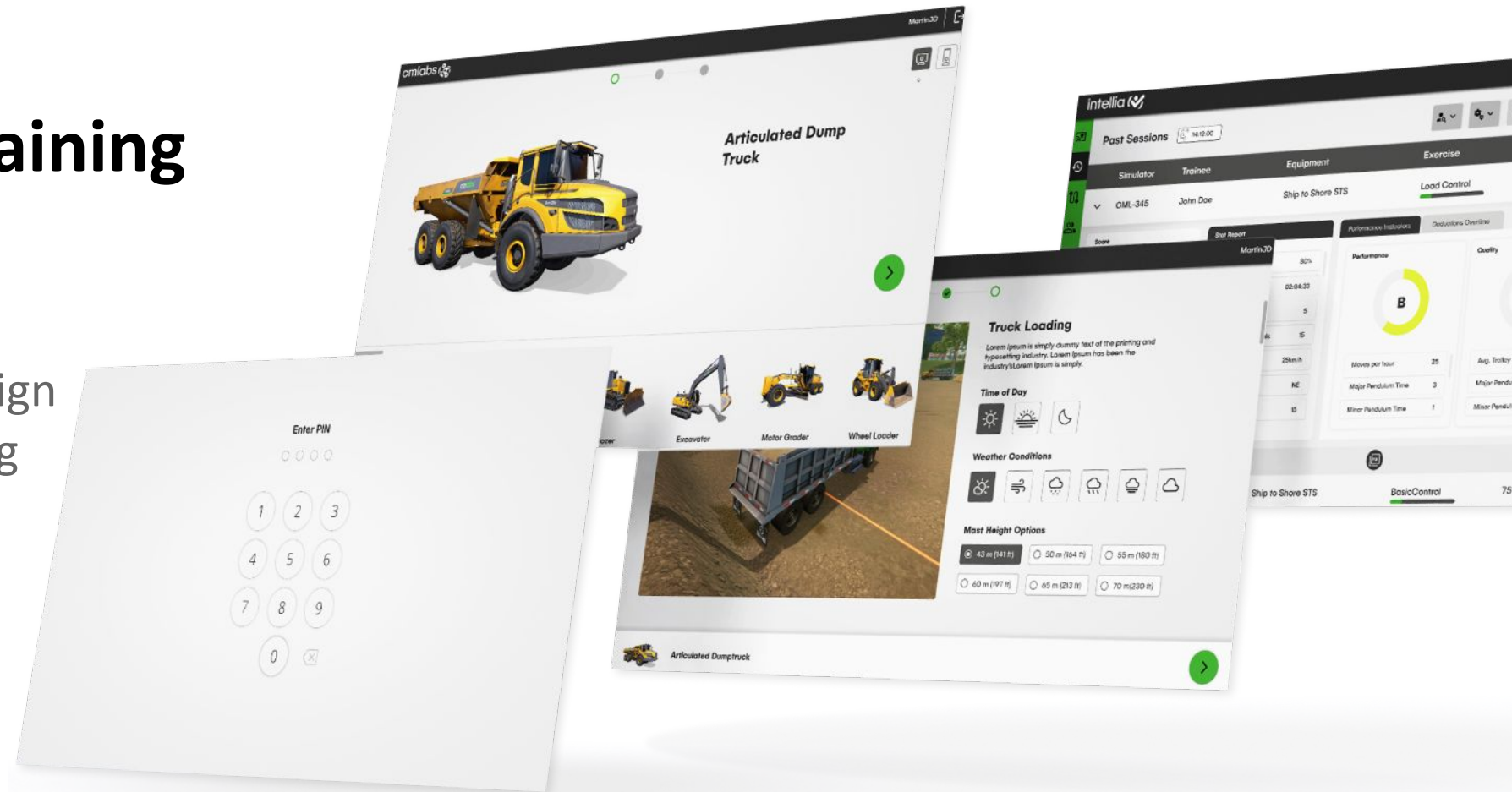


VR Simulation Training CM Labs

UX research, interface design
and interactive prototyping

Work completed at CM Labs
