Interactive Hi-Fi Prototype

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CS147 – Augmented Humans

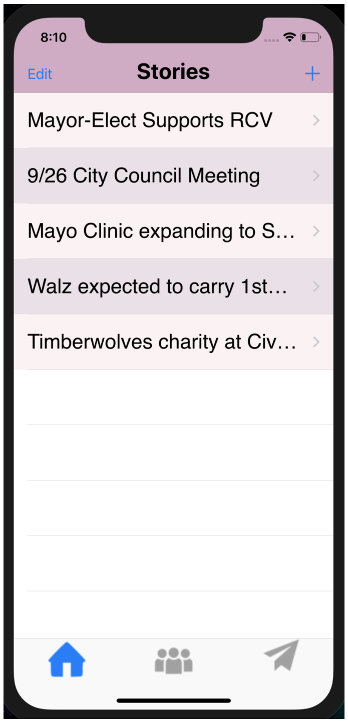
Captiva: Streamlining Journalism from Pitch to Publication

Captiva

Streamlining Journalism from Pitch to Publication

Problem and Solution Overview

With digital news at everyone's fingertips, journalism today has to operate in terms of seconds, not hours or days. While field reporters are out doing research, conducting interviews, and taking photos, the newsroom is busy synthesizing these elements into a completed story. To keep up, it's absolutely essential that information gets to the right colleagues at the right time. Captiva makes it easy for reporters to collaborate on information capture, organize it intuitively, communicate with relevant colleagues, and send their updates back to the newsroom on the fly. This way, the newsroom can stay up-to-date and organized, improving journalists' workflow and allowing them to break stories quicker than ever before.



- Mayor-Elect Supports RCV
- 9/26 City Council Meeting
- Mayo Clinic expanding to S…
- Walz expected to carry 1st…
- Timberwolves charity at Civ…

Captiva stores all of your information with its simple, hierarchical layout. We make it easy to share information, find collaborators, and transmit updates to the newsroom.

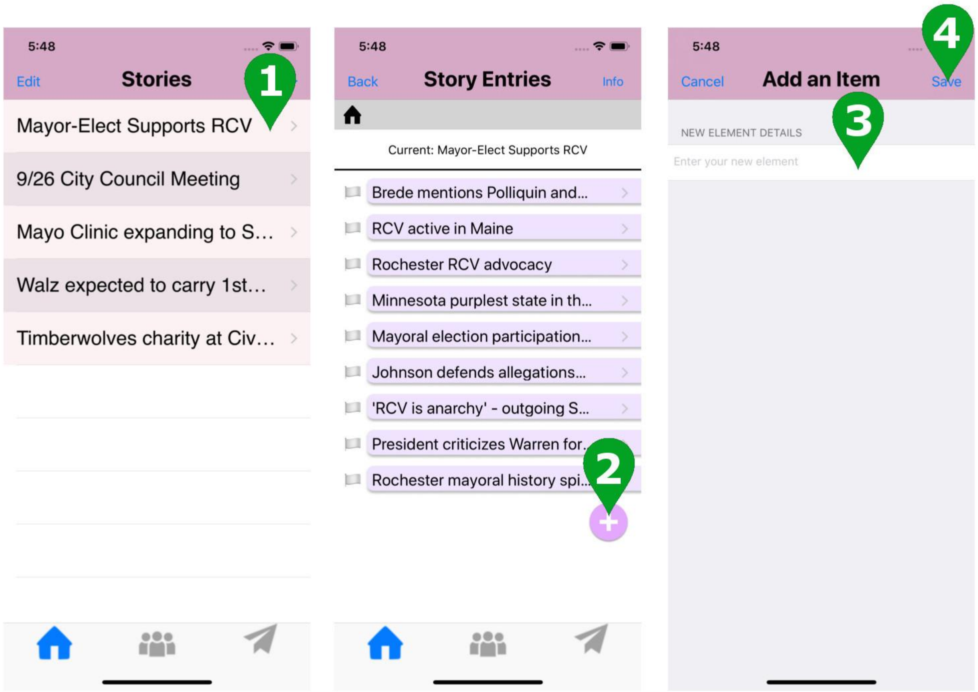
Tasks & Final Interface Scenarios

Simple: Collaborate on Information Collection

Task: Reporters want to collaborate on information capture. (Figure 1)

Explanation: Reporters need a shared organizational structure that doesn't slow down the process of collecting information.

