

Going back for the Future

Harish Tella



Setup

Original Project Proposal

“...a crowd-sourced documentary app that helps people create, take in, and pass down personal stories involving technologies of the past.”

Users will be able to navigate the app in a variety of ways allowing them to form a story-by-story understanding of the technosocial landscape of past eras.

Motivation

The technology and communication landscape is changing at a rate faster than ever.

As these changes in technology amplify some of our abilities and weaken others, it is important to preserve these stories so we can know where we have come from and direct where we head next.

Problems to be addressed

“..creation of an interface and interaction scheme that elicits rich stories from users in an automated way.”

“...creation of an interface that allows the user to go through stories in an inspiring manner”

Persona

Steve the Lurker

Software Engineer

"I love watching the cool stuff people are doing on Youtube. I wish I could do it too."

DEMOGRAPHICS

36 years old,
lives alone in
his own
condo

Lives in a
hip part of
the city

Has an older
car, but most
often takes a
bike to work

BEHAVIORS

Likes to share
cool things he's
found on the
web with friends
and girlfriend

Likes to find and
subscribe to
unique channels
on youtube

Reads reddit
to learn
about new
things

ATTITUDES

Any issue can
be solved if you
understand the
problem well
enough

Seen so many
tech changes,
everything feels
like the same

People who
are able to
market
themselves
do well

NEEDS/ CHALLENGES

Needs a
way of
being
creative

Bored
outside of
work

Doesn't feel
like he is
growing

GOALS/ MOTIVATIONS

To build an
exciting life
outside of
work

To share
what he has
seen and
done

To get his
name out
there

HOW CAN WE HELP?

Offer an
original way
of
entertainment

Provide a
creative
outlet

Give value
to his past
experiences

Cant seem to
force himself to
make his own
website or
content

Scenario - Current

After an exhausting day of work, Steve plops down on his couch browsing the web while dinner gets warm. He would like to do something fun and creative, but it feels hard for him to get over the hump of starting one of the million projects that have been on his mind. He starts to browse Reddit. This leads him to a Youtube video. This in turn leads to him clicking another recommended video and then another. Steve knows where this night is likely to lead. He is going to end up spending hours going down some Youtube rabbit hole, or he is going to vegetate to some show on Netflix.

He wishes there was something to knock him out of this funk—something to bring out his creative energies and the cool stuff he has to share with the world. He has started half a dozen video projects, but he has never completed them. He had some original ideas, but somehow he always second guessed whether anyone would actually care. Everytime he discovers a cool youtube video or channel, he winces inside knowing that he could be doing that.

Now the inertia from not having done something for so long and the pressures from work make it harder and harder to jump back in. Much later that night, after passing the night exactly how he imagined it, Steve shuts off his devices feeling like he's again wasted the day. He dreads the thought that tomorrow this whole experience is likely to repeat itself.

Scenario - Ideal

After an exhausting day of work, Steve plops down on his couch browsing the web while dinner gets warm. He follows a link from Reddit to arrive at our site and watches a fun and inspiring story about a guy who used to write letters to people to buy their used video games in the era before the internet. Curious about this new video platform, Steve decides to view another video. This time he sees a video of someone interviewing a person who used to run a huge CD shop in NYC in the early 90's. Steve quickly realizes that all of these stories have a regular format to them, and they are all about our relationship to past technology, methods, and places. He also sees that this is a platform for creating and sharing these types of stories.

Excited about the possibilities, Steve downloads the app to his phone. He opens it and selects the "record a story" feature. He pauses for a second and thinks of a story that he's been wanting to share for a while now—one about a car meetup that happens in his hometown. After a few attempts, Steve is satisfied with his recorded story and decides to submit it. He pauses for a moment and realizes he's actually creating again and now people are going to see his work. Feeling proud of his accomplishment, he goes back into the app and grabs a link to his video to send his friends. Now that he's made one video, it's onto the next. Steve thinks about what other stories might make sense in this app. He thinks of his friend Mark who collects old video game magazines and his buddy Mike who has been running a hifi audio shop since the 70s. He could interview them.

Now, with his head full of possibilities, Steve can't sleep because he sees months of creative projects that he can easily do because of the structure of this app. Also, he knows his work will reach people who will appreciate it—again because of our app.

Final achievements at a glance

Goal: "...creation of an interface that allows the user to go through stories in an inspiring manner"

Delivered Solution:

Going Back for the		A story
A place	Future	
Friends	Internet	Fun
	How to do	Show a thing
Smart Phone	Social Media	Family
Work	Computers	A person
⇌	How to do	

Goal: "...creation of an interface and interaction scheme that elicits rich stories from users in an automated way."

Delivered Solution:

What kind of story do you want to create? <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Show something	Show a Place	Introduce a Person
A device	One that doesn't exist now	A friend
A photo	That I go to	Someone I met
Show how to do something	Tell a story	Something else
An old way		Free form

Iterative Process

Initial Thinking

I began with the following elements in mind for solving my design problems.

For eliciting rich stories from users in an automated way:

- Showing sequences of prompts
- Giving story templates
- Prompting with pictures or videos
- Triggering memories with **archived internet content**
- Free association

For giving the user an inspiring way to go through stories:

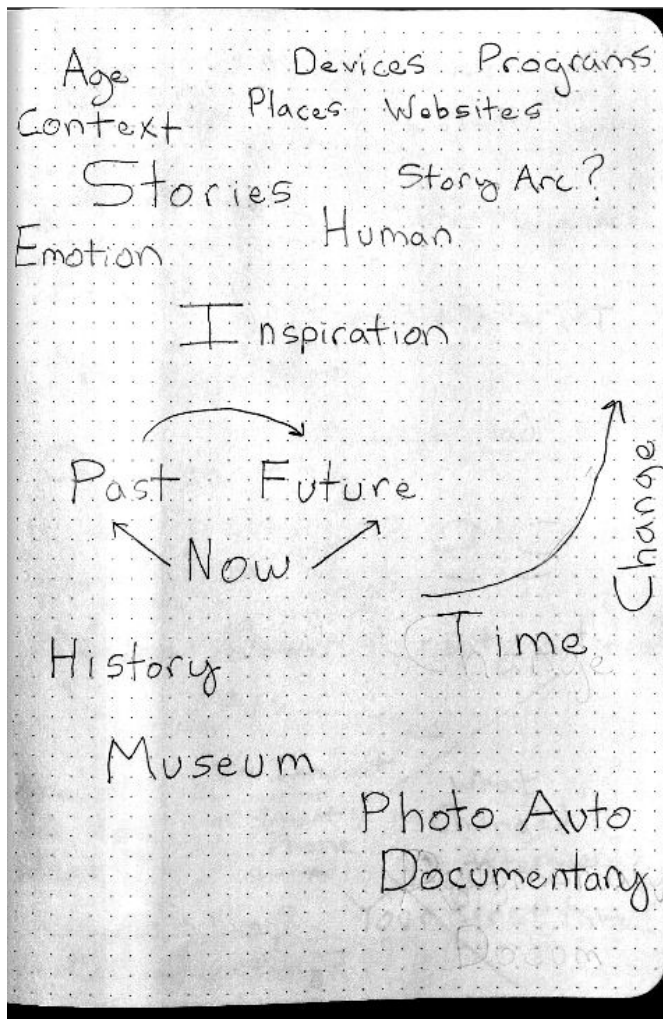
- Browsing by year of the story,
- Browsing by the technology involved
- Browsing by the age of the storyteller at the time of their story

