

# Software Requirements Specification

Wouter Van Rossem

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### **Abstract**

This document describes the Software Requirements Specifications for the software behind an online auction website. This project is part of the course on software engineering at the Vrije Universiteit Brussel.

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# Chapter 1

## Introduction

### 1.1 Purpose

The purpose of this document is to present an overall description and listing of the functionality of the system behind an online auction website. This document is intended for users of the system including designers, testers, implementation unit and the employer.

### 1.2 Scope

Salesmen is the system behind an online auction website. An auction site is a web application where users can buy and sell objects. Users can place auctions or bid on auctions of other users.

There are also some social features such as sending messages to users, add a seller to favourite sellers and a rating system for users.

### 1.3 Definition And Abbreviation

- *SRS*: Software Requirements Specification
- *UML*: Unified Modelling Language
- *XHTML*: Extensible HyperText Markup Language
- *HTML*: HyperText Markup Language
- *CSS*: Cascading Style Sheets
- *HTTPS*: Hypertext Transfer Protocol Secure
- *CAPTCHA*: Completely Automated Public Turing test to tell Computers and Humans Apart

## 1.4 Overview

Section 2 describes the general factors that affect the product and its requirements. This section does not state specific requirements. Instead, it provides a background for those requirements, which are defined in detail in Section 3 of the SRS, and makes them easier to understand.

Section 3 contains all of the software requirements, to a level of detail sufficient to enable designers to design the system to satisfy these requirements, and testers to test that the system satisfies these requirements.

## Chapter 2

# Overall Description

### 2.1 Product Perspective

The project will make use of a database and a web server that can be accessed with any web browser. There are 4 types of users on the system: guests, registered users, administrators and banned users. Before a user can make use of the full functionality of the site, the user has to register. The user will have to enter some personal information in a form in order to do this. Only users of at least 18 years old will be allowed due to legal reasons.

Both guests and users can browse the different auctions, but only registered users can bid on auctions or place their own auctions. Users can browse through auctions with categories or tags. Users can also search for a specific auction.

Different auctions can be created such as English auctions[2] or silent auctions[3]. When a user places an auction, he or she also has to specify payment methods, transport methods, a minimum price, a duration for the auction and other general information about the auction.

A user can follow an auction. The followed auctions list is a list of auctions that interest the user but on which he or she may not have bid yet. Then when the user wants, he or she can bid on the auction. A user can view all the auctions he or she has bid on in the active auctions list.

When a user has won an auction, he or she can pay for the item. This will be done through a transaction. The buyer can pay for the item by choosing one of the payment options the seller has specified. One of these methods is through salespal. This is a personal “bank account” on the site that each user has. Buyers can pay for items with the money on this account and sellers can receive money on their salespal account. Users can top up their salespal account, i.e. they transfer money to the account. When the transaction is done, buyers and sellers can rate the transaction. Each user will have a rating then which is based on the ratings of their transactions.

Users can also contact other users through personal messages. Other sellers can also be added to a favourite sellers list, so that a user can easily check if a seller

they like has new auctions.

Administrators have some extra functionality, they can manage the users and auctions. Administrators can also retract a bid of a user.

## 2.2 User Characteristics

The users of the system will be users with different levels of technical expertise. Any user with a basic understanding of the internet and auctions should be able to make use of all the available functionality of the system.

There are three different types of users:

- **Guests:** These are visitors of the site which don't have an account yet or aren't logged in.
- **Users:** These are users of the site who have an account and are logged in.
- **Administrators:** These are special members of the site who manage the site.
- **Banned users:** These are users that were removed by an administrator

## 2.3 Interfaces

- The auction site is accessible from any operating system using a web browser and a connection to the web server running the Salesmen software
- No special hardware is required by the end-user
- The client browser must be W3C XHTML compatible
- Communication between the users and the auction site will be through HTTP communication using TCP/IP port 80
- If an error occurs during a request, the user should receive a clear error message. These errors should also be logged

### 2.3.1 User interfaces through forms

#### Account information

- Username (mandatory)
- Password (mandatory)
- Password verification (mandatory)
- E-mail (mandatory)



- E-mail verification (mandatory)
- Default Language (default English)
- CAPTCHA (mandatory)

**Personal information**

- First Name (mandatory)
- Last Name (mandatory)
- Address (optional)
- Phone number (optional)
- Date of birth (mandatory, minimum 18 years old)

