<PsychWorks>
Vision and Scope

Version <1.0>

Revision History

Date	Version	Description	Author
09/23/2024	0.1	Initial Documentation	Hien Dau, Roland Andrade, Ryan Smith, Sion Kim
10/19/2024	0.2	Revision and Clarification of Background, product capabilities, and Problem statement	Will Peck
1/15/2025	0.3	Addition of names for potential competition	Will Peck
1/16/2025	0.4	Rewrote and further fleshed out parts of the background and Business opportunity section. Added references to the references section. ~~TODO: add UML diagram and paragraph to background describing current process~~ ~~TODO: Discuss merging product capabilities 1 and 3~~	Will Peck
1/22/2025	0.5	Added reference page to clients current process	Will Peck
1/23/2025	0.6	Added UML diagram outlining current process Added description for current process UML diagram Reworded language on product capability 3 Added UML diagram outlining proposed report creation process Rewrote deployment strategy	Will Peck

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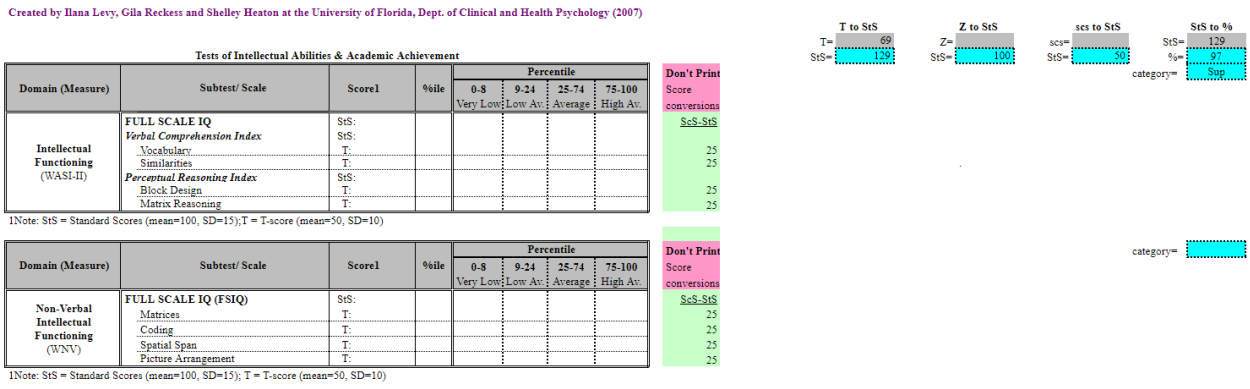
Vision

1. Introduction

The purpose of this document is to collect, analyze, and define the business requirements, i.e., high-level needs, desired ultimate business outcomes, and features of Fort Worth PsychWorks. It focuses on the capabilities needed by the stakeholders and the target users, and why these needs exist in the first place. The details of how the PsychWorks System fulfills these needs are detailed in the use case and software requirements specification.

1.1 Background

Fort Worth PsychWorks is a psychiatry office that offers treatment for all ages. Fort Worth PsychWorks specializes in neuropsychological and psychological assessment, as well as therapy for conditions such as ADHD, Autism Spectrum Disorder, and anxiety. Each patient that is treated has to perform a series of cognitive performance tests. After the patient completes the tests the psychiatrist will create a report that shows all their findings from the various behavioral and cognitive tests taken by the patient. The current process to create reports is to use templates that allow the staff to input the data by hand. The Adult Male MASTER template and the Adult Female MASTER template files are two examples showing what data needs to be filled in for a report. Currently, inputting the data into said report for a patient is tedious and inefficient. The current system starts with psychiatrists administering a multitude of tests in person 1-on-1 as well as online tests through their client portal. On top of this, there is a client interview if applicable where they acquire more data on the patient. Once all the data is acquired it is then input into tables that match the tests the patients took. This process is explained in detail in this sample file. After data is input into the charts the psychiatrists use this data to fill in the blanks of a patient report template that closely matches the patient's description based on other recent patient reports. The process of inputting this data into the charts and then into the patient reports takes anywhere between 45 minutes to two hours to complete. Additionally, the staff like the flexibility of the excel sheet, as it allows them to create "shortened" tests that contain less relevant scores from the test. The basic goal of this project is to make the report creation process require as little human intervention as possible and provide the Fort Worth PsychWorks staff with a more friendly user experience without compromising on the style or flexibility of the current system.



