

PROJECT DOCUMENTATION

WORK PACKAGE

Project: **Certichain - A secure certificate verification system for Institute Santha Rita**

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Client: Mr. Ravi Muditha

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1 Work Package History

1.1 Document Location

This document is only valid on the day it was printed.

The source of the document will be found on the project's PC in location.

1.2 Revision History

Date of this revision:

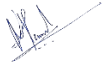
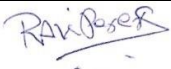
Date of Next revision:

Revision date	Previous revision date	Summary of Changes	Changes marked
14/03/2024		First issue	

1.3 Approvals

This document requires the following approvals.

Signed approval forms are filed in the Management section of the project files.

Name	Signature	Title	Date of Issue	Version
Dr. Yasas Jayaweera		Project board	17/03/2024	1.0
A. A. M. N Perera		Project manager	14/03/2024	1.0
Mr. Ravi Muditha		Client	14/03/2024	1.0

1.4 Distribution

This document has been distributed to:

Name	Title	Date of Issue	Version
A. A. M. N. Perera	Project Manager	14/03/2024	1.0
I. Hassaan	Start-up manager	14/03/2024	1.0
Nethrough Wickramasinghe	Quality manager	14/03/2024	1.0
Shenuka Fernando	Risk Manager	14/03/2024	1.0
P. A. Gunawardhana	Scheduling manager	14/03/2024	1.0

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3 Purpose

Work packages are critical for clearly defining and assigning tasks or deliverables to team leads and members. They provide a systematic approach to organize and manage the work items and outputs produced during a sprint.

The objectives of work packages in this context include - precise task definition, responsibility assignment, deliverable identification, and collection of relevant information. Work packages enable seamless handover of work from project manager to team by providing documented bundles of information.

By issuing formal work packages, the project manager can transfer ownership of tasks and deliverables to team members, empowering them to progress independently with the assigned items. This methodical decomposition and distribution of work enables structured execution while maintaining transparency.

4 Work Package Description

This Work Package document focuses on all the tasks and deliverables related to Sprint 3 of the project. It includes activities such as, designing IPFS and blockchain structure, implementation and testing in Sprint 3.

5 Product Description(s)

Design blockchain structure: Creating a strong framework that securely holds certificate data is a necessary step in designing the blockchain architecture. To enable smooth interactions with the CELO Blockchain, this entails defining data models, transaction formats, and smart contract architecture.

Design IPFS structure: Create the IPFS framework and outline the protocols for certificate data retrieval and storage in tandem with the blockchain design. In order to maintain compatibility with the selected IPFS client-server configuration, this phase concentrates on optimising data storage and retrieval efficiency.

Implementation blockchain structure with CELO Blockchain: After designing the blockchain structure, Integrate it with the CELO Blockchain to start the implementation process. This entails setting up nodes, launching smart contracts, and creating channels of communication to enable data transfer and validation on the blockchain.

Implement IPFS with client server: We'll use a client-server architecture to create the IPFS structure simultaneously. To enable seamless data uploading and retrieval via IPFS, this involves setting up IPFS nodes and configuring them to communicate with the CELO Blockchain. Client-side applications must also be developed.

Synchronizations of IPFS result with CELO Blockchain: To guarantee data consistency and integrity between the two platforms, we'll concentrate on synchronising IPFS results with the CELO Blockchain in the last stage. To enable smooth cross-referencing of certificate data, this entails developing protocols for updating blockchain entries with IPFS CID references and vice versa.

6 Techniques / Processes / Procedures

A Content Identifier (CID) is generated when a certificate and its related information are uploaded, saved off-chain, and moved to the InterPlanetary File System (IPFS). Concurrently, all relevant data is released from IPFS and off-chain saved in a JSON file. All of these facts are then minted on the Chelo blockchain. The process loop is completed when the returned data is successfully minting and is once more the data is stored off-chain. This process makes sure that certificate details are verified and stored securely using off-chain and blockchain technologies with the help of IPFS too.

