



# **BuySafe Requirements Specification**

**Version 0.4**

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Requirements Definition	Date: 2012-12-17

## Revision History

<b>Date</b>	<b>Version</b>	<b>Description</b>	<b>Author</b>
2012-02-11	0.01	Initial Draft	Juraj Murgić
2012-12-02	0.2	Changes made after the end of the first sprint	Juraj Murgić
2012-12-06	0.3	New use case diagram and use case descriptions added	Želimir Kompes
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## 1. Introduction

### 1.1 Purpose of this document

The purpose of this document is to provide a detailed description of the functionalities the application BuySafe should contain.

### 1.2 Intended Audience

This document shall be used in all phases of the project as a functionality guideline. Intended audience of this project is:

- project supervisor
- project leader
- team members
- course staff

### 1.3 Scope

This document gives an overview of the BuySafe project requirements. It will contain all the information necessary for the definition of requirements, use cases that are going to be implemented and functionalities that are planned to be developed in the future and are not part of this project.

## 1.4 Definitions and acronyms

### 1.4.1 Definitions

Keyword	Definitions
BuySafe	The name of the project
Project Supervisor	A person in charge of supervising the project
Project Leader	A person in charge of organizing the team and communicating with the project supervisor
Team Member	An active member of the team responsible for making the job done
Database	An organized collection of data
Interface	A point of interaction between components
Three click rule	An unofficial web design rule concerning the design of website navigation. It suggests that a user of a website should be able to find any information with no more than three mouse clicks.

### 1.4.2 Acronyms and abbreviations

Acronym or abbreviation	Definitions
App	Application
Info	Information

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## 1.5 References

1. <http://www.scrum.org/>
2. <http://kunagi.org/>
3. <http://svnbook.red-bean.com/en/1.5/index.html>

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## 2. Overall Description

The goal of this project is to create an application that protects the customers from harmful and potentially dangerous products by informing them about the product contents and the manufacturer that created the product. The application will help the customers by giving them information about the quality of a product. The quality will be based on contents of the product, user reviews and rating. To make the application practical it will run on Android smartphones with the ability to scan the barcode of the product that the customer is interested in. Customers will also be allowed to search the products by name and compare different products to help them with making a better decision.

### 2.1 Product Perspective

1. BuySafe is developed for Android smartphones only.
2. The application will connect via the internet to an application server connected to the database.
3. The server will receive product query with client profile from the client side. It will then do the following:
  - a. Retrieve product information from database.
  - b. Compare list of allergies and unwanted ingredients in client's profile against product ingredients.
  - c. Scan database for any harmful ingredients in the product.
  - d. Return product information to client with any found danger flags.

For	Savvy food and household product shoppers who own an android phone.
Who	Would like to be informed about the existence or the possible effect of food or household product ingredients.
BuySafe	Is an application that will help you shop better health-wise.
That	Will enable you to make a faster and a better decision based on information and reviews.
Unlike	Any other application out there with regard to the array of services it provides.
Our product	Is your new shopping mate.

### 2.2 Product Functions

This application will:

1. Create and save a user profile.
2. Read barcode of a product.
3. Retrieve name of product, contents and other information according to the barcode.
4. Search for products according to their names and retrieve their information.
5. Flag food and products with ingredients you wish to avoid according to the profile.
6. Compare products that were scanned by barcode.
7. Make a product comparison according to the amount of certain ingredients (optional).
8. Create a report of scanned products and send it to your email (optional).

### 2.3 User Characteristics

Targeted people for this product are:

1. Parents who want to choose products carefully for their young children.
2. People who have special needs, especially those who have allergic history or certain illness.
3. People who want to have healthier foods.
4. People who want to buy products with high quality.
5. Athletes or special groups that need to be on diet.

### 2.4 Constraints

1. Free and usable data sources that can be inserted into the database. Data sources in most cases aren't

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- free and contain only part of the information that is needed.
2. Organization and work division over distance.
  3. Having identical environments for all team members.