**Registration form**

- Account information (mandatory)
- Personal information (mandatory)

**Login form**

- Username
- Password

**Auction search form**

- Auction name

**Member search form**

- Member name

**Place auction form**

- Auction name
- Transport options
- Minimum price
- Duration
- Auction type
- Category
- Tags
- Other information

**Bidding form**

- Maximum offer

**Personal message form**

- Subject
- Message

**Rate transaction form**

- Overall rating
- Message

## **2.4 Product Functions**

### **2.4.1 Guest**

Guests can

- Browse through auctions
- Request an account
- Log in

### **2.4.2 User**

Users can

- Browse through auctions through searching
- Browse through auctions by selecting a category
- Place auctions
- Bid on auctions
- Follow an auction
- View a transaction
- Pay for a transaction
- Rate a transaction
- View their placed, active and followed auctions
- Access and modify their account information
- Contact other users
- Add a seller to their favourite sellers
- View and top up their salespal account

### 2.4.3 Administrator

Administrators can

- Manage the members
- Manage the auctions
- Retract bids from users

## 2.5 Constraints

- The system must work on Linux, and more specifically on Wilma
- The design should be modular, so extensions and replacements of modules will be simplified
- The web interface should be simple, attractive and standard (CSS, XHTML)
- The basic programming language must be Java
- Only open source software and libraries may be used

## 2.6 Apportioning of Requirements

In order to have a working prototype available at the end of the first iteration, some functionalities have different priorities.

- **Must have:** These functionalities should definitely be in the system, preferably after the first iteration.
- **Want to have:** These functionalities should be in the system, but could be dropped when there isn't enough time.
- **Nice to have:** These functionalities should only be implemented if all the 'must have' and 'want to have' requirements are implemented and there is still some time left.

## Chapter 3

# Specific Requirements

### 3.1 Requirements Control Plan

This section describes how the different requirements will be described and how modifications to these requirements will be handled.

Each requirement will have a unique identifier which will be used for referencing in the source code, the design, ... Some requirements will only be described by a short description, while others will be described by a use case.

Whenever a requirement changes, the change will be noted at the description of the requirement. If a requirement is retired, this will also be noted at the requirement description, together with a reason why the requirement was retired.

### 3.2 Functional Requirements

#### 3.2.1 Guest

##### 3.2.1.1 Create a new account

**Requirement ID** 1

**Priority** Must have

**Actor** Guest

**Preconditions** User is not logged in

**Description** A guest can create a new account so that he or she can use the full functionality of the site

**Path**

1. Guest selects *register*
2. Guest fills in *registration form*
3. Guest submits form
4. System checks form and if valid saves it

5. System sends a confirmation mail

**Exceptions**

1. Username is already taken
2. Incorrect information in the registration form
3. Incomplete form

**Result** An account is created for the user

#### **3.2.1.2 Log in**

**Requirement ID** 2

**Priority** Must have

**Actor** Guest

**Preconditions** The user is registered on the site, user is not logged in

**Description** If a user is registered but not logged in, he or she can log in to use the full functionality of the site.

**Path**

1. Guest fills in login form
2. Guest submits form
3. System checks if the form is valid and if so logs the user in
4. System redirect the user to the page he or she was on before the log in

**Exceptions**

1. Incorrect username and or password
2. Incomplete login form

**Result** The user is logged in

### **3.2.2 Guest and User**

#### **3.2.2.1 Search for an auction**

**Requirement ID** 3

**Priority** Must have

**Actor** User or Guest

**Preconditions** User is at the home page

**Description** Guests and members can search for auctions

**Path**

1. Users enters a search term in the search field
2. User submits the search

3. System redirects the user to a page with all found auctions that match this search query

**Exceptions** Empty search field

**Result** A page with the found auctions for the search term

### **3.2.2.2 View auctions of a certain category**

**Requirement ID** 4

**Priority** Must have

**Actor** User or Guest

**Preconditions** User is at the home page

**Description** Guests and users can view all the auctions of a certain category

**Path**

1. Users select a category from the category list
2. System redirects the user to a page with all the auctions of the selected category

