**Software Requirements Specification**

**for**

Delivery Company

**Version 1.0 approved**

**Prepared by Strimbeanu Mihai**

**Gavrila Sebastian**

**Sbaroi Ionut-Alexandru**

**MSA SRL**

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**Revision History**

| **Name** | **Date** | **Reason For Changes** | **Version** |
| --- | --- | --- | --- |
| Sbaroi Ionut-Alexandru | 12/03/2024 | - added content to Intended Audience and Reading Suggestions - added content to Product functions  - added team members, creation date, and name of the project on the cover | 1.1 |
| Sbaroi Ionut-Alexandru | 15/03/2024 | -added content to Product Scope | 1.2 |
| Sbaroi Ionut-Alexandru | 15/03/2024 | -added content Operating Environment | 1.3 |
| Sbaroi Ionut-Alexandru | 15/03/2024 | -added content Hardware Interfaces | 1.4 |
| Strimbeanu Mihai-Alexandru | 18/03/2024 | - added 5 new system features | 1.5 |
| Sbaroi Ionut-Alexandru | 23/03/2024 | - added 5 new system features  - added content for Security Requirements - added content for Software Interfaces | 1.6 |

# **Introduction**

## **Purpose**

*<Identify the product whose software requirements are specified in this document, including the revision or release number. Describe the scope of the product that is covered by this SRS, particularly if this SRS describes only part of the system or a single subsystem.>*

*// scopul aplicatiei*

## **Document Conventions**

*<Describe any standards or typographical conventions that were followed when writing this SRS, such as fonts or highlighting that have special significance. For example, state whether priorities for higher-level requirements are assumed to be inherited by detailed requirements, or whether every requirement statement is to have its own priority.>*

*// template abrevieri termeni etc*

## **Intended Audience and Reading Suggestions**

Types of Readers:

*-Developers: Developers will be interested in the detailed technical specifications, including system architecture, database design, and API documentation.*

*-Marketing Staff: Marketing staff may be interested in the high-level features and functionalities of the software to better grasp its market positioning and potential customer benefits.*

*-Users: Users will want to know how to interact with the system, including user authentication, order placement, and tracking functionalities.*

*-Testers: Testers will look for detailed functional and non-functional requirements to create test cases and ensure the software meets the specified criteria.*

*// partial adresat pentru marketing*

*// admin la fel*

*//*

*The SRS provides a detailed look into the Courier Management System. It covers everything from its scope, functional and non-functional requirements, system architecture, user roles, and security considerations. Additionally, you'll find in-depth descriptions of system behaviors, interfaces, and data requirements within the SRS.*

## **Product Scope**

*The software we're talking about here is a web application for a delivery company. Its main purpose is to make order management easier and more efficient. With this app, users can create, delete, and track orders, as well as automatically assign them to delivery employees.*

*Here are the key objectives and benefits of using this application:*

*-Efficient Order Management: This app will make it seamless for users to create and delete orders, reducing the need for manual effort and minimizing errors that can happen with traditional methods.*

*-Order Tracking: Users will be able to easily track the status and history of their orders, giving them transparency and improving customer satisfaction.*

*- Automated Assignment: The application will automate the process of assigning orders to delivery employees based on factors like proximity, workload, and availability. This feature aims to optimize delivery routes and ensure orders are fulfilled on time.*

*- Enhanced Productivity: By automating repetitive tasks and providing user-friendly interfaces for order management, this application will boost the productivity of both users and delivery employees.*

*-Improved Customer Experience: The app's efficient order handling and timely delivery will greatly enhance the overall customer experience, leading to customer loyalty and retention.*

*- Alignment with Business Goals: This software aligns perfectly with the company's goals of improving operational efficiency, optimizing resource utilization, and providing exceptional customer service.*

*By offering a centralized platform for order management and utilizing automation for order assignment, this web application aims to revolutionize the way orders are processed and fulfilled. Ultimately, it will contribute to the company's success in the competitive delivery services market.*

## **References**

*<List any other documents or Web addresses to which this SRS refers. These may include user interface style guides, contracts, standards, system requirements specifications, use case documents, or a vision and scope document. Provide enough information so that the reader could access a copy of each reference, including title, author, version number, date, and source or location.> – standarde de programare*

# **Overall Description**

## **Product Perspective**

*<Describe the context and origin of the product being specified in this SRS. For example, state whether this product is a follow-on member of a product family, a replacement for certain existing systems, or a new, self-contained product. If the SRS defines a component of a larger system, relate the requirements of the larger system to the functionality of this software and identify interfaces between the two. A simple diagram that shows the major components of the overall system, subsystem interconnections, and external interfaces can be helpful.> – diagrama flow/ serviciu*

