STP Document

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GLOBAL FOREST WATCH

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Planned Schedule

A step in the project process	Start date	End date
Preparation of STP document	23.03.2024	23.03.2024
Preparation of STD document	24.03.2024	24.03.2024
Round of tests #1	25.03.2024	25.03.2024
Round of tests #2	26.03.2024	26.03.2024
Round of tests #3	27.03.2024	27.03.2024
Preparation of STR document	27.03.2024	28.03.2024

Purpose Of This Document

The purpose of the document is to define a framework program for testing This framework plan will include all relevant topics for planning and performing the tests, such as the test topics and types of tests, the schedule, and the planned work method for testing the system.

The document will also be used as base for writing a detailed test plan (STD) in which the various tests will be detailed step by step. After that, the tests will be carried out according to the instructions in this document.

Description Of the GFW System

Global Forest Watch (GFW) is a cutting-edge online platform dedicated to monitoring and safeguarding the world's forests. With its user-friendly interface and robust features, GFW serves as a vital resource for individuals, organizations, policymakers, and researchers striving to understand and protect forest ecosystems worldwide.

Purpose: The primary goal of Global Forest Watch is to provide accurate and timely information about forest cover, change, and related data to support informed decision-making and advocacy efforts. By offering a comprehensive suite of tools and datasets, GFW empowers users to monitor deforestation, track forest restoration initiatives, assess biodiversity, and analyze forest-related trends. Through accessible and actionable data, GFW aims to promote transparency, accountability, and collaboration in global forest conservation efforts.

Key Features and Functions:

1. **Interactive Map:** The website features an interactive map interface that allows users to visualize global forest cover, deforestation hotspots, forest restoration areas, and other relevant spatial data.
2. **Deforestation Monitoring:** Users can access real-time and historical data on deforestation rates, forest degradation, and forest loss alerts, enabling them to track changes in forest cover over time.
3. **Custom Analysis Tools:** Global Forest Watch offers a suite of custom analysis tools that empower users to perform spatial and statistical analyses, identify drivers of deforestation, assess forest carbon stocks, and evaluate biodiversity indicators.
4. **User-friendly Interface:** The website offers a user-friendly interface with intuitive navigation and easy-to-use tools, making it accessible to a wide range of stakeholders, including non-experts and decision-makers.
5. **Data Download and API Access:** Users have the option to download datasets and access APIs for programmatically retrieving forest-related data, facilitating further analysis, research, and integration with external systems and applications.

Stakeholders:

1. **Environmental Researchers:** Utilize GFW for forest ecosystem analysis, biodiversity monitoring, and climate change research.
2. **Policymakers:** Rely on GFW for informed decision-making, policy formulation, and monitoring of environmental commitments.
3. **NGOs and Conservation Groups:** Use GFW to identify deforestation hotspots, advocate for forest protection, and support community-based conservation efforts.
4. **Indigenous Communities:** Access GFW to monitor threats to traditional lands, assert rights, and engage in participatory forest management.
5. **Academia and Educators:** Incorporate GFW into curricula for teaching environmental issues and sustainability.

Glossary and Abbreviations

Glossary

- GUI (Graphical User Interface): The design of user interfaces based on specified requirements.
- Functional Testing: Verification that fundamental system functions operate correctly.
- Maintenance Testing: Examination of the functionality of a modified system following changes, updates, or alterations in the working environment.
- STP (System Test Plan): A comprehensive project planning document encompassing strategy, schedule, and topic tree.
- STD (System Test Design): Detailed documentation outlining the testing plan.
- STR (System Test Results): A concise document summarizing test results after three cycles.
- Traceability Matrix: A document that correlates any two baselined documents that require a many-to-many relationship to determine the completeness of the relationship.

Abbreviations

- QA: Quality Assurance
- CEO: Chief Executive Officer
- HR: Human Resources

Testing Plan

The testing team will communicate the requirements to the development team based on the planned tests. The development team will work according to these requirements to maximize efficiency.

Resources: Team leader, 4 testers. A total of 5 team members will be assigned to this project.

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1. **Computers:**
   - High-performance desktops or laptops to run test scripts and perform manual testing.
2. **Network Equipment:**
   - Routers and switches to simulate different network conditions for testing GFW performance under various network scenarios.
3. **Mobile Devices:**
   - Various smartphones and tablets to test GFW website across different platforms (iOS, Android).
4. **Virtual Machines:**
   - Set up virtual machines for testing on different operating systems and browser combinations.
5. **Storage Devices:**
   - Sufficient storage space to store test data, logs, and files generated during testing.

Software Needed:

1. **Operating Systems:**
   - Install and configure various operating systems for testing, including Windows, macOS, and Linux distributions.
2. **Browsers:**
   - Latest versions of popular browsers (Google Chrome, Microsoft Edge, Safari) for cross-browser compatibility testing.
3. **Mobile Emulators/Simulators:**

- Emulators or simulators to test GFW mobile website on different devices and screen sizes.