December 2022 – January 2025

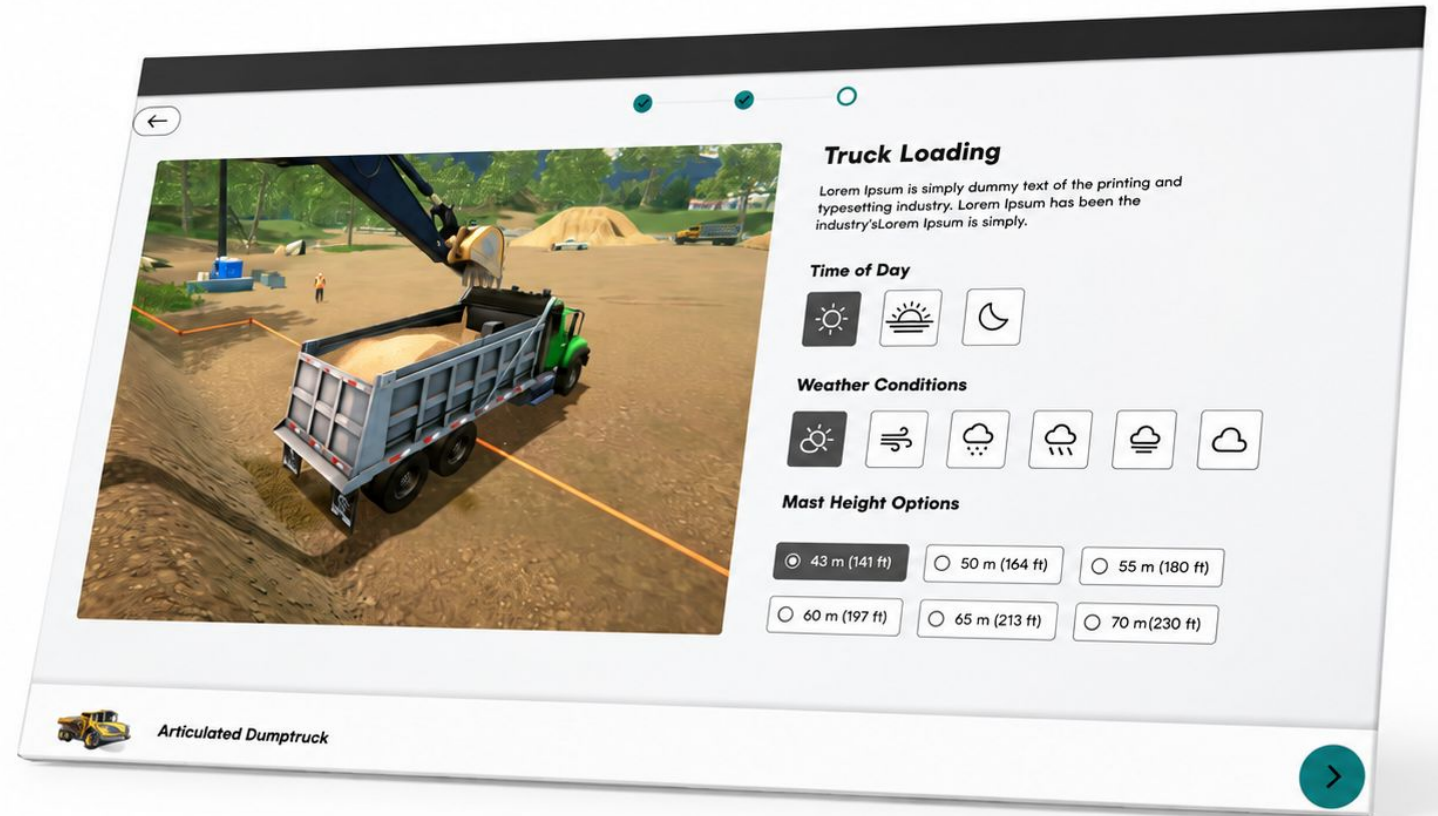


Project Overview

A redesign of the interfaces surrounding heavy-equipment simulation training.

