"Exploring the startup ecosystem: Development of a visualization tool for entrepreneurial panorama in Peru"

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Abstract

The project focuses on the development of a web tool to visualize and analyze the startup ecosystem in Peru. With a prosperous startup scene backed by the government, the lack of visualization and analysis tools represents a gap that this tool seeks to fill.

The tool will provide detailed information on the starting process, initial financing and technological trends. It is expected to be accessible from the desk and allow users to explore and analyze data related to startups in Peru. In addition, it will offer functionalities such as newsletters, search for specific information and possibly a social media platform for interactions between users.

The team involved in the project will include web developers, user interface designers and data analysis experts. Essential requirements such as data security, system reliability and accessibility to guarantee its success will be established.

The project requires a deep understanding of the Peruvian startup ecosystem, as well as the needs and expectations of users. Legal and cultural aspects will be considered, ensuring compliance with local regulations and respecting the country's cultural diversity.

The main objective of the project is to provide an integral and effective tool that promotes growth and collaboration within the startup ecosystem in Peru, facilitating entrepreneurs access to resources and key information for their success.

1 Introduction

The Software Requirements Specification (SRS) presents a detailed vision of the project focused on the development of a visualization tool for the startup ecosystem in Peru. This section covers the purpose of the project, its scope, key definitions, references used and an overview of the content of the SRS.

1.1 purpose:

The purpose of this project is to design and develop an innovative web tool that allows users to immerse themselves in the vibrant startup ecosystem in Peru. This tool will not only provide easy access to detailed information on the startup process, but will also offer up-to-date data on seed funding, relevant technology trends, and other essential aspects of the country's entrepreneurial landscape. The main objective is to offer a comprehensive platform that facilitates the exploration and analysis of the dynamic world of Peruvian startups, thus promoting knowledge and collaboration within the entrepreneurial community.

1.2 System Scope:

The system to be developed will be a multifunctional web tool, accessible from desktop and mobile devices, that will provide users with a complete experience to explore the startup ecosystem in Peru. In addition to offering detailed information about the startups and their development process, the tool will include advanced functionalities, such as data analysis, trend comparison, social media integration and community interaction options. The scope will range from the collection and presentation of data to the generation of useful insights for entrepreneurs, investors and other actors interested in the Peruvian startup ecosystem.

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1.3 Personnel involved:

1.4 Definitions, acronyms and abbreviations:

Startups: Emerging companies with an innovative and scalable business model, typically in their early stages of development.

SRS: Software Requirements Specification. Document that details the functional and non-functional requirements of the system to be developed.

ERS: Software Requirements Specification. Synonym for SRS, used in this specific context.

UX: User Experience. It refers to the way users interact with the interface and how they perceive the experience.

UI: User Interface. The visible and interactive part of the system through which users interact.

QA: Quality Control. Software quality assurance process through testing and verification.

API: Application Programming Interface. Set of rules and protocols that allow different applications to communicate with each other.

HTML: Hypertext Markup Language. Language used to create and structure content on web pages.

CSS: Cascading Style Sheets. Language used to define the visual appearance and format of elements on a web page.

JS: JavaScript. Programming language used to add interactivity and dynamism to web pages.

SQL: Structured Query Language. Language used to interact with relational databases.

CRM: Customer Relationship Management. System used to manage interactions with clients and potential clients.

FAQ: Frequently Asked Questions. List of common questions and answers on a specific topic.

URL: Uniform Resource Locator. Address that identifies a resource on the Internet.

SEO: Search Engine Optimization. Set of techniques used to improve the visibility of a website in search results.

ROI: Return on Investment. Measurement used to evaluate the profitability of an investment.

KPI: Key Performance Indicator. Metric used to evaluate the performance of a process or system in relation to established objectives.

API: Application Programming Interface. Set of rules and protocols that allow different applications to communicate with each other, facilitating the integration of external systems and services.

1.5 References

article hyperref

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1.6 Resumen

The Software Requirements Specification (ERS) provides detailed guidance for the development of the startup ecosystem visualization tool project in Peru. It is organized into several sections that cover all aspects of the project, from introduction to implementation and maintenance of the system.

Project Introduction: This section provides an overview of the project, including its purpose, scope, and objectives. It also introduces the team involved and defines the definitions and acronyms used throughout the document.

Definitions, acronyms and abbreviations: All technical terms, abbreviations and acronyms used in the ERS are defined here, ensuring a clear and consistent understanding of the documentation.