7 Quality Checking Method

- **Requirements Review:** Detailed evaluation of project documentation by quality personnel to validate completeness and accuracy.
- **Client Inputs:** Incorporate feedback from client on scope, expectations, and parameters to align project execution.
- **Requirement analysis:** Make sure that all features and functionalities are understood and taken into account by carefully going over the project requirements.
- **Design review and prototyping:** To see the layout and design of the user interface, make mockups and prototypes of it. To get input from stakeholders and make sure the interface satisfies aesthetic and usability requirements, conduct design reviews.
- **Define Quality Standards:** Clearly define the requirements and standards for each component of the project, such as the synchronisation procedures, IPFS implementation, blockchain architecture, and user interface design.
- **Peer Review:** To find possible errors, omissions, or departures from accepted practices, conduct peer reviews of design documentation, code implementations, and system architecture. Peer reviews encourage cooperation and raise standards of excellence by offering insightful opinions and input from other team members.
- **Automated Testing:** Use automated testing techniques to confirm the integrated system's performance and functioning. To make sure that all of the parts function as intended and communicate with one another without hiccups, this comprises end-to-end testing, integration testing, and unit testing.

8 Configuration Management Requirements

A few prerequisites must be met in order to mint IPFS data in the blockchain. To facilitate smooth communication and data transmission, a strong integration mechanism between IPFS and the blockchain is first and foremost required. Additionally, in order to design smart contracts that can handle IPFS data, blockchain development tools and frameworks are needed. Furthermore, prior to being minted onto the blockchain, off-chain data management technologies are essential for guaranteeing the accessibility and accuracy of IPFS data. To guarantee the security and dependability of data kept on the blockchain and to expedite the minting process, a smooth integration of IPFS, blockchain, and off-chain components is necessary.

9 Stage Plan Extracts

10 Sign – Off Requirements

Before sending reports and milestones to the project board and client, the quality manager will thoroughly review them. The project manager will assess all work, including the features of the website built in Sprint 3, to determine whether any changes are necessary. Additionally, the project manager needs to make sure that the client is aware of any new features that need to be included or any features that are missing but cannot be implemented. All of the testing should be done by the risk manager to make sure there are no more flaws or vulnerabilities.

11 Work Return Arrangements

If the client does not like the website, the project team will work together to make changes that meet their needs. However, this is limited to the provisions that were agreed upon by the parties at the time the contract was signed.

12 Completion

Email Notification: We formally notify pertinent parties by email when a task or project is completed. In-depth information about the breadth of work finished, any unresolved problems or follow-up steps, and words of gratitude to team members for their contributions are all included in these emails.

Tools for Project Management: Our project management software acts as a central location for monitoring the status of tasks and projects. The programme automatically notifies team members and stakeholders who are involved in the project or have a stake in its success when a task or project is designated as completed.

Meetings or Status Updates: Having regular meetings or status update sessions gives you the chance to let important stakeholders know when tasks or projects are finished. Real-time communication during these meetings enables stakeholders to clarify any doubts they may have and ask questions about the finished product.

Formal documents: We produce official completion reports or documents that include information about the goals attained, the resources used, and any lessons discovered throughout the project. These publications support organisational knowledge management and act as a resource for stakeholders.

13 Independent Quality Checking Arrangements

The quality manager employs rigorous validation testing across all project artifacts including applications, reports, and documentation. Evaluation results are compiled in periodic assessments presented to leadership and clients to enable transparent oversight.

Expert reviews of documents, features and other deliverables are conducted through board meetings for additional perspective. Clients are provided access to quality dashboards and test reports during collaborative working sessions to instil confidence.

By taking an all-encompassing approach to quality control and facilitating multi-level assessments, the project aims to uphold highest standards throughout the development lifecycle.

14 Reporting

Weekly reports and logs are submitted via Google Drive to the project board, and board meetings will be held physically held on campus.

15 Problem Handling and Escalation

A risk/issue log will be maintained with clear classification of risks by priority, impact, and cause. Potential risks that may occur over the course of the project are pre-emptively identified and assessed by the Risk Manager. Corresponding mitigation strategies and contingency plans are defined during risk response planning sessions.

Team members are required to report emerging and potential issues to the Risk Manager for inclusion and tracking in the log.

If any of the assumed risks get manifested, the mitigation plans formulated earlier are to be immediately activated by the team. The Risk Manager monitors their effectiveness through the issue log.