PROJECT FOCUS

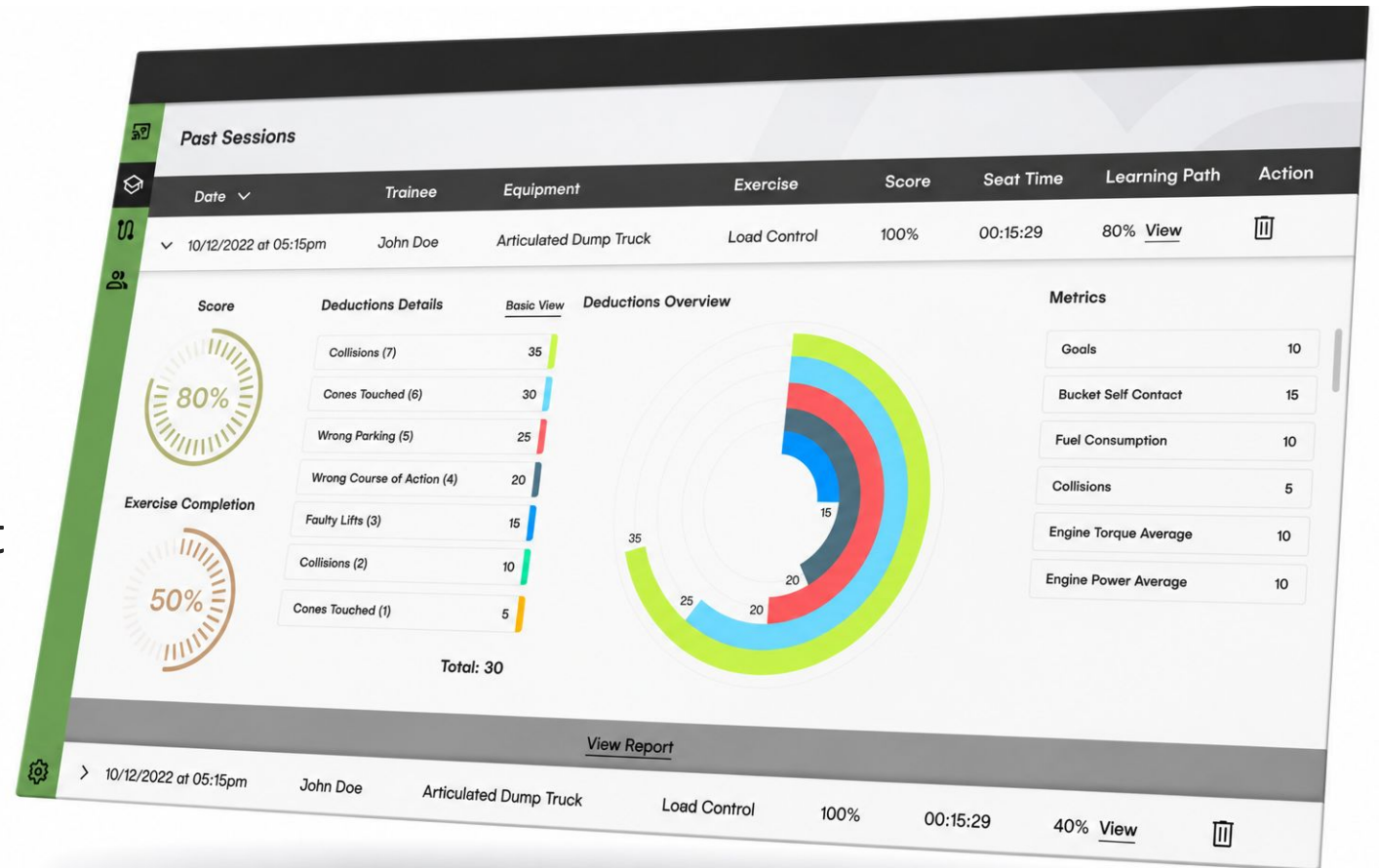
Platform access
Equipment selection
Training-session information
Performance review



The Design Challenge

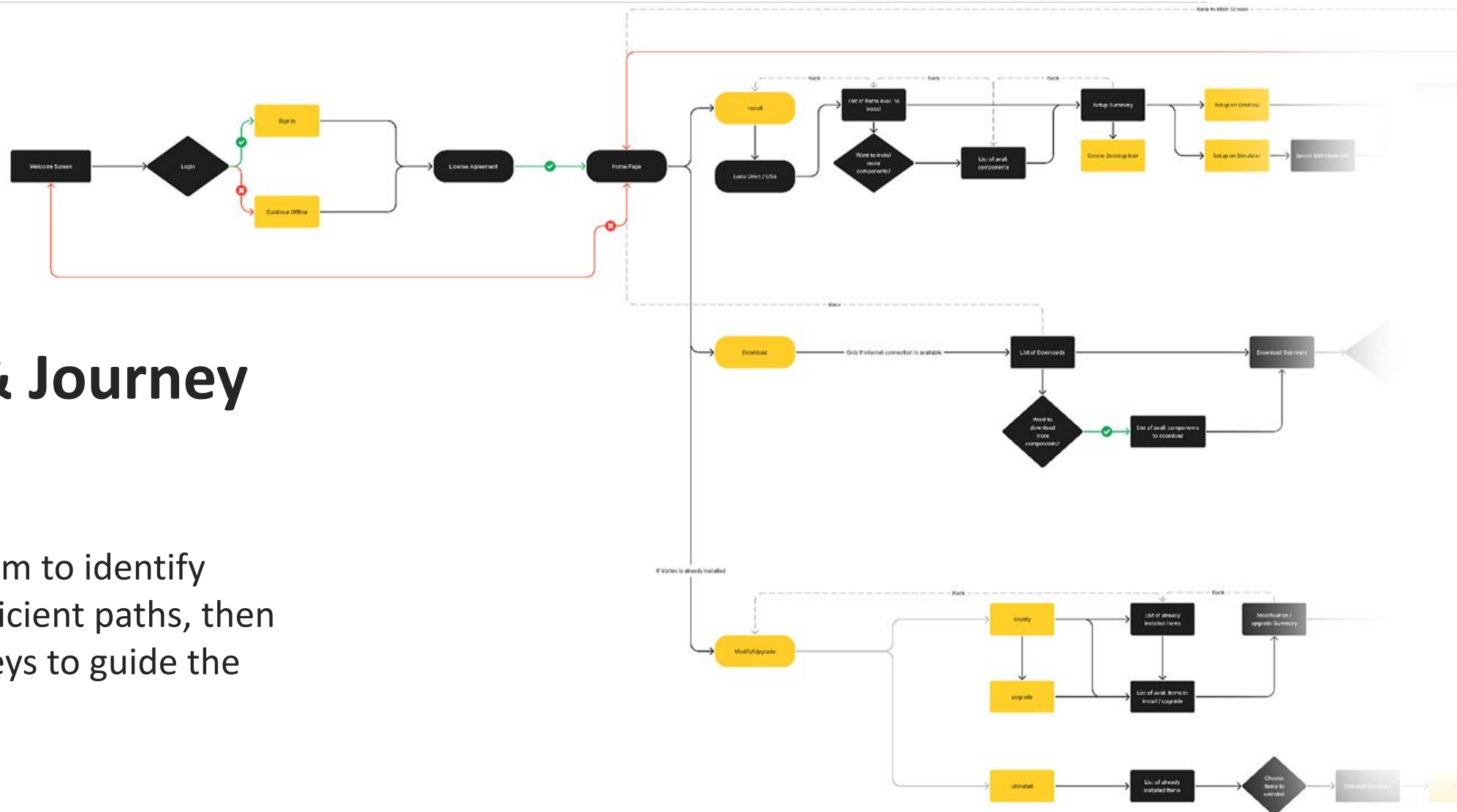
Make a complex training platform easier to navigate and understand.