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### **3. Requirements Description**

#### **3.1 Introduction**

The goal of this project is to design an application that helps people decide what food products to buy by providing them with information regarding the quality of the product. The application should be helpful to people who have to take special care about the food that they buy like people who have small children because food quality has a big impact on a child's early growth and development also people with allergies or illnesses and even people who try to eat healthier or are on some kind of diet. This project can have a big impact on a lot of people and help them live healthier and better lives.

#### **3.2 General requirements**

##### **3.2.1 Basic functionality**

Basic goal of the application is to inform people about the product that they buy so that they could buy better quality products. It will achieve this by informing the user about the product manufacturer, contents and quality of the product. Product quality will be estimated by the product contents and user reviews of the product. Product contents will be flagged if they are estimated to be dangerous or harmful to people. It will use user profiles that contain user allergies and/or illnesses, data sources that contain products that are estimated to be dangerous by state authorities and data sources that contain product contents that are estimated to be harmful. The information it will display will come from reliable data sources or even official sources like state authorities. It will also have a tutorial that will give users helpful tips on how to buy quality products by informing them what things to look out for when buying.

##### **3.2.2 Application interface**

To make the application practical it will run on Android smartphones with the ability to scan the barcode of the product that the customer is intending to buy. Also to make the application easier to use it will include the ability to search the products by name because not all products will have defined barcodes. User interface will be simple, intuitive and easy to use.

##### **3.2.3 Optional functionality**

Optional functionality is intended to help people while they shop for food. Users will be able to scan multiple products and the application will compare them and show the user which of the scanned products has the best quality. Also users will be able to define a list of products at home that they intend to buy like a shopping list. Users will have the ability to save products that they are not certain about buying so that they can research them later. To help improve the functionality of the application users will be able to flag products that they think are harmful or even dangerous that were missed.

#### **3.3 Database**

The database has to be optimized to enable fast searches by product barcode and name.

#### **3.4 Data integrity**

The application will use different data sources that are regularly updated. Our application will also update its database once per week according to the data sources, to maintain data integrity.

#### **3.5 Susceptibility to testing**

It will be possible to test the application client, data and server layers separately.

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### **3.6 Interoperability**

The application will have an interface that will enable it to interact with the Android client and potentially other clients as well.

### **3.7 Performance**

The application will have a maximum response time of 10 sec.

### **3.8 Usability**

The interface will ably by the three click [rule](#).

### **3.9 Security**

Because of the sensitive nature of the user profile data that consists of user allergies and illnesses no recognizable user parameters like name and surname will be stored. All the profile information will be stored locally on the user's smartphone.

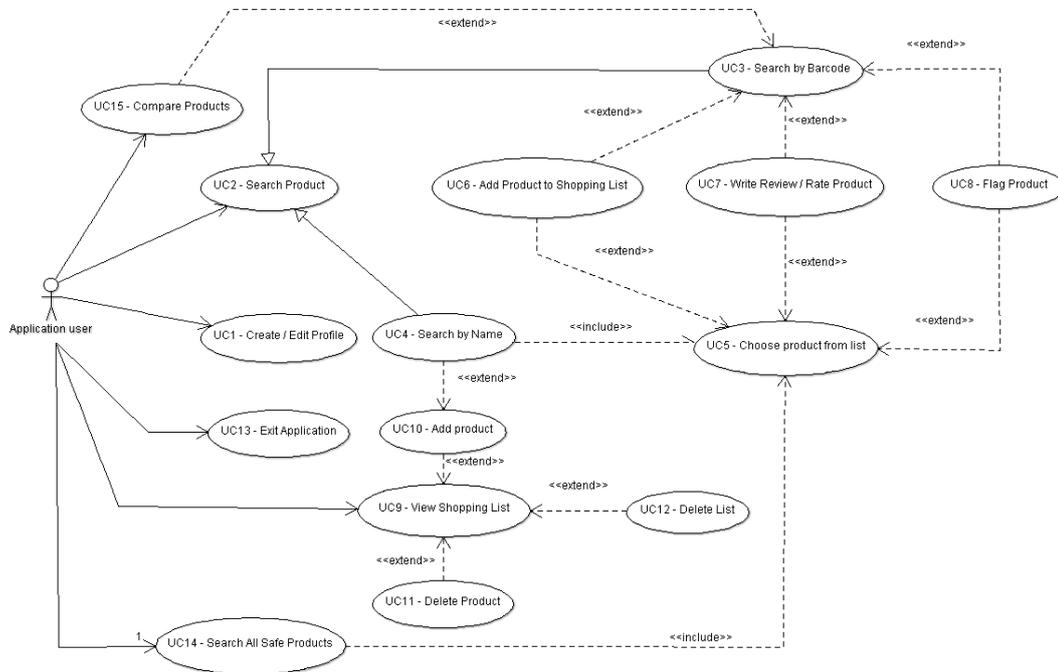
### **3.10 Interface**

The application will have an intuitive and user friendly interface that will allow users to easily understand how the application is supposed to be used.

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## 4. Use Cases

### 4.1 Use case model



#### 4.1.1 Use case “user creates/edits profile”

Use case ID	UC1
Name	<i>Create/Edit Profile</i>
Goal	<i>Create or edit personal user profile</i>
Participating actors	Application user
Precondition	Application started
Main scenario	<ol style="list-style-type: none"> <li>1. Application shows main screen with five options: <ol style="list-style-type: none"> <li>a. Profile</li> <li>b. Search Product</li> <li>c. Shopping List</li> <li>d. Safe Products</li> <li>e. Exit</li> </ol> </li> <li>2. User presses <u>Profile</u> button</li> <li>3. Application shows window for profile creation/modification with two options: <ol style="list-style-type: none"> <li>a. Enter email address</li> <li>b. View user allergies or Illnesses</li> </ol> </li> <li>4. User enters email address</li> <li>5. User chooses to view personal allergies</li> <li>6. Application shows new window with personalized list of allergies/conditions</li> <li>7. User can choose from two options: <ol style="list-style-type: none"> <li>a. Remove selected conditions</li> <li>b. Add new conditions</li> </ol> </li> <li>8. User chooses one option</li> </ol>

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	<ol style="list-style-type: none"> <li>a. 'Add new conditions' option <ol style="list-style-type: none"> <li>i. Application shows the new window with list of conditions</li> <li>ii. User selects wanted conditions</li> <li>iii. User chooses an option 'Add new Conditions'</li> <li>iv. Application closes the window and shows previous window with personalized list of allergies/conditions</li> </ol> </li> <li>b. 'Remove selected conditions' option <ol style="list-style-type: none"> <li>i. User selects wanted conditions</li> <li>ii. User chooses an option 'Delete conditions'</li> <li>iii. Application removes conditions from the list</li> </ol> </li> </ol> <ol style="list-style-type: none"> <li>9. User chooses the option 'Done'</li> <li>10. Application closes the window and shows the 'User Profile' window</li> <li>11. User chooses option 'Save Profile'</li> <li>12. Application closes window and shows the main screen</li> </ol>
Exceptions	<p>If the user closes the application, the application closes.</p> <p>If the user chooses to add new conditions and doesn't select any, application warns user to select conditions.</p>
Extensions	
Dependent UC	

#### 4.1.2 Use case "user searches for product"

Use case ID	UC2
Name	<i>Search product</i>
Goal	<i>Search for information about desired product</i>
Participating actors	Application user
Precondition	Application started
Main scenario	<ol style="list-style-type: none"> <li>1. User presses <u>Search Product</u> button</li> <li>2. Application offers two options for product search <ol style="list-style-type: none"> <li>a. Search by barcode</li> <li>b. Search by name</li> </ol> </li> <li>3. User chooses one option</li> </ol>
Exceptions	<p>If the user closes the application, the application closes.</p> <p>If the user aborts search, application displays main screen</p>
Extensions	
Dependent UC	UC3, UC4

