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Credersi-Vend

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Credersi-Vend Admin Test Strategy

Version 1

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1. Introduction
   1. Background

General Background

Founded in 2009 in Bury St Edmunds, Credersi-vend supplies and operates Vending Machines that sell premium Suffolk based product to museums and other tourist sites of historical interest

Credersi-Vend is small family-firm operating using predominantly analogue and paper-based workflows and organisational methods. Recently, Credersi-Vend has identified a need to update and transition these workflows and processes to more modern techniques.

A small group within the company have begun diversifying into software development, with the intention of creating bespoke in-house software to transition their workflows over to digital environments and processes.

ROQ have been hired by Credersi to review their Credersi Vend Application.

Product for testing

The first development product is an administrator tool (known as Credersi-Vend Admin) for its vending machine engineers. Credersi-Vend engineers routinely visit locations where vending machines are leased to carry out planned or ad-hoc maintenance and repairs.

Credersi-Vend Admin displays and manages routes between vending machines at a given client site, informs engineers of all machines at a client site, and from the relative position of the current/first vending machine they are at, the closest ones nearby on that site.

The admin tool provides an overall list of all clients and their respective sites which house Credersi-Vend vending machines.

Anticipated benefits

* Every engineer has access to the same information about client sites
* Staff can add new machines, sites and clients to the tool and ensure all other staff can see this new information simultaneously
* Staff unfamiliar with a client site should be able to find individual machines more easily as all descriptions of the location are shared with all engineers
* Should save engineers time by offering the most efficient walking routes between vending machines relative to the current location
* Ensure engineers visit all machines as needed at a client site- completeness
* Accessibility- accessed via a web browser, so appearance of the tool can be altered to individual needs
* Account system should bring traceability and accountability for work loads
* Database records which account instantiated changes/additions/removals of information held
* Could be linked into future inhouse tools, and/or third-party tools, such as Trello/Jira for work that needs to be carried on out specific machines for example.

**Problems being experienced to date**

* Currently an alpha release for internal testing and trials
* Developed by a newly formed team
* Limited functionality for logins- only one admin login at present
* Still stored locally- no explicit server environment setup for testing- run using a local host
  1. Purpose

The purpose of this document is to describe an overall approach to testing in accordance with the corporate objectives for system development*.*

The purpose of this document is to gather information about what work will be carried out, and develop a strategy to test Credersi-Vend Admin. This is to ensure everyone is working collaboratively is organised, given accurate information, confidence so that the tasks are known to all members involved. Additionally, it is important for all members to clearly identify what is tested and what is not as well as not required. So, that if any contingencies come up there is a course of action for everyone to undertake to ensure that the project is going as expected.

The components of the systems that will be needed to be tested will be the four test levels which will be acceptance level, system level, integration testing and component testing. This will ensure a moderate-high level of coverage relative to the time constraints for this test cycle.

This will be achieved by conducting tests using manual testing, automation testing such as selenium, Junit, Jest and postman API. The components of the system that will not be tested will be different accounts for logging in this is due to only one existing admin account being made available for use by the client Credersi.

* 1. Overall Test Objectives

State the major objectives of the testing. A strategy should cover multiple projects and be in line with company objectives. It is important to capture what these company objectives are as they will inform many of the decisions taken when writing the strategy.

**Overall objective of testing: to provide sufficient evidence to evaluate levels of confidence in the quality of the software.**

Note: testing of Credersi-Vend Admin is not aiming to explicitly evaluate the levels of confidence, but instead create a body of evidence from which evaluation of the alpha version can then take place.

* To test all the user stories
* To test that the Credersi Vend Application meets the required minimum level for the user to be able to use
* To test that the user will have a good experience using the application

1. Scope
   1. Test Scope – Inclusions
      1. Full Test Scope

The following areas have been identified as coming under a ‘full test scope’, which would provide a very high level of test coverage for Credersi-Vend Admin. The app is made up of four key areas for test consideration at varying test levels

| Item | Purpose | Description/Features |
| --- | --- | --- |
| Frontend Component | The frontend purpose is to ensure the user can interact with the system without facing failure. | * **Svelte web-application** as the Frontend |
| Backend Component | The purpose of the backend folder is to store the frontend code so that the browser can request it based on the route. | * **Neo4j Aura** No-SQL Graph Database * **Java Spring Boot REST API** called Backend |
| Routes Component | The routes folder allows the backend to communicate with the database. | * **Java Fluid API** called Routes |
| APIs | The purpose of the API is to enable cross-functionality between software types to share data and functionality with external develops, business partners and internal departments. |  |

