



# Multilingual Blueprint Renderer

Field Session Project Proposal – Fall 2026

## 01 Company Background

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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

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Construction plans are dense, technical documents: multi-page PDFs packed with annotations, callouts, dimensions, and spec notes. When those plans reach Spanish-speaking crews and subcontractors, critical details get lost in the gap. Closing that gap is a real computer vision and NLP challenge, not a wrapper around a translation API.

There's some genuinely fun engineering here. Detection is the first real puzzle: plan sets aren't clean documents, so the team will push past off-the-shelf OCR into real computer vision, text region detection on angled callouts, tiny labels, and irregular layouts. Translation is the next layer, where modern LLMs and machine translation APIs get put to work on domain-specific construction terminology. Then there's the geometry of reflowing translated text back into place, since Spanish runs 20 to 30 percent longer than English and the team gets to figure

out how to scale, wrap, or fit it while keeping the drawing readable. It's a full ML-powered pipeline with real depth to dig into.

Put together, the tool ingests a PDF plan set, detects the text on every page, runs it through the translation pipeline, and renders the result back in the same positions, an output that reads like the original plan in another language, with no reformatting and no second document to check on site. Infinity Commercial and Industrial Concrete is advising on the project and will provide real plan sets and language context from an active job.

### 03 Recommended Stack

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We recommend Python for the backend and React for the frontend. The core pipeline breaks down into four pieces: PDF parsing, computer-vision text detection on image-based plans, an LLM-driven translation layer tuned for construction terminology, and a rendering step that places translated text back onto the page. PyMuPDF and OpenCV are good starting points for parsing and detection, and translation can run through an LLM API like OpenAI, or dedicated services like DeepL or Google Translate. All of that said, we're open to the team's judgment on tooling. If there's a better way to solve the problem, we want to hear it.

### 04 Desired Skillset

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- Interest in computer vision, OCR, or natural language processing
- Willingness to learn Python backend development
- Interest in with PDF and image processing
- Interest in Front-end development
- Interest in working with LLMs and translation or other AI APIs
- Adaptable and self-directed. This project rewards independent research and picking up new tools on the fly

## 05 Preferred Team Size

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

## 06 Location

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All work can be done remotely, with consistent support and regular feedback from the ITS team through virtual meetings and online tools. Infinity Commercial and Industrial Concrete will also be available in an advisory capacity for industry context and guidance. We will have an on-site team member for consultation.