<Fort Worth PsychWorks>

<PsychWorks>
Software Requirements Specification

Version <1.0>

Revision History

Date	Version	Description	Author
5/6/2025	1.0	Added all sections to the document, added links to the Senior Design site as well.	Will Peck, Hien Dau, Roland Andrade, Alexandra Teran

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Software Requirements Specification

1. Introduction

The PsychWorks Software Requirements Specification (SRS) outlines the functional and non-functional requirements of the system. This document serves as a comprehensive reference for developers, project stakeholders, and the Fort Worth PsychWorks team, ensuring a shared understanding of the system's capabilities, design considerations, and operational expectations.

The SRS provides a detailed breakdown of PsychWorks' purpose, user environments, architectural design, constraints, functional behaviors, data handling procedures, and quality expectations. It is designed to guide the development, deployment, and future maintenance of the system, enabling seamless collaboration among all stakeholders. This document follows a structured and consistent format, referencing supporting materials such as the Vision and Scope document, Use Cases, and UI wireframes. Each section systematically describes the components of the system, helping ensure that PsychWorks can be reliably implemented, scaled, and handed off to future teams without loss of fidelity.

1.1 The Purpose of PsychWorks

The PsychWorks system is built to solve inefficiencies in the neuropsychological assessment reporting process at Fort Worth PsychWorks. Currently, psychologists rely on a manual, time-intensive process that involves filling out report templates by hand, transcribing test scores, and generating descriptive narratives for cognitive and behavioral test results. This often leads to inconsistent formats, redundant work, and slower report delivery.

PsychWorks aims to automate and streamline this workflow. Psychologists and staff will be able to create and manage digital assessment tables, populate them with patient-specific data, and automatically generate well-structured reports. These reports will contain prewritten narratives aligned with score types, removing the need for repetitive writing. By digitizing and centralizing report management, PsychWorks improves efficiency, accuracy, and consistency. The system is designed for use by licensed psychologists and clinical staff, ensuring timely patient documentation and compliance with healthcare standards.

1.2 The Purpose of this Document

The purpose of this document is to describe the functional and nonfunctional requirements for software release 1.0 of the PsychWorks system. This document serves as a comprehensive reference for the project's requirements, offering a clear and detailed understanding of what the system is expected to achieve. It is intended to align stakeholders, developers, and testers by defining the system's scope, core features, constraints, and behaviors. The SRS outlines both external behaviors and internal characteristics necessary for development. By consolidating all requirements into one structured document, it ensures consistency, eliminates ambiguity, and serves as a foundational artifact for design, implementation, quality assurance, and long-term maintenance.

1.3 Document Conventions

This document follows a structured format to ensure clarity and consistency. Each section is numbered according to its hierarchy within the document (e.g., 1.0, 1.1, 1.2). Requirement identifiers follow a structured format with a two-letter prefix that corresponds to the category (e.g., USE-1 for usability requirements, PER-1 for performance requirements, SEC-1 for security requirements). All headings and subheadings are bolded to enhance readability. Key terms and system names, such as **PsychWorks,** are capitalized consistently throughout the document. Where applicable, hyperlinks or references to supporting documents are provided to maintain traceability.

1.4 References

- Project Glossary: URL
- Vision and Scope: URL
- Use Cases: URL
- Business Rules: URL
    - Bottom of page
- Business Domain Model: URL
- The API document is available here: URL.
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2. Project Glossary