Ideally the following would be tested:

Component Level

* Frontend
* Backend
* Routes
  + Routes Component Documentation

Integration Level

* Frontend
* Backend
* Routes
* API

System Level

Regression tests to run

**Functional**

* Frontend
* Backend
* Routes
* API

**Non-functional**

* Performance (i.e. speed)
* Scalability- multiple users at once
* Stability- e.g., data connection

User Acceptance Level

* User stories met?
* Regression tests to run

**Functional**

* Frontend
* Backend
* Routes
* API

**Non-functional**

* Performance (i.e. speed)
* Scalability- multiple users at once
* Stability- e.g., data connection
* API

Actual Test Scope

However, due to time constraints for this round of testing, the team felt it necessary to consider prioritising one aspect of testing at each level (component, integration, system, and user acceptance). Given that the overall testing objective for this cycle in section 1.3 is:

“**Overall objective of testing: to provide sufficient evidence to evaluate levels of confidence in the quality of the software.”**

It is the opinion of the test team that ensuring each component is tested at least of the test levels should provide sufficient test data and analysis to thereby evaluate overall levels of confidence in the quality of Credersi-Vend Admin.

Therefore, for each component of Credersi-Vend Admin the scope will include the following:

Component Level

* Routes

Integration Level

* Backend
* Routes

System Level

Regression tests to run

**Functional**

* Frontend

**Non-functional**

* Performance (i.e. speed)

User Acceptance Level

* User stories met?
* Regression tests to run

**Functional**

* Frontend

**Non-functional**

* Performance (i.e. speed)
  1. Test Scope – Exclusions

If any types of project or types of testing are not covered by this test strategy then that should be detailed in this section.

TODO

Testing different user logins, as the admin login details are the only details set up.

1. Quality Approach

**Discussions with Credersi-Vend employees and reviews of internal documentation have led to the following conclusions about the approach to quality at the company:**

* Credersi-Vend has only recently established a software development department. The team is newly created, and whilst comprised of some experienced staff members, has a limited number of internal standards, processes, and quality assurance mechanisms in place to review and assess the quality of work products
* This means that there is a reliance on the processes and standards created by senior developers in the team, which are not fully formalised and explicit in terms of documentation and training for junior members of the team. These processes and standards may also not work sufficiently in the context of a smaller company such as Credersi-Vend
* In addition, senior management and the owners of Credersi-Vend are by their own admission individuals who work predominantly in analogue ways.
* Therefore, from a governance perspective most of these individuals lack necessary experience to assess existing standards and processes of the software development team, nor any experience in improving or creating new ones
* Challenges also emerge from the use of an external contractor to create the Routes component- limited capacity and oversight to ensure this developer worked in a manner following the expectations of Credersi-Vend and assess their work product
* Finally, this is a new development team crafting a bespoke piece of software, rather than modifying an existing off-the-shelf product or open-source software.
* With all that said, there is a clear determination from the software development team to ensure a high level of quality of the final product
* External testers from ROQ have been brought in to evaluate this product at an early stage to validate and verify the quality of the product
* The development team has placed an emphasis on working through core product requirements and user stories first, before moving onto lower priority items

Levels of acceptable defects in the end product

Given that the overall testing objective:

**“Overall objective of testing: to provide sufficient evidence to evaluate levels of confidence in the quality of the software.”**

* ROQ need to provide evidence at this stage that the admin tool can be verified as meeting the product requirements or not.
* ROQ also need to validate if the admin tool actually meets the needs of the intended end user
* In respect of both of these, there is a very low level of acceptable defects in terms of validation against user requirements, but a higher level of acceptable defects for the product meeting requirements:
  + Being an internal alpha build, none-core functionality will be missing
  + For core functionality, it is anticipated that there will be a significant amount of defects present of all severities
  + However, acceptable defect levels for severe issues are low, as senior Credersi-Vend management expect to have confidence in the overall quality of the software at this stage

**Types and volume of test evidence which needs to be collected during test execution**

1. Test Approach

If the plan covers very different types or phases of testing then this section can be split into an Overall Approach and a separate specific approach for each of the testing types. A common distinction is separate approaches for functional and non-functional types of testing (and types of non-functional testing may also be very different from each other).