Functional Requirements: This section details all the functions and features that the system must meet, including startup exploration, information search, data visualization, and more.

Non-functional requirements: The non-functional aspects of the system, such as security, usability, performance and scalability, which are equally important for the success of the project, are described.

System Design: The overall architecture and design of the system is presented here, including the database structure, user interface, and integration of key technologies.

Testing: Test plans and procedures are detailed to ensure the quality and reliability of the system before implementation.

Deployment: The system implementation and deployment process is described, as well as the infrastructure requirements necessary for its operation.

Maintenance: Guidelines and responsibilities are established for the ongoing maintenance of the system once it is in production.

2 Overview

2.1 Product outlook

The startup ecosystem visualization tool in Peru is an independent product designed to be used autonomously. It is not part of a larger system and does not have dependencies on other systems or external components for its operation.

As a standalone product, the tool provides users with a complete platform to explore, analyze and obtain information about the startup ecosystem in Peru. It does not require integration with other systems or applications for proper use.

Therefore, a product situation diagram within a larger system is not provided, as it is not applicable in this case. The tool is self-sufficient and is designed to be used individually by users to satisfy their information needs about startups in Peru.

2.2 Product functionality:

The product must perform the following main functionalities:

Startup Exploration: Allows users to explore a complete list of startups in Peru, with detailed information about each one, such as its name, description, location, sector, and current status.

Advanced Search: Offers an advanced search feature that allows users to search for specific startups using filters such as sector, geographic location, development stage, funding received, among others.

Data visualization: Provides interactive graphs and reports that show trends, statistics and analysis about the startup ecosystem in Peru, including financing, growth, and emerging technologies.

Information: Allows users to access detailed information about the startup process, including necessary steps, available resources, and best practices.

Newsletter Subscription: Offers the possibility of subscribing to a newsletter to receive regular updates about the startup ecosystem in Peru, including news, events, and investment opportunities.

Interaction with the community: Facilitates interaction between users, allowing them to share information, experiences and opinions about startups, as well as participate in discussions and collaborations.

Personalization: Allows users to personalize their experience, saving favorite startups, setting viewing preferences, and receiving personalized recommendations based on their browsing history.

2.3 User Features:

Users of the startup ecosystem visualization tool in Peru have the following general characteristics:

Educational level: Users can have various educational levels, from university students to professionals with postgraduate degrees. They are expected to have an educational level that allows them to understand the information presented in the tool, although an intuitive interface will be provided to facilitate accessibility to users with different educational levels.

Experience in the business field: Users are expected to have some level of experience in the business field, whether as entrepreneurs, investors, academics or sector professionals. They may have previous experience creating or managing startups, or they may be interested in learning more about the startup ecosystem in Peru.

Technical Expertise: An advanced level of technical expertise is not required to use the tool as it will be designed with a friendly and easy-to-use interface. However, users are expected to have basic skills in the use of technology, such as Internet browsing and handling web applications.

2.4 Restrictions:

The following restrictions are imposed on product developers:

- Company Policies: Developers must comply with the internal policies and regulations of the company overseeing product development, including information security, data protection, and business ethics policies.
- Hardware limitations: The product must be compatible with a wide range of devices and operating systems, ensuring that it works optimally even on resource-constrained computers.

- Interfaces with other applications: The product must be able to integrate with other applications and external systems, following established communication standards and protocols to ensure adequate interoperability.
- Parallel operations: Mechanisms must be implemented that allow parallel operations to be carried out efficiently, guaranteeing optimal performance even in high traffic environments.
- Audit functions: Audit functions must be incorporated to record and monitor user activities, ensuring traceability of actions performed in the system.
- Control functions: The product must have access and privilege control functions, ensuring that only authorized users can access certain functionalities and sensitive data.
- Programming language(s): Product development will be carried out using modern and widely accepted programming languages, such as JavaScript for frontend development and Python for backend, ensuring scalability, maintainability and efficiency of the code.
- Communication protocols: Standard communication protocols, such as HTTP/HTTPS, must be followed for communication between the client and the server, ensuring the security and reliability of data transmissions.
- Skill Requirements: Developers must have technical skills and experience in web application development, as well as in-depth knowledge of the technologies and tools used in the project.
- Criticality of the application: Given the nature of the application, its availability and reliability must be guaranteed, minimizing any downtime or interruption in service.
- Security considerations: Robust security measures must be implemented to protect sensitive user data, such as data encryption, user authentication and prevention of security attacks, complying with information security standards and regulations.

