UNIVERSIDAD TECNOLÓGICA DE TIJUANA

SOFTWARE DEVELOPMENT AND MANAGEMENT ENGINEERING

TITLE:

“TEXTILE BACKTRACKING SYSTEM”

TEAM MEMBERS:

ACOSTA LUQUE HECTOR GONZALO
GALVEZ SILVAS ANGEL
GARCIA SILVA MARCO ENRIQUE
REYES REYES JORGE
VERDIN RAMOS ALDRICH BENNY

GROUP:

10°A IDGS

DUE DATE:

MONDAY, JANUARY 13, 2025

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1. INTRODUCTION.

The following Software Requirement Specification (SRS) document will be based on the IEEE 830 standard. The structure will be divided into purpose, system scope, definitions, references and a general overview of the document.

In the following point, the purpose of the SRS will be defined, to whom the documentation is addressed, as well as the scopes of the system (what it will do, what it will not do, benefits, objectives, achievable goals, among others). Once concluded, the definitions of acronyms or abbreviations will be given. Then, a general description of the project will be given, along with the definition of its functionalities, dependencies and future requirements.

1.1. PURPOSE.

The purpose of this document is to define the functional and non-functional requirements of the system to be developed. The SRS serves as a form of communication with the stakeholders and provides a basis for the design, development, evaluation and change control of the system. In addition, it acts as a reference documentation for future stages of the project.

1.2. SCOPE OF PROJECT.

The Textile Backtracking System is a web and mobile application designed to facilitate the processes of textile industries or companies that collaborate with different clients. Through existing services (APIS), the system allows the connection and request of products between the client and the contact, which the contact will allow to deny or accept the request for the items and notify the personnel of the area in charge of the product for the monitoring and updating of the status and follow-up of the request. On the other hand, the system will not manage internal warehouses and inventories or the production of these items. The system does not offer a sales section so no financial transactions are made. In addition, the system will not be in charge of the maintenance of materials and production equipment.

Main functions:

- **User registration:** Allows customers, administrators and area managers to register on the platform using validation forms.
- **Profile management**: Users can create and update their profile, including personal information and password updates.
- **Textile product display:** Customer users will be able to view the products that are available and in stock.
- **Product request:** Customers will be able to request products, available by choosing between different points, such as color and size.
- **Connection between customer and administrator:** Facilitate negotiations between the customer and administrator for clarification, quotation and acceptance of the order.
- **Order monitoring:** View the process in which the order is from cutting to packaging.

Benefits of the system:

- Customer access to the administrator is facilitated for negotiations.
- It prevents loss of stock and provides greater monitoring of where the products are at a given time.
- It improves direct connections between the administrator and the area managers to improve the order preparation process.
- It saves time in searching for products through preferences once a product has been ordered.
- Both administration, clients and area managers will have access to accurate and up-to-date information on product requests.

Objectives and goals:

- Strengthen the customer network. Promote interaction and mutual support between managers and customers.
- Improve product visibility. Increase the diffusion of textile products by maximizing exposure to a global market.

- Satisfaction and feedback. Create a system that allows managers to improve the efficiency of the internal processes carried out.
- Adaptation to market needs. Keep the platform updated based on trends and user feedback.

1.3. GLOSSARY.

Nombre	***Descripción***
Software	Term referring to computer programs and related data used to operate and control computing devices.
Interface	Point of interaction between a user and a system or device.
SRS (Software Requirement Specification):	Document or set of documents that describe in detail the functional and non-functional requirements and specifications of a software system, also used as a basis for the design, development and testing of the software, and serves as a guide for developers and the project team.
Operating System	A set of computer programs that allows for the efficient management of a computer's resources. These programs start working as soon as the computer is turned on, since they manage the hardware from the most basic levels and also allow interaction with the user.
FR (Functional Requirement)	These are statements of the services that the system will provide, in the way it reacts to certain inputs.
NFR (Non-Functional Requirement)	These are requirements that do not directly refer to the specific functions provided by the system (user characteristics), but to the properties of the system: performance, security, availability, etc.

