

# What-If RAG Chatbot & Explainable Project Dashboard

**Aurigo Hackathon 2025** | Technology-driven Innovation in Construction and Infrastructure

Presented by The Multiverse Task Force



# The Challenge: Construction's Data Darkness

## Critical Pain Points

- Isolated data silos
- Slow document reviews
- Manual compliance audits
- Dashboards lack context
- Cost overruns
- Material waste & safety hazards
- Schedule delays
- Lack of real-time forecasting

## The Real Cost

Unanswered "What if?" questions about budget changes, timeline shifts, or safety standards lead to high-stakes decisions without critical context.

# Our Solution: Intelligence That Explains Itself

We empower construction teams with immediate, explainable data insights.



## Data Unification

Aggregate all project data into a unified knowledge base.

## What-If Scenarios

Instantly answer critical "what-if" questions for better decisions.



## Transparent Reasoning

Understand the 'why' behind every insight, not just outputs.



## Visual Clarity

Intuitive dashboards for project health, risks, and recommendations.

# How It Works: From Upload to Insight



## Upload

Upload project documents



## Parse & Chunk

Chunking extracts meaningful segments



## Embed & Index

Embeddings enable semantic search



## Natural Language Query

Ask questions in plain English



## Explainable Answer

LLM provides reasoning and citations

Every metric includes the **"why"**, with citations and logic for auditable decisions.