Rationale: Our solution makes it easy to input information into a hierarchical structure that all reporters share. This way, they can take many standalone notes in the same category without dealing with repeated organizational issues, which are continuously synced with other reporters. The process looks like:



Stories

Mayor-Elect Supports RCV

9/26 City Council Meeting

Mayo Clinic expanding to S…

Walz expected to carry 1st…

Timberwolves charity at Civ…

Story Entries

Current: Mayor-Elect Supports RCV

Brede mentions Polliquin and...

RCV active in Maine

Rochester RCV advocacy

Minnesota purplest state in th...

Mayoral election participation...

Johnson defends allegations...

'RCV is anarchy' - outgoing S...

President criticizes Warren for...

Rochester mayoral history spi...

Add an Item

NEW ELEMENT DETAILS

Enter your new element

Figure 1: Simple Task

Moderate: Send to Newsroom

Task: Reporters want to send information back to the newsroom. (Figure 2)

Explanation: Once elements are ready to be communicated to the newsroom, the process needs to be as easy as possible. Reporters often wait to send this information back until there's enough information and time to organize it.

Solution: Captiva lets you send any subset of your notes to the newsroom with just a few clicks, thereby allowing you to transmit incomplete but relevant information in an organized manner.

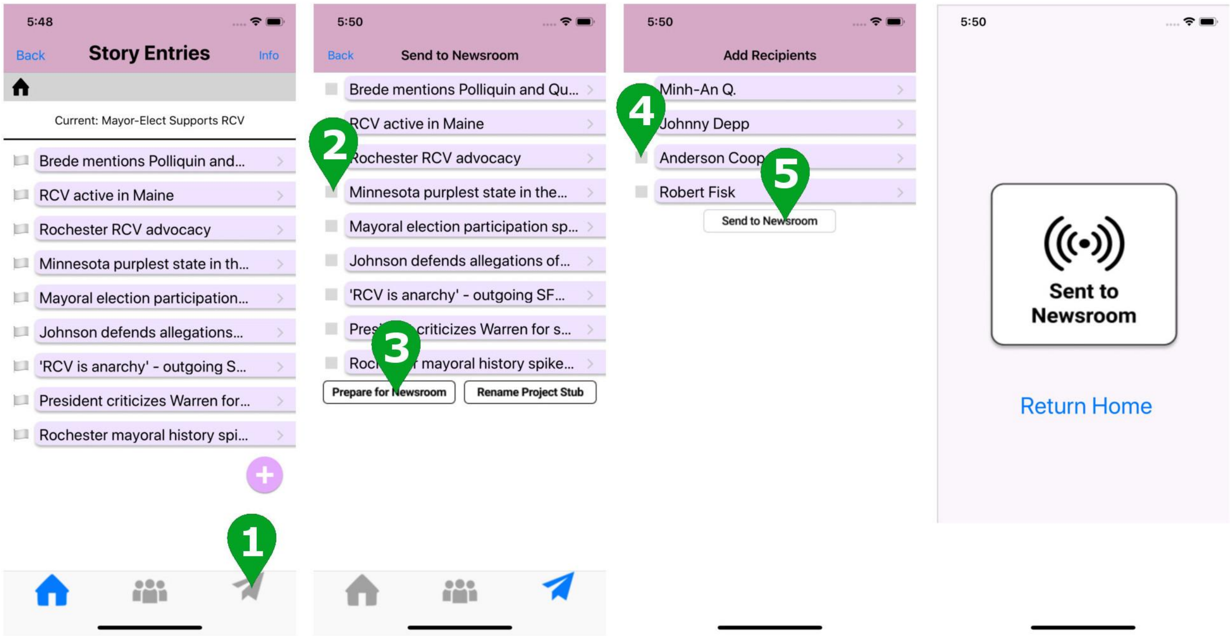

5:48
Back
Story Entries
Info
Current: Mayor-Elect Supports RCV
Brede mentions Polliquin and...
RCV active in Maine
Rochester RCV advocacy
Minnesota purplest state in th...
Mayoral election participation...
Johnson defends allegations...
'RCV is anarchy' - outgoing S...
President criticizes Warren for...
Rochester mayoral history spi...
1
5:50
Back
Send to Newsroom
Brede mentions Polliquin and Qu...
RCV active in Maine
Rochester RCV advocacy
Minnesota purplest state in the...
Mayoral election participation sp...
Johnson defends allegations of...
'RCV is anarchy' - outgoing SF...
President criticizes Warren for s...
Rochester mayoral history spike...
2
3
Prepare for Newsroom
Rename Project Stub
5:50
Add Recipients
Minh-An Q.
Johnny Depp
Anderson Cooper
Robert Fisk
4
5
Send to Newsroom
5:50
Sent to Newsroom
Return Home