Created by Ilana Levy, Gila Reckess and Shelley Heaton at the University of Florida, Dept. of Clinical and Health Psychology (2007)

Tests of Intellectual Abilities & Academic Achievement

Domain (Measure)	Subtest/ Scale	Score1	%ile	Percentile 0-8 Very Low	9-24 Low Av.	25-74 Average	75-100 High Av.	Don't Print Score conversions
Intellectual Functioning (WASI-II)	FULL SCALE IQ	StS:						ScS-StS
	Verbal Comprehension Index	StS:						
	Vocabulary	T:						25
	Similarities	T:						25
	Perceptual Reasoning Index	StS:						
	Block Design	T:						25
	Matrix Reasoning	T:						25

1Note: StS = Standard Scores (mean=100, SD=15);T = T-score (mean=50, SD=10)

Domain (Measure)	Subtest/ Scale	Score1	%ile	Percentile 0-8 Very Low	9-24 Low Av.	25-74 Average	75-100 High Av.	Don't Print Score conversions
Non-Verbal Intellectual Functioning (WNV)	FULL SCALE IQ (FSIQ)	StS:						ScS-StS
	Matrices	T:						25
	Coding	T:						25
	Spatial Span	T:						25
	Picture Arrangement	T:						25

1Note: StS = Standard Scores (mean=100, SD=15); T = T-score (mean=50, SD=10)

T to StS: T= 69, StS= 129
Z to StS: Z= , StS= 100
scs to StS: scs= , StS= 50
StS to %: StS= 129, %= 97, category= Sup
category=

Figure 1 Shared Template of an empty table that psychiatrists use for cognitive assessment tests

1.2 References

Adult Male MASTER Template.docx

File containing a sample male report

Adult Female MASTER Template.docx

File containing a sample female report

xNeuroPsych NEW Tables (9_30_23).xlsm

File containing a sample spreadsheet showing the current way test scoring is handled.