Search Results for Jan 01, 1996 - Jul 29, 2008					
2000	2001	2002	2003	2004	200
73 pages	685 pages	154 pages	61 pages	205 pages	910 pa
Feb 29, 2000 *	Jan 18, 2001 *	Jan 23, 2002 *	Feb 02, 2003 *	Jan 03, 2004 *	Jan 01, 2005 *
Mar 01, 2000 *	Jan 19, 2001 *	Jan 24, 2002 *	Feb 04, 2003 *	Jan 13, 2004 *	Jan 01, 2005 *
Mar 01, 2000 *	Jan 19, 2001 *	Jan 24, 2002 *	Feb 05, 2003 *	Jan 21, 2004 *	Jan 02, 2005 *
Mar 02, 2000	Jan 19, 2001 *	Feb 06, 2002 *	Feb 08, 2003	Jan 26, 2004	Jan 02, 2005
Mar 03, 2000	Jan 19, 2001 *	Feb 22, 2002 *	Feb 14, 2003 *	Jan 29, 2004	Jan 03, 2005
Mar 04, 2000	Jan 19, 2001 *	Feb 23, 2002	Feb 15, 2003	Feb 08, 2004 *	Jan 05, 2005
Apr 07, 2000 *	Jan 19, 2001 *	Mar 31, 2002 *	Feb 17, 2003 *	Feb 11, 2004	Jan 06, 2005
Apr 08, 2000	Jan 19, 2001 *	Apr 02, 2002	Feb 17, 2003 *	Feb 15, 2004 *	Jan 06, 2005
Apr 09, 2000	Jan 19, 2001 *	May 23, 2002 *	Mar 24, 2003 *	Feb 18, 2004 *	Jan 07, 2005
May 10, 2000 *	Feb 01, 2001	May 25, 2002	Mar 28, 2003	Feb 25, 2004 *	Jan 07, 2005
May 10, 2000 *	Feb 24, 2001 *	Jun 02, 2002	Mar 29, 2003	Feb 27, 2004 *	Jan 07, 2005
May 10, 2000	Feb 26, 2001 *	Jun 04, 2002 *	Apr 02, 2003	Mar 06, 2004	Jan 08, 2005
May 10, 2000	Mar 01, 2001	Jun 05, 2002	Apr 03, 2003 *	Mar 25, 2004 *	Jan 09, 2005
May 10, 2000	Mar 01, 2001 *	Jul 02, 2002 *	Apr 09, 2003	Mar 31, 2004 *	Jan 09, 2005
May 10, 2000 *	Mar 01, 2001 *	Jul 03, 2002 *	Apr 21, 2003 *	Apr 01, 2004	Jan 11, 2005
May 11, 2000	Mar 01, 2001	Jul 04, 2002 *	Apr 23, 2003	Apr 03, 2004 *	Jan 14, 2005
May 11, 2000	Mar 02, 2001	Jul 07, 2002 *	Apr 28, 2003	Apr 03, 2004 *	Jan 15, 2005
May 11, 2000 *	Mar 31, 2001 *	Jul 09, 2002 *	May 01, 2003	Apr 04, 2004	Jan 15, 2005
May 11, 2000 *	Mar 31, 2001 *	Jul 20, 2002 *	May 12, 2003	Apr 07, 2004	Jan 15, 2005
May 11, 2000	Apr 01, 2001 *	Jul 26, 2002	May 27, 2003	Apr 26, 2004 *	Jan 16, 2005

Initial Thinking

Here is the start of some sketch thinking.

With the big vision of this project in mind, it was a challenge to reduce it down to what it will actually look like and be structured like.



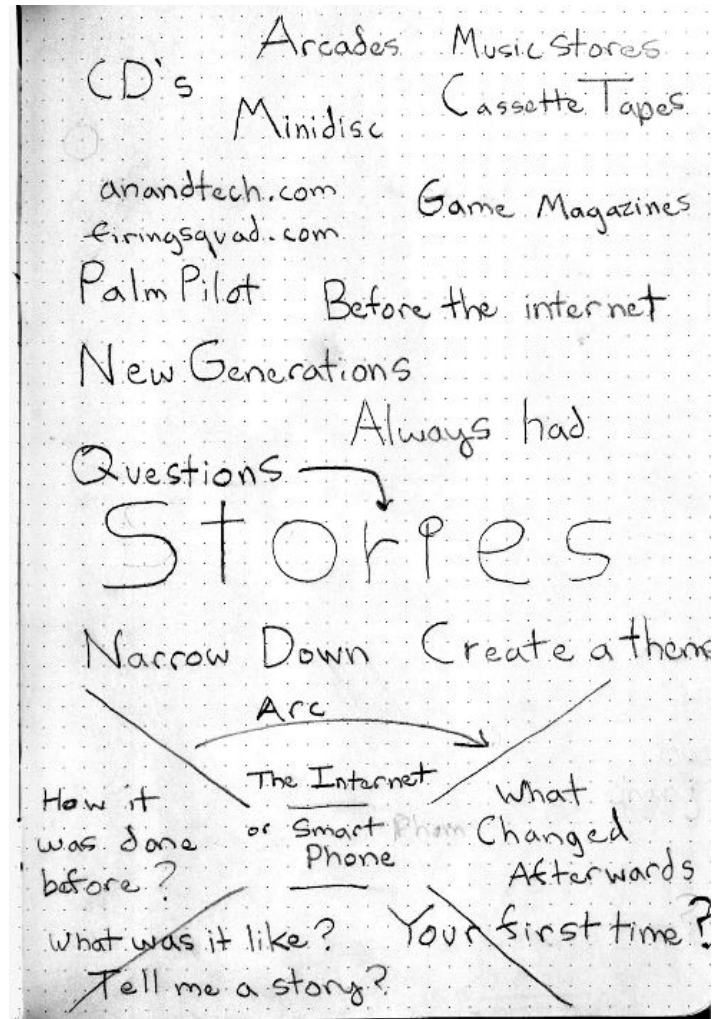
Initial Thinking

Here is a continuation of the previous sketch thinking.

What I realized at this point was that if this project was going to use questions to produce stories then these stories needed some kind of arc.

A question posed by a friend inspired me, "What about asking people about the first time they used the internet?" This led me to the arc at the bottom of this page.

The idea here is to get people to talk about how something was before some critical technology, like the internet or smart phone, and then talk about what came afterwards, what were the impacts.



