**IMTSquare Company**

**AnyChange Software**

**System-Wide Requirements Specification**

**v1.0**

**Revision History**

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**AnyChange**

**System-Wide Requirements Specification**

# Introduction

This document is aimed to supply system-wide requirements that are not described as use cases for the project “AnyChange Software”.

# System-Wide Functional Requirements

* Access to the system shall use OAuth 2.0 protocol to authenticate all users.
* The system will store all login information with its metadata up to last 6 months to ensure the user's security.
* The system will logout the user after 15 minutes of idling.
* Users will be able to request deletion of their account and all data related to their account.
* The core module of the system will be subject to intellectual property rights.
* The system shall comply with the licensing requirements as per dependencies. This also applies to cases where an artifact is used from another source such as GitHub.
* All dependencies used are expected to be explicitly licensed as open source.
* All data, hence the database applications and clients are expected to be secure.
* The database instances will only be accessible by the application servers.
* Servers that run the database engines will reject all connections sourcing from the public internet.
* System will not store any passwords in plain text.
* All systems will communicate over TLS.
* System will process online purchases only through ICTA.

# System Qualities

## Usability

* Users will be able to use the software/platform without a specific need for a separate training.
* The system will require and verify only e-mail upon account creation for customers.
* The system will resemble the existing systems to familiarize the users and reduce the learning curve.
* The system will provide step back functionality to allow users to edit their order related information.
* System messages shown to the user will include the current state of the process as well as next actions that can be performed.

## Reliability

* System will be available 7/24.
* Functional uptime of the system will be 166 hours per week (99%).
* Maintenance window for the system will be 2 hours per week.
* System will be subject to a general health check mechanism that checks the status of all system components every 30 seconds.
* System will only support payment via credit/debit card to prevent accounting errors.
* System will run on multiple instances in isolated environments for redundancy.
* Upon significant service availability issues, mean time to repair shall be 1 hours.
* Upon detection of minor defects such as GUI glitches, mean time to repair shall be 24 hours.
* Upon detection of critical errors resulting with the general operation of the system is degrading, system will only allow idempotent operations.
* System shall have restore points for databases to allow rollback to a previous deployment for each release.
* System shall store read replicas for all databases up to 14 days for data integrity.
* In case of an unforeseen error where repair time cannot be estimated, system will serve a static maintenance page to the users.

## Performance

* System will allow 100 concurrent users performing any operation on the system for the initial release.
* System will respond within 10 seconds assuming that the client meets the required conditions.
* System will respond within 5 seconds on a user input including communication overhead.
* A new instance for any system module shall startup in 15 seconds.

## Supportability

* System will run on Linux based environments.
* Principal development and operations shall be performed on Ubuntu Server LTS.
* System shall support containerization with Docker.
* User interface will be available on all major browsers.
* User interface will support different resolutions.
* All system modules shall support external configuration via variables or files.
* System shall scale up to support 10000 concurrent transactions.
* System will scale up by increasing the number of running servers upon reaching a total computational load of 70% to prevent throttling.
* System will scale down by shutting down servers that are under 20% load (i.e. idle servers).
* System will provide FAQs for the customers.
* Every software component developed will have step by step documentation packaged with its source code to define the overall functionality and how to build the executable artifact from it.
* Software build process will be automated where applicable.
* System shall provide feedback functionality.
* Maintenance and fix releases will be provided whenever necessary.

# System Interfaces

## 4.1 User Interfaces

### 4.1.1 Look & Feel

* The system will have a GUI for all users.
* Users will be able to select and deselect products.
* Premium Users will be able to access special features while regular users won’t.
* The product lists will be designed with a responsive layout that adapts to different screen sizes and devices.
* All planes and panels within the UI will have round-tipped corners to create a visually pleasing and modern design.

### 4.1.2 Layout and Navigation Requirements

* The products shall be grouped together with their respective categories to provide easy navigation for customers to find the products they are looking for.
* Users will be shown that the product is selected or deselected due to different coloring.
* Users will be able to navigate through product pages and profile pages by GUI.
* Users will be able to expand and collapse categories for better visibility.

### 4.1.3 Consistency

* System will show only prices of selected products.
* System will present the prices in the same order and layout.
* System will show a loading prompt to the user during getting the prices.
* System will prompt a warning when any required information is wrong or missing.
* All interactions will prompt a temporary success/failure message to the user.

### 4.1.4 User Personalization & Customization Requirements

* Only the Premium Users will be able to see notification settings while others won’t.
* Only the Sellers will be able to see product settings while others won’t

## 4.2 Interfaces to External Systems or Devices

### 4.2.1 Software Interfaces

* The system should support multiple web scraping APIs or frameworks, with built-in integration that allows users to easily select and use their preferred tools.
* The system should have clear documentation and user guides, providing users with the necessary information and instructions to effectively use the software.
* The system should have built-in security features, such as authentication and authorization mechanisms, to protect sensitive data and prevent unauthorized access.

### 4.2.2 Hardware Interfaces

* The system should be compatible with common hardware devices such as desktops, laptops, tablets, and mobile devices, with a responsive design that adapts to different screen sizes and resolutions.
* The system should be able to connect to the internet securely and reliably, with support for common network protocols such as HTTPS and SSL.
* Hardware specs rules will apply to the system.

### 4.2.3 Communications Interfaces

* The system should be able to interface with external systems or services using web-based APIs such as REST or SOAP, allowing it to exchange data and perform tasks with other software applications.
* The system should be able to transfer files to and from external systems using standard file transfer protocols such as FTP or SFTP.
* The system should be able to interface with cloud-based services such as Amazon Web Services or Microsoft Azure, allowing it to access cloud-based data storage, processing, and analysis capabilities.

# Business Rules

* 1. Account management administrators

Along with regular administrators, there will be customer support and maintenance personnel assigned to designated sellers and e-commerce platforms a.k.a “enterprise customers”, whose authorities shall cover specific tasks for relevant sellers and e-commerce platforms. In that regard, these authorities may be extended for some cases and limited for other cases as required.

* 1. AI validation and verification (V&V) tests

AI validation and verification (V&V) tests shall be distributed to interested sellers and e-commerce platforms only with a mutual non-disclosure agreement. Relevant customer support and maintenance personnel shall be able to see the NDA in place or not. The relevant sellers and e-commerce platforms shall be able to access these V&V documentation online via application.

* 1. Rating based promo

Any seller with a rating 4.9 over 5.0 with more than 1000 user reviews shall earn a special promo for advertised content, to be activated or not at their own discretion.

# System Constraints

* System will be written using microservice architecture to allow for horizontal scalability in the future.
* The backend of the system will be written using Java 17.
* Spring Boot Framework will be used in the backend applications.
* System will use PostgreSQL 15.2 as the database.
* The data collection module will be developed separately and will be written in Python 3.11.2. The backend will interface with the data collection module using Jython 2.7.3.
* The frontend will be written using Vue.js.
* Frontend will work on Chrome, Firefox, Safari, Edge, Opera browsers on both Windows and Linux.

# System Compliance

## Licensing Requirements

There is no licensing requirement.

## Legal, Copyright, and Other Notices

All relevant legal information per GDPR and ICTA rules shall be provided.

## Applicable Standards

Please see section 7.2 above and Vision document for relevant speciications.

# System Documentation

* Online FAQ will be created by the development team until transition phase, after which it will be contributed by the customer support team and modified and maintained by maintenance team.
* Online Help will be created by the development team until transition phase, after which it will be contributed by the customer support team and modified and maintained by maintenance team.