The original screens combined compact controls, equipment grids and dense lists. The redesign gave each task a clearer visual focus.



Discovery & Journey Mapping

I audited the platform to identify dead ends and inefficient paths, then mapped user journeys to guide the redesign.



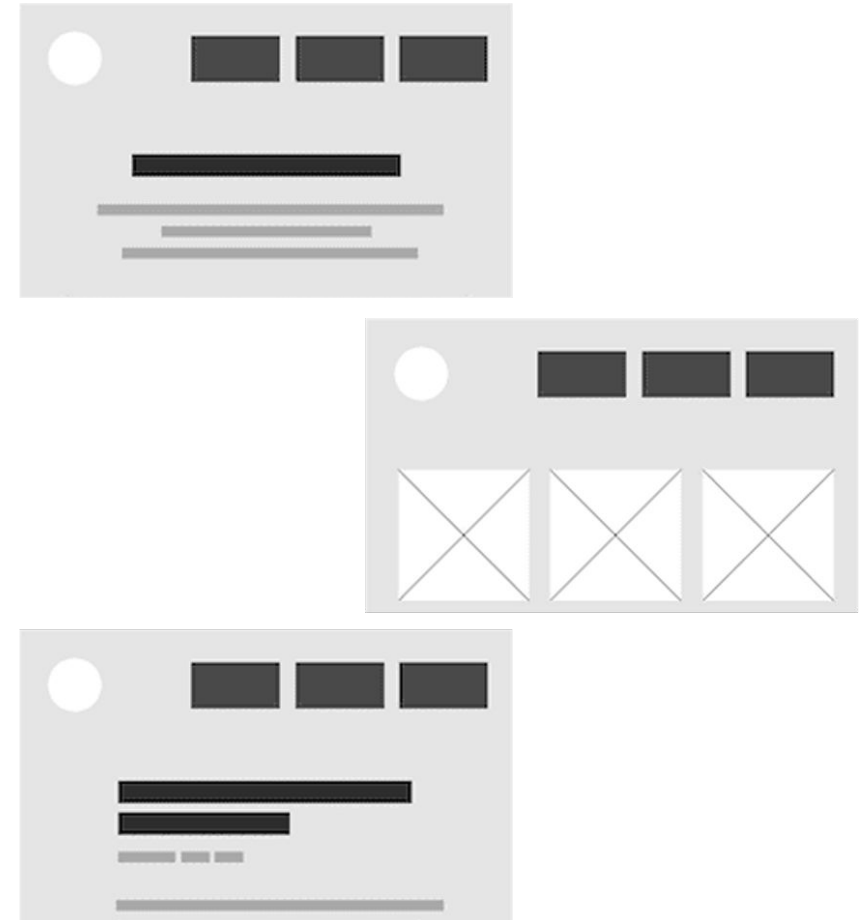
Research included interaction analysis and heat maps, as documented in the project portfolio.

Wireframes & Iteration

I explored key layouts before refining the visual interface.

Low-fidelity wireframes established the page structure and user flows.

Stakeholder feedback and usability testing informed successive refinements.

