# Software Requirements Specification for Software Engineering: subtitle describing software

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# Contents

# Revision History

| Date | Version | Notes |
|---|---|---|
| Date 1 | 1.0 | Notes |
| Date 2 | 1.1 | Notes |

# 1 Purpose of the Project

## 1.1 User Business

*Insert your content here.*

## 1.2 Goals of the Project

*Insert your content here.*

# 2 Stakeholders

## 2.1 Client

*Insert your content here.*

## 2.2 Customer

*Insert your content here.*

## 2.3 Other Stakeholders

*Insert your content here.*

## 2.4 Hands-On Users of the Project

*Insert your content here.*

## 2.5 Personas

*Insert your content here.*

## 2.6 Priorities Assigned to Users

*Insert your content here.*

### 2.7 User Participation

*Insert your content here.*

### 2.8 Maintenance Users and Service Technicians

*Insert your content here.*

## 3 Mandated Constraints

### 3.1 Solution Constraints

*Insert your content here.*

### 3.2 Implementation Environment of the Current System

*Insert your content here.*

### 3.3 Partner or Collaborative Applications

*Insert your content here.*

### 3.4 Off-the-Shelf Software

*Insert your content here.*

### 3.5 Anticipated Workplace Environment

*Insert your content here.*

### 3.6 Schedule Constraints

*Insert your content here.*

### 3.7 Budget Constraints

*Insert your content here.*

### 3.8 Enterprise Constraints

*Insert your content here.*

## 4 Naming Conventions and Terminology

### 4.1 Glossary of All Terms, Including Acronyms, Used by Stakeholders involved in the Project

*Insert your content here.*

## 5 Relevant Facts And Assumptions

### 5.1 Relevant Facts

*Insert your content here.*

### 5.2 Business Rules

*Insert your content here.*

### 5.3 Assumptions

*Insert your content here.*

## 6 The Scope of the Work

### 6.1 The Current Situation

*Insert your content here.*

### 6.2 The Context of the Work

*Insert your content here.*

### 6.3 Work Partitioning

*Insert your content here.*

### 6.4 Specifying a Business Use Case (BUC)

*Insert your content here.*

## 7 Business Data Model and Data Dictionary

### 7.1 Business Data Model

*Insert your content here.*

### 7.2 Data Dictionary

*Insert your content here.*

## 8 The Scope of the Product

### 8.1 Product Boundary

*Insert your content here.*

### 8.2 Product Use Case Table

*Insert your content here.*

### 8.3 Individual Product Use Cases (PUC's)

*Insert your content here.*

## 9 Functional Requirements

### 9.1 Authentication

**A1:** Description.
*Insert formal Specification*

**Rationale:** Insert Rational
**Fit criterion:** Insert criterion here

## 9.2 System Setup

**SS1:** Description.
*Insert formal Specification*
**Rationale:** Insert Rational
**Fit criterion:** Insert criterion here

## 9.3 User Interactions and Question Handling

**UIQH1:** Description.
*Insert formal Specification*
**Rationale:** Insert Rational
**Fit criterion:** Insert criterion here

## 9.4 Data Collection and Storage

**DCS1:** The database shall store multimedia files including video, audio, and structured data for each session.
*Insert formal Specification*
**Rationale:** These file types are necessary to capture the full scope of the speech-language assessment, including patient responses and the structured data associated with each session.
**Fit criterion:** The system must successfully store and retrieve at least 1GB of video, audio and structured data per session without any data corruption.

**DCS2:** The database shall record the video and audio of an assessment, flagged occurrences (e.g., errors or critical moments during the assessment), and timestamps for each question asked during the assessment.
*Insert formal Specification*
**Rationale:** Storing flagged occurrences and timestamps lets clinicians perform detailed analysis of patient responses and enables them to review specific moments of interest efficiently.
**Fit criterion:** The database shall include video and audio files for 100 percent of recorded assessment sessions, and each recording must have flagged occurrences and timestamps associated with every question asked, retrievable

via query.

**DSC3:** The system shall not store any personally identifiable textual information (e.g., patient name, address, or medical record number) in the database.
*Insert formal Specification*
**Rationale:** To maintain privacy and ensure compliance with data protection regulations such as HIPAA, identifying textual information must be excluded from storage in the database.
**Fit criterion:** A manual review and automated script shall verify that 100 percent of all records in the database accessible by clinicians are anonymized and contain no identifying textual information after every batch upload.

