

it 🖓 username_example1 Sed elementum quis lectus nec dapibus. Nulla

David Barter

Liked by thousands of people

Nt Contaxt Doguanta (+)

tristique semper rutrum. Aenean quis consequat magna.

▣

ල

E.

INDS 4007 - Major Design Project II Koby Barhad & Angelika Seechaaf-Veres OCAD University Fall 2020-Winter 2021

a

context Т

SELF-SUFFICIENT DIGITAL LITERACY FOR THE VISUALLY IMPAIRED COMMUNITY





• • • •

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.

username_example	1 :
uspendisse bibendum nisi liquam maximus feugiat s ni eu felis tempus interdun isi, eget pharetra quam ulla	in ex fringilla tincidunt. odales. Etiam ultricies n. Ut venenatis feugiat amcorper sit amet.
Aaecenas et gravida purus, Aorbi semper, augue vitae i st aliquet arcu, eget semp	, eget tristique tortor. maximus aliquam, orci er leo nisl a nulla.
the state	- Al_Generator_IG (3)
A 🔅 🔅 (

QQA
Liked by thousands of peop username_example1 Sed elementur tristique semper rutrum. Aenean quis
example_user10
example_user15
example_user20
Etiam sed nunc vitae eret efficitur feu nulle, eget consectetur seglen tristig: nulle et risus blendit bibendum. Etian
View all 43 comments
Add a comment
1 hour ago

context

	ii "iiii" alt conte
le 댰	Posts Requests R
n quis lectus nec dapibus. Nulla consequat magna.	All Following My I
向	Rep. Points Earned 💿 Rep. Point
30 minutes ago	Today Last 2 days This week Date ~ This week R.P. R.R. Thour opp 1 9 0
1 hour ago	
1 hour ago	And Control 2 186 pm 8 0 2 0
e eget. Nem lobortis lacinia fringilia mattis	5 NOUT ODD Apr: 20 2022 11 (5) 20 04 am
	^{8 hours apo} Apr 2020223 3 () 235 on 3 () € 2 () € 2 ()
♥ @ ⊕	^{1 day ago} Apr 19/2021 6 3×0 pm 6 € € € €









Gate 1

-Areas of interest / signals / issues -Primary + secondary research (Intent & Opportunities) -How-Might-We Questions -Precedent Projects -Designer-Maker-User & **Distance Framework**

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

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



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



Gate 1

-Areas of interest / signals / issues -Primary + secondary research (Intent & Opportunities) -How-Might-We Questions -Precedent Projects -Designer-Maker-User & **Distance Framework**

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?



Gate 1

-Areas of interest / signals / issues -Primary + secondary research (Intent & Opportunities) -How-Might-We Questions -Precedent Projects -Designer-Maker-User & **Distance Framework**

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



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.







Florence Chatbot:

Assists users with healthcare selftreatment, uses audio feedback, but relies on data visualizations; good example of impact from greater data access



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.









Gate 1

-Areas of interest / signals / issues
-Primary + secondary research (Intent & Opportunities)
-How-Might-We Questions
-Precedent Projects
-Designer-Maker-User & Distance Framework 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.



Negative reaction to ***hero worship* (unwanted characterization** as *brave* or *special* for having *overce adapting enough to perform everyday tasks earns accolades)
Negative reaction to **stereotypes/assumptions**, especially of **sensory capabilities** (i.e. visually impaired = elevated hearing capabilities)
Worries about ability to adapt to environment, and for environment to adapt to them
Autonomy (opportunities to earn their own ways in life, living independently **System / Values —**Participation in technology development for their sake – *Nothing for us without us*
Technology that is cohesive with the adaptations of their everyday lives (*I don't need to be fixed*)
Identity that is neither defined by disability, nor in ignorance of it

Employability & job stability

SIGNER			KER	Adherence to specifications	
				Path of least resistance for technology development process	
	Technical expertise vs people expertise			Concern for efficiency and cost effectiveness	
Relatively rigid indust	ry standards vs need for flexibility / adapt	ability to user needs		System / Values	
	broarce mailing a meet radministra is			Technical expertise	
				Working within corporate strategies for profitability	
	GNER-MAKER DISTA	NCE		Standardization	
	UNLII MAKLII DIOTA	INUL		Society	
				Specialization in relevant technical skills to maintain employability	
			~	Technologically and digitally literate	
	ΓΩΤ ΙΝΙΤΕΝ			Economy / Politics	
— – – – – – – – – – –	FIJI INIF N			Reactive industry standards, accessibility treated as an afterthought or add-on	
1105				Budget for projects	
Alter altitudes about visual impairment "descruing nity" on	Attitudes	No significant impact on the potential to view visually impaired		Technological limitations	
ADDITICQ all sides of the conversation		people as more independent and capable than was the norm		Profitability of projects	
UNIIIEO		FAI		Environment	
siming to accomplish?			7 now can my moniton can:	Industrial complex areas of large cities	
Where do I start? Adaptations to disability as more important than overcoming or fixing it	System / Values 🗆	Fail to leverage the versatility of visual impairment into an appropriate adaptation for digital literacy		High-tech knowledge worker company	
				Culture	
				Technology-criented	
Encourage the ability to autonomously improve one's digital literace to match accient domand for employability	🖝 Society 📼	Maintain over-reliance on others for involvement with digital literacy		Balance of speed and results	
digital interacy to match societal demand for employability				in production process	
Aim to establish more proactive standards for inclusion	🖝 Economy / Politics 📼	Unable to ease the financial burden on the visually impaired		Unintentional ableism	
Provide visually impaired people with options to independently improve their employability		community needed to enhance their employability		 Lack of direct control or participation in making process for technology that is expected to be part of their lives 	
Educational materials must be affordable to the visually		accessible design standards		Unintentional view of visually impaired as "pitiable", belief of visually impaired that they are viewed as "pitiable"	
impaired community				Underappreciation / lack of understanding of Braille's viability as a form	
for digitial literacy for visualy impaired people		Digital environments remain unintelligible to visually impaired users seeking autonomous education for digital literacy		Culture of unemployment / underemployment vs highly paid knowledge	
		seeing additioned a constant to agric storag		workers High digital literacy vs lack of digital literacy	
Help foster autonomy and adaptability as characteristics of the visually impaired community	🖝 Culture 🖂	No significant impact on the potential to solidify the visually impaired community's desired defining characteristics as a culture			
				► MAKER-IISER DISTANCE	
	— 11SFB				

