

Introduction to Software Engineering

Assignment 1

Dimitri Tabatadze, 2024-10-06

Goal of the Development

My company should have a website where customers will be able to purchase the product and it’s plugins.

Operating Environment

- Target audience: Co-workers and customers of my company.
- Platform:
 - User end: an Up-to-spec web browser running on any device (mobile, desktop).
 - Server: debian 18^.

Functional Requirements

- /FR10/ The store shall offer the basic package iMage-Basics, as well as individual plug-ins and plug-in packages.
- /FR20/ Employees of the sales department should be able to manage products
- /FR21/ they shall be able to enter new plug-ins and plug-in packages into the online system.
- /FR22/ they shall also be able to define prices and time-limited special offers.
- /FR30/ Employees of the marketing departments shall be able to enter a product description, which will be displayed to customers after approval. This description shall contain the functionality of the package offered and a listing of the plug-ins included.
- /FR40/ The store should display the price savings compared to purchasing the included plug-ins individually, for plug-in packages.
- /FR50/ After registration, the user should receive a confirmation message to their e-mail address.
- /FR60/ The customers should be able to purchase software products in the online store only if they have confirmed registration.
- /FR70/ Customers can choose to pay their invoices by direct debit or credit card.
- /FR71/ Customers should be able to define their preferred payment method in the account information.

Product Data

- /PD10/ The system should store and serve products that are available for sale, along with their prices and their descriptions.
- /PD20/ The system should keep track of time-limited special offers.
- /PD30/ The system should store customers’ names, addresses, telephone numbers, e-mail addresses, preferred payment method and a confirmation status.
- /PD40/ Customers shall be able to see the products they have already purchased.

Non-functional (Quality) Requirements

- /QR10/ The product iMage-Basics is to be available at the opening of the online store.
- /QR20/ /FR70/ should happen with a delay of at most 5s.
- /QR30/ The online platform shall support at least 1,000 simultaneous users and be able scale to 10,000 simultaneous users.

System Models

Scenarios

Scenario name	Amanda buys the whole package
Participating actor instances	Amanda: customer
Flow of events	<div>1. Amanda, being a professional graphic designer, knows that the online store for <i>iMage</i> is launching today. She goes to the website <code>buy.image.com</code>. After browsing, she decides to buy the product.</div> <div>2. Amanda sees that before she can buy the software, she has to register. She clicks “Register” and is taken to a page where she enters her name, adress, telephone number and e-mail address. She is also asked to set her preferred payment method.</div> <div>3. After clicking register, she recieves a confirmation message to her e-mail address. After confirming her e-mail, she can finally purchase <i>iMage</i>.</div> <div>4. She goes to the page where she can click “buy iMage”, clicking on which opens a modal which suggests <i>iMage Basicscs</i> — a package containing <i>iMage</i> and a few basic plugins.</div> <div>5. Amanda buys <i>iMage Basics</i>.</div>

Scenario name	Release of an AI inpainting plugin
Participating actor instances	Becca: employee, Chuck: head of sales
Flow of events	<div>1. After the team has worked on it for 5 months, the AI image inpainting plugin is ready for release. Becca was tasked with creating a product entry on the online store for this plugin. She goes to the page accessible only to the employees and clicks “Create new entry”.</div> <div>2. Becca is prompted to enter the name of the product and select the type. She enters the name and selects “plugin” as the type, after which she is asked to upload the software. Then she is asked to provide the description of the product After uploading, she clicks “submit for approval”.</div> <div>3. Chuck, head of sales department sees the product listing submitted by Becca. He reviews and approves it publishing it to the online store.</div>

