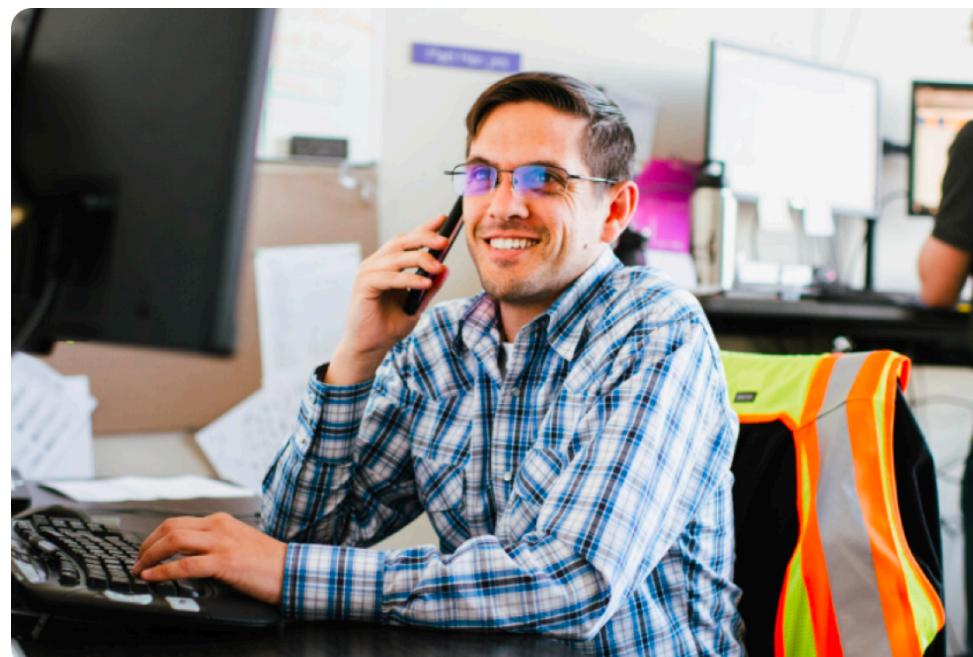


# Evolving Convoy for medium and large carriers

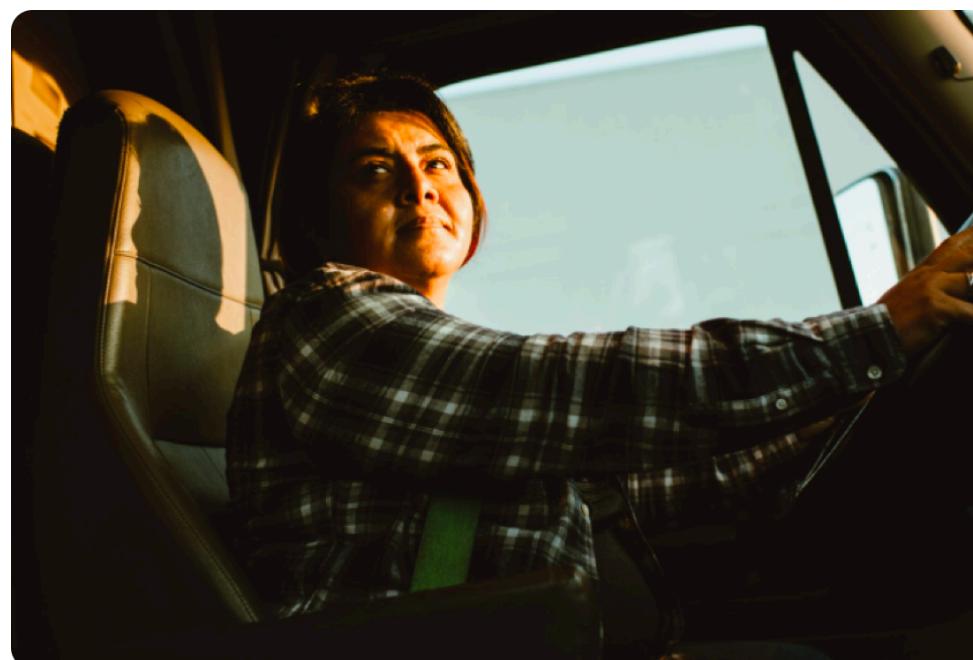
**Karena Vongampai**

Case study from my time at Convoy Inc.

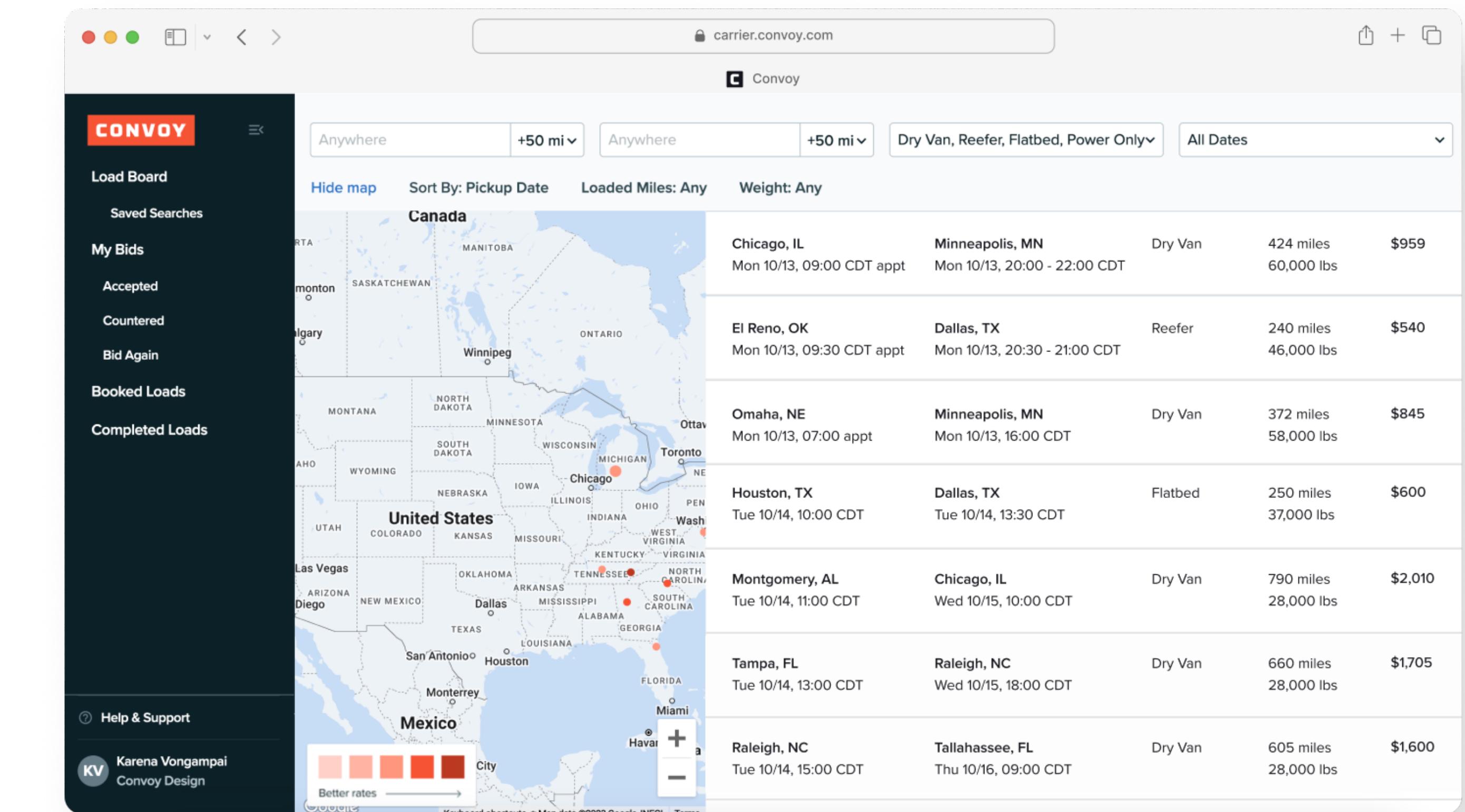
# Convoy is a freight brokerage with an online marketplace for carriers to find loads