2.5 Assumptions and dependencies

The development and proper operation of the product are subject to certain assumptions and dependencies, which are detailed below:

1. Technological infrastructure: It is assumed that the technological infrastructure necessary for the operation of the product, including servers, databases and web hosting services, will be available and functioning correctly.
2. Access to external data: The product may depend on the availability and accessibility of external data, such as startup databases, funding sources and technological trends, the access and update of which is not under the direct control of the development team.
3. Third-party collaboration: The collaboration and cooperation of third parties, such as technology companies, data service providers and government agencies, whose services or data may be necessary for the operation of the product, is assumed.
4. Changes in the technological environment: System requirements may be affected by changes in the technological environment, such as software updates, changes in security standards, or evolution of web development technologies.
5. Policies and Regulations: System requirements may be subject to changes in government, data privacy, or information security policies and regulations, which may require adjustments to product design and operation.
6. Availability of human resources: The availability of adequate human resources, including technical personnel, developers and information security specialists, is assumed for the development, implementation and ongoing maintenance of the product.
7. User Expectations: System requirements may be influenced by the changing expectations and needs of end users, which may require adjustments to the product's functionality and user interface.

2.6 Foreseeable evolution of the system

Although the initial product will focus on meeting the requirements established for its initial release, some areas are identified for possible improvements and future expansions of the system:

1. Advanced analytics capabilities: Implement advanced data analytics features that allow users to perform deeper analysis of the startup ecosystem in Peru, such as pattern identification, predictive analytics, and custom reporting.
2. Integration of collaboration tools: Incorporate online collaboration tools, such as discussion forums, chat rooms, and project collaboration platforms, to encourage interaction and knowledge sharing between users.
3. Personalization of the user experience: Improve the customization capacity of the user experience, allowing users to configure their viewing preferences, receive personalized recommendations and adapt the interface to their specific needs.
4. Database expansion: Continue to expand and update the startup database in Peru, including more detailed information on new companies, updated financial data, and emerging trends in the startup ecosystem.
5. Integration with social networks: Allow users to share content from the platform on popular social networks and facilitate integration with social network profiles to improve the user experience and increase product visibility.
6. Mobile App: Develop a companion mobile app that allows users to access the system from mobile devices, providing an experience optimized for smaller screens and taking advantage of mobile capabilities such as geolocation.
7. Machine learning capabilities: Incorporate machine learning capabilities to improve the accuracy of the recommendations and analyzes provided by the system, allowing for a more personalized and relevant experience for users.

3 Specific requirements

Número de requisito	**Nombre de requisito**	**Tipo**	**Fuente del requisito**	**Prioridad del requisito**
RF 1	Exploración de startups	Requisito	Cliente	Alta/Esencial
RF 2	Búsqueda avanzada	Requisito	Equipo de desarrollo	Alta/Esencial
RF 3	Visualización de datos	Requisito	Equipo de desarrollo	Alta/Esencial
RF 4	Información detallada	Requisito	Cliente	Media/Deseado
RF 5	Suscripción al boletín	Requisito	Equipo de desarrollo	Media/Deseado
RF 6	Interacción con la comunidad	Requisito	Cliente	Media/Deseado
RF 7	Personalización	Requisito	Equipo de desarrollo	Baja/Opcional

3.1 Common interface requirements

3.1.1 User interfaces

For this startup project in Peru, user interfaces must be intuitive and provide a pleasant experience for users. All inputs and outputs of the software system must be described in detail, including elements such as data entry forms, navigation buttons, drop-down menus, and information display panels.

3.1.2 Hardware interfaces

Since the system will be based on a web application, hardware interfaces are minimal. However, logical characteristics must be specified for any interface between the product and peripheral hardware devices, such as printers or scanners, that may be used in conjunction with the system.

3.1.3 Software interfaces

It is important to identify any necessary integrations with other software products. This may include data analysis tools, database management systems, or third-party services for user authentication. For each software product used, a description, the purpose of the interface and the definition of the interface must be provided, including the content and format of the data exchanged.

3.1.4 Communication interfaces

If the system requires communications with other systems, it is necessary to describe the communication interface requirements and the protocols used. For example, if the system needs to send data to an external API to obtain updated information about startups, the communication methods (for example, HTTP/HTTPS) and data formats accepted by the API must be specified.

3.2 Functional requirements

Functional requirements are fundamental actions that the software must perform when receiving information, processing it and producing results, adapted to the context of the startup project in Peru. This includes checking the validity of inputs, the exact sequence of operations, response to abnormal situations, parameters, generation of outputs, and relationships between inputs and outputs.

