

EstimAI – Full Scope Document (v0.2)

Objectives

EstimAI is an AI-powered estimating assistant designed to help contractors quickly generate accurate, professional bids for construction projects. It automates takeoffs, scope generation, bid leveling, risk assessment, cost estimation, and bid packaging.

Core Features

- PDF Ingest: Upload drawings/specs; system creates sheet_index.json and spec_index.json.
- Takeoff Agent: Extracts quantities from drawings.
- Scope Agent: Extracts inclusions, exclusions, and scope details from specs.
- Leveler Agent: Normalizes and maps takeoff items to assemblies.
- Risk Agent: Identifies risks, schedule impacts, and assumptions.
- Estimate Agent: Maps assemblies and quantities to unit costs from RSMeans or contractor-provided costbooks.
- Bid Generator: Produces polished contractor-ready bid PDF with estimate summary, scope, and risks.

Tech Stack

Backend: FastAPI (Python), orchestrator pattern for agents Frontend: React (Vite) UI for upload, running agents, and displaying outputs Data: RSMeans (or other costbooks), JSON artifacts AI: LLM-powered agents with strict JSON schema validation Exports: JSON + PDF (ReportLab/Docx)

Current Status (v0.1)

- PDF ingest works, producing sheet_index.json and spec_index.json.
- Takeoff and Scope agents produce schema-valid JSON outputs.
- Artifacts saved per project and listable via API.
- Tests exist for ingest and artifacts listing endpoints.
- Next: Tightening Leveler & Risk prompts; then integrate Estimate + Bid outputs.

Extended Scope: Estimate + Bid Generation

The final deliverable for contractors is a professional estimate and bid package. This layer transforms structured agent outputs into a submission-ready document.

- Estimate Agent: Consumes takeoff + leveler outputs; applies unit costs.
- Cost Sources: RSMeans, subcontractor quotes, or internal costbooks.
- Outputs: Line-item estimate JSON (quantities, unit costs, totals).
- Bid PDF: Includes project info, scope of work, estimate summary table, risks/clarifications, and total bid.

Roadmap

- Short term: Tighten Leveler and Risk prompts; add estimate agent.
- Mid term: Export contractor-ready bid PDFs; simple frontend integration.
- Long term: Database persistence, bid versioning, subcontractor integrations, analytics.