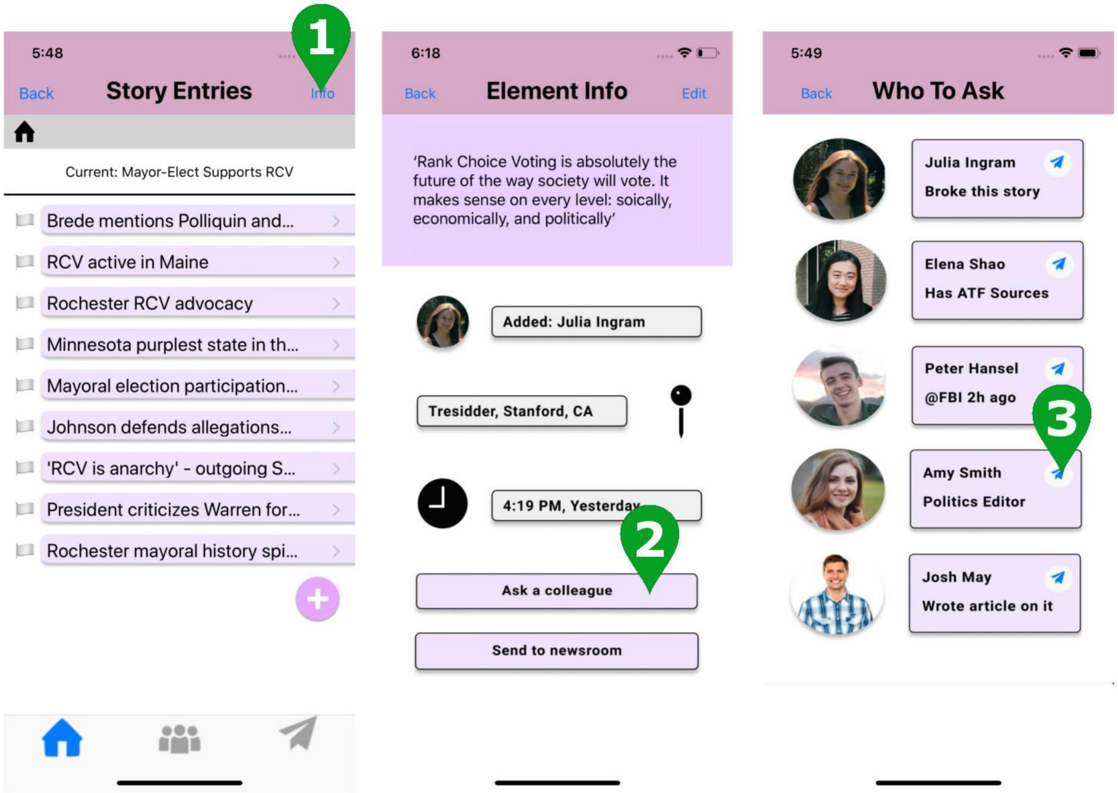
Figure 2: Moderate Task

Complex: Find Collaborators

Task: Reporters want to collaborate with their colleagues on stories. (Figure 3)

Explanation: Fast-moving stories can make collaboration hard; reporters often don't know who they can talk to about a given topic.

Solution: Captiva makes it easy to find the best people to talk to about a story. This reduces the barriers to collaboration and thereby helps reporters work more efficiently.



Current: Mayor-Elect Supports RCV

- Brede mentions Polliquin and...
- RCV active in Maine
- Rochester RCV advocacy
- Minnesota purplest state in th...
- Mayoral election participation...
- Johnson defends allegations...
- 'RCV is anarchy' - outgoing S...
- President criticizes Warren for...
- Rochester mayoral history spi...