Society —
Social connections with other visually impaired people, willingness to assist if needed
Economy / Politics -
Accessibility standards for information and communication technology
Accessibility standards for living spaces, limiting where they can live, but also helps ensure that thei environments can meet their needs
Statistically, people with disabilities are less likely to find employment the more severe their disa disabilities are
Higher levels of education correspond to higher levels of employment, so access to education is k

Higher levels of education correspond to higher levels of employment, so access to education is a Difficulties in saving for retirement

Environment —

Obstacles to adopting digital tech: needs for assistive tech, high costs, constraints in availability, lack of digital literacy, need and availability of training in such skills
Culture —
Reject "pitiful" depictions seen as common in most forms of media
Cultural aspects to unique forms of reading and writing, lack of literacy that is routinely dismissed or condoned specifically because of the nature of their disability
Evident visual identification (white cane, guide dogs), especially in some countries that require such identification (Germany)
Similar economic situation, as Canada and U.S. have roughly equal unemployment and under-employment rates among visually impaired people (70% for blind), leading to similar underprivileged environments
Make similar adaptations to environment, as a result of similar economic conditions
Similar modes of transportation
Internal conflicts such as Print vs. Braile, Care vs. Dog, causes significant debate, while people outside the culture are relatively unaware of these debates

Readily form groups among each other in times of need that other visually impaired people can help with



Gate 1

-Areas of interest / signals / issues
-Primary + secondary research (Intent & Opportunities)
-How-Might-We Questions
-Precedent Projects
-Designer-Maker-User & Distance Framework 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.



DESIGNER ►	People vs technical expertise	■ MAKER	Addresses to specifications Path of least resistance for technology development process
Need for adapta Need to take time to pr DESI	bility to user needs vs rigid in oduce insights vs rapid deliver GNER-MAKER DISTA	idustry standards ry/meeting requirements NNCE Wo	Technology-oriented Values efficiency and cost effectiveness rks within corporate strategies for profitability
nent – PROJ	ECT INTEN	Reactive NTION	tech development, accessibility an afterthought Technologically and digitally literate
PRIORITIES Wat do I want to change? Where do I start? Where do I start? Advectations to disability as more important than	 Attitudes System / Values 	No significant impact on the potential to view vacatly impained people as more independent and capable they was the norm. FAILURE Where <i>I</i> hav can by interfield to impact the second people of th	Profitability of projects Profitability of p
Encourage self-sufficiency for digital literacy rove users' educational, employability potential	👄 Society 🖂	Maintain over-reliance on others for digital liter Under-leveraging of versatility of adaptations	racy Culture Technology-entented Balance of speed and results by production process
Make industry standards for inclusion/ accessibility more proactive	🚥 Economy / Politics 📼	Failure to ease the financial burden on visually impaired communities	- Contractored attents
ICT Change attitudes about users to recognize characteristics of adaptability, self-sufficiency	📟 Environment 📼	No significant impact on how visually impaired peopl are viewed, and how they believe they are viewed	 Adherence to standards vs need for flexible adaptability Under-valuing of adaptations to impairment as solutions Culture of un/underemployment vs highly paid knowledge workers Low vs high digital literacy
Thep fighter autonomy and adaptability as characteristics of the visually incarned community		No argument impact on the potential to solidly the valuesy impaired commanity's desired defining characteristics as a culture	



Values self-sufficiency, adaptability to impairment

Significant unemployment and underemployment rates

Lack of availability/digital literacy/training/assistive tech, high costs obstacles to digital tech adoption

Identity is neither defined by disability, nor ignorant of it

Rejects "pitiful" depictions in media, unwanted "hero worship", assumptions/stereotypes by others

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

MAKER-USER DISTANCE



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.







Gate 2

-Speculative design methodology: scenario development

- -Storyboard
- -Empathy maps
- -Contextual Speculative Artifact
- -Prototyping
- -User Journey Map

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.



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.

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.





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.





Gate 2

-Speculative design methodology: scenario development

- -Storyboard
- -Empathy maps
- -Contextual Speculative Artifact
- -Prototyping
- -User Journey Map

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.



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.



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.



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 FAO section...



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









Gate 2

-Speculative design methodology: scenario development

- -Storyboard
- -Empathy maps
- -Contextual Speculative Artifact
- -Prototyping
- -User Journey Map

What do they I

Willingness to a

Assumptions about their abilities and/or lack of abilities (untr

Suggestions from non-visually impaired people on what t could do to better use or adapt to something, usually helpful, coming from place of misunderstanding

Anxiety over fir

Advice on career advancement that ass good vision (untru

PAINS

Assistive technology aids frequently go out of date, prohibitively (Needs for digital accessibility frequently fail to be met, with no or Often fail to acknowledge or accept situations in which they get Limited economic independence resulting from lack of employn

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:

? s' k' e' ss e' s' ?' n' is' o' ?' fe fe ty es	What do they PERCEIVE? A lack of options for digital information access Many kinds of accessible technology, most either too expensive, too ineffective, or both Accessible digital content only reliably comes from specific providers Strong social bonds with other visually impaired people Others with good vision that are overly eager to help me Figure 1 (1) (1) (1) (1) (1) (1) (1) (1) (1) (NEEDS Consistent access to digital content, more freedom from control of providers and their economic status Able to self-sufficiently adapt to the demands of society Ability to receive assistance in ways that acknowledge character, avoid stigma Ability to self-sufficiently use the networking and socializing potential of digital technology to its fullest potential
ccept assis self-suf	stance depends on trust in the source ficiency and avoid looking or feeling "I'm fine, don't worr" ity, personal and professional opport "What am I missing here?" "I want to do that, but how could I?" Look for opportunities to get training on necessary technologies	e ability to maintain electronic de la contractiona de la contractica
to replace with newer versions little control over alternatives conomic status of providers need assistance assumed to have good vision oportunities, reliance on living w	CAINS Improvements to productivity in everyday life (completing tasks faster Improvements to ability to collaborate with people with good vision Improvements to ability to find and consume digital content (become Improvements to ability to create digital content (outlet for expression Improvements to ability to communicate or share digital content (abilit social life, create and take advantage of personal and professional op Get help when needed without feeling dependent, avoiding social stip Greater public awareness of positive characteristics Greater potential income	making more informed decisions) more informed) , communication) y to reach a broad audience with their own messages, improve portunities) ma, embarrassment

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





Gate 2

-Speculative design methodology: scenario development

- -Storyboard
- -Empathy maps
- -Contextual Speculative Artifact
- -Prototyping
- -User Journey Map

What do they THINK/FEE

I have a responsibility to uphold, as someone who is trusted by s

"I enjoy being depended on by this person, it helps 'I wish they could be more indepe

