

MudSlinger

CSCI 370 – Advanced Software Engineering

Project Proposal

Why This is the Project You've Been Looking For

Picture a framing crew that needs three yards of 4,000 psi concrete for a footing pour first thing tomorrow. Today, that means working the phones: calling two or three batch plants, hoping someone picks up, negotiating a minimum load, and crossing your fingers that the truck shows up inside the window you were promised. Concrete is also brutally unforgiving about time, most mixes need to be placed within about 90 minutes of batching before they start to set up in the drum. That combination of fragmented suppliers and a hard countdown clock is exactly the kind of problem an on-demand marketplace was built to solve. Think Uber Eats, except the “restaurant” is a ready-mix batch plant and the “order” is three yards of mix showing up at a job site before it goes off.

That's MudSlinger: a marketplace that connects contractors, builders, and DIY customers who need ready-mix concrete with the nearest available batch plants and mixer trucks, so an order can be placed, priced, and dispatched in minutes instead of an afternoon of phone tag. You'll own the full stack: a front end for browsing vendors and placing orders, back-end services that handle real-time matching, dispatch, and dynamic pricing, database design for vendor capacity and delivery zones, live order tracking, and payment processing. You'll also get to explore agentic development patterns and build something modular enough to scale with a fast-growing company. Work remotely on your schedule with weekly mentorship from VeroTouch's team, and walk away with a portfolio piece that proves you can design, build, and deliver real revenue-driving software. Strong performers get a direct line to internships and career opportunities at one of Colorado's most exciting construction-tech companies. Ready-mix delivery hasn't changed in decades, the only question is whether you'll be the team that finally fixes it.

Company Background

VeroTouch is a forward-thinking construction technology platform company headquartered in Salida, Colorado. Founded in 2023, VeroTouch is dedicated to inventing better ways to build and

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serving as a catalyst for positive change in the construction and manufacturing sectors. The company leverages robotics, automation systems, advanced material science, and repeatable processes to transform traditional building practices. VeroTouch provides comprehensive turn-key services, including architecture, design, engineering, automation, manufacturing, and construction.

The company specializes in innovative methods such as 3D construction printing of concrete homes and structural insulated panel (SIP) systems, while also incorporating hybrid and traditional stick-built approaches. VeroTouch has completed Colorado's first 3D-printed homes and is actively developing communities that combine these technologies to deliver sustainable, energy-efficient, cost-effective, and resilient housing solutions. By integrating technology with practical construction expertise, VeroTouch addresses critical challenges in housing affordability, sustainability, labor shortages, and workforce development. As a company that runs on concrete every day, VeroTouch feels the pain of ready-mix logistics firsthand, which is exactly why this project matters to us. The company is committed to continuous innovation and welcomes collaboration with emerging talent through internships, apprenticeships, and project-based learning.

Project Description

VeroTouch seeks to develop MudSlinger, a web-based marketplace application that connects buyers who need ready-mix concrete with nearby batch plants and independent mixer-truck operators who have available capacity. Buyers will specify what they need, mix design and PSI rating, quantity in cubic yards, slump, any additives, delivery address, and requested time window, and the platform will surface real-time matches, live pricing, and an estimated arrival time, the same way a food delivery app surfaces nearby restaurants that can fill an order.

Students will engage in every phase of the solution, from requirements gathering and system design through implementation, testing, documentation, and final delivery. The project will begin with an analysis of the ready-mix concrete supply chain and VeroTouch's vendor network, followed by the creation of a modular, scalable marketplace application.

The system must handle the following core functionalities:

- Provide an intuitive, responsive web interface for buyers to submit concrete orders specifying mix design, PSI strength, quantity in cubic yards, slump requirement, special

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additives (fiber reinforcement, accelerants, etc.), delivery address, and requested time window.

- Implement a real-time matching engine that identifies the nearest available batch plant or mixer truck based on order size, distance, current plant capacity, and truck availability, accounting for concrete's limited pour window after batching.
- Calculate dynamic, instant pricing based on mix design, quantity, delivery distance, and demand (for example, premium pricing for last-minute or after-hours orders), so buyers see a real quote before they book.
- Support live order tracking, dispatch confirmation, in-transit status, and estimated arrival, so crews aren't standing around a job site waiting on a truck.
- Include a vendor-side dashboard for batch plants and independent operators to manage capacity, set a service radius, list available mix designs and pricing, and accept or decline incoming orders.
- Ensure responsive design for use in the field on phones and tablets, with attention to accessibility and user experience best practices, since most buyers and drivers will be using this from a job site, not a desk.