Use Cases

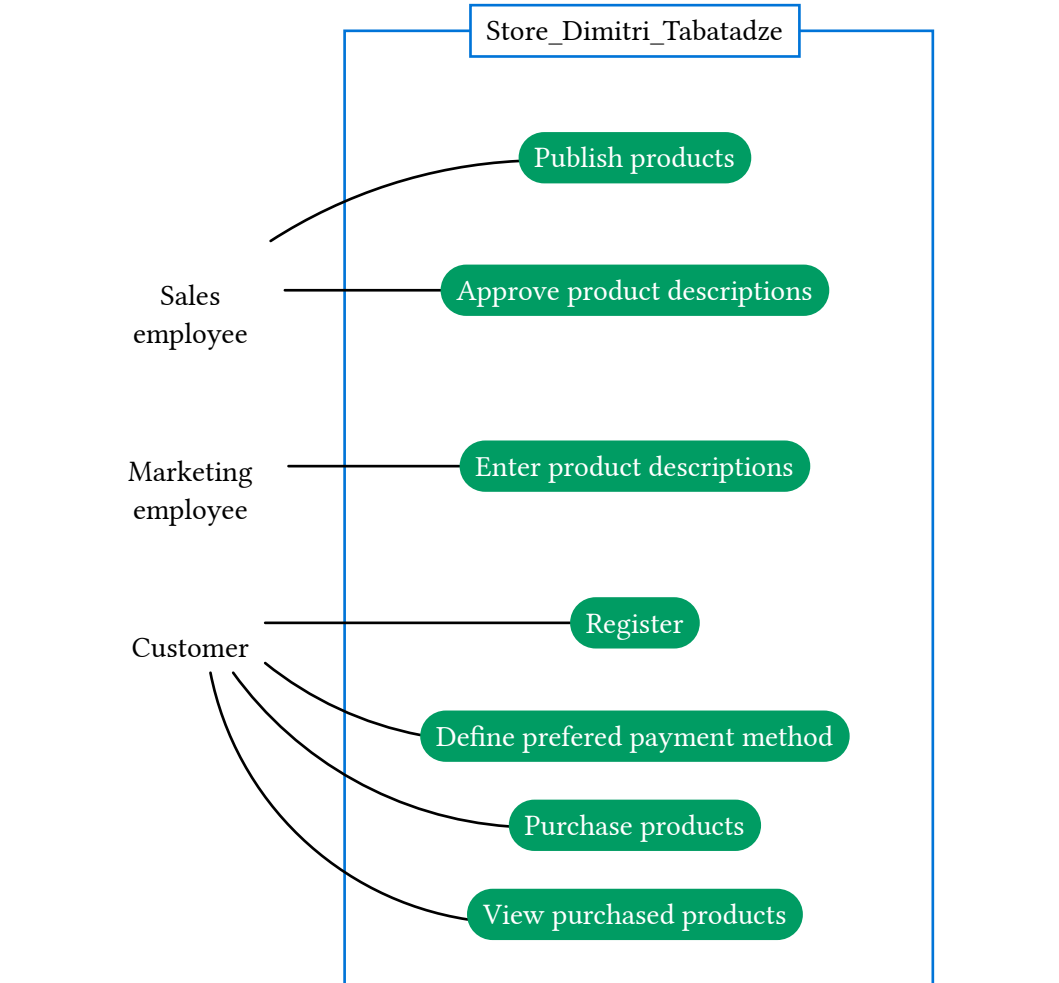


Figure 1: Use case diagram.

Glossary

- Package** A collection of plugins.
- Plugin** A piece of software (A) which can only be used together with a different piece of software (B) to enhance the capabilities of (B).
- iMage-Basics** A package containing some basic plugins.

Feasibility study

Technical Feasibility

- **Server application:** We have great .NET developers in our team, they can spin up a server in a couple weeks.
- **Client application:** We may have to struggle a bit but everything is doable in two months.

Alternative Solutions

Publish on an already existing online software store (play store, app store, microsoft store).

Availability of Personnel

Back-end developers are available. Need to do training for front-end.

Risks

Implementing authorization is a security risk. There's a need to secure user data.

Economic Feasibility

- **Development costs:** Back-end can be developed at fixed-price (without any additional costs that may arise during development). Front-end may suffer, since in-house training may take longer than expected.
- **Maintenance costs:** Most likely very low.
- **Hosting costs:** The servers will be run in-house, only electricity and internet bills to worry about.

Legal Considerations

- **Data security:** User data (name, address, mobile phone number, e-mail) should remain secure. The users should be asked for permission for storing this data.
- **Licenses:** Will only use MIT and GPLv3 licensed software for production.