Enjoys being relied on,

What do they HEA Concerned with how se

from sources online, from friends

Misinformed opinions of people without first hand experie interacting with people with a visual impairm

Desire to positive

PAINS

Fear of missing out on User #1's times of need, failin Incomplete comprehension of User #1's needs and w Desire to positively impact User #1's life and act on ca Life ambitions unfulfilled with time and attention focused on User #1

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:

?	What do they SEE?	NEEDS
ne t ^r e" d" d" d" t e"	Needs of User #1, opportunities to assist Frustration, negative reactions by User #1 when confronted with their limitations Ways in which User #1's environment is inaccessible, ways to change that Misinformed assumptions made by others about User #1, and about their care needs	Confidence in how well-adjusted User #1 is in their lifestyle Freedom from perception of User #1's depen- dence on them Ability to participate in supporting User #1's activities, goals
yet simulta ? If-sufficier	What do they SAY/DO? It and capable of self-care their child I will support you in any way I can, and am happy to do that? "I can reach out to that person for you, atheire envior you want" "Would this work as a way to help them?"	care responsibilities INSIGHTS is, and how suitable Desire to help User #1 with their issues could Desire to help User #1 with their issues could the state of the state of the state of the state informing User #2 on their importance Simultaneous desire to be depended on by User #1, yet relatively free of the time commit-
ly impact i	their childsiolife and act of the care instin Reach out, check in to see how they are feeling	ctstaoften unfulfilled
to provide adequate care its, most appropriate wa	e Knowledge of most effective ways to play uys to help Ability to assist User #1 in acceptable, ind feel helpless and dependent	a positive role in User #1's life lirect ways that avert making them

Chance to build a more trusting relationship with User #1, better unde stand their needs and wants

User #2: Parent of User #1





Gate 2

-Speculative design methodology: scenario development

- -Storyboard
- -Empathy maps
- -Contextual Speculative Artifact
- -Prototyping
- -User Journey Map

What do they THINK/FEE

- 'The technical aspects of solving problems for visually impaired
- 'l can't imagine what being visually i

should try to make friends with visually impaired peop

Desire to assist visua

What do they HE Readily believes in harm

disadvantaged in ways that you can ass

Values of people they trust and community at large gards to helping people

Interested in the technica

PAINS

Risk of offending visually impaired people and other adv Uncertainty, or perhaps willful ignorance, of how they ca

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:

?	What do they SEE?	NEEDS
n- e" s" le s" pe lt"	Perceived struggles of visually impaired people in accomplishing tasks that are routine for people with good vision Visually impaired people as targets to socialize with in spaces they encounter them in	Feeling of validation from others through demonstrating something virtuous Use of technical know-how for something emotionally worthwhile
ly impaire wit	d people comes from perceived socie h others' beliefs as a whole rather tha	etal duty to conform In genuine empathy
ful stereo	types of What do they SAY/DO? visually impaired people, inc Offers assistance, often without asking Offers companionship, assuming it is needed depende "We should use audio for this, that won't be a problem because of how well they can hear"	INSIGHTS Luding that they are Desire to help User #1 with their issues could the appendic Sociality in ept Incentivizing those outcomes and educating User #3 on why they are more necessary than
alaspects	"You look like you need help, let me do that for you" of solving problems for yvisually impa "Why don't I read that for you, that'll be easier" that that	their pre-conceived notions of what would be best could transform User #3 into a better ad- irede people more so Appealing to their technical interests could be a the ethical aspects
ates with their assumption best assist visually impa	ons ired people More effective resources for making connections with vis their social circles	S me to make a positive impact on visually impaired sually impaired people and others who are part of

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





Gate 2

-Speculative design methodology: scenario development

- -Storyboard
- -Empathy maps
- -Contextual Speculative Artifact
- -Prototyping
- -User Journey Map

What do they

Imitation of "norm

Assumptions about their abilities and/or lack of abilities (untr

Suggestions from non-visually impaired people on what could do to better use or adapt to something, us

Difficulties with that benefit them (f

PAINS

Assistive technology aids frequently go out of date, prohibitively Cannot engage with digital media at desired level (mainly social m Often fail to acknowledge or accept situations in which they ger

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:

? rrs' o?' ne' ts' to ia? s?' do' t?' o?' iiity Desire to re	What do they PERCEIVE? A lack of options for digital information access Many kinds of accessible technology, most either too expensive, too ineffective, or both Awkwardness with co-workers and friends who are accustomed to them having good vision and are unsure of how best to address (or not) their new normal Reduction in role at work, unwanted but forced as their efficiency and speed in conducting research has slowed significantly Automatic and and an expected by the efficiency and speed in conducting research has slowed significantly	NEEDS Consistent access to digital content, more freedom from control of providers and their economic status Able to self-sufficiently adapt to the demands of society Ability to receive assistance in ways that acknowledge character, avoid stigma Regain quality of employable skills
al" behavi	ours in digital spaces when visual con Get frustrated when faced with difficult adjulimiting get that prevent living life as "normal" "I want to know what that is showing" "I miss being able to see" stive technologies up to date, avoidin "I want to to that, bit how could 12" Look for opp tunness regain previous itestyle	text is inaccessible, nuine engagement. d conomically viable alternatives Often hesitant to accept or request assistance, even when needed, because of character values, and fear of bing positive impressions that others had for them Gengelett behind Lack of contextual understanding of visual media is a sinificant loss for the mitation of previous accept the visual media is a sinificant loss for the mitation of previous accept ment with content and with people
y to replace with newer versions little control over alternatives economic status of providers a, videos) from previous lifestyle y need assistance	GAINS Improvements to productivity in everyday life (completing tasks faster, in Improvements to ability to collaborate with people with good vision Improvements to ability to find and consume digital content (become me Improvements to ability to create digital content (outlet for expression, Improvements to ability to communicate or share digital content (ability Get help when needed without feeling dependent, avoiding social stign Greater public awareness of positive characteristics Retain positive image of strength and independent capability that other	making more informed decisions) ore informed) communication) to reach a broad audience with their own messages, regain participation in desired contexts) na, embarrassment s had for them before vision loss

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





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.

