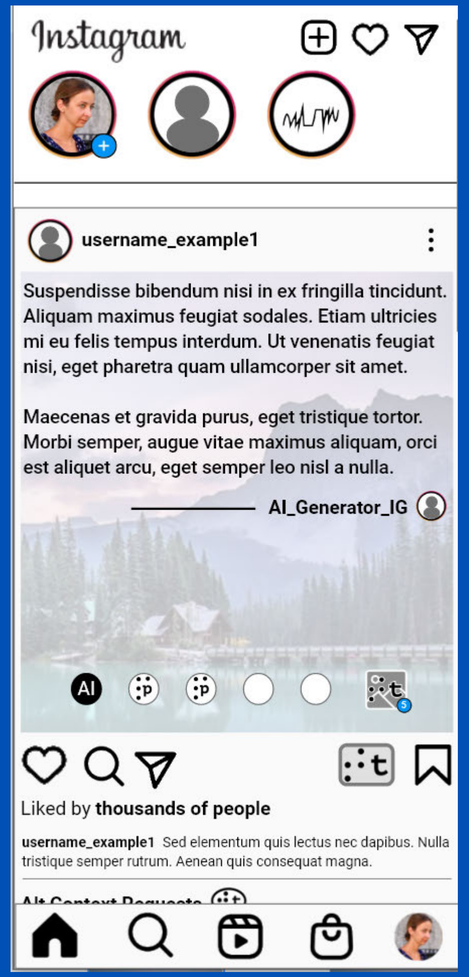


alt context

SELF-SUFFICIENT DIGITAL LITERACY FOR THE VISUALLY IMPAIRED COMMUNITY

David Barter

INDS 4007 - Major Design Project II

Koby Barhad & Angelika Seechaaf-Veres

OCAD University

Fall 2020-Winter 2021

PROCESS

Gate 1

Gate 2

Gate 3

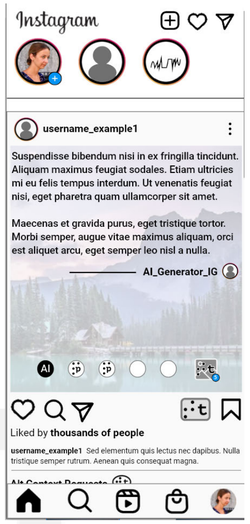
Gate 4

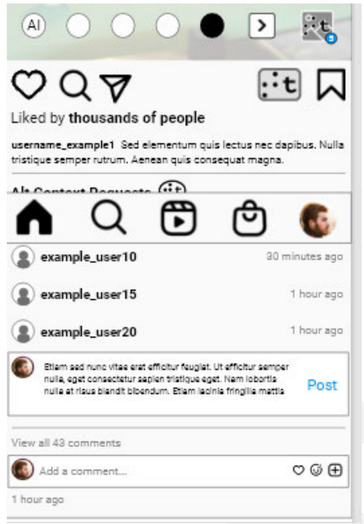
Gate 5

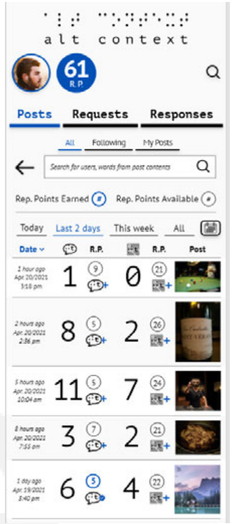
Gate 6

alt context

Alt Context is a service that synergizes with Instagram to deliver a comprehensible context to visual media in text form, intended to expand on alt-text and create a community of people contextual descriptions of visual media, making social connections between visually impaired and non-visually impaired users, providing the resources for visually impaired users to self-sufficiently understand the context of visual media on Instagram through bottom-up communal means, and significantly improving Instagram's utility for the visually impaired community.







David Barter | INDS Major Design Project | Fall 2020-Winter 2021

PROCESS

Gate 1

-Areas of interest / signals / issues

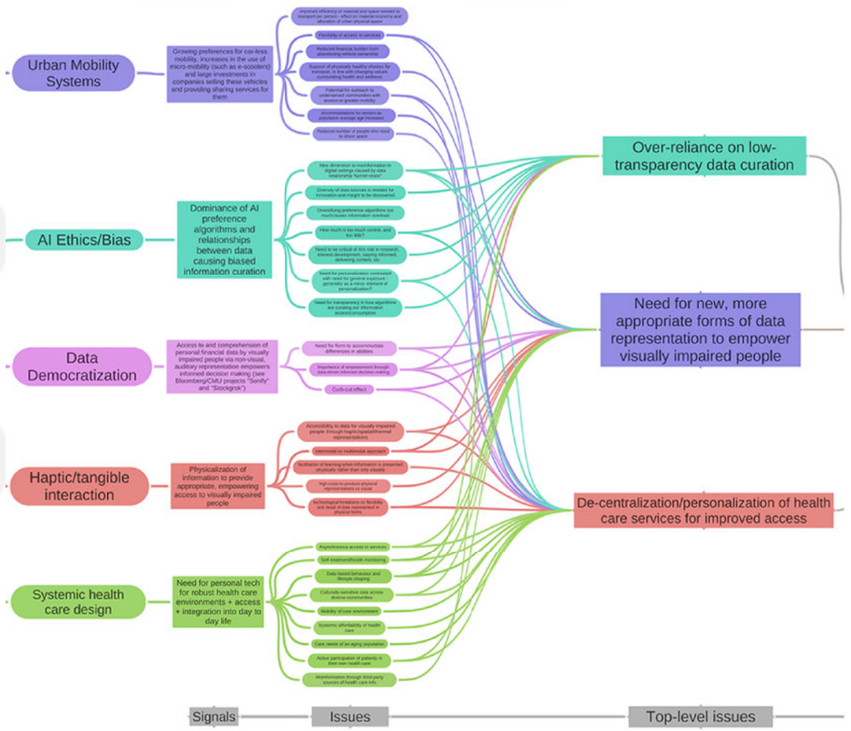
-Primary + secondary research (Intent & Opportunities)

-How-Might-We Questions

-Precedent Projects

-Designer-Maker-User & Distance Framework

For Gate 1, the focus was on scanning for relevant signals and issues, leading into identifying design opportunities in an area of interest:



My focus was on the issues around making data more accessible to visually impaired people, and using the emerging research field of “data physicalization” as inspiration to develop solutions

When challenged to define a problem rather than dive directly into solution-making through the lens of data physicalization, I found a significant issue within the visually impaired community: a lack of **digital literacy**, encompassing the skills needed to consume, create, communicate, share, and access digital content. This set my research direction: uncovering the nature behind why this paradigm exists, and what design opportunities come with the territory

PROCESS

Gate 1

-Areas of interest / signals / issues

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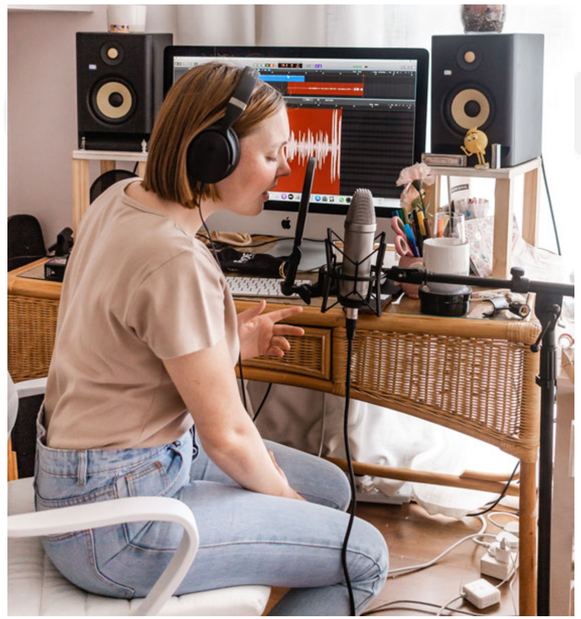
Through primary and secondary desk research, I found that the nature of this problem is cyclical: society increasingly demands high digital literacy, especially for employment, while the visually impaired community has high rates of unemployment and underemployment. Despite this situation, and research showing their characteristics of resilience and adaptability to their abilities, this community has very low engagement with digital technologies, and so their current resources for becoming digitally literate must be inadequate.



This resulted in two initial research questions:

1. How might we enable visually impaired people to improve their digital literacy more self-sufficiently?

2. How might access to digital literacy be transformed to best accomplish this goal?

PROCESS

Gate 1

-Areas of interest / signals / issues

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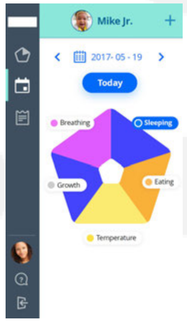
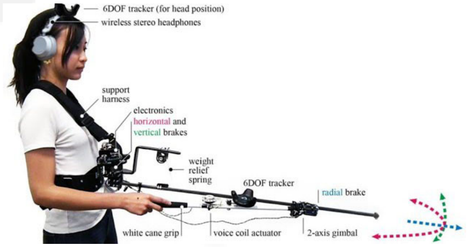
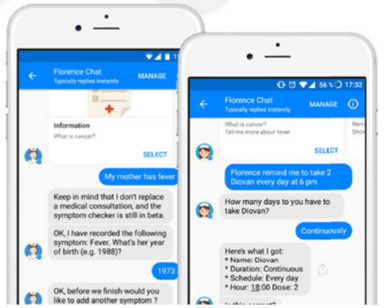
Next, I moved to scanning for precedent projects: the criteria for these project were that they could not be my own, nor from OCAD, and they should have different qualities to my proposed project, but address a similar issue, use a similar approach, target similar users, share similar needs and wants, etc. They must also come from a variety of disciplines, not solely industrial design:



PreeMe + You: Focused on providing neo-natal healthcare data for parents, example of visual data UI with little accessibility for a visually impaired user

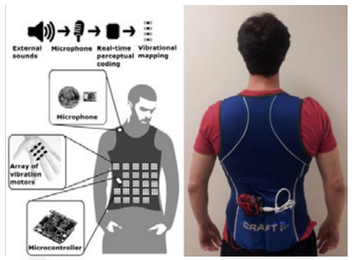


VR Without Vision: Aims to grant access to VR environments for visually impaired people, simulates haptic andtangible feedback



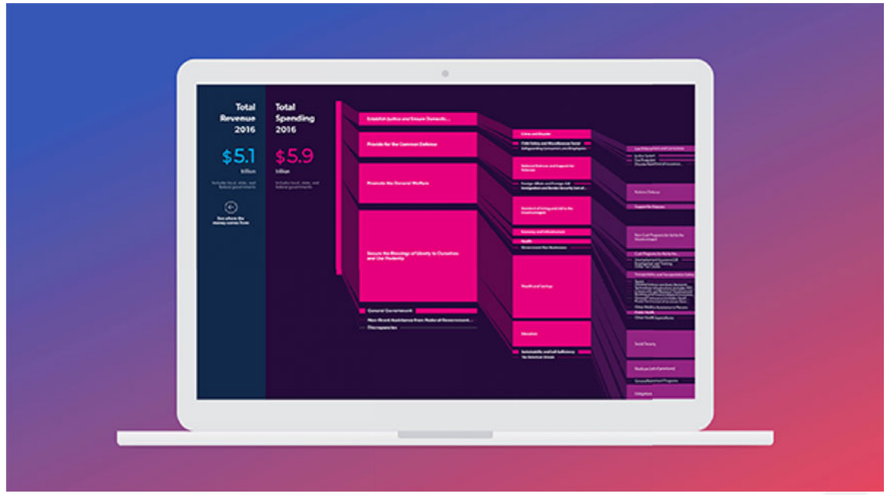
Florence Chatbot: Assists users with healthcare self-treatment, uses audio feedback, but relies on data visualizations; good example of impact from greater data access

Stockgrok: Web application that translates graphical data into equivalent audio signals. Explicitly meant to provide access to data visualization in a non-visual form.



Sensory Substitution Vest: Garment that uses haptic actuators on the abdomen to translate speech into vibration for auditory impaired users to learn. Similar intention to improve access by transforming the sensory form of something so that an audience with different abilities can use it.

Xbox Adaptive Controller: Designed to provide access to gaming to as wide an audience as possible as affordably as possible. Similar need/wants, in terms of appropriate interaction design for diverse abilities, use of tangible user interfaces.



USAFacts: Main precedent, showing an example of improved digital literacy (allowing users to learn about government spending) through advanced data visualization, but this is not accessible to visually impaired people, because of the impact of the visuals vs. seeing or hearing text.

PROCESS

Gate 1

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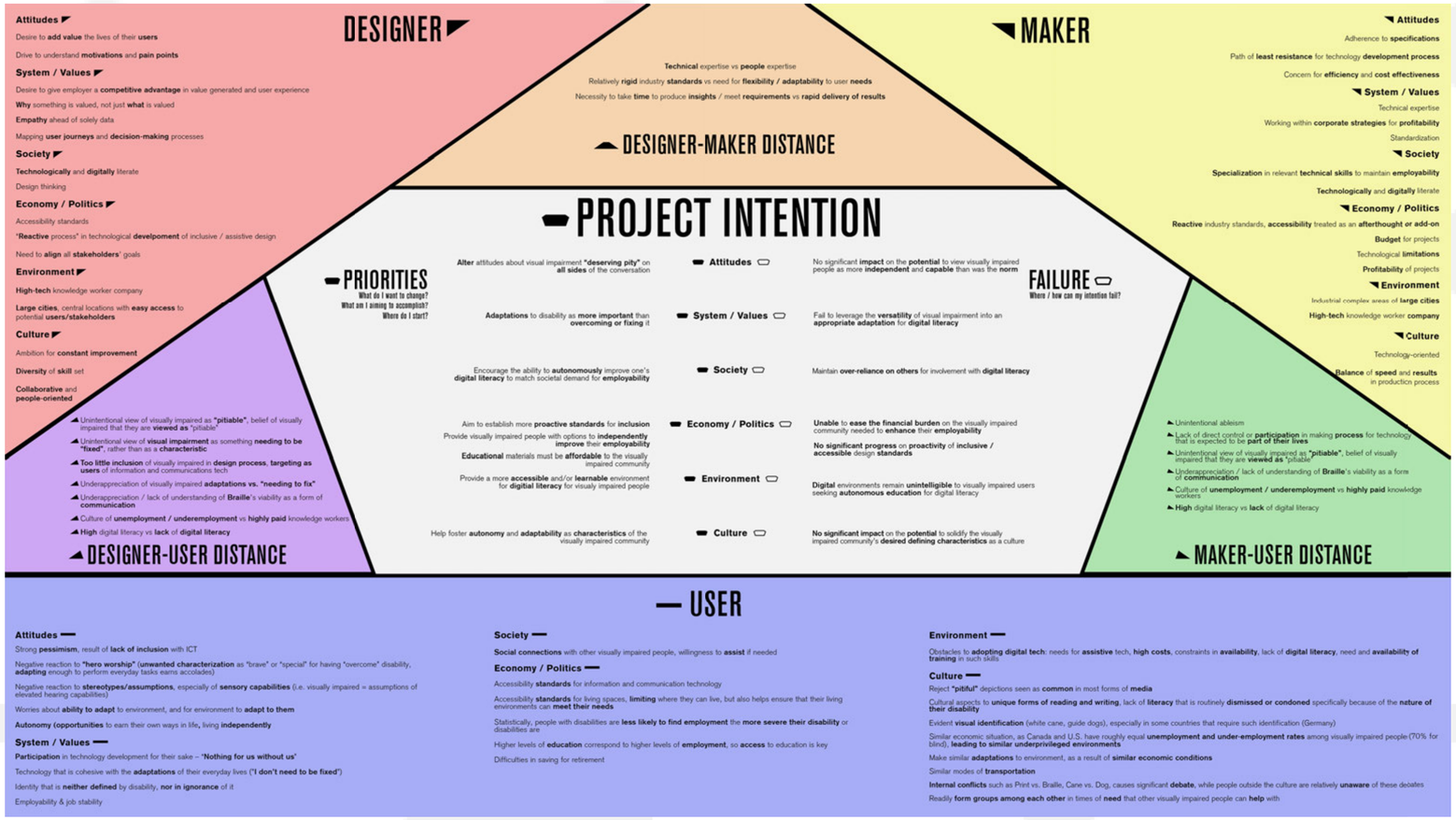
After the precedents, we worked through an exercise - the Designer-Maker-User (DMU) Framework, which considers the implications of the who will design, make and use the outcome of the project (product, system, service, etc), and understand and define the context of the relationship between the three entities, how they operate, power structures that affect them, and world views that they follow.

Further, this research identifies **distance** between the entities, in the form of conflicts that all of these factors cause, and lead to the discovery of design opportunities.



PROCESS

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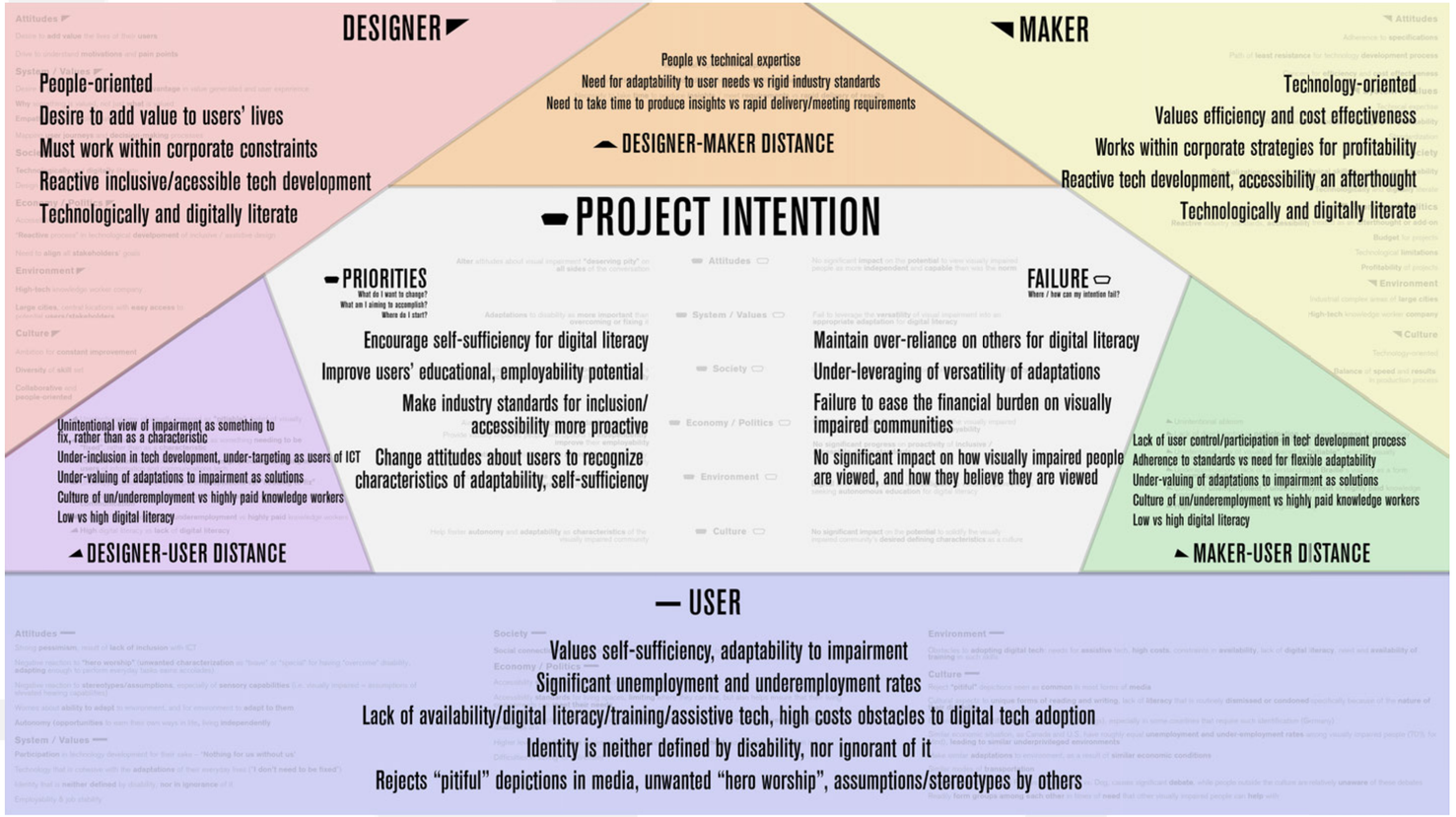
As a result of this research, I clarified my intention and identified further opportunities more aligned with the wants and needs of the visually impaired users around which I was orienting my design efforts. The deisgner and maker in this scenario (ICT development in line with industry accessibility standards) are closely aligned, but differ in terms of people-orientation and technology-orientation.

However, the user lacks sufficient availability of resources to improve digital literacy, and often has a contentious relationship with the other parties due to ignorance and belief in stereotypes of incapability regarding the users, while the users value self-sufficiency and adaptability.



PROCESS

Gate 2

-Speculative design methodology: scenario development

-Storyboard

-Empathy maps

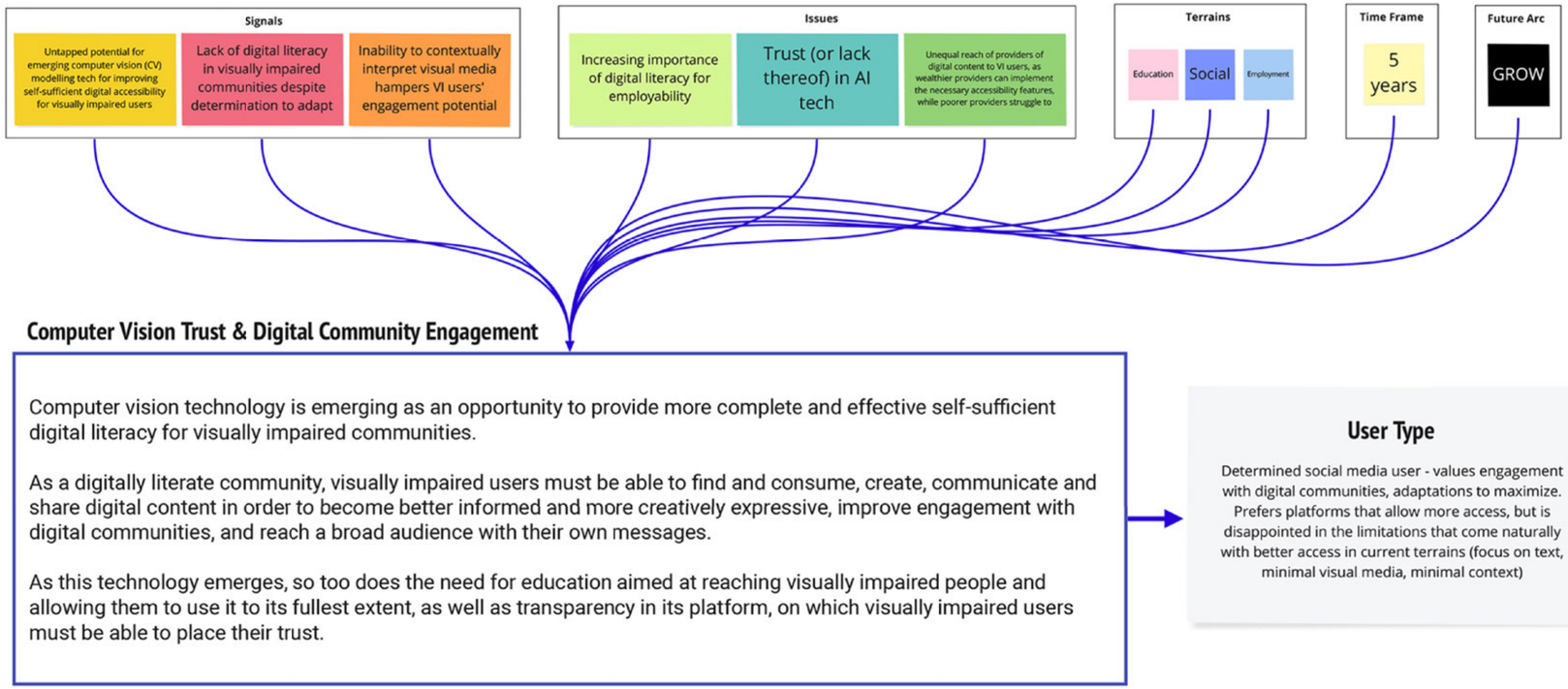
-Contextual Speculative Artifact

-Prototyping

-User Journey Map

As part of this thesis course's speculative / critical design methodology, **Gate 2** began with scenario development. We developed product and user concepts based on a combination of signals and issues (revisited), terrains (social, technological, environmental, economical and political context the concept is situated in), time frame and future arc (relationship of future scenario to the present - either growth, collapse, discipline or transformation).

It was in this exercise that my research first pivoted towards **computer vision technology** as a medium with which to accomplish the goals of the project. Many sources point to the possibility of computer vision models to aid accessibility through techniques such as automatic alt-text generation, or even descriptions of images / video.



PROCESS

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-Speculative design methodology: scenario development

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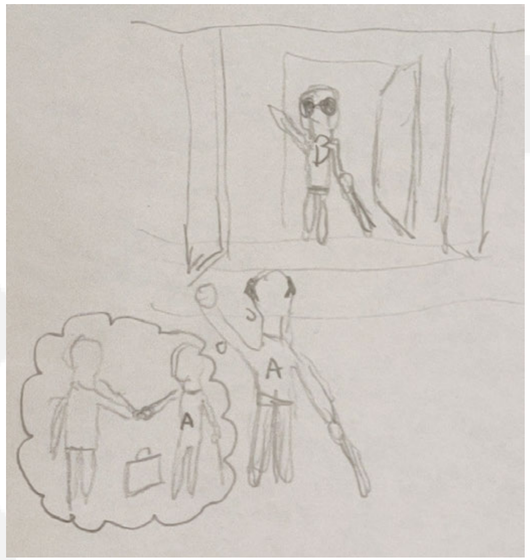
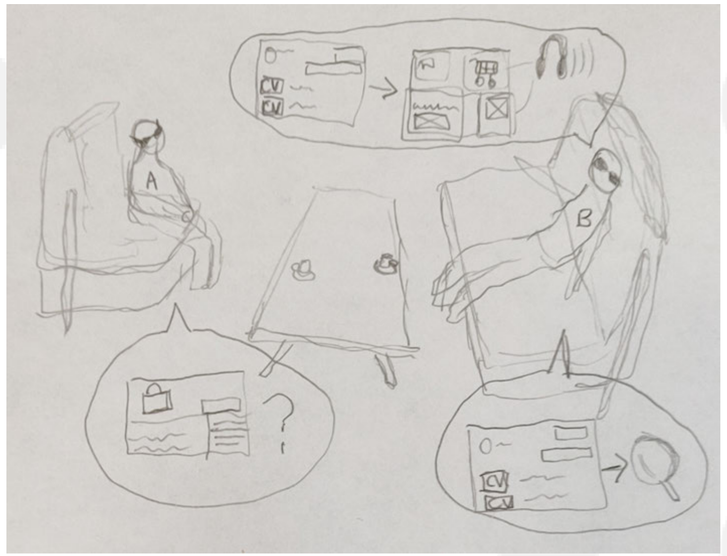
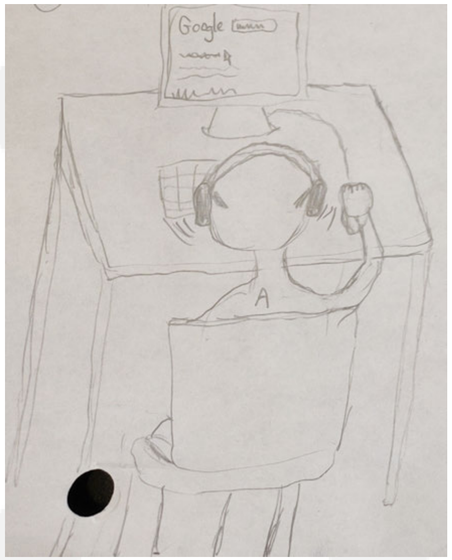
The scenarios were then fleshed out into rough **storyboards**:



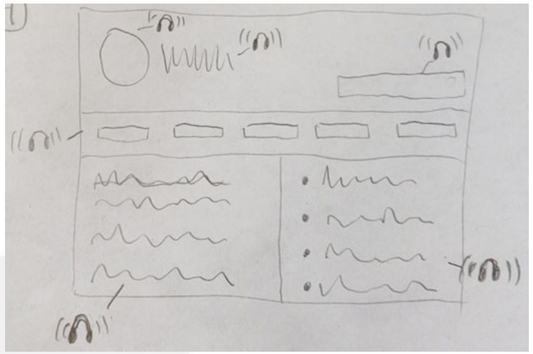
A is a visually impaired person attempting to find a job. During some downtime, they visit a fellow visually impaired neighbour, B.



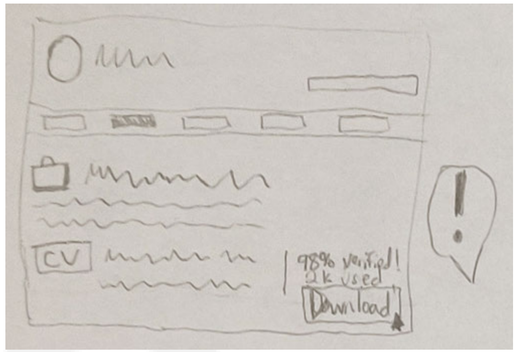
B mentions a website aimed at improving digital accessibility for the visually impaired community. Through it, they found software that helped generate better descriptions of a grocery outlet's online ordering system. A asks if it could help them with applying to a job on LinkedIn, but could not successfully apply to.



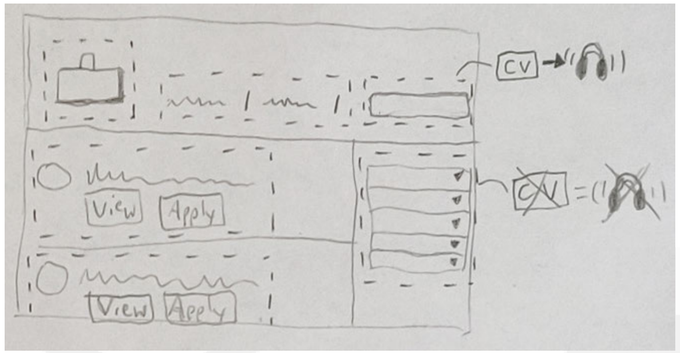
B thinks so, depending on if they can find a program that works for this employer's system. A visits this website and see if they can find a program that would help. A searches for it on Google, using their screen reader. They find it and click on the link.



The website is fully compatible with WCAG guidelines, so it is easy for A to get the information they need and follow the navigation to the correct place within the site's architecture using their screen reader.



A discovers after searching that there is one pre-trained CV model for the job application system. A looks over the description of the model, and notices how many other users have verified that it works and given it a high rating. They decide to download the model and install it.



A then navigates to the job application system using their screen reader, with the CV model ready to run. The CV model reacts to the visual content of the application system and communicates the information through the screen reader's audio system. It is completely comprehensible to A and allows them to continue the application process for a job, which they were not able to do before using the CV model.

PROCESS

Gate 2

-Speculative design methodology: scenario development

-Storyboard

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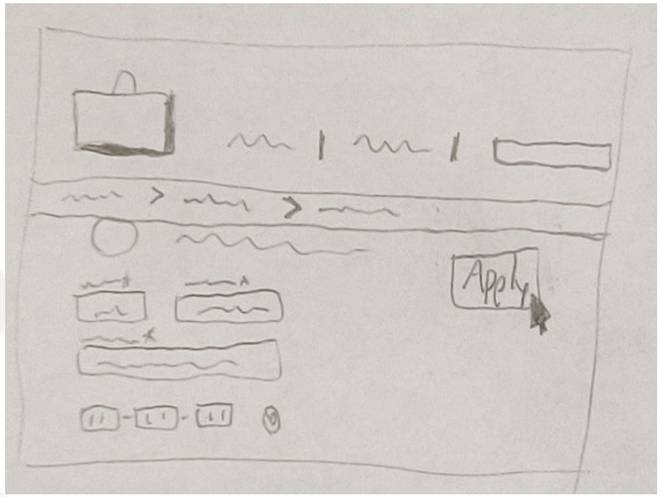
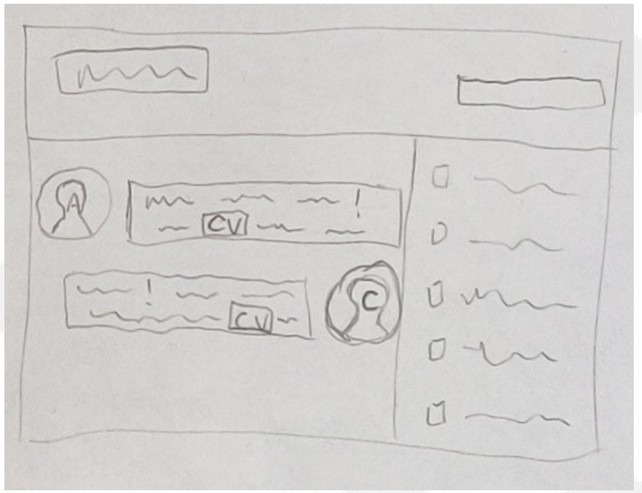
The scenarios were then fleshed out into rough **storyboards**:

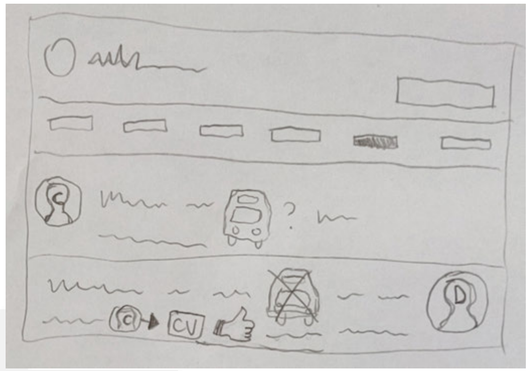


Their application goes through, and A leaves the system very pleased with what the CV model and the website they used to find it were able to allow them to accomplish.

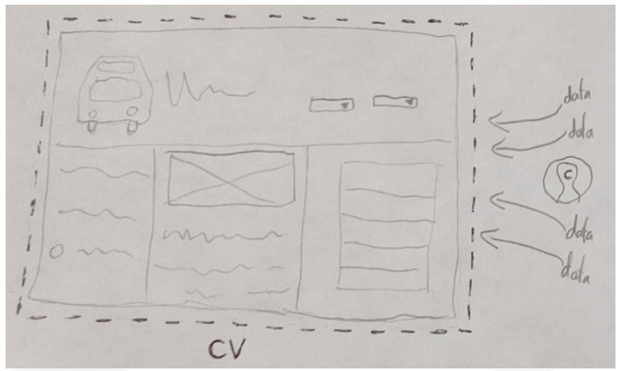


After this positive experience, A mentions this on social media, which gets the attention of A's friend, C. C has a visually impaired family member and is active in the community, so they decide to learn more about the website and what sort of service it provides.

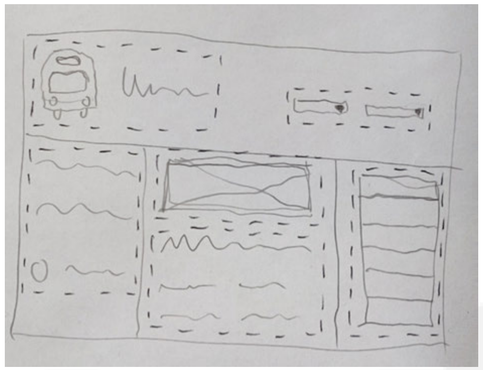
After asking their family member about what digital content they have struggled to access or use in the past, C comes to the website with a specific source in mind to find a CV model for.



They discover after searching the list of sources and communicating with the website's community that there is not yet a CV model for this specific source.



Knowing this, C takes it upon themself to train a CV model on this source and share it with the website's community. C follows the guidelines for doing so in the website's FAQ section..,



...and successfully generates a new, pre-trained CV model for the source in question.

PROCESS

Gate 2

-Speculative design methodology: scenario development

-Storyboard

-Empathy maps

-Contextual Speculative Artifact

-Prototyping

-User Journey Map

With further insight from working through the story of my future scenario, I moved on to clarifying the details on wants and needs of my hypothetical users through developing four **empathy maps**, and reflecting on new insights:

User #1: Visually impaired recent post-secondary graduate, entering the workforce

PROCESS

Gate 2

-Speculative design methodology: scenario development

-Storyboard

-Empathy maps

-Contextual Speculative Artifact

-Prototyping

-User Journey Map

With further insight from working through the story of my future scenario, I moved on to clarifying the details on wants and needs of my hypothetical users through developing four **empathy maps**, and reflecting on new insights:

User #2: Parent of User #1

PROCESS

Gate 2

-Speculative design methodology: scenario development

-Storyboard

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-Prototyping

-User Journey Map

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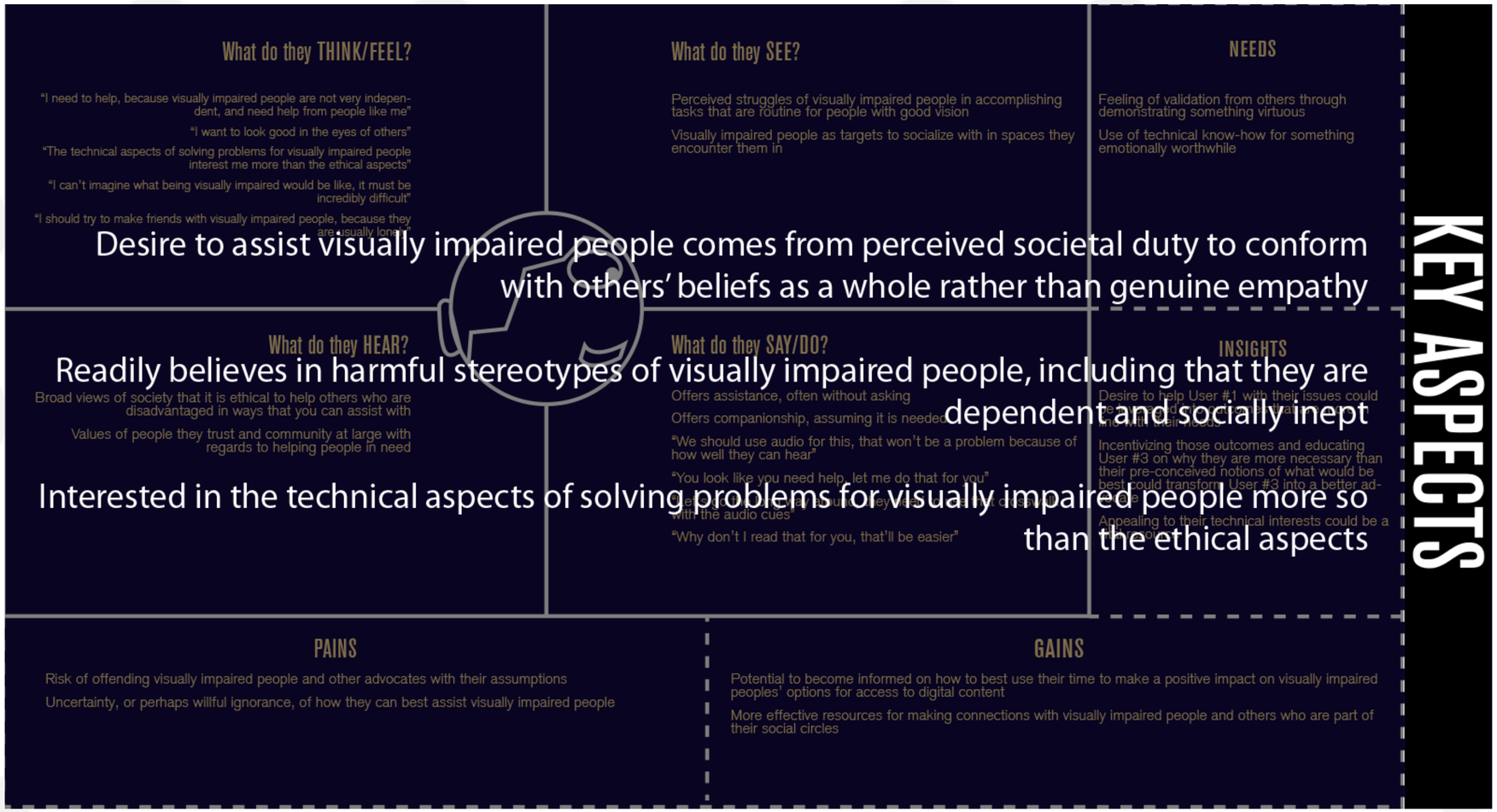

User #3: Ill-informed outside advocate for visually impaired people (who has good vision themself)

PROCESS

Gate 2

-Speculative design methodology: scenario development

-Storyboard

-Empathy maps

-Contextual Speculative Artifact

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-User Journey Map

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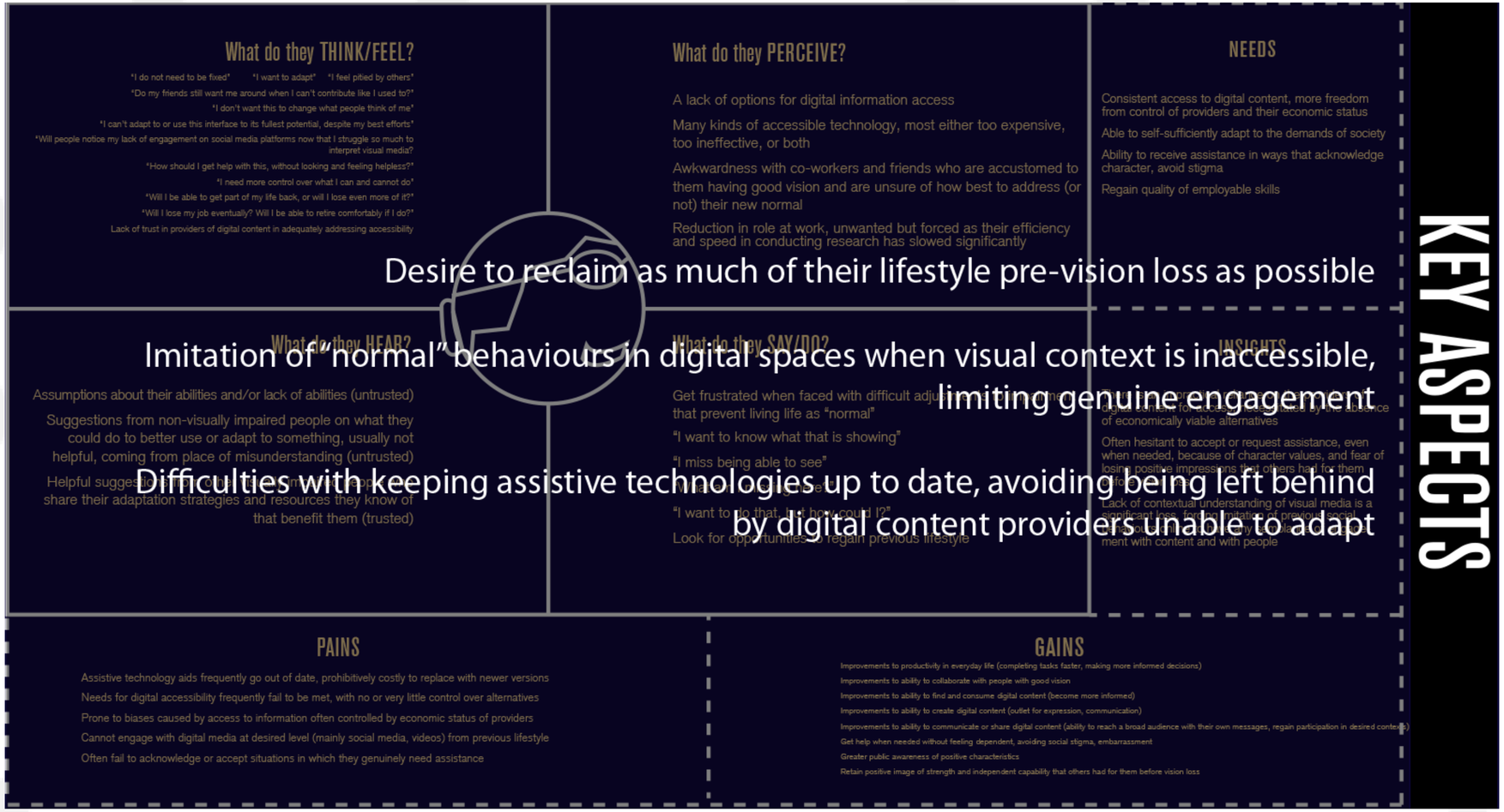