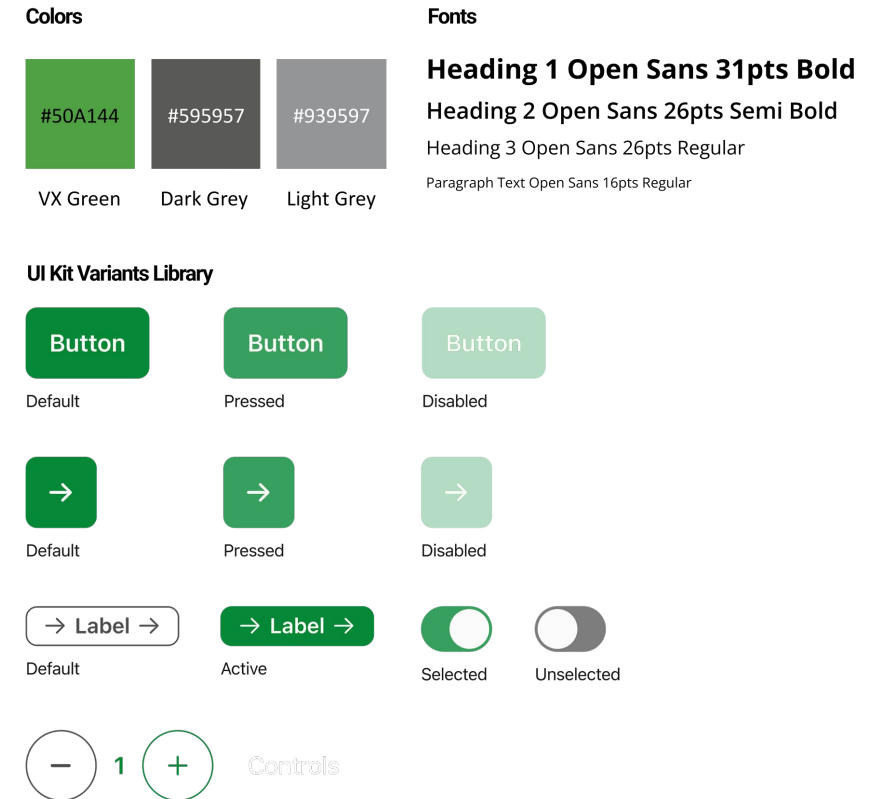


A Consistent Interface System

Shared components gave the platform a coherent visual language.

The system defined color, typography and iconography alongside reusable controls.

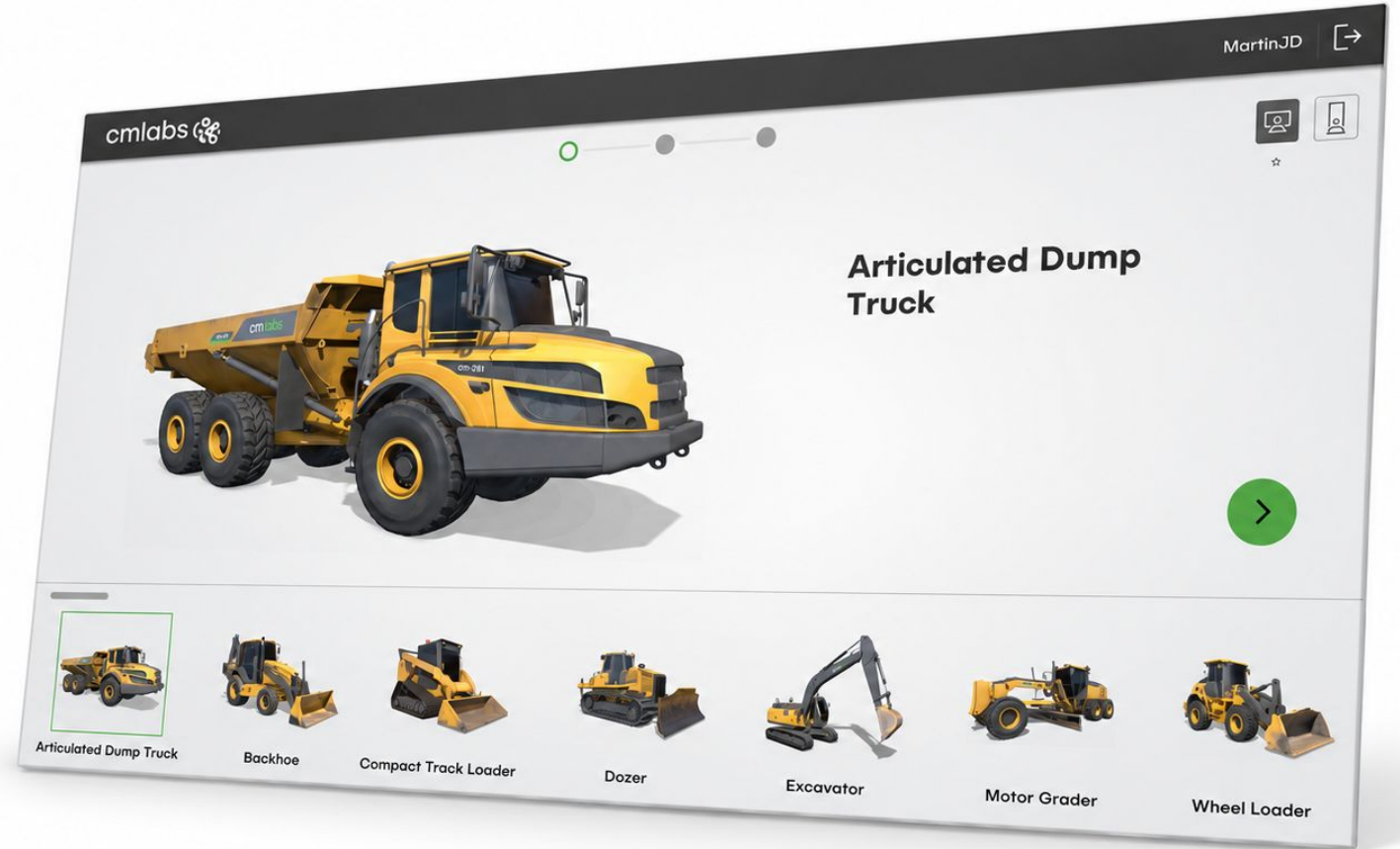
These patterns supported consistent treatment of actions and interface states.