## **Product Functions**

*User Authentication and Access Control:*

*-Users can log in with a username and password.*

*-Different user roles (Administrator, Client, Courier) have distinct access privileges.*

*Order Management:*

*-Users can place, cancel, and confirm orders.*

*-System automatically assigns couriers based on various criteria*

*-Users can monitor order status and view order history.*

*User Management:*

*-Administrators can add, edit, and manage employees.*

*-Couriers can mark the start and end of their workday/delivery and update order status.*

*Vehicle Management:*

*-Administrators can allocate and manage vehicles for courier operations.*

*Data Viewing:*

*-Users can view real-time information about orders, deliveries, and courier assignments.*

*Security:*

*-Ensure the protection of personal and sensitive data.*

## **User Classes and Characteristics**

*<Identify the various user classes that you anticipate will use this product. User classes may be differentiated based on frequency of use, subset of product functions used, technical expertise, security or privilege levels, educational level, or experience. Describe the pertinent characteristics of each user class. Certain requirements may pertain only to certain user classes. Distinguish the most important user classes for this product from those who are less important to satisfy.>*

## **Operating Environment**

*Hardware Platform:*

*The servers hosting the application should have the capability to support the .NET framework and SQL Server. It is important to ensure that the hardware meets the minimum requirements in terms of CPU, RAM, and disk space to handle the expected workload and data storage needs.*

*Operating System and Versions:*

*During development and testing, the application will primarily be focused on Windows-based operating systems. For server deployment, it is recommended to use Windows 10 or 11, every version after version 1507 of Windows 10 is suitable .For development environments, Windows 10 or 11 is recommended.*

*Software Components:*

*The application will be developed using the MVC architecture with .NET 8, which ensures compatibility with the latest features and enhancements provided by the framework. SQL Server will be used as the relational database management system to store and manage data related to orders, users, delivery employees, and other relevant entities. Compatibility with SQL Server versions compatible with .NET 8 need to be minimum SQL Server 2005. Visual Studio 2022 or later will serve as the primary IDE for designing, coding, debugging, and testing the application. When it comes to web servers, options like Internet Information Services (IIS), Apache HTTP Server, Azure Devops WebApp and AWS can be chosen, as long as they are compatible with ASP.NET MVC applications and have the necessary configurations to support .NET applications.*

*Other Considerations:*

*To provide a consistent user experience across different platforms, the web application will be designed to be compatible with modern web browsers such as Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari. Security measures will also be integrated into the application, user authentication, authorization mechanisms, and data encryption, to protect sensitive information, everything built using EntityFramework.Identity Nuget package from .NET.*

## **Design and Implementation Constraints**

*<Describe any items or issues that will limit the options available to the developers. These might include: corporate or regulatory policies; hardware limitations (timing requirements, memory requirements); interfaces to other applications; specific technologies, tools, and databases to be used; parallel operations; language requirements; communications protocols; security considerations; design conventions or programming standards (for example, if the customer’s organization will be responsible for maintaining the delivered software).>*

## **User Documentation**

*<List the user documentation components (such as user manuals, on-line help, and tutorials) that will be delivered along with the software. Identify any known user documentation delivery formats or standards.>*

## **Assumptions and Dependencies**

*<List any assumed factors (as opposed to known facts) that could affect the requirements stated in the SRS. These could include third-party or commercial components that you plan to use, issues around the development or operating environment, or constraints. The project could be affected if these assumptions are incorrect, are not shared, or change. Also identify any dependencies the project has on external factors, such as software components that you intend to reuse from another project, unless they are already documented elsewhere (for example, in the vision and scope document or the project plan).> – aici third party*

# **External Interface Requirements**

## **User Interfaces**

*<Describe the logical characteristics of each interface between the software product and the users. This may include sample screen images, any GUI standards or product family style guides that are to be followed, screen layout constraints, standard buttons and functions (e.g., help) that will appear on every screen, keyboard shortcuts, error message display standards, and so on. Define the software components for which a user interface is needed. Details of the user interface design should be documented in a separate user interface specification.>*

## **Hardware Interfaces**

**Web Interface (User Interface):**

Logical Characteristics: The web interface offers a user-friendly platform that can be accessed through web browsers on different devices like desktops, laptops, tablets, and smartphones.

Physical Characteristics: Users interact with the application by using graphical elements such as buttons, forms, and menus that are displayed on their device screens.

Data and Control Interactions: Users input data (e.g., order details) and control application actions (e.g., creating or deleting orders) by sending HTTP requests to the web server. The server processes these requests and responds with the appropriate data or status updates.

**Database Interface:**

Logical Characteristics: The database interface enables the storage, retrieval, and manipulation of data within the SQL Server database management system. Physical Characteristics: Data is stored in tables within the SQL Server database, where each table represents a specific entity (e.g., orders, customers, employees).

Data and Control Interactions: The application communicates with the database using SQL queries and commands like SELECT, INSERT, UPDATE, and DELETE. These operations allow for tasks such as retrieving order information, adding new orders, updating order statuses, and deleting orders The connection and the queries are established using EntityFrameworkCore from .NET framework.

**Server Interface:**

Physical Characteristics: The web application is deployed on a server environment, which can be either physical or virtual. It runs the necessary operating system and hosting software (e.g., IIS, Azure, AWS).

Data and Control Interactions: The application server receives HTTP requests from clients (web browsers) and processes them. It executes the required methods and services’s callsand interacts with the database as needed. Finally, it generates HTTP responses that contain the requested data or HTML content for rendering on the client side, based on the page view the user is accessing.

By describing these interface characteristics, the software product's interactions with hardware components are clear, ensuring a comprehensive understanding of how data and control flow between the software and the underlying hardware infrastructure.

## **Software Interfaces**

**Bootstrap 5**: This front-end framework is used for designing responsive and attractive user interfaces. It provides a set of CSS and JavaScript components for creating web pages and web applications. The interface between your application and Bootstrap 5 involves utilizing its classes, components, and utilities to style and structure your user interface elements.

**Ajax (Asynchronous JavaScript and XML)**: Ajax is used for making asynchronous HTTP requests from the client-side to the server-side. It allows your web application to update parts of a web page without reloading the entire page. The interface with Ajax involves making requests to your server-side application endpoints and handling the responses asynchronously using JavaScript.

**Entity Framework**: Entity Framework is an Object-Relational Mapping (ORM) framework for .NET applications. It provides a way to interact with databases using .NET objects. The interface with Entity Framework involves defining your data model using classes (entities) and interacting with the database through Entity Framework's APIs for querying, inserting, updating, and deleting data.

**Identity Framework**: Identity Framework is used for authentication and authorization in ASP.NET applications. It provides a set of APIs for managing user authentication, user accounts, roles, and permissions. The interface with Identity Framework involves integrating it into your application to handle user registration, login, logout, password management, and access control.

## **Communications Interfaces**

*<Describe the requirements associated with any communications functions required by this product, including e-mail, web browser, network server communications protocols, electronic forms, and so on. Define any pertinent message formatting. Identify any communication standards that will be used, such as FTP or HTTP. Specify any communication security or encryption issues, data transfer rates, and synchronization mechanisms.>*

# **System Features**

*<This template illustrates organizing the functional requirements for the product by system features, the major services provided by the product. You may prefer to organize this section by use case, mode of operation, user class, object class, functional hierarchy, or combinations of these, whatever makes the most logical sense for your product.> -50*

## User Registration

* + 1. Description and Priority

Description: Allow potential users to register with the system by providing necessary information, enabling them to create an account and access the system's functionalities.

Priority: High

* + 1. Stimulus/Response Sequences

Stimulus: User navigates to the registration page.

Response: System prompts the user to enter registration information.

Stimulus: User presses the Register button.

Response: System validates entered information and proceeds accordingly.

* + 1. Functional Requirements

REQ-1: The system shall prompt the user to enter their email address in a text field (mandatory).

REQ-2: The system shall prompt the user to enter their desired password in a password field (mandatory).

REQ-3: The system shall check if the provided email address already exists in the system.

REQ-4: The system shall check if the provided password meets the system's criteria for complexity and length.

REQ-5: If all checks (email address availability and password criteria) are passed, the system shall create a new user account with the provided email and password.

REQ-6: Upon successful registration, the system shall progress the user to the login page.

REQ-7: If any other errors occurred during registration, the system shall notify the user that registration has been unsuccessful without specifying the reason.

REQ-8: If there are multiple problems regarding the fields validation, the system shall allow the user to retry the registration process.

## User Login and Navigation

* + 1. Description and Priority

Enable potential users to log in with their credentials, navigate through the system's functionalities, and view their name/email in the navbar for easy access to logout.

Priority: High

* + 1. Stimulus/Response Sequences

Stimulus: User navigates to the Login page.

Response: System prompts the user to enter login information.

Stimulus: User presses the Login button.

Response: System validates entered information and proceeds accordingly.