'Rank Choice Voting is absolutely the future of the way society will vote. It makes sense on every level: soically, economically, and politically'

Added: Julia Ingram

Tresidder, Stanford, CA

4:19 PM, Yesterday

Julia Ingram
Broke this story

Elena Shao
Has ATF Sources

Peter Hansel
@FBI 2h ago

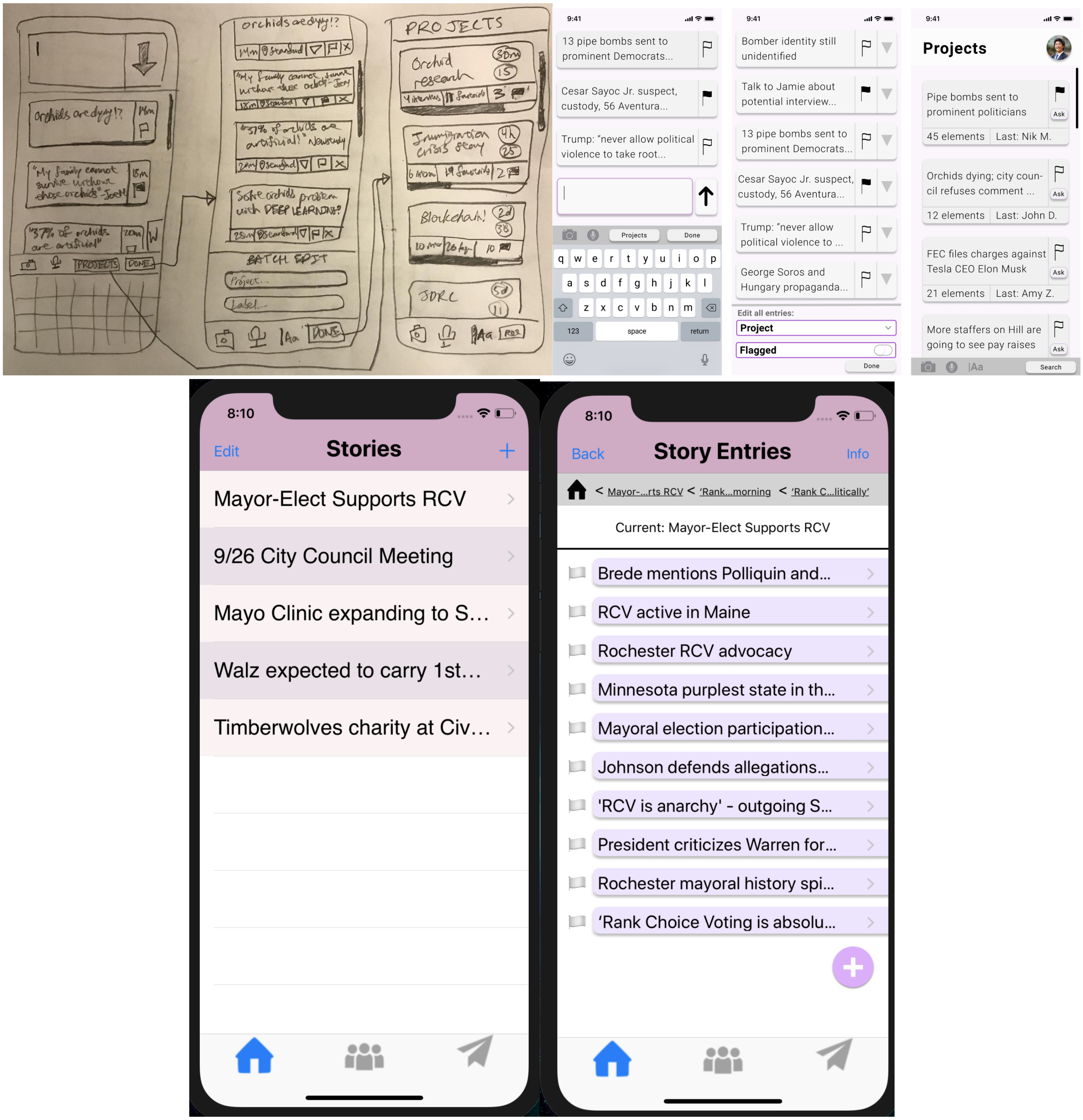
Amy Smith
Politics Editor

Josh May
Wrