

Welcome!

Thank you for your consideration. I'm excited to share a few projects with you, and you can find more on my website at reneelynn.com.

1. [Making the Claim: Education & Futures Visioning](#)
2. [Predictions Display: Research & Strategy](#)
3. [Rider Journey Mapping: Research & Strategy](#)



MAKING THE CLAIM

because we need to be proactive about equity when we're bringing new technologies into the classroom

Project Manager and Research Lead,
Greater Good Studio



Developing design principles for ethical, equitable edtech

Emerging classroom technologies that use Natural Language Processing have a lot of potential. They can transform learning experiences for a diverse student population, particularly Black and Latinx students, as well as English Language Learners and disabled students / students with disabilities. But these technologies also have the potential to perpetuate existing inequities and lasting harm.

To better understand how new educational technologies will support inclusive, effective writing communities, our team conducted research and developed design guidance for building equitable, ethical digital platforms for students and teachers in middle and high school English/ Language Arts classrooms.



Research, co-design, and synthesis

Our multidisciplinary team drew on a range of methods to gather and analyze data about the complicated intersection of language, pedagogy, emerging AI solutions, and classroom experiences.



Secondary research

Expert and stakeholder interviews

Literature review

Conference and workshop attendance



Primary research

10 remote and in-person classroom observations

40+ interviews with students, teachers, and administrators

Prototype evaluation and co-design with users



Synthesis

Textual analysis

Affinity mapping

Participant profiles

Stakeholder and participant workshops

Insight writing



Principle development

Prioritization workshops

Audience profile development

Ideation and low-fidelity sketching

Report writing and publication

One student's suggestions for the writing platform

The sketches are arranged in a grid and include the following titles and content:

- Practice Writing Prompts:** Three boxes labeled "USE".
- Writing Skills Practice:** "Time to practice! ORGANIZING YOUR ESSAY?" with a box below. *Callout: better organizing, write notes where ever*
- Pre-writing Tools:** "Pre-writing Map" with a spider diagram. *Callout: use graphic organizers. spider diagram*
- Community (teachers, students):** "Your Writing Community" with names: Ms. Jones, Becky M., Cedric P., Olga Flores, Tammy C.
- AI Tools:** "What is AI" with "Are you stuck? Here are some articles and videos to help:" and two boxes. *Callout: What is AI*
- Portfolio:** "Your Work" with a timeline showing "June 10" and "May 21". *Callout: don't use a timeline*
- Data Visualization:** "Your Most Used Words" with a bar chart and "Your Essay Length Trend" with a line graph.
- Editing Tools:** "editing Tools" with "check for..." and checkboxes for Spelling, Grammar, Word choice, Sentence structure. *Callout: (star)*
- Citations:** "Citations" with "+ ADD" and three checkboxes.
- Accessibility Features (easing typing):** "Your Essay" with "SPEECH TO TEXT" and a box. *Callout: use this a lot*
- Accessibility (text display controls):** "TEXT DISPLAY" with "Size", "Color", and "Font" dropdowns.
- Accessibility (focused tasks):** "CLEAR MODE" with "PARAGRAPH VIZ" and navigation arrows.
- Translation:** "Feedback from Mr. Jones" with a "TRANSLATE TO..." dropdown. *Callout: use this a lot*
- Rubric:** "My Writing" with "VIEW RUBRIC" and a list of items.
- Accessibility Features (preventing stress):** "Your feedback is ready." with "VIEW FEEDBACK + GRADE" and "VIEW FEEDBACK ONLY" buttons.

Building a project community

This was not a traditional “consulting” project. We had no client: we were among four organizations who’d been given a grant to work on AI-enabled technologies for the English/Language Arts classroom. The other three organizations were building the tech; we were there to create guardrails for these organizations and for the field at large.

To generate buy-in for this work, we built a diverse and engaged coalition over the course of 15 months through conversations, texts, emails, newsletters, surveys, and iterative workshops.



Partners and stakeholders who are currently developing new technologies for the writing classroom.



Teachers and administrators who are supporting students in a rapidly-evolving world.



Discourse community advisors who provide additional expertise critique on issues of disability, mental health, and cultural humility.