Initial Thinking

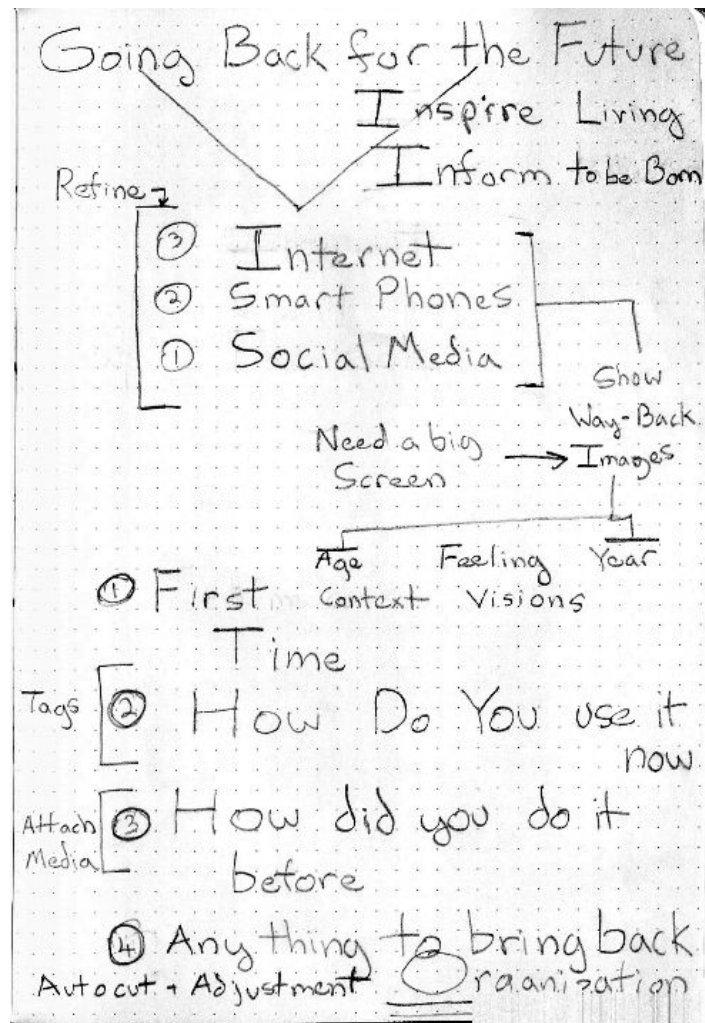
At this point I thought of a title for this project. And I landed on some structure for the stories and how they could be indexed.

The user would first select one of three pivotal technologies: The Internet, smartphones, or social media. They would then select their age at the time of their story and the year. The app would inspire them with pictures from that era, and the user would then answer the four questions at the bottom of this sketch.

There would also be the ability to tag stories and attach media to stories after they had been created.

Users would find stories by browsing in a number of ways: by tags, by pivotal technology, by age of the storyteller, or by year of the story.

It's also worth mentioning that at this point the app was meant to be a sort of hybrid web-app/smartphone app.



Realizing initial concept

Now with a basic structure in place, I went about realizing it.

Version 1.0

Pivot Points

Internet

Social
Media

Smart
Phones

Time Period

Age of
storyteller

Year of
story

Questions (video segments)

Tell me about
you first time
you used X?

What is
something
you use X for
now?

How did you
go about
doing that
before X?

Is there something
you would bring
back from the old
way of doing that?

Realizing initial concept

First I made a set of user stories built on the persona previously introduced.

User Stories - Steve the Lurker -- old

User Story Card

As a lurker I want to watch stories tagged about a particular product because I am interested in that product

User Story Card

As a lurker I want to see what story tags are available because I am curious if there is anything else that will interest me.

User Story Card

As a lurker, I want to star stories that connect with me so that other people will notice them and hopefully connect with them too.

User Story Card

As a lurker I want to try my hand at recording a story of my own because I have something I want to share

User Story Card

As a lurker creating a story, I want to see websites and images from the year of my story so that my memory gets jogged while i tell it.

User Story Card

As a lurker, i want to be able to record videos for my story on my phone so that I can move freely while I record.

User Story Card

As a lurker I want to view my recently recorded video because I want to make sure my story came across the way I intended.

User Story Card

As a lurker I want to edit my recently recorded video because I want to only keep the best part for sharing.

User Story Card

As a lurker, I want to add images and links to my story so that other people can see clearly what I'm talking about.

User Story Card

As a lurker, I want to tag my recently created story so that other people looking for related things find it.

User Story Card

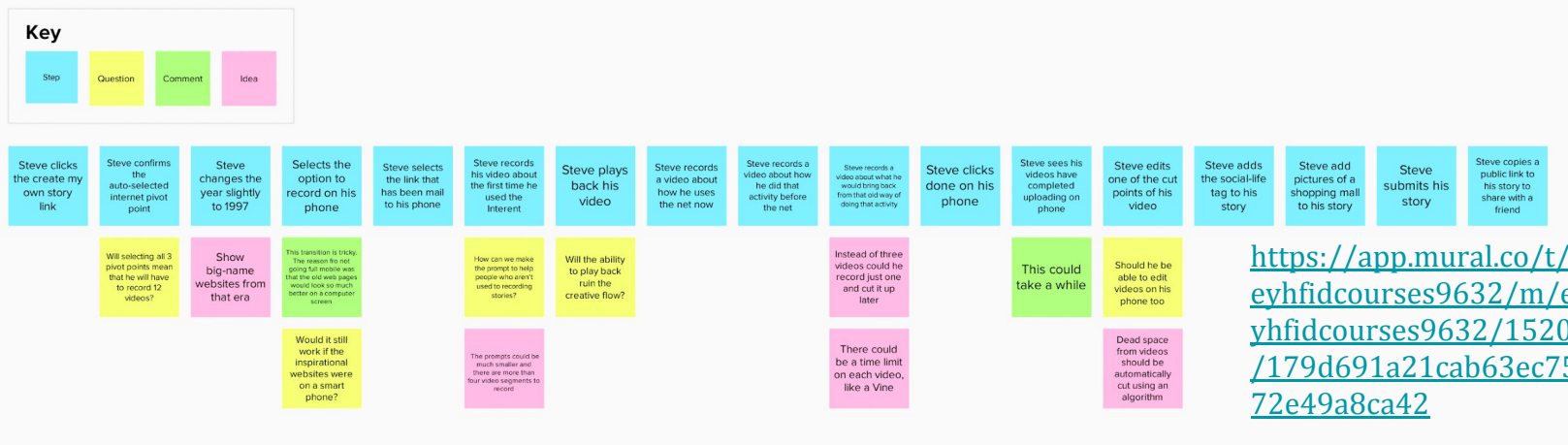
As a lurker, I want to get a public link to my story so I can share it with my friends

Realizing initial concept

Then I created a scenario map to identify areas of the concept that were unclear or ripe for experimentation. Please see the higher res version in Mural–linked below.

Scenario - Steve the Lurker

After a day of work, Steve relaxes at home on his couch browsing the web while dinner gets warm. He follows a link from Reddit to arrive at our site and watches a fun and inspiring story about a guy who would write letters to people to buy their used video games in the era before the internet. This reminds Steve of a great story of his own, and now he wants to record and share it.