4. **Performance Testing Tools:**
    - Tools like Apache JMeter, LoadRunner, or Gatling for performance and load testing to simulate high user traffic.
5. **Automation Testing Tools:**
    - Selenium, Appium, or similar tools for automating functional tests across web and mobile platforms.
6. **Database Management System:**
    - Database systems (MySQL, PostgreSQL) for testing GFW data handling and retrieval functionality.
7. **Collaboration Tools:**
    - Communication and collaboration tools (e.g., Slack, Microsoft Teams) for effective communication among the testing team.
8. **Test Management Tools:**
    - Test case management tools (e.g., **TestRail, Jira**) to organize, execute, and track test cases.

This document will be approved by the testing team leader and the project manager. Following approval, the senior tester will build the STD document based on it. The STD document will then undergo approval by the testing team leader.

After approval of the STD document, three rounds of testing will be conducted. At the end of these rounds, the STR document will be prepared by the senior tester, undergo approval by the testing team leader, and serve as the final documentation.

Before the start of testing rounds, **functional tests** will be performed, including:

1) **Unit Testing:** To test individual units or components of a software application.
2) **Sanity Testing:** To verify that the most important functionalities of a software application work correctly.
3) **Integration Testing:** To verify the interactions and interfaces between different components or systems within the application.
4) **Regression Testing:** To ensure that new code or changes do not affect the existing functionality of the software.
5) **API Testing:** To validate the functionality of an API by testing its endpoints and request-response mechanisms.
6) **UI Testing:** To validate that the user interface elements and interactions function correctly according to the design.
7) **End-to-End Testing:** To evaluate the entire software system's functionality from start to finish, simulating real user scenarios and interactions.

Afterwards, the following **non-functional tests** will be conducted including:

1) **Performance Tests (Load + Stress + Volume):** they assess how well a system performs under various conditions, including heavy loads, stressful situations, and large data volumes.
2) **Security Tests:** Security tests aim to identify vulnerabilities and weaknesses in a system to ensure protection against unauthorized access.
3) **Upgrade and Installation Test:** Upgrade and installation tests verify the smooth installation of software upgrades and updates, ensuring that the system remains stable and functional.
4) **Recovery Tests:** they assess how well a system can recover from failures including data loss or system crashes.
5) **Localization and Globalization Testing:** Localization testing verifies that a software application adapts to specific regional or cultural requirements, while globalization testing ensures its compatibility with diverse international settings.
6) **Usability Testing:** evaluates the user friendliness and overall user experience of a software application to ensure it meets user expectations.
7) **Compatibility Testing:** Compatibility testing ensures that a software application works seamlessly across different devices, browsers, operating systems.

Starting and exiting Criteria

- **Criteria for starting the tests:**

- 100% of the planned sanity tests were carried out and passed successfully.
- 100% of planned functional test cases have been created and reviewed.
- A traceability matrix is established, linking each test case to specific requirements.
- The testing environment, including necessary configurations, data, and tools, is prepared and verified.
- Sufficient and accurate test data for both positive and negative scenarios is available.
- The test plan, detailing the testing approach, objectives, and schedules, has been reviewed and approved.

- **Completion/Release Criteria:**

- 100% of planned functional and non-functional tests have been executed, and results have been documented.
- 100% of test cases passed successfully.
- All critical bugs have been fixed at this point.
- The remaining bugs are at low severity levels, with no high-severity issues affecting functionality.

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Traceability Table

Business Requirement	REQ ID	Functional/non Functional tests	Test Case ID	Defects?	Status
Sign-In	1	Successful sign in to GFW account.	1.a	None	Verified
		Verify Unsuccessful sign in to GFW account using wrong password.	1.b	None	Verified
		Forgot password	1.c	None	Verified
		Perform regular GFW sign-in under unstable network conditions.	1.d	None	In-progress
		multiple users attempt to log in simultaneously on GFW.	1.e	None	Denied
Sign out	2	Verify Successful sign out from the user account.	2.a	None	Verified
		Verify that the user data is still in the database after signing out.	2.b	None	Verified
Sign-Up	3	Successful sign up on GFW.	3.a	None	Verified
		Verify Unsuccessful sign up on GFW when entering wrong details.	3.b	None	Verified
		Simulate a server outage during the sign-up process and assess the system's recovery.	3.c	None	In-progress
Searching	4	Verify Basic Search Functionality.	4.a	None	Verified
		Verify successful Search when entering a very long input in the search bar.	4.b	None	Verified
		Verify Searching under different language settings.	4.c	None	Verified
		Verify unsuccessful Searching using invalid chars.	4.d	None	Verified

Map	**5**	Verify that a use can successfully add an area to his list of areas.	5.a	None	Verified
		Verify that a user can edit an area after adding it to its areas.	5.b	None	Verified
		Verify that the user can analyses any country he chooses in the map.	5.c	None	Verified
		Verify that the use can add any filters on the map.	5.d	None	Verified
Profile	**6**	Verify successful retrieving profile info	6.a	None	Verified
		Verify successful changing country name in the profile.	6.b	None	Verified
		Verify successful changing city name in user profile.	6.c	None	Verified

Testing Tree

1. Sign- In/out:

Functional testing:

a. sign in to GFW account.