#### 4.1.3 Use case "user searches product by barcode"

Use case ID	UC3
Name	<i>Search product by barcode</i>
Goal	<i>Search for information about desired product by barcode</i>
Participating actors	Application user
Precondition	Application started, user chose to search product
Main scenario	<ol style="list-style-type: none"> <li>1. User presses <u>Search Product by barcode</u> button</li> <li>2. Application displays barcode scanner</li> <li>3. User scans the barcode</li> <li>4. Application displays <ol style="list-style-type: none"> <li>a. Product name</li> <li>b. User ratings</li> <li>c. Product description</li> <li>d. Product content (flagged if harmful)</li> </ol> </li> </ol>

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Exceptions	<i>If the user closes the application, application closes. If the user aborts search, application displays main screen. If product is not found, application offers user to scan another product. If the user chooses to scan another product, application displays window with barcode scanner.</i>
Extensions	UC6, UC7, UC8
Dependent UC	

#### 4.1.4 Use case “user searches for product by name”

Use case ID	UC4
Name	<i>Search by name</i>
Goal	<i>Search for information about desired product by name</i>
Participating actors	Application user
Precondition	User pressed <u>Search</u> product button
Main scenario	<ol style="list-style-type: none"> <li>1. Application displays empty field for product name</li> <li>2. User enters full name of the product or part of the name</li> <li>3. User presses <u>Search</u> button</li> <li>4. Application displays list with possible products</li> </ol>
Exceptions	<i>If the user aborts search, application displays main window. If user doesn't enter any name, application warns user to enter product name</i>
Extensions	
Dependent UC	UC5

#### 4.1.5 Use case “user chooses wanted product from list”

Use case ID	UC5
Name	<i>Choose product from list</i>
Goal	<i>Choose the desired product from list</i>
Participating actors	Application user
Precondition	User searched for product by name
Main scenario	<ol style="list-style-type: none"> <li>1. User chooses the product from list</li> <li>2. Application displays <ol style="list-style-type: none"> <li>a. Product name</li> <li>b. User ratings</li> <li>c. Product description</li> <li>d. Product content (flagged if harmful)</li> </ol> </li> <li>3. Application displays options to user <ol style="list-style-type: none"> <li>a. Add product to shopping list</li> <li>b. Return to main screen</li> <li>c. Show additional product info (reviews)</li> </ol> </li> </ol>
Exceptions	<i>If the user aborts search, application displays main window. If the user chooses to search for another product, application displays window with empty field for product name.</i>
Extensions	UC6, UC7, UC8
Dependent UC	

#### 4.1.6 Use case “user adds product to shopping list”

Use case ID	UC6
Name	<i>Add product to the shopping list</i>
Goal	<i>Add product to the shopping list</i>
Participating actors	Application user

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Precondition	User successfully scanned product or selected product from list
Main scenario	<ol style="list-style-type: none"> <li>1. User presses the button <u>Add to shopping list</u></li> <li>2. User enters quantity he wishes to buy</li> <li>3. User saves the product to shopping list</li> <li>4. Application displays message of success if product is successfully added to the shopping list</li> </ol>
Exceptions	If the product can't be added to the shopping list, application display error message.
Extensions	
Dependent UC	