Subject matter experts who have studied and worked in the fields of artificial intelligence, edtech, and ethics.



Current and former students who are studying writing and growing as communicators.



Funders who are looking for ways to evaluate future investments in education technology.

Applying the principles of equitable design

...with our edtech partners.

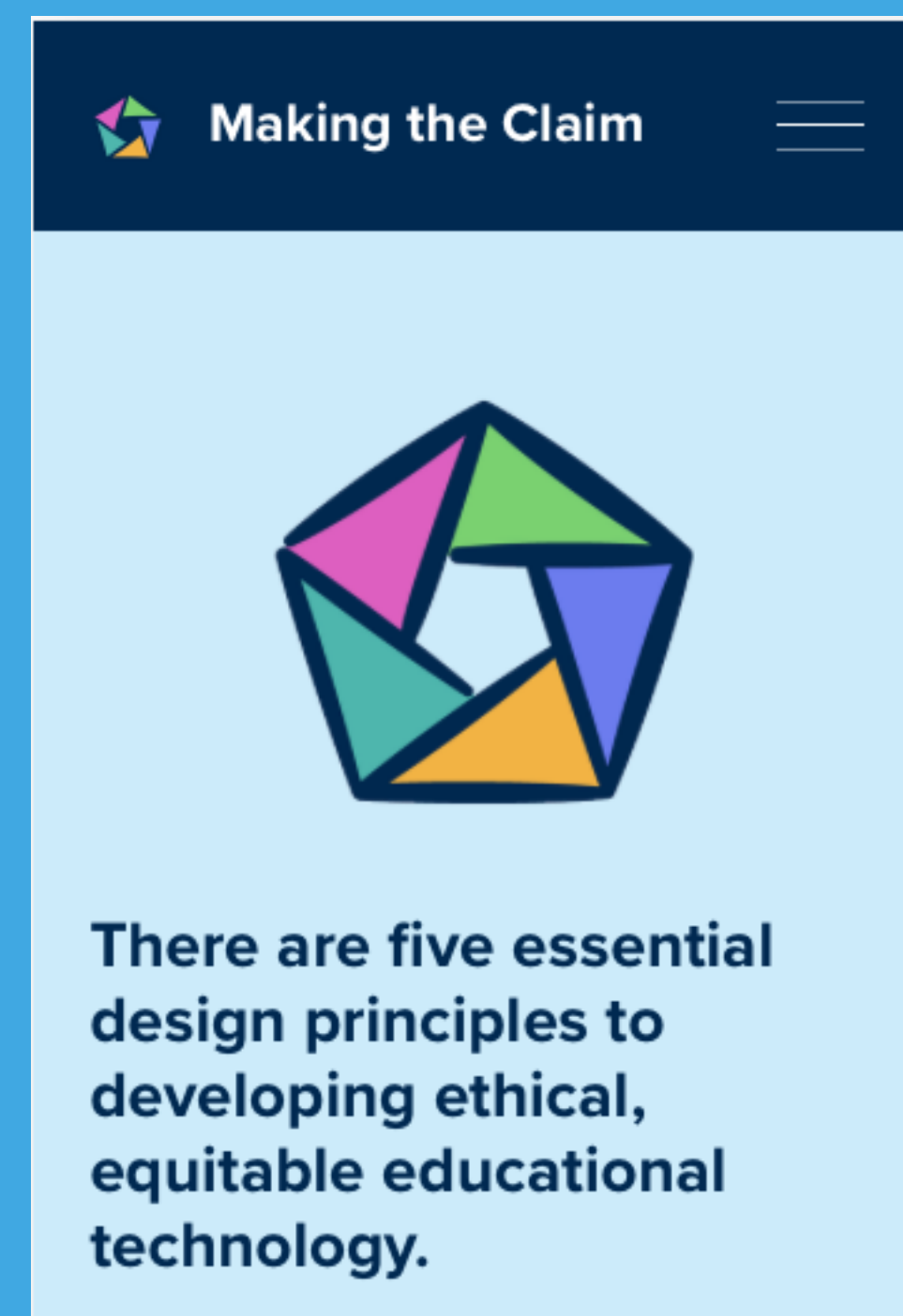
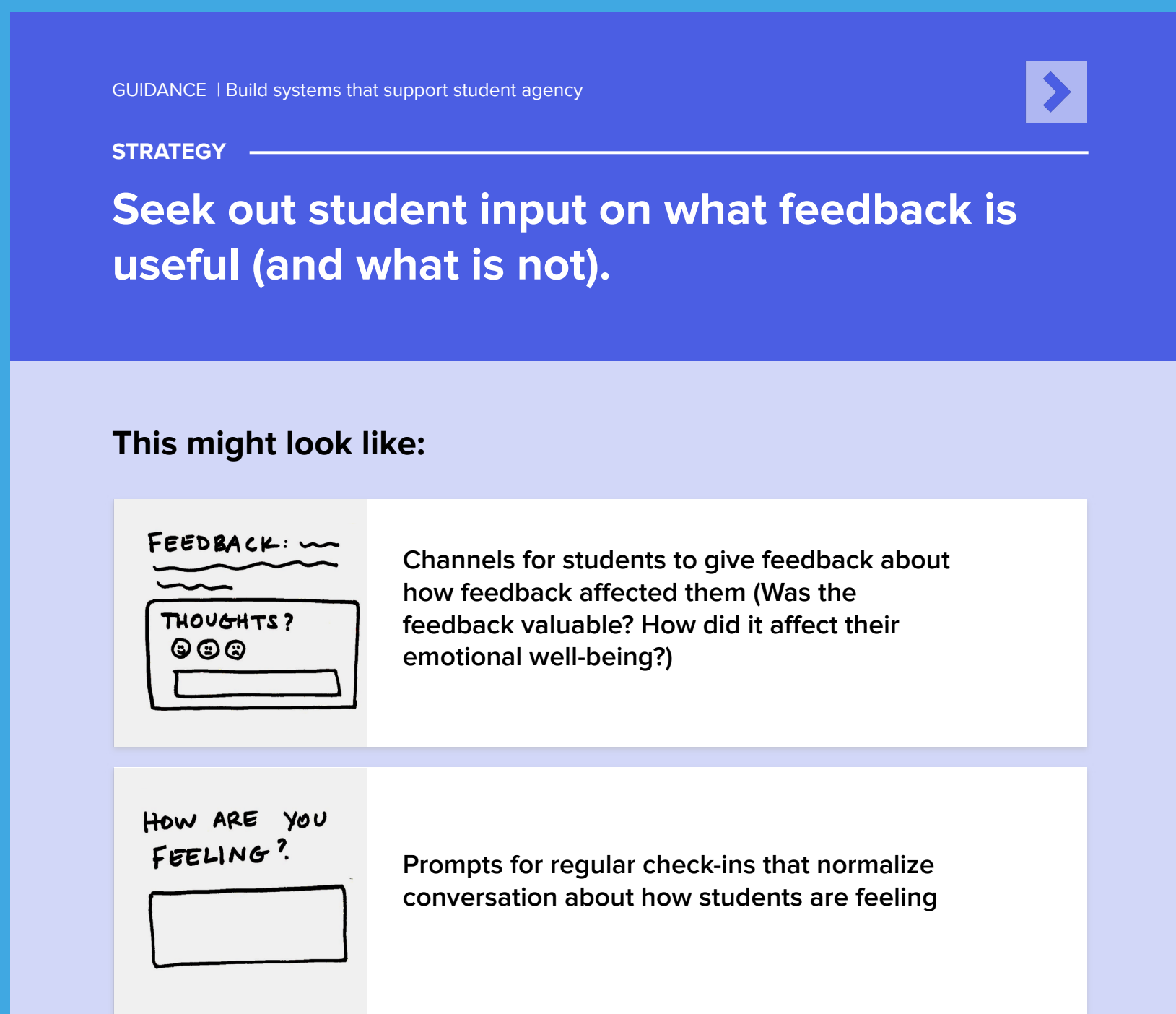
We developed and shared a “Design Guidance” document and led generative workshops that used the information as a set of “guiding stars” for discussion, evolution, and future ideation.