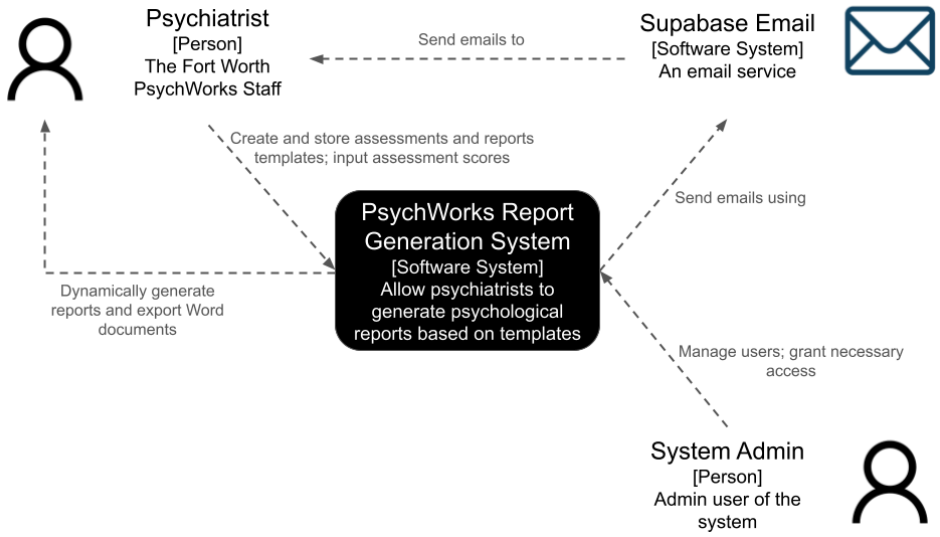
The project glossary is available here: URL.

3. Vision and Scope

The vision and scope document is available here: URL.

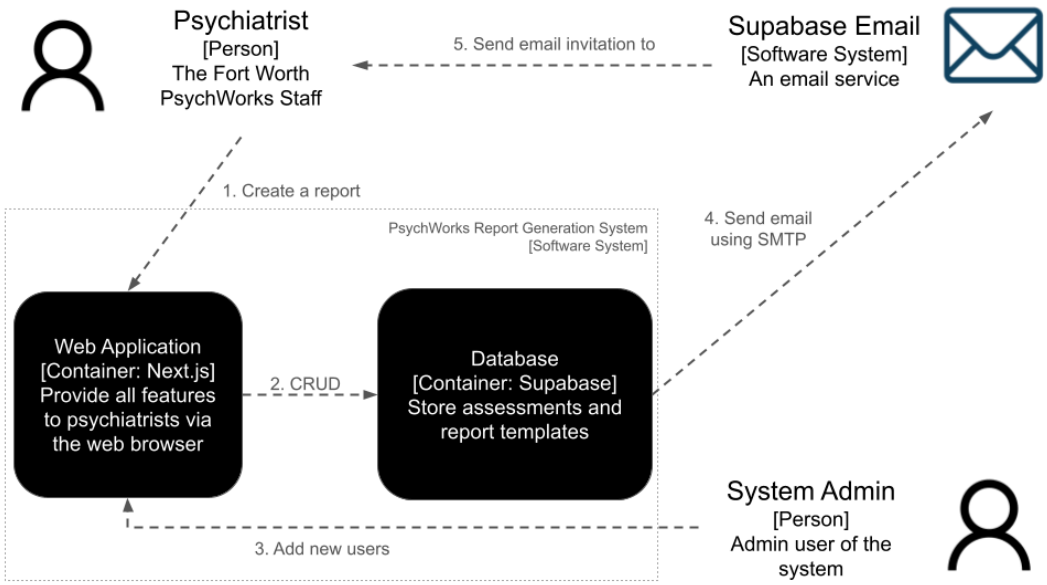
4. Software Architecture

4.1 System Context Diagram



The Level 1: Context Diagram for the PsychWorks Report Generation System provides a high-level overview of its interactions with users. The system serves as the central platform, enabling psychiatrists to manage psychological assessments and psychological report templates. The system integrates with the Supasbase system to send automated email invitations to new users. The designated admin user will manage all other users and grant them special privileges when necessary. This diagram highlights the roles of the Psychiatrist as primary user, the admin, the central functionality of the PsychWorks Report Generation System, and its reliance on Supabase for email communication, offering a clear picture of the system's operational scope and interactions.

