# Data Driven Job Scheduler

Field Session Project Proposal – Fall 2026

## 01 Company Background

Infinity Technology Systems provides software and managed IT for construction companies, built around how they actually work. We come from construction, so we do IT with a construction mindset. That's what sets us apart: we've been in our clients' shoes, and the trade's focus on getting the details right is what we bring to everything we build.

Our work spans custom software suites, AI-powered workflows, system administration, and full managed IT. We take on hard, current problems, the kind of technical work most companies aim at flashier industries, and point it at construction instead.

## 02 Project Background

When a construction project kicks off, someone has to turn estimating data, the quantities and takeoffs from the bid, into a real schedule: what gets built, in what order, and how long each piece takes given the assigned crews. Today that happens by hand between a project manager and a superintendent, then lives in a spreadsheet that goes stale the moment work starts. This project builds a tool that generates a sequenced, dependency-aware schedule from that data and keeps it honest as the job unfolds.

There are two problems worth sinking your teeth into. The first is building the timeline itself. Every task takes as long as its size divided by how fast the crew works, and tasks depend on each other in ways that matter, you can't pour concrete until the formwork under it is built. So the schedule is really a web of dependencies, and the job is to form it into a dated plan: figure out what can start when, chase those dates

through the chain, and flag the tasks that actually decide the finish date. The second problem is what keeps it from being a dead chart. As crews report progress from the field, the schedule reworks itself, pushing dates downstream and even learning the crew's real pace instead of trusting the original estimate. That live feedback loop, where the plan keeps up with the job, is the part with real depth.

Put together, the tool turns estimating data into an interactive Gantt chart. Creates tasks as bars on a calendar with their dependencies drawn in and progress shaded as work gets done. A feedback loop recomputes the timeline live as crews report from the field. A schedule that builds itself from real data and tracks reality as the job moves is the heart of the project.

## 03 Recommended Stack

We'd suggest Python on the backend and React on the front end. There are really three parts to build: something to turn the project data into a scheduled timeline, an interactive Gantt view to see and adjust it, and a live layer so updates from the field flow back in and reshape the plan. Libraries like frappe-gantt or vis-timeline give you a head start on the chart, a graph library like NetworkX helps with the task dependencies, and websockets are a straightforward way to handle the live updates. That said, this is just a starting point. If the team sees a better way to build it, we want to hear it.

## 04 Desired Skillset

- Interest in Front-end development, specifically React preferred
- Interest in algorithms, scheduling, or optimization problems
- Interest in working with data visualization or charting libraries
- Interest in real-time systems and live data updates
- Python backend development experience, or a willingness to learn
- Adaptable and self-directed. This project rewards independent research and picking up new tools on the fly

## 05 Preferred Team Size

We recommend a team of 4 students to ensure meaningful collaboration and a well-rounded skill set across the project.

## 06 Location

All work can be done remotely, with consistent support and regular feedback from the ITS team through virtual meetings and online tools. The team is based in New Braunfels, Texas, and is available for industry context and guidance throughout the project, but a member of staff will be available on Mines campus for consulting. Infinity Commercial and Industrial Concrete will be advising on the project.