Since we began this work, of these partners has integrated suggested features into their existing platform. Another partner has begun working on an entirely new application.

...in the field at large.

We published a set of broadly applicable “Design Principles,” including suggested practices, which can guide new organizations toward the development of equitable classroom tools for writing instruction.

This report is available to the public at makingtheclaim.com. Since we launched on April 1, we’ve already heard from another funder that they are using it as a benchmark for evaluating the ethics of design processes.



PREDICTIONS DISPLAY



**because we need to agree on how to tell
people that the bus is coming**

Strategist and Facilitator, MBTA

“Built on top of cow paths”

The legend goes that the city of Boston’s streets were built to follow cow paths—the informal paths that many people used to get from place to place before there were roads—rather than according to an organized plan.

While the urban legend isn’t entirely true, it’s a great analogy for how many residents feel about how the transportation system communicates with its riders, even about something as critical as “When is the next train coming?” It can feel haphazard, uncertain, and inefficient.

The department agreed that we needed to do a better job with communication. But how do we agree on what needs to be done, and help several busy product teams take on and prioritize the work? As a strategist and facilitator, I took on the task of getting the innovation department’s leadership to agree to a set of priorities, and creating actionable next steps for individual contributors.



The voice (and view) of the rider

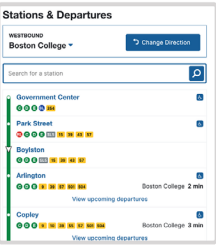
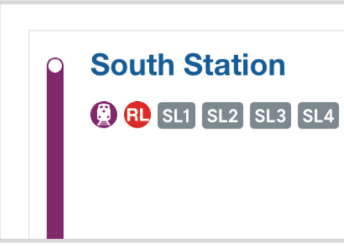
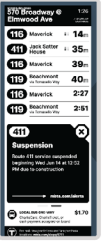
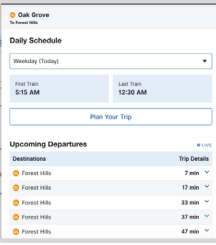
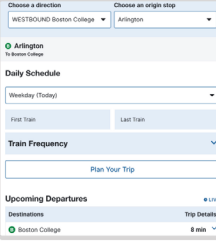
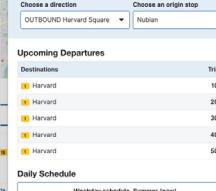
To get a rich understand the rider's point of view in a short window of time, I analyzed two different kinds of research.

Touchpoint library

I gathered and analyzed photos of the "current state" of every way that riders might encounter a prediction about when a vehicle might arrive, creating a detailed "touchpoint library."

Research & rider feedback review

I accessed an archive of rider feedback and coded it for comments, complaints, and compliments about predictions. I analyzed it for sentiment and connected it to the touchpoint it was referencing.

#	Occurrence	Collaborator notes - morning	Collaborator notes - afternoon	Updates	Image(s)	Context	Text (prediction)
20	Schedules & Maps > Subway > Green Line Stations & Departures					Private	X min
21	Schedules & Maps > Commuter Rail					Private	XX:XX
Spatial Relationships: Route Ordinal							
22	Bus e-ink		**This is the wrong image, (this is for GL E-ink) *Is this XX:XX or XX:XX scheduled?			Public	Xm XX:XX
Spatial Relationships: Ordinal							
23	Schedules & Maps > Subway > Upcoming Departures (Orange Line)		Same as above, text can also show "Arriving." Also perhaps would tag "Text (data type)" with Live?			Private	X min
24	Schedules & Maps > Subway > Green Line Stations & Departures > Schedule Finder					Private	X min
25	Schedules & Maps > Bus > Schedule Finder > Upcoming Departures		For cancelled trips, IIRC this view doesn't show the trip at all (vs strikethrough)			Private	X min

Creating analytical frameworks

To build buy-in, I needed a way to “show my work” to the leadership at the MBTA: a group of passionate, knowledgeable, busy people. I used several analytical frameworks to make it digestible without glossing over the rigor of the process. I shared these frameworks with leadership at an alignment session to ensure that everyone felt confident about the direction of the work.