## Shippers



## Carriers



The screenshot shows the Convoy Load Board interface. On the left, there's a sidebar with options like Load Board, Saved Searches, My Bids, Accepted, Countered, Bid Again, Booked Loads, and Completed Loads. The main area features a map of North America (Canada, United States, Mexico) with red dots indicating load locations. Above the map are search filters: 'Anywhere' with '+50 mi', 'Sort By: Pickup Date', 'Loaded Miles: Any', and 'Weight: Any'. Below the map is a table of available loads:

Pickup Location	Delivery Location	Type	Miles	Weight	Rate
Chicago, IL	Minneapolis, MN	Dry Van	424 miles	60,000 lbs	\$959
El Reno, OK	Dallas, TX	Reefer	240 miles	46,000 lbs	\$540
Omaha, NE	Minneapolis, MN	Dry Van	372 miles	58,000 lbs	\$845
Houston, TX	Dallas, TX	Flatbed	250 miles	37,000 lbs	\$600
Montgomery, AL	Chicago, IL	Dry Van	790 miles	28,000 lbs	\$2,010
Tampa, FL	Raleigh, NC	Dry Van	660 miles	28,000 lbs	\$1,705
Raleigh, NC	Tallahassee, FL	Dry Van	605 miles	28,000 lbs	\$1,600

At the bottom of the sidebar, there's a 'Help & Support' section and a credit to 'Karena Vongampai Convoy Design'. A color scale legend indicates 'Better rates' with a gradient from light pink to dark red.

# Diversify with medium and large carriers to reduce costs

- Represents 77% of total for-hire carrier capacity, but only executes 5% of Convoy's shipments
- 3-8% lower costs compared to small carriers



My objective

As the lead product designer, I...

# **Led my cross-functional team through a design sprint to develop a customer centric product vision and strategy**

---

**~2 months**

Timeframe

**Product, Engineering, Carrier Account Management, Data Science**

Team

# Project outcomes

- 01** Clarified target customer definition
- 02** Defined strategy and vision based on user goals and needs
- 03** Collaboration in the early stages from every discipline

01

# Define customer and problem space

Define customer and problem space

# Learn about the target carrier



**01** How do they run their business?

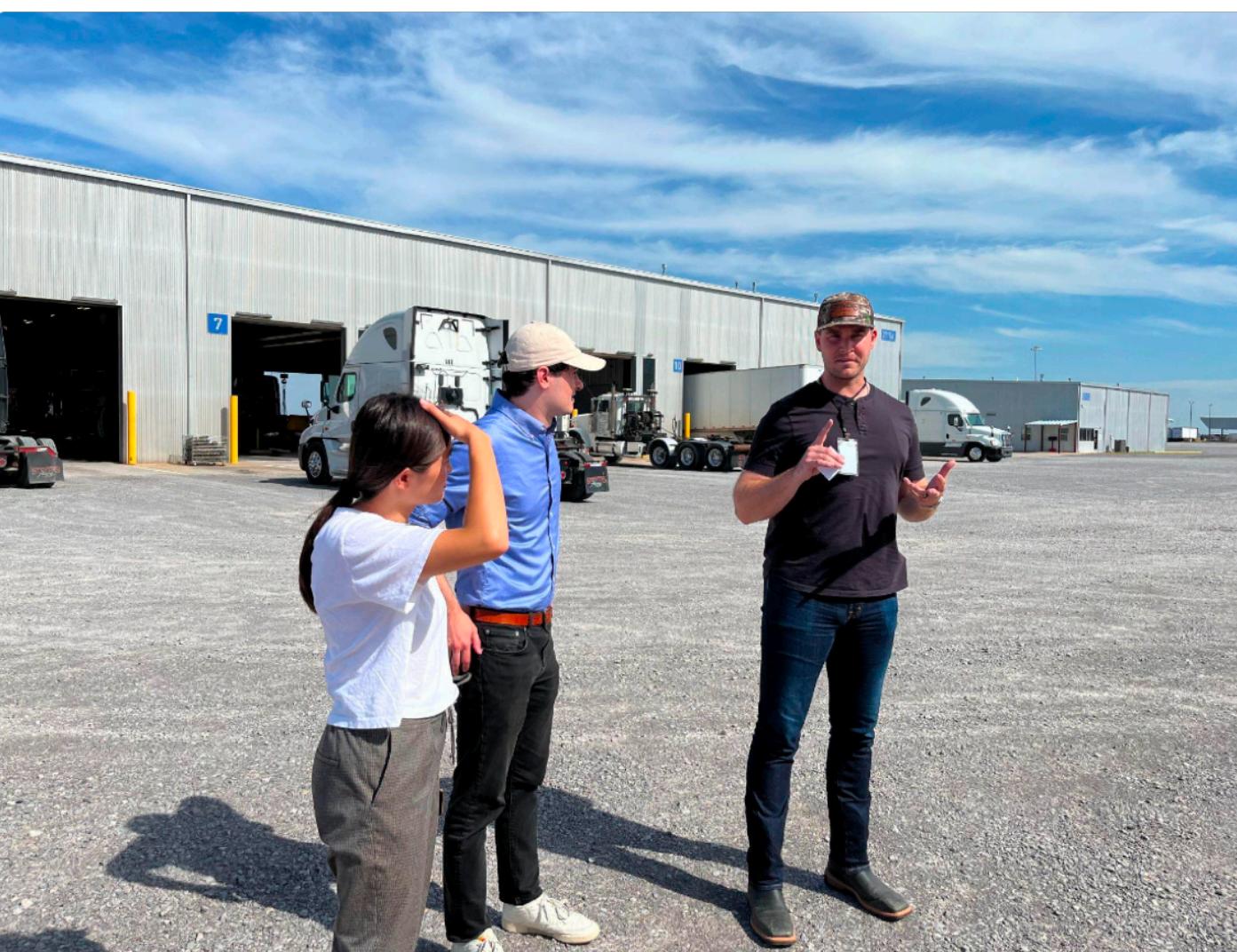
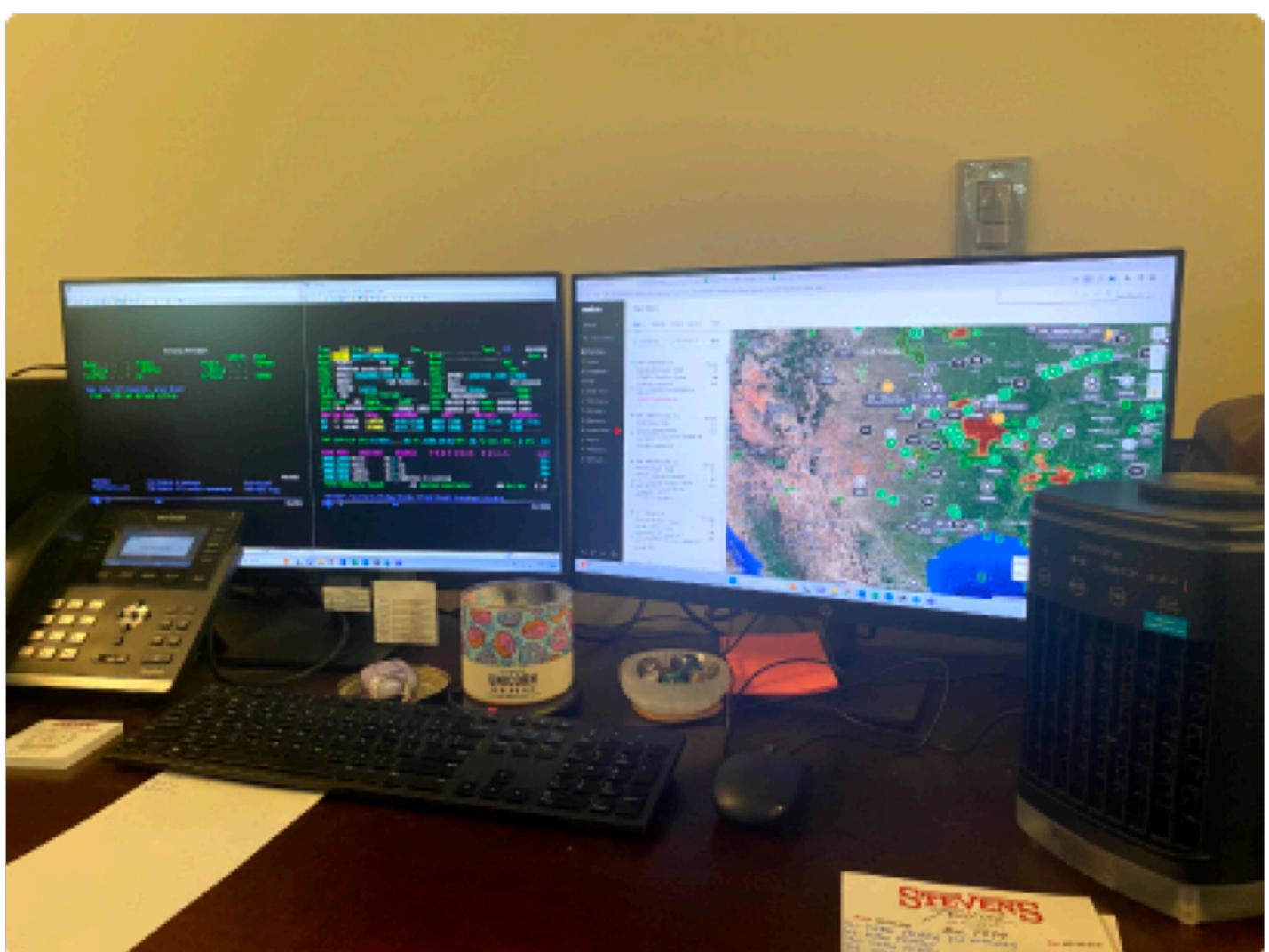
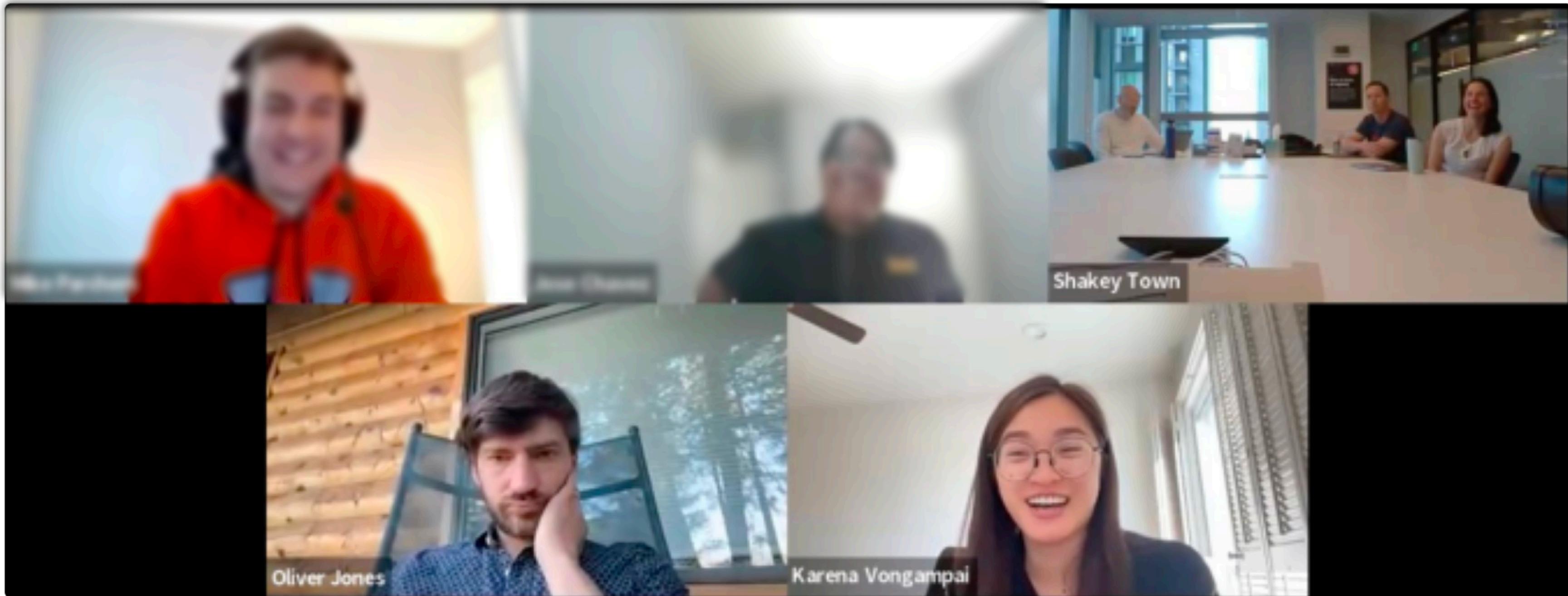
**02** How do they work with freight brokers?

**03** How do they find shipments to run?

**04** How do they measure success for their business?

**05** How do they do what they do, and why?

## Define customer and problem space





Define customer and problem space

# Refine customer definition

- Our initial definition was too broad and didn't explain what behaviors make them, them
- Identify what behaviors map to business goals

## Vague definition to start

- Carrier with 20+ trucks



## Refined with specificity around behavior

- Business level:
  - Fleet of 20-300 trucks
  - Prioritize asset utilization over maximizing revenue on every load
  - Builds shipment volume in familiar markets, doesn't go anywhere
- User level:
  - Responsible for sourcing loads (e.g. transportation coordinator)

# Clairfy key jobs to be done

As someone who sources loads, I am trying to...

**01** Setup truck drivers to haul a broker's loads

o→ Expensive to equip trucks with a device and train drivers on how to use broker apps

**02** Know a broker's network overlaps with my needs

o→ Difficult to determine if a broker has the shipment volume the carrier wants to run

**03** Find loads that match my truck availability

o→ Time-consuming and tedious to find loads that match their needs

Define customer and problem space

As someone who sources loads, I am trying to...

# Find loads that match my truck availability

- Typically is a “backhaul” load
- Load parameters align with truck’s empty location, desired delivery location, available time, etc.

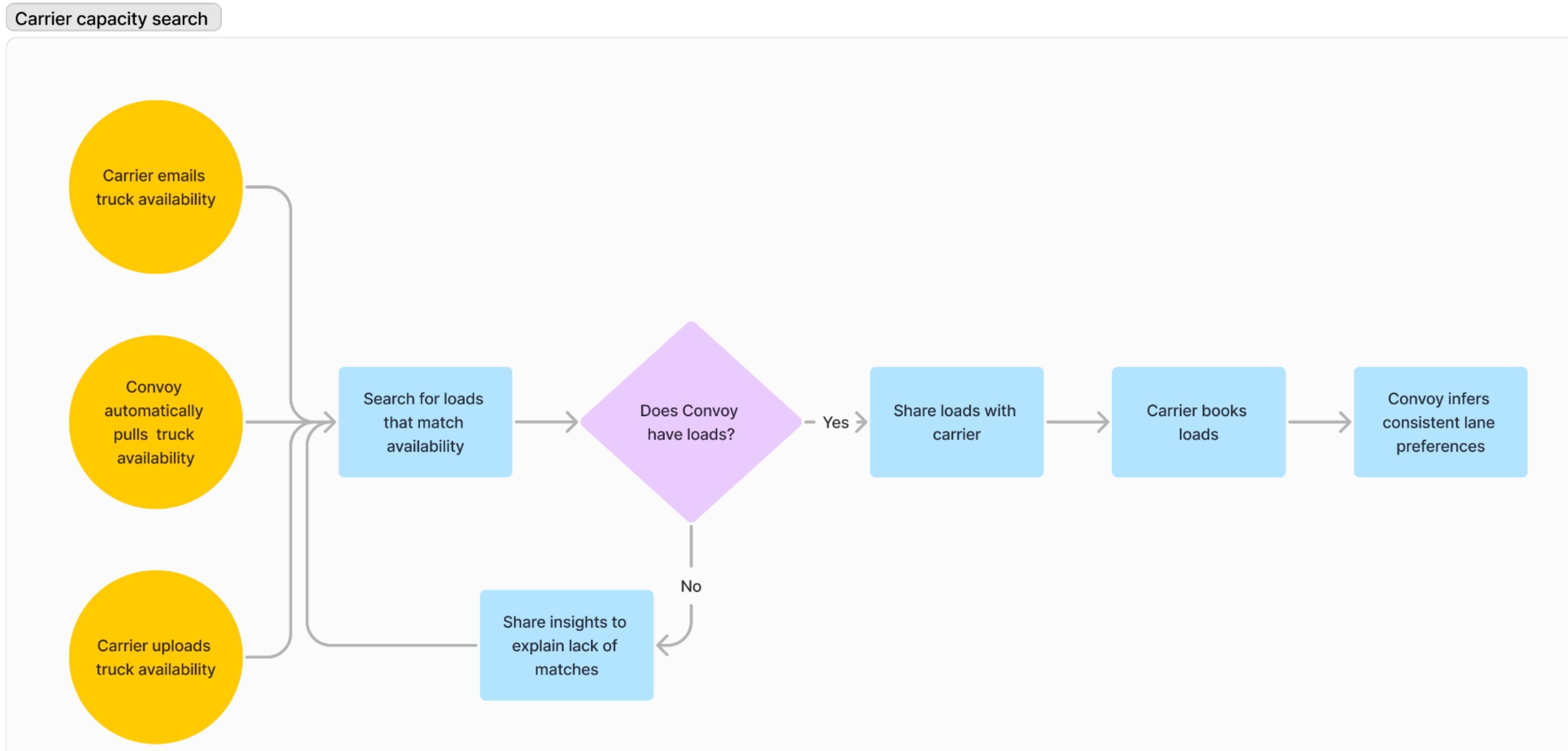
- 01** Minimize the time and effort it takes to find a load that aligns with my truck availability
- 02** Minimize the time it takes to know when loads matching my truck availability come on the market
- 03** Improve my understanding of why a broker doesn’t have loads matching my needs

02

Visualize the ideal state

Visualize the ideal state

# Map out flows that deliver on user needs



Visualize the ideal state

# Visualize the concept to make it concrete

## 1. Upload truck availability (backhaul needs)

Hi,

Please find the truck list below:

			Sent Date :	5/31/2023
Unit ID	Empty Date	Empty Time	Empty City/St	Dest.
102	5/31/23	11:00 AM	La Crosse, WI	
112	6/1/23	9:00 AM	Dallas, TX	
114	6/1/23	9:00 AM	Joliet, IL	
115	6/5/23	9:00 AM	Dallas, TX	
122	6/1/23	11:00 AM	Germantown, WI	
124	6/3/23	9:00 AM	Dallas, TX	
2616	6/1/23	7:00 AM	Hampshire, IL	

\* Max Weight 43,500

AVAILABILITY External Inbox x

Gustavo Duarte <gus@floridabeauty.us>  
to Gustavo

SOLO EMPTY WED 8AM IN GRANDVIEW, WA NEED A LOAD TO ANYWHERE

SOLO EMPTY WED 1PM IN CHICAGO, IL NEED A LOAD TO GAYLORD, MN AREA

TEAM EMPTY WED 3PM IN DETROIT, MI NEED A LOAD TO FL

TEAM EMPTY WED 2PM IN MAPLE HEIGHTS, OH NEED A LOAD TO FL OR NORTHEAST

SOLO EMPTY WED 8AM WITH DRYVAN IN BOSOTN, MA NEED A LOAD TO EASTON, PA

SOLO EMPTY WED 9AM IN EDISON, NJ NEED A LOAD TO THE MIDWEST

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TEAM EMPTY THU 10AM IN ELIZABETH, NJ NEED A LOAD TO FL

TEAM EMPTY THU 10AM IN BOSTON, MA NEED A LOAD TO FL

SOLO EMPTY THU 8AM WITH DRYVAN IN FISHKILL, NY NEED A LOAD TO JACKSONVILLE, FL AREA

TEAM EMPTY SAT 8AM IN BOSOTN, MA NEED A LOAD TO FL

TEAM EMPTY SAT 1PM IN DETROIT, MI NEED A LOAD TO FL

Welcome to Convoy!

Find loads Compare where we haul

4,000 total loads available right now across our entire network

Have us find loads for you

We'll find loads that match your truck availability

Upload or drag a .csv, .xlsx, jpg, png here and we'll find loads that match your needs.

Request API integration

Search for a load yourself

Visualize the ideal state

# Visualize the concept to make it concrete

## 2. Show load matches

< Back

OK, here's what we found

# of stops: Any Broker: Any Opportunity type: Any

Matches for availability (32) No matches (4)

Truck availability

	Mon 07/20		Tue 07/20		Wed 07/20		Thu 07/20		Fri 07/20		
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
<b>#1023 Reefer</b> Cleveland, OH → Richmond, VA Available starting Mon 07/20 @ 13:30											
			Pickup @ 19:0 C... Book								
				Pickup @ 24:00 C... Book							
					Pickup @ 21:30 C... Book						
<b>#3923 Dry Van</b> Houston, TX → Jacksonville, FL Available starting Mon 07/20 @ 13:30							Pickup @ 14:30 CST, Deliver @ 1... Book				
								Pickup @ 06:30 CST, Deliver @ 1... Book			
<b>#208 Dry Van</b> Tampa, FL → Albuquerque, NM Available starting Mon 07/20 @ 13:30							Pickup 1 @ 08:00 EST, Pickup 2 @ 11:00 EST, Deliver @ 15:30 CST Book				
								Pickup @ 08:00 EST, Deliver @ 17:30 CST Book			
<b>#3402 Dry Van</b> Atlanta, GA → Albuquerque, NM Available starting Mon 07/20 @ 13:30							Pickup @ 11:30 EST, Deliver @ 15:30 CST Book				
								Pickup @ 11:30 EST, Deliver @ 15:30 CST Book			

Refresh

## 3. Explain why there are no matches

< Back

OK, here's what we found

# of stops: Any Broker: Any Opportunity type: Any

Matches for availability (32) No matches (4)

Disable for all trucks

We'll email you as loads come on the market in the next 48 hours

Truck availability Insights into L12W volume

Truck availability	Insights into L12W volume
<b>#1039 Reefer</b> Cleveland, OH → Richmond, VA Available starting Mon 07/20 @ 13:30	Avg loads per week 34 Hot market time Monday mornings Est. carriers interested 12 Somewhat competitive
<b>#1043 Dry Van</b> Houston, TX → Jacksonville, FL Available starting Mon 07/20 @ 13:30	Avg loads per week 34 Hot market time Monday mornings Est. carriers interested 4 Less competitive
<b>#502 Reefer</b> Tampa, FL → Albuquerque, NM Available starting Mon 07/20 @ 13:30	Avg loads per week 8 Hot market time Monday mornings Est. carriers interested 2 Less competitive
<b>#2039 Dry Van</b> Atlanta, GA → Albuquerque, NM Available starting Mon 07/20 @ 13:30	Avg loads per week 2 Hot market time Monday mornings Est. carriers interested 24 Highly competitive

Visualize the ideal state

# Visualize the concept to make it concrete

## 4. Notify when loads come on the market

The Convoy mobile application interface displays a notification: "Woohoo! New loads have come on the market that match your truck availability". It includes a summary table of available loads and a "Log in to book" button.

Truck availability	Availability date/time	Total available loads
Reefer Cleveland, OH → Richmond, VA	08/17/23 13:00 PST	Convoy loads 12 Partner loads 12
Reefer Cleveland, OH → Richmond, VA	08/17/23 13:00 PST	Convoy loads 12 Partner loads 12
Reefer Cleveland, OH → Richmond, VA	08/17/23 13:00 PST	Convoy loads 12 Partner loads 12

**Log in to book**

## 5. Assess transit feasibility, then book

The Convoy booking interface shows search results for available loads. A specific load for a Reefer truck from Cleveland, OH to Richmond, VA is selected. The booking summary includes pickup in Cleveland, OH and delivery in Richmond, VA, both marked as successful. The total cost is \$1,390.

**Finish booking**

**Available load to book**

Load details		How this load fits into your schedule	
Convoy ID	Total miles	Houston, TX → Phoenix, AZ	Avg transit time ~15 hrs
89302932	1,093	Requires HOS reset	Available for next load Wed 8/16
Total weight	Trailer type	Drive to pickup for next load	Avg deadhead 30 mi on I5 highway
37,900	53' Dry Van (no Reefer)	Phoenix, AZ	123456 Peachtree Industrial Boulevard Cleveland, OH 30295
Accessorial & Requirements		Live pickup   Thu 8/17/23 09:00 PST	
CARB Compliant Truck & Trailer		Atlanta, GA	
Notes		123456 Peachtree Industrial Boulevard Richmond, VA 30295	
Palletized Automotive Parts. Convoy requires trailer number and BOL number upon arrival to pick.		Live pickup   Thu 8/17/23 09:00 PST	

**Compare to my truck availability** It's a match!

Pickup	Delivery	Trailer	Pickup date	Pickup time
Cleveland, OH ✓	Richmond, VA ✓	Dry Van ✓	Tue - 08/23/23 ✓	09:00 PST ✓

**Place a bid** **Book now \$1,390**

# Visualize the ideal state

Iterate on  
concept with  
product

- Turnaround in less than 2 days
  - PM contributes to ideation by layering ideas on top of wireframes and giving feedback

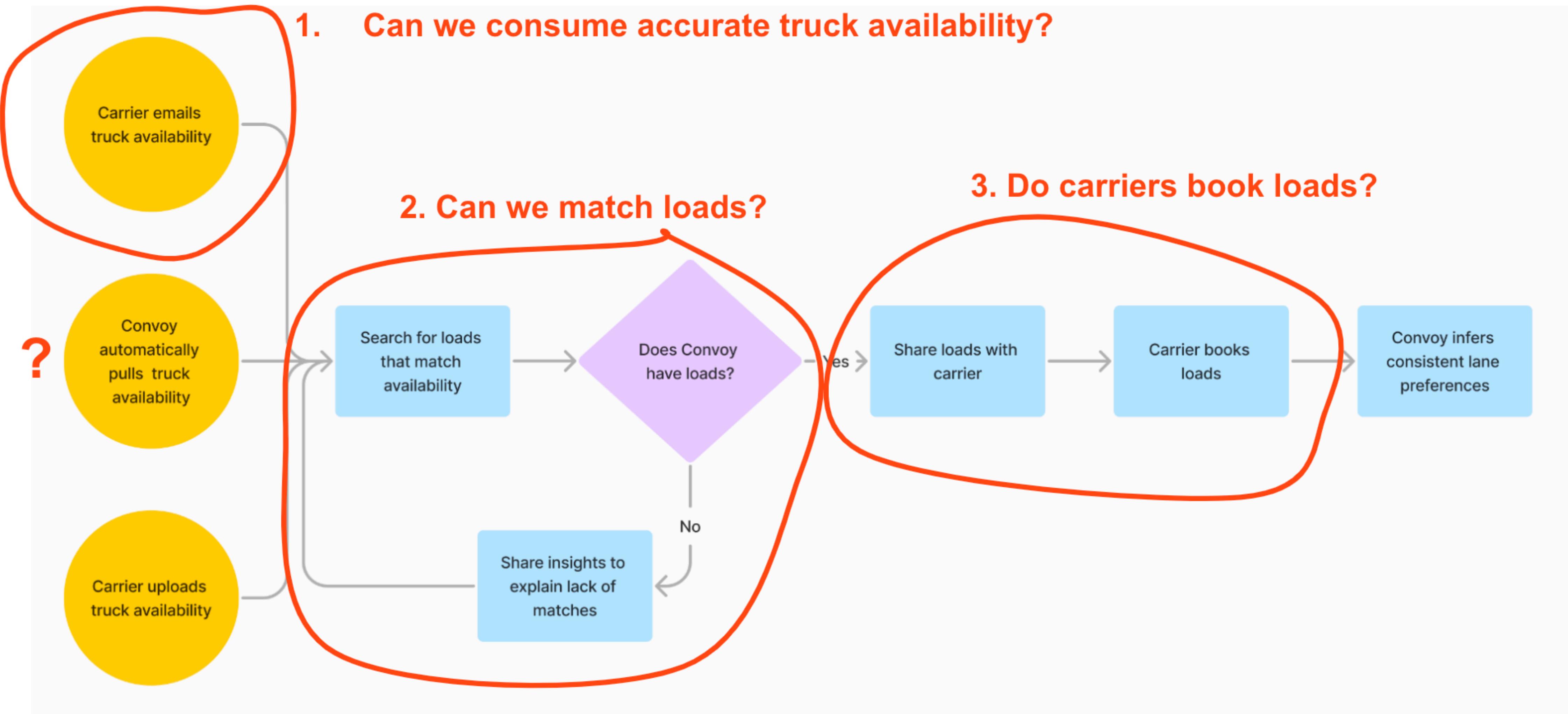
OK, here's what we found											
# of stops:	Any	Broker:	Any	Opportunity type:	Any						
<b>Matches for availability (32)</b>						No matches (4)					
Truck availability		Mon 07/20	Tue 07/20	Wed 07/20	Thu 07/20	Fri 07/20	>				
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
#1023 Reefer	Cleveland, OH → Richmond, VA		Cleveland, OH @... Book		Cleveland.... Book		Cleveland.... Book		5 mi / .5 hr DH --		
	Avg transit time ~13 hrs		HOS Reset		Phoenix to Houston		30 mi / 1 hr DH		Houston, TX @ 09:30, ... Book		20 mi DH / 1 hr buffer ---
	Houston, TX → Jacksonville, FL		Phoenix to Houston		Houston, TX @ 09:30, ... Book		10 mi DH / .5 hr buffer		Phoenix to		
	Avg transit time ~13 hrs		Tampa, FL @ 8:15AM, Albuquerque, NM @ 17:00 Book		Tampa, FL @ 8:15AM, Albuquerque, NM @ 17:00 Book		Atlanta, GA @ 16:30, Dallas, TX @ 14:00, Albuquerque, NM @ 10:15 Book				
#208 Dry Van	Tampa, FL → Albuquerque, NM		Atlanta, GA @ 17:30, Amarillo, TX @17:00, Albuquerque, NM @ 17:00 Book								
	Avg transit time ~13 hrs										
#3402 Dry Van	Atlanta, GA → Albuquerque, NM										
	Avg transit time ~13 hrs										