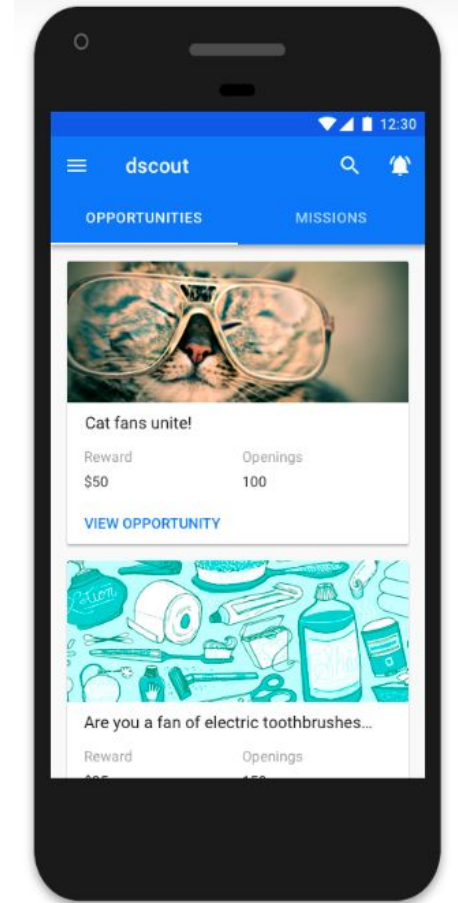
<https://app.mural.co/t/ericsonbentleyhfidcourses9632/m/ericsonbentleyhfidcourses9632/152070612228/179d691a21cab63ec75259f46da0072e49a8ca42>

Version 2.0 - Inspired by DScout

At this point something did not feel quite right. I was fortunate to encounter at this same time a user research application called DScout.

DScout allows researchers to create research studies and push them out to DScout users. A matched DScout user will participate in a study by answering prompts with recordings of themselves and recordings of things in their life. This led me to a number of key insights.

- Videos of just people talking might be boring. Get people to show you things using their phone.
- Don't worry about inspiring people with pictures and old websites. People who are excited and have something to show will want to show it.
- The app should be completely based on a mobile platform.



Version 2.0

This new direction of thinking led to a new entry point for creating a story in my project.

The user can select from one of six story types. They can also select from a microgenre within these story types if they see one that fits. These microgenres will be increased and developed over time similar to how it is done on Netflix.

What would you like to do?

Show us a thing.	Show a place.	Introduce us to a person.	Show us how to do something	Tell a story.	Something else
A device	One that doesn't exist now	A friend	A process	Something that happened to me	Free form
A photo	That I go to	Someone I met	A old way of doing something.	Something that happened to someone else	
	Take us on a walk		A comparison		

Version 2.0

Next, based on the story type selected, the user will be asked a series of questions. They will record a video response to each of these questions as story segments.

The user is also free to divide time up between these segments as they wish, but the total story time will be 6 minutes.

All of this structure is imposed to provide organization and uniformity for the user browsing through these stories and looking for common threads and inspiration.

These six categories and questions were thought of intuitively, but they will likely be adjusted in later stages of development

Structured Questions

6 minutes

Show us a thing.	Show a place.	Introduce us to a person.	Show us how to do something	Tell a story.	Something else
What is it	What's the place	Who is this person	What are you doing	Who, Where,	5 minutes unstructured
Why is it special	Why is it special	Why are they special	What is special about it	What happened	Fears and concerns
How was it changed by one of the big 4	How was it changed by one of the big 4	How were they impacted by one of the big 4	Show us	Any other thoughts?	Hopes for the future
Fears and concerns	Fears and concerns	Fears and concerns	How was this way impacted by one of the big 4		Any other thoughts?
Hopes for the future	Hopes for the future	Hopes for the future			
Any other thoughts?	Any other thoughts?	Any other thoughts?			

Version 2.0

Finally, after recording their story. The user will select one of 4 technological pivot points to categorize it.

These pivot points were selected because of their wide sweeping impact on society and the way we do things.

More detailed tagging was avoided because we wanted to emphasize the wide sweeping impact of each of these technologies and not other areas of interest. In addition the recommendation system will allow users to get more of what they want without tagging. More on this later.

Which of these technologies are responsible?

Computers

Internet

Social
Media

Smart
Phone

User Stories - Steve the Lurker

Version 2.0

Now with the app and story prompting structure in mind, I created this final set of user stories that I set about to prototype.

User Story Card

As a lurker I want to want ta watch a random story.

User Story Card

As a lurker, I want to watch a random story within a certain category.

User Story Card

As a lurker, I want to be able to create a story similar to one I have just seen so that I dont have to figure out the correct categorization and tagging for my story.

User Story Card

As a lurker I want to be able to request more or less of a certain type of story so that random stories are more in line with my interests.

User Story Card

As a lurker I want to see a listing of my recorded stories so that I can manage them.

User Story Card

As a lurker I want to record my own story.

User Story Card

As a lurker I want to be able to view my story before I submit it so that I know exactly what I am putting out there.

User Story Card

As a lurker I want to re-record parts of my story before submitting it so that I can remove mistakes.

User Story Card

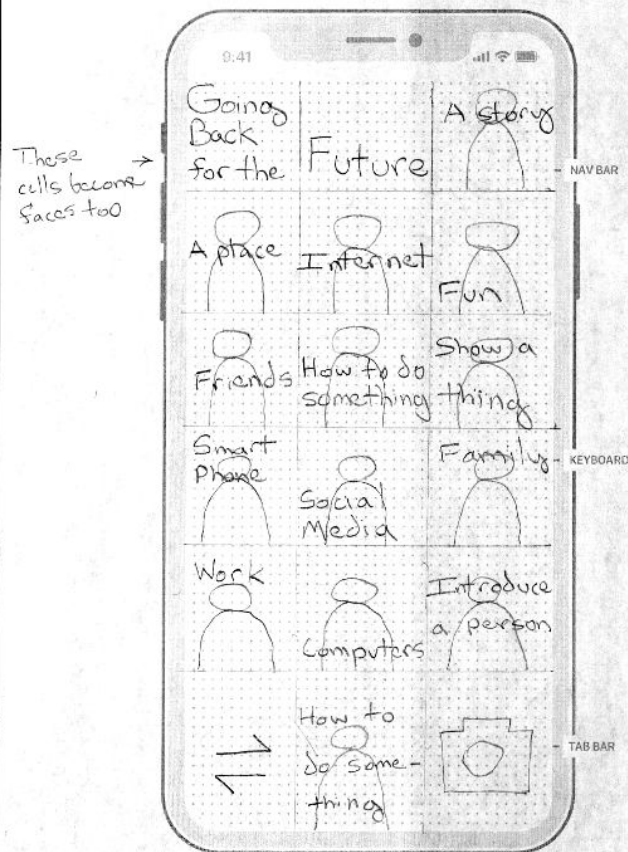
As a lurker, I want to tag my recently created story so that other people can more easily find it.

User Story Card

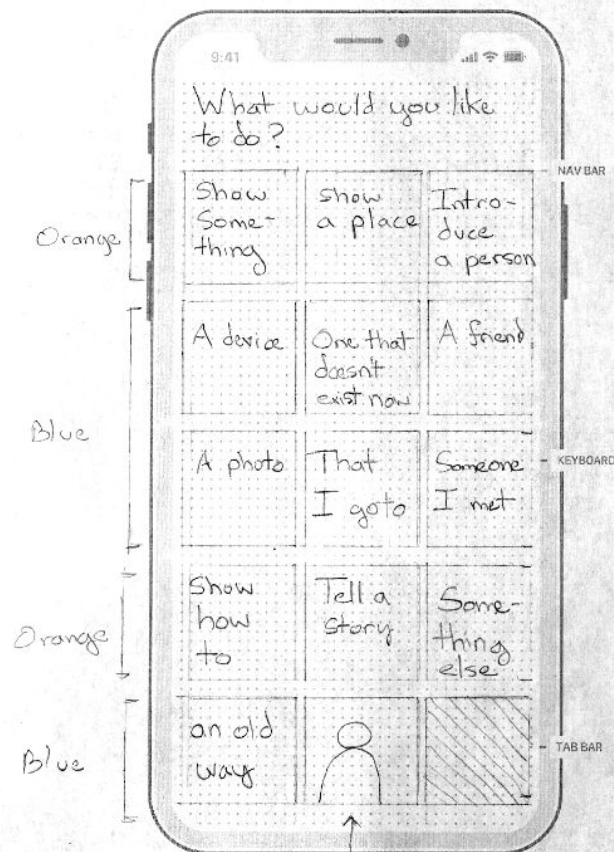
As a lurker, I want to get a public link to my story so I can share it with my friends

Paper prototypes

Home Screen

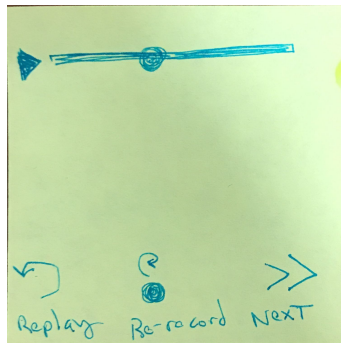


Create Story

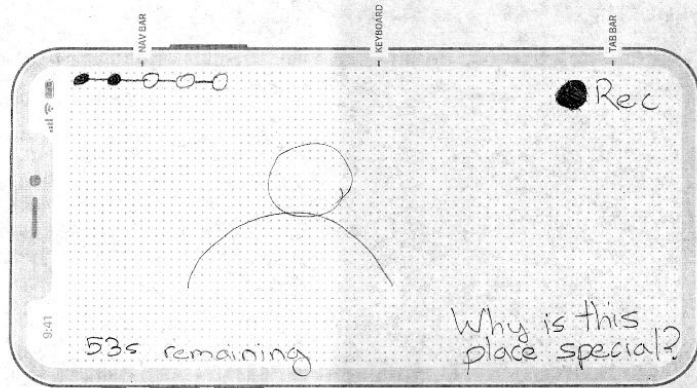


tile slips back unless tapped twice

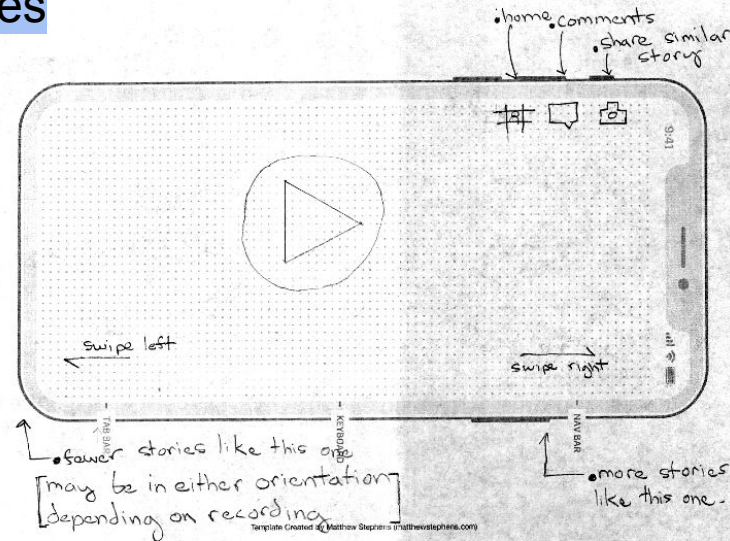
Controls for finished story segment



Recording story segment



Browsing stories



Electronic Prototypes

<https://invis.io/QTHTTTPC2G7>

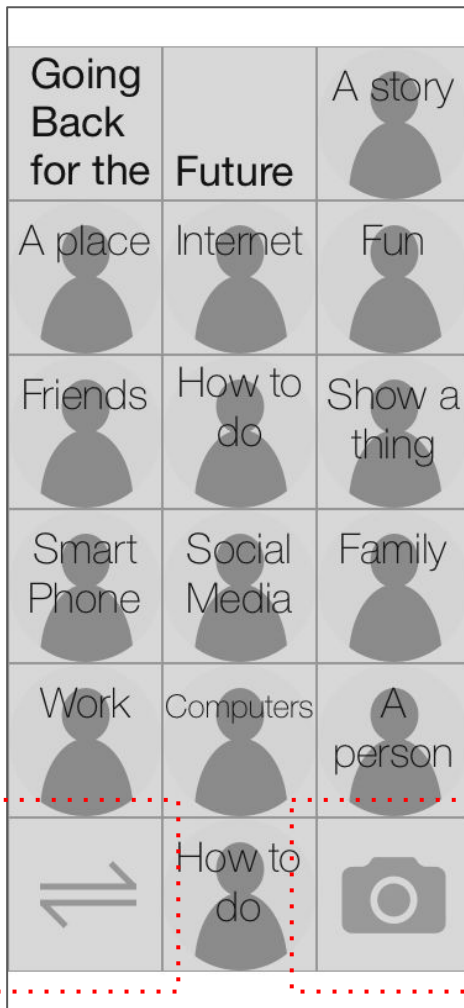
Design Choices

Home Screen

The user is immediately presented with story thumbnails—mostly faces of people. They will be overlaid with labels determined by the story type.

This provides an effortless way to jump into a story and emphasizes the feeling of chance discovery.

Tapping this icon takes the user to story browsing. The swipe-left swipe-right characteristic of story browsing is emphasized here with this icon.

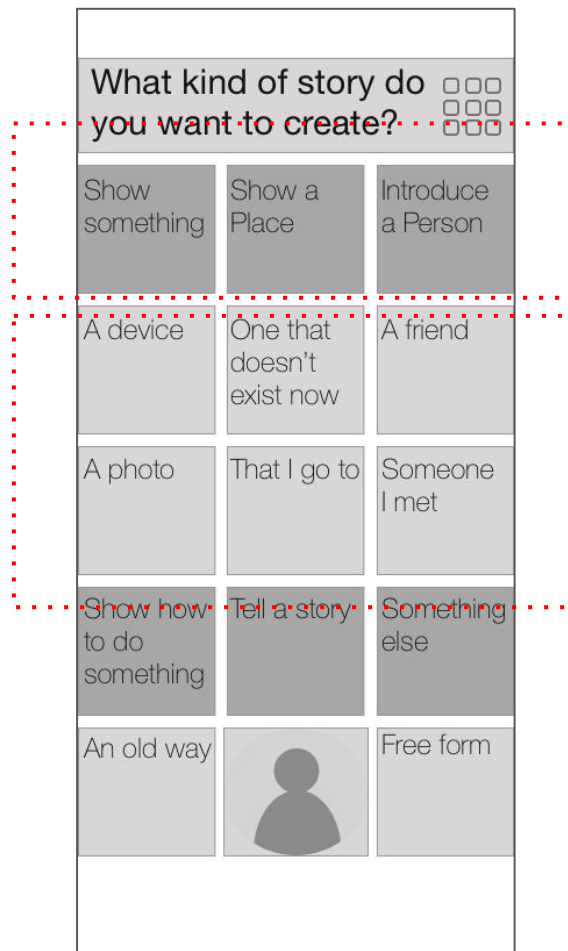


Tapping this icon lets the user create their own story

Create a story screen

The user selects one of these tiles to kick off their story creation. The darker colored tiles represent the six major story categories while the lighter tiles represent microgenres within the larger categories. Different microgenres show up each time this page is encountered. This is to emphasize the playful discovery nature of creating these stories.