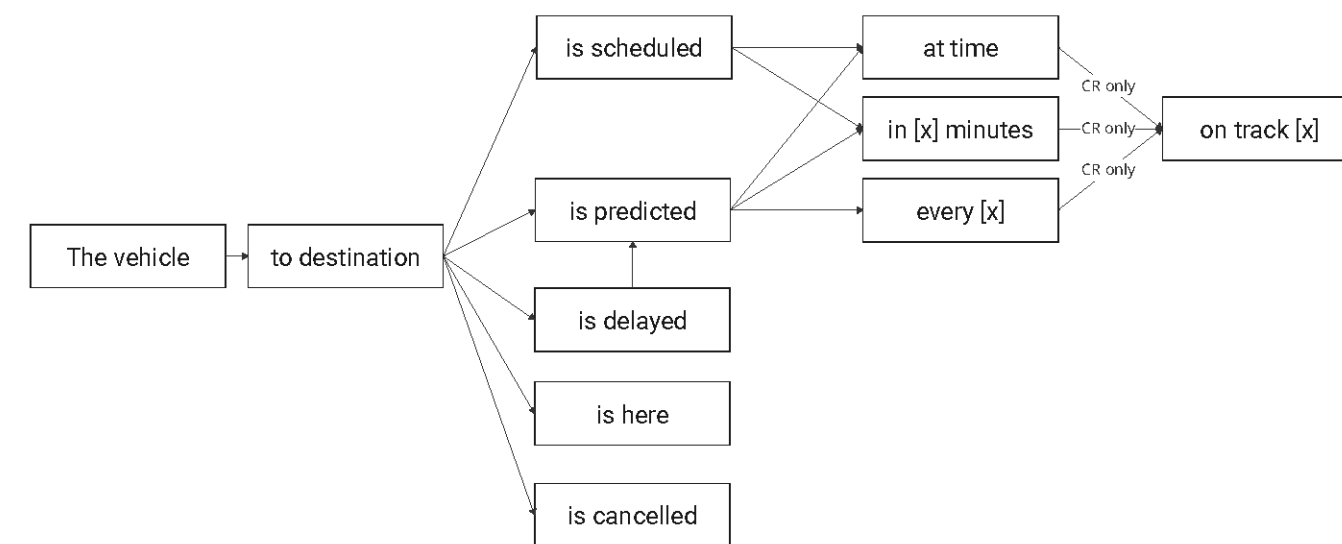
The Vocabulary of Real Time Data

Text	Time away	6m 6 min Every 7-10 minutes Now
	Time of arrival	12:10 12:10 Scheduled
	Physical proximity	ARR Due Has arrived Approaching
	Action	BRD All Aboard
Data type	Live Scheduled Live updates are currently unavailable	
Track	Track 3	
Status	Cancelled Delayed	

Typography + Color	Type	Bold Regular Strikethrough
	Color	Black Gray

Icon	Data type	[no icon]
------	-----------	-----------

The Grammar of Real Time Data



The vehicle Vehicle number [CR]
Scheduled time of vehicle [CR]
Name or number of route

to destination Terminus of route
"via" intermediate stops

is scheduled Scheduled departure time

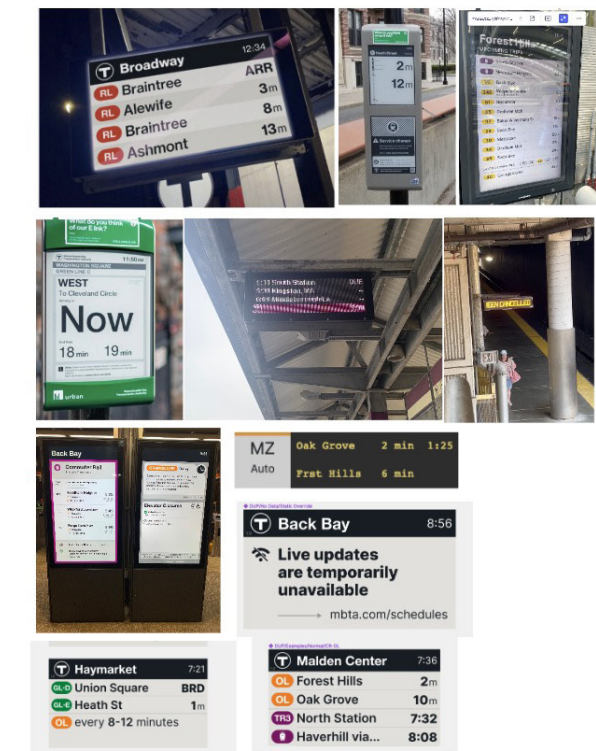
is predicted Real-time arrival prediction