03

# Evaluate our concept

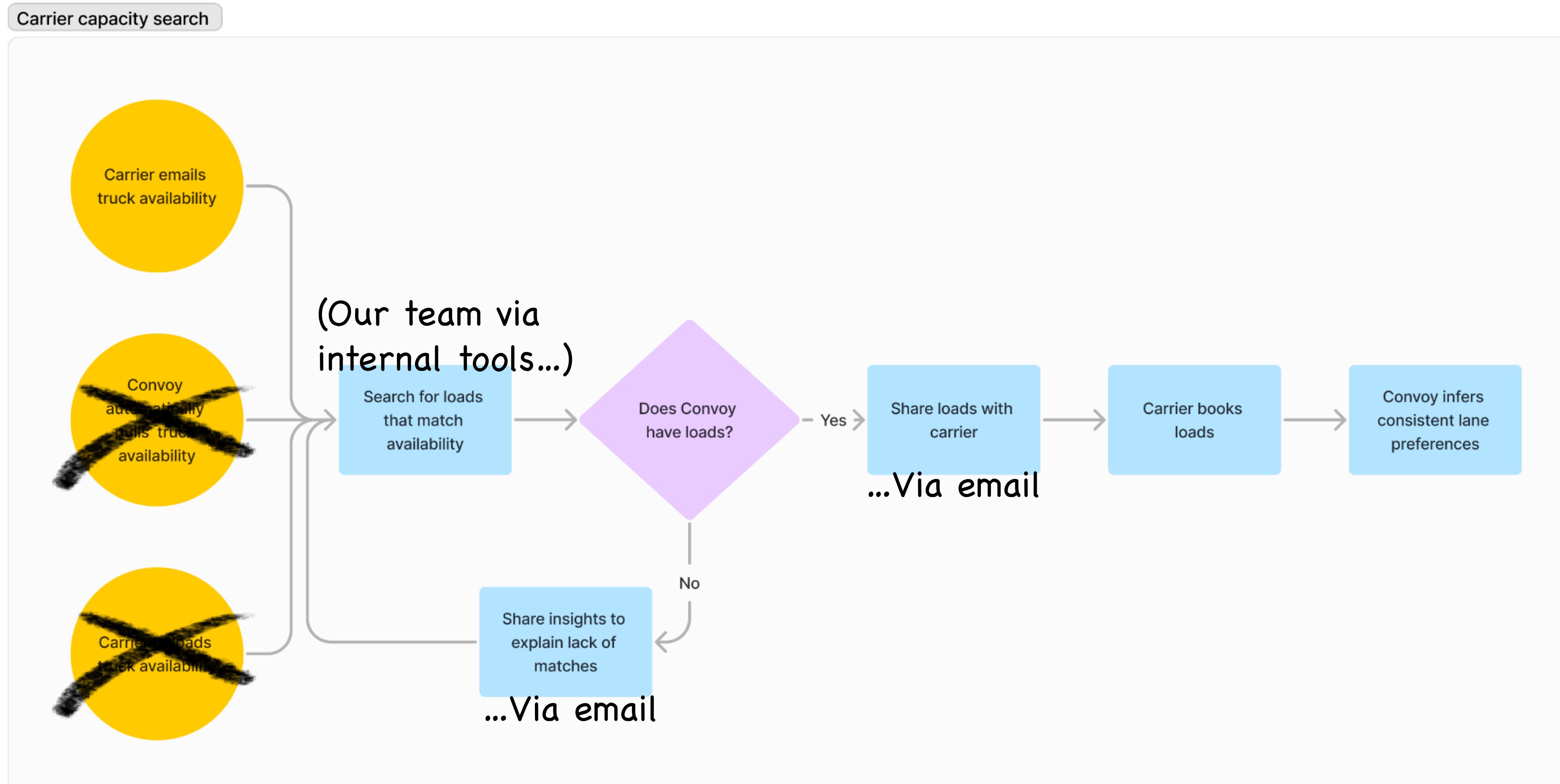
Evaluate our concept

# Scope out a pilot to validate our thinking



Evaluate our concept

# Scope out a pilot to validate our thinking



Evaluate our concept

# Pilot experience

## 1. Receive truck availability via email

Hi,

Please find the truck list below:

Unit ID	Empty Date	Empty Time	Empty City/St	Sent Date :
102	5/31/23	11:00 AM	La Crosse, WI	
112	6/1/23	9:00 AM	Dallas, TX	
114	6/1/23	9:00 AM	Joliet, IL	
115	6/5/23	9:00 AM	Dallas, TX	
122	6/1/23	11:00 AM	Germantown, WI	
124	6/3/23	9:00 AM	Dallas, TX	
2616	6/1/23	7:00 AM	Hampshire, IL	

\* Max Weight 43,500

SOLO EMPTY WED 8AM IN GRANDVIEW, WA NEED A LOAD TO ANYWHERE

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TEAM EMPTY SAT 8AM IN BOSOTN, MA NEED A LOAD TO FL

TEAM EMPTY SAT 1PM IN DETROIT, MI NEED A LOAD TO FL

## 2. Team member search Convoy systems

### CONVOY

Find loads that match a carrier's truck availability

Once you've added the carrier's availability, we'll automatically apply a 100mi radius to find loads that match. If no truck type is included, we'll automatically default the trailer type to Dry Van.

