# Software Requirements Specification

for

ROMIS Online Computer shop

**Prepared by**

C Leiva

S Ayele

R Mensah

**EIS Lab Project**

**University of Bonn**

**14th May, 2014**

Table of Contents

# 1. Introduction

## 1.1 Purpose

The purpose of this document is to provide a detailed description of the requirements for using Magento to set up and showcase an online computer retail shop. It will illustrate the purpose of the system, its' features, interfaces and interactions with the environment. The concepts will be explained using textual descriptions and diagrams to illustrate interactions within the system.

This document is intended for the Supervisors of our Enterprise Information Systems Lab at the University of Bonn. It can also be used by stakeholders of enterprise Information systems such as software developers, managers and businesses.

## 1.2 Scope

The goal of this project is to use the ecommerce platform, Magento to develop an online retail shop. The application will be accessible by people irrespective of their geographical location. The system will be characterised by the front-end, which will be accessible to normal users and a back-end which only the administrators have access to. This system will be designed to maximize the administrator's productivity by providing tools to assist in automating the store activities and also have the functionality of publishing the public information to RDF. The public information will also be available as linked data and will be published as a public SPARQL endpoint. Special marketing features of the system will include connections to popular social networking sites and the use of RDFa Microformat tagging of products and reviews; which will make it easier for search engines to easily locate the products. Customers and visitors will also have simplified interfaces of the system to ensure easy access to products and other relevant information.

## 1.3 Definitions, acronyms, and abbreviations

- SRS: Software requirement specification
- RDF: Resource Description framework is a family of World Wide Web Consortium (W3C) specifications used as a general method for conceptual description or modeling of information that is implemented in web resources, using a variety of syntax notations and data serialization formats.

- RDFa: Resource Description Framework in Attributes is a W3C Recommendation that adds a set of attribute-level extensions to HTML, XHTML and various XML-based document types for embedding rich metadata within Web documents.
- SPARQL: SPARQL Protocol and RDF Query Language) is an RDF query language, that is, a query language for databases, able to retrieve and manipulate data stored in Resource Description Framework format.
- Visitor: A person who browses the site for products without necessarily registering.
- Customer: A person who has been registered with the online shop
- Magento admin: This person handles all the tasks needed for the successful use of the Magento e-commerce platform.
- Store admin: The one who manages the online shop, ensuring that the sales, payments and successful delivery of products to customers.

## 1.4 References

IEEE SRS format

## 1.5 Overview of document

The next chapter, the Overall Description section, of this document gives an overview of the product perspective, the various interfaces; system, user, hardware and software and the constraints taken into consideration while developing the system.

The third chapter, Requirements Specification section, of this document describes in technical detail, the functional and non functional requirements for the online e-commerce system. Use case scenarios are used to explain in detail the functional requirements of the system.

## 2. Overall description

### 2.1 Product perspective

ROMIS is envisaged to be a system that would bridge the gap between customers and the shop owner. It is expected that the system will be user friendly and quick to learn. The shop will be developed from an already existing e-commerce platform, Magento and it is expected to be accessible to any person connected to the Internet. This system will be of two parts: a front end and the backend system. The backend of the system will have database catalog of all products and a content management system for managing information and the various processes hence, will require SQL and Magento to be installed. All information provided at the backend will be classified as either public or private information. The public information will be exposed as a SPARQL endpoint for general purpose usage. The front end part will be purposely designed and built for visitors and customers to have access to products, reviews and purchases.

### 2.2 Product functions

| Front end | Priority | Backend |
|---|---|---|
| • Products display and search | 1 | • Maintain Inventory |
| • Customer registration, login and profile update<br>• Virtual shopping (product wishlist, shopping cart, place orders)<br>• Shopping history | 2 | • Setting up payment method<br>• Processing customer orders<br>• Assignment of user privileges |
| • Customer support, reviews and ratings<br>• Newsletter Subscription | 3 | • Setting up automatic conversion of relational data to RDF<br>• Items RDFa information and Microformat tagging |
| • Sharing on Social Media | 4 | • Perform analysis on RDF data<br>• Publish data on Social Media |

- ROMIS: UML Use Case Diagram.