API (Application Programming Interface)	An API is a set of definitions, protocols, and tools for building software applications. Basically, it is an interface that allows two applications to communicate with each other and exchange data.
Database	Organized collection of information or data, which is stored in a structured manner and can be easily accessed and manipulated. Databases are used to store and manage all kinds of information, such as user records, inventories, invoices, etc.

1.4. REFERENCES.

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1.5. OVERVIEW OF DOCUMENT.

For this web, mobile and PWA development project, this is a document that provides an overview of the project and establishes the functional and non-functional requirements of the application. It includes a description of the product, in this case the development of the Textile Backtracking System, emphasizing its main features and functionalities, as well as a clear description of the cases that represent the interactions of users with the application. In addition to comprehensively addressing the restrictions, dependencies and risks associated with the project, presenting

mitigation strategies to minimize possible obstacles and contemplating a test plan that ensures the quality and reliability of the application, as well as a deployment plan that seeks the successful implementation of the project.

2. OVERALL DESCRIPTION.

This section will provide an overview of the Textile Backtracking System, covering aspects such as the product perspective, the functions it offers, user characteristics, restrictions, assumptions and dependencies, as well as possible future requirements.

This system seeks to facilitate the internal processes of a textile company. Its main objective is to guarantee the integrity and quality of the customer's order, from the agreement made with the seller, the cutting, to its packaging.

The project consists of developing an application called Textile Backtracking System that will facilitate processes in textile companies. Allowing customers to request products more quickly and easily from the available catalog to be found on the portal, and only wait for their order to be confirmed and on its way.

On the other hand, administrators will be able to monitor orders, customer reviews, product publication and negotiations with customers. The system aims to facilitate these administrative processes by allowing the supervision of textile processes with a real-time update by area managers.

The objective of the system is to enhance the connection with clients and personnel of textile companies, to facilitate the management and control of products in stock and production. Allowing area managers to start the process through the system when an order is approved and confirm the completion of the order in order to proceed with shipping.

2.1. SYSTEM ENVIRONMENT.

This system addresses the issue of transparency that the customer obtains when placing an order within a company, monitoring the movement of the items during their stages, up to their correct packaging and shipment.

The application will be integrated with the company's existing database, allowing the administrator to manage product information and stay in touch with customers. This application will be accessible through a web or mobile device, where the customer can log in and place orders, the administrator can accept or reject orders and contact customers, and finally, the area manager can update the order process.

2.2. FUNCTIONAL REQUIREMENTS SPECIFICATION.

The required functionalities are listed below:

- **User management:**
    - **Roles:** Users will have an assigned role that will delimit the content they have access to and the changes they can make to it.
    - **User registration:** Users with the Administrator role will be able to register users of the other roles.
    - **Customers:**
        - **Customer registration:** Customers will be able to create their accounts from the registration page or the mobile app. They can also be registered by an administrator from the administration page.
- **Orden Management:**
    - **Order request:** Customers will be able to generate an order request from the website or mobile app after logging in.
    - **Request approval:** Administrators will be able to view order requests and approve them once the deal with the customer is done.
    - **Order registration:** Administrators will be able to log the orders they approved from the administration page.
    - **Order status:** Orders will have an assigned status from the request until it is completed.
    - **Order tracking:**
        - **Customer:** Customers will be able to view the current status of their order from the mobile app or website and the details from the request until it is completed.

- **Administrators:** Customers will be able to view the current status of orders from the administration page and modify it if they are not in a work area.
- **Area manager:** Customers will be able to view general order information and the specific work of the area they are in, as well as being able to modify their status while they are assigned to the area.

2.3. USER CHARACTERISTICS.

User type	System administrator
Training	Higher university technician
Skills	Attention to detail, data analysis, software navigation skills
Activities	● View general information for each order assigned to the area (order number, status, products involved, customer, etc.) ● Check the history and current status of the order

User type	Head of area
Training	Higher Technician in industrial Processes
Skills	Ability to interpret and manage information related to the area, organization, decision-making. Knowledge of specific tasks within the assigned area. Analytical capacity, organization, reporting skills. Training in the use of project management tools and progress reporting.
Activities	● View the specific work of the area to which you are assigned. This includes details related to tasks that need to be performed within your area, such as order progress and actions that are pending or in progress ● Control that area activities are performed correctly ● Track the progress of orders within your area