**DSC4:** The database shall group all stored data by a unique user identifier to ensure data can be linked to specific users without storing identifiable information.
*Insert formal Specification*
**Rationale:** Using a unique user identifier allows for data organization and retrieval by patient without compromising patient privacy, supporting the requirement for anonymized data storage.
**Fit criterion:** The system must assign a unique identifier to every user and confirm through testing that all session data is properly grouped and retrievable under that identifier, with no misassociated data.

## 9.5 Video and Audio Data Analysis

**VADA1:** The system shall deploy an analysis model to analyze session data and provide insights regarding speech patterns and disturbances.
*Insert formal Specification*
**Rationale:** Automating data analysis using a model will streamline the process of identifying disturbances and improve the speed and accuracy of evaluations for clinicians/ speech-language pathologists
**Fit criterion:** The model must be deployed and accessible via the platform's infrastructure, successfully analyzing data from at least 200 assessment sessions

**VADA2:** The analysis model shall have access to the video recordings of each session for the purpose of processing and analyzing patient speech

patterns and behavior.
*Insert formal Specification*
**Rationale:** The video data contains essential visual and auditory information that the model needs to analyze in order to assess speech-related disturbances and non-verbal cues.
**Fit criterion:** The model must successfully retrieve and process video data from 100 percent of completed assessment sessions without encountering data access errors.

**VADA3:** The analysis model shall identify speech disturbances, including interruptions, parental assistance on the assessment, or other irregularities in the background.
*Insert formal Specification*
**Rationale:** Detecting disturbances is critical for accurate assessment of speech disorders, providing clinicians/ speech-language pathologists with detailed insights for diagnosis and treatment.
**Fit criterion:** The model must accurately identify and log at least 95 percent of speech disturbances from a set of test videos, validated against human observations.

**VADA4:** The system shall flag detected disturbances and associate them with specific timestamps in the video recordings for easy review by clinicians and speech-language pathologists.
*Insert formal Specification*
**Rationale:** Flagging disturbances and marking the exact points where they occur enables therapists to quickly review the relevant portions of the assessment, reducing the time needed for manual analysis.
**Fit criterion:** For each session, the model must flag at least 95 percent of disturbances and attach the corresponding timestamps, retrievable by query during session review.

## 9.6 Data Processing and Display

**DPD1:** The system shall retrieve processed assessment results from the database for report generation.
*Insert formal Specification*

**Rationale:** Inorder to generate reports, the system must access and extract the necessary data from the database, ensuring that all relevant assessment information is included.
**Fit criterion:** The system shall successfully retrieve all assessment data without errors within 5 seconds of a query being made.

**DPD2:** The system shall automatically generate a comprehensive report based on the retrieved assessment data, including flagged occurrences, timestamps, and patient performance metrics.
*Insert formal Specification*
**Rationale:** Automatically generating a report provides a streamlined process for clinicians to review the patient's performance, saving time on manual data compilation.
**Fit criterion:** The report must include 100% of the required data for each session (video, audio, flagged disturbances, timestamps), and be generated within 10 seconds of the request.

**DPD3:** The system shall display the generated report in a user-friendly format, accessible through the platform's interface.
*Insert formal Specification*
**Rationale:** Clinicians need to be able to easily view and interpret the report to assess patient progress and determine next steps for therapy.
**Fit criterion:** The report must be displayed within the clinician's dashboard, formatted with charts and tables where applicable, and fully load within 3 seconds.

**DPD4:** The system shall store the generated report in the database, linked to the corresponding patient's unique user identifier.
*Insert formal Specification*
**Rationale:** Storing the report ensures that clinicians can access previous assessment results, enabling them to track patient progress over time.
**Fit criterion:** The report must be stored in the database with a unique identifier and timestamp, and be retrievable for at least 5 years after creation.

**DPD5:** Clinicians shall be able to securely access previously generated reports from the database at any time.
*Insert formal Specification*
**Rationale:** Clinicians need on-demand access to reports to monitor progress

and make informed treatment decisions during follow-up sessions.
**Fit criterion:** Clinicians must be able to access 100% of stored reports within 3 seconds via a secure, role-based access system.