The main function of the test approach is to provide guidance in the production of test plans for specific pieces of work. Because of this it is important to ensure the approach covers the following topics

The System Development Life Cycle within which the testing must exist

The general approach to projects, for example, where the development work is done (In house? Off-shore? Of the Shelf product?)

The overall appetite for risk within projects

The level of auditability and evidence which is needed

The general approach to documentation adopted by the organisation

The final level of product quality which must be achieved

Any other quality assurance activities in addition to testing which may influence the work which needs to be done

Where there are factors (e.g. historical, legislative) which have influenced these topics it is important to document so that people enacting the strategy can better appreciate the needs which it is meeting.

SDLC

SDLC of Credersi-Vend Admin is not currently setup in a fully agile way. Hybrid of waterfall and agile approaches. This initial version has taken two months to develop, primarily due to needing to recruit an external contractor to develop the Routes component. This component was two weeks late, leading to

1. Team Structure

Explain the structure of the test team and how it will operate in the context of the test strategy scope.

ROQ Test Team

* Alec- Academy Consultant
* Avais- Academy Consultant
* James- Academy Consultant

Core objectives for testing cycle:

Evaluate all information present to form a test basis

Credersi-Vend Employees

* Floz- senior developer for Credersi Vend
* Maddy- developer for Credersi Vend

External Contractors

* Floz-Alt- external contractor brought in by Credersi-Vend to design the ‘routes’ component of Credersi-Vend Admin

1. Test Phases

Each distinct phase of testing should have a section covering it and describing the key factors which define that phase.

* 1. <<Test Phase>>
     1. Objectives and Approach

Describe the specific objectives of the test phase within the context of this strategy, and outline the general approach to be taken with this type of testing.

* + 1. Test Design Techniques

Describe the techniques which will be used to design the tests, for example risk based testing, modular test design etc.

* + 1. Entry and Exit Criteria

The entry criteria should list all the prerequisites which need to be met before testing can start. These criteria should include a specification of other types of testing which should have been carried out (note that the prerequisite testing must also be defined within the organisation carrying out the testing and should be referenced here), as well as any other non-testing criteria such as the provision of system documentation.

The exit criteria should specify the measure of quality which the system under test should reach before testing is complete. This is usually expressed in terms of numbers of outstanding defects of different types (as defined in the defect management approach).

The first entry requirement will be, to ensure the code is working and the website is working to be able to start testing on it. For the code this will be that the data base links up with the backend to allow the website to run. For the website, for it to work the user must be able to login and see the data on the website.

The login screen will be simple, with it only needing for the user to test if login and log out is working, and if the website does not allow an incorrect username/password to work.

* + 1. Degree of Test Objectivity

Testing objectivity is achieved by having unambiguous acceptance criteria and when someone other than the developer who wrote the software or the analyst who designed the software is involved in the test planning, design and execution.

The entry/exit criteria will govern what criterion needs to be achieved before a test phase can begin and what factors will need to be met before a test phase can be considered complete.

In order to do their job effectively testers should be given a degree of freedom from design and build teams. Testers have the potentially contentious job of assessing and reporting the quality of a product and must have a degree of independence to be able to do so objectively. Conversely the test team relies upon the other teams for the entirety of its input and so must tread a fine line between independence and co-operation to build trust within the teams.

The strategy will define the degree of objectivity in order to achieve the desired levels of quality and provide justification for the intended direction.

1. Managing the Testing Process
   1. Test Management

Consider test management requirements, principles, frameworks and standards. For example:

How will test project plans be structured and supported?

How will test documents and specifications be supported, stored and controlled?

How will releases and versions be managed?

How will test execution be supported and result recording?

What progress and test reports will be required?

Will test management tools be used?

* 1. Defect Management

Consider test defect management requirements, principles, frameworks and standards. For example:

What defect management system(s) will be used, how will they be used?

What are the key roles and process/workflows?

How will defect priority, severity, and other relevant status codes be used?

What defect reports are required?

1. Roles and Responsibilities

Summarise the organisation for testing, considering both central support roles and project/phase/function specific roles.

Make clear reporting lines.

Define each role, where the ROQ standard roles and responsibilities are not applicable.

1. Measures and Metrics

Consider and define requirements for testing metrics. Consider what data will need to be captured during each test phase, how it will be captured and analysed, and how it will be used. Illustrate what role the metric will play in measuring the success of testing and any process improvement.

1. Test Environments

Define the major principles for test environments.