**Exceptions** None

**Result** A page displaying all the auctions of a certain category

### **3.2.2.3 View auctions with a certain tag**

**Requirement ID** 5

**Priority** Want to have

**Description** Guests and users can view all the auctions with a certain tag

### **3.2.2.4 Change language**

**Requirement ID** 6

**Priority** Must have

**Description** Guests and users can change the language of the website to one of the available languages

### **3.2.2.5 Change currency**

**Requirement ID** 7

**Priority** Nice to have

**Description** Guests and users can change the currency in which auctions are displayed

### **3.2.3 User**

#### **3.2.3.1 Log out**

**Requirement ID** 8

**Priority** Must have

**Actor** User

**Preconditions** User is logged in

**Description** Members who are logged in can log out

**Path**

1. User selects *log out*
2. System logs the user out
3. System redirects the user to the site's homepage

**Exceptions** None

**Result** The user is logged out

#### **3.2.3.2 Search a user**

**Requirement ID** 9

**Priority** Want to have

**Actor** User

**Preconditions** User is at advanced search page

**Description** Members can search for other members

**Path**

1. User enters search term in search user field
2. User submits search
3. System redirects the user to page containing all users corresponding to that search query

**Exceptions** Incorrect or incomplete form

**Result** A page displaying the found members for the search term

### 3.2.3.3 Place an auction

**Requirement ID** 10

**Priority** Must have

**Actor** User

**Preconditions** User is logged in. User is at home page or user home

**Description** Members of the site can create a new auction on which other members can bid

**Path**

1. User selects *place auction*
2. User fills in *new auction form*
3. User submits the form
4. System checks the form and if valid creates the auction

**Exceptions** Incorrect information in the form, incomplete form

**Result** Auction is placed

### 3.2.3.4 View placed auctions

**Requirement ID** 11

**Priority** Want to have

**Actor** User

**Preconditions** User is logged in. User is at control panel

**Description** Users can view the auctions they have placed

**Path**

1. User selects *placed auctions*
2. System redirects user to user's placed auctions page

**Exceptions** None

**Result** The user views the auctions he or she has placed

### 3.2.3.5 Bid on an auction

**Requirement ID** 12

**Priority** Must have

**Actor** User

**Preconditions**

1. User is logged in
2. User is on an auction page



3. Auction is not of the user

**Description** Members can bid on auctions of other members

**Path**

1. User select *bid*
2. User fills in bidding form
3. User submits form
4. System checks form and if valid places the bid

**Exceptions** Wrong bid value in the form, incomplete form

**Result** The bid is placed on the auction

#### 3.2.3.6 View active auctions

**Requirement ID** 13

**Priority** Want to have

**Actor** User

**Preconditions** User is logged in. User is at control panel

**Description** Users can view the auctions they have bid on

**Path**

1. User selects *active auctions*
2. System redirects user to user's active auctions page

**Exceptions** None

**Result** The user can view the auctions he or she had bid on

#### 3.2.3.7 Modify account information

**Requirement ID** 14

**Priority** Must have

**Actor** User

**Preconditions** User is logged in. User is at control panel

**Description** Members can modify their account information

**Path**

1. User selects *modify account*
2. User changes account information form
3. User submits the form
4. System checks the form and if valid, makes the changes

**Exceptions** Incorrect information, incomplete form

**Result** The account information of the user is changed

### 3.2.3.8 Send a personal message

**Requirement ID** 15

**Priority** Nice to have

**Actor** User

**Preconditions** User is logged in. User is at user page

**Description** Users can send messages to other users

**Path**

1. User selects *send message*
2. User fills in personal message form
3. User submits the form
4. System checks the form and if valid, sends the message

**Exceptions** Incorrect information, incomplete form, users send message to him or herself

**Result** A message is sent to another user

### 3.2.3.9 View personal messages

**Requirement ID** 16

**Priority** Nice to have

**Actor** User

**Preconditions** User is logged in. User is at control panel

**Description** Users can view the personal messages

**Path**

1. User selects *personal messages*
2. System redirects the user the user's personal messages page

**Exceptions** None

**Result** The user will view a page with his or her personal messages

### 3.2.3.10 Delete a personal message

**Requirement ID** 17

**Priority** Nice to have

**Actor** User

**Preconditions** User is logged in. User is at personal messages page

**Description** Users can delete personal messages they have received

**Path**    1. User selects a message  
            2. User selects *delete message*  
            3. System deletes the message