is here Real-time arrival

Real Time Data Channels

"Public" screens

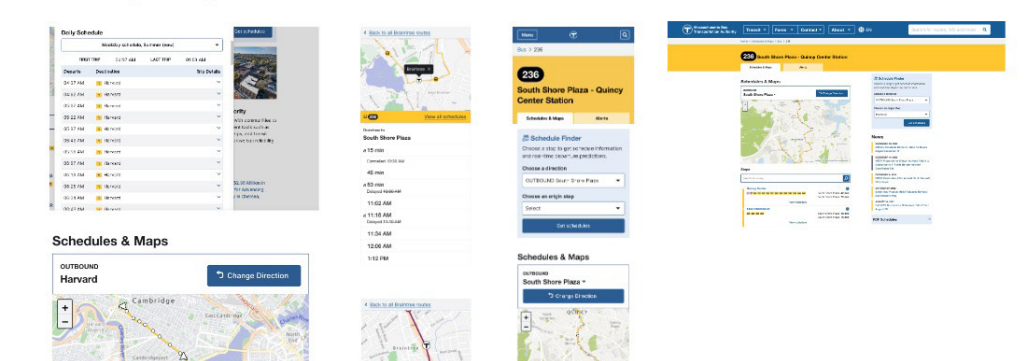
Digital interfaces that people encounter in public spaces, such as inside or outside stations or at bus stops.



"Private" screens

Digital interfaces that people pull up on private devices such as computers and phones.

Managed by CTD



Identifying opportunities

After finishing the leadership sessions, I conducted small group workshops with individual contributors—members of the project teams that would eventually have to carry out any improvements to the system—to synthesize and contextualize the patterns that were showing up in analysis. In these sessions, we developed a list of “predictions tasks” and described what resources teams would need to accomplish them.



Proposed common practices & areas for investigation

Where do we see conflicts that need to be resolved?

AC - indicating RT data through a combination of text and icon. Align on a combination of icon and text.	AC: Align on the way that we convey timing, that text, abbreviation "arriving", "departing", what is the status of a train that is HERE.	AC: Conveying minutes - "minutes" "mins" "m"
AC: Showing a time in minutes away vs. Hkzmm - what is the pattern?	AC: When it comes to off modes, commuter rail follows its own pattern, should we represent this from different authority or should we have a more consistent?	PS: align on how to display cancelled trips (missing vs strikethrough vs cancelled text)
Align on how to display/describe delays and disruptions (vs. cancelled trips)	AC: Skipped trips vs cancelled trips???	PS: stops can be skipped (e.g., if there is a detour)
Align on how we display what information is available in our app that is not available in our website, what are we showing and how often?		
Consistent icons from map, RT, etc.	DUPS - up to 59	shows schedules for

What seems like an "edge case" or a separate entry in the design system?

AC - use screen sizes to guide abbreviations (countdown clocks vs. website)	align on whether to use "arriving" or "departing" because the information found in apps sometimes has the data and sometimes doesn't	
difference between central relationships - whether we display the next train in time or the next train on a route. (M)		

What do we still have questions about?

Should we include alerts UI as a data source when considering predictions and RT data?	AC/PS: "likely delays" - should we include delay information in predictions rather than just in alerts? Should delays and disruptions be included in predictions?	< How to consistently communicate about delays
how does the language that we use in operations compare to the information we show riders?	Where do we keep the data as represented in the GTFS spec? Where do we represent the data differently for riders?	
levels of information - basic to detailed, not obscuring "basic"		
differentiating between style routes and content routes. Content routes		

Putting it in action

While leadership and project teams were excited about the bird's eye view of how we were displaying predictions, I needed to ensure that these insights made it to implementation and had an impact on rider experiences.