User #4: Senior employee at marketing firm, with recent 90% loss of vision

PROCESS

Gate 2

-Speculative design methodology: scenario development

-Storyboard

-Empathy maps

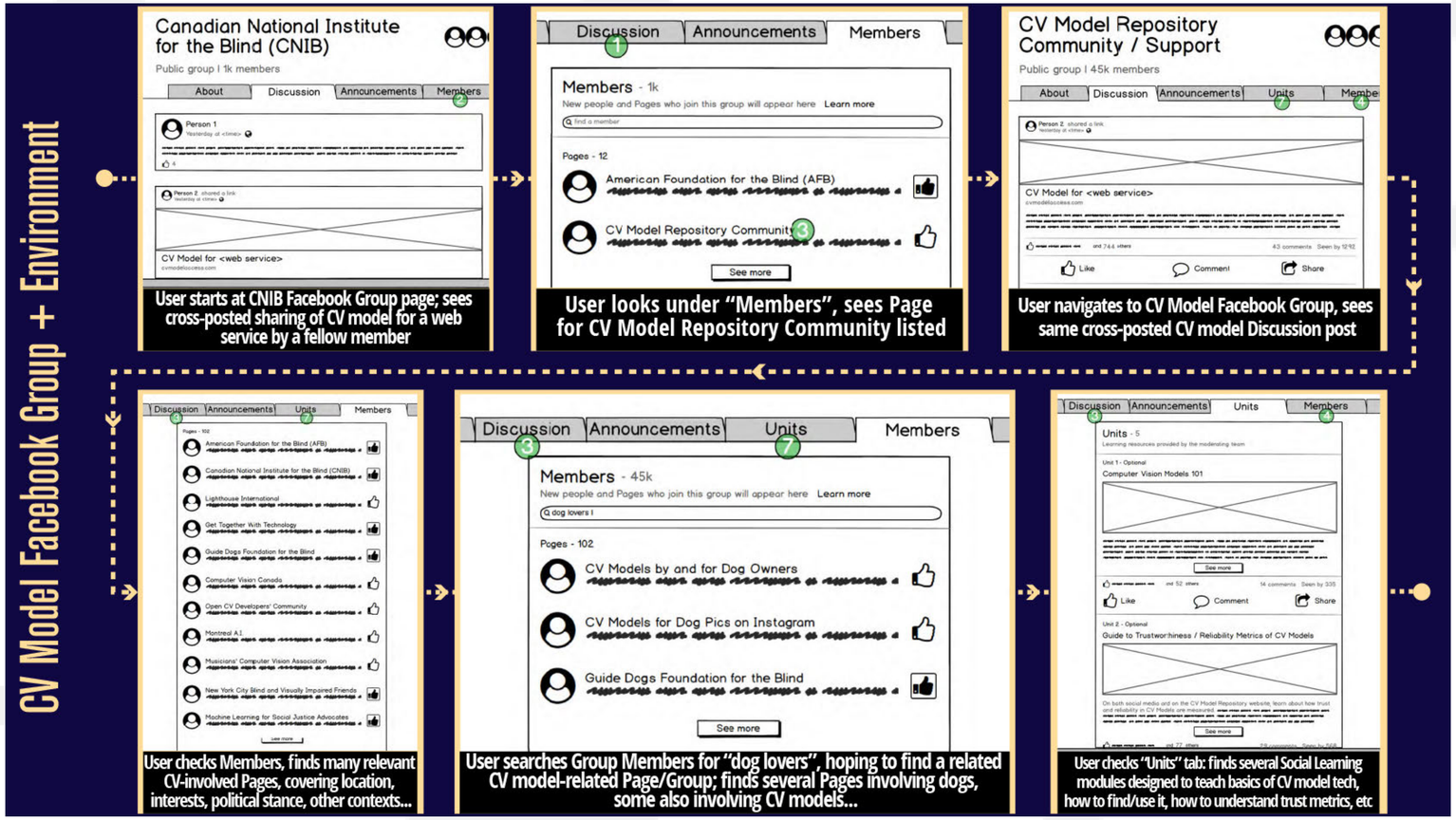
-Contextual Speculative Artifact

-Prototyping

-User Journey Map

Part of envisioning a speculative future scenario for this project was using a **contextual speculative artifact** as a refinement. This artifact is an object, space, service, system or policy that exists within the scenario created by a speculative design project that represents change initiated by the design outcome, but is not the design outcome itself.

For this, I decided to introduce a **Facebook group page for my Computer Vision Model** making community and where it intersects with group pages for organizations such as the Canadian National Institute for the Blind. It explores the potential future enviornment in which there are many ways that people could discover my Computer Vision Model Repository service that support their lives for better or worse.



PROCESS

Gate 2

-Speculative design methodology: scenario development

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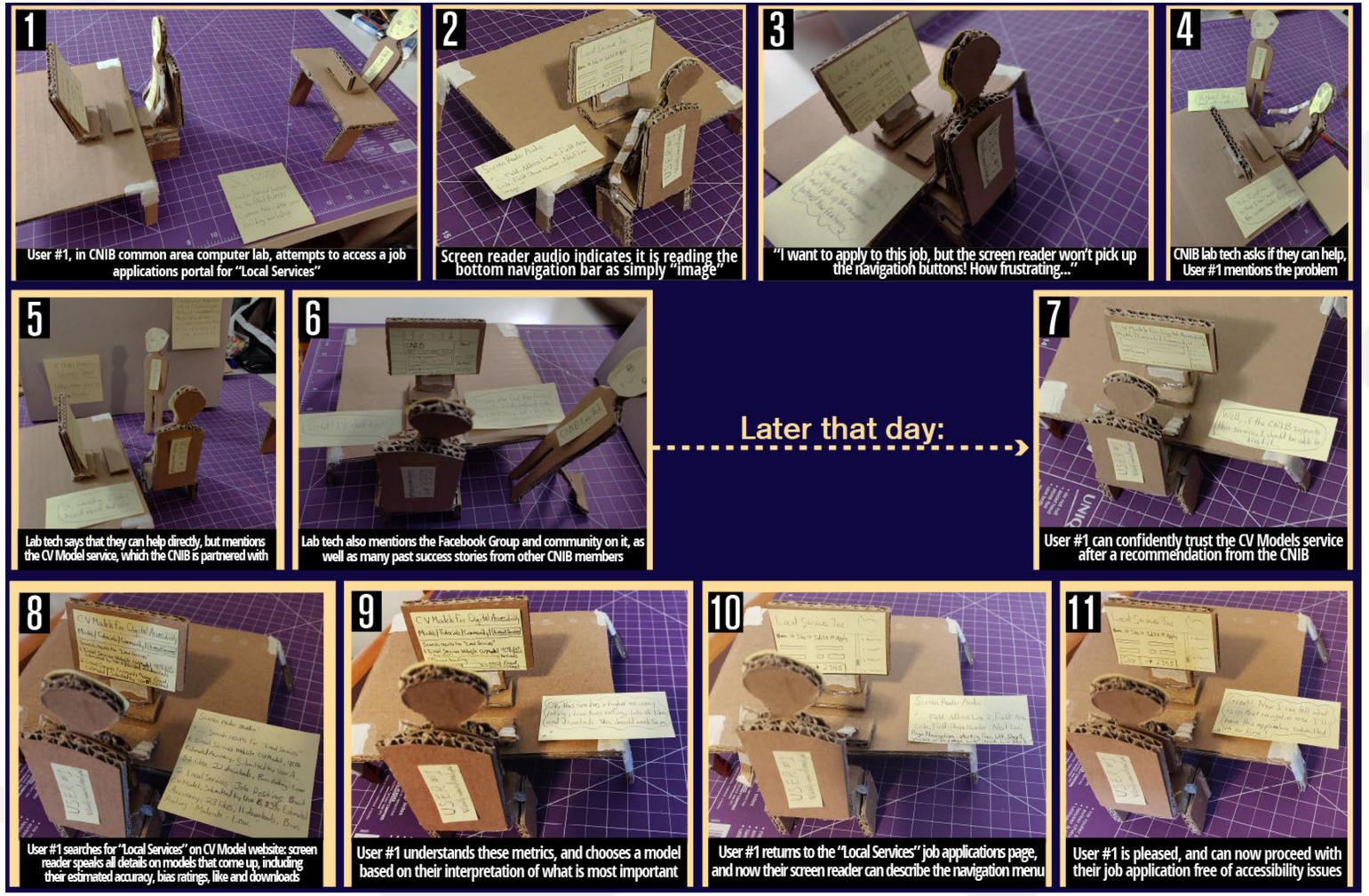
-Prototyping

-User Journey Map

In advance of Gate 2, I went through several rounds of **physical prototyping**. We were encouraged in class to focus on physically enacting the story we were creating for our projects, so even though my project was shaping up to be entirely digital, I starting working through the physicality of this service existing in the world, in spaces such as users' homes and workplaces, or the offices of the CNIB as part of their work processes.



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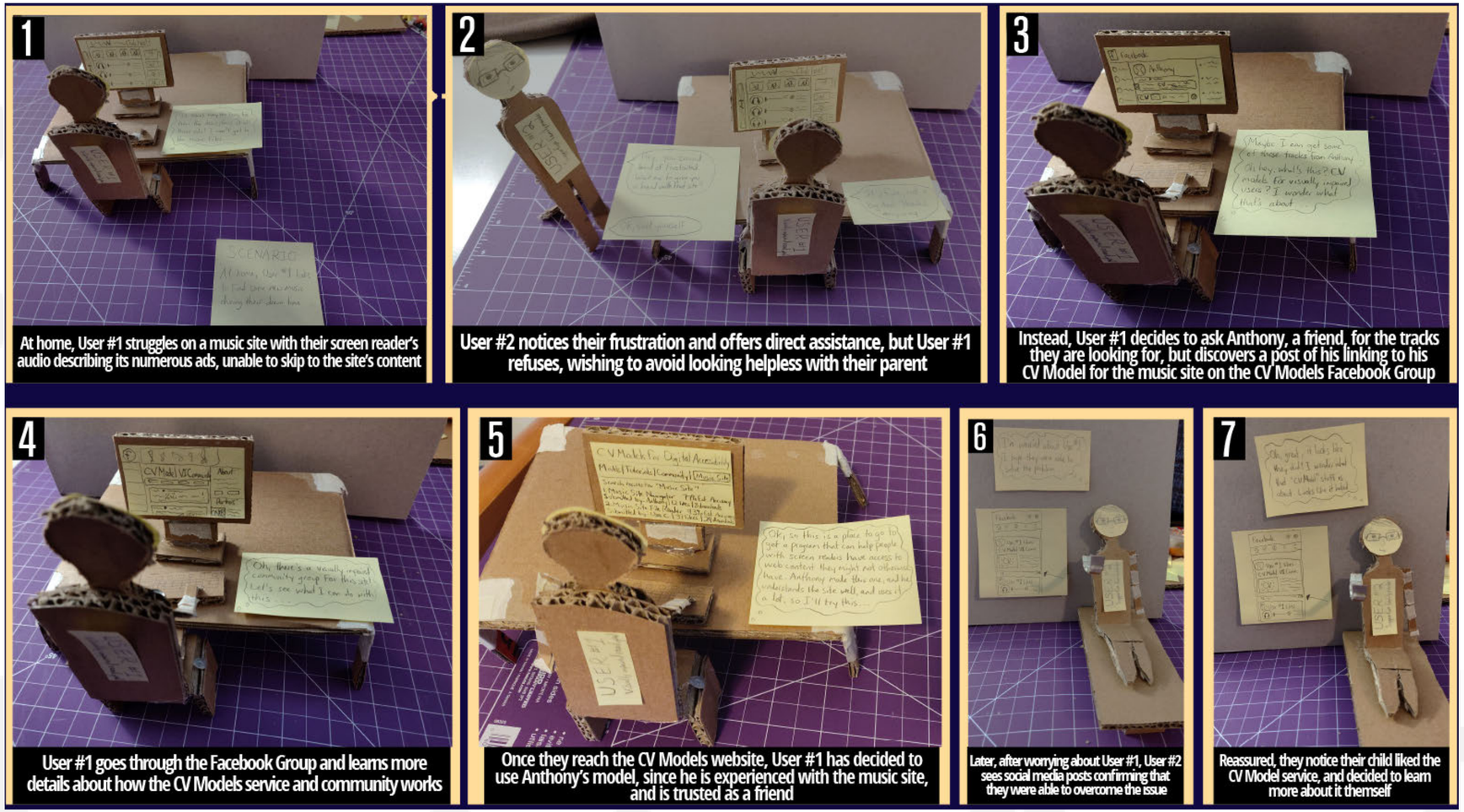

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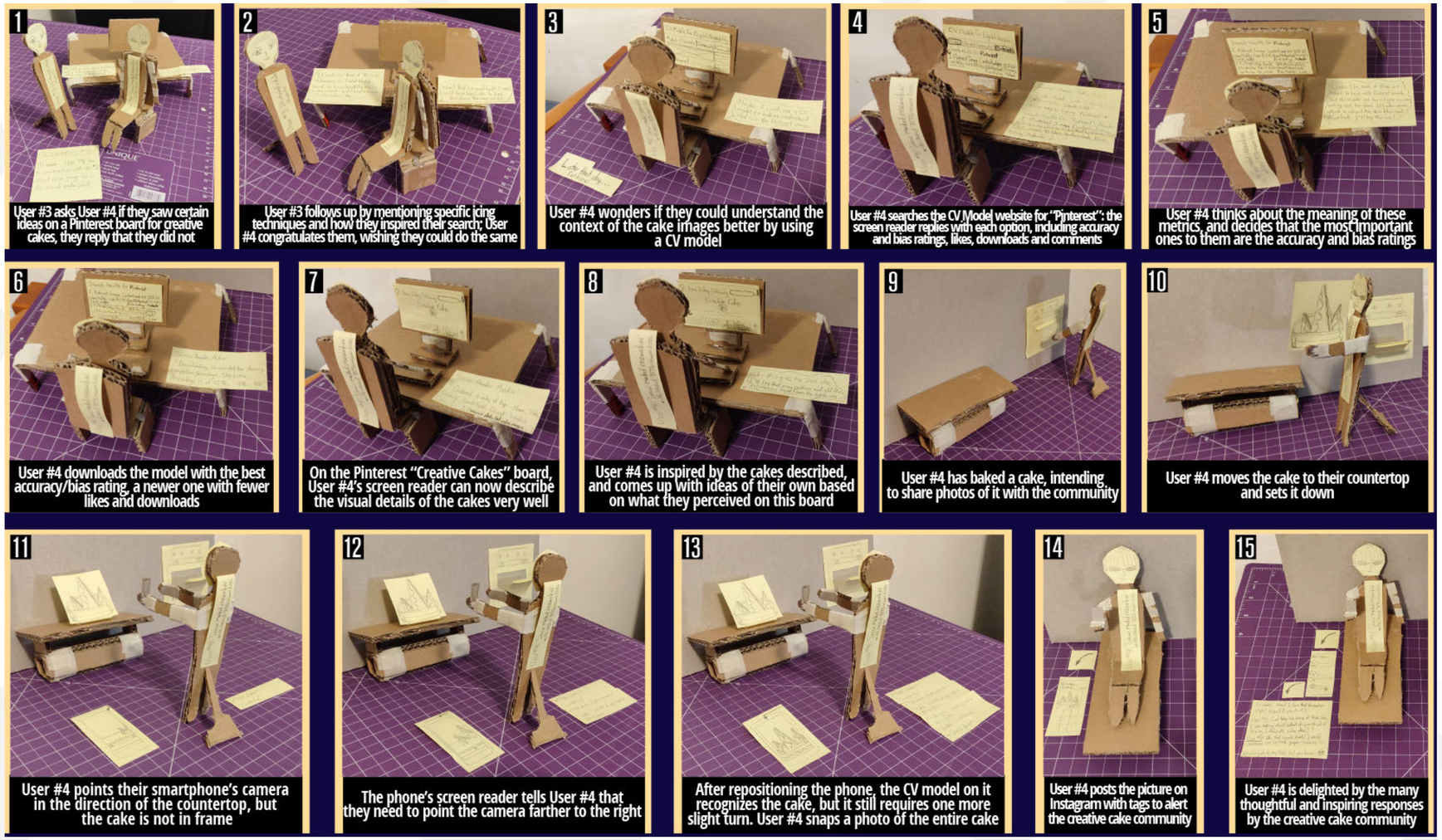

PROCESS

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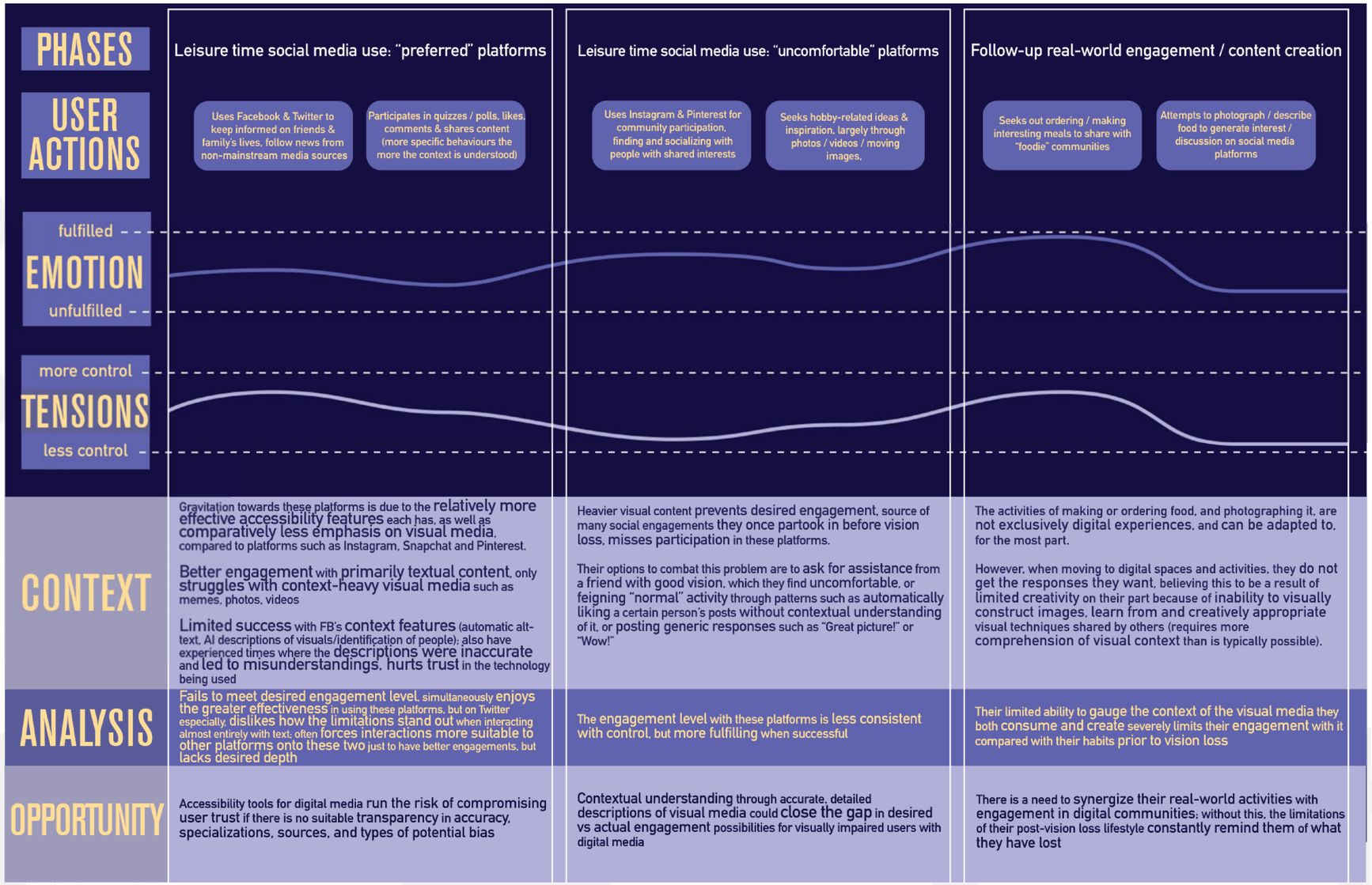
-Prototyping

-User Journey Map

The final step for Gate 2 was to craft a detailed, macro-scale user journey to further detail the experience and impact of the planned design outcome:



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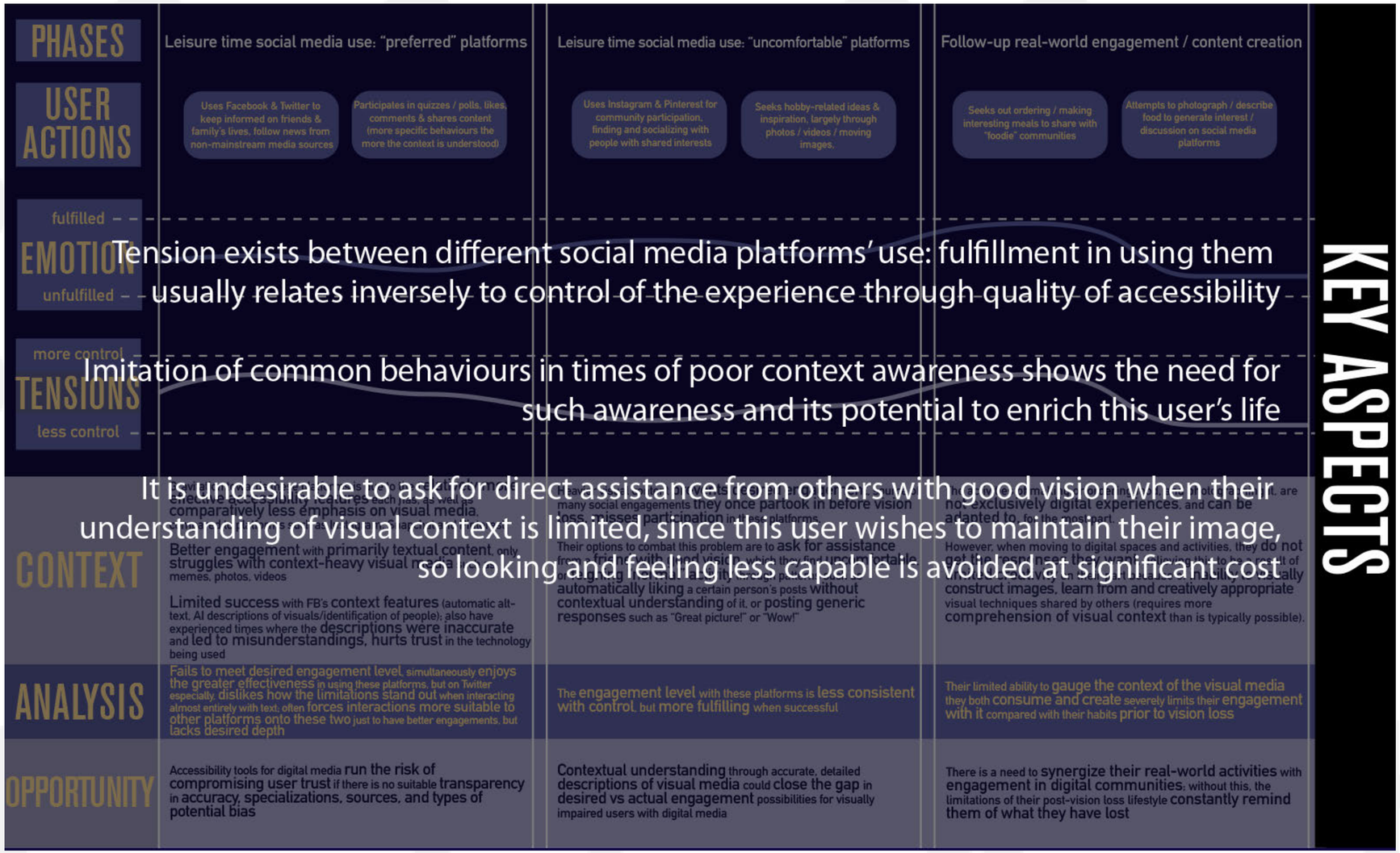

PROCESS

Gate 3

-Refined Design Intention

-Refined Hypothesis

-Design Criteria (principles / values / tensions)

-Intended Change

-Refined Contextual Speculative Artifact

-Refined User Journey

-Refined UI Prototypes

Gate 3 was mainly a period of **refinement** of many of the methods we had been introduced in the class, and use of those methods to develop the project toward full realization.