Interactive Prototyping

High-fidelity prototypes connected the layouts to realistic interactions.

I used prototypes to review functionality and navigation with end users, then refined the experience based on their feedback.



VR training management

My work extended beyond the simulator interface to the platform used to manage training and review student progress.

Administration & Instruction

Admin and instructor dashboards supported the management side of the training experience.

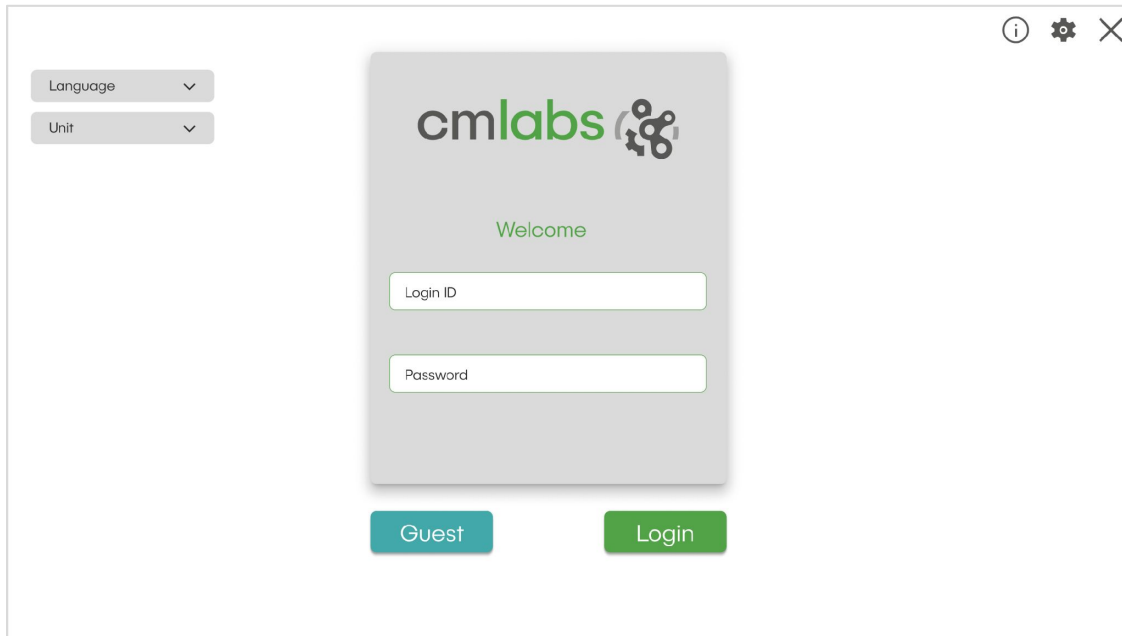
Student progress

Profiles, equipment learning paths and reporting connected the student experience to training results.