Define specific test environments where appropriate. Make clear what test phases in the testing lifecycle these support. Consider for example:

How the system under test is hosted?

What computers, operating systems and support application environments are required?

Connectivity and peripheral requirements

Locations

Harness and stub requirements

Test data

Management and support requirements

Change management

Configuration management

Where testing requires several environments with different attributes then it is advisable to split these out into separate sub headings.

1. Test Data

Define the major principles for test data. Consider for example:

Use of live/production data or generated data

Data protection issues, particularly around live/production data

Volume considerations

Repeatability in data, ageing

Building representative data to support test objectives and principles (e.g. boundary values in data)

Data support in interfaces, building a compatible data environment

1. Test Tools

Make clear any strategic use of test tools and the role they play. This might include tools for:

Test automation

Load and performance testing

Data generation or migration, or other data support

Test and defect management

Test result comparators

1. Standards

Describe the standards that will apply to testing, any specific industry requirements and how they will be applied and measured.

Identify and reference any templates relevant to testing produced through this test strategy (e.g. for test plans, test specifications, repository or file structures).

1. Assumptions

Record any assumptions used during the preparation of this strategy. Assumptions are typically positive things which enable project work, but cannot currently be demonstrated or proved to be true. Also explicitly state what the impact to the strategy would be if the assumption proved to be false or incorrect.

All assumptions need to be agreed by an appropriate authority, usually the client programme manager; record who agreed the validity of the assumption and when. The strategy should not be signed off without all the assumptions first being explicitly agreed to.

| Description | Impact | Agreed By | Agreed Date |
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1. Constraints

Constraints are things which do or definitely will restrict the way that work is carried out. Typically they are unequivocal and factual in nature. As well as stating a constraint it is essential to explain the impact this constraint will have on the testing in terms of efficiency, scope or risk.

The constraints need to be signed off by a suitable authority, typically the client programme manager; the purpose of this is to ensure the client is aware of any constraints and so can potentially choose to do something about them.

| Description | Impact | Agreed By | Agreed Date |
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1. Risks

A risk is something which might happen in the future and if it did would negatively impact the project. The risk is given numeric rating for impact (1-4) and likelihood (1-3). These numbers are multiplied together to generate the overall Risk Factor; the higher the risk factor the more effort should be invested to ameliorate the risk. Each risk needs an owner who is charged with monitoring the risk and taking proportionate steps to see that the risk does not occur. Alternatively, a low risk can simply be accepted by the programme.

During the planning phase it is often possible to express risks as Assumptions or Constraints.

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| Description | Impact | Likelihood | Risk Factor | Owner |
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1. Glossary of Terms

Define relevant terms used in this test strategy.

1. Document Control
   1. Document Review

Record who has participated in both the internal and external reviews of the document. Where a person reviews a document multiple times it is only necessary to record the last date of review.

| Name | Role Title | Date |
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* 1. Change History

Record the different versions of the document which get distributed. Each new version of the document should receive a minor increment (e.g. from 0.01 to 0.02) unless the document is a major revision (e.g. the document has been signed off)(e.g. from 0.03 to 1.00). The level of information recorded in the Description of Changes field depends on the amount of sign-off received. Where external sign-off has been achieved the changes should be recorded in a high level of detail.

Not every version needs approval. Generally approval indicates passing internal review and therefore being made available to the client, or passing external review and being signed off by the client

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| Version | Date | Description of Changes | Approval |
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* 1. Distribution

List the people who the document will ultimately be circulated to. The roles are:

Review: The named person will review the document and feedback

Approval: The named person will approve the document on behalf of their organisation

Information: The names person may be interested in the document but is not reviewing or approving the document

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| Name | Organisation | Document Role |
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* 1. Referenced Documents

List all the documents referenced in the production of this document. Each item needs a number so it can be uniquely identified. The document title and version should be specified. Finally, it is important to record who or where the document is available from so a reader of this document can get copies of all the references documents.

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| Ref | Document and Version | Available from |
|  | Credersi-Vend Admin Test Plan |  |
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* 1. Document Sign-off

This document has been reviewed, and approved for issue at the indicated issue status by the following:

Credersi-Vend Programme Manager or Authorised Representative

|  |  |
| --- | --- |
| Name: Floz |  |
| Position: | Senior Developer |
| Signature: |  |
| Date: |  |

ROQ Test Project Manager or Authorised Representative

|  |  |
| --- | --- |
| Name: |  |
| Position: |  |
| Signature: |  |
| Date: |  |