* + 1. Functional Requirements

REQ-1: The system shall prompt the user to enter their email address in a text field (mandatory), if the email is not provided, the system shall display an error message prompting the user to enter their email.

REQ-2: The system shall prompt the user to enter their password in a password field (mandatory),

if the password is not provided, the system shall display an error message prompting the user to enter their password.

REQ-3: The system shall check if the entered email/ and password fields are completed correctly, if any of the fields are incomplete, the system shall inform the user to complete them.

REQ-4: The system shall verify if there is a user with the provided email and password that matches a saved user in the database, if the email and password combination do not match any user in the database, the system shall inform the user of incorrect credentials and prompt them to try again.

REQ-5: If the login is successful, the system shall redirect the user to the Home page (About).

REQ-7: The system shall display only the pages the user has rights to based on their role.

## User Navbar display

* + 1. Description and Priority

Display the name/email of the logged-in user in the navbar.

Priority: Medium

* + 1. Stimulus/Response Sequences

Stimulus: User successfully logs into the application.

Response: Name/email of the authorized user is displayed in the right corner of the application navbar.

Stimulus: User clicks on the displayed name/email in the navbar.

Response: Dropdown menu is displayed.

* + 1. Functional Requirements

REQ-1: Upon successful login, the system shall display the name/email of the authorized user in the right corner of the application navbar.

REQ-2: When the user clicks on the displayed name/email in the navbar, the system shall display a dropdown menu.

## User Logout

* + 1. Description and Priority

Provide the option to sign out from the application.

Priority: High

* + 1. Stimulus/Response Sequences

Stimulus: User selects the "Sign Out" option from the dropdown menu.

Response: User is logged out from the application and redirected to the Log In page.

* + 1. Functional Requirements

REQ-1: The dropdown menu shall include options, including "Sign Out".

REQ-2: Upon selecting the "Sign Out" option from the dropdown menu, the system shall log the user out from the application.

REQ-3: After logging out, the system shall redirect the user to the Log In page.

## Home Page Redirection and Information Display

* + 1. Description and Priority

Redirect signed-in users or employees to the Home page upon logging in, where they can view a short description of the application and the cities serviced by the Delivery Company.

Priority: High

* + 1. Stimulus/Response Sequences

Stimulus: User successfully logs in.

Response: System automatically redirects the user to the Home page.

* + 1. Functional Requirements

REQ-1: Upon logging in, the system shall redirect the user to the Home page.

REQ-2: The Home page shall display a descriptive text about the application. (for users/employees, the description about the application shall be presented in read-only mode).

REQ-3: The Home page shall contain a table listing the cities serviced by the Delivery Company. (for users/employees, the table displaying cities shall be in read-only mode)

REQ-4: The application logo shall be prominently displayed on the Home page.

## Orders Page Access and Viewing

* + 1. Description and Priority

Allow users to access the Orders page to view the history and status of their orders.

Priority: High

* + 1. Stimulus/Response Sequences

Stimulus: User successfully logs in.

Response: User can select the Orders page from the navigation bar.

* + 1. Functional Requirements

REQ-1: Upon logging in, the user shall have the option to select the Orders page from the navigation bar.

REQ-2: The Orders page shall display a history of past orders along with their current status.

REQ-3: The user shall be able to view order details on the Orders page, including order ID, items, destination, status, price, and other order details.

## Manage Users Page

* + 1. Description and Priority

Allow administrators to access the Manage Users page for creating new users with various roles, managing existing users, and viewing a list of users categorized by their roles.

Priority: High

* + 1. Stimulus/Response Sequences

Stimulus: Administrator successfully logs in.

Response: Administrator can select the Manage Users page from the Navigation bar.

* + 1. Functional Requirements

REQ-1: Upon logging in, the administrator shall have the option to select the Manage Users page from the Navigation bar.

REQ-2: The Manage Users page shall provide options to create new users, manage existing users, and display a list of users categorized by their roles.

REQ-3: The administrator shall be able to create new users by providing necessary information such as username, password, email, and role selection (including Admin role).

REQ-4: The administrator shall be able to manage existing users by updating their credentials or information as needed.

REQ-5: Users shall be listed along with their basic information, such as username, email, and role.

REQ-6: Actions performed by the administrator, such as creating new users or updating existing ones, shall be saved and reflected in the system.

## Home Page Description Editing

* + 1. Description and Priority

Allow administrators with the Admin Role to access the Home page and edit/update the description of the application.

Priority: Medium

* + 1. Stimulus/Response Sequences

Stimulus: Administrator with Admin Role successfully logs in.