Canadian National Institute for the Blind (CNIB) Public group I 1k members About Discussion Announceme	Discussion Announcements Members Its Members - 1k New people and Pages who join this group will appear here Learn more Images - 12 Images - 12 Images - 12 Images - 12 </th <th>ers</th>	ers
User starts at CNIB Facebook Group cross-posted sharing of CV model for service by a fellow member	Discussion Announcements Units M Members - 45k	Page listed User navigates to CV Model Facebook Group, sees same cross-posted CV model Discussion post
Lighthouse International Construction and the second seco	New people and Pages who join this group will appear here Learn more (a dog lovers I Pages - 102 CV Models by and for Dog Owners CV Models for Dog Pics on Instagram GO Guide Dogs Foundation for the Blind	Bee more Bee more Bee more Comment Dirit 2 · Optional Guide to Trustworthiness / Reliability Metrics of CV Models
Machine Learning for Social Justice Advocates Machine Learning for Social Justice Advocates User checks Members, finds many releval CV-involved Pages, covering location, interests, political stance, other contexts	nt User searches Group Members for "dog lovers", hoping to CV model-related Page/Group; finds several Pages invo some also involving CV models	On both social media and on the CV Model Repository website, learn about how trust of relability in CV Model are measured. Bee more Chemical arelated olyging dogs, User checks "Units" tab: finds several Social Learning modules designed to teach basics of CV model tech, how to find/use it, how to understand trust metrics, etc.



Gate 2

- -Speculative design methodology: scenario development
- -Storyboard
- -Empathy maps
- -Contextual Speculative Artifact
- -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.





Gate 2

- -Speculative design methodology: scenario development
- -Storyboard
- -Empathy maps
- -Contextual Speculative Artifact
- -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.









Gate 2

- -Speculative design methodology: scenario development
- -Storyboard
- -Empathy maps
- -Contextual Speculative Artifact
- -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.





User #3 follows up by mentioning specific icing techniques and how they inspired their search; User #4 congratulates them, wishing they could do the same



r #4 downloads the model with the best racy/bias rating, a newer one with fewer



On the Pinterest "Creative Cakes" boar User #4's screen reader can now describ the visual details of the cakes



User #4 points their smartphone's camera in the direction of the countertop, but the cake is not in frame



User #4 wonders if they could understand the context of the cake images better by using a CV model



User #4 searches the CV Model website for "Pinterest": the screen reader replies with each option, including accuracy and bias ratings, likes, downloads and comments



User #4 thinks about the n metrics, and decides that th ones to them are the accura



User #4 is inspired by the cakes described and comes up with ideas of their own base on what they perceived on this board



User #4 has baked a cake, intending to share photos of it with the community



User #4 moves the cake to their countertop and sets it down

The phone's screen reader tells User #4 that they need to point the camera farther to the right



After repositioning the phone, the CV model on it recognizes the cake, but it still requires one more slight turn. User #4 snaps a photo of the entire cake



Instagram with tags to alert the creative cake community



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





Gate 2

- -Speculative design methodology: scenario development
- -Storyboard
- -Empathy maps
- -Contextual Speculative Artifact
- -Prototyping
- -User Journey Map

of the planned design outcome:

PHASES	Leisure time social media use: "preferred" platforms	Leisure time social media use: "uncomfortable" platforms	Follow-up real-world engagement / content creation
USER ACTIONS	Uses Facebook & Twitter to keep informed on friends & family's lives, follow news from non-mainstream media sources	Uses Instagram & Pinterest for community participation, finding and socializing with people with shared interests Seeks hobby-related ideas & inspiration, largely through photos / videos / moving images,	Seeks out ordering / making interesting meals to share with "foodie" communities Attempts to photograph / describe food to generate interest / discussion on social media platforms
fulfilled EMOTION unfulfilled			
more control – – TENSIONS less control – –			
CONTEXT	Gravitation towards these platforms is due to the relatively more effective accessibility features each has, as well as comparatively less emphasis on visual media, compared to platforms such as Instagram, Snapchat and Pinterest. Better engagement with primarily textual content, only struggles with context-heavy visual media such as memes, photos, videos Limited success with FB's context features (automatic alt- text, AI descriptions of visuals/identification of people); also have experienced times where the descriptions were inaccurate and led to misunderstandings, hurts trust in the technology being used	Heavier visual content prevents desired engagement, source of many social engagements they once partook in before vision loss, misses participation in these platforms. Their options to combat this problem are to ask for assistance from a friend with good vision, which they find uncomfortable, or feigning "normal" activity through patterns such as automatically liking a certain person's posts without contextual understanding of it, or posting generic responses such as "Great picture!" or "Wow!"	The activities of making or ordering food, and photographing it, an not exclusively digital experiences, and can be adapted to for the most part. However, when moving to digital spaces and activities, they do not get the responses they want, believing this to be a result of limited creativity on their part because of inability to visually construct images, learn from and creatively appropriate visual techniques shared by others (requires more comprehension of visual context than is typically possible).
ANALYSIS	Fails to meet desired engagement level, simultaneously enjoys the greater effectiveness in using these platforms, but on Twitter especially, dislikes how the limitations stand out when interacting almost entirely with text; often forces interactions more suitable to other platforms onto these two just to have better engagements, but lacks desired depth	The engagement level with these platforms is less consistent with control, but more fulfilling when successful	Their limited ability to gauge the context of the visual media the both consume and create severely limits their engagement with compared with their habits prior to vision loss
OPPORTUNITY	Accessibility tools for digital media run the risk of compromising user trust if there is no suitable transparency in accuracy, specializations, sources, and types of potential bias	Contextual understanding through accurate, detailed descriptions of visual media could close the gap in desired vs actual engagement possibilities for visually impaired users with digital media	There is a need to synergize their real-world activities with engagement in digital communities; without this, the limitatio of their post-vision loss lifestyle constantly remind them of what they have lost

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





Gate 2

- -Speculative design methodology: scenario development
- -Storyboard
- -Empathy maps
- -Contextual Speculative Artifact
- -Prototyping
- -User Journey Map

of the planned design outcome:



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

nspiration, largely throug

Leisure time social media use: "uncomfortable" platforms

Follow-up real-world engagement / content creation

Tension exists between different social media platforms' use: fulfillment in using them usually relates inversely to control of the experience through quality of accessibility -

Imitation of common behaviours in times of poor context awareness shows the need for such awareness and its potential to enrich this user's life

It is undesirable to ask for direct assistance from others with good vision when their understanding of visual context is limited, since this user wishes to maintain their image, so looking and feeling less capable is avoided at significant cost

contextual understanding of it, or posting generic responses such as "Great picture!" or "Wow!"

with control, but more fulfilling when successful

Contextual understanding through accurate, detailed descriptions of visual media could close the gap in desired vs actual engagement possibilities for visually impaired users with digital media

uct images, learn from and creative visual techniques shared by others (requires more comprehension of visual context than is typically possible

Their limited ability to gauge the context of the visual media hey both CONSUME and Create severely limits their engageme with it compared with their habits prior to vision loss

There is a need to synergize their real-world activities with engagement in digital communities: without this, the limitations of their post-vision loss lifestyle constantly remind them of what they have lost



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 sy **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**

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



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:

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 Al algorithm-based assistive technology.