Since my project was continuing to focus more on introducing computer vision technology to act as an aid for access to digital literacy for the visually impaired community, a central issue of **trust in the technology and who will create and shape it** to suit their wants and needs began to show its importance:

How might computer vision technology be trusted to help visually impaired people self-sufficiently improve their digital literacy?

I want to provide **new, more reliable** options for visually impaired people to **self-sufficiently overcome accessibility challenges** in digital technology use.

I want to **build trust** into a system and in a type of technology such that visually impaired users can **confidently rely** on them.

I want to provide **education** to the visually impaired community, their support networks, and all others interested, on a **beneficial, emerging technology**

PROCESS

Gate 3

-Refined Design Intention

-Refined Hypothesis

-Design Criteria (principles / values / tensions)

-Intended Change

-Refined Contextual Speculative Artifact

-Refined User Journey

-Refined UI Prototypes

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Since my project was continuing to focus more on introducing computer vision technology to act as an aid for access to digital literacy for the visually impaired community, a central issue of **trust in the technology and who will create and shape it** to suit their wants and needs began to show its importance:

Computer vision technology has significant potential to aid visually impaired people in **self-sufficiently improving their digital literacy**. By recognizing the **visual patterns and context of digital media** using large quantities of user data on the use of specific sources and communicating this through audio feedback, a visually impaired user can more effectively **consume, communicate, create, share and access digital content**.

However, this technology is emerging, and therefore the general public, including visually impaired communities, is largely **unaware of it or its possible benefits**.

There is an **opportunity to connect** visually impaired communities with this technology, however, successfully doing so is dependent on **fostering sufficient trust in an AI algorithm**-based assistive technology.

PROCESS

Gate 3

-Refined Design Intention

-Refined Hypothesis

-Design Criteria (principles / values / tensions)

-Intended Change

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-Refined User Journey

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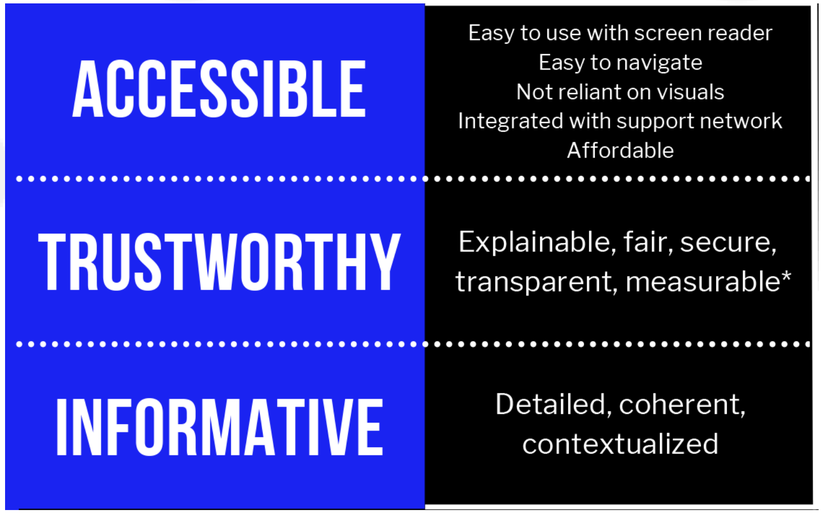

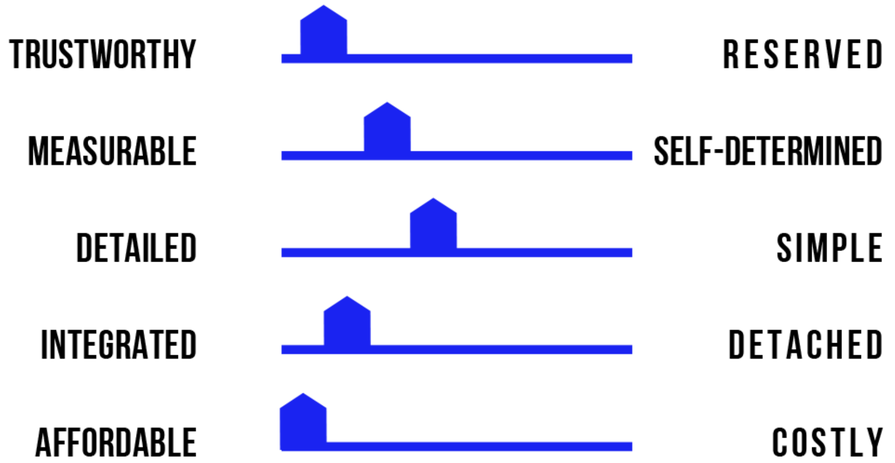

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FROM	TO
Top-down impositions of accessibility	Bottom-up self-sufficiency
Apprehension of AI algorithms	Trust in AI algorithms
Ignorance of computer vision applications	Education on computer vision applications
Disorderly detachement from outside communities	Coordinated support through outside communities
Restricted, biased digital media consumption	Diverse, informed participation in digital media platforms
Withdrawn, limited usage of visual media and content	Engaged, contextually aware involvement in visual media and content

PROCESS

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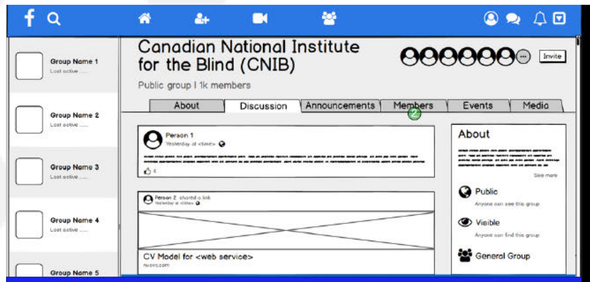
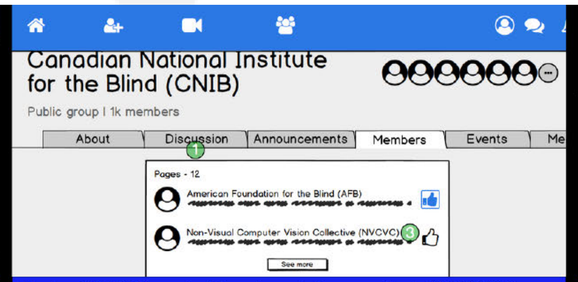
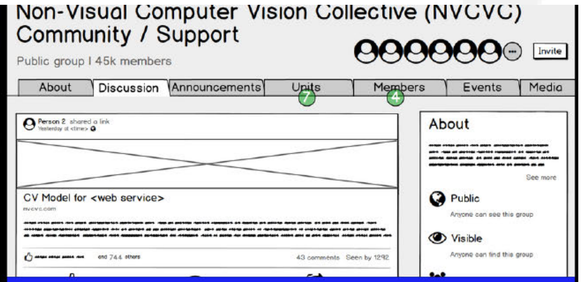


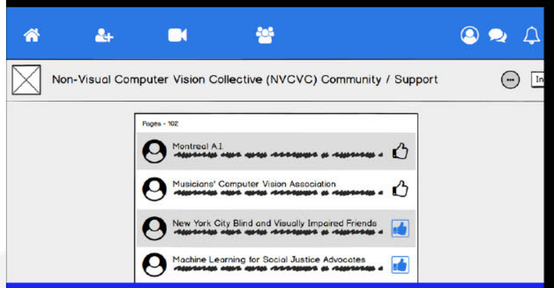
User arrives at CNIB Facebook Group page, sees post about CV Model linked to NVCVC database, and becomes curious.



Under CNIB Group's Members tab, user finds NVCVC Page link, since there is an affiliation between the two organizations, as well as with other CV related Pages.

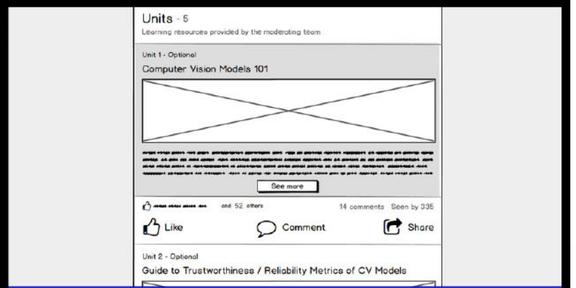


User navigates to the NVCVC Group, where they find the same post about a CV model in the Discussion feed, and other relevant content related to how and why the visually impaired community is using them frequently.



Under the NVCVC Group's Members tab, the user finds many different CV related groups with different contexts (geographical area, hobbies, political beliefs, etc...

Wanting to find a CV related group with similar interests, the user searches for "dog lovers" in the Members tab, and finds numerous Pages related to both CV models and visually impaired organizations who are concerned with dogs.



The user navigates to "Units", and finds educational modules designed to teach users about computer vision technology, how it should be used, ways to judge its trustworthiness, etc...

PROCESS

Gate 3

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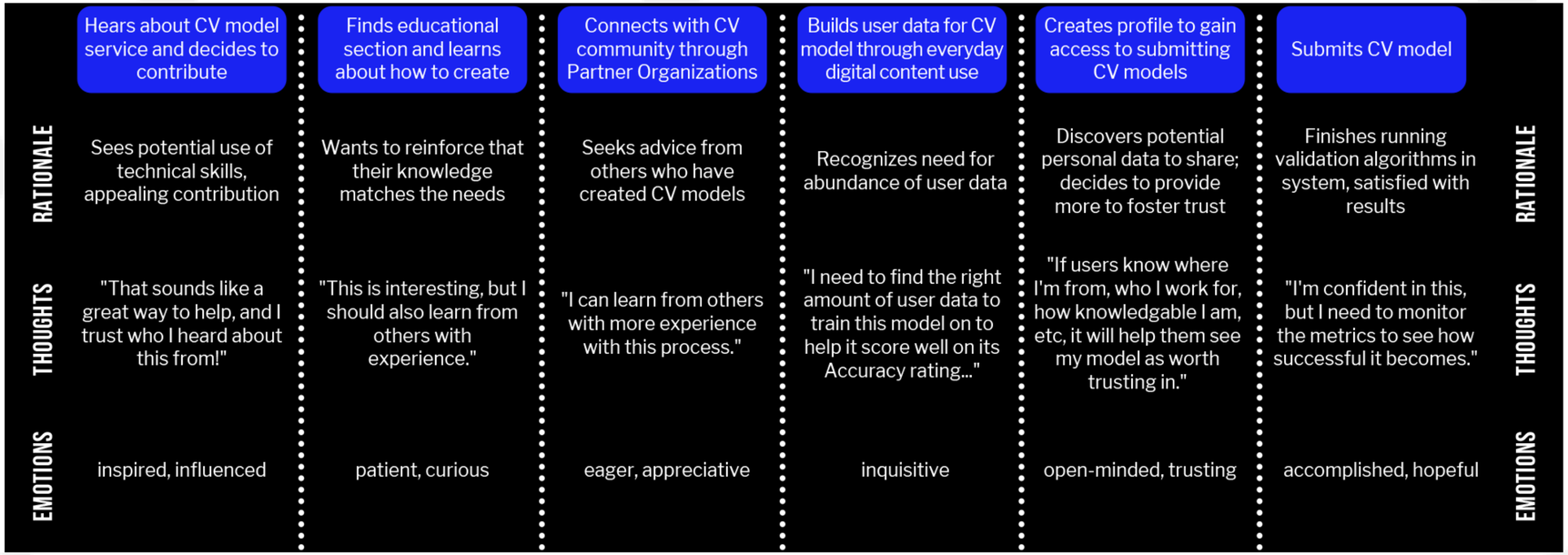

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'ACCESS' PROTOTYPE

Shows how gaps in digital accessibility for a visually impaired user could be addressed by finding, being educated on, and using a CV model

(Based on User #1)

PROCESS

Gate 3

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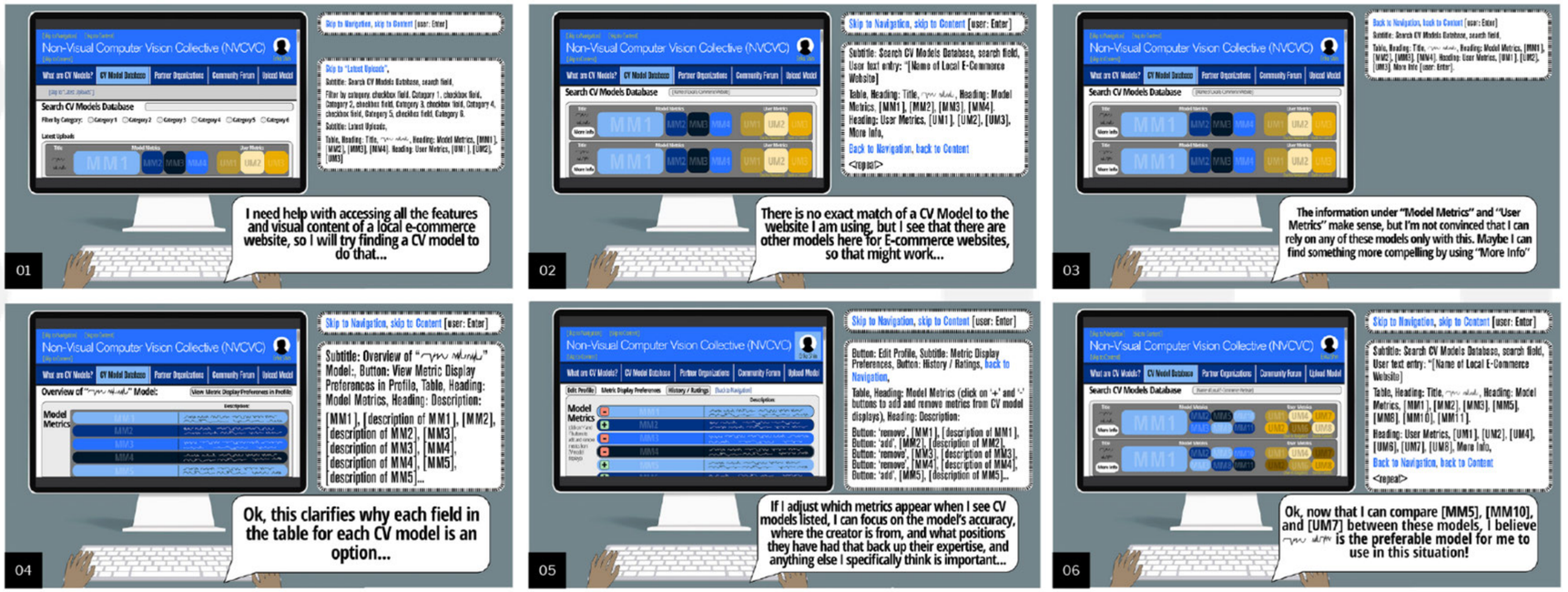

Screen Reader Audio

Explores the tension between trustworthiness and transparency established through many data points for a visually impaired user, and the potential complexity that a large quantity of data may entail

(Based on User #1)

'TRUST' PROTOTYPE

PROCESS

Gate 3

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-Refined Hypothesis

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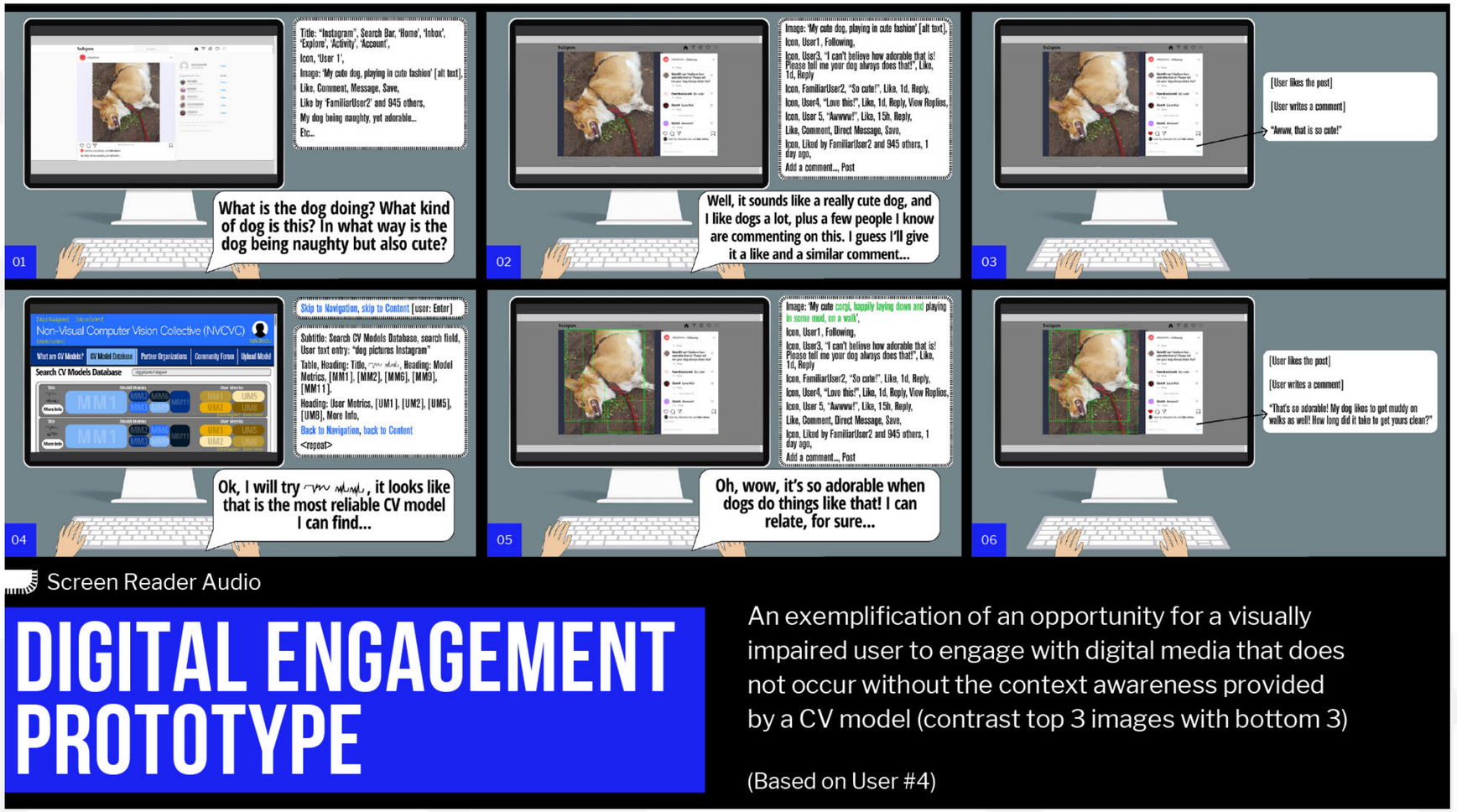

DIGITAL ENGAGEMENT PROTOTYPE

An exemplification of an opportunity for a visually impaired user to engage with digital media that does not occur without the context awareness provided by a CV model (contrast top 3 images with bottom 3)

(Based on User #4)

PROCESS

Gate 4

-Behaviour shifts

-Translation of behaviour shifts into objects/spaces/policies

-Prototype development

-Detailed personas

-Micro user journey map

-Final prototypes for gate 4

-Storyboard presented as movie

-Final micro user journey

Beginning in **Gate 4**, the focus of the class shifted towards identifying and developing clear definitions of **behaviour shifts** (FROM [x] TO [y]) that would be outcomes of our design projects and drive the **impact** they deliver:

Initial definition:

"From top-down impositions of accessibility to bottom-up self-sufficiency"

Refinement after integration of Gate 3 empathy map insights:

"From avoiding accessing and engaging with digital content whenever possible, to feeling completely free to do so"

"From imitating trusted digital engagement behaviours of others to genuine, independent, context-aware digital engagement"

Final versions, one for each main user identified:

"From ignorance and indifference to the need of visually impaired people for visual media context"
"From avoidance and withdrawn interactions with digital content to increased time and engagement in consuming and creating digital content"

PROCESS

Gate 4

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Before beginning our prototyping anew, we were encouraged to **translate** our newly-defined **behaviour shifts into objects, spaces and policies** in order to gain insight on how we might enact the behaviour changes we were targeting, but with some **distance from the current context** of the project to expand the possible outcomes:

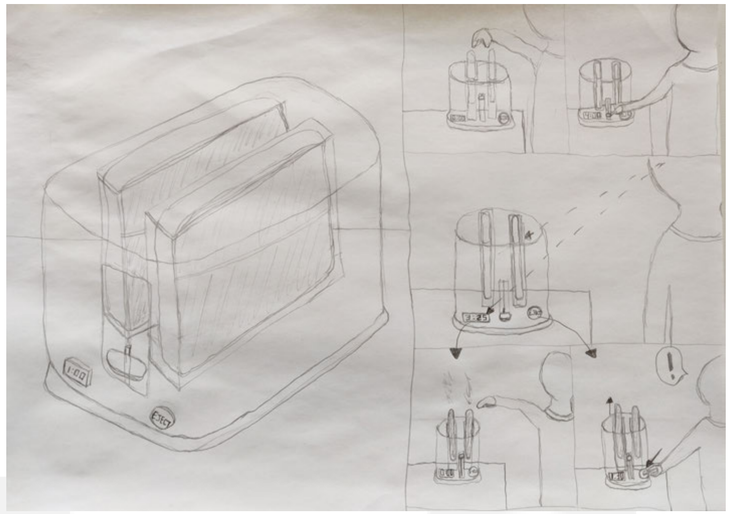
Guiding behavioural quotes:

"This is only here because members of my community put it here"

"I can perceive that someone else had a good experience with this object/space/policy within the object/space/policy itself"

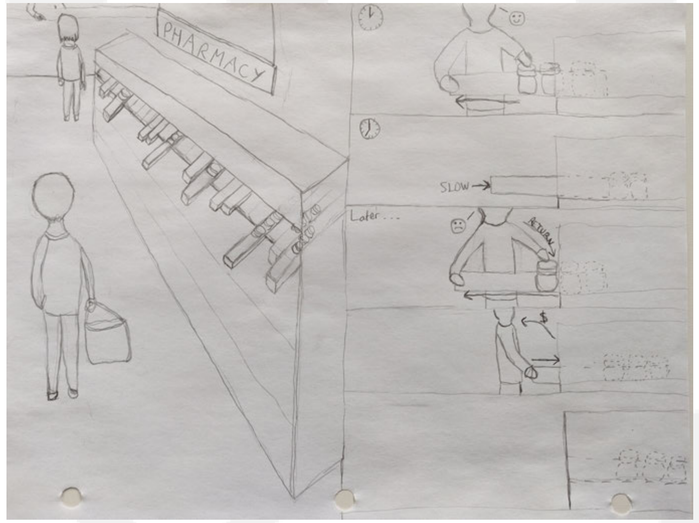
"This object invites me to appraise its performance, therefore, it is confident that it can be trusted by me"

"Transparent" Toaster



An object that materializes trust between itself and its users through literal transparency and enhanced control compared to a normal toaster. The case is transparent, allowing the user to see the toast, there is a timer for how long the toasting will go on for, and an eject button that the user can press to get their toast out immediately.