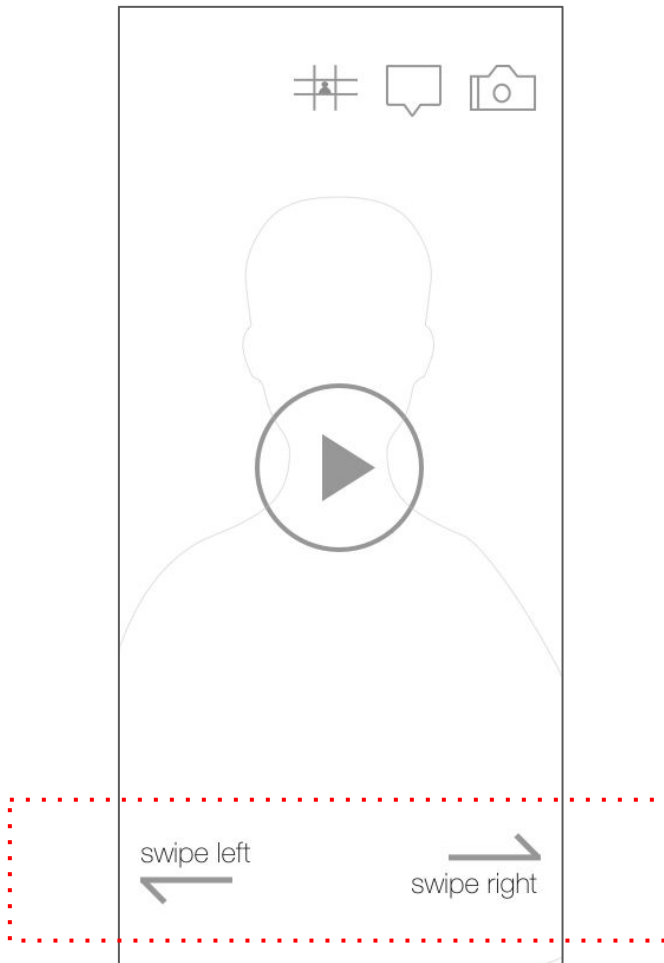
If a major story category is held, a full listing of microgenres within will be displayed. However making this affordance perceptible remains for a later prototype.



Story Browsing

After a user watches a story, they can swipe left to demote stories like this one in the offerings of the recommendation engine and swipe right to promote it. After either action a new story will be displayed.

There are no story ratings. This swipe data alone will be enough to provide users with stories they enjoy and find inspiring. I opted to keep the exploration process as simple as possible.



Designing with Principles

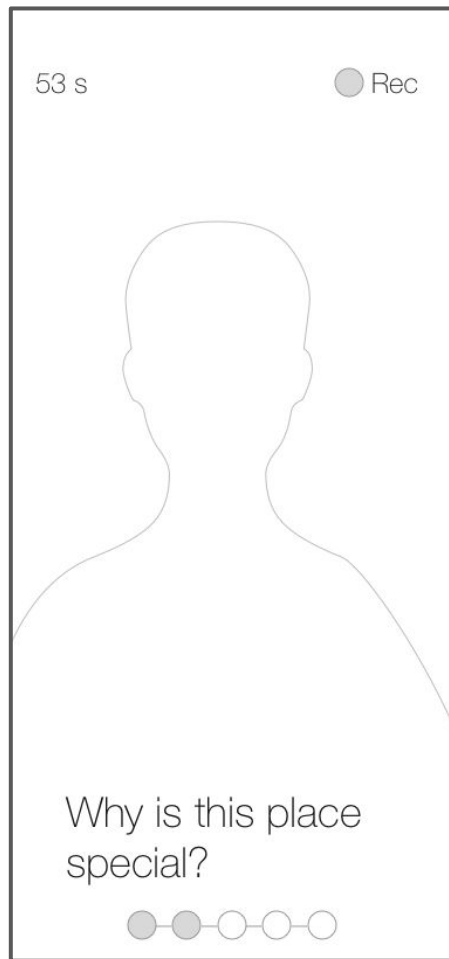
Justifications

Design Principle: Constraints

Where It Appears: While recording each segment of a story

Explanation: Constraints reduce the range of action possibilities in a system in order to prevent errors or simplify and increase intuitiveness (Lidwell, Holden, & Butler, 2010, pg. 60).

Here we prevent the user from stopping the recording of a story segment midstream. Often times when recording oneself, self judgement comes up leading to a lot of time spent re-recording. This constraint helps users avoid this perfectionism by forcing them to complete the current short story segment before evaluating. This may even lead to spontaneous moments of brilliance.

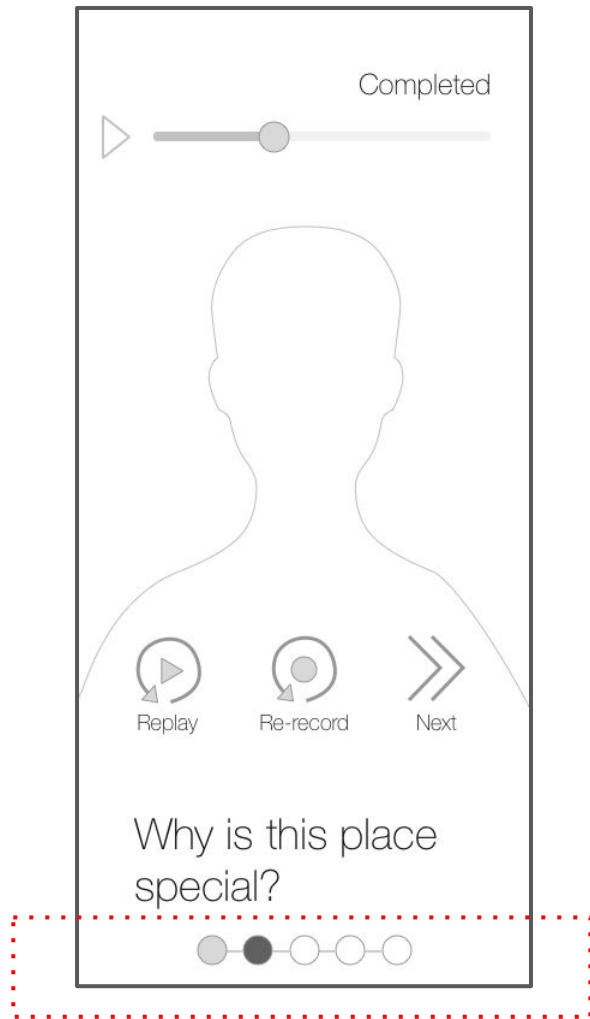


Justifications

Design Principle: Incremental Construction

Where It Appears: During the recording of a story

Explanation: This is the building of a creative work in pieces and often times not in order (Tidwell, 2010, pg. 14). Here the user is building a story segment by segment. It will be easier for them to focus on each segment individually and perfect it before moving on to other segments. In addition, they can go back to previous segments and work on them again.