# 10 Look and Feel Requirements

## 10.1 Appearance Requirements

*Insert your content here.*

## 10.2 Style Requirements

*Insert your content here.*

# 11 Usability and Humanity Requirements

## 11.1 Ease of Use Requirements

*Insert your content here.*

## 11.2 Personalization and Internationalization Requirements

*Insert your content here.*

## 11.3 Learning Requirements

*Insert your content here.*

## 11.4 Understandability and Politeness Requirements

*Insert your content here.*

## 11.5 Accessibility Requirements

*Insert your content here.*

# 12 Performance Requirements

## 12.1 Speed and Latency Requirements

*Insert your content here.*

## 12.2 Safety-Critical Requirements

*Insert your content here.*

## 12.3 Precision or Accuracy Requirements

*Insert your content here.*

## 12.4 Robustness or Fault-Tolerance Requirements

*Insert your content here.*

## 12.5 Capacity Requirements

*Insert your content here.*

## 12.6 Scalability or Extensibility Requirements

*Insert your content here.*

## 12.7 Longevity Requirements

*Insert your content here.*

# 13 Operational and Environmental Requirements

## 13.1 Expected Physical Environment

*Insert your content here.*

### 13.2 Wider Environment Requirements

*Insert your content here.*

### 13.3 Requirements for Interfacing with Adjacent Systems

*Insert your content here.*

### 13.4 Productization Requirements

*Insert your content here.*

### 13.5 Release Requirements

*Insert your content here.*

## 14 Maintainability and Support Requirements

### 14.1 Maintenance Requirements

*Insert your content here.*

### 14.2 Supportability Requirements

*Insert your content here.*

### 14.3 Adaptability Requirements

*Insert your content here.*

## 15 Security Requirements

### 15.1 Access Requirements

*Insert your content here.*

### 15.2 Integrity Requirements

*Insert your content here.*

### 15.3 Privacy Requirements

*Insert your content here.*

### 15.4 Audit Requirements

*Insert your content here.*

### 15.5 Immunity Requirements

*Insert your content here.*

## 16 Cultural Requirements

### 16.1 Cultural Requirements

*Insert your content here.*

## 17 Compliance Requirements

### 17.1 Legal Requirements

*Insert your content here.*

### 17.2 Standards Compliance Requirements

*Insert your content here.*

## 18 Open Issues

*Insert your content here.*

# 19 Off-the-Shelf Solutions

## 19.1 Ready-Made Products

*Insert your content here.*

## 19.2 Reusable Components

*Insert your content here.*

## 19.3 Products That Can Be Copied

*Insert your content here.*

# 20 New Problems

## 20.1 Effects on the Current Environment

*Insert your content here.*

## 20.2 Effects on the Installed Systems

*Insert your content here.*

## 20.3 Potential User Problems

*Insert your content here.*

## 20.4 Limitations in the Anticipated Implementation Environment That May Inhibit the New Product

*Insert your content here.*

## 20.5 Follow-Up Problems

*Insert your content here.*

# 21 Tasks

## 21.1 Project Planning

*Insert your content here.*

## 21.2 Planning of the Development Phases

*Insert your content here.*

# 22 Migration to the New Product

## 22.1 Requirements for Migration to the New Product

*Insert your content here.*

## 22.2 Data That Has to be Modified or Translated for the New System

*Insert your content here.*

# 23 Costs

*Insert your content here.*

# 24 User Documentation and Training

## 24.1 User Documentation Requirements

*Insert your content here.*

## 24.2 Training Requirements

*Insert your content here.*

# 25 Waiting Room

*Insert your content here.*

# 26 Ideas for Solution

*Insert your content here.*

# Appendix — Reflection

The information in this section will be used to evaluate the team members on the graduate attribute of Lifelong Learning. Please answer the following questions:

1. What knowledge and skills will the team collectively need to acquire to successfully complete this capstone project? Examples of possible knowledge to acquire include domain specific knowledge from the domain of your application, or software engineering knowledge, mechatronics knowledge or computer science knowledge. Skills may be related to technology, or writing, or presentation, or team management, etc. You should look to identify at least one item for each team member.

2. For each of the knowledge areas and skills identified in the previous question, what are at least two approaches to acquiring the knowledge or mastering the skill? Of the identified approaches, which will each team member pursue, and why did they make this choice?