TCU Project Evaluation Process Overview

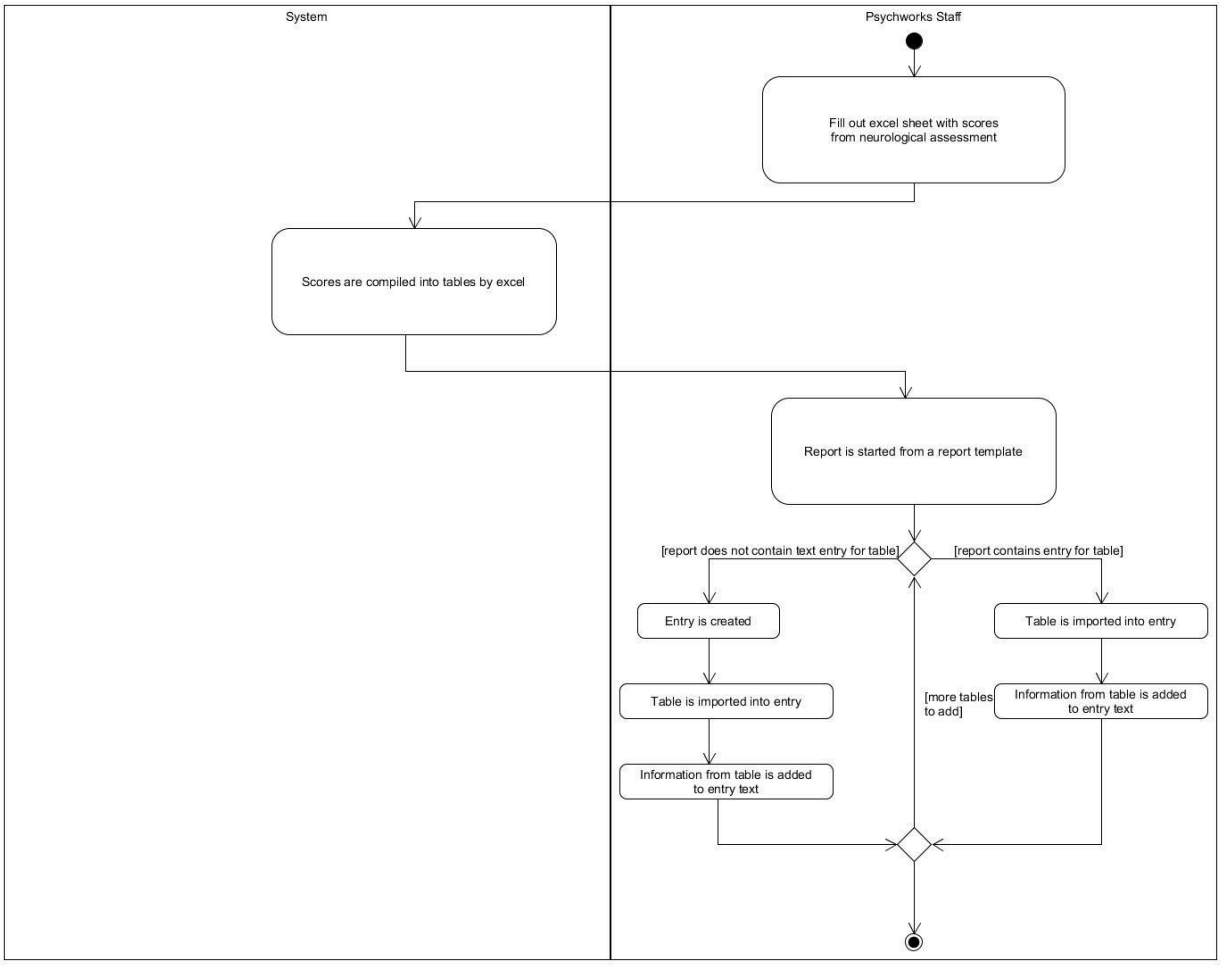
File given by the client giving an in-depth explanation of the current (as-is) process flow.

1.3 Current Process Flows (As-Is Process Flows)

To create a report for a patient based on the performed neurological assessment, psychworks staff:

- Input behavioral and cognitive score information into the correspond test's table in their excel sheet
- These tables compile this score data into digestible information to be inserted into a report
- The report is started from one of a handful of templates similar to the ones in the references section above
- The staff checks to see if the template has an entry for the test table that is to be added to the report
    - If yes, the table is added and variable information from the table is manually inputted into the entry
    - If no, an entry is created for the table. The table is then added and the variable information is inputted.
- The above is repeated until there is no more table information to be added.

For further reading on the current process, refer to the TCU Project Evaluation Process Overview document in the references section. This document contains information on the entire process of meeting a patient. The UML diagram below outlines specifically the table and report creation, AKA where the pain point currently lies.



2. Business Requirements

2.1 Business Opportunity/Problem Statement

The currently used report system is tedious and inefficient. The psychiatrist has to manually find where the test score is to be entered in the patient report, enter it in, then determine the correct language associated with said score. For example, the standardized language for a test might say that a score of 65 constitutes “moderately high symptoms.” It also can take a lot of time to customize a patient report, as some patients may have taken different tests than what are on the standard adult or child templates. Ideally, our software would allow psychiatrists to create, and later select a template, say for a child or adult, add or remove any tests for the current patient report, then generate text and/or tables/charts for the report based on the scores inputted for each test. This would largely free up time for psychiatrists at the clinic, increasing their amount of billable hours.

The problem of	The manual and time-consuming method of inputting data into the patient reports and creating patient charts.
Affects	The psychiatrists, Fort Worth PsychWorks staff, and patients.
The Impact of Which Is	Many hours are wasted on filing paperwork that could be spent treating more patients.