4.2 Container Diagram



The Level 2: Container Diagram for the PsychWorks Report Generation System provides a detailed view of its internal architecture, illustrating how the system components interact. The system is composed of two key containers: the **Web Application** and the **Database**, all supported by integration with the **Supabase Email** for email

communication. The **Web Application**, built with Next.js, is delivered to psychiatrists' browsers to provide a user-friendly interface for generating reports and managing interactions with the **Database**. The **Database** stores critical data, such as assessments and report templates. Additionally, the Supabase Email uses SMTP to send email invitations. Here are the detailed steps:

1. Create a Report: The psychiatrists indicate that they want to create psychological reports.
2. CRUD Operations with the Database: The Web Application performs CRUD (Create, Read, Update, Delete) operations on the Database. which extends Postgres. The database securely stores the assessments and the report templates.
3. Add New User: The admin user invites new users to the system.
4. Send Email Using SMTP: The Database will direct its internal email service to send an email invitation to new users.
5. Send Email Invitation: An email will be sent to new users, after which they can sign up and start using the system.

This sequence of actions outlines how the PsychWorks Report Generation System components collaborate to facilitate seamless functionality for the psychiatrists while ensuring efficient data management and communication.

4.3 Operating Environment

OE-1: The system shall operate correctly with the following web browser(s):Google Chrome (all versions)

4.4 Design and Implementation Constraints

CO-1: The runtime must be Node.js version 20.
CO-2: The React.js framework must be version 18.
CO-3: The TailwindCSS framework must be version 3.4.1.
CO-4: The TypeScript programming language must be version 5.

4.5 Assumptions and Dependencies

None

5. Functional Requirements

The PsychWorks system must provide functionalities for managing assessment templates, populating patient scores, generating reports, and exporting final documents. Psychologists and administrative staff should be able to create new cognitive and behavioral test tables, input patient-specific data, and automatically produce written narratives based on score interpretations. The system must also allow for the creation and editing of report templates, secure account access, and export features to PDF or Word formats. These functionalities must operate cohesively through the user interface, backend logic, and database management to ensure efficient and reliable report production.

5.1 Use Cases

The use cases are available here: URL.

5.2 Non-Use Case Functional Requirements

The following functional requirements describe system behaviors that do not stem directly from user interaction but are essential for maintaining proper system functionality and automation. These are expressed in structured EARS format for clarity and precision:

- When a user account is inactive for 15 minutes, the system shall automatically log the user out to protect sensitive data.
- When a report template is saved, the system shall validate the structure and cross-reference all included tables to ensure completeness.
- When an unauthorized user attempts to access a protected resource, the system shall redirect the user to a login page or display an access denied message.
- When template data is changed, the system shall log the change along with the user ID and timestamp for audit purposes..

6. Business Rules

The business rules are available at the bottom of the page here: URL.

7. Data Requirements

7.1 Business Domain Model

The domain model is available here: URL

7.2 Data Acquisition, Integrity, Retention, and Disposal

The system permanently stores assessment templates and report templates to support efficient report generation. No patient data is collected, stored, or transmitted at any point, ensuring alignment with HIPAA compliance requirements. All generated reports are saved locally on the user's device.

Authorized users can delete Assessment Templates and Report Templates, otherwise, they are stored permanently in the Supabase database.

This approach ensures that only non-sensitive configuration data is retained, and all data handling practices conform to relevant privacy and security standards.

8. External Interface Requirements

8.1 User Interfaces

UI-1: The Assessment Template System screen displays buttons to create an Assessment Template, delete an Assessment Template, modify an Assessment Template, or view the details of an Assessment Template. Additionally, a pop-up window prompting the user to enter the name, measured area, type, tests, subtests,, and narrative description of an assessment, as well as a table preview, will be shown when the user is creating an assessment template.
UI-2: The Report Template system screen displays buttons to create, delete, view, or modify a report template. Additionally, a button for generating a report is also present. If creating a report template, the user will be given a dropdown allowing them to select the desired Assessment Templates to be used in this Report Template.
UI-3: The Report Generation system screen displays dropdown menus for each Assessment Template within that report, with a button that can expand or collapse all of them. Additionally, each Assessment Template will contain multiple textboxes for the user to insert scores into, and a preview of the narrative description which is populated by the inputted scores in real time. The system also contains a button to generate the report, which will save the report as a docx file to the user's local machine.
UI-4: The Admin Panel system screen presents a list of all registered users, with buttons to grant or revoke their deletion privileges for Report Templates and Assessment Templates. Additionally, there are buttons for each of these users that allow the admin to delete that user.
UI-5: The Sign-in/Sign-up screen presents the user with fields for entering their credentials and buttons to either sign in with those credentials or sign up with them, as well as a reset password button.