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:





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:



DM	TO
positions of	Bottom-up
sibility	self-sufficiency
f Al algorithms	Trust in Al algorithms
omputer vision	Education on computer vision
ations	applications
chement from	Coordinated support through
nmunities	outside communities
ed digital media	Diverse, informed participation
nption	in digital media platforms
nited usage of and content	Engaged, contextually aware involvement in visual media and content



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:

Group Name 1 Group Name 2 Lost active Group Name 2 Lost active Group Name 3 Lost active Group Name 4 Group Name 4 Lost active Group Name 5 Concadian National Institute for the Blind (CNIB) Public group 1 1k members About Discussion Announcements Members Events Media Methods Croup Name 4 Lost active Group Name 4 Lost active Group Name 5 CV Model for <web service=""></web>	Canadian National Institute for the Blind (CNIB) Public group I 1k members About Discussion Announcements Members Events Me Pages - 12 American Foundation for the Blind (AFB)	Non-Visual Computer Vision Collective (NVCVC) Public group I 45k members About Discussion Announcements Units Members Events Person 2 shared a link Weilerday at cirres a CV Model for <web service=""> rvcvccom members at cirres a members at cirres at cirres a members at cirres at cirr</web>
User arrives at CNIB Facebook Group page, sees post about CV Model linked to NVCVC database, and becomes curious.	About Discussion Announcements Units Members Events Members - 45k New people and Pages who join this group will appear here Learn more Grag Inverse Pages - 102 CV Models by and for Dog Owners CV Models for Dog Pics on Instagram Guide Dogs Foundation for the Blind Guide Dogs Foundation for the Blind Guide Dogs Foundation for the Blind Guide Dogs Foundation for the Blind Bee more 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	CV model in the Discussion feed, and other relevant content related how and why the visually impaired community is using them frequent





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:

	Hears about CV model service and decides to contribute	Finds educational section and learns about how to create	Connects with CV community through Partner Organizations	Builds user data for CV model through everyday digital content use	Creates profile to gain access to submitting CV models	Submits CV model	
RATIONALE	Sees potential use of technical skills, appealing contribution	Wants to reinforce that their knowledge matches the needs	Seeks advice from others who have created CV models	Recognizes need for abundance of user data	Discovers potential personal data to share; decides to provide more to foster trust	Finishes running validation algorithms in system, satisfied with results	RATIONALE
THOUGHTS	"That sounds like a great way to help, and I trust who I heard about this from!"	"This is interesting, but I should also learn from others with experience."	"I can learn from others with more experience with this process."	"I need to find the right amount of user data to train this model on to help it score well on its Accuracy rating"	"If users know where I'm from, who I work for, how knowledgable I am, etc, it will help them see my model as worth trusting in."	"I'm confident in this, but I need to monitor the metrics to see how successful it becomes."	STHAIINHT
EMOTIONS	inspired, influenced	patient, curious	eager, appreciative	inquisitive	open-minded, trusting	accomplished, hopeful	SNULUNS
	EMOTIONS THOUGHTS RATIONALE	Inters about CV models service and decides to contributeInters about CV models appealing contributionInters about CV modelsInters about CV modelsInte	Hears about CV model service and decides to contributeFinds educational section and learns about how to createIDIODSees potential use of technical skills, appealing contributionWants to reinforce that their knowledge matches the needsIDIOD"That sounds like a great way to help, and I trust who I heard about this from!""This is interesting, but I should also learn from others with experience."IDIODInspired, influencedpatient, curious	Hears about CV model service and decides to contributeFinds educational section and learns about how to createConnects with CV community through Partner OrganizationsImage: Sees potential use of technical skills, appealing contributionWants to reinforce that their knowledge matches the needsSeeks advice from others who have created CV modelsImage: Sees potential use of technical skills, appealing contributionWants to reinforce that their knowledge matches the needsSeeks advice from others who have created CV modelsImage: Sees potential use of technical skills, appealing contribution"This is interesting, but I should also learn from 	Hears about CV model service and decides to contributeFinds educational section and learns about how to createConnects with CV community through Partner OrganizationsBuilds user data for CV model through everyday digital content useImage: Sees potential use of technical skills, appealing contributionWants to reinforce that their knowledge matches the needsSeeks advice from others who have created CV modelsRecognizes need for abundance of user dataImage: Sees potential use of technical skills, appealing contribution"This is interesting, but I should also learn from others with experience."Seeks advice from others who have created CV modelsRecognizes need for abundance of user dataImage: Sees potential use of technical skills, appealing contribution"This is interesting, but I should also learn from others with experience."Seeks advice from others who have created CV models"I need to find the right amount of user data to train this model on to help it score well on its Accuracy rating"Image: Sees potential use of train this from!"patient, curiouseager, appreciativeinquisitive	Hears about CV model service and decides to contributeFinds educational section and learns about how to createConnects with CV community through Partner OrganizationsBuilds user data for CV model through everyday digital content useCreates profile to gain access to submitting CV modelsTorusSees potential use of technical skills, appealing contributionWants to reinforce that their knowledge matches the needsSeeks advice from others who have created CV modelsRecognizes need for abundance of user dataDiscovers potential personal data to share; decides to provide more to foster trustThat sounds like a great way to help, and I trust who I heard about this from!""This is interesting, but I should also learn from others with experience.""I can learn from others with this process.""I need to find the right amount of user data to train this model on to help it score well on its Accuracy rating""If users know where I'm from, who I work for, how knowledgable I am, etc, it will help them see my model as worth trusting in."Toruspatient, curiouseager, appreciativeinquisitiveopen-minded, trusting	Hears about CV model service and decides to contributeFinds educational section and learns about how to createConnects with CV community through Partner OrganizationsBuilds user data for CV model through everyday digital content useCreates profile to gain access to submitting CV modelsSubmits CV model1000Sees potential use of technical skills, appealing contributionWants to reinforce that their knowledge matches the needsSeeks advice from others who have created CV modelsRecognizes need for abundance of user dataDiscovers potential personal data to share; decides to provide more to foster trustFinishes running validation algorithms in system, satisfied with results1000"That sounds like a great way to help, and I this from!""This is interesting, but I should also learn from others with experience.""I can learn from others with this process.""I need to find the right amount of user data to train this model on to help it score well on its Accuracy rating""If users know where l'm from, who I work for, how knowledgable I am, my model as worth trusting in.""I'm confident in this, but I need to monito successful it becomes."10000inspired, influencedpatient, curiouseager, appreciativeinquisitiveopen-minded, trusting accomplished, hopeful







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:



finding, being educated on, and using a CV model





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:



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)

Inuol Phului Il











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:





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"

free to do so"

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"

- Refinement after integration of Gate 3 empathy map insights:
- "From avoiding accessing and engaging with digital content whenever possible, to feeling completely
- "From imitating trusted digital engagement behaviours of others to genuine, independent, context-



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

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:

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.