User type	Head of area
Training	Higher Technician in industrial Processes
Skills	Ability to interpret and manage information related to the area, organization, decision-making. Knowledge of specific tasks within the assigned area. Analytical capacity, organization, reporting skills. Training in the use of project management tools and progress reporting.
	● Generate progress reports, task completion, and potential obstacles for supervisors or area managers ● Keep a record of the status and times of each order

User type	Area manager in packaging
Training	Packaging Engineer
Skills	Decision making, ability to manage workflow, handling of tracking software tools. Training in the use of order management software and order status tracking.
Activities	● Change the status of the order while it is assigned to your area ● Change the status of the order as it progresses in your area (for example, from "pending" to "in process" or "completed") ● Ensure that updates are reflected accurately and in real time

User type	Human resources
Training	Bachelor of Human Resources Administration
Skills	Effective communication skills, management of labour relations, ability to resolve conflicts. Training in teamwork and interdepartmental communication.
Activities	● Change the status of the order while it is assigned to your area ● Change the status of the order as it progresses in your area (for example, from "pending" to "in process" or "completed")

User type	Human resources
Training	Bachelor of Human Resources Administration
Skills	Effective communication skills, management of labour relations, ability to resolve conflicts. Training in teamwork and interdepartmental communication.
	● Ensure that updates are reflected accurately and in real time

2.4. RESTRICTIONS.

Company policies:

1. Order management policy.

The objective of this policy is to ensure that all orders are managed efficiently, from receipt to final delivery. Orders must be reviewed by the area manager within the first 24 hours to ensure that they are processed without errors. The status of each order must be updated in real time in the system. Orders must be delivered within the time agreed with the client, except in exceptional circumstances.

2. Inventory control policy.

The objective is to maintain adequate control of the product inventory to avoid shrinkage, losses or shortages. The inventory must be automatically updated with each purchase and sale transaction. In case of shrinkage, losses or damage, the area manager must record and justify the cause in the system. A physical inventory of products must be carried out on a monthly or quarterly basis to verify the accuracy of the inventory system. The area manager must report any anomaly in the inventory to those responsible for the administrative area.

3. Order acceptance.and cancellation policy.

The purpose of this policy is to ensure that orders are accepted, modified or

cancelled in accordance with established procedures. Orders may only be accepted by the area manager once the availability of the inventory and the accuracy of the products ordered have been verified. Order cancellations must be justified and recorded in the system with a clear reason (e.g. lack of stock, order error, payment problems, etc.). In the event of cancellation, the inventory must be updated immediately. Cancellations must be processed within a maximum of 48 hours.

4. Information security and privacy policy.

The objective of this policy is to protect the confidentiality and security of customer, supplier and employee data. All staff must have access to information based on their role and responsibilities (layered security). Passwords must be complex, changed regularly and never shared. Confidential information (such as customer data, financial information, etc.) must be handled in accordance with current data protection legislation. Security measures will be implemented on all computer systems (data encryption, firewalls, etc.) to prevent unauthorized access.

5. Interdepartmental communication and coordination policy.

The objective is to foster clear communication between the different areas of the company. Area managers must coordinate with other areas to ensure that orders move smoothly through the production, distribution, etc. process. All changes in the status of orders must be effectively communicated to the departments involved. Periodic meetings between the different departments must be scheduled to review the progress of orders and resolve operational problems. Area managers must maintain an open communication channel with area managers and supervisors.

6. Performance evaluation and reporting policy.

The objective of this policy is to measure and improve the performance of the areas and personnel involved in the order management process. Performance reports must be generated on a monthly basis, evaluating response times, compliance with deadlines and accuracy of orders. Area managers must send periodic reports on the progress of orders and any problems or delays. Performance

results will be used to identify areas for improvement and conduct training if necessary. The performance of each area will be evaluated based on customer satisfaction and compliance with delivery times.

7. Staff training and development policy.

The objective is to ensure that employees have the necessary skills and knowledge to fulfill their responsibilities. Periodic training will be provided on order handling, use of management software, inventory procedures and customer service. Staff must be kept up to date on new tools or technologies used in the company. Continuous training and professional development of employees will be encouraged so that they can assume greater responsibilities within the company. Training will be periodically evaluated to determine its effectiveness.

8. Quality customer service policy.

The objective is to provide exceptional service to customers and guarantee the quality of the products delivered. All products must undergo quality control before being delivered to customers. The area manager must verify that the delivered orders are correct and in the conditions agreed with the customer. Complaints or returns must be managed quickly and effectively to maintain customer satisfaction. The company will promote a customer service culture within all areas.

9. Legal and regulatory compliance policy.

The objective of this policy is to ensure that the company complies with all applicable local and international regulations. The company must comply with all laws related to workplace safety, data protection, e-commerce, among others. The company's policies will be reviewed periodically to adapt to any changes in legislation. Non-compliance with legal policies will be sanctioned in accordance with the company's internal regulations.

Hardware limitation:

- The system must be compatible with different operating systems, such as

Windows 8+ and Linux/Unix distributions. Its use on other operating systems is not contemplated.

- The system must be compatible with different devices, such as desktop computers, laptops or mobile phones.

Parallel operations:

The application should be able to perform multiple tasks simultaneously, such as allowing users to register and log in while processing product requests and updating order statuses in real time. It should have an easy view for product requests, to reduce the complexity of communication between customers and administrators.

Control functions:

- Users can only access the functions and data corresponding to their assigned permission role (client, administrator, area manager).
- Security measures must be established to protect data and prevent unauthorized access, such as encryption of information and the use of secure communication protocols.

Programming languages:

- The project will use programming languages such as JavaScript, HTML, CSS, and the React (web) and React Native (mobile) frameworks for the front-end. Python and the Django framework will be used for the back-end. MySQL will be used as the database management system.

Security considerations:

- The system shall comply with data privacy regulations to protect users' personal information.
- Security measures shall be implemented to prevent unauthorized access and protect the integrity of system data.

2.5. SUPPOSITIONS AND DEPENDENCIES.

Suppositions:

- Users are expected to already have basic navigation and search skills.
- It is assumed that the user uses a mobile device to use the application and has an internet connection.
- The system will be easy and intuitive for the user.
- Users will be associated with the system through a login to access all functions.
- Users will be willing to provide personal data.
- No financial transactions will be made within the system.
- This system will not be responsible for the maintenance of materials and production equipment.

Dependencies:

- The operating system on which the system will be developed will be Windows (web platform), and must be compatible with the main Linux/Unix distributions, ensuring that it works correctly on the most common browsers such as Chrome, Firefox, Edge, and Safari.
- The system must be responsive, ensuring that it automatically adapts to different screen sizes and resolutions, providing a consistent user experience on mobile devices as well as desktop and laptop computers.
- The system must also comply with all security and data privacy regulations and policies applicable to the management of user information, including, but not limited to, regulations such as GDPR, local data protection laws, and security regulations such as PCI-DSS (if applicable).
- It is important that policies and regulations within the company do not change during the project cycle. In the event of changes, a detailed impact analysis should be performed to understand how these changes should be implemented in the system, adapting functionality as necessary.
- The system depends on the availability of an external database or service that provides essential resources for the application, such as customer data, products, transactions, among others. This database or service must be available and accessible throughout the life cycle of the project.

- The system depends on the production process that the company follows until the product is approved. In case there are changes in this process, a review of the impact of such changes on the system should be performed, rethinking key aspects of the functionality to adjust to the new requirements or production procedures.

2.6. FUTURE REQUIREMENTS

1. **Full system automation.** Develop functionalities that automate search processes and direct application of customers which give direct contact with the administration.

2. **Development of a mobile application.** Create a mobile application that allows graduates to access their data, search for products, view order status, among others.

3. **Integration with social networks and recruitment platforms.** Facilitate integration with social networks to improve outreach.

3. REQUIREMENT SPECIFICATION.

3.1. FUNCTIONAL REQUIREMENTS.

ID	FR-A1
Name	Register user
Type	☒ Requirement ☐ Restriction
Description	Enter user personal data
Characteristics	**General Information:** ID, name, surname, email, password and phone number. For the client user, their address must be registered for delivery of the product. **Detailed information:** Full name, including last name and first name. Email will have a maximum number of characters Address will be where the product will be sent, it must include postal code, street name The password will be repeated if the data matches, an account will be created automatically, if not, the system will throw an error alert.

Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	

ID	FR-A2
Name	User role management
Type	☒ Requirement ☐ Restriction
Description:	This requirement is based on roles with defined permissions and functionalities; the assignment and reassignment of roles to collaborators, ensuring that they have only one role at a time; security mechanisms and access control.
Characteristics	It is characterized by guaranteeing the coherence and synchronization of the information related to the roles, permissions and users throughout the entire role system, which are reflected consistently in other modules, avoiding conflicts or inconsistencies. There will be three users within this system: Client, Administrator and Area Manager, each with different views and functionalities within the system.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	FR-A1. Register user: A registered user must exist to be assigned a role.

ID	FR-B1
Name	Login
Type	☒ Requirement ☐ Restriction
Description	Log in with the registered account.
Characteristics	You will need to enter your email and password. If the credentials are valid, you will be sent to the main page according to your assigned role. If they are not, an alert will be displayed depending on whether the user was approved or not yet approved.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	FR-A1, FR-A2 You must be registered to log in, otherwise you will be redirected to registration.

ID	FR-B2
Name	Personal profile update
Type	☒ Requirement ☐ Restriction
Description	Update data such as phone number and address
Characteristics	Previously written number or address updates cannot be deleted and will be required for ordering.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	FR-A1. Register user: A user must be previously registered to modify their data.

ID	FR-C1
Name	Product Display
Type	☒ Requirement ☐ Restriction
Description	The main content will display the default menu of the page, where once purchases have been made based on the user's preferences, the same category will be displayed. A product catalog will be displayed, allowing customers to consult, search and filter the products available within the list.
Characteristics	The home page will contain information that benefits and suggests the user based on the purchases once made. It should allow the customer to search for products and offer filters so that items can be easily found.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	

ID	FR-C2
Name	Product Request
Type	☒ Requirement ☐ Restriction
Description	Request for items displayed on the page
Characteristics	Users can send an order request to the administrator to create a direct connection and confirm the products and quantity to be purchased.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional

Precondition	

ID	FR-C3
Name	Order tracking.
Type	☒ Requirement ☐ Restriction
Description	Viewing the status of the requested order
Characteristics	Section that will show the status and tracking of the order through a timeline, which will be updated based on the movements made by the area managers and administrators.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	

ID	FR-D1
Name	Viewing orders
Type	☒ Requirement ☐ Restriction
Description	Viewing pending customer orders
Characteristics	List of orders placed by customers where you can see the general details of the order along with the customer's contact information.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	FR-C2. Orders placed by customers are required.

ID	FR-D2
Name	Order acceptance and cancellation
Type	☒ Requirement ☐ Restriction
Description	Acceptance or cancellation of the order
Characteristics	Buttons to accept or reject the order after the negotiation after contact between the client and administrator.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional

Precondition	FR-D1. It will be accepted after contact with the client regarding an order placed by the client.

ID	FR-D3
Name	Order registration
Type	☒ Requirement ☐ Restriction
Description	Record of accepted orders
Characteristics	Order registration after a negotiation is carried out through contact, where all specific order data is recorded, in addition to the client. Order registration data: ● Order ID ● client ● registration date ● estimated delivery date ● quantity by size ● total quantity
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	FR-D1: One of the orders requested by the client must be registered after the contact between the administrator and the client.

ID	FR-D4
Name	Customer visualization
Type	☒ Requirement ☐ Restriction
Description	Client dashboard
Characteristics	Display of the dashboard of previously registered customers in the order registry where all customers can be viewed, as well as being able to delete or edit them.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	FR-D2: The customer must be registered in the order so that it can be viewed.

ID	FR-D5
Name	Catalog registration

Type	☒ Requirement ☐ Restriction
Description	Product and service catalog registration
Characteristics	Record of products and procedures carried out in the company that can be catalogued by unit along with their general details and prices.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	

ID	FR-D6
Name	Catalogue display
Type	☒ Requirement ☐ Restriction
Description	Viewing the product and procedure catalogue
Characteristics	List of products and procedures that the company has carried out, showing their details and prices per unit
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	FR-D4: You need to have data registered in order to view it.