N/A

8.2 Software Interfaces

SI-1: Assessment Template System

SI-1.1: The System shall ask the user to enter the measured area, measure, type, tests, subtests, and narrative description of an assessment when it is created

SI-1.2: The System shall ask the user to modify the measured area, measure, type, tests, subtests, and narrative description of an assessment when it is modified/edited

SI-1.3: The system will display all tests, and subtests of an assessment when viewing

SI-1.4: The system will ask the user if they are sure they want to delete an assessment when deleting an assessment

SI-2: Report Template System

SI-2.1: The System shall ask users to enter the name and the assessments when a report template is created

SI-2.2: The System shall ask the user to modify the assessments of a report template when it is modified/edited

SI-2.3: The system will display all assessments a report template has when viewing

SI-2.4: The system will ask the user if they are sure they want to delete an report template before deleting an report template

SI-2.5: The system will prompt users to enter patient data into dynamic tables when a patient report is to be generated

SI-3: SupaBase Database

The Assessment Template System and Report Template System shall communicate with the database through a programmatic interface for the following operations:

SI-3.1: To allow a user to create, edit, and delete assessment templates

SI-3.2: To allow a user to create ,edit, and delete report templates.

SI-3.3: To allow a user to use their credentials to sign in, granting them a valid access token for the Report Template System and Assessment Template System

SI-3.4 To allow a user to sign-up, storing their credentials securely and allowing for SI-3.3

SI-3.5 To allow the admin user to grant/revoke delete permissions on Assessment Templates and Report Templates and delete any other user.

SI-4: Admin Panel System

SI-4.1: The System shall present the admin user with the list of current users

SI-4.2 The system shall present the admin user with the ability to delete any of the current users

SI-4.3 The system shall present the admin user with the ability to grant/revoke the Assessment Template and Report Template deletion permissions of any current user..

8.3 API Document

The API document is available here: URL.

8.4 Hardware Interfaces

No Hardware interfaces have been identified

8.5 Communications Interfaces

CI-1: The System shall send an email when the user signs up to the system, allowing them to confirm their signup.

CI-2: The System shall send an email when the user requests a password reset, allowing them to confirm the password reset.

9. Quality Attributes

The PsychWorks system is designed to ensure high-quality performance, usability, and reliability for both psychologists and administrative users. These quality attributes focus on making the system efficient, easy to use, and accessible while maintaining data integrity, security, and consistent report output.

9.1 Usability

USE-1: The PsychWorks system shall allow a psychologist to generate a complete assessment report in five steps or fewer.

USE-2: 90% of new users shall be able to complete a basic report generation task within 10 minutes of training or onboarding.

USE-3: The system shall use consistent button placements, fonts, and color schemes across all pages to promote user familiarity and reduce confusion.

USE-4: The user interface shall conform to accessibility standards (e.g., WCAG 2.1 AA), including support for screen readers and keyboard navigation.

USE-5: Form inputs shall include placeholder text, validation prompts, and tooltips to guide users in data entry and reduce input errors.

USE-6: Error messages shall be written in plain language and shall offer actionable guidance on how to correct the issue.

USE-7: The system shall provide undo functionality for template changes and report edits made within the last 5 minutes.

USE-8: Users shall be able to navigate the entire application without the need for external documentation beyond a built-in help or FAQ panel.

9.2 Performance

PER-1: The PsychWorks system shall support up to XXX registered users and a maximum of XXX concurrent users during peak usage hours between 8:00 A.M. and 6:00 P.M. Central Time.