**Exceptions** None

**Result** A message is deleted from the user's inbox

#### **3.2.3.11    Follow an auction**

**Requirement ID** 18

**Priority** Want to have

**Actor** User

**Preconditions** User is logged in. User is at auction page

**Description** Users can follow an auction, i.e. they put it in their following list

**Path**    1. User selects *follow auction*  
            2. System adds auction to the users followed auctions list

**Exceptions** None

**Result** An auction is added to the user's follow auctions list

#### **3.2.3.12    View followed auctions**

**Requirement ID** 19

**Priority** Want to have

**Actor** User

**Preconditions** User is logged in. User is at control panel

**Description** Users can view the auctions they are following

**Path**    1. User selects *followed auctions*  
            2. System redirects user to user's followed auctions page

**Exceptions** None

**Result** The user can view the auctions he or she is following

### 3.2.3.13 View Transaction

**Requirement ID** 20

**Priority** Want to have

**Actor** User

**Preconditions** User is logged in. User is at auction page. User bought the item.

**Description** Users can view the transaction of an item they bought

**Path**

1. User selects *view transaction*
2. System forwards user to transaction page of auction

**Exceptions** None

**Result** The user views the transaction of the auction

### 3.2.3.14 Pay transaction

**Requirement ID** 21

**Priority** Want to have

**Actor** User

**Preconditions** User is logged in. User is at transaction page

**Description** Users can pay auctions on the transaction page of an auction

**Path**

1. User selects *pay item*
2. User selects a payment method
3. User performs the payment
4. System notifies the seller that the auction is paid for

**Exceptions** Incorrect information, incomplete form

**Result** The transaction is paid for

### 3.2.3.15 Rate transaction

**Requirement ID** 22

**Priority** Want to have

**Actor** User

**Preconditions** User is logged in. User is at transaction page, user paid transaction

**Description** Users can send rate a transaction after it is paid

**Path**

1. User selects *rate transaction*
2. User fills in rate transaction form
3. User submits the form
4. System checks the form and if valid, rates the transaction
5. System updates the ratings of the user

**Exceptions** Incorrect information, incomplete form

**Result** The transaction is rated

### **3.2.3.16 Add seller to favourites**

**Requirement ID** 23

**Priority** Nice to have

**Actor** User

**Preconditions** User is logged in. User is at user page

**Description** Users can add a seller to their favourites so they can their auctions easily

**Path**

1. User selects *add seller to favourites*
2. System adds the seller to the favourite seller list of the user

**Exceptions** Seller is already in the favourite seller list

**Result** The seller is added to the favourite seller list of the user

### **3.2.3.17 View favourite sellers**

**Requirement ID** 24

**Priority** Nice to have

**Actor** User

**Preconditions** User is logged in. User is at control panel

**Description** Users can view his or her favourite sellers

**Path**

1. User selects *favourite sellers*
2. System redirects user to user's favourite sellers page

**Exceptions** None

**Result** The user will view a page with his or her favourite sellers

### **3.2.3.18 Delete a favourite seller**

**Requirement ID** 25

**Priority** Nice to have

**Actor** User

**Preconditions** User is logged in. User is at control panel

**Description** Users can remove a seller from his or her favourite sellers list

**Path**

1. User selects a seller from the list
2. User selects *delete seller*
3. System removes the selected user from the list

**Exceptions** None

**Result** A seller is removed from user's favourite sellers list

### **3.2.3.19 View salespal**

**Requirement ID** 26

**Priority** Want to have

**Actor** User

**Preconditions** User is logged in. User is at control panel

**Description** Users can view their own personal "bank account" on the site

**Path**

1. User selects *view salespal*
2. System redirects the user to the user's salespal page

**Exceptions** None

**Result** The user is on his or her salespal page

### **3.2.3.20 Top up salespal**

**Requirement ID** 27

**Priority** Want to have

**Actor** User

**Preconditions** User is logged in. User is at salespal page

**Description** Users can add more money on their salespal account

**Path**

1. User selects *top up salespal*

2. Users fills in top up salespal form
3. System checks the form and if valid tops up the account

**Exceptions** Incorrect or incomplete form

**Result** The user tops up his or her salespal account

#### **3.2.3.21 View recommended auctions**

**Requirement ID** 28

**Priority** Nice to have

**Actor** User

**Preconditions** User is logged in. User is at control panel

**Description** Users can view recommended auctions for him or her. This list is generated through tags and categories the user frequently uses