ID	FR-D7
Name	Viewing work order
Type	☒ Requirement ☐ Restriction
Description	Viewing work order tracking
Characteristics	Administrators will be able to view the tracking of work orders on a timeline where they will be able to see which area they are in and which ones they have already passed through, as well as their details by work area.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	

ID	FR-E1
Name	State of order
Type	☒ Requirement ☐ Restriction
Description	Changes to the current status of orders

Characteristics	The administrator will start the order once its status changes to pending and a work area is assigned to it. Area managers will move the order through the pending, in-process and finished statuses of their respective areas. The administrator will finish an order once it does not have to be moved to another work area.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	FR-D3: The order has to be registered

ID	FR-E2
Name	Change of work area
Type	☒ Requirement ☐ Restriction
Description	Handling orders when changing the work area.
Characteristics	When changing the status within a work area the administrator must specify the current number of pieces in the order.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	FR-E1: The order must be assigned to the work area.

ID	FR-F1
Name	Register products in stock
Type	☒ Requirement ☐ Restriction
Description	Add new product arriving to the area
Characteristics	**General information:** ID, name, price, color, size, brief description and quantity. The area manager will be responsible for filling out the information
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	

ID	FR-F2
Name	Stock update
Type	☒ Requirement ☐ Restriction
Description	Update the quantity of product available

Characteristics	There will be a date of when it was updated, a note of why it was updated, and if it was added, lost, or was lost, etc. The quantity of a product may decrease or increase based on what arrives or if losses or shrinkage occur.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	

ID	FR-F3
Name	Finishing order
Type	☒ Requirement ☐ Restriction
Description	The area manager will be able to mark orders as "completed", indicating that all associated tasks have been completed and that the order can be processed for shipment.
Characteristics	The system should update the order status to "completed" and reflect this change in the order tracking.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	

ID	FR-F4
Name	Detailed visualization of order
Type	☒ Requirement ☐ Restriction
Description	The area manager will be able to access detailed information about each order, including products, quantities, prices, customer, status and any relevant notes about the order.
Characteristics	The visualization must include all the details necessary for the area manager to make decisions about the order.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	

ID	FR-F5
Name	Acceptance or cancellation of order
Type	☒ Requirement ☐ Restriction
Description	The area manager will have the ability to accept or cancel orders, as the case may be, based on stock availability or problems with the order (errors, customers, etc.)
Characteristics	The area manager can change the status of the order to "accepted" or "cancelled" and must enter the reason for the action.
Priority	☒ High/Essential ☐ Medium/Desired ☐Low/Optional
Precondition	

3.2. NON-FUNCTIONAL REQUIREMENTS.

ID:	**NFR-01**
Name :	Response time
Type:	Non-functional
Description :	The system must be able to handle multiple user requests simultaneously without experiencing significant delays in response time.
Characteristics:	The system must be able to handle an expected number of requests efficiently, without reducing response time, and specific metrics will be established to measure and monitor system performance, in order to ensure that objectives are met.

Priority:	HIGH

ID:	**RNF02**
Name :	Data security.
Type:	Non-functional
Description :	The system must ensure the security and confidentiality of employee data by implementing appropriate encryption and access control measures.
Characteristics:	Data stored in the system must be protected using robust encryption techniques, ensuring its security. Access and authentication controls will be implemented to ensure that only authorized users can access the system information.
Priority:	HIGH

ID:	**RNF03**
Name :	Escalability
Type:	Non-functional

Description :	The system must be scalable to accommodate future growth of the business, being able to handle an increase in the number of employees and operations.
Characteristics:	The system should be designed in a modular and flexible manner to allow easy expansion and scalability in terms of storage, processing and user capacity.
Priority:	MEDIUM

ID:	**RNF04**
Name :	Intuitive User Interface
Type:	Non-functional
Description :	The user interface of the system should be intuitive and easy to use, with a clear design that facilitates navigation and use by users.
Characteristics:	The user interface should be intuitive and easy to use, with a clean and consistent design that facilitates navigation and task completion.
Priority:	HIGH

ID:	**RNF05**
Name :	System Availability
Type:	Non-functional
Description :	The system must be available and accessible to users during established business hours, minimizing downtime.
Characteristics:	Redundancy and fault tolerance measures will be implemented to ensure that the system is available and accessible to users at all times.
Priority:	HIGH

4. METHODOLOGY AND JUSTIFICATION

KANBAN:

A project management methodology that provides project managers with full transparency into the task management process.