A Successful Solution Would Be	Automating the entire process of creating patient reports and charts, being able to hire more staff, and meet with more patients.

2.2 Business Objectives and Success Metrics

BO-1: Reduce the time it takes to complete a patient report by 10-25%

SM-1: Current: 45 minutes - 2 hours, Goal: 5 - 30 minutes

BO-2: Create tables that can be reused for future patient use

SM-2: Current: One general template that must be modified each time, Goal: Multiple different templates

BO-3: Meet with more patients

SM-3: Current: 6-8 patients per psychiatrist per week, Goal: 12+ Patients per psychiatrist per week. This will be achieved by lowering the amount of time psychiatrists spend writing patient reports, freeing them up for taking more.

2.3 Vision Statement

For	Fort Wort Psychworks writers and psychiatrists
Who	Write patient reports and charts
The PsychWorks System	Web Application
That	Enables the PsychWorks team to auto-generate reports
Unlike	The current manual process or other software vendors that offer data entry services
Our product	Will allow the team to create customizable tables that follow certain psychiatric guidelines and store them for future use. On top of this, the tables will be used to generate reports, resulting in increased productivity by reducing time spent assessing patients.

2.4 Business Risks

RI-1: Issues finding long term support after project completion. (Probability = 0.8, Impact = 2)
RI-2: Issues training new users how to effectively use the system. (Probability = 0.5, Impact = 4)
RI-3: Employees becoming too confident in the new system increasing the amount of errors in the reports. (Probability = 0.1, Impact = 6)

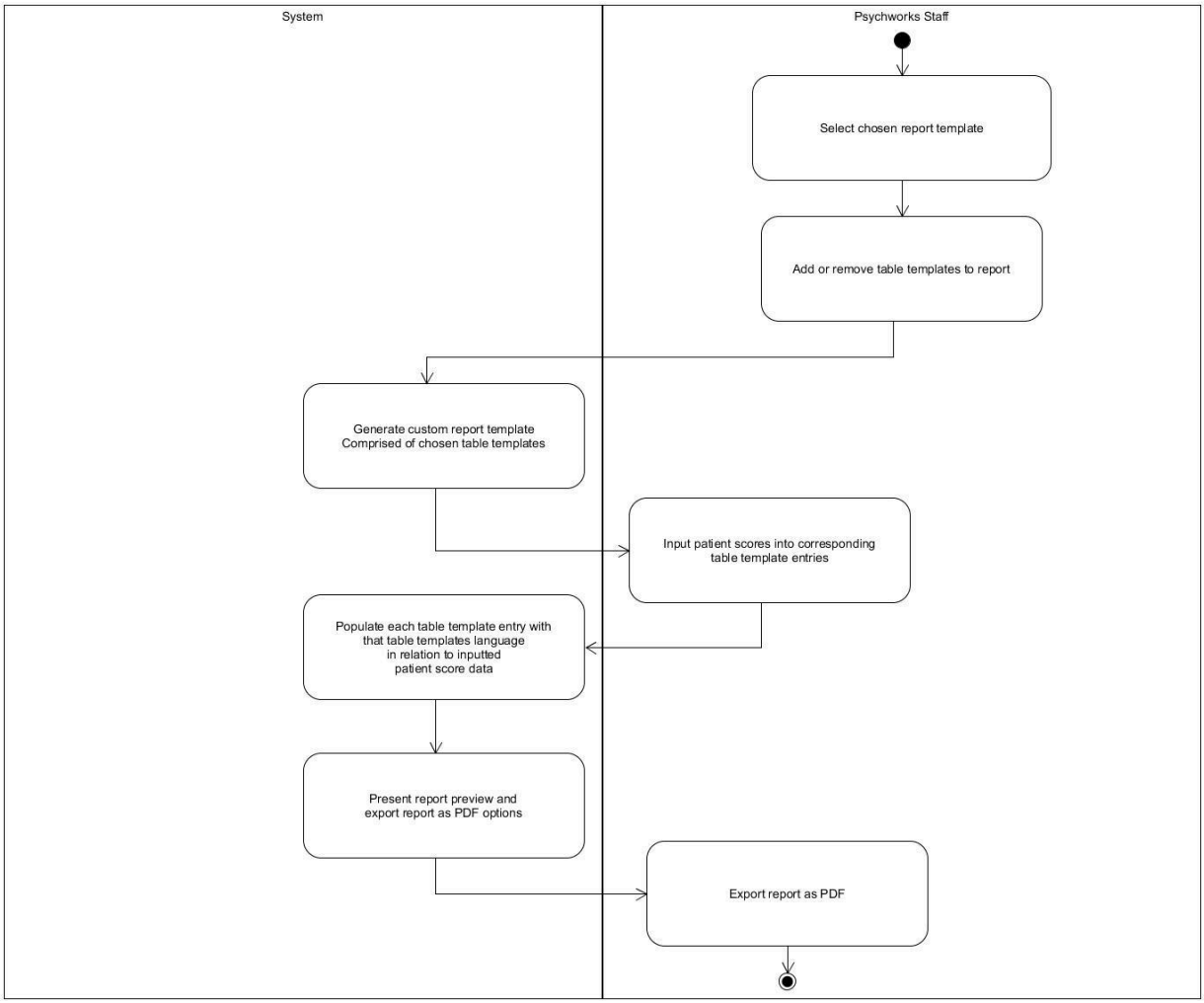
2.5 Business Assumptions and Dependencies

AS-1: Data that is input into the system is correct and has been verified by the psychiatrists.
AS-2: Psychiatrists will have the proper equipment needed to run and facilitate use of the software being built.
AS-3: It is assumed that Fort Worth PsychWorks will continue to use its current way to format data.
AS-4: It is also assumed that Fort Worth PsychWorks will continue to treat patients after the release of this software.
DE-1: Fort Worth PsychWorks must stay compliant and up to date with current psychiatric practices and

regulations instituted by their respective governing bodies.

2.6 Proposed New/Improved Process Flows (To-Be Process Flows)

This activity diagram for the web application demonstrates an enhanced workflow for generating reports. The process begins with Psychworks staff selecting a predefined report template and customizing it by adding or removing table templates. The system then generates a custom report template based on the selected tables. Staff input patient scores directly into the corresponding table template entries. The system automatically populates each table entry with relevant language for each test template based on the inputted patient data. For example, a score of 80 might appear in the language as “very high,” or “80” depending on the context defined in that table template’s specifications. A preview of the report is then presented, offering options for export as a PDF, ensuring streamlined and professional report generation.



3. Stakeholder Profiles and User Descriptions

3.1 Stakeholder Profiles

Stakeholder	Major value or benefit from this product	Attitudes	Major features of interest	Constraints	End user or not?
Patient	Better healthcare service and time usage; improved satisfaction level	Currently unknown	Shorten the evaluation process	None Identified	No
Psychologist	More efficient use of time throughout the day; higher customer satisfaction	Supportive	Shorten the evaluation process; customize reports based on specific patient	Must abide by HIPAA	Yes

3.2 User Environment

There are typically two people included in one evaluation: the psychologist and the client. The actual number depends on the session's nature and the center's availability at the given time. An assessment takes around 4 hours in total. This duration is fairly constant but can change due to specific clients' needs or psychologists trying new techniques. Fort Worth PyschWorks's employees use desktops/laptops/tablets for client meetings and Electronic Health Records (EHR) to store clients' profiles. They also have a client portal that allows booking appointments and joining telehealth sessions. AI tools and dictation systems are also being utilized to record information and generate reports. As mentioned, the center is using EHR, client portals, AI, dictation tools, video conferencing tools, payment processing software, etc. to help with interacting with clients. Our application does not need to integrate with existing ones because it is desired to streamline the assessment process and is intended for internal use (employees at the center) only.