Justifications

Design Principle: Grouping by Color

Where It Appears: The story creation prompt

Explanation: The Gestalt principles of proximity and similarity say that we tend to perceptually group visual elements with similar features (color). These principles of grouping by color and similarity can also compete with each other when elements agree in one dimension and disagree in an other (Wagemans, 2012).

Here higher level story categories are grouped together by similar color, while specific example instances of these categories are grouped by a different color.

What kind of story do you want to create? <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Show something	Show a Place	Introduce a Person
A device	One that doesn't exist now	A friend
A photo	That I go to	Someone I met
Show how to do something	Tell a story	Something else
An old way		Free form

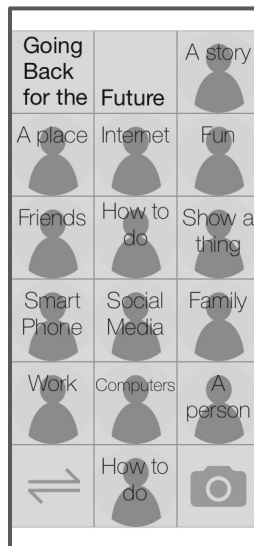
Justifications

Design Principle: Grid of Equals

Where It Appears: On multiple pages, but most perfectly on the my stories page.

Explanation: Setting each application area as an element in a grid of equals helps convey the similarity and equal importance of each section (Tidwell, 2010, p. 149).

Here, on the my stories page, each element has equal importance as each one represents a single recorded story.



Justifications

Design Principle: Visibility of System Status

Where It Appears: On the name your story page.

Explanation: Showing the user feedback of the system's status is a key principle of good usability (Nielsen, 1994).

Here we are showing the user which of the story categories they have selected previously and also allowing them to change it.

The image shows a mobile application interface for creating a story. It features a form with the following elements:

- Title:** A text input field with the placeholder text "Title...".
- Description:** A larger text input field with the placeholder text "Description...".
- Central Technology:** A section containing a label "Central Technology:" and a button labeled "Internet". This entire section is enclosed in a red dotted rectangular border, indicating it is the focus of the justification.
- Publish:** A button at the bottom of the form.

Justifications

Design Principle: Input Prompts

Where It Appears: On the name your story page.

Explanation: This is when input boxes are prefilled with text telling the user what to do (Tidwell, 2010, pg. 369).

Here we are telling the user to title their story and give it a description.

Name Your Story

Title...

Description...

Central Technology: Internet

Publish


Justifications

Design Principle: Satisficing

Where It Appears: The story creation prompt

Explanation: Users often do not spend the time to make optimal decisions. They make good-enough decisions. Good interfaces allow them to do that (Lidwell, Holden, & Butler, 2010, pg. 210).

Here users see the major story categories in one color along with specific example instances within those categories in another color. If either of these are good-enough, the user can just select them. However if they want to get a category that exactly matches, they can tap-and-hold one of the major story categories to bring up a full list.

What kind of story do you want to create? <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Show something	Show a Place	Introduce a Person
A device	One that doesn't exist now	A friend
A photo	That I go to	Someone I met
Show how to do something	Tell a story	Something else
An old way		Free form

Justifications

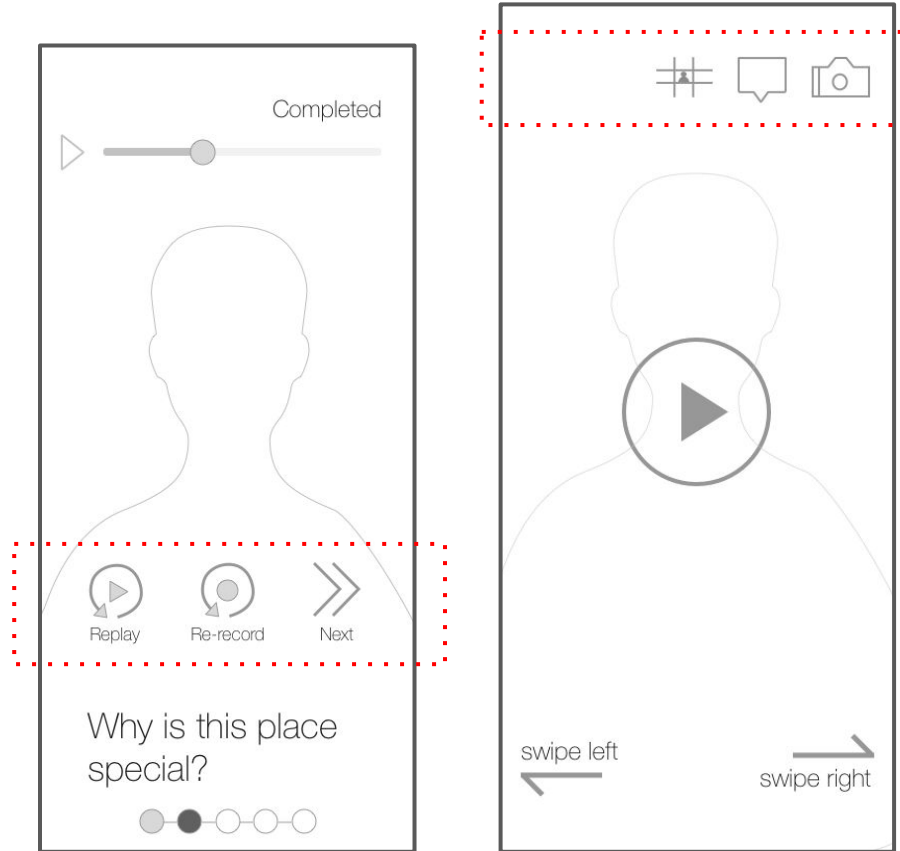
Design Principle: Iconic Representation

Where It Appears: After a story segment has been recorded and the story browsing view.

Explanation: The use of icons for particular actions can help them be remembered and it can save precious screen real-estate (Lidwell, Holden, & Butler, 2010, pg. 132) .

On the left screen, icons are representing quick actions to take to a story segment that has been just recorded.

And on right screen, icon are representing the following: return to the home screen, comment on this story, and create a story like this one.



Justifications

Design Principle: Instant Gratification

Where It Appears: On the home screen

Explanation: People want access to their goal right now and not after many steps (Tidwell, 2010, pg. 10).

On the home screen the user is presented with snapshots of stories from many different people along with certain tags for those stories. If the user sees one they like, clicking on it will immediately start the video playing.