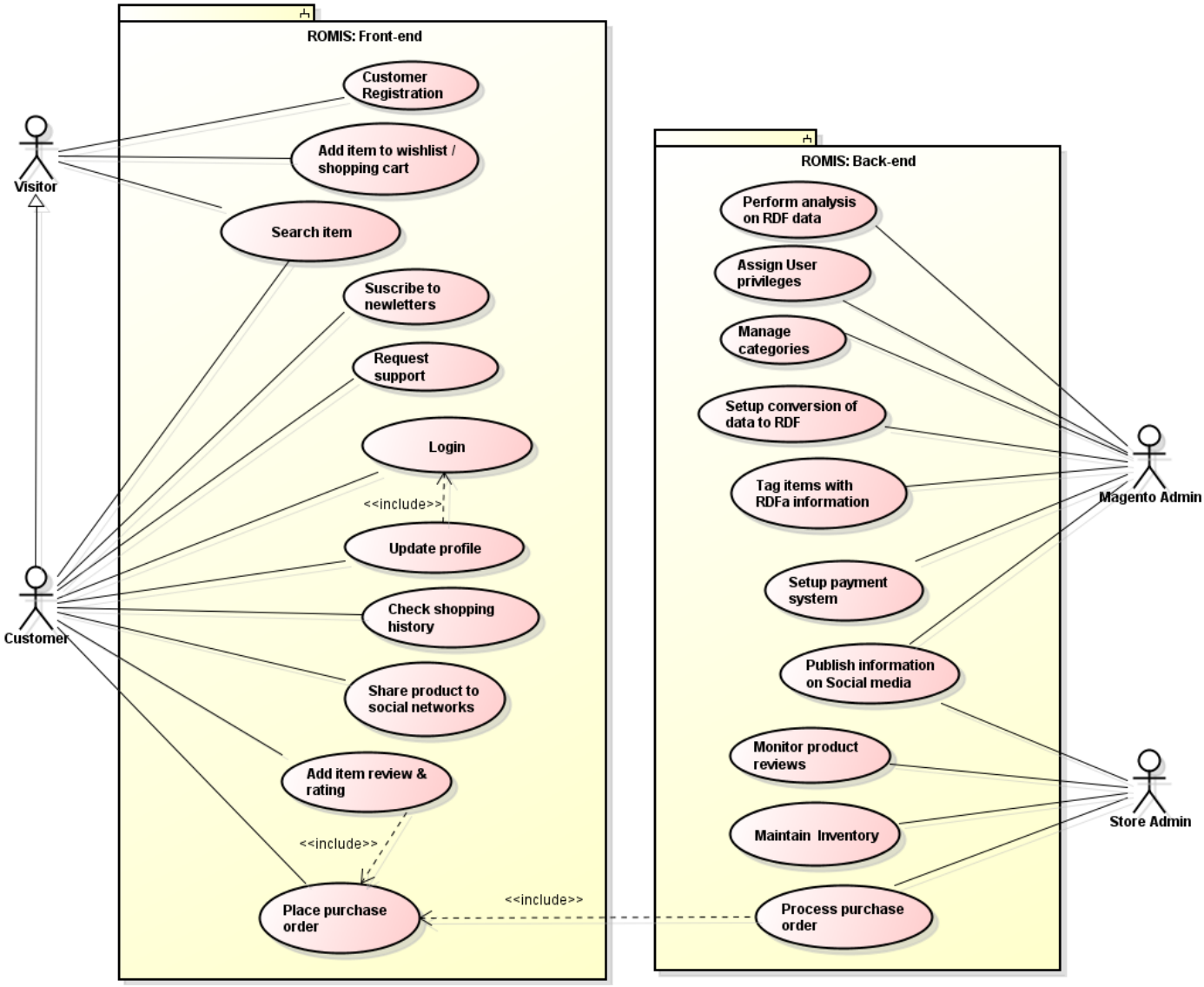


Fig 1. ROMIS: Front-end & Back-end Use Case diagram.

## 2.3 User characteristics

### Store admin

This user has complete control over the online shop. He is responsible for maintaining a current database of all the products, monitoring customer enquiries and making sure customer purchases are completed successfully.

### Magento admin

His main tasks are to ensure the successful implementation of the content management system. He adds, deletes, and modifies new categories and products. He is also responsible for customizing the Magento platform to suit the online store by adding and modifying the core logic of the platform.

### Customer/Visitor

A visitor can browse through the shop and choose products to place in a virtual shopping cart. The shopping cart details can be viewed and items can be removed from the cart. To proceed with the purchase, the visitor is prompted to login or register. Once logged in, the status of the person changes from a visitor to a customer. The customer can modify personal profile information stored by the application. The customer can also view the status of any previous orders, and cancel any order that has not been shipped yet.

## 2.4 Operating environment

### Front end / Online shop

The shop can be accessed by online visitors and customers via any of the standard web browsers; Microsoft Internet Explorer 7, Mozilla Firefox 3.5 and later, Apple Safari 5 and later for Mac PCs, Google Chrome 7 and later. Adobe flash browser plugin needs to be also installed.

Backend – Magento Platform

- Operating systems: Linux x86, x86-64
- Web servers: Apache 1.3.x, Apache 2.0.x, Nginx, MySQL 4.1.20 or later
- E-commerce software: Magento Community Edition 1.9

## 2.5 Design and implementation constraints

## 2.6 User documentation

The online system will have an FAQ section which will address general issues. The visitors and customers will also have the opportunity to send questions to the administrators of the system. The complete system will also be delivered along with an extensive manual which will be helpful for future reference.

## 2.7 Assumptions and Dependencies

The system will be developed on the Magento platform hence it is assumed that the platform will provide all the functionalities it promised and work according to expectation when all the functional and non functional requirements are satisfied. The system will also use the D2RQ framework to access relational databases as virtual RDF graphs.

## 3. Specific requirements

3.1 Functional requirements

FRONT END

| | |
|---|---|
| Requirement number | FR1 |
| Requirement name | **Product display and search** |
| Priority | 1 |
| User | Visitor/ Customer |
| Description | • The shop shall display all available products in their correct categories.<br>• Returning Customers and visitors should be able to browse the site for specific products. Different search and sort mechanisms will be incorporated into the system.<br>• The system shall display detailed information about a selected product.<br>• Matching options for any selected product will also be displayed<br>• The system shall notify the user when no matching product is found for a search. |
| Implementation | Magento provides the framework for uploading products by the various categories and for sorting out products. |

| | |
|---|---|
| Requirement number | FR2 |
| Requirement name | **Customer registration, login and profile update** |
| Priority | 2 |
| User | Visitor/Customer |
| Description | • The System should display a login area for a visitor to register or validate customer credentials on the website.<br>• Customer validation (login) is required to perform purchases, add comments and reviews.<br>• Returning customers and visitors should be able to fill out a registration form to register them automatically.<br>• The system shall prompt the visitor to enter a human readable 'captcha' in order to avoid bots from registering.<br>• The system shall securely store (SSL encryption) the information in the database.<br>• Users would be able to update the profile information. |
| Implementation | Magento provides the framework for storing and managing user information. |

| | |
|---|---|
| Requirement number | FR3 |
| Requirement name | **Virtual shopping** |
| Priority | 2 |
| User | Visitor/Customer |
| Description | • Each customer or visitor will be provided with a shopping cart and a wishlist during online session.<br>• The system shall allow every user to add or remove products from the shopping cart or wishlist.<br>• The shopping cart and wishlist information would be persistent: keeps track of unpurchased items left in the cart/list, and saves the information for the customer's next visit.<br>• Users would be provided with an interface to confirm purchase of an item or items.<br>• A customer would be able to cancel or change his or her order before shipment date.<br>• The system shall notify the user about any changes made to the order. |
| Implementation | Magento provides the framework for managing customer purchases. The persistent shopping cart / wishlist scenario will be implemented using Magento's inbuilt persistent cookies and session cookies. |

| | |
|---|---|
| Requirement number | FR4 |
| Requirement name | **Shopping history** |
| Priority | 2 |
| User | Customer |
| Description | • A customer would be able to cancel or change his or her order before shipment date.<br>• The system shall be able to display details of each order in the shopping history. |
| Implementation | Magento provides the framework for storing each performed purchase by the user on the database; this information can be displayed to the user when it is required. |

| | |
|---|---|
| Requirement number | FR5 |
| Requirement name | **Customer support, reviews and comments** |
| Priority | 3 |
| User | Customer |
| Description | • A customer would be able to request user support thought different channels.<br>  ○ Dedicated support e-mail address.<br>  ○ Support webpage<br><br>In order to perform this task the customer must fill the respective support form.<br><br>• The system shall be able to notify the customer about pending product reviews.<br><br>• A customer would be able to provide a review and set a rating about each purchase made.<br><br>• The system shall display all customer reviews and ratings for each product. |
| Implementation | Magento provides the framework for displaying / storing reviews and ratings of each product item in the inventory. |

| | |
|---|---|
| Requirement number | FR6 |
| Requirement name | **Newsletter Subscription** |
| Priority | 3 |
| User | Customer |
| Description | • The system shall be able provide newsletter subscription options through the customer registration.<br>• A customer would be able receive e-mails with store promotions and sales. |
| Implementation | Magento provides the framework for newsletter subscriptions. |

| | |
|---|---|
| Requirement number | FR7 |
| Requirement name | Sharing on Social Media |
| Priority | 4 |
| User | Customer |
| Description | • The system shall be able to display different social media options on each product and review.<br>• A customer would be able to share products information through social networks (Facebook and Twitter).<br>• A customer would be able to share a written product review through social networks (Facebook and Twitter). |
| Implementation | The following Magento extension will be implemented to provide this feature:<br>• Beetailer - Social Commerce Platform |

# BACK END

| | |
|---|---|
| Requirement number | BK1 |
| Requirement name | **Maintain Inventory** |
| Priority | 1 |
| User | Store administrator |
| Description | • The store administrator shall be able to Read / Add / Delete / Modify any product in the system.<br>• The store administrator shall keep track of all the products in the shop.<br>• The system should indicate the availability or otherwise of a product to customers.<br>• It should also be able to provide details on the amount of each product that is in stock. |
| Implementation | Magento's import and export feature will be used to create, update and track stock of products in various categories. |

| | |
|---|---|
| Requirement number | BK2 |
| Requirement name | **Setting up payment method** |
| Priority | 2 |
| User | Magento admin |
| Description | • Payments from customers will be received using Paypal.<br>• The system shall display available payment methods for payment.<br>• The system shall allow user to select the payment method for order. |
| Implementation | Magento Magento can be configured to receive payments through Paypal sandbox. |

| | |
|---|---|
| Requirement number | BK3 |
| Requirement name | **Processing Customer Orders** |
| Priority | 2 |
| User/ Actor | Store administrator / System Modules |
| Description | • The system (payment module) should capture payment details online and notify the invoicing module about the status of payment.<br>• An invoice with a unique ID should be created and displayed to the user once the payment has been captured.<br>• A message should be displayed once the purchase of an item has been completed.<br>• The system (shipment module) should ship the paid product and get a tracking number.<br>• The system shall notify the customer by email once the tracking number has been assigned to the shipment. |
| Implementation | Magento provides the framework for processing customer orders. |

| | |
|---|---|
| Requirement number | BK4 |
| Requirement name | **Assignment of user privileges** |
| Priority | 2 |
| User | Magento admin |
| Description | • The system shall provide the options to set user privileges to access different modules of the system.<br>• Magento admin shall assign access privileges to respective users. |
| Implementation | Magento provides the framework for user privileges assigment. |

| | |
|---|---|
| Requirement number | BK5 |
| Requirement name | **Setting up automatic conversion of relational data to RDF** |
| Priority | 3 |
| User | Magento admin |
| Description | • The system shall be able to convert periodically and automatically the products database information to Resource Description Framework (RDF format).<br>• Magento admin shall setup and select the information to be converted. |
| Implementation | A Magento extension could be develop to automate the process of conversion from relational database to RDF format using the following technology:<br>• D2RQ |

| | |
|---|---|
| Requirement number | BK6 |
| Requirement name | **RDFa information and Microformat tagging** |
| Priority | 3 |
| User | Magento admin |
| Description | • The system shall be able set RDFa attribute-level extensions to store products in order to enhance aggregation of content and more reliable search results.<br>• Magento admin shall setup and select the information to be RDFa tagged and microformated. |
| Implementation | The following Magento extensions will be implemented to provide this feature:<br>• Easy RDFa Tags<br>• MSemantic |

| | |
|---|---|
| Requirement number | BK7 |
| Requirement name | **Perform analysis on RDF data** |
| Priority | 4 |
| User | Magento admin |
| Description | • The system shall be able to provide RDF data from MySQL relational databases in order to be analyzed by the administrator.<br>• Magento admin shall setup and select the tools to analyze the RDF data. |
| Implementation | Analysis tools will be selected to implement this functionality. |

| | |
|---|---|
| Requirement number | BK8 |
| Requirement name | **Publish data on Social Media** |
| Priority | 4 |
| User | Magento admin / Store admin |
| Description | • The system shall be able to export the store information (products and reviews) to the social network Facebook.<br>• A Facebook page of the store shall be provided to the customers with all the available products.<br>• Customers would be able to share and review products through the social network Facebook.<br>• Magento admin shall setup and select the information to be published the social network.<br>• Store admin shall maintain the information presented on the social network. |
| Implementation | The following Magento extension will be implemented to provide this feature:<br><br>• Beetailer - Social Commerce Platform |

## 3.2 Operational and Other Requirements

- Search Engine Optimization - 100% search engine friendly, Search engine friendly URLs, Meta-information for products, categories and content pages
- Marketing, Promotions and Conversion Tools - Related products, up-sells and cross-sells, Catalog promotional pricing with the ability to restrict to stores, categories or products, Flexible coupons (pricing rules) with ability to restrict to stores, customer groups, time period, products, and categories
- New items promotional tool
- Site Management
- Analytics and Reporting, Mobile Commerce

## 3.3 Performance Requirements

- Catalog Browsing
- Product Browsing
- Order Management

## 3.4 Software System attributes

### 3.4.1 Reliability and availability

The system shall provide for replication to aid automatic switch over in case of a database failure. The database system would be updated regularly to reflect each current state of the online store. The system shall be compatible with all standard web browsers. It shall be possible to upgrade the system while it is running.

### 3.4.2 Security

HTTPS/SSL will be used for all transactions and pages that require login. “Use Secure URLs in Frontend" and "Use Secure URLs in Admin" features of Magento would be used to implement the above mentioned feature. The system shall automatically log out all customers after a period of inactivity. The system’s back-end servers shall only be accessible to authenticated administrators and databases would be encrypted.