**Path** 1. User selects *view recommendations*  
2. System redirects user to user's recommended auctions page

**Exceptions** None

**Result** The user views a page with recommended auctions for the user

#### **3.2.3.22 View buyer's assistant**

**Requirement ID** 29

**Priority** Want to have

**Description** A user can check the auctions the buyer's assistant has found for his or her preferences

#### **3.2.3.23 Comment on an auction**

**Requirement ID** 38

**Priority** Want to have

**Description** A user can comment on an auction. This comment can be viewed by anyone viewing the auction page

### 3.2.4 Administrator

#### 3.2.4.1 Remove a user

**Requirement ID** 30

**Priority** Must have

**Actor** Administrator

**Preconditions** User is at control panel

**Description** User selects *manage users* and selects a user from the users list.  
After the user is selected, *remove user* is selected.

**Exceptions** None

**Result** A user is removed from the system

#### 3.2.4.2 Remove an auction

**Requirement ID** 31

**Priority** Must have

**Actor** Administrator

**Preconditions** User is at control panel

**Description** User selects *manage auctions* and selects an auction from the auctions list. After the auction is selected, *manage auction* is selected.

**Exceptions** None

**Result** Auction is removed

#### 3.2.4.3 Retract bid

**Requirement ID** 32

**Priority** Want to have

**Description** An administrator can retract a bid from a user when that user has e.g. made a high bid because of a typo

### 3.2.5 Security

#### 3.2.5.1 Encrypted password

**Requirement ID** 33

**Priority** Must have

**Description** Password must be stored encrypted



### **3.2.5.2 CAPTCHA**

**Requirement ID** 34

**Priority** Must have

**Description** When a user registers, he or she has to fill in a CAPTCHA

### **3.2.5.3 Limited login attempts**

**Requirement ID** 35

**Priority** Must have

**Description** A guest may only try to try to log in with a wrong password a fixed number of times

### **3.2.5.4 Extra site for banned users**

**Requirement ID** 39

**Priority** Nice to have

**Description** When a banned user visits the site, he or she will view a special site for banned users

### **3.2.5.5 Cookies**

**Requirement ID** 40

**Priority** Want to have

**Description** Cookies can be created for the user to let the user log in automatically

## **3.2.6 Other**

### **3.2.6.1 Basic e-mail notification**

**Requirement ID** 36

**Priority** Want to have

**Description** User can receive an e-mail when he or she has won an auction, when the item is shipped, when an auction is paid for

### **3.2.6.2 Advanced e-mail notification**

**Requirement ID** 37

**Priority** Nice to have

**Description** User can receive an e-mail when he or she is overbid, when an auction is almost done, with recommended auctions for the user

### 3.3 Database Requirements

All data will be saved in the database. The database must always remain consistent. There will be many concurrent request for the database. A good database structure will be needed.

### 3.4 Design Constraints

1. The design must be object-oriented
2. Design diagrams must be made using UML

### 3.5 Software system attributes

#### 3.5.1 Reliability

Errors in the code will be divided into 2 groups: *small errors* and *fundamental errors*.

Fundamental errors will be corrected within 48 hours after the detection of this error. Small errors (details) will be corrected within a week after the detection of these errors.

#### 3.5.2 Security

- When a user want to recover his or her password, the site will generate a new password and send it to the user's e-mail.
- Communication of sensitive data should be encrypted (e.g. using https)
- Users should only be allowed to try to log in a limited number of times
- When a guests registers for an account, he or she has to fill in a CAPTCHA

### 3.6 Summary

Must have	Want to have	Nice to have
Create new account	Search a user	View recommended auctions
Log in	View active auctions	Send a personal message
Search for an auction	View placed auctions	View personal messages
View auctions of a category	Follow an auction	Delete a personal message
Log out	View salespal	Add seller to favourites
Place an auction	Top up salespal	View favourite sellers
Bid on an auction	View buyer's assistant	Delete a favourite seller
Modify account information	Comment on an auction	Extra site for banned users
Retrieve password	Change currency	Advanced e-mail notification
Remove a user	View auctions with a tag	
Remove an auction	Cookies	
Change language	View followed auctions	
CAPTCHA	View transaction	
Limited login attempts	Pay transaction	
Encrypted password	Rate transaction	
	Retract bid	
	Basic e-mail notification	

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- [2] English auction  
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