#### 4.1.7 Use case “user writes the review of the product”

Use case ID	UC7
Name	Write review
Goal	Write and store the personal opinion of the product
Participating actors	Application user
Precondition	User successfully scanned product or selected product from list
Main scenario	<ol style="list-style-type: none"> <li>1. User presses the button <u>Write review</u></li> <li>2. Application displays window with one text field and 5-star rating bar</li> <li>3. User rates the product: <ol style="list-style-type: none"> <li>a. 1 star – poor quality</li> <li>b. 2 stars – not so good quality</li> <li>c. 3 stars – average/good quality</li> <li>d. 4 stars – very good quality</li> <li>e. 5 stars – excellent quality</li> </ol> </li> <li>4. User writes the observations about the product</li> <li>5. User sends the review</li> <li>6. Application displays message of success if review is successfully sent</li> </ol>
Exceptions	<p>If the user aborts to write review, application displays window with product information.</p> <p>If the review can't be sent, application displays error message and asks user to try again.</p> <p>If the user doesn't choose the grade and presses the button to send review, application displays a message of warning and doesn't send review.</p> <p>If the user doesn't write the review and presses the button to send review, application displays a message of warning and doesn't send empty report.</p>
Extensions	
Dependent UC	

#### 4.1.8 Use case “user flags the product”

Use case ID	UC8
Name	Flag product
Goal	Flag the product and send the report
Participating actors	Application user
Precondition	User successfully scanned product or selected product from list
Main scenario	<ol style="list-style-type: none"> <li>1. User presses the button <u>Send Warning</u></li> <li>2. Application displays window with one input field</li> <li>3. User writes the reason for flagging product</li> <li>4. User sends the warning</li> <li>5. Application displays message of success if report is successfully sent</li> </ol>
Exceptions	If the user aborts flagging process, application displays window with product information.

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	<i>If the user flags a product and doesn't write the report, application doesn't accept it and displays a message that user needs to fill the report.</i>
Extensions	
Dependent UC	

#### 4.1.9 Use case “user views shopping list”

Use case ID	UC9
Name	<i>View Shopping list</i>
Goal	<i>Open the shopping list and view the products</i>
Participating actors	Application user
Precondition	Application started
Main scenario	<ol style="list-style-type: none"> <li>1. <i>User presses the button <u>View shopping list</u></i></li> <li>2. <i>Application displays window with list of products</i></li> <li>3. <i>Application offers three options:</i> <ol style="list-style-type: none"> <li>a. <i>Add product to the shopping list</i></li> <li>b. <i>Delete products from the shopping list</i></li> <li>c. <i>Clear shopping list</i></li> </ol> </li> </ol>
Exceptions	<i>If the user closes the application, application closes.</i>
Extensions	UC10, UC11, UC12
Dependent UC	

#### 4.1.10 Use case “user starts the process of adding the product to the shopping list”

Use case ID	UC10
Name	<i>Add product</i>
Goal	<i>Start process of adding product to the shopping list</i>
Participating actors	Application user
Precondition	User opened shopping list
Main scenario	<ol style="list-style-type: none"> <li>1. <i>User presses the button <u>Add new product</u></i></li> <li>2. <i>Application opens ‘Search by Name’ screen</i></li> <li>3. <i>User enters full name of the product or part of the name</i></li> <li>5. <i>User presses <u>Search</u> button</i></li> <li>4. <i>Application displays list with possible products</i></li> <li>5. <i>Use case “user chooses wanted product from list”</i></li> <li>6. <i>Use case ‘User adds product to shopping list’</i></li> </ol>
Exceptions	<i>If the user aborts addition of the new product, application displays a window with shopping list.</i>
Extensions	
Dependent UC	

#### 4.1.11 Use case “user deletes the shopping list”

Use case ID	UC11
Name	<i>Delete list</i>
Goal	<i>Delete all products from the shopping list</i>
Participating actors	Application user
Precondition	User opened shopping list
Main scenario	<ol style="list-style-type: none"> <li>1. <i>User presses the <u>Delete list</u> button</i></li> <li>2. <i>Application asks user to confirm list deletion</i></li> <li>3. <i>User presses the button to confirm deletion</i></li> <li>4. <i>Application deletes all products from the shopping list</i></li> </ol>
Exceptions	<i>If the user aborts deletion of the shopping list, application displays a window</i>