"Communal Confidence" Shelf



A shelving unit that uses space and position to communicate information to customers that helps influence the trust they have in what they are buying. It does this by needing its drawers to be pulled out, and retracting so slowly that customers can see which products are bought most frequently by how far the drawers extend.

PROCESS

Gate 4

-Behaviour shifts

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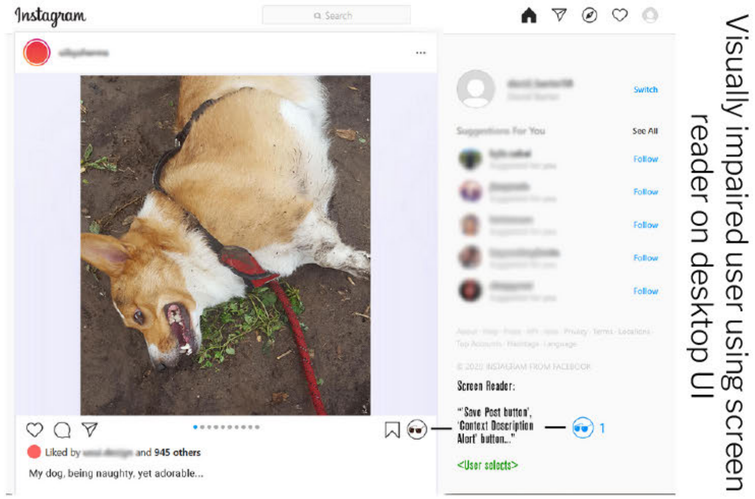
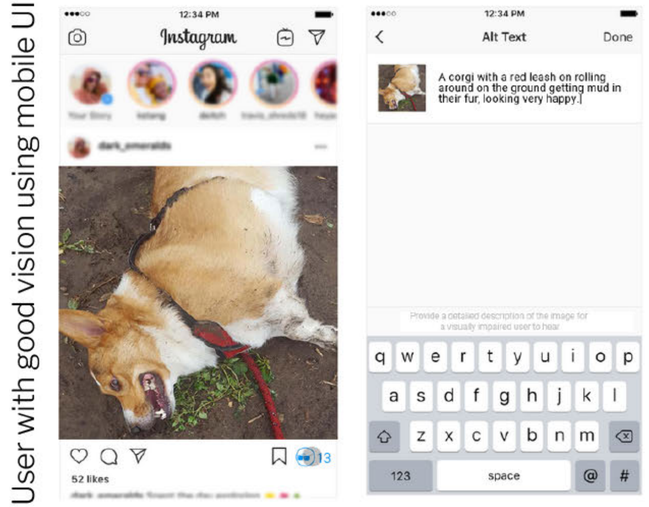
After exploring the possibilities of materializing trust in the prior prototypes, I turned my attention back to my main concepts, and further development of prototypes. Here, I started to visualize **new features for Instagram** (a digital platform that stood out in my research as difficult for visually impaired people to use due to its heavily visual nature), in which the **“alt-text”** accessibility feature is **more visible** (an icon on each post), and **more versatile** (could be longer and more detailed):

- Instagram with added icon that functions as a general request for a more detailed description of a piece of visual media. Does not identify the user who clicked it, and provides awareness to users who can help that someone needs this assistance:



Visually impaired user using screen reader on desktop UI



User with good vision using mobile UI

PROCESS

Gate 4

-Behaviour shifts

-Translation of behaviour shifts into objects/spaces/policies

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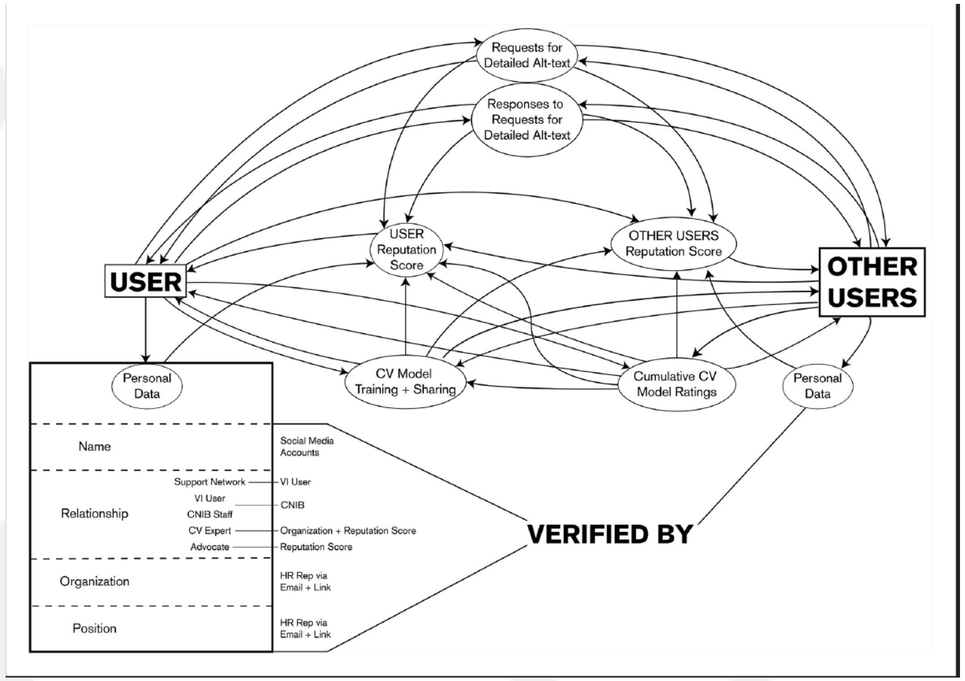
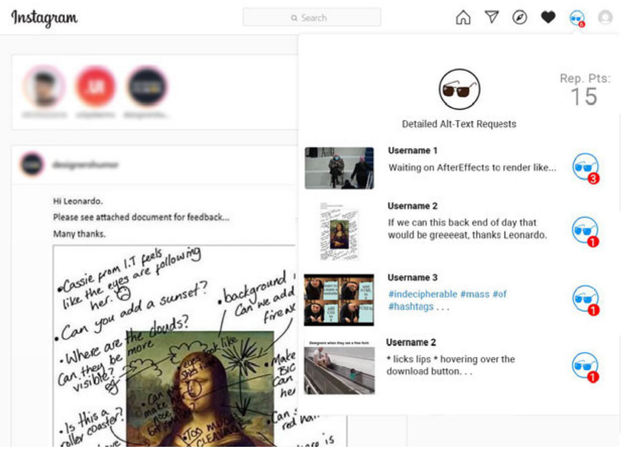
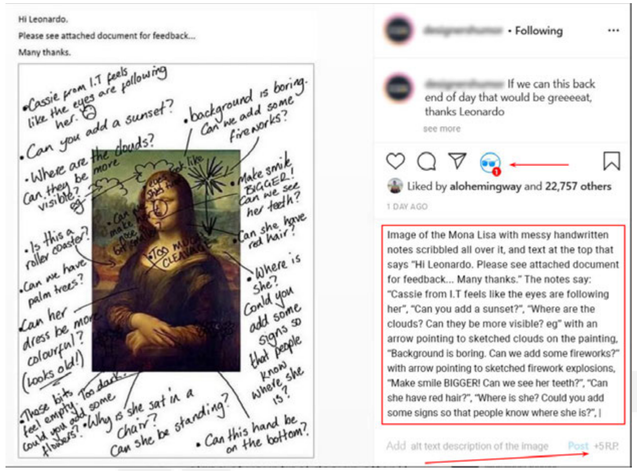
This round of prototyping also brought forward the idea of a kind of "**reputation score**" system to guide judgments of how **trustworthy** users providing "**detailed alt text**" are, and by extension, how trustworthy the content they write as alt-text is. This would be achieved by **awarding points for writing alt-text**, as well as providing **more profile data** that can be viewed by other users, and by providing **verification** of that data:







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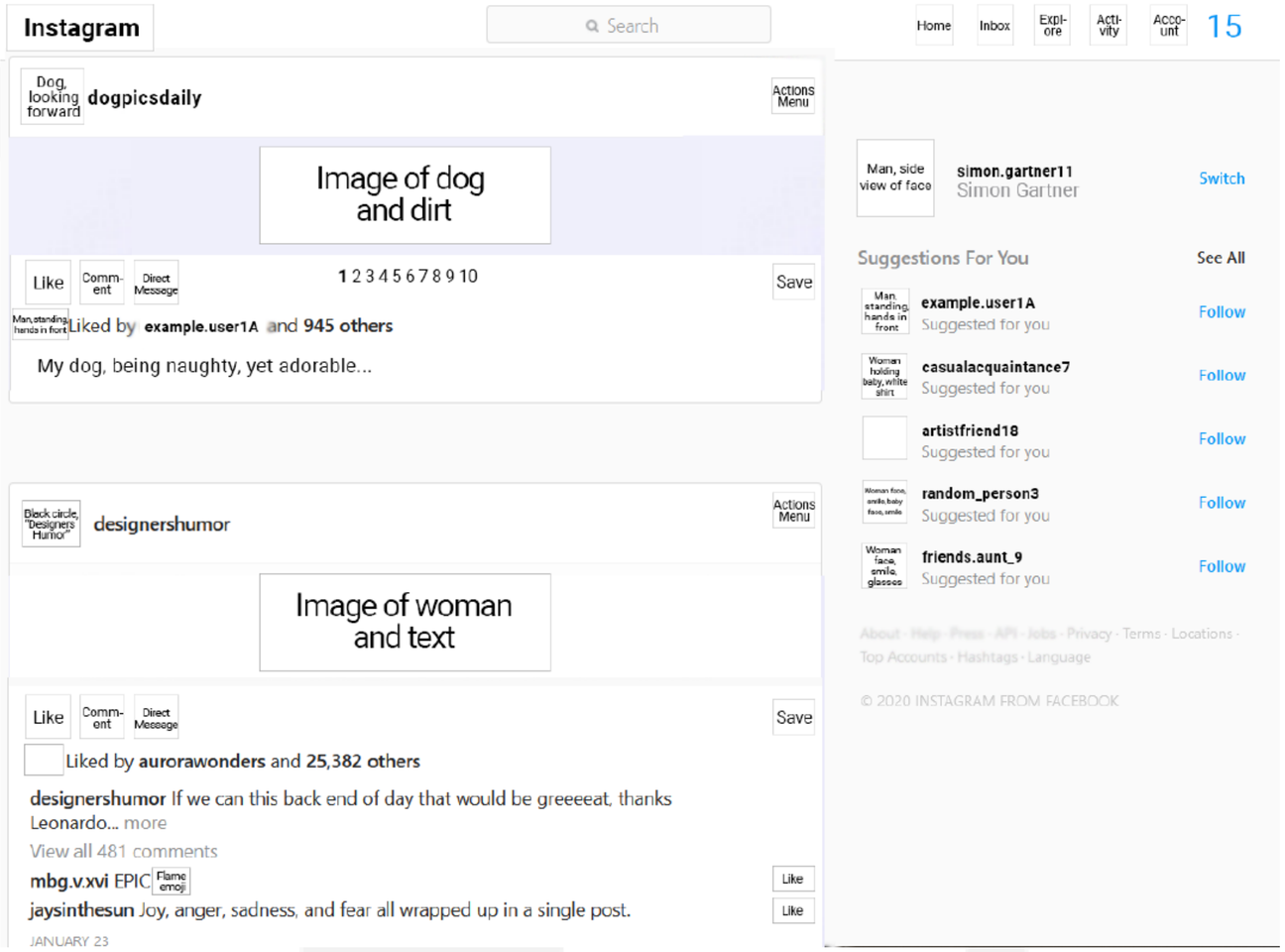
Finally, I proposed an **“alt-text” mode**, which would force users to see Instagram as an **entirely text UI**, rather than visual, which would theoretically only affect non-visually impaired users, since visually impaired users would still get the same experience via screen reader as always. The idea here is that this would occur **briefly every so often**, and users would be **rewarded with points** for continuing to use Instagram in this mode as best they can. It would help **educate them on the issues visually impaired users face**, and help them understand the **difference that effectively-written alt-text makes**:



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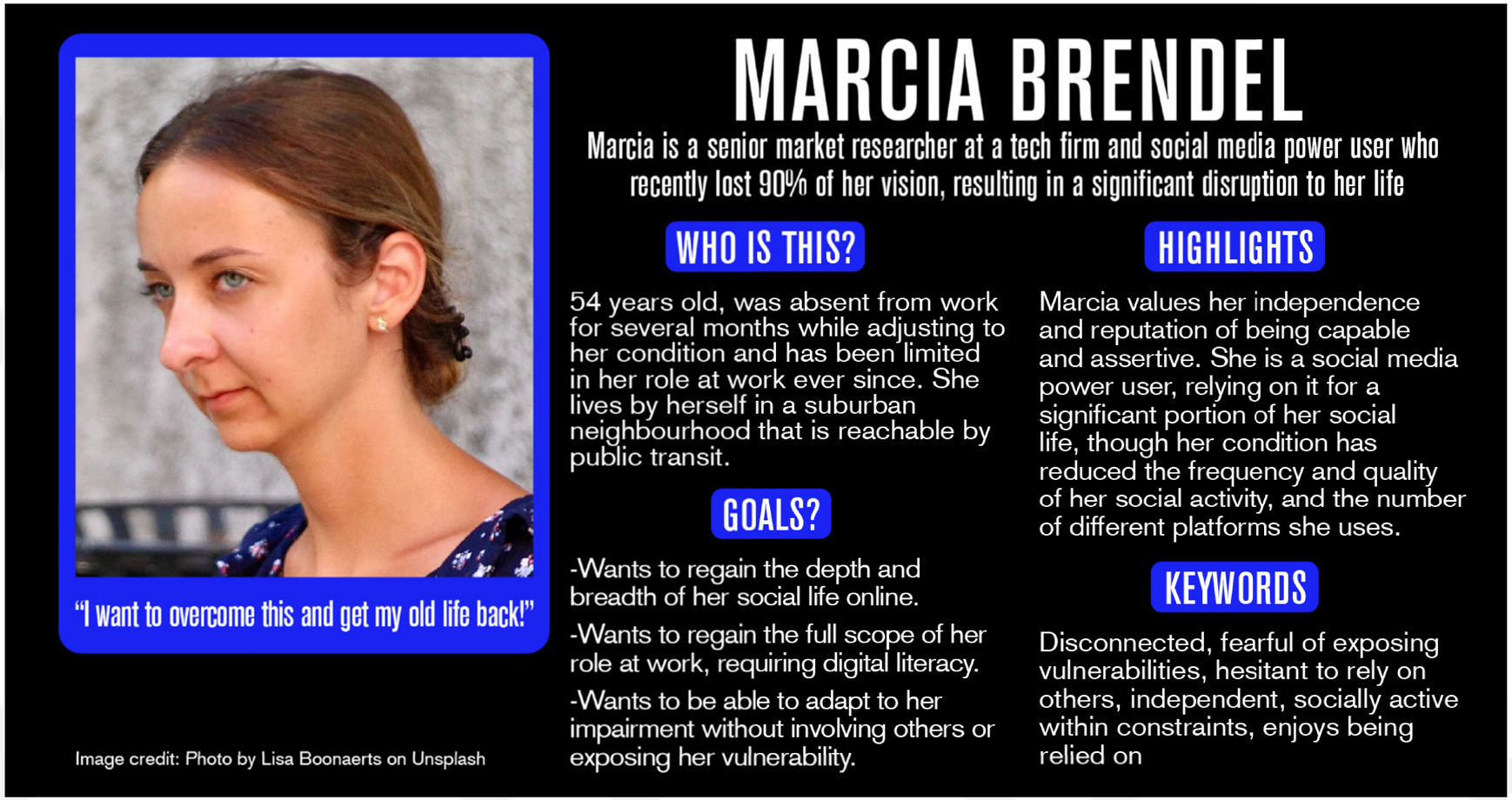
At this point in my process towards Gate 4, I felt the need to develop much more detailed accounts of my users, which I did through personas. I focused entirely on my “User #3” and “User #4” profiles from the Gate 3 empathy maps, feeling that they would best drive the development of the project starting now:



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“I need to do good things for other people, so I can look good to everyone else.”

Image credit: Photo by Alex Blăjan on Unsplash

SIMON GARTNER

Simon looks for opportunities to help people in need but lacks genuine empathy and focuses on activities that are easy and take little time in order to accomplish this

WHO IS THIS?

In his late 20s, has a 9-5 junior level tech sector job, has a girlfriend who admires his outwardly expressed giving nature, lives alone in a suburban Toronto condo.

GOALS?

-Wants to improve image in the eyes of others with little effort

-Wants to feel good about himself

-Wants to use his social media savvy to his own benefit

-Prefers online activities over face-to-face

HIGHLIGHTS

Simon is a “keyboard activist”, usually limits his actions to help others to ones he can do in front of a computer. He cares about what others think of him and sees helping people who are “disadvantaged” as an opportunity to look good.

KEYWORDS

Lack of empathy, believes in stereotypes, sees people with disabilities as less capable, values social capital

PROCESS

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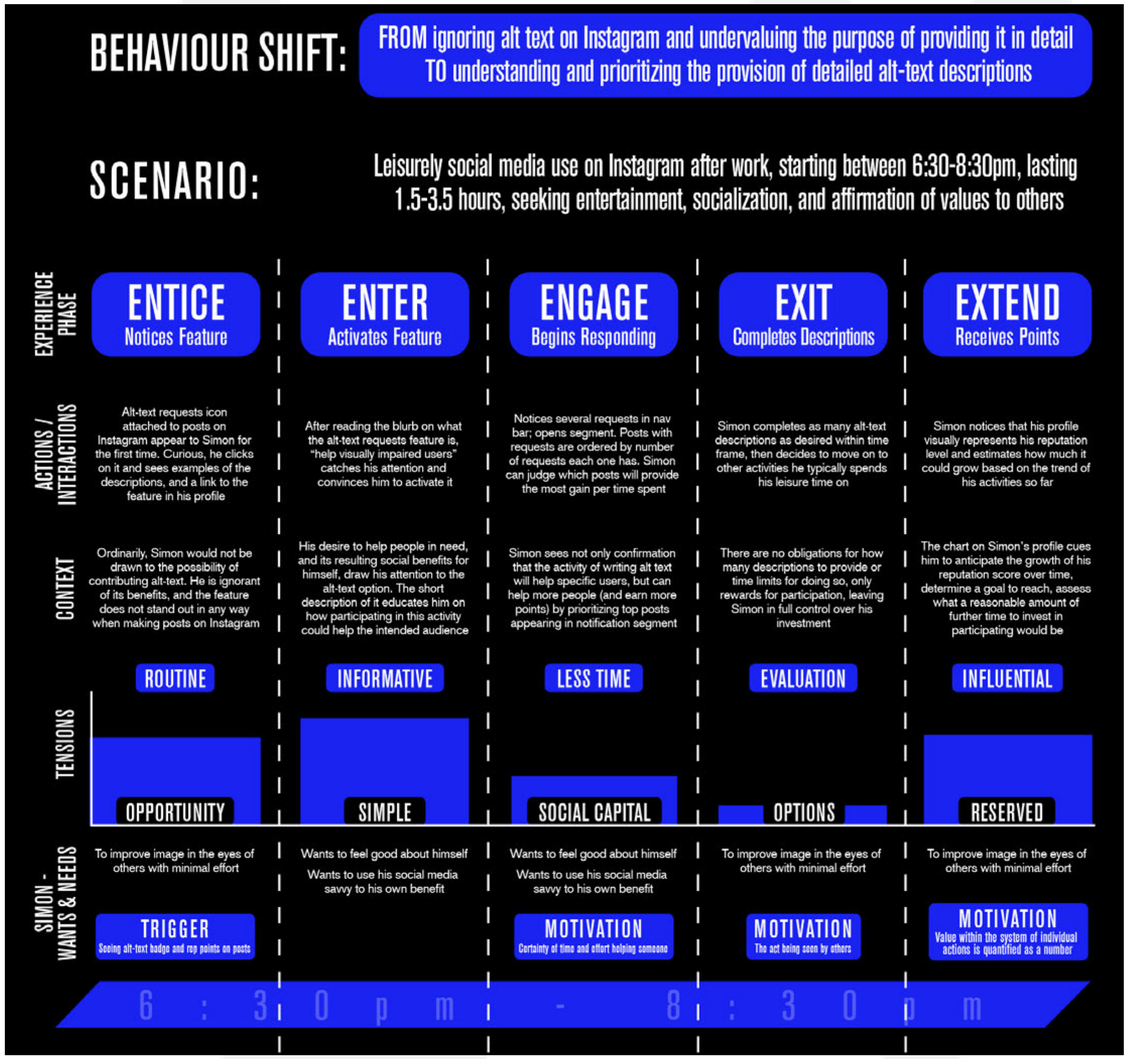
To supplement the prototyping, I mapped out a detailed micro-scale user journey that focused on the small details of the experience I was envisioning that would enforce my behaviour shifts. This required analyzing the “5 stages of experience”: Entice, Enter, Engage, Exit and Extend:



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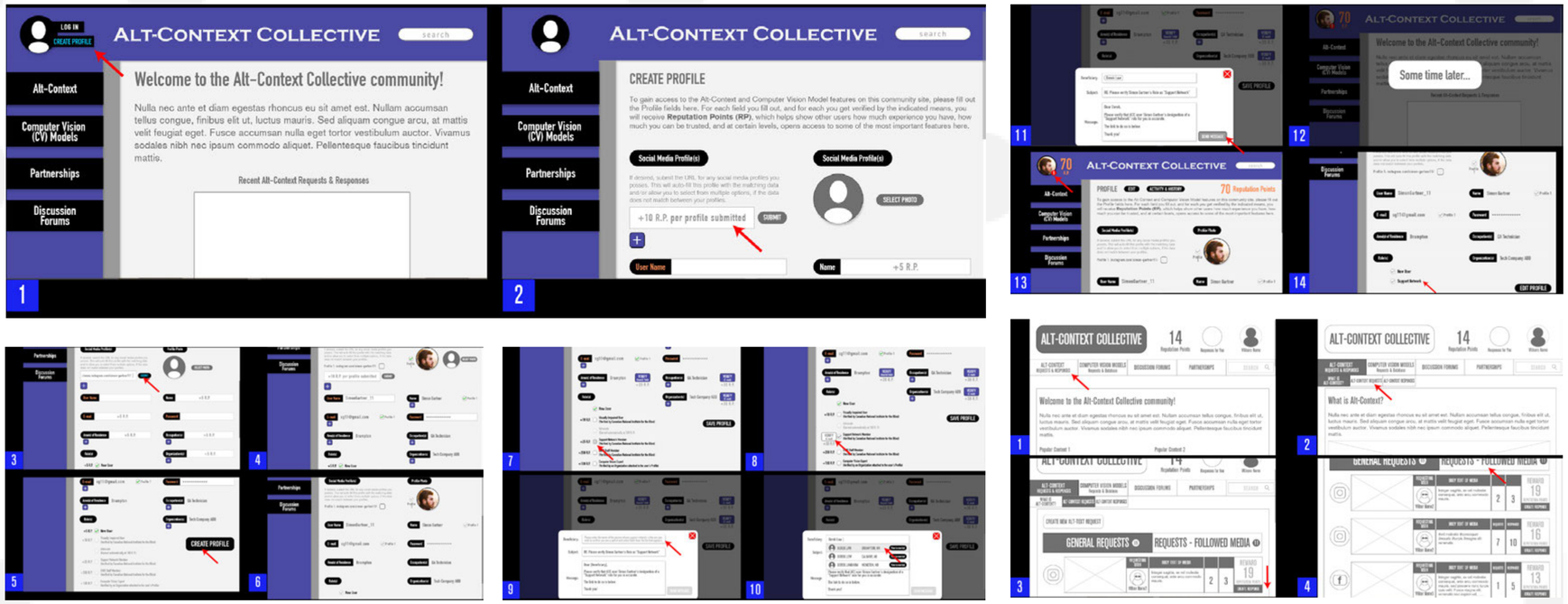
As a natural result of the prior phases of prototyping and persona development, my project **pivoted** almost entirely **away from the idea of a computer vision model-providing** and educating digital community, and towards the idea of equipping digital platforms (focus on Instagram) with new features that **encourage a bottom-up provision of contextual descriptions of visual media** for visually impaired people, from their communities. By the final stages of prototype development for Gate 4, I had named this service **Alt Context**:

Prototype 1 (med-hi fidelity)



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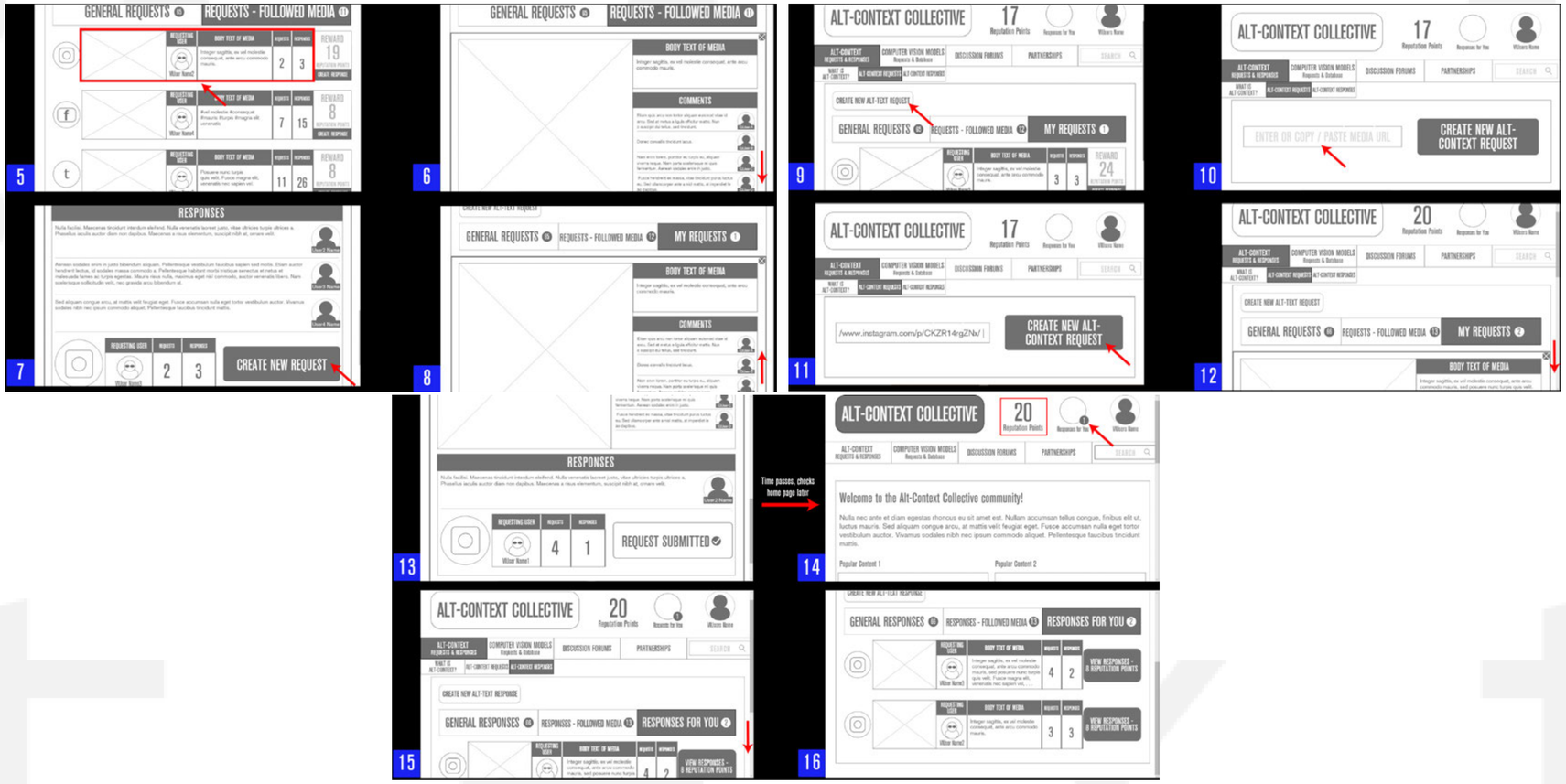
Prototype 2 (low fidelity)



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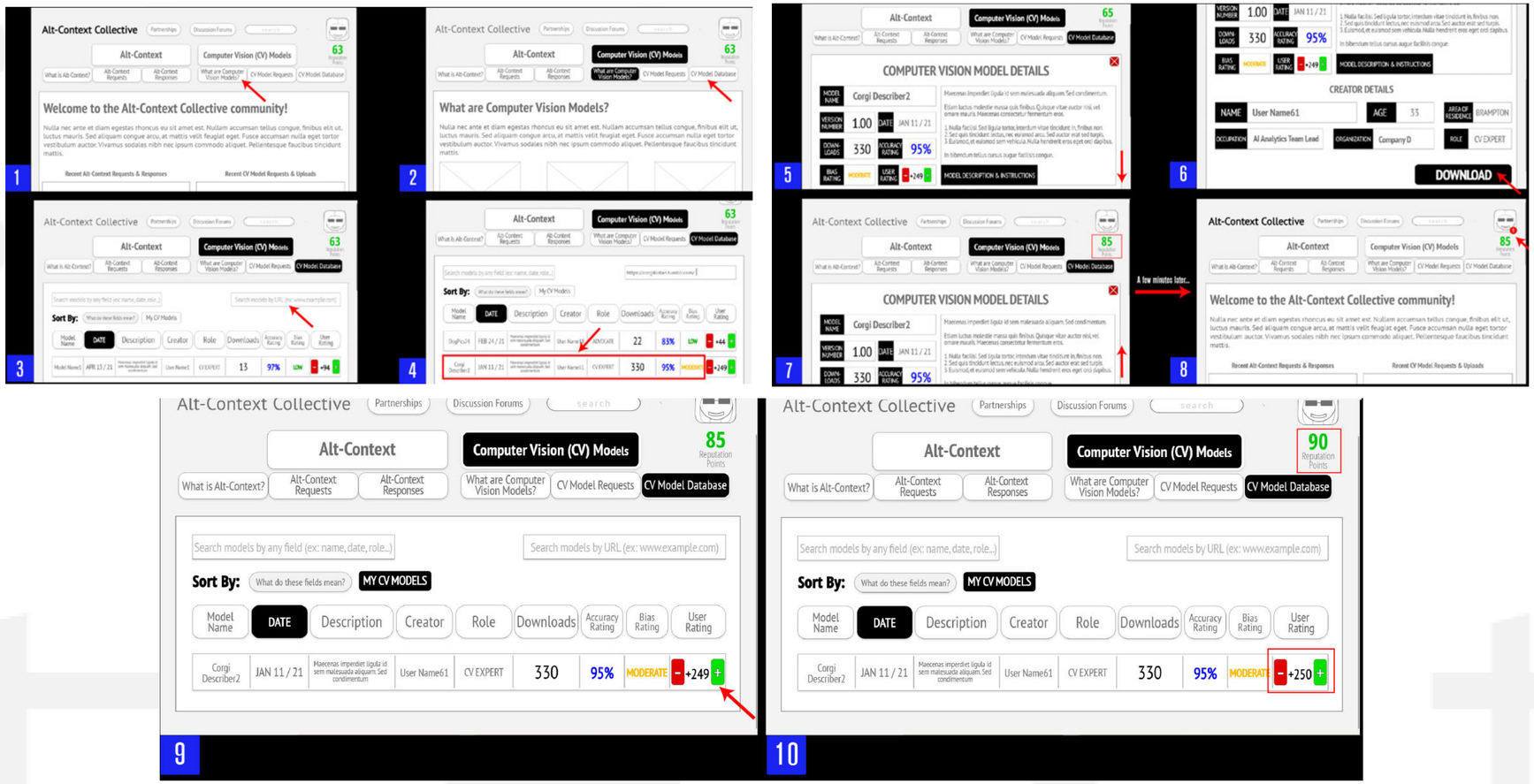

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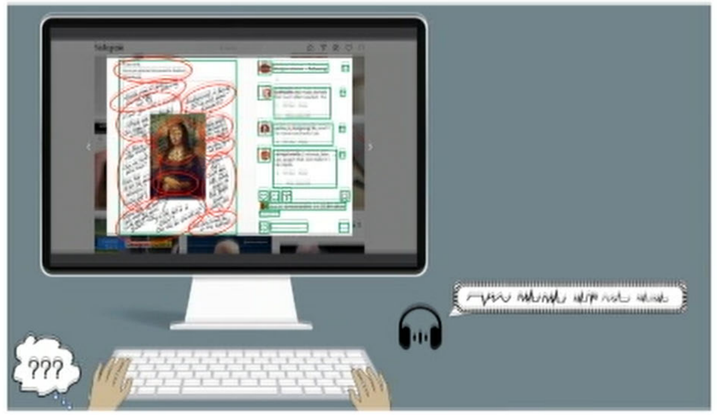

Most visually impaired people rely on screen readers for interacting with digital media through audio feedback, which limits what they have access to and often prevents them from understanding the full c

but her engagement potential is limited by a lack of full comprehension of the visual context, and she is uncomfortable exposing her vulnerabilities to people she knows in order to get assistance

Meanwhile, Simon, who has good vision and frequents social media in his free time, would like to help users like Marcia, but isn't aware of their needs while using social media or motivated to learn about them

With the Alt-Context system, Marcia can now make a request for a contextual description of the visual media

PROCESS

Gate 4

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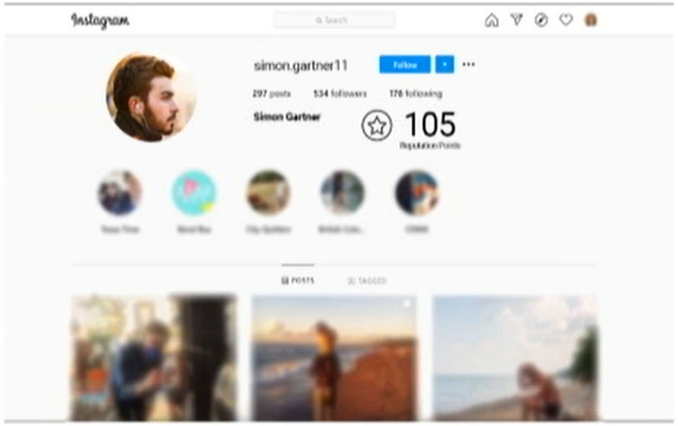
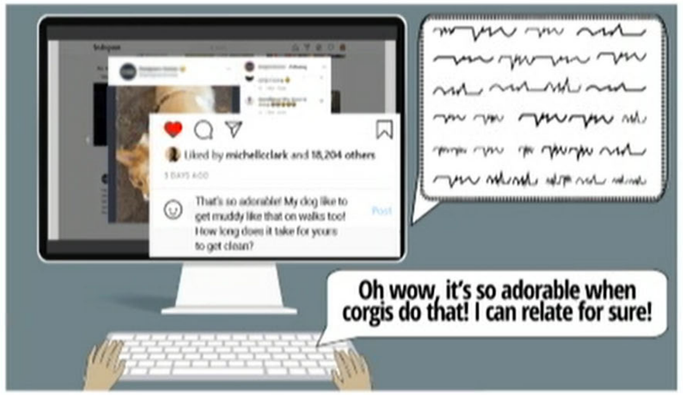
Once this request is made, other users, like Simon, will see the requests, and be able to tell that responding to it will definitely help someone



Simon sees the request and clicks it to view the post in question, write a description of what he sees in it and send it out. He receives "reputation points" for this activity and can publicly share this to gain social capital.

Using this feature improves his empathy towards visually impaired people, as he thinks about how to describe visual context to someone unable to see it themselves



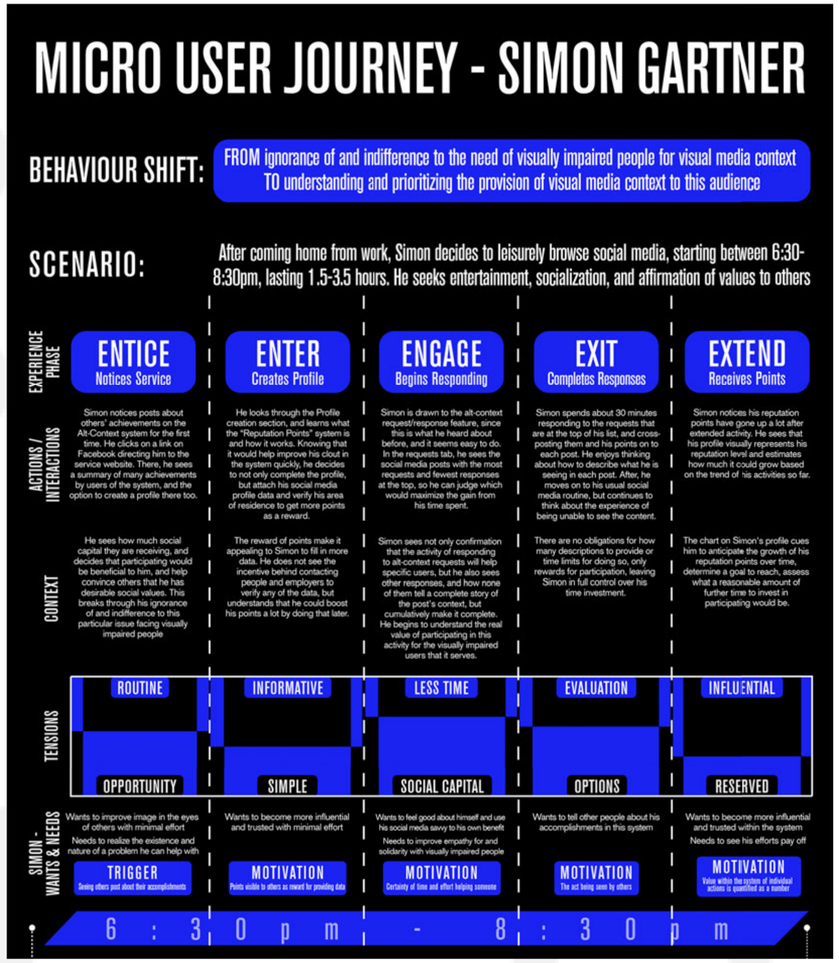
Having gained the contextual information about the post, she is able to engage with it as effectively as users with good vision can without exposing her vulnerability to those in her social circle

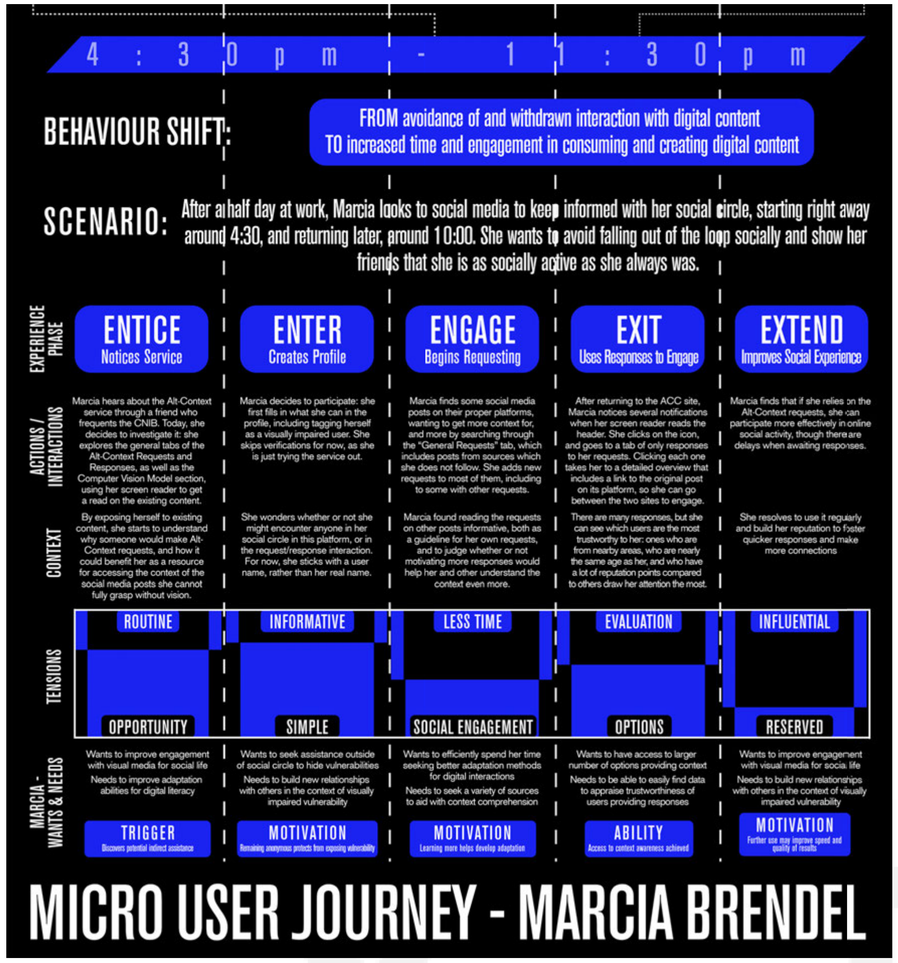
PROCESS

Gate 4

- -Behaviour shifts
- -Translation of behaviour shifts into objects/spaces/policies
- -Prototype development
- -Detailed personas
- -Micro user journey map
- -Final prototypes for gate 4
- -Storyboard presented as movie
- -Final micro user journey

Finally, I reached a point with detailing my micro interactions in which it became obvious that I was dealing with intersecting (yet still distinct) behaviour shifts from each of my two primary users, and so my micro journey needed to account for this intersecting nature. So, I designed a journey map that joined the two behaviour shifts and two journeys together:





PROCESS

Gate 5

-Branding development

-Hi fidelity prototype

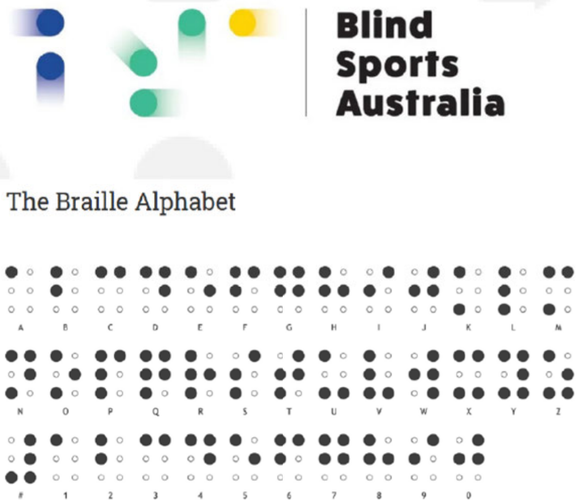
-Refining system map

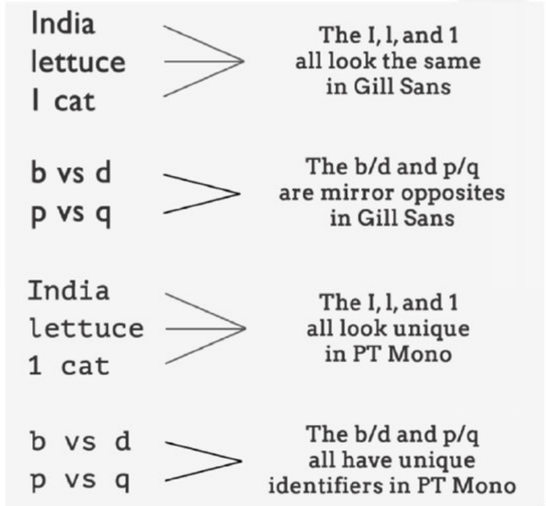
-Business model + value proposition defining

-Comparative market analysis

-New storyboard movie

Following Gate 4, the essence of this project had been decided, and the focus became **detailing** every aspect of it into a high fidelity presentation. Before diving back into prototyping, I needed to begin developing the **brand identity** of the Alt Context app and overlay features for Instagram:





I quickly thought about the idea of incorporating Braille into the visual brand for the project, since the audience of any visual design for Alt Context would be users with good vision who may or may not know what the service is or what purpose it serves.

So, although Braille is meant to be tactile symbols for visually impaired people, it functions very well in this role also. I looked at examples of other brands that use it, and considered fonts and colours meant to be as generally accessible as possible, in consideration of those with low vision.

