LSA DIGITAL
Lean Scaled Architects

CASE STUDY

PURPOSE-BUILT AI: LEAST COST ROUTING EXAMPLE

CONTEXT

Large metropolitan areas require significant amounts of gasoline, relying on distribution from supply tanks to gas stations. Distributors, who purchase fuel from suppliers and sell it to stations, make only a small profit per gallon, so minimizing costs is key to profitability. However, distributors face various expenses beyond just fuel, including driver wages, truck operations (fuel, maintenance, repairs), and staff overhead. All these factors must be accounted for when planning gasoline distribution.

Dispatchers used to spend hours determining the most cost-efficient routes for their trucks, juggling factors like varying supplier prices, station locations, and operational expenses. When unexpected changes occurred, as they often did, dispatchers had to recalculate plans quickly, leading to time-consuming revisions and frequent errors.

THE CHALLENGE

While buying gasoline at the cheapest supplier might seem like the obvious choice, it wasn't always the best strategy. Long wait times at cheaper suppliers, or greater distances to reach them, could actually increase costs. This presented a classic least-cost routing problem, perfectly suited for an AI solution.

For instance, long lines at a cheaper supplier could cause delays, increasing driver costs and disrupting the delivery schedule. In some cases, it was more cost-effective to pay slightly more for fuel at a supplier with no wait than to lose...

SNAPSHOT


Combined UX and AI expertise


Commercial Trucking


User Experience Research

PAIN POINTS

- Cumbersome and Time consuming routing tasks
- High potential for errors and inefficiencies

RESULTS

- AI-First design
- Saved many hours of time
- Reduced errors
- Increased efficiencies
- Required no training, could be used by anyone on the team

...hours in line at the cheaper option. Additionally, price fluctuations during delivery required the AI to quickly adjust schedules and routes in real time.

OUR PROCESS

We started by conducting observational research, such as ride-alongs with drivers and office visits with dispatchers, to gain a clear understanding of the tasks and challenges from their perspective. This research informed our task analysis and optimization, guiding us to explore how AI could assist the users effectively. We developed and tested mockups of an AI-first design concept with real users, who responded enthusiastically to the assistive AI. The project concluded with us collaboratively reviewing and handing over the finalized design specifications to the client's developers.

RESULTS

This wasn't just a simple calculator solution, as the variables and priorities were constantly shifting, requiring a more dynamic AI-driven analysis. Early testing of the prototype showed excellent results, with dispatchers reporting that it saved them six hours of work per day. Moreover, the AI eliminated calculation errors that were previously common when done manually.

WORDS OF ADVICE

This project underscored the importance of conducting thorough user research to accurately define the AI problem that needs solving. Many poorly performing designs suffer from relying on assumptions rather than verified data. It's easy to believe you understand your users' needs, but without research, you likely don't. Building an AI solution on faulty data leads to flawed outcomes. Additionally, it's crucial to consider how users' tasks will evolve with the implementation of a new, AI-driven solution.