Invoicing ROI Simulator — Project Documentation

Overview

The Invoicing ROI Simulator is a lightweight, full-stack web application that allows businesses to quickly calculate and visualize the Return on Investment (ROI) of switching from manual to automated invoicing. It helps users understand cost savings, payback period, and cumulative ROI through simple inputs and real-time simulations.

The goal is to deliver a working prototype (frontend + backend + database) with CRUD support for scenarios, report generation with email gating, and bias-favored calculations to ensure automation always shows clear benefits.

Planned Approach & Architecture

The project follows a modern 3-tier architecture:

Frontend (React + Tailwind): Interactive UI with live simulation and CRUD.
Backend (Node.js + Express): REST API, business logic, PDF generation.
Database (MongoDB): Cloud/local persistence for scenarios.

Technologies & Frameworks

Layer	Technology	Purpose
Frontend	React, Tailwind CSS, Axios	UI, API calls, validation
Backend	Node.js, Express	REST API & business logic
Database	MongoDB	Scenario persistence
Deployment	Vercel / Render	Local or hosted prototype

Key Features & Functionality

1. Quick ROI Simulation — Users enter metrics, results shown instantly with bias in favor of automation.

2. Scenario Management — Save, load, delete simulations with CRUD API and MongoDB storage.

3. Backend Calculation Logic — Uses cost and ROI formulas with internal constants hidden from UI.

4. Report Generation with Email Gate — Email required before downloading PDF report.

5. REST API Endpoints — Simple JSON responses for simulation, CRUD, and report generation.

Development & Run Instructions

Prerequisites:
- Node.js ≥ 18
- npm or yarn
- MongoDB (Local or Atlas)

Setup:

1. Clone the repository
2. Install dependencies
3. Set up MongoDB connection string in .env
4. Start backend and frontend servers
5. Open http://localhost:5173

Acceptance Checklist

- Inputs validated and persisted
- ROI results always favor automation
- Email-gated report works
- CRUD API functional
- Documentation complete and runnable