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	<i>with shopping list.</i>
Extensions	
Dependent UC	

#### 4.1.12 Use case “user deletes a product from shopping list”

Use case ID	UC12
Name	<i>Delete product</i>
Goal	<i>Delete one or more products from the shopping list</i>
Participating actors	Application user
Precondition	User opened shopping list
Main scenario	<ol style="list-style-type: none"> <li>1. <i>User marks the wanted products</i></li> <li>2. <i>User presses the <u>Delete product</u> button</i></li> <li>3. <i>Application deletes marked products from the shopping list</i></li> </ol>
Exceptions	<i>If the user presses the <u>Delete product</u> button and no products are selected, application displays warning message.</i>
Extensions	
Dependent UC	

#### 4.1.13 Use case “user exits the application”

Use case ID	UC13
Name	<i>Exit application</i>
Goal	<i>Exit application</i>
Participating actors	Application user
Precondition	Application started
Main scenario	<ol style="list-style-type: none"> <li>1. <i>User presses the <u>Exit</u> button</i></li> <li>2. <i>Application closes</i></li> </ol>
Exceptions	-
Extensions	
Dependent UC	

#### 4.1.14 Use case “user searches all safe products”

Use case ID	UC14
Name	<i>Safe products for user</i>
Goal	<i>Search and display all safe products based on user profile</i>
Participating actors	Application user
Precondition	User profile already created
Main scenario	<ol style="list-style-type: none"> <li>1. <i>User presses the button <u>Safe Products</u></i></li> <li>2. <i>Application displays list with possible products</i></li> </ol>
Exceptions	<i>If the user aborts search, application displays main window. If no product is found, application displays a message and returns to main screen.</i>
Extensions	
Dependent UC	UC5

#### 4.1.15 Use case “compare products”

Use case ID	UC15
Name	<i>Compare products</i>

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Goal	<i>Compares products that user has previously scanned based on the user ratings.</i>
Participating actors	Application user
Precondition	Application started
Main scenario	<ol style="list-style-type: none"> <li>1. <i>User chooses Compare product option</i></li> <li>2. <i>User scans two or more products</i></li> <li>3. <i>Application shows list of products sorted by rating</i></li> </ol>
Exceptions	<p><i>If the user aborts, application displays main window.</i></p> <p><i>If no product is found, application displays a message and returns to main screen.</i></p>
Extensions	
Dependent UC	UC6

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## 5. Requirements Definition

### 5.1 Requirement Group Definitions

Identification	Requirement Group	Rem.
SS	Server Side	
PH	Product Handling	
UPH	User Profile Handling	
SLH	Shopping List Handling	
AC	Android Client	
DBPH	Database and Parser Handling	
DX	Data Exchange	
SM	Security Management	
NFR	Non-functional Requirements	

### 5.2 Requirement Sources

Source	Description	Rem.
Ctm	Customer	
Sys	Required as a consequence of system design (contractor's requirement)	
Ds	Development team's suggestion	

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### 5.3 Requirement definitions

