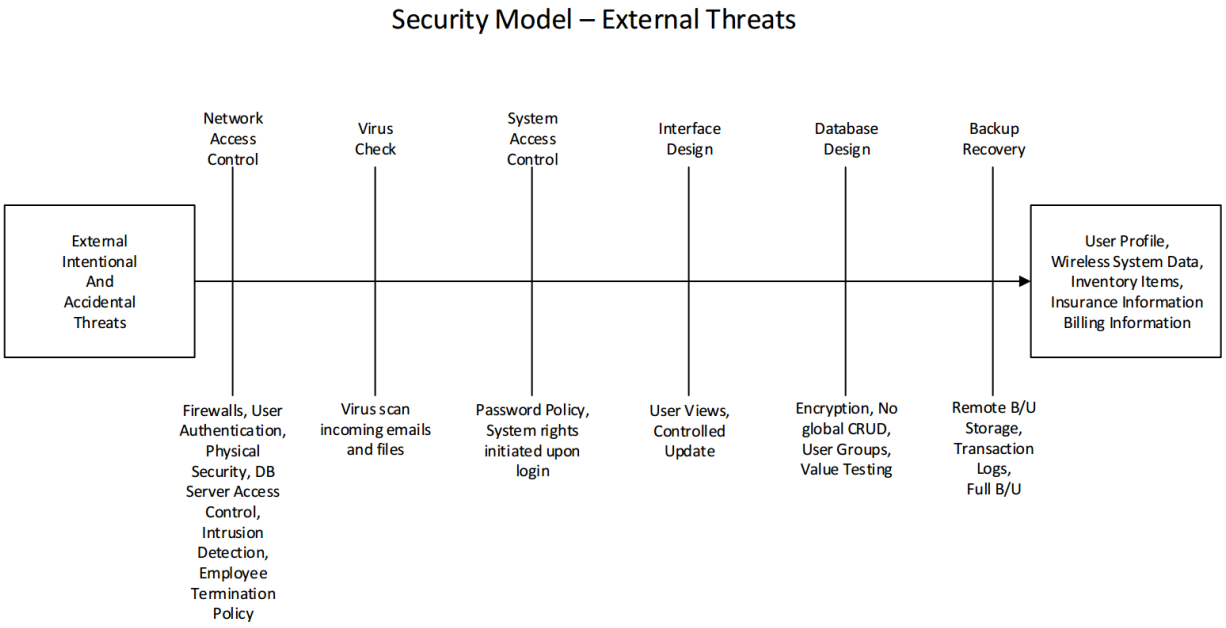
Appendix 4.3.2 – Fully Attributed ERD



Appendix 4.4.1 – Internal Threats Security Model



Appendix 4.4.2 – External Threats Security Model



Appendix 4.4.3 – Acts of God Security Model