Platform access

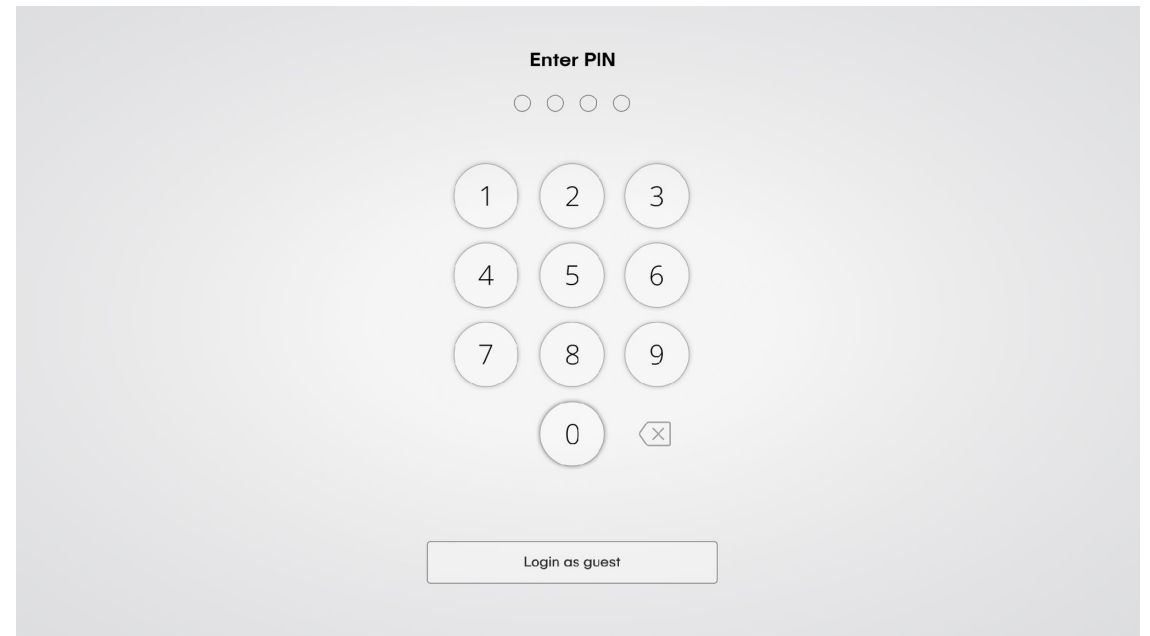
BEFORE



The 'BEFORE' interface shows a login form within a larger window. On the left, there are two dropdown menus labeled 'Language' and 'Unit'. The main form has the 'cm labs' logo at the top, followed by a 'Welcome' message. Below this are two input fields: 'Login ID' and 'Password'. At the bottom of the form are two buttons: 'Guest' (teal) and 'Login' (green). The window has a standard macOS-style title bar with information, settings, and close buttons.

Username and password form with several supporting controls.

AFTER

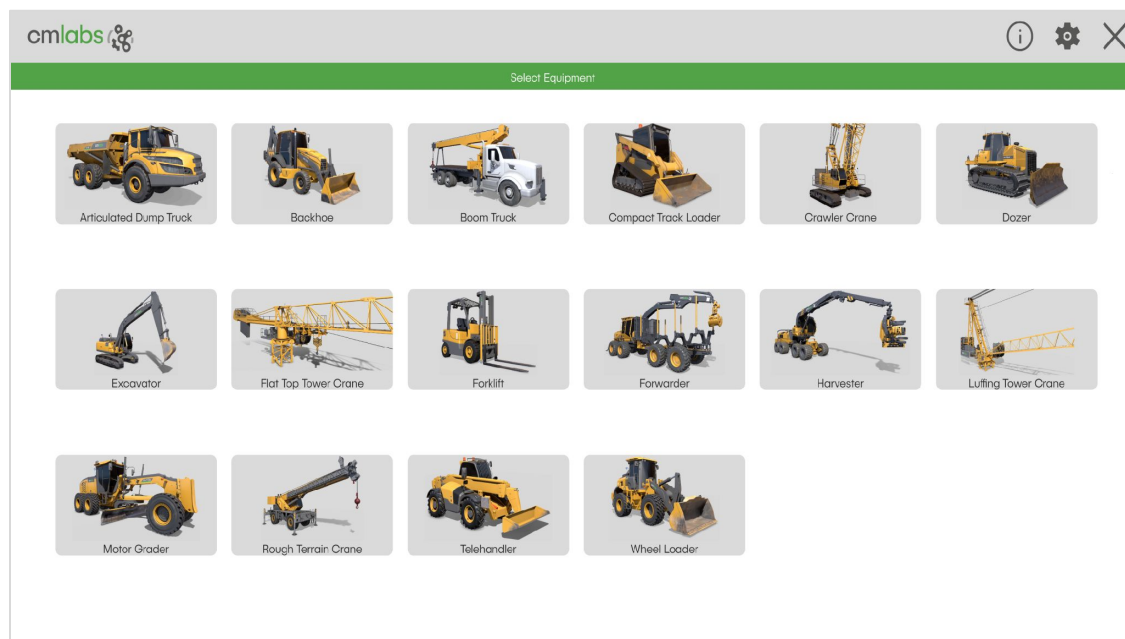


The 'AFTER' interface is a focused PIN-entry screen. At the top, it says 'Enter PIN' above four empty circles for the PIN digits. Below this is a numeric keypad with buttons for digits 1 through 9, 0, and a backspace button (X). At the bottom, there is a button labeled 'Login as guest'.

A focused PIN-entry screen with a separate guest-access option.

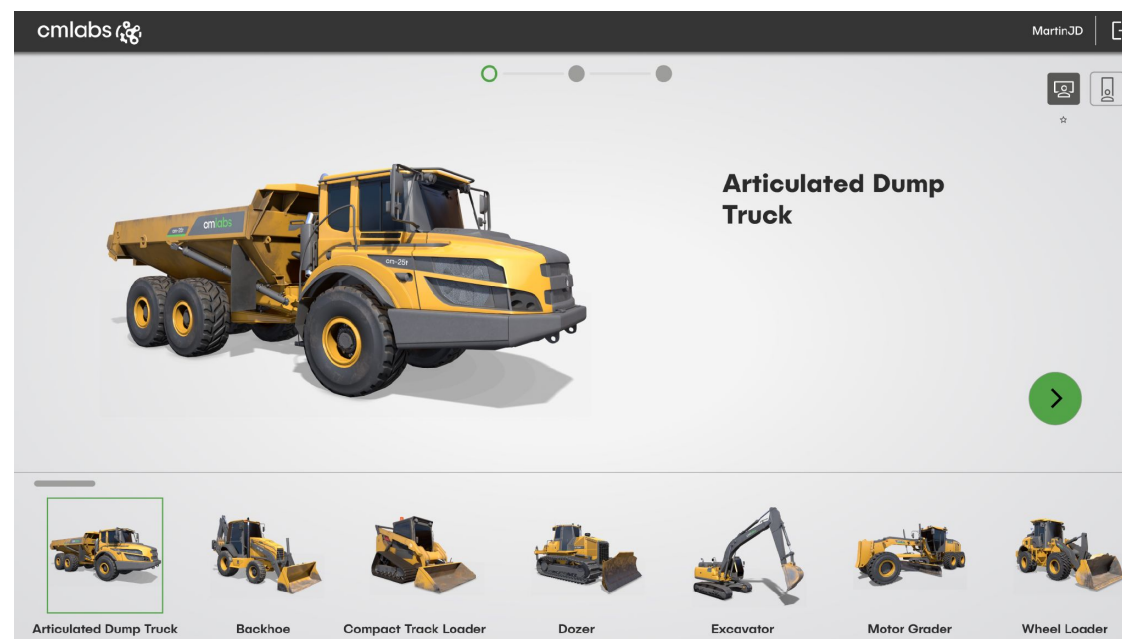
Equipment selection

BEFORE



A compact grid presents the equipment choices together.

AFTER



A large equipment preview establishes focus above a thumbnail selector.

Dashboard and performance review

BEFORE

cmlabs Classroom Sessions					
Search...					
Excavator	Albus Dumbledore	Excavator	Basic Controls	100%	00:01:23
ARKHAM	Bruce Wayne	Backhoe	Truck Loading	90%	00:01:59
LAP-00567	Frodo Baggins	Wheel Loader	Load Handling	60%	00:02:45
Falcon_1	Han Solo	Forklift	Yard Ramp	75%	00:05:11
Enterprise	James T.Kirk	Motor Grader	V-Ditch	10%	00:03:36
The WALL	John Snow	Dozer	Sandbox	95%	00:15:20
SIM_005	Katniss Everdeen	Lifting Tower Crane	Working in Building	90%	00:01:10
Relio	Lara Croft	Telehandler	Shuttle Operation	70%	00:06:32
Simulator_251	Rubeus Hagrid	Compact Track Loader	Truck Loading	100%	00:04:29
ADV_5	Tony Stark	Crawler Crane	Steel Structure	100%	00:02:01

A table-based overview emphasizes scanning records.

AFTER

Past Sessions 14:12:00

Simulator	Trainee	Equipment	Exercise	Score	Duration	Status
CML-345	John Doe	Ship to Shore STS	Load Control	80%	00:15:29	Running

Score

80%

- Contact - Crane Body (5) -15%
- Contact - Load (3) -15%
- Slack Rope (2) -5%
- Not Following CMS (2) -5%

Stat Report

Completion Level	80%
Elapsed Time	02:04:33
Goals	5
Total Number of Goals	15
Wind Speed	25km/h
Wind Heading	NE
Containers Moved	15

Performance Indicators

Moves per hour	25
Major Pendulum Time	3
Minor Pendulum Time	1

Deductions Overtime

Avg. Trolley Dir. Change	3
Major Pendulum Event	2
Minor Pendulum Event	1

Safety

Contact - Crane Body	3
Contact - Load	2
ByPass Used	2

CML-345	Dave MingChang	Ship to Shore STS	BasicControl	75%	00:15:29	Paused
CML-345	Dave MingChang	Ship to Shore STS	BasicControl	75%	00:15:29	Paused

An expanded session view adds score summaries and performance detail.

Design expertise for simulation teams

Clear interfaces for complex training workflows.

UX reviews, workflow redesign, interface systems
and interactive prototypes for simulation products.