Step 1: Insert multiple truck availability in any format

Step 2: Review information and finish adding lanes

Pickup	Delivery	Trailer types	Pickup date
Tacoma, WA	Fresno, CA	Dry Van X	09-25-2023
Chicago, IL	Fresno, CA	Dry Van X	09-25-2023
San Francisco, CA	Fresno, CA	Dry Van X	09-26-2023
Deliver in Tampa, FL			
Dallas, TX	Fresno, CA	Dry Van X	09-29-2023
Tempe, AZ	Fresno, CA	Dry Van X	09-29-2023

Clear Process

< Back Continue

Evaluate our concept

# Pilot experience

## 3. Team member selects loads to share

**CONVOY**

Select loads to offer the carrier

15 loads selected [Unselect all](#)

Status	Pickup	Delivery	Trailer Type	Pickup date	Available loads	Loads offered <small>i</small>	Requested by																																
> <a href="#">Covered by Convoy</a>	Sacramento, CA	Spokane, WA	Dry Van	10/08/2023	412 total Marketplace 22 Partner 44	3 loads offered Marketplace 2 Partner 1	Janice Boyer																																
<table border="1"><thead><tr><th><input type="checkbox"/> Load ID</th><th>Pickup</th><th>Pickup deadhead</th><th>Delivery</th><th>Delivery deadhead</th><th>Weight</th><th>Commodity</th><th>Booking method</th></tr></thead><tbody><tr><td><input checked="" type="checkbox"/> CHY-102932 <a href="#">View offer page</a></td><td>Elk Grove, CA 10/02 @ 19:30 PST</td><td>32 mi Est. 45 min</td><td>Marshall, WA 10/04 @ 08:30 PST</td><td>23 mi Est. 38 min</td><td>32,000 lbs</td><td>Bottled water</td><td>Instant auction</td></tr><tr><td><input type="checkbox"/> VPL-2034 <a href="#">View offer page</a></td><td>Elk Grove, CA 10/02 @ 19:30 PST</td><td>32 mi Est. 45 min</td><td>Marshall, WA 10/04 @ 08:30 PST</td><td>23 mi Est. 38 min</td><td>36,000 lbs</td><td>Pumpkins</td><td>Boost</td></tr><tr><td><input checked="" type="checkbox"/> VPL-2034 <a href="#">View offer page</a></td><td>Elk Grove, CA 10/02 @ 19:30 PST</td><td>32 mi Est. 45 min</td><td>Marshall, WA 10/04 @ 08:30 PST</td><td>23 mi Est. 38 min</td><td>36,000 lbs</td><td>Pumpkins</td><td>Boost</td></tr></tbody></table>								<input type="checkbox"/> Load ID	Pickup	Pickup deadhead	Delivery	Delivery deadhead	Weight	Commodity	Booking method	<input checked="" type="checkbox"/> CHY-102932 <a href="#">View offer page</a>	Elk Grove, CA 10/02 @ 19:30 PST	32 mi Est. 45 min	Marshall, WA 10/04 @ 08:30 PST	23 mi Est. 38 min	32,000 lbs	Bottled water	Instant auction	<input type="checkbox"/> VPL-2034 <a href="#">View offer page</a>	Elk Grove, CA 10/02 @ 19:30 PST	32 mi Est. 45 min	Marshall, WA 10/04 @ 08:30 PST	23 mi Est. 38 min	36,000 lbs	Pumpkins	Boost	<input checked="" type="checkbox"/> VPL-2034 <a href="#">View offer page</a>	Elk Grove, CA 10/02 @ 19:30 PST	32 mi Est. 45 min	Marshall, WA 10/04 @ 08:30 PST	23 mi Est. 38 min	36,000 lbs	Pumpkins	Boost
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[Compose concierge email](#)

## 4. Team member sends coordinator loads

**CONVOY**

Share loads with the carrier

We've taken the loads you previously selected and formatted a message for you.

Email Telegram

**Available loads that match:** {Optional unique ID} | Reefer | San Mateo, CA 94404 to Sacramento, CA | Empty @ 09:00 PST

<b>Option 1</b> Pickup location: Somewhere, CA 94063 Pickup appt: 08/29/23 @ 16:30 PST	Delivery location: 83923, Boise, ID 39208 Delivery appt: 08/31/23 @ 11:00 XXX	<a href="#">Finish booking</a>
<b>Option 2</b> Pickup location: Somewhere, CA 94063 Pickup appt: 08/29/23 @ 16:30 PST	Delivery location: 83923, Boise, ID 39208 Delivery appt: 08/31/23 @ 11:00 XXX	<a href="#">Finish booking</a>
<b>Option 3</b> Pickup location: Somewhere, CA 94063 Pickup appt: 08/29/23 @ 16:30 PST	Delivery location: 83923, Boise, ID 39208 Delivery appt: 08/31/23 @ 11:00 XXX	<a href="#">Finish booking</a>
<b>Option 4</b> Pickup location: Somewhere, CA 94063 Pickup appt: 08/29/23 @ 16:30 PST	Delivery location: 83923, Boise, ID 39208 Delivery appt: 08/31/23 @ 11:00 XXX	<a href="#">Finish booking</a>

[View more similar loads](#)

[Copy message](#)

[Finish](#)

# Close collaboration made this project awesome



**Katy McCown** · 1st

Director, Product Management

November 1, 2023, Katy worked with Karena on the same team

All LinkedIn members

On

Karena raises the bar for customer-centric research and design, digging deep to understand customer needs and designing experiences that meet the needs of today while building towards a bigger vision for the future. I had the pleasure of working with Karena at Convoy when she led research and design for a new product for mid-sized carriers. Throughout, Karena found opportunities to share the voice of the customer with the rest of the team -- opening up research calls to the team, synthesizing her findings in regular research updates, and ultimately translating those insights into product designs that delighted our newest customers. We would not have made such quick progress or developed as deep an understanding of our carriers without her, and I am so grateful that we had Karena on our team.

Karena is just the best. I would jump at the chance to work with her again!

03

# Results & Reflections

# High engagement, but low conversion, why?

We onboarded ~40 carriers. 50% of the loads shared were viewed in our carrier website, but only 3 loads were booked.

**01** Their flexibility on backhaul loads fluctuates

**02** They booked a load via another platform or method

**03** The load they wanted got booked by someone else

**04** The load they wanted was a broker partner's load

**05** Convoy's rate was too low

**06** Their truck availability changed

# Reflection

- 01** The design process should be played as a team sport
- 02** Dream big, and then remember what you're optimizing for
- 03** Be customer focused on problems, not solutions

**Thank you!**  
**Questions, or comments?**