**KMTI Data Management and Invoicing System**

**Project Overview**

Problem Statement:

The company currently manages CAD files in local folders, leading to:

* Slow file searches
* No integration with invoicing (billing is manual/separate)
* Disorganized project tracking (files ≠ invoices).

Solution:

Desktop application with:

* Fast CAD file search
* Automated invoicing (PDF)

**Tech Stack**

**Core Application Framework**

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| **Language** | Python 3.9+ |
| **Runtime** | CPython (64-bit) |
| **Packaging** | PyInstaller + Inno Setup |

**File Processing & CAD Integration**

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| **AutoCAD Automation** | AutoCAD COM API via pywin32 |
| **3D File Parsing** | pythonocc-core (Open CASCADE) |
| **2D Thumbnails** | AutoCAD Export + Pillow |
| **File Watching** | watchdog |

**Search & Database**

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| --- | --- |
| **Search Engine** | SQLite FTS5 |
| **Index Storage** | SQLite |
| **Query Optimization** | Trigram search |
| **Metadata Cache** | JSON + SQLite BLOB |

**User Interface**

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| --- | --- |
| **UI Framework** | PyQt5 |
| **3D Viewport** | Qt3D |
| **Thumbnail Grid** | QGraphicsView |
| **Theme Engine** | Qt Style Sheets |

**Project Roadmap**

Phase 1: UI Designing and Core File Management (1st week)

Phase 2: Invoicing System (2nd week)

Phase 3: UI & Integration (3rd week)

Phase 4: Testing & Handover (Remaining week)