"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/



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.





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

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):

someone needs this assistance:



• 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





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





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 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**:

Instagram
Dog, looking forward
Like Comm- ent Direct Message Man, standing hands in fort Liked by example.user1A My dog, being naughty, yet
"Designers Humor" designershumor
Like Comm-Direct Message Liked by aurorawonders
designershumor If we can thi Leonardo more View all 481 comments
jaysinthesun Joy, anger, sadn

Image of dog and dirt Image of dog and dirt 12345678910 Seve 12345678910 Seve adorable Suggestions For You adorable Suggested for you Image of woman and text Follow Image of woman and text Seve Seve Seve Seve Suggested for you Image of woman and text Follow Seve Seve Seve Suggested for you Image of woman and text Follow Seve Seve Seve Suggested for you Seve Suggested for you Image of woman and text Seve Seve Seve Seve Seve Seve Seve Seve Suggested for you Seve Suggested for you Seve Suggested for you Seve Seve Seve Seve <t< th=""><th></th><th>Q Search</th><th></th><th>Home Inbox Expl- ore vity</th><th>Acco- unt 15</th></t<>		Q Search		Home Inbox Expl- ore vity	Acco- unt 15
Image of dog and dit Men, side simon gartner11 Switch 12345678910 Switch 12345678910 Switch adorable Suggestions For You See All adorable Image of royou Follow Suggested for you Follow Image of woman and text Follow Image of woman and text Follow Switch Suggested for you Switch Suggested for you Image of woman and text Follow Switch Suggested for you Switch Suggested for you Image of day that would be greeeeat, thanks Switch Image of day that would be greeeeat, thanks Image of day that would be greeeeat, thanks			Actions Menu		
12345678910 Seve Suggestions For You See All 12345678910 Seve Follow adorable Suggestide for you Follow adorable Suggested for you Follow Image of woman and text Follow Follow Image of woman and text Suggested for you Follow Save Suggested for you Follow Image of woman and text Follow Follow Save Suggested for you Follow Save Follow Follow Image of woman and text Follow Follow Save Save Follow Save Save Follow Image of woman and text Follow Follow Save Save Follow Save Follow Follow Save Follow Follow Save Follow Suggested for you Follow Save Follow Follow Follow Save Follow Follow Follow Save Follow Follow Follow <th>Image of dog and dirt</th> <th></th> <th></th> <th>Man, side simon.gartner11 view of face Simon Gartner</th> <th>Switch</th>	Image of dog and dirt			Man, side simon.gartner11 view of face Simon Gartner	Switch
adorable Image of woman and text Image of woman and text Save Save Save Save Image of woman and text Save Save <th>1 2 3 4 5 6 7 8 9 10 and 945 others</th> <th></th> <th>Save</th> <th>Man. standing hands in front Suggested for you</th> <th>See All Follow</th>	1 2 3 4 5 6 7 8 9 10 and 945 others		Save	Man. standing hands in front Suggested for you	See All Follow
Actions and text Image of woman and text Save Save Color Color Image of woman and text Save Color Color Save Color Image of woman and text Save Color Color Save Image of woman and text Image of woman and	adorable			Woman holding baby, white shirt Suggested for you	Follow
Actions Follow Image of woman and text Follow Image of woman and text Follow Save C 2020 INSTAGRAM FROM FACEBOOK				artistfriend18 Suggested for you	Follow
Image of woman and text Follow Image of woman and text Suggested for you About the free start as Privacy - Terms - Locations - Top Accounts - Hashtags - Language © 2020 INSTAGRAM FROM FACEBOOK Image and 25,382 others and 25,382 others aback end of day that would be greeeeat, thanks Image and fear all wrapped up in a single post. Image and fear all wrapped up in a single post.			Actions Menu	Woman face, anile, baby face, amile Suggested for you	Follow
About from From From From S - Locations - Top Accounts - Hashtags - Language © 2020 INSTAGRAM FROM FACEBOOK	Image of woma	an		Woman face, smile, glasses Suggested for you	Follow
Save © 2020 INSTAGRAM FROM FACEBOOK and 25,382 others aback end of day that would be greeeeat, thanks uke ess, and fear all wrapped up in a single post.	and text			About - Help-Press - API - Jobs - Privacy - Te Top Accounts - Hashtags - Language	rms · Locations ·
and 25,382 others is back end of day that would be greeeeat, thanks Like Like Like Like Like			Save	© 2020 INSTAGRAM FROM FACEBOOK	
Ess, and fear all wrapped up in a single post.	and 25,382 others s back end of day that wou	uld be greeeeat, thanks			
Ess, and fear all wrapped up in a single post.					
	ess, and fear all wrapped u	ıp in a single post.	Like		



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

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:



"I want to overcome this and get my old life back!"

mage credit: Photo by Lisa Boonaerts on Unsplash

MARCIA BRENDE

Marcia is a senior market researcher at a tech firm and social media power user who recently lost 90% of her vision, resulting in a significant disruption to her life

WHO IS THIS?

54 years old, was absent from work for several months while adjusting to her condition and has been limited in her role at work ever since. She lives by herself in a suburban neighbourhood that is reachable by public transit.

GOALS?

-Wants to regain the depth and breadth of her social life online.

-Wants to regain the full scope of her role at work, requiring digital literacy.

-Wants to be able to adapt to her impairment without involving others or exposing her vulnerability.

HIGHLIGHTS

Marcia values her independence and reputation of being capable and assertive. She is a social media power user, relying on it for a significant portion of her social life, though her condition has reduced the frequency and quality of her social activity, and the number of different platforms she uses.