Leadership buy-in

I returned to MBTA leadership with these tasks and, in a series of large group meetings, one-on-one sessions, and asynchronous commenting periods, sought approval and resources for project work.

Individual contributor handoff

I created a database of tasks, related research, and high-level acceptance criteria to support project work, which I handed off to the UX Principal for oversight.

Rider results

Riders were quick to notice some of the early results—while the data they were seeing wasn't new, UX designers were able to help riders understand its meaning.

1. Make sure our **data vocabulary is defined** and readable to interested users.
2. Consider whether users would value seeing that a prediction is **real-time or scheduled on public screens**.
3. Assess the ways that a **consistent "grammar"** can support readability of signs where real estate is at a premium.
4. Create a design system that ensures users are seeing

Predictions display tasks

Task	UI or UX?	Implementation team(s)	Supporting research / contact	Alerts Scope/Notes	Alerts T-Shirt Size	App Scope/
whether to use "minutes" or "min" on screens where there is enough space for multiple letters (maintaining awareness that in some cases, there will only be space for 1-3 letters)	UI	Dotcom External Vendor(s) Keolis MBTA App PA/ESS	Screens Team - Mindy Villaran, Betsy Medvedovsky, MBTA.com - Anna Chung			
develop a single convention for when we display "minutes" vs. the predicted time across public and private screens	UI	Dotcom External Vendor(s) Keolis MBTA App PA/ESS Screens	Screens Team - Mindy Villaran, Betsy Medvedovsky, MBTA.com - Anna Chung			
align on the way that we convey that a vehicle is "arriving" at a station (with						

"I love love love that you added real time updated arrival time to the page with your recent changes. This is a HUGE improvement. The change makes the page soooooo much more useful."

- Customer feedback



RIDER JOURNEY MAPPING



**because we need to
understand how complicated
the user experience of public
transit really is**

Researcher and Strategist, MBTA

How do we know what to do?

The MBTA is a massively complex transportation system—made up of light rail, heavy rail, buses, shuttles, and ferries; operated by a dedicated and diverse team; facing financial, technological, and even meteorological challenges. We know that there are problems, but when it comes time to solve them, how do we even begin?

The rider experiences this system not through the lens of an operator, but through the lens of a traveler. As an innovation team inside the larger organization, we needed to develop a tool to help us understand and communicate about the key moments in the rider's journey.



Collaborating on a mental model

Research stewardship

The innovation department had conducted dozens of studies of diverse rider experiences. We began by looking back at all the data that teams had collected and organizing over 30,000 individual data points into a usable (and reusable!) database of rider experiences.

#	Incident	Description	Category
Subject: The RIDE			
Topic: (Empty)			
1	1353184	Customer called in to state that she has not been able to access her Uber account. Customer has attempted to reach out to Uber and Ride pilots at MBTA .com since October the 14th and no one has contacted her back. Custoemr stated her account was suspended due to owing 12 dollars which she has been trying to pay to resume services but no one is contacting her back (AutoClosed)	Inquiry
2	1354149	Customer indicates she has a brain injury and needs assistance with booking FLEX rides. (AutoClosed)	Inquiry
3	1355374	Hi my ID # is 4031680, I use your pilot program with Uber and it is great but there was some sort of problem with my last 4 rides. I was charged the full trip price instead of the \$3 fare associated with The Ride pilot program. I tried to explain to Uber but the customer service doesn't understand what I'm telling them. My trips I was charged for was 11/2/22 to and from 54 Woodside ave... my dentist and my trips to and from MGH on 11/3/22. Can you please help me straighten this out? Thank you in advance Karen Burke (AutoClosed)	Inquiry

Synthesis

Along with a group of other researchers, I created summaries of individual data points and grouped them by theme and “moments” in the rider journey. We met frequently to review each others’ findings, compare trends, and standardize our language.

Unnamed record

SUMMARY

[would] Use congestion information to determine whether or not to wait to board the next train

DIRECT QUOTE

Before COVID, there were times at Sullivan sq from 8-820 you are PACKED on the train like sardines. The train ...