Response: System directs the administrator to the Home page.

* + 1. Functional Requirements

REQ-1: Upon logging in, the system shall direct the administrator with the Admin Role to the Home page.

REQ-2: The Home page shall display the current description of the application.

REQ-3: The administrator with the Admin Role shall have the ability to edit and update the description of the application directly on the Home page.

REQ-4: Changes made to the description by the administrator shall be reflected immediately upon saving.

## Orders Page Access and Control for Administrators

* + 1. Description and Priority

Allow administrators to access the Orders page with the ability to view the history and status of all orders, regardless of the user who created them. Additionally, grant administrators full control over canceling orders that are not yet in transit.

Priority: Hight

* + 1. Stimulus/Response Sequences

Stimulus: Administrator successfully logs in.

Response: Administrator can select the Orders page from the navigation bar.

* + 1. Functional Requirements

REQ-1: Upon logging in, the administrator shall have the option to select the Orders page from the navigation bar.

REQ-2: The Orders page shall display the history of all orders, including details such as order ID, items, destination, user, and status.

REQ-3: The administrator shall be able to view the status of each order and identify orders that are not yet in transit.

REQ-4: The administrator shall have full control over the canceling status of orders, with the ability to cancel orders that are not yet in transit.

REQ-5: If necessary, the administrator shall be able to review order details to assist users or resolve any issues.

## Visual Loading Animation

* + 1. Description and Priority

Implement visually appealing loading animations to provide feedback to users during page transitions and various actions, enhancing the user experience.

Priority: Low

* + 1. Stimulus/Response Sequences

Stimulus: User triggers an action that requires loading or processing time (e.g., submitting a form, fetching data).

Response: Visual loading animation is displayed during the loading process.

* + 1. Functional Requirements

REQ-1: The loading animation shall provide feedback to the user about the loading progress, ensuring it is intuitive and visually appealing.

REQ-2: Whenever the user triggers an action that requires loading or processing time, such as submitting a form or fetching data, a loading animation shall be displayed.

REQ-3: During the loading process, the rest of the user interface shall be partially obscured or disabled to prevent user interaction until the operation is complete.

# **Other Nonfunctional Requirements**

## **Performance Requirements**

*<If there are performance requirements for the product under various circumstances, state them here and explain their rationale, to help the developers understand the intent and make suitable design choices. Specify the timing relationships for real time systems. Make such requirements as specific as possible. You may need to state performance requirements for individual functional requirements or features.>*

## **Safety Requirements**

*<Specify those requirements that are concerned with possible loss, damage, or harm that could result from the use of the product. Define any safeguards or actions that must be taken, as well as actions that must be prevented. Refer to any external policies or regulations that state safety issues that affect the product’s design or use. Define any safety certifications that must be satisfied.>*

## **Security Requirements**

**User Identity Protection:**

-Implement measures to protect user identities and sensitive information stored within the system, such as encryption of stored passwords and sensitive user data.

**Access Control:**

-Regularly review and update access control policies to ensure that users are assigned appropriate roles and permissions based on their responsibilities within the application.

**Data Protection:**

-Maintain data protection measures, such as encryption of sensitive data at rest and in transit, to safeguard user data against unauthorized access or disclosure.

-Implement data retention and disposal policies to securely manage and dispose of user data.

## **Software Quality Attributes**

*<Specify any additional quality characteristics for the product that will be important to either the customers or the developers. Some to consider are: adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, reusability, robustness, testability, and usability. Write these to be specific, quantitative, and verifiable when possible. At the least, clarify the relative preferences for various attributes, such as ease of use over ease of learning.> –10*

## **Business Rules**

*<List any operating principles about the product, such as which individuals or roles can perform which functions under specific circumstances. These are not functional requirements in themselves, but they may imply certain functional requirements to enforce the rules.>*

# **Other Requirements**

*<Define any other requirements not covered elsewhere in the SRS. This might include database requirements, internationalization requirements, legal requirements, reuse objectives for the project, and so on. Add any new sections that are pertinent to the project.>*

**Appendix A: Glossary**

*<Define all the terms necessary to properly interpret the SRS, including acronyms and abbreviations. You may wish to build a separate glossary that spans multiple projects or the entire organization, and just include terms specific to a single project in each SRS.>*

**Appendix B: Analysis Models**

*<Optionally, include any pertinent analysis models, such as data flow diagrams, class diagrams, state-transition diagrams, or entity-relationship diagrams*.>

**Appendix C: To Be Determined List**

*<Collect a numbered list of the TBD (to be determined) references that remain in the SRS so they can be tracked to closure.>*