# Software Detail Design

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| PREPARED BY | NAME | TITLE | SIGNATURE |
| REVIEW BY |  |  |  |
| APPROVED BY |  |  |  |

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## 1. PURPOSE

This document is to subdvide the software until it is represented by software units.

## 2. SCOPE

The scope of this document is to document the detail of software unit design, including hardware, program, interface, performance and functional specifications.

## 3. DEFINITIONS, ACRONYMS, AND ABBREVIATIONS

## 4. SOFTWARE ARCHITECTURE OVERVIEW

Please refer to Software Architecture Design Document.

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## 5. DEVELOPMENT PLATFORM AND TOOL

Please reference 5.1 Software Development and Maintenance Plan > [8.3.2. SOFTWARE DEVELOPMENT TOOLS](https://docs.google.com/document/d/1_i8uMje-_tTCxqQKz1w-gne2RPgpQ5YV/edit#heading=h.1pxezwc)

## 6. DETAIL DESIGN

### 6.1 SOFTWARE ITEM SI01-01

This Software item handles display of dental with periodontal stage visualization and manages the frontend UI imaging features. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :———————————— | :———– | | SU0101-01 | Render the length of periodontal estimation | class A | | SU0101-02 | Auto-annotation(Render periodontal stage visualization) | class A | | SU0101-03 | View, zoom, and navigate through imaging layers | class A | | SU0101-04 | Handle image loading and layout for UI | class A | ### 6.2 SOFTWARE ITEM SI02-01 This Software item performs periodontal analysis computations and processing. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :————————— | :———– | | SU0201-01 | Compute periodontal analysis | class B | | SU0201-02 | Send results back the UI layer | class B | ### 6.3 SOFTWARE ITEM SI03-01 This Software item manages account management UI functionality including user interfaces for account creation, editing and deletion. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :——————- | :———– | | SU0301-01 | Display an interactive account management interface | class B | | SU0301-02 | User input validation | class B | | SU0301-03 | Account session management | class B | ### 6.4 SOFTWARE ITEM SI03-02 This Software item handles feature management UI allowing users to enable/disable features based on permissions. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :——————- | :———– | | SU0302-01 | Render a feature management interface | class B | ### 6.5 SOFTWARE ITEM SI03-03 This Software item manages audit logging UI functionality for viewing and filtering system logs. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :————— | :———– | | SU0303-01 | An UI allows users to view | class A | | SU0303-02 | An UI allows users to filter | class A | | SU0303-03 | User could export log entries | class A | ### 6.6 SOFTWARE ITEM SI03-04 This Software item handles file management UI including archive, file listing and file transfer operations. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :—————- | :———– | | SU0304-01 | An archive button | class B | | SU0304-02 | Display and manage file list | class B | | SU0304-03 | Handle file upload/download | class B | ### 6.7 SOFTWARE ITEM SI03-05 This Software item manages settings management UI for application preferences and configurations. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :——————- | :———– | | SU0305-01 | Render a settings management interface | class B | | SU0305-02 | Display settings options | class B | | SU0305-03 | Auto-save settings changes | class B | ### 6.8 SOFTWARE ITEM SI03-06 This Software item handles language management UI including English and Traditional Chinese localization. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :——————- | :———– | | SU0306-01 | Present english locale UI | class B | | SU0306-02 | Present traditional chinese locale UI | class A | | SU0306-03 | Switch between language locales | class B | ### 6.9 SOFTWARE ITEM SI04-01 This Software item manages account management backend services including user authentication and profile management. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :———————— | :———– | | SU0401-01 | Backend services for managing user accounts | class B | | SU0401-02 | Process user registration and login | class B | | SU0401-03 | Handle account deletion and updates | class B | ### 6.10 SOFTWARE ITEM SI04-02 This Software item handles feature management backend services for enabling/disabling features and managing permissions. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :———————— | :———– | | SU0402-01 | Backend to enable, disable features | class B | | SU0402-02 | Manage feature state persistence | class B | | SU0402-03 | Synchronize features across sessions | class B | ### 6.11 SOFTWARE ITEM SI04-03 This Software item manages audit logging backend functionality for recording and retrieving system logs. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :——————- | :———– | | SU0403-01 | Create an audit logging backend to record and retrieve user actions | class A | | SU0403-02 | Append log entries from services | class A | ### 6.12 SOFTWARE ITEM SI04-04 This Software item handles file management backend services for secure file operations. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :——————– | :———– | | SU0404-01 | Backend that allows secure file operations | class B | | SU0404-02 | Maintain file metadata | class B | | SU0404-03 | Manage file permissions | class B | ### 6.13 SOFTWARE ITEM SI04-05 This Software item manages settings management backend for storing and retrieving application preferences. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :———————— | :———– | | SU0405-01 | Backend to store and retrieve application preferences | class B | | SU0405-02 | Load settings defaults | class B | | SU0405-03 | Save and update user preferences | class B | ### 6.14 SOFTWARE ITEM SI04-06 This Software item handles language management backend services including localization APIs. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :———————— | :———– | | SU0406-01 | Compute english locale API | class B | | SU0406-02 | Compute traditional chinese locale API | class B | | SU0406-03 | Fetch and apply localization data | class B | ### 6.15 SOFTWARE ITEM SI05-01 This Software item manages pub/sub and event management for data integration. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :————————– | :———– | | SU0501-01 | Manage event subscriptions | class B | | SU0501-02 | Dispatch and log event messages | class B | | SU0501-03 | Retry failed message deliveries | class B | ### 6.16 SOFTWARE ITEM SI06-01 This Software item handles pre-processing data pipeline including filtering and normalization. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :————————– | :———– | | SU0601-01 | Filtering | class B | | SU0601-02 | Normalization | class B | ### 6.17 SOFTWARE ITEM SI07-01 This Software item manages ML model inference for dental segmentation tasks. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :—————- | :———– | | SU0701-01 | Dental segmentation tasks | class A | ### 6.18 SOFTWARE ITEM SI08-01 This Software item handles post-processing data pipeline including contour extraction and anatomy structure processing. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :————————— | :———– | | SU0801-01 | Contour extraction | class A | | SU0801-02 | Anatomy structure locating | class A | | SU0801-03 | Anatomy structure enhancement | class A | ### 6.19 SOFTWARE ITEM SI09-01 This Software item manages storage for unstructured data with metadata and versioning capabilities. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :————————— | :———– | | SU0901-01 | Store data with metadata and versioning | class B | ### 6.20 SOFTWARE ITEM SI10-01 This Software item handles storage for structured data including indexing and backup functionality. | SOFTWARE Unit | Description | Hazard Class | | ——————— | :————————- | :———– | | SU1001-02 | Indexing | class B | | SU1001-03 | Backup and restore functionality | class B |## 7. UPDATE AND VERIFICATION OF SOFTWARE DETAIL DESIGN Before this document is released, all software unit shall be reviewed to ensure the following:

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| --- | --- | --- |
| Item | Pass/Fail | Check by |
| implements the software architecture | Pass | AAA |
| free from contradiction with the software architecture | Pass | BBB |

Corresponding detailed verification shall be documented in the Software unit verification report.

The document shall update as required in the software development and maintenance plan.