3.3 Alternatives and Competition

- Buying another product, like PsychWriter Pro:
  - Strengths: immediately available to use
  - Weaknesses: the client does not like the design of any existing software
- Artificial Intelligence (AI):
  - Strengths: can generate reports based on client's specifications
  - Weaknesses: cannot process assessment scores

4. Scope and Limitations

Product Capabilities:

1. **Data Integration and Automation:** Generates language based on the score entered for a behavioral test, and language based on scores within the table for a cognitive test. All language will be automatically generated and put into the patient report.
2. **Table Customization:** Users can modify table formats to accommodate varying types of information as required by changing medical practices or specific assessment needs.
3. **Report Template Creation:** Templates containing various sets of behavioral and cognitive test tables can be created and modified for individual use on a specific patient report.
4. **Adaptability to Practice Needs:** Configurable to support various behavioral and cognitive tests as outlined in the practice's operational requirements.

Interfaces to Other Applications:

1. **Data Export:** Supports exporting reports to .docx format for easy editing in Microsoft Word.

System Configurations:

1. **User Access Controls:** Different access levels for various user roles (e.g., clinicians, administrative staff) to ensure data security and integrity. only the staff should have access to this system.
2. **Customizable Templates:** Provides templates that can be customized to reflect the specific domains assessed, such as attention, memory, language, and others, relevant to neuropsychological evaluations.
3. **Scalable Architecture:** Designed to accommodate increases in data volume and user load without performance degradation.

Limitations:

1. **System Compatibility:** Requires compatibility with the practice's current hardware and software infrastructure: Mac OS / Windows
2. **Training Requirements:** Staff may require training to effectively use the new system, including customizing tables and interpreting automated outputs.
3. **Regulatory Compliance:** Must continuously update to adhere to changing healthcare regulations and data privacy laws.

This automated system is designed to enhance the efficiency and effectiveness of neuropsychological assessments by reducing the labor-intensive process of data entry and document preparation, allowing Dr. Gaddis and his team to focus more on patient care and less on administrative tasks.

4.1 Product Perspective

This product is an independent solution specifically developed to meet the documentation needs of Dr. Gaddis' neuropsychological assessments. It enhances the efficiency and accuracy of the practice's operations and offers optional pathways for integration, ensuring flexibility and adaptability to future technological or operational changes.

4.2 Major Features / Scope

Below is a list of the major features that outline the capabilities of the system.

Feature Descriptions:

FE-1: Data Capture and Input

- Capture and input data from neuropsychological assessments, including test results, clinical interviews, and behavioral observations to be used for inputs. This can be done manually through drop down menus or through an automated process.

FE-2: Customizable Table Management

- Provide the ability to create, modify, and delete tables that organize assessment data, allowing for customization according to different assessment types or specific requirements of the practice.

FE-3: Document Generation

- Generate formatted documents from data stored in tables, with the ability to customize the output to meet specific reporting or regulatory requirements.

FE-4: Reporting and Analytics

- Offer reporting tools that allow for the analysis of collected data to identify trends, track treatment efficacy, and support research within the practice.

FE-5: Data Export and Import

- Allow for the export of data to standard formats (PDF) and import from external sources to facilitate data handling and interoperability with other systems.

FE-6: Secure Data Storage

- Implement security protocols to ensure all neuropsychological assessment data, including sensitive patient information, is securely stored. This feature employs encryption and other industry-standard security measures to protect data integrity and privacy. Regular security audits and adherence to healthcare regulations, HIPAA.

Partitioning the System: The system can be logically partitioned into several subsystems based on the related functionalities:

- **Data Management Subsystem:** Encompasses features related to data capture (FE-1), customizable table management (FE-2), and data export/import (FE-5).
- **Document Management Subsystem:** Includes dynamic document generation (FE-3) and reporting and analytics (FE-4).
- **Security and Compliance Subsystem:** A new partition focusing on secure data storage (FE-6) and implementing security measures to protect patient data and ensure compliance with legal standards.

These features and subsystem partitions provide a clear overview of the system's capabilities and how they contribute to achieving the desired benefits for Dr. Gaddis' practice, laying a foundation for detailed system requirements and development planning.