The Kanban method was originally created as a lean manufacturing tool to maximize production efficiency. Since then, it has become a great task management tool for DevOps and agile teams and has evolved to be used in different industries, such as software development.

Justification:

The reason why the kanban methodology was selected is because it allows monitoring the flow of work which is assigned to different team members, it is

adaptable and flexible allowing them to quickly adapt to changes and make decisions based on real-time visualization of the project progress.

5. ARCHITECTURE AND JUSTIFICATION

MODEL-VIEW-CONTROLLER (MVC):

Generally speaking, MVC is a software architecture approach used to separate code by its different responsibilities, maintaining different layers that are responsible for doing a very specific task, which offers various benefits.

MVC is initially used in systems where the use of user interfaces is required, although in practice the same architecture pattern can be used for different types of applications. It arises from the need to create more robust software with a more appropriate life cycle, where ease of maintenance, code reuse and separation of concepts are enhanced.

This MVC pattern will be used because it promotes a clear, modular and flexible structure that improves maintainability, scalability and efficiency of software development, especially in applications where there is a complex or large user interface as the project below.

6. TECHNOLOGIES TO BE USED

For the development of the Textile Backtracking System, a set of technologies has been selected that offer scalability, efficiency, security, and ease of maintenance. The selected technologies are based on scalability, security, and ease of maintenance. React and Django allow for modular development optimized for handling large volumes of data. MVC architecture improves the separation of responsibilities and simplifies code maintenance. Widely adopted tools were chosen, ensuring a large support community and long-term sustainability.

Database:

- ***PostgreSQL*:** A relational database management system that provides data integrity, support for complex queries, and high performance. It handles multiple transactions simultaneously without compromising performance and allows for the management of semi-structured data. It also offers robust backup and data recovery mechanisms.

Programming Languages:

- JavaScript: It is a programming language widely used in web and mobile development. Its flexibility allows the creation of dynamic and interactive interfaces in the frontend, as well as the management of logic in the backend through environments such as Node.js.
- Python: It is a versatile and powerful programming language that will be used in the backend of the system. It has been chosen due to its ease of learning and strong ecosystem in the development of web applications with frameworks such as Django.

Frontend:

- HTML: It is the markup language used to structure the content of web pages. It defines the basic visual elements such as buttons, forms and links, allowing browsers to represent information correctly.
- CSS: It is used to style and improve the visual presentation of the application. It allows the customization of colors, fonts, margins and layout of elements in the interface.
- Bootstrap: It is a CSS framework that facilitates the development of responsive and attractive interfaces with less effort. It provides predefined components such as buttons, forms and navigation menus that speed up frontend development.
- React: A JavaScript library developed by Meta that facilitates the creation of dynamic and responsive interfaces through the use of reusable components.
- React Native: It is a framework derived from React that allows developing mobile applications for iOS and Android using JavaScript. By sharing much of the code with the web version, it reduces costs and development time, ensuring a smooth experience on mobile devices.

Backend:

- Django: A Python-based web development framework that facilitates the creation of secure, scalable and efficient applications. Its MVC-based architecture allows a clear separation of business logic, interface and data model. It protects against common attacks such as SQL injection and

Cross-Site Scripting. It also facilitates database manipulation through Python models.

7. WORKFLOW TOOL

Github is a collaborative development platform that allows programmers to manage, share and store code remotely. It emerged in 2008 as a solution based on Git, a distributed version control system that facilitates code change tracking and collaboration among multiple developers.

As a workflow tool, Github allows teams to organize themselves through repositories, which can be public or private depending on the nature of the project. With a version control system based on Git, it is possible to work in different branches, so it is possible to experiment with functionalities without affecting the stable version of the code.

Justification:

This tool was chosen because of the way it allows collaboration between team members, facilitating version management, code updating and issue tracking. It was chosen over other tools because of its ease of use, integration with multiple services and ease of information search.