3.2.1 Functional requirement: User registration

Description: The system should allow users to register by providing basic information such as name, email address, and password. Entry validation: Verify that the email address provided is valid and unique in the system. Additionally, the password strength must be validated according to established criteria. Exact sequence of operations: The user completes the registration form, the system checks the validity of the data entered, and if it is valid, a user account is created in the database. Response to abnormal situations: If the email address is already registered in the system, an error message will be displayed indicating that the email address is already in use. If the password does not meet the security criteria, the user will be prompted to choose a stronger password. Parameters: Parameters include user name, email address and password. Generation of outputs: The output will be the creation of a user account in the system. Relationships between inputs and outputs: The input is the data provided by the user in the registration form. The output is the creation of a user account in the database. Logical requirements for stored information: User information, including name, email address, and an encrypted version of the password, will be stored in the database.

3.2.2 Functional requirement: Advanced startup search

Description: The system should allow users to search for specific startups using filters such as sector, geographic location, development stage, and funding received. Input validation: Data entered in the search fields must be validated to ensure that it meets the accepted criteria. Exact sequence of operations: The user selects the desired search filters, the system processes the request and returns a list of startups that match the specified criteria. Response to abnormal situations: If no results are found that match the specified search criteria, the system should display a message indicating that no results were found. Parameters: Parameters include the search filters selected by the user. Output generation: The output will be a list of startups that meet the specified search criteria. Relationships between inputs and outputs: The input is the search criteria selected by the user. The output is a list of startups that meet the specified search criteria. Logical requirements for stored information: No new information is stored in the database as a result of this operation. Search results are generated dynamically based on data stored in the startup database.

3.3 Non-functional requirements

For the startup project in Peru, it is crucial to take into account the non-functional requirements that guarantee the security, performance and availability of the system, as well as its maintainability and portability.

3.3.1 Performance requirements

The system is expected to be able to handle a large number of simultaneous users, with optimal performance even at times of high load. For example, 95 of transactions are expected to be completed in less than 1 second, regardless of the number of connected users.

3.3.2 Security

The system must employ cryptographic techniques to protect users' confidential information and ensure data integrity. Additionally, an activity log should be implemented to track any unauthorized access or suspicious activity. Communications between different system modules should be restricted and regular checks of the integrity of critical information should be performed.

3.3.3 Reliability

The system is expected to be highly reliable, with the longest possible time between allowable incidents. This will ensure a consistent and seamless experience for users. 3.3.4 Availability

The system must be available for use as much of the time as possible, with a minimum availability of 99. This means that the system can only be taken down for a very limited time for maintenance or upgrades.

3.3.5 Maintainability

The system should be designed so that it is easy to maintain and update. Maintenance tasks must be able to be performed by both end users and developers, and must be scheduled on a regular basis to ensure long-term system performance.

3.3.6 Portability

The system must be highly portable, meaning that it must be easily portable to other platforms or environments. This can be achieved by using standard, cross-platform programming languages and technologies, as well as minimizing dependence on specific server or operating system components.

3.4 Other requirements

In the context of the startup project in Peru, there are other specific requirements that must be taken into account:

Cultural and political requirements: The system must be sensitive to cultural diversity and respect the political regulations of Peru. Any content or functionality that may be considered inappropriate or that violates local cultural norms should be avoided. Furthermore, it is important that the system promotes inclusion and equal opportunities for all users, regardless of their cultural or political origin. Legal requirements: The system must comply with all applicable local laws and regulations in Peru. This includes aspects such as personal data protection, electronic commerce, copyright and intellectual property. Appropriate security measures must be implemented to protect user information and guarantee their privacy as established by Peruvian legislation. Likewise, the required legal information, such as terms and conditions of use, privacy policy and legal notices, must be provided in a clear and accessible manner for users.

3.5 Appendices

Within the appendices, additional information specific to the startup project in Peru may be included, which, although relevant, is not a direct part of the Software Requirements Specification (ERS) itself.

Some examples of content that could be included in appendices are:

Data input/output formats: Detailed description of the formats in which the data will be presented in the user interface, either on the screen or in lists. This may include screen layouts, data tables, and sample system-generated reports. Cost analysis results: Detail of the costs associated with the development, implementation and maintenance of the startup system in Peru. This may include budget analysis, expense estimates, and financial projections for the project. Restrictions on the programming language: Specifications on the programming language that will be used in the development of the system. This may include technical restrictions, development team preferences, and compatibility considerations with other technologies.

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