- i. Verify successful login with a valid email and password.
- ii. Verify unsuccessful login with an invalid email or password.
  1. Attempt login with an invalid email.
  2. Attempt login with a valid email and incorrect password.
- iii. forgot password:
  1. retrieve password using email address.
  2. retrieve password using phone number.

b. Sign up for a GFW account.

- i. Successful sign out from the user account
- ii. verify that the sign out button is present and clickable.

Non-functional:

Reliability Testing

- c. Perform regular GFW sign-in under unstable network conditions.
- d. Verify that the user data is still in the database after signing out.

Scalability Testing

- e. Test the sign-in functionality with many concurrent users:
  1. multiple users attempt to log in simultaneously on GFW.

Localization and Globalization Testing:

- f. Perform sign-up using different regional settings (language, date formats).

2. Sign-Up:

Functional testing:

a. signs up to GFW using email address.

- i. Verify successful registration with a valid email and password.
- ii. Verify unsuccessful registration with an invalid email or password.
  1. Attempt registration with an already used email.
  2. Attempt registration with a fake email.
  3. Attempt registration with a weak password.

Non-functional:

Recovery Tests:

b. Simulate a server outage during the sign-up process and assess the system's recovery.

Localization and Globalization Testing:

c. Perform sign-up using different regional settings (language, date formats).

3.Searching

Functional Testing

a. Basic Search Functionality:

i. The search bar is present and functional.

ii. successfully Performing basic search in different languages.

iii. verify that we get no result when searching for invalid unputs.

b. Advanced Search Options:

i. successfully Applying date filter before searching.

ii. Verify sorting by relevance.

c. Search Suggestions:

i. Confirm suggestions while typing something on the search bar.

ii. Verify the relevance of suggestions.

Non-Functional:

Scalability Testing:

d. Simulate a scenario where a significantly large number of users are simultaneously conducting search operations on GFW.

Performance Testing:

e. Test the performance of applying pressure by searching a very long input.

Compatibility Testing

f. Test search functionality across different browsers.

g. Validate responsiveness on various devices (desktop, mobile).

Usability Testing

h. Make sure the search engine is placed in a way that is understandable and clear to the user.

3. Map:

Functional testing:

a. Verify successfully map showing and basic interactions.

b. Verify successfully adding an area from the map to my list of areas.

c. Verify successfully adding a new filter to the map.

d. Verify successfully checking a new country statics by clicking on it on the map.

Non-functional:

performance Testing:

e. Evaluate the time taken to perform filtering on the map.

Compatibility Testing:

f. Validate the responsiveness and functionality of the map interface on various devices (e.g., desktops, laptops, tablets, smartphones) with different screen sizes and resolutions.

Reliability Testing:

g. Verify the stability of the map service by running continuous stress tests over an extended period to identify potential memory leaks or resource exhaustion.

3. Profile:

Functional testing:

a. Verify successfully seeing my areas under my profile.
b. Verify successfully retrieving profile info.
c. Verify successfully changing the city in my profile.
d. Verify successfully changing my country on my profile.

Non-functional:

performance Testing:

e. Evaluate the time taken to perform the changing city operation.
f. Validate the security of the profile section against unauthorized access and data breaches.

Scalability Testing:

g. Assess the system's ability to handle concurrent requests for changing the city in user profiles.

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Hazard Table

Responsible	Description	Action	Hazard Description	Risk Level	Damage	Chance	Hazard	#
	-Description Of prevention method	Enclose Monitoring Acceptance	What will happen in case of the hazard	Chance Multiplied by Damage	10-1	The probability of the hazard occurring, ranging from 0 to 1.		
System	NA	Monitoring	Unable to connect as a user	5	10	0.5	Bad Internet Connectivity	**1**
	Finding a tester for the project length	Enclose	Bad testing and coverage	1.6	8	0.2	New Testers	**2**
System		Monitoring	Unable to login and retrieve info from the DB	7	7	0.5	Server Crash	**3**
	Postponing / finding replacement	Enclose	Vacations	7	7	1.0	Vacations	**4**
System	Adding servers	Enclose	System Crash	5	10	0.5	Weak Server	**5**

HR	Hiring a stable worker	Monitoring	Lowering Team Morale	5	10	0.5	Employee quitting	**6**
QA Lead	Hiring Experienced Testers	Enclose	Failure to meet the schedule	1	10	0.1	Inexperienced Testers	**7**
CEO	More flexible customer	Monitoring	No income for the company	3	10	0.3	Contract Termination	**8**
CEO	QA Lead bad Management	Enclose	Unsatisfied Customer	10	10	1	Failure to meet the schedule	**9**
CEO	An appointment must be made with the customer and it should be noted to him that it will not be possible to make changes after the system is established	Monitoring	Failure to be prepared for changes by the customer will not ensure a professional, accurate and correct inspection	3.5	7	0.5	Customer requirements document changes frequently during the project	**10**