4.3 Deployment Considerations

This section details the necessary information and activities to ensure a successful deployment of the neuropsychological assessment documentation system within the PsychWorks practice environment. It focuses on user access, system availability, data management, infrastructure needs, and preparatory steps for training and business process adjustments.

User Access Requirements:

- **Access Limited to PsychWorks Employees:** The system will be exclusively accessible to PsychWorks employees to ensure confidentiality and control. All users will be authenticated through secure login credentials.
- **Operating Environment:** Since all users are co-located at the PsychWorks office, there is no need to manage access across multiple time zones or remote locations.

System Availability and Usage:

- **Standalone Software Availability:** The software is standalone, meaning it can be used at any time without dependencies on external systems, ensuring reliable access around the clock.
- **Flexible Access:** Employees can use the system during office hours for real-time data entry and access, as well as after hours for report generation and review, accommodating various work schedules and operational demands.

Data Management and Storage:

- **Cloud Data Storage:** Data will be stored in a cloud environment, while employing encryption and other security measures to protect sensitive information.
- **Local Report Storage:** Reports containing sensitive patient data will be stored to the clients machines, ensuring HIPAA compliance.

Infrastructure Changes:

- **Enhanced Security Measures:** Implement advanced security software and protocols to safeguard the stored data. This includes encrypted storage configurations.
- **Regular Data Backup:** Establish a routine for regular backups of the data to prevent data loss

Training and Business Process Modifications:

- **Training Requirements:** Develop a comprehensive training program for all PsychWorks employees that covers the operation of the system, security best practices, and procedures for data entry and retrieval.
- **Business Process Adjustments:** Review and modify existing business processes to integrate the new system seamlessly into daily operations. This includes defining new roles or adjusting existing roles to include system management responsibilities.

Preparation for Deployment:

- **Technical Preparation:** Web application will be deployed to the web using Vercel.

By addressing these considerations, PsychWorks can ensure that the deployment of the neuropsychological assessment documentation system is efficient, secure, and well-integrated into the existing operational framework, thereby enhancing overall productivity and data management within the practice.

5. Other Product Requirements

Standards and Legal Requirements

- HIPAA Compliance: The system must adhere to all HIPAA regulations to ensure patient data privacy and security.
- APA Standards: Compliance with American Psychological Association (APA) standards for psychological testing and reporting.

Hardware and Platform Requirements

- Operating System Compatibility: The system must be compatible with both Mac OS and Windows.
- Cloud Infrastructure: Capable of integrating with cloud storage solutions for secure data management.

Performance Requirements

- Concurrent Users: Support for multiple simultaneous users.
- Data Processing: Ability to handle large datasets from various neuropsychological tests efficiently.

Usability Requirements

- User-Friendly Interface: Intuitive design that requires minimal training for psychologists and staff to operate effectively.
- Customization: Easy-to-use tools for customizing tables.

Reliability and Availability

- Uptime: The system should maintain 99% uptime to ensure constant availability during business hours.
- Data Backup: Automated, regular backups of all data to prevent loss of critical patient information.

Security Requirements

- Encryption: All data must be encrypted both in transit and at rest.
- Access Control: Role-based access control to ensure that only authorized personnel can access sensitive information.

Priorities

1. HIPAA Compliance and Data Security (High Priority, High Stability)
2. Usability and Customization (High Priority, High Stability)
3. Performance and Reliability (High Priority, Medium Stability)
4. Platform Compatibility (Medium Priority, Medium Stability)

Design Constraints

- The system must integrate seamlessly with existing hardware and software infrastructure at Fort Worth PsychWorks.
- The user interface must be designed to accommodate the specific workflow of neuropsychological assessments.

External Constraints

- Ongoing compliance with evolving healthcare regulations and data privacy laws.

Dependencies

- Availability of secure cloud infrastructure for data storage and processing.
- Cooperation from staff for integration of standardized test scoring algorithms, if applicable.