The architecture should be modular to facilitate future expansions, such as integration with VeroTouch's own batch plant scheduling, route optimization for multi-stop deliveries, or fleet-management features for larger vendors. Development may include a front-end framework for the user interface, a back-end service for matching and pricing logic, and a database for vendor inventory, delivery zones, and order history. Students should consider cloud-based deployment options for scalability and security.

This project builds on the innovative ethos of VeroTouch and will result in a functional prototype that can be demonstrated to vendors and internal stakeholders. Documentation of the system design, data models, and recommendations for future enhancements will be required as part of the final deliverables.

Outputs

MudSlinger is not simply a buyer-facing ordering tool, it must generate actionable outputs that feed directly into a vendor's dispatch and delivery workflow. The platform must produce the following outputs:

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- **Order Matching & Dispatch:** Matched orders must automatically route into the selected vendor's dispatch queue, capturing order specs, delivery address, time window, and buyer contact information without manual phone calls.
- **Digital Delivery Ticket:** Each completed order must generate a digital batch/delivery ticket documenting mix design, quantity, batch time, and pour-by time, giving both the vendor and the buyer a clean record for the job file.
- **In-Platform Payment and Booking:** The tool must support buyers completing payment directly within the platform, eliminating back-and-forth invoicing between buyer and vendor.
- **Order Summary Exports:** Exportable order confirmations (e.g., PDF) summarizing mix specs, pricing, and delivery details for use by both the buyer and vendor throughout the project.

Desired Skill Set

The ideal team will bring a mix of the following skills, though expertise in all areas is not required. Students are encouraged to learn new languages, frameworks, or tools as part of the project, and mentorship will be provided to support technical growth:

- Web application development, including modern front-end frameworks (such as React, Vue.js, or Angular) for building responsive and interactive user interfaces.
- Agentic development approaches are strongly encouraged. Students should explore AI-assisted or agent-driven development patterns that produce clean, readable, and editable codebases. Identifying and working with a model or framework that will scale with VeroTouch's long-term needs, and that the VeroTouch team can actively use and build upon, is considered cutting-edge programming and is a welcome area of exploration for this project.
- Back-end development and API design (e.g., using Node.js/Express, Python with Django or Flask, or similar technologies) to handle matching logic, dispatch rules, and real-time updates. Students are encouraged to evaluate and select stacks based on long-term viability, favoring robust, well-maintained technologies over anything at risk of losing support in the near term.
- Database management and data modeling (e.g., SQL or NoSQL databases such as PostgreSQL or MongoDB) for storing vendor inventory, delivery zones, pricing rules, and order history.

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- Geolocation and mapping integration (e.g., Google Maps or Mapbox APIs) for proximity-based vendor matching and delivery tracking.
- State management and real-time functionality (e.g., handling live dispatch and tracking updates without full page reloads).
- User interface and user experience (UI/UX) design principles, including responsive design, accessibility standards, and clear visual feedback for order status.
- Basic understanding of authentication, data security, and access control practices, given the sensitive nature of payment and location data.
- Experience or willingness to work with version control (Git), collaborative development workflows, and deployment processes.
- Additional beneficial areas include cloud services (e.g., AWS, Azure, or Vercel for hosting), testing frameworks, and documentation tools.

The project will involve full-stack development, integration of front-end and back-end components, and consideration of modular, maintainable code structures.

Preferred Team Size

3–5 students. This range supports effective division of labor across front-end implementation, back-end matching and dispatch logic, vendor-side tooling, testing, and documentation, while fostering strong team collaboration.

Work Location

All work will be performed remotely. Students may utilize their preferred collaboration and communication tools. Regular virtual meetings (typically once per week) will be scheduled with VeroTouch mentors to accommodate campus academic responsibilities.

Non-Disclosure Agreement and Intellectual Property

Students selected for this project will be required to sign a non-disclosure agreement (NDA). In addition, all intellectual property rights for the work performed and artifacts produced during the project will be assigned to VeroTouch.

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Potential Internship Opportunities

VeroTouch actively offers internships, apprenticeships, and career opportunities in software development, design, engineering, automation, construction technology, and related fields. Strong performers on this project may be considered for post-course internship or extended learning opportunities.

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