PROCESS

Gate 5

- -Branding development
- -Hi fidelity prototype
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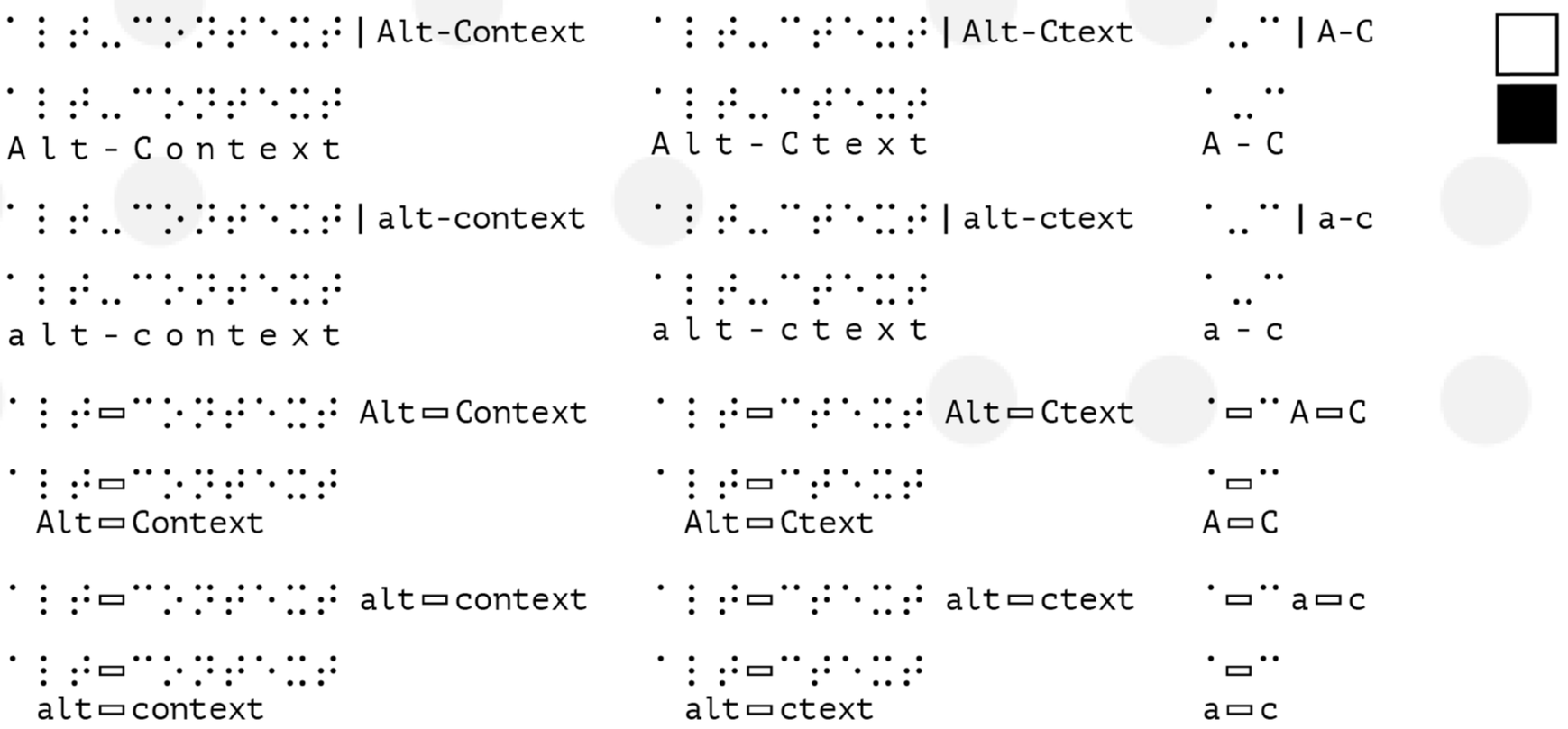

Spelling out “Alt Context” in Braille was a promising direction for a brand, but I cycled through many iterations of font, spacing, capitalization, and whether or not (and how) to represent a dash (i.e. “Alt-Context”). This early document was limited to using black text and images on white backgrounds.

PROCESS

Gate 5

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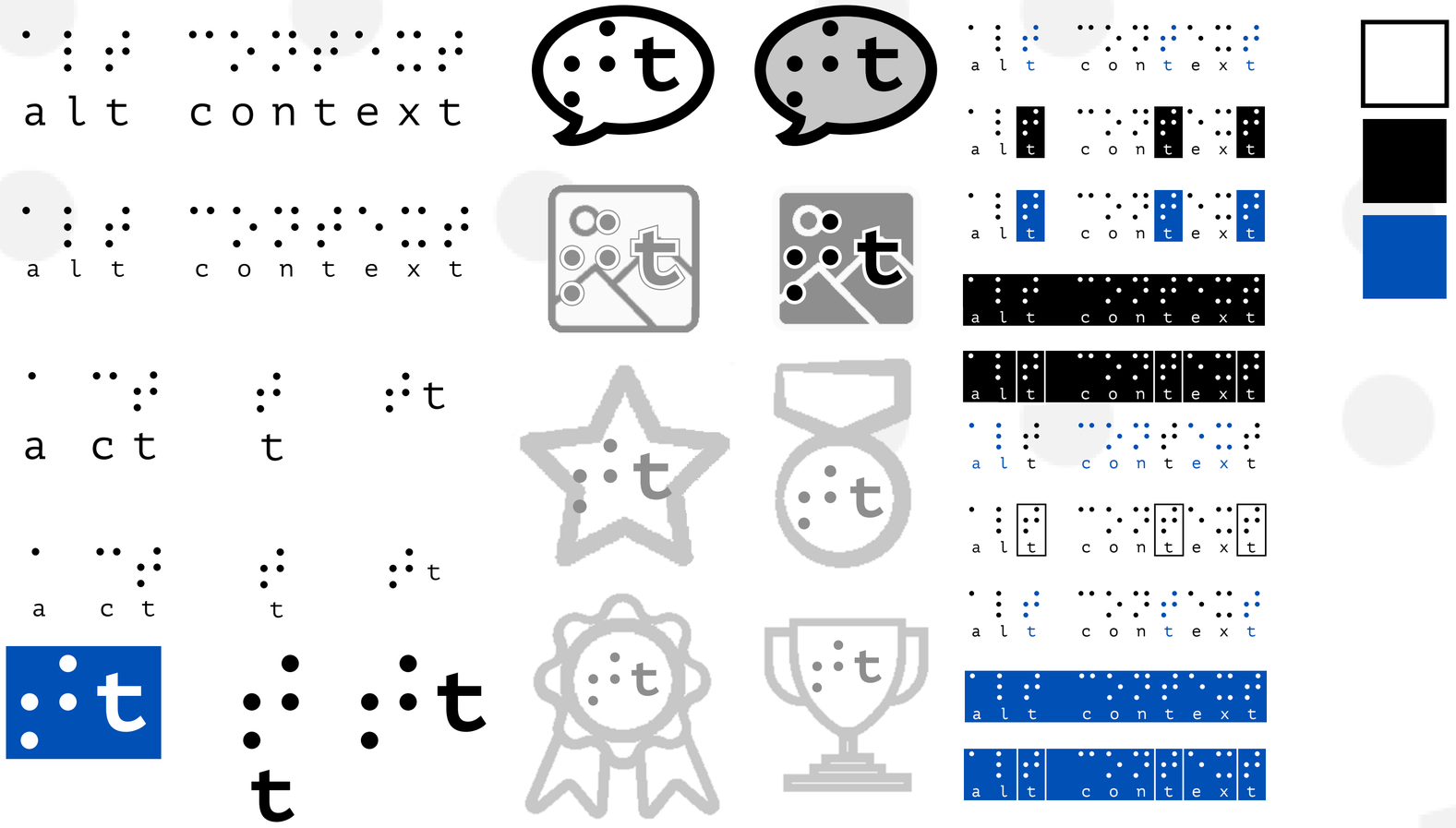


After exploring colour combinations, I arrived at an addition of cobalt blue (#0150B5) to the scheme, in order to align more with Instagram's branding, but still stand out as a distinct entity. This palette also runs through a few examples of icons for the app and overlays, representing Alt Context requests, responses, and rewards.

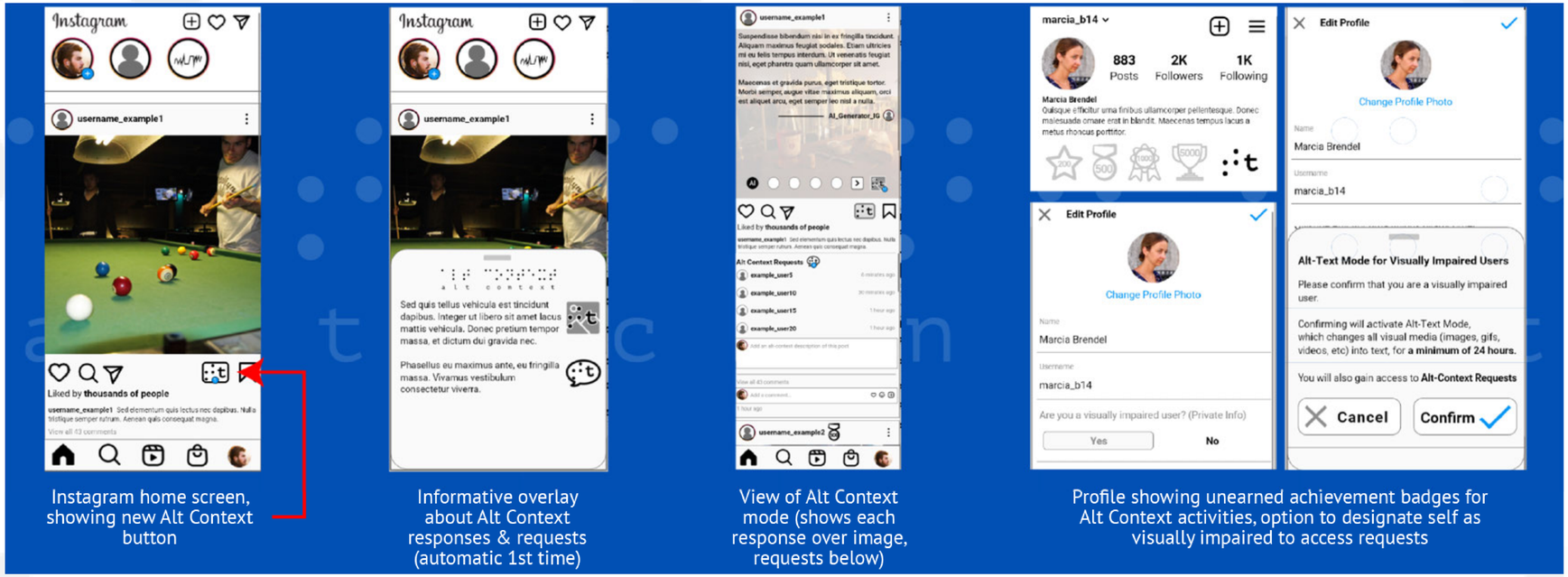
PROCESS

Gate 5

- -Branding development
- -Hi fidelity prototype
- -Refining system map
- -Business model + value proposition defining
- -Comparative market analysis
- -New storyboard movie

Prototyping with more focus on **one-to-one requesting and responding service** between visually impaired users of Instagram and other users with good vision was possible after developing the brand. It became obvious early on that the responses (contextual descriptions) of the visual media in posts should appear on top of the visual content it describes, since it is “replacing” the visuals in a manner of speaking.

The overlay features on Instagram **provide visibility** for individual needs of visually impaired users for visual context, instead of expecting it to be provided in general and only by the creators of the content:



Instagram home screen, showing new Alt Context button

Informative overlay about Alt Context responses & requests (automatic 1st time)

View of Alt Context mode (shows each response over image, requests below)

Profile showing unearned achievement badges for Alt Context activities, option to designate self as visually impaired to access requests

PROCESS

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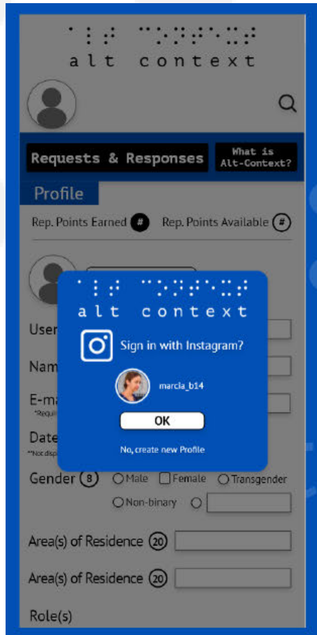
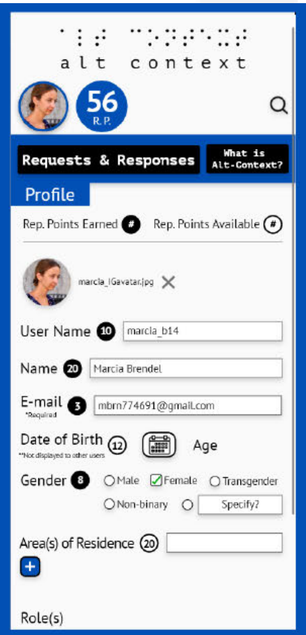
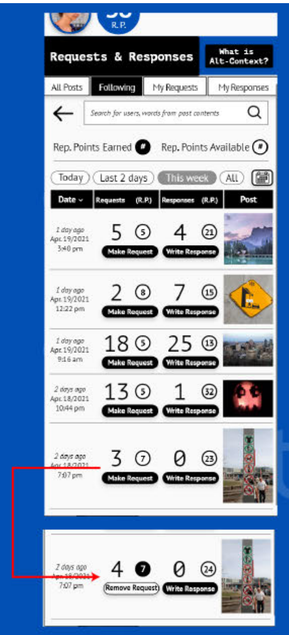
The app integrates with Instagram, allowing users to use their Instagram profiles to sign in, and **streamlines the process of finding the best opportunities to participate** in the activity of requesting Alt Context or writing responses through searching and filtering:



First screen arriving from Instagram, allows quick sign-in from IG account



Profile is auto-filled based on IG profile data. Reputation Points earned/unearned shown in legend + data fields



View of database, shows search, sorting features, consistency with points-earning legend

Shows Alt Context response screen with informative instructions in text field

PROCESS

Gate 5

-Branding development

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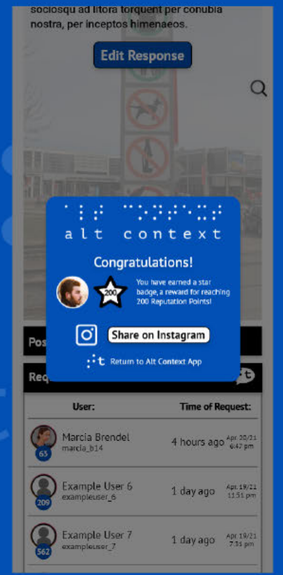
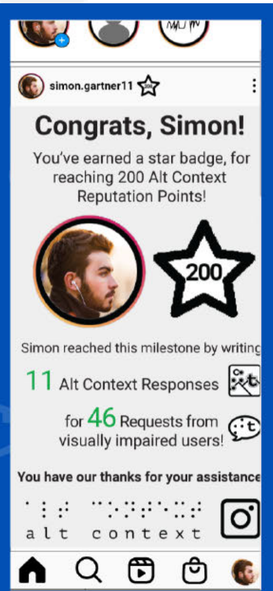
Prototyping with more focus on **one-to-one requesting and responding service** between visually impaired users of Instagram and other users with good vision was possible after developing the brand. It became obvious early on that the responses (contextual descriptions) of the visual media in posts should appear on top of the visual content it describes, since it is “replacing” the visuals in a manner of speaking.

Rewards earned for participating on the app can be **shared** to Instagram to help **motivate** users who choose to assist as a public show of virtue, and the transitions between Instagram and the app support these interactions:

Response to a request



User earns an achievement badge for 200 points, shares the milestone on Instagram



View of resulting post to Instagram

Requesting user sees new responses to their request

Badges earned on Alt Context app visible on IG, attached to user names, profiles

PROCESS

Gate 5

-Branding development

-Hi fidelity prototype

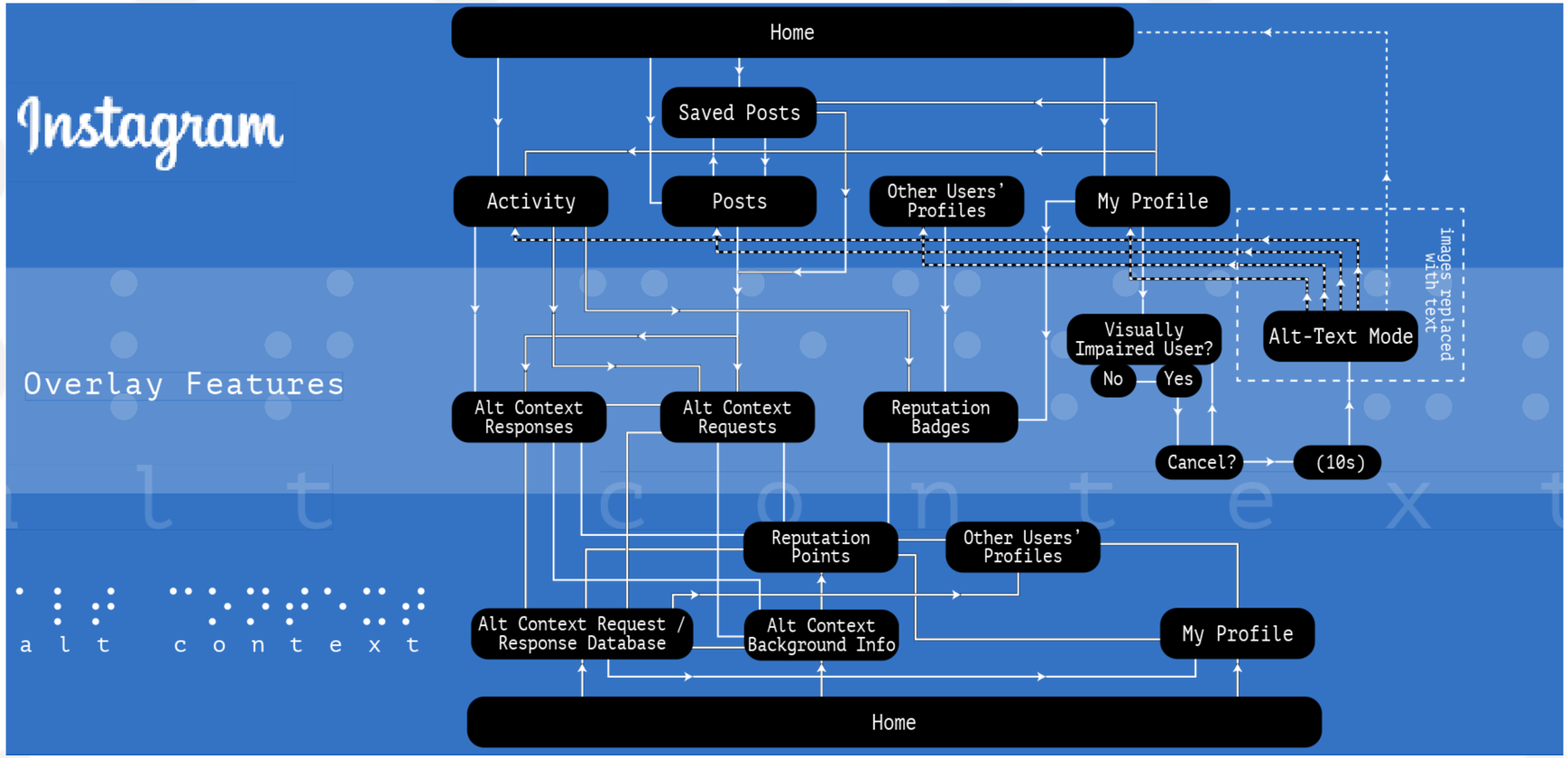
-Refining system map

-Business model + value proposition defining

-Comparative market analysis

-New storyboard movie

This **refined system map** resulted from my process of breaking down the base elements of Instagram, my app concept, and the overlay features (i.e. the features “in between” that appear on Instagram’s UI, but are part of the Alt Context service):



PROCESS

Gate 5

-Branding development

-Hi fidelity prototype

-Refining system map

-Business model + value proposition defining

-Comparative market analysis

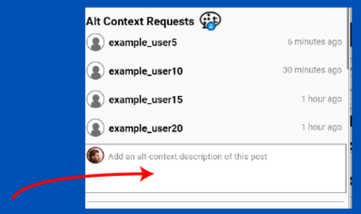
-New storyboard movie

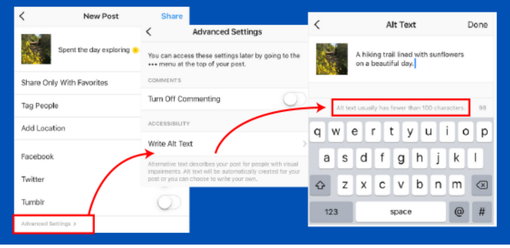
Envisioning how this service would **function as a business** is something I had to consider, so I developed a **value proposition** to propose the value of the service in business terms. Alt Context as a service only "competes" with alt-text, since alt-text is considered the standard accessibility feature for web content to be accessible to those with limited or no vision, and who use screen readers to browse the Internet, so it is **highly feasible as a targeted service** to improve specific users' experiences with Instagram, and would likely both **attract and retain significant numbers of visually impaired users** if implemented.

Alt Context is a service that **helps visually impaired people understand the context of visual media** within Instagram posts by **crowdsourcing contextual descriptions from users who can see the media, in exchange for rewards and social capital**. It averts the need for them to ask for help directly, which forces them to expose their vulnerabilities, or to imitate the responses of other users without genuinely engaging with the content, or to avoid using this platform entirely.

For users with acute vision, it provides an opportunity to help others, showcase their social values, and build empathy between themselves and visually impaired users. The service will subtly add visible features to the core Instagram experience, in the form of a new icon, and overlays that explain the basics of what the service is, how to use it, why it should be used, and who it will benefit.

Over time, it will **allow visually impaired users to have self-sufficient access to** a larger supportive **resource that will improve their abilities to consume, create, share, and engage with visual media**. This provides far more value than alt-text, which is an intentionally short description used for many other purposes and is much less visible to the general Instagram population.





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Gate 5

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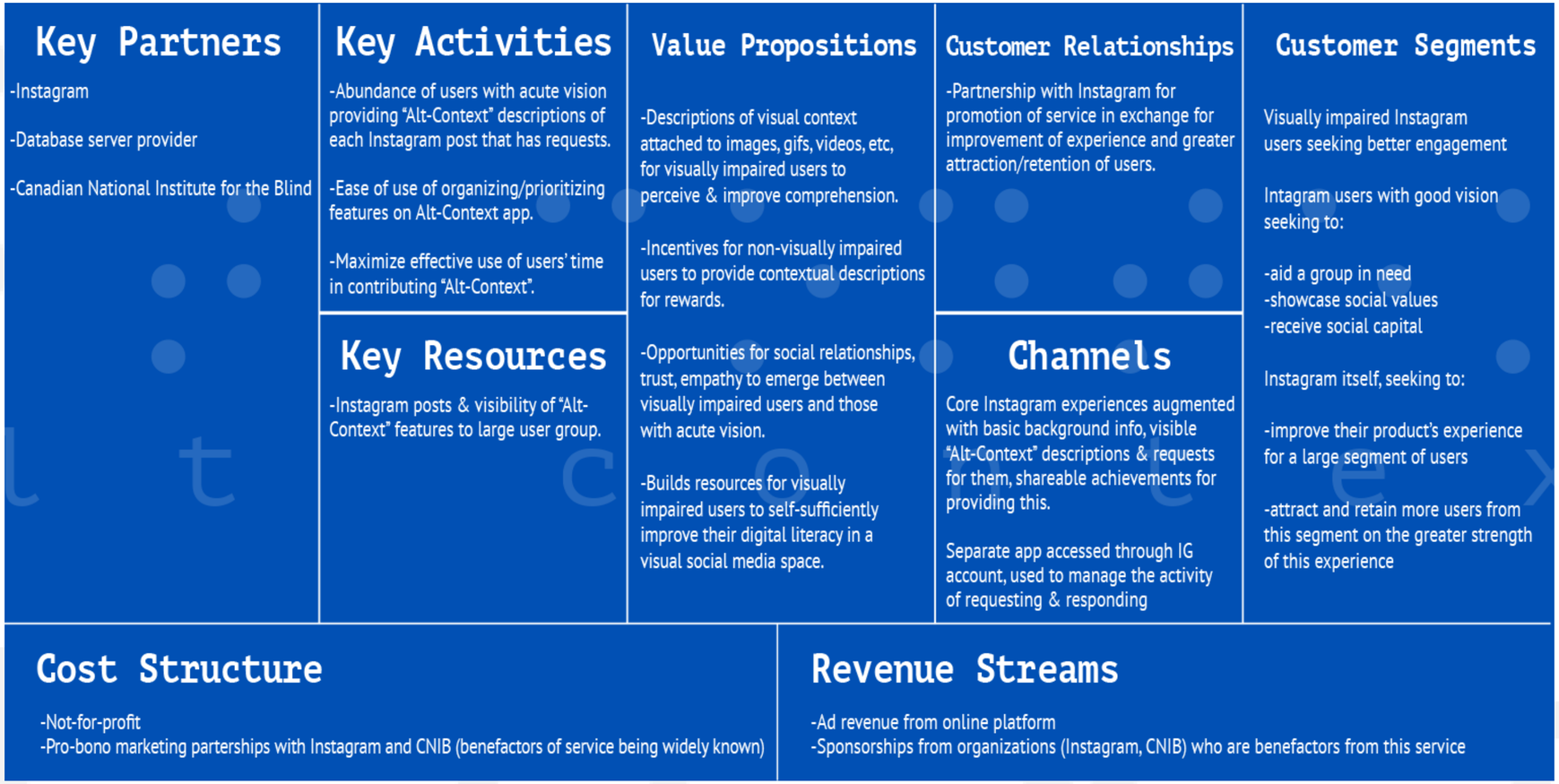

PROCESS

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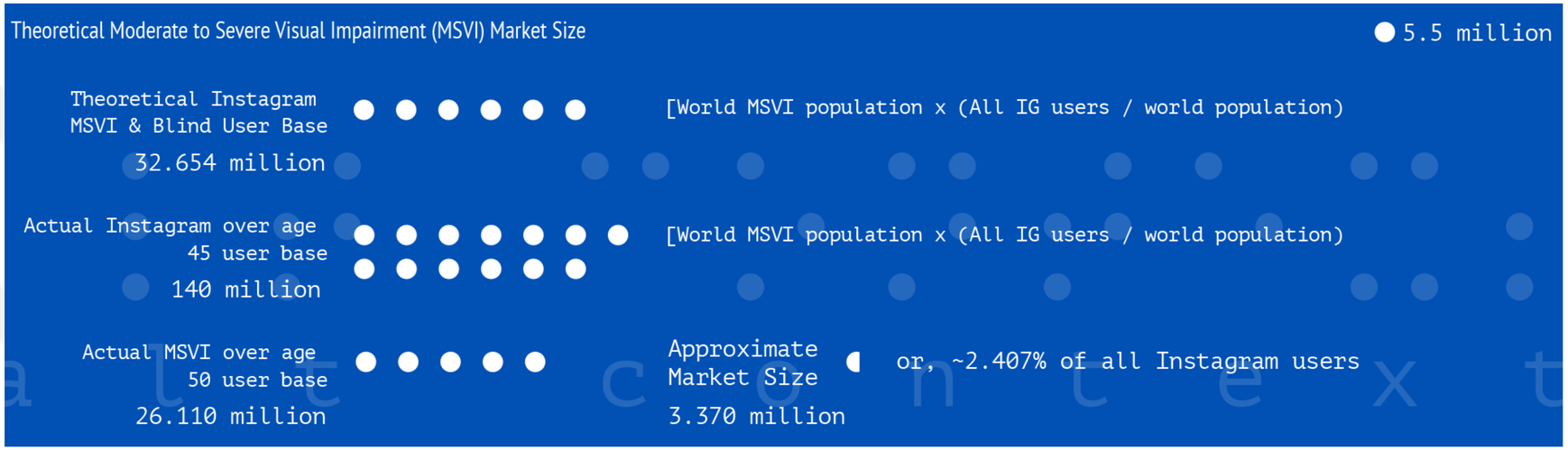
There are many indications that Instagram would benefit from a significantly better experience for visually impaired users. For instance, Instagram's theoretical market share for moderate-to-severe-vision-impairment in users over the age of 45 is ~2.407%, compared to the global average population rate of ~3.265%, which becomes significant in large sample sizes, such as Instagram's ~1 billion user base:



PROCESS

Gate 5

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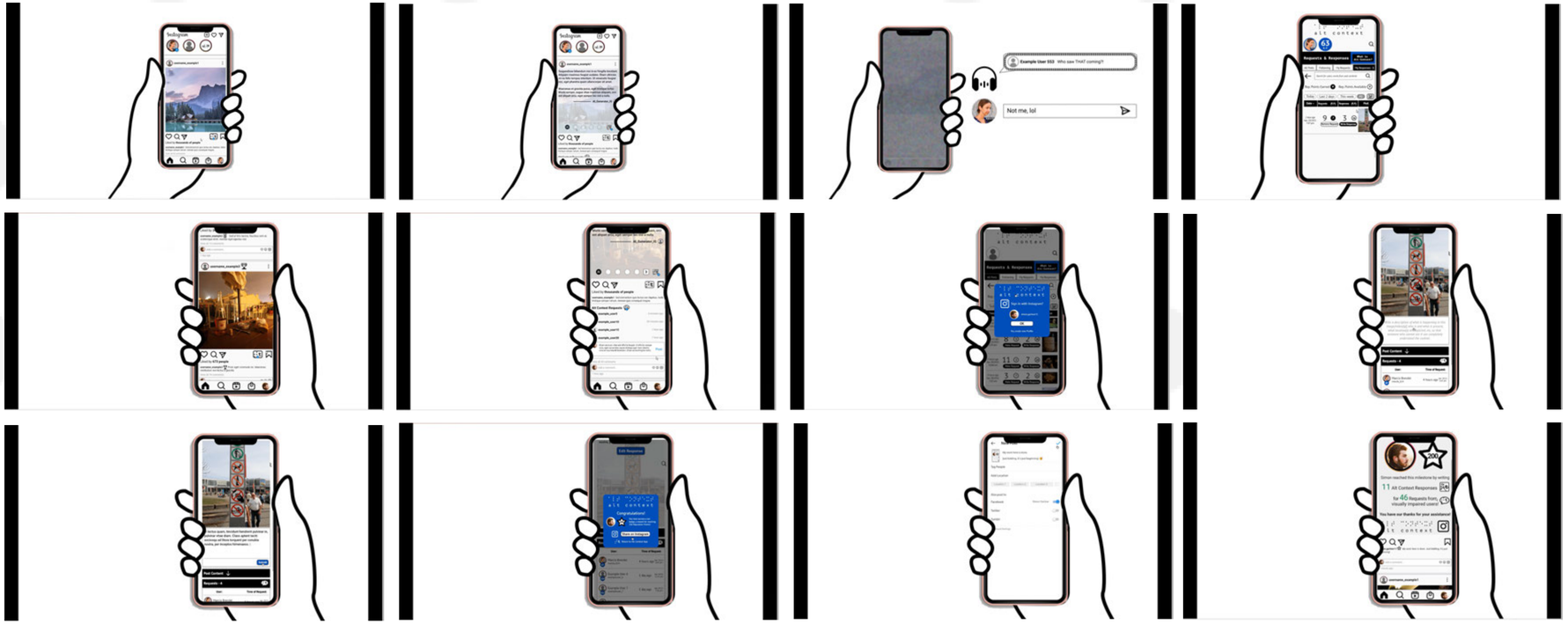
-New storyboard movie

The Gate 5 version of my scenario video focuses more on the value brought to the users featured in it than on explaining the details of the service and how it functions, other than to clarify that value:



PROCESS

Gate 6

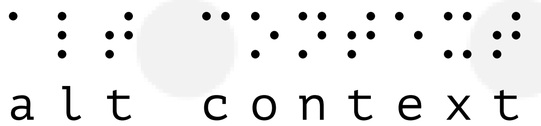
-Refined branding

-Project descriptions

-Final prototypes

-Final storyboard movie

As for Gate 5, Gate 6 focused entirely on refinements to the project's deliverables and any necessary additions:



Il1pqdbyjar00E3gG6B8t725

Il1pqdbyjar00E3gG6B8t725

Il1pqdbyjar00E3gG6B8t725

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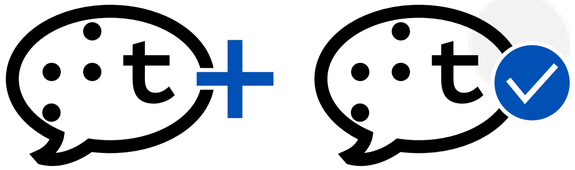
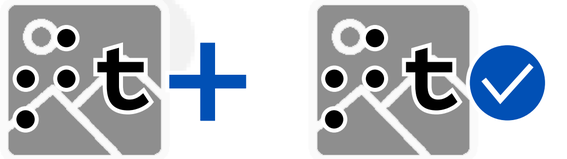
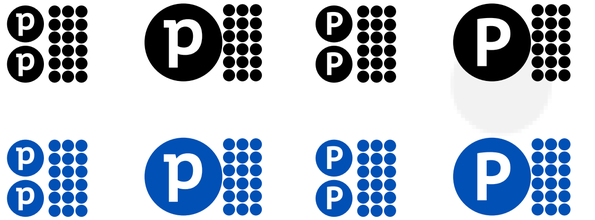
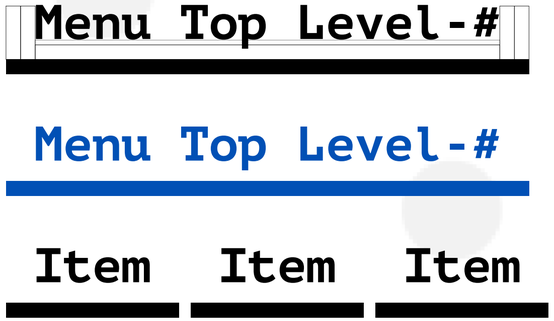


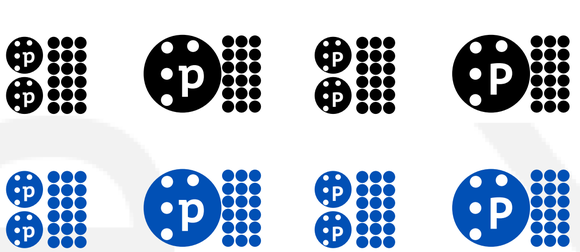


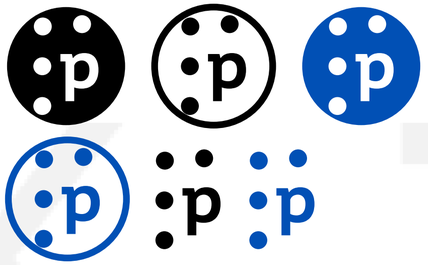




Revised menu designs meant to better suit Instagram visual identity

Versions of new icon for "Preferred Source" feature





PROCESS

Gate 6

-Refined branding
-Project descriptions
-Final prototypes
-Final storyboard movie

As for Gate 5, Gate 6 focused entirely on refinements to the project's deliverables and any necessary additions:

PROCESS

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As for Gate 5, Gate 6 focused entirely on refinements to the project's deliverables and any necessary additions:

Short project description:

Alt Context is a service that synergizes with Instagram to deliver a comprehensible context to visual media in text form, intended to expand on alt-text and create a community of people contextual descriptions of visual media, making social connections between visually impaired and non-visually impaired users, providing the resources for visually impaired users to self-sufficiently understand the context of visual media on Instagram through bottom-up communal means, and significantly improving Instagram's utility for the visually impaired community.

Standard-length project description:

Alt Context is a service integrated with Instagram aimed at providing visually impaired users with self-sufficient access to comprehending the visual context of the media in posts. With it, they can make requests to other users for text descriptions of the context of a post; the requests become visible to all other users and can be responded to for rewards.

With sufficient participation, this allows visually impaired users to significantly improve their engagement with visual media and access to personal and professional opportunities, all by using existing accessibility tools (screen readers). Users with good vision, meanwhile, can see opportunities to assist visually impaired users that come from the users themselves, earn rewards for doing so, and share those rewards to showcase the efforts they have made.

The result is the potential for visually impaired users to self-sufficiently improve their digital literacy, make connections and mutually improve empathy with users who have good vision, and have a significantly improved user experience, on Instagram.

PROCESS

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Long-form project description:

Digital literacy is a set of skills that is in ever-increasing demand for employability, decision making, maintenance of social relationships, and much more in our everyday lives. Despite the characteristic resilience and adaptability that they so often show, visually impaired people face incredible challenges in this area, as a result of the reliance on visual access and comprehension of the context of visual media in digital settings, which has resulted in less engagement, less opportunity and less connection in the visually impaired community compared to those with vision.

Alt Context is an approach to bridging this gap by crowdsourcing descriptions of the context of individual instances of visual media and providing these descriptions to visually impaired users in a similar manner as alt-text, readable through screen readers. Situated initially on the Instagram platform, it provides visibility for the need for descriptions of visual context to all users through a feature with which visually impaired users can request these descriptions for individual posts, and all other users can see these requests and potentially provide a response. Users who participate will be rewarded with points and badges that showcase their time spent on this socially good cause and can be shared on Instagram for all other users to see.

The accompanying app for this service streamlines the activity of requesting and responding by making the requests and responses organized and searchable and allows for easy access to user profile information for the users participating, in order to establish trusting relationships. It is also possible (and incentivized) to designate users as trusted sources when their responses are found to be very helpful, and even form one-on-one social connections with users on the basis of being a preferred source for Alt Context, and on becoming knowledgeable of a specific visually impaired person's needs for it, improving empathy and overcoming the barriers of vulnerability.

Alt Context on Instagram has the potential to drastically improve its user experience for the visually impaired community, despite the focus on visual communication, and with that, the potential to attract and retain a significantly higher number of users. If successful on Instagram, this service could expand to serve any participatory digital space that is difficult for visually impaired people to access because of the presence of visual media. It is also possible, with significant awareness and comprehension of this service and its outcomes, to bridge into the use of Computer Vision technology, trained by users so that one model can provide Alt Context for many sources of digital media, and improve the potential of self-sufficient resources for digital literacy more efficiently in the future.

PROCESS

Gate 6

- -Refined branding
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Alt Context Requests Button on Posts

Alt Context Mode Button / Notifications

Responses displayed on image in AC mode

Overlay Features on Instagram

- Icons + notifications integrate with UI to guide use of Alt Context features
- Text descriptions of visual media display on top for minimal disruptions of screen space
- Making requests for Alt Context is a simple button click
- First-time Alt Context users see short explanation in overlay

Alt Context Responses

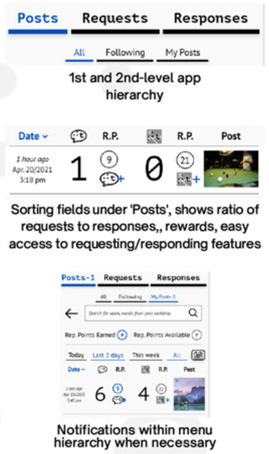
Response Classifiers

AI auto-generated summary of most common responses

Alt Context Response writing process

Overlay Features on Instagram

- AI summarization of most common descriptive words displays as first response when many others have been written
- Simple process for writing Alt Context Responses directly on posts, classifier icons keep track of your own



1st and 2nd-level app hierarchy

Sorting fields under 'Posts', shows ratio of requests to responses,, rewards, easy access to requesting/responding features

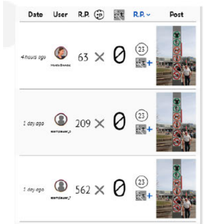
Notifications within menu hierarchy when necessary

Alt Context App

- Streamlines requesting / responding activities
- Allows for searching and filtering relevant data
- Notifies users of responses to their requests to make the activity timely and organized

185 R. P. Reputation Point (R.P.) Counter in Header

7 7 R.P. available (left) & earned (right)



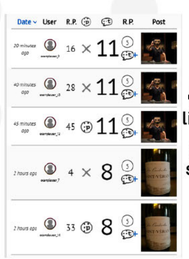
User sorting requests by R.P. available for writing responses

Overlay telling user about a badge earned, offering to share to Instagram

Alt Context App

- Requests and responses earn users Reputation Points
- Users can sort by the number of points to be earned, quickly finding the best opportunities
- Users who reach major milestones for Reputation Points earn badge rewards that can be shared / display on Instagram profile

Preferred Source Icon



Filter fields under 'Responses' - each listed with user who created it, their Reputation Points, status as Preferred Source (or not)

Ratings attached to each response on a post creates bottom-up influence over users' perceived trustworthiness

Reputation Points & Preferred Sources

- Users reading responses can rate them, reflected in the providing users' "Reputation Point" score
- Users can be designated as "Preferred Sources", which can be searched for / filtered to focus
- Both anticipate the need for perceivable trustworthiness of users in a bottom-up fashion

PROCESS

Gate 6

-Refined branding

-Project descriptions

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As for Gate 5, Gate 6 focused entirely on refinements to the project's deliverables and any necessary additions:

PRODUCT AFFORDANCES

Logos designed to imply their function

Literal up/downvoting buttons

Italicized text within text boxes to cue users that these are instructions (audio cue would be the phrase "Instructions: ..." for screen readers)

Alt-Context responses appear over faded images as a cue to their function (directed at users with good vision who need to understand this relationship)

Lines and colour to distinguish selected items, legend for earned/unearned points, arrows to indicate sorting terms

PROCESS

Gate 6

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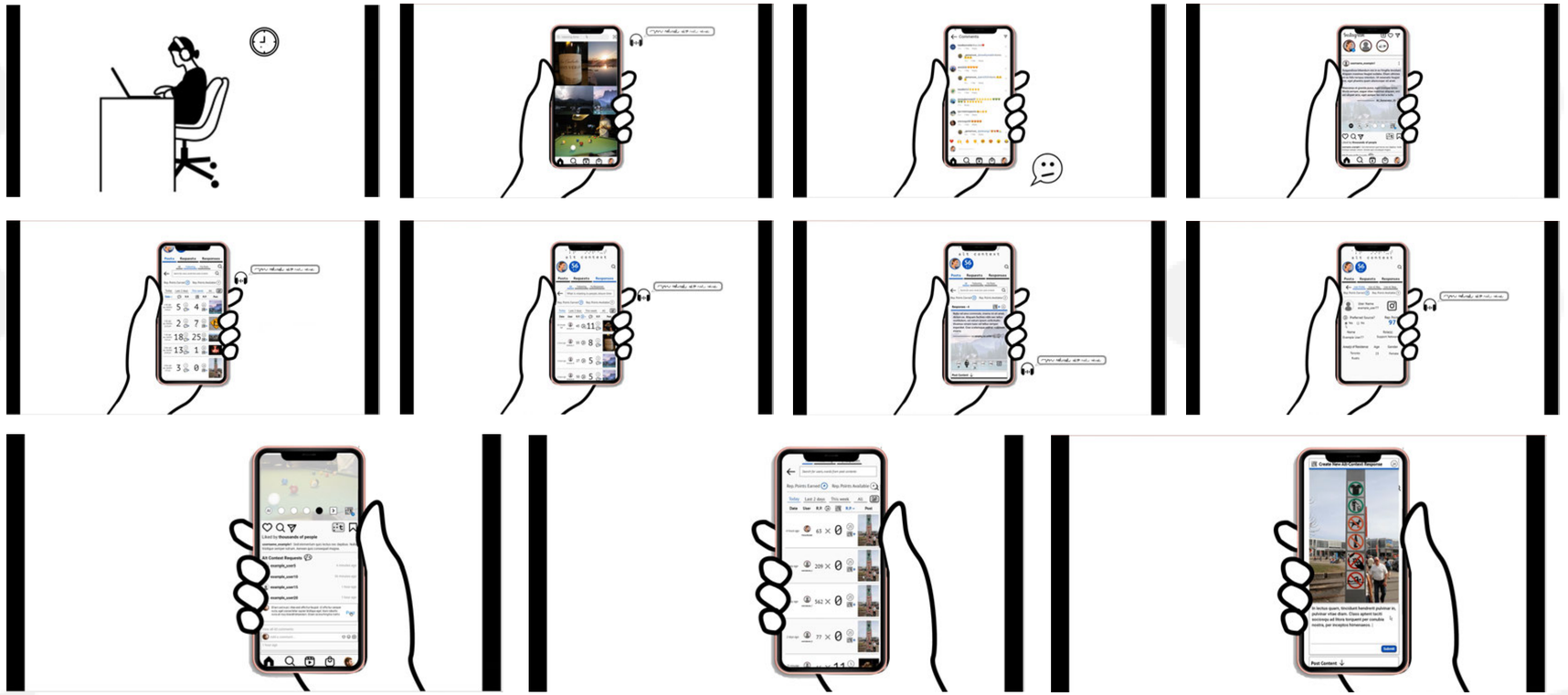
-Final prototypes

-Final storyboard movie

For the final storyboard video, I included more context for how Instagram was being used before the introduction of Alt Context, and how this use is fundamentally flawed based on the wants and needs of the users I am targeting with this service. It also specifies with a visual cue (headphone icon and “sound bubbles”) when the user is visually impaired and listening to screen reader audio to navigate on the screen.



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