Identity	Status	Priority	Reference	Description	Source
Server Side					
SS-1	I	1	3.7	Handle exceptions and errors efficiently and act accordingly in the case of exceptions.	Sys
SS-2	I	3		Schedule database updates from external sources.	Ds
Product Handling					
PH-1	I	1		UC2 - User searches for product	Ctm
PH-2	I	1		UC3 - User searches product by barcode	Ctm
PH-3	I	1		UC4 - User searches for product by name	Ctm
PH-4	I	1		UC5 - User chooses wanted product from list	Ctm
PH-5	I	1		UC7 - User writes the review of the product	Ctm
PH-6	I	1		UC8 - User flags the product	Ctm
PH-7	I	2		UC14 - User searches all safe products	Ctm
PH-8	A	2		UC15 - Compare products	Ctm
PH-9	M	1		UCX - User scans the product	Ctm
PH-10	M	1		UCX - User rates the product	Ctm
PH-11	D	1		UCX - Recall and incident history	Ctm
Shopping List Handling					
SLH-1	I	2		UC6 - User adds product to shopping list	Ctm
SLH-2	I	2		UC9 - User views shopping list	Ctm
SLH-3	I	2		UC10 - User starts the process of adding the product to the shopping list	Ctm
SLH-4	I	2		UC11 - User deletes the shopping list	Ctm
SLH-5	I	2		UC12 - User deletes a product from shopping list	Ctm
SLH-6	M	2		UC10 - User enters product name	Ctm
User Profile Handling					
UPH-1	I	1		UC1 - User creates/edits profile	Ctm
UPH-2	M	1		UCX - User enters personal data	Ctm
UPH-3	M	1		UCX - User enters allergies or illnesses	Ctm
Android Client					

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AC-1	I	1		Use android SDK 2.3 to ensure compatibility with maximum number of devices.	Sys
AC-2	I	1	3.11	XML-based layout to speed up the UI-design process.	Sys
AC-3	I	1		UC13 - User exits the application	
AC-3.1	I	1		Save data locally in device before exiting.	Ds
AC-3.2	I	1		Close all connections.	Sys
Database and Parser Handling					
DBPH-1	I	3	3.3	Optimize database to enable faster searches.	Sys
DBPH-2				Handle different data sources accordingly.	
DBPH-2.1	I	1		Connect to database for locally stored data.	Ds
Non-functional Requirements					
NFR	I	2	3.8	Response time should be less than 10 seconds.	Ds

Requirement status:

- I = initial* (this requirement has been identified at the beginning of the project),
- D = dropped* (this requirement has been deleted from the requirement definitions),
- H = on hold* (decision to be implemented or dropped will be made later),
- A = additional* (this requirement was introduced during the project course).
- M = merged* (this requirement was merged with another requirement).

BuySafe	Version: 0.4
Requirements Definition	Date: 2012-12-17

### 5.3.1 Change Log

Table contains the list of changes to requirements from the main table, in chronological order.

Identity	Action	Date	Comments
PH-8	A	22-11-2012	Added after suggestions by the customers.
PH-9	M	07-11-2012	Merged with UC3 as they were too simple.
PH-10	M	07-11-2012	Merged with UC7 as they are the same.
PH-11	D	07-11-2012	Dropped as found unnecessary, application will automatically check for product recalls.
UPH-2	M	07-11-2012	Merged with UC1 as it was too simple.
UPH-3	M	07-11-2012	Merged with UC1 as it was too simple.

Requirement status:

- D* = *dropped* (this requirement has been deleted from the requirement definitions),
- H* = *onhold* (decision to be implemented or dropped will be made later),
- A* = *added* (this requirement was introduced during the project course).
- R* = *resurrected* (dropped or on hold requirement was reactivated)
- M* = *merged* (this requirement was merged with another requirement).

## 6. Future Development

### 6.1 General overview

Future development of this application should mainly focus on adding more information for a wider range of products, since this application chooses food product as baseline. After covering a decent amount of other products on the market future developers should consider adding support for other mobile platforms. It should be also considered to add additional functionalities on top of the existing ones.

### 6.2 Product range

Increasing product range should be the main focus of future development. Not only should the number of products be increased, but future developers should also try to add different product types.

### 6.3 Additional platforms

BuySafe application will be developed for the Google Android platform as a starting point of this project. In future projects developing an application for iOS and Windows Phone would increase the number of potential customers.

### 6.4 Additional functionalities

1. Provide user with interface to report incidents
2. Incorporate “Wiser Buy”, for instance, show users the cheaper products but with almost the same content or quality
3. Show side effect of the ingredients that a user input