PER-2: XX% of assessment table and report template pages shall load completely within X seconds over a XX Mbps or faster Internet connection.

PER-3: The system shall display confirmation messages to users within an average of X seconds and a maximum of XX seconds after submitting a score, template, or report.

PER-4: The system shall generate and export assessment reports in PDF or DOCX format within an average of X seconds and a maximum of XX seconds.

PER-5: Search and filtering operations within template and report management interfaces shall return results within X seconds for up to XXX stored entries.

9.3 Security

SEC-1: All network transactions involving patient data or personally identifiable information (PII) shall be encrypted using HTTPS with TLS 1.2 or higher, per HIPAA compliance requirements.

SEC-2: Users shall be required to authenticate with a unique username and password before performing any operation beyond the login screen.

SEC-3: Only authorized administrative users shall be permitted to create, edit, or delete user accounts and assign roles, per BR-1.

SEC-4: The system shall enforce role-based access control to restrict access to patient records, report generation tools, and sensitive templates based on user type.

SEC-5: Psychologists shall be permitted to view and modify only the reports and data they have created or been granted access to by an admin.

SEC-6: The system shall log all administrative actions and access to patient data for auditing purposes, in alignment with HIPAA retention policies.

SEC-7: User sessions shall automatically expire after 15 minutes of inactivity to minimize the risk of unauthorized access.

9.4 Safety

SAF-1: The system shall display a confirmation dialog before allowing users to delete any assessment templates, report templates, or patient reports.

SAF-2: The system shall retain a revision history for all editable templates and reports to support rollback in the event of erroneous changes.

SAF-3: In the event of a crash, the system shall restore unsaved progress using the most recent autosave state, captured within the last 60 seconds.

SAF-4: All error messages shall be clear, non-technical, and designed to help users recover from input or system issues without compromising data integrity.

9.5 Availability.

AVL-1: The PsychWorks system shall maintain high availability to ensure psychologists and administrative staff can access assessment templates, patient records, and report generation features without disruption.

AVL-2: Scheduled maintenance periods shall be communicated to users at least 24 hours in advance to minimize operational impact.

AVL-3: The system shall implement automated monitoring and alerts to detect, log, and notify system administrators of downtime or performance issues within 5 minutes of detection.

9.6 Robustness

ROB-1: The PsychWorks system shall handle unexpected errors gracefully, ensuring that patient data, reports, and templates are not lost or corrupted during connectivity or server failures.

ROB-2: If a session is interrupted due to timeout, browser crash, or network issues, users shall be able to resume data entry or report generation without losing progress, using autosaved content.

ROB-3: The system shall implement redundancy and failover strategies to maintain operational stability and prevent downtime during peak usage or infrastructure disruptions.

10. Deployment

The Fort Worth PsychWorks application is deployed using Vercel, a platform optimized for frontend frameworks like Next.js. This allows for the use of Continuous Integration and Continuous Deployment (CI/CD) principles to streamline development and maintain a robust release cycle. Every code commit pushed to the main branch triggers an automated build and deployment process through Vercel, enabling rapid iteration and immediate feedback.

Vercel's integration with GitHub allows for seamless pull request previews and branch-specific deployments, helping developers test changes in isolated environments before merging. This workflow reduces the risk of production bugs and facilitates efficient collaboration among team members. Given the serverless nature of Supabase (used for the backend database) and the Next.js API routes (acting as the API Gateway), the entire application stack remains scalable and low-maintenance after deployment.

11. Internationalization and Localization Requirements

Due to the specific needs of our client, Fort Worth PsychWorks, localization and internationalization were not a primary concern for this project. The application was developed exclusively for use within a single clinical practice based in Fort Worth, Texas, and all users operate within the Central Time Zone. Additionally, English is the only language used by both the staff and their clients in the context of this tool. As a result, there was no requirement to support multiple languages, regional formats, or time zone conversions.

12. Other Requirements

13. Appendix A