KEYWORDS

Disconnected, fearful of exposing vulnerabilities, hesitant to rely on others, independent, socially active within constraints, enjoys being relied on



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

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:

"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

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

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:

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

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)

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

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 2 (low fidelity)

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

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 3 (med. fidelity)

ort By:	What do these f	ields mean? MY CV
Model Name	DATE	Description
Corgi Describer2	JAN 11/21	Maecenas imperdiet ligula id sem malesuada aliquam. Sed condimentum

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

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

Meanwhile, Simon, who has good vision and frequents social media in his free time, would like to help users With the Alt-Context system, Marcia can now make a request for a contextual description of the visual media like Marcia, but isn't aware of their needs while using social media or motivated to learn about them

I was able to present the envisioned scenario for my project as a fleshed out short narrative video:

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

ALT-CONTEXT COLLECTIVE 17 Department 17 Department 10 Depa	And and all all and and

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

Simon sees the request and clicks it to view the post in guestion, write a description of what he sees in it and Once this request is made, other users, like Simon, will see the requests, and be able to tell that responding send it out. He receives "reputation points" for this activity and can publicly share this to gain social capital. to it will definitely help someone

Using this feature improves his empathy towards visually impaired people, as he thinks about how to describe Having gained the contextual information about the post, she is able to engage with it as effectively as users visual context to someone unable to see it themselves with good vision can without exposing her vulnerability to those in her social circle

I was able to present the envisioned scenario for my project as a fleshed out short narrative video:

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:

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:

	1	2	3	4	5	6	7	8	9	0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0
	0 0	• •	0 0	•	۰ 🔴	• •	••	••	• •	
	• •	• •	$\bullet \bullet$	$\bullet \bullet$	• •	$\bullet \bullet$	$\bullet \bullet$	• •	•	0
Ν	0	Ρ	Q	R	\$	т	U	v	W	Х
0	• •	• •	• •	• •	• •	• •	••	••	•	
	•	• •	••	••	• •	••	0 0	• •	••	0
	• •	$\bullet \bullet$	$\bullet \bullet$	• •	•	۰ 🌒	•	• •	•	
A	В	c	D	E	F	G	н	1	L	к
0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
0 0	• •	0 0	0	0	• •	••	••	• •	••	0
0	• •		••	• •			• •	0	•	٠

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.

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:

::		· A-C
・:: ・・: ・・: ・・: :: Alt - Context	`∶∴…∵∵∵…∷ Alt-Ctext	• • • A - C
· : : · · · · : : · · : alt-context	· ⋮ ⋮ ¨:⋮ ` ∷:: alt-ctext	• a-c
`::''`:':'``.::' alt-context	`::`.`:``.:: alt-ctext	• •• • • a - c
`∶:'□'':':'':':' Alt⊡Context	` ∶ : [:] □ [`] : [:] ·∷:: Alt⊡Ctext	. — V — C
・:・:・:・::・ Alt ー Context	`::'='':'':' Alt=Ctext	••• A C
` ∶ :'□'':':''·∷:' alt□context	` ∶ :'□'':'`∵.::' alt□ctext	·—…a—c
`∶:'□'':':''·`.: alt□context	`::''':'``::' alt=ctext	·⊡·· a□c

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.

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:

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.

Gate 5

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

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 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

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.

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:

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):

Instagram

Overlay Features

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.

< New Po:	ost	Share		<			Alt 1	Text		D	one
S10 ***	•	<	Advanced Settings	`						-	
Spent the day exp	ploring 😑	You can acces	s these settings later by going to the se top of your post.	5		A hiking on a be	ı trail li autiful	ned wit day.	th sunflo	wers	
Share Only With Favorites		COMMENTS		E SEL V							
Tag People		Turn Off Cor	nmenting	→[Alt text	usually	has few	er than '	100 chara	octers.	98
Add Location		ACCESSIBILITY		qv	v e	r	t	у	u i	0	р
Facebook	-	Write Alt Tex	t / >	a	4	d	f	n h	1 i	k	
		Alternative text impairments. Alt	describes your post for people with visual text will be automatically created for your	-	<u> </u>	<u> </u>				- L	-
Twitter		post or you can	chaose to write your own.	÷	z	х	cΝ	/ b	n	m	\otimes
Tumbir		\bigcirc		123			SDE	ice	-	@	#
Advanced Settings >											

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.

Key Activities Key Partners -Abundance of users with acute vision Instagram providing "Alt-Context" descriptions of each Instagram post that has requests. -Database server provider -Canadian National Institute for the Blind -Ease of use of organizing/prioritizing features on Alt-Context app. -Maximize effective use of users' time in contributing "Alt-Context". Key Resources -Instagram posts & visibility of "Alt-Context" features to large user group.

Cost Structure

-Not-for-profit -Pro-bono marketing parterships with Instagram and CNIB (benefactors of service being widely known)

Value Propositions

-Descriptions of visual context attached to images, gifs, videos, etc, for visually impaired users to perceive & improve comprehension.

-Incentives for non-visually impaired users to provide contextual descriptions for rewards.

-Opportunities for social relationships, trust, empathy to emerge between visually impaired users and those with acute vision.

-Builds resources for visually impaired users to self-sufficiently improve their digital literacy in a visual social media space.

Customer Relationships

-Partnership with Instagram for promotion of service in exchange for improvement of experience and greater attraction/retention of users.

Channels

Core Instagram experiences augmented with basic background info, visible "Alt-Context" descriptions & requests for them, shareable achievements for providing this.

Separate app accessed through IG account, used to manage the activity of requesting & responding

Revenue Streams

-Ad revenue from online platform -Sponsorships from organizations (Instagram, CNIB) who are benefactors from this service

Customer Segments

Visually impaired Instagram users seeking better engagement

Intagram users with good vision seeking to:

-aid a group in need -showcase social values receive social capital

Instagram itself, seeking to:

-improve their product's experience for a large segment of users

-attract and retain more users from this segment on the greater strength of this experience

Gate 5

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

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:

Theoretical Moderate to Severe Visual Impairment (MSVI) Market Size

Theoretical Instagram MSVI & Blind User Base

Actual Instagram over age 45 user base 140 million

Actual MSVI over age 50 user base 26.110 million

Gate 5

Branding development
Hi fidelity prototype
Refining system map
Business model + value proposition defining
Comparative market analysis
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:

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:

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:

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:

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.

Gate 6

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

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.

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

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:

Alt Context Requests **Button on Posts**

Alt Context Mode Button Notifications

Responses displayed on image in AC mode

username_example1

Donec id purus nec libero dictum porttitor eget u est. Proin vitae tincidunt purus. Mauris pellentesque sed nisl non ultricies. In ut gravida usto. Vestibulum consequat erat sit amet saple olutpat, vitae fermentum odio condimentum.

Etiam velit ipsum, faucibus vitae maximus vitae, sagittis vitae magna. Fusce finibus ultrices nulla, ut ultricies ante. Nunc nec est sed leo aliquam interdum nec ac leo. Etiam neque libero, dignissir tricies et, bibendum nec turpis.

