BIM Model Analyzer

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Introduction:

1.1 Purpose

This document outlines the requirements for developing a web application that enables users to visualize Revit models and generate Excel-based bills of materials (BoMs). The application aims to streamline design exploration and manufacturing processes by integrating Autodesk Forge API into a user-friendly interface.

1.2 Scope

The application will allow users to upload Revit files, view 3D models using Autodesk Forge Viewer, extract relevant manufacturing data, and generate BoMs directly from the web interface.

1. User authentication and authorization.
2. File upload functionality for Revit files.
3. Integration with Autodesk Forge API for model visualization.
4. Extraction of component data from Revit models.
5. Generation of Excel-based bills of materials.

System Overview:

The system will consist of the following main components:

1. User Interface (UI):

- The UI component provides a user-friendly interface accessible via web browsers.
- Users can upload Revit files, interact with the 3D model viewer, and generate BoMs.

2. Backend Server:

- The backend server hosts the application logic and serves as the intermediary between the user interface and the Autodesk Forge API.
- It handles user authentication, file management, data extraction, and BoM generation.

3. Autodesk Forge API Integration:

- The application integrates with the Autodesk Forge API to leverage the Forge Viewer for rendering Revit models in the web browser.
- The Forge Model Derivative API is utilized to translate Revit files into a format compatible with web visualization.

4. Excel Generation Module:

- This module is responsible for formatting the extracted manufacturing data into Excel-compatible format for BoM generation.
- It utilizes libraries or tools for Excel file generation based on the extracted data.

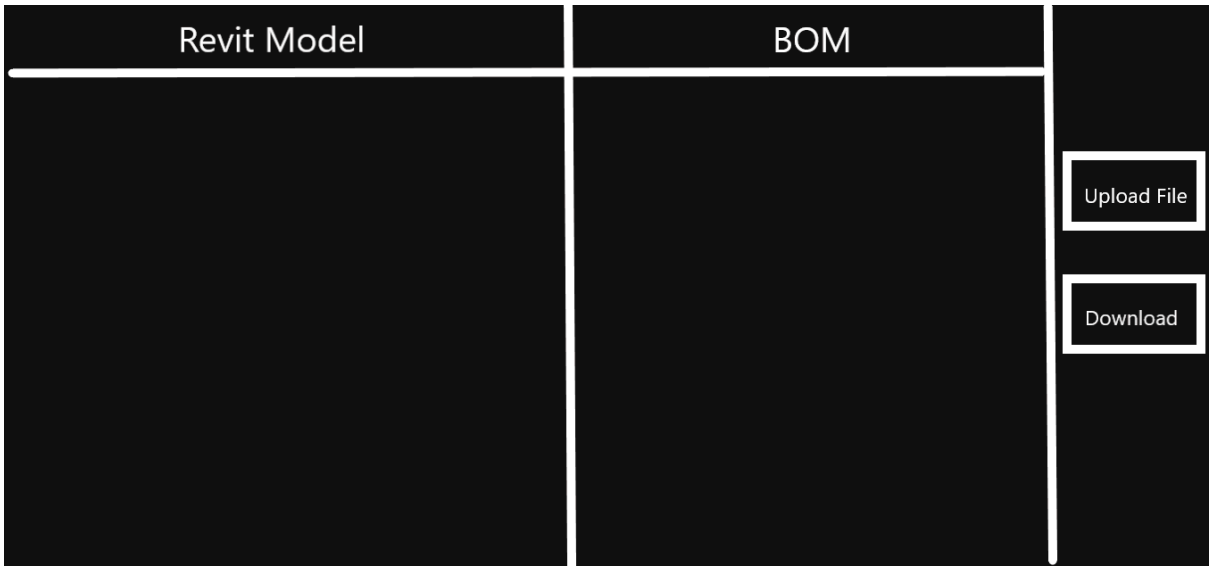
3 Functional Requirements:

- **Upload Revit File and the user can view the Model .**
- **Bill of Materials (BOM) Generation.**
- **Export to Excel Functionality.**

4 Tools:

- **Code Editor/IDE :** VS code .
- **React:** React is a JavaScript library for building user interfaces, and it provides components for creating a modern and interactive UI.
- **TypeScript:** Superset of JavaScript for type-checking and improved code quality.
- **Autodesk Forge API:**utilize Forge services for integrating with react Application.
- **Excel Generation Library:**

5 UI :



Upload File : This button allows users to import a Revit file (.rvt) from the system.

Download :This button allows users to download the generated Bill of Materials (BOM) report in Excel format.

5 Milestones and Timeline:

Sr. No.	Milestones	Date and Time
1.	SRS preparation	7 May - 10 am
2.	SRS Presentation	7 May - 2 pm
3.	SRS approval	7 May - 7 pm
4.	GUI Design	8 May - 7 pm
5.	Autodesk Forge API integration	9 May - 7 pm
6.	Convert Json file data into Excel using library	10 May - 7 pm
7.	Testing & Debugging	12 May - 7 pm
8.	Finalization & Presentation	13 May - 11 am

6 Conclusion:

This Software Requirements Specification (SRS) outlines the requirements for developing a web application to visualize Revit models and generate bills of materials (BoMs). By integrating with Autodesk Forge API, the system aims to streamline design exploration and manufacturing processes.

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