SOURCE

Crowding

Unnamed record

SUMMARY

[Would] Use travel time estimates to time out each leg of my trip, so I don't have to race to my destination

DIRECT QUOTE

Travel time estimates to my final destination would be the most useful. Often I find myself having to race to som...

SOURCE

Unnamed record

SUMMARY

Adjust my plans by myself using my own tools (like the Transit app) when there's a disruption because other ...

DIRECT QUOTE

Red Line derailment, you were headed from Andrew Station to a conference at Lowell for work. Had to go back to JFK ...

SOURCE

Accessible Tech

Unnamed record

SUMMARY

Afraid to schedule time-sensitive events around Commuter Rail schedules when I experience delays up ...

DIRECT QUOTE

The Franklin line just finished many months of refurbishing switches and rails over 2 years. Now, service is worse ...

SOURCE

Customer Service

Unnamed record

SUMMARY

Alter how much time I allot for commuting now that the trains don't leave on a schedule, which affects how I go about ...

DIRECT QUOTE

What time the vehicle is going to leave the station. I live at Ashmont, and now that the trains don't leave according t...

SOURCE

Screens Research

Unnamed record

SUMMARY

Am hyper-vigilant about arriving early for bus arrivals, and time my connection to the train based on headways I ...

DIRECT QUOTE

So I'm always early, especially for the bus. And so I kind of know how long it's gonna take me to walk and allow extra ...

SOURCE

Alerts Refresh



Creating a journey map

We used our findings to create a journey map. Instead of trying to create a unified path through the system, we showcased divergent goals and experiences.



Awareness

Become familiar with parts of the system relevant to my trips

Use maps to figure out the system

Study routes on the map ahead of new trips

Find route maps confusing

Rely on my existing knowledge of the system

Expect trains to be running their regular schedules

Know my route well enough to be able to improvise

Know that shuttle schedules aren't published (so don't look them up)

Keep an eye out for landmarks on the

Planning

Decide on my route

Choose my mode of travel

Study routes on the map ahead of new trips

Find route maps confusing

Compare trips to find the best mode and route

Expect trains to be running their regular schedules

Know my route well enough to be able to improvise

Know that shuttle schedules aren't published (so don't look them up)

Keep an eye out for landmarks on the

Decide when to start my trip

Figure out how long my trip will take

Factor in extra time when there's a shuttle

Look at trip planners for time estimates

Plan for worst case scenario

Build in a buffer for rush hour travel

Evaluate the best time to leave

Look at arrival predictions

Leave excessively early because I expect something to go wrong

Avoid rush hour

Use visual interpreting interface to look at schedules

Using the map to communicate

This tool has become a reference for innovation work at the MBTA. We are currently using it to frame “jobs stories” and ensure that project work is grounded in the current rider experience.

“There were so many times that I wanted to smash “!!!!” on my keyboard or forward a ticket to another department... I’m excited for all that will come from this, and the process that you have laid out for us.”

- TID Leadership



Trip planning job stories

Relevant touchpoints is **Mobile apps (notifications)**

Main job

Compare trips to find the best mode and route

Job story

When I'm planning to take a route I'm not familiar with, I want to look at routes on a map to decide on the bes...

Main job

Decide on the route of my trip

Job story

When I'm taking a route I'm not familiar with, I want a route recommendation for my specific date and time, s...

When I have multiple routes I could take to reach my destination, I want know which will be the quickest right...

When I'm deciding between routes, I want accurate real time information so I can make an informed decision ...

Main job

Decide when to start my trip

Job story

When I'm planning a trip a few days out, I want to get an idea of when the service I'll take is running, so I can ...

When I'm about to take a specific trip, I want to know when I should leave my house to get to my stop just be...

When I'm planning to take a bus I'm not familiar with, I want to know the schedule that day for the direction I'...

Main job

Get to the right place to catch my vehicle

Thank you!

Acknowledgements:

- Graphics from Pablo Stanley's Open Peeps and Transhumans collections
- The teams at Greater Good Studio & the MBTA
- The hundreds of research participants who contributed both lived and learned experience to our project work