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

(2) merrume_receptet Al auto-generated summary of most common responses 00000 P E Internation das solution lauget in dens sander site sei provinte operationale que les solu-rebor fectuell blander. Das solutionelle production (1) usemane, example1 Alt Context Response writing process 0.00

Alt Context Responses

Response Classifiers

.~t

Overlay Features on Instagram

- Al 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

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

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

Date - User R.P. 🕑 💬 R.P. Post 30 minutes , 16 × 11 10 minutes (1) 28 × 11 (5) 45 minutes 8 45 9 11 5 2 hours equ 🔘 33 🔁 8 🔅

•p

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

Preferred Source Icon

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

Gate 6

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

PRODUCT AFFORDANCES

Logos designed to imply their function

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

Write a description of what is happening in this image/video/gif, who is and what is present, what location(s) are depicted, etc, so that someone who cannot see it can completely understand the context.

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

Gate 6

Refined branding
Project descriptions
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.

SOURCES

[1] ABA Commission on Disability Rights. (2019, Jan 7). Implicit biases & people with disabilities. Retrieved from https://www.americanbar.org/groups/ diversity/disabilityrights/resources/implicit_bias/

[2] Ackland, P., et al. (2017). World blindness and visual impairment: despite many successes, the problem is growing. Community eye health / International Centre for Eye Health, 30 (100), pp. 71-73.

[3] Adetoro, N. (2016, Oct). Information access for the visually impaired in the digital age. Retrieved from https://www.researchgate.net/publication/ 324455245_INFORMATION_ACCESS_FOR_THE_VISUALLY_IMPAIRED_IN_THE_DIGITAL_AGE.

[4] Bhojwani, P. (2019, Sept 30). Instilling trust in AI. Retrieved from https://developer.ibm.com/technologies/data-science/articles/instilling-trust-in-ai/.

[5] Browne, N. (2018, Sept 28). Understanding the difficulties faced by people with sight problems. Retrieved from https://dvsadigital.blog.gov.uk/ 2018/09/28/understanding-the-difficulties-faced-by-people-with-sight-problems/.

[6] Bush, C. (2020, Feb 28). The importance of inclusive design in an ever-digitalized world. Retrieved from https://www.brandquarterly.com/ importance-inclusive-design-ever-digitalised-world.

[7] European Commission. (2019, Apr 8). Artificial intelligence: commission takes forward its work on ethics guidelines. Retrieved from https://ec. europa.eu/commission/presscorner/detail/en/IP_19_1893.

[8] Hopfe, A. (2011). The culture of blindness. Retrieved from http://www.blindcanadians.ca/publications/cbm/14/culture-blindness.

[9] Johnson, L. (2019, Apr 5). Making the web more accessible using machine learning. Retrieved from https://www.myplanet.com/downloads/ MLAccessibility2019.pdf.

[10] McKenna, M. Machines and trust: how to mitigate AI bias. Retrieved from https://www.toptal.com/artificial-intelligence/mitigating-ai-bias.

[11] Kulkarni, M. (2019). Digital accessibility: challenges and opportunities. IIMB Management Review. 31(1), pp. 91-98.

[12] Lehrer-Stein, J. (2020, Jan 17). What it's like to use Facebook when you're blind. Retrieved from https://www.nytimes.com/2020/01/17/opinion/ sunday/facebook-facial-recognition-accessibility.html.

[13] Life of a blind girl. (2019, Apr 3). Retrieved from https://lifeofablindgirl.com/2019/04/03/how-accessible-is-social-media-if-you-have-a-visual -impairment/.

SOURCES

[14] Manyika, J. & Bughin, J. (2018, Oct 15). The promise and challenge of the age of artificial intelligence. Retrieved from https://www.mckinsey.com/ featured-insights/artificial-intelligence/the-promise-and-challenge-of-the-age-ofartificial-intelligence#.

[15] Manyika, J., Silberg, J., Presten, B. (2019, Oct 25). What do we do about the biases in AI? Retrieved from https://hbr.org/2019/10/what-do-we-do-about-the-biases-in-ai.

[16] The OrCam Blog. (2020, Sept 24). Associations and organizations that help people who are blind and visually impaired. Retrieved from https://www.orcam.com/en/blog/associations-and-organizations-that-help-people-who-areblind-or-visually-impaired/.

[17] McDonnall, M. C., Sui, Z. (2019). Employment and underemployment rates of people who are blind or visually impaired: estimates from multiple sources. Journal of Visual Impairment & Blindness. 113(6), pp. 481-492.

[18] Media Smarts. Digital literacy fundamentals. Retrieved from https://mediasmarts.ca/digital-media-literacy/general-information/digital-media-literacy-fundamentals.

[19] Mihajlovic, I. (2019, Apr 25). Everything you ever wanted to know about computer vision. Retrieved from https://towardsdatascience.com/ everything-you-ever-wanted-to-know-about-computer-vision-heres-a-look-why-it-s-soawesome-e8a58dfb641e.

[20] Morris, S., et al. (2018, Nov 28). A demographic, employment and income profile of Canadians with disabilities aged 15 years and over, 2017, Statistics Canada: Canadian survey on disability reports. Retrieved from https://www150.statcan.gc.ca/n1/pub/89-654-x/89-654-x2018002-eng.htm.

[21] Polyakov, S. et al. (2014). The Noun Project. Retrieved from https://thenounproject.com/.

[22] Renaissance Learning Inc. (2019, Feb 2). What is digital literacy and why does it matter? Retrieved from https://www.renaissance.com/2019/02/ 08/blog-digitalliteracy-why-does-it-matter/.

[23] Shaomei, W. (2016, Apr 4). How blind people interact with visual content on social networking sites. Retrieved from https://research.fb.com/blog/ 2016/04/how-blind-peopleinteract-with-visual-content-on-social-networking-sites/.

[24] Statista. (2021). Retrieved from https://www.statista.com/statistics/325587/instagram-global-age-group/

[25] Steffens, W. (2020, Jan 28). Insights from usability testing with visually impaired users. Retrieved from https://www.fabrique.com/blog/2020/1/ insights-usability-testing-visuallyimpaired-users/.

SOURCES

[26] Westgaard, C.S. (2017). ICT barriers in job-application websites. Masters thesis in universal design of ICT. Oslo and Akershus University College of Applied Sciences, Oslo, Norway.

[27] Wu, Y. (2018, Oct. 11) Sight-impaired people want to use technology but are excluded by cost and accessibility – new research. Retrieved from https://theconversation.com/sightimpaired-people-want-to-use-technology-but-are-excluded-bycost-and-accessibility-new-research-103882.