Going Back for the	Future	A story
A place	Internet	Fun
Friends	How to do	Show a thing
Smart Phone	Social Media	Family
Work	Computers	A person
↔	How to do	📷

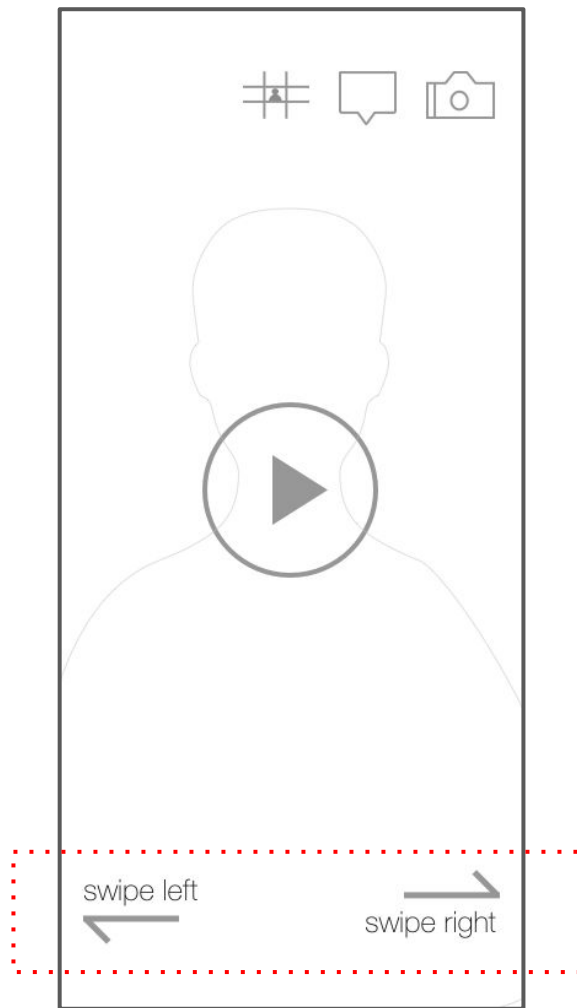
Justifications

Design Principle: Affordances

Where It Appears: On the browse video screen

Explanation: Gestural interfaces have been criticized for lacking elements that signify their action possibility (Norman & Nielsen, 2010). Here we are making the ability to swipe left and swipe right a perceived affordance by adding this additional signage indicating this action possibility.

Here swiping left will result in fewer videos like this being auto-recommended while swiping right will result in more.



Wrap Up

Constraints

The main constraints in this application are embodied in the structure imposed on the storyteller.

- Selection of one of only six story types
- Limit of 6 minutes for each story
- Labeling a story with one of four pivotal technologies.

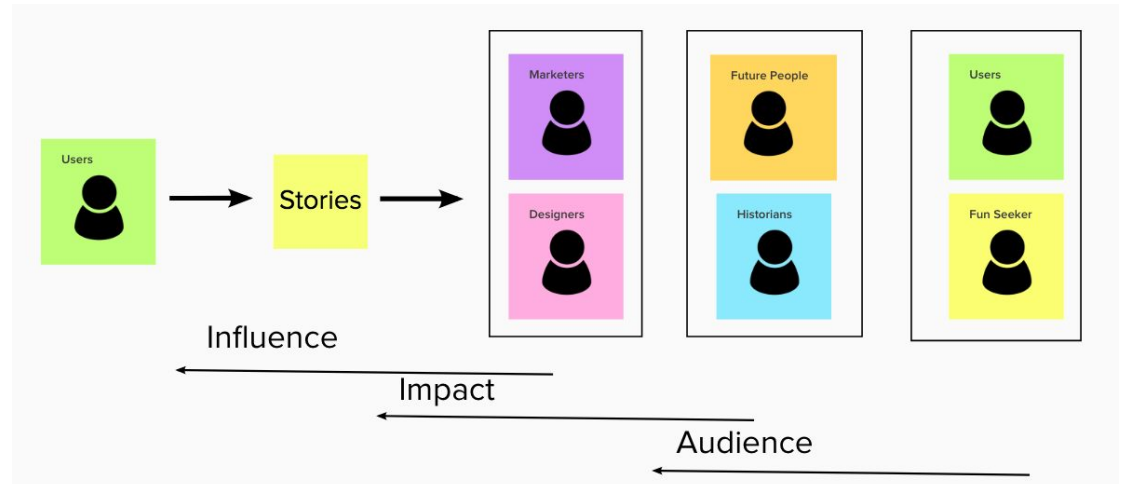
The idea behind these constraints was the old saying “constraints breed creativity.” I thought taking away choice would get the user to create and make something faster. The exact specifications for these constraints will have to be adjusted after user testing.

Some other constraints I embraced were the following:

- Limited app to mobile only – does not span platforms
- Reduced categorization for stories – no tags, no attached content
- Limited to interactions to those common to most smartphone apps

Value

This project provides value to three distinct groups.



First are the **people who are creating stories and casually browsing stories**. They benefit because this app provides them with a source of fun and also access to an audience. Our primary persona's main issue is not have a frictionless way of being creative and sharing his creativity. Our app provides that. And it gives other people a way to enjoy it.

Next are **marketers and product designers**. After a period of time when many stories have been contributed, the app will be an incredible resource for these groups. They will be able to see what resonates with people and opportunities for fulfilling needs that have gone unfilled due to changes in technology.

Last are **people from the future looking backwards**. These may be curious people or historians, but either way the stories in this app will provide them with an understanding of what it was like back in previous eras. As we speak, the stories and memories of times before the internet are fading. And we can't imagine life without smartphones. If these are captured now, they will be valuable for people in the near future who want to steer our direction informed by the past.

Next Steps

The clearest next step for this applications is to perform usability testing with the prototype.

I would like to print out paper copies of the screens and have users go through the question prompts recording story segments on their actual phone.

This will help me understand where the current question structure is working and where it needs to be changed. It will also help me understand if the interface is easily learnable.

My Inspiration

Websites, posts, and projects

Front page of <http://itsourreasear.ch/>

YouTube videos essays on old technology

(<https://www.youtube.com/user/Techmoan>)

YouTube videos on production processes with old technology (AVGN Making of)

(https://www.youtube.com/watch?v=MiqE_Lb801U)

Eyesteelfilms – OpenSourceCinema (now defunct)

Reddit posts concerning technology of the past

Applications

Windows 10 user interface

DScout

People and Stores

Mike at AudioLab Cambridge

Owner at Sudden Impact Games (Name Unknown)

East Village Cassette and CD Store (Name Unknown)

References

Lidwell, W., Holden, K., & Butler, J. (2010). *Universal principles of design, revised and updated: 125 ways to enhance usability, influence perception, increase appeal, make better design decisions, and teach through design*. Rockport Pub.

Nielsen, J. (1994). Enhancing the explanatory power of usability heuristics (pp. 152–158). Presented at the Proceedings of the SIGCHI conference on Human Factors in Computing Systems, ACM.

Norman, D. A., & Nielsen, J. (2010). Gestural interfaces: a step backward in usability. *Interactions*, 17(5), 46–49.

Tidwell, J. (2010). *Designing interfaces: Patterns for effective interaction design*. " O'Reilly Media, Inc."

Wagemans, J., Elder, J. H., Kubovy, M., Palmer, S. E., Peterson, M. A., Singh, M., & von der Heydt, R. (2012). A century of Gestalt psychology in visual perception: I. Perceptual grouping and figure–ground organization. *Psychological bulletin*, 138(6), 1172.

Appendix

Mural:

<https://app.mural.co/t/ericsonbentleyhfidcourses9632/m/ericsonbentleyhfidcourses9632/1520706122228/179d691a21cab63ec75259f46da0072e49a8ca42>

High-res electronic prototype artboards:

<https://drive.google.com/open?id=1I5sWd5w519afQgvYuZLpsTLEpj6D0Sv->

Original Project Proposal:

<https://docs.google.com/document/d/1fwT3gmpApDJdkDQGDxNS0Swfy7ETsL7F9bOMQrANdyY/edit?usp=sharing>

Invision Prototype

<https://invis.io/QTHTTTPC2G7>