# Live Example: Q&A with Reasoning

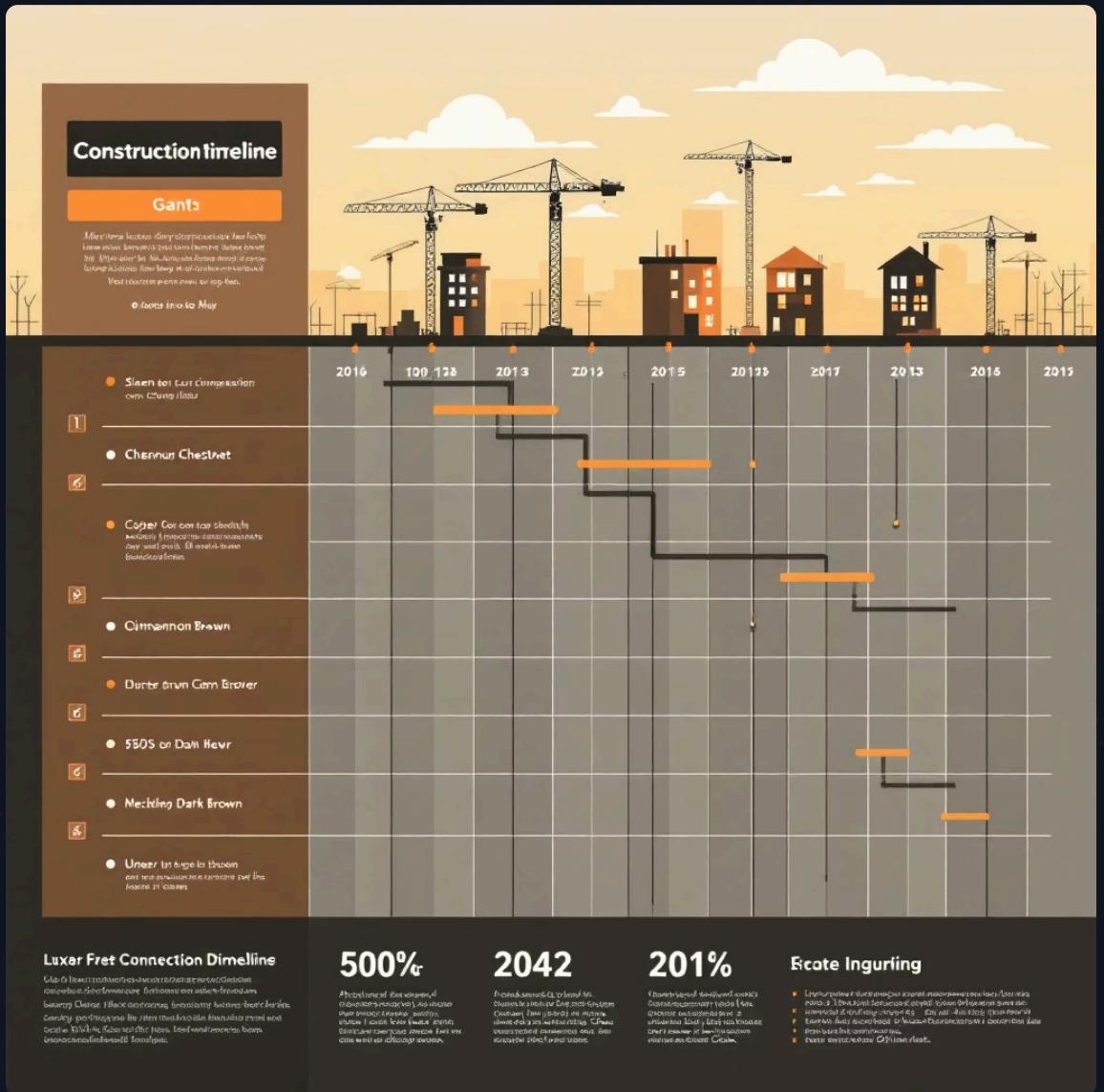
## User Question

"When is project completion expected?"

## AI Response

□ June 2026

Delay risk identified due to late supplier commitment.



# Overall Project Score

# 3.14/5



## Project Strengths

- Advanced design specifications
- Strong safety record & high PPE compliance

## Project Weaknesses

- Budget fluctuations
- Inconsistent completion rates
- Missed energy targets

## Recommended Next Steps



### Review Supplier Schedules

Mitigate timeline risks from late commitments.



### Implement Cost-Tracking

Improve budget control with granular expense monitoring.



### Develop Sustainability Strategies

Meet energy targets for environmental impact.

Detailed Parameter Analysis →

# Detailed Parameter Analysis

★★★★☆ 3.25

## Cost

Fluctuations due to material price changes and unexpected scope variations.

★★★★★ 3.75

## Compliance

Strong adherence to regulatory standards and safety protocols.

★★☆☆☆ 2.0

## Sustainability

Missed energy efficiency targets and low adoption of eco-friendly materials.

Our platform ensures that every parameter score is backed by transparent reasoning, providing a clear audit trail for all decisions.

★★★☆☆ 3.05

## Timeline

Delays primarily linked to late supplier commitments and permitting issues.

★★★★★ 3.65

## Design

High marks for innovative architectural specifications and functional layouts.





# What Makes Us Different

## Unified Intelligence Platform

Contract understanding, planning insights, and risk analysis in one AI-powered system.

## Real-Time Scenario Testing

Instantly test planning decisions and see budget, timeline, compliance, and safety impact.

## Explainable AI Insights

Complete transparency — every result includes reasoning, not just scores or predictions.

## Smart Project Health Scoring

Dynamic scoring across cost, timeline, design quality, compliance & sustainability.

## Automated Document Analysis

AI reads contracts/reports, highlights risks, key terms, and compliance gaps automatically.

## Actionable Recommendations

For every scenario, get the next 3 specific actions to improve project outcomes.

## Conversational Decision Support

Ask natural questions like "What if material costs rise?" and get instant AI guidance.

# Join the Multiverse: Try Our Demo

## Smarter Chunking

Adaptive semantic parsing for improved document analysis.

## Persistent Sessions

User profiles & insights for personalized experiences.

## Enhanced Formats

PDF, BIM, CSV integration for comprehensive data handling.

## Feedback From LLM

User-guided LLM improvement for continuous optimization.

## Reporting

Audit reports & summaries for clear insights.

See the tangible benefits of our platform:

## Future Vision

We're continuously innovating to bring you even more powerful capabilities. Here's a glimpse into what's coming next:

- **Advanced AI reasoning capabilities**

Deeper analytical insights and predictive intelligence.

- **Enhanced visualization tools**

Intuitive and interactive data representations for better decision-making.

- **Real-time IoT sensor integration**

Seamless incorporation of live operational data.

- **Expanded format support**

Compatibility with an even broader range of document and data types.



Ready to transform your construction and infrastructure projects?

[Watch Demo Video](#)

Scan to Experience the Demo

# Thank You

This project is made by Sparsh Agarwal & Divy Dobariya

We are dedicated to pioneering **technology-driven innovation** to transform construction and infrastructure for a smarter, more efficient future.

[Contact us](#)

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**Team:** The Multiverse Task Force | **Event:** Aurigo Hackathon 2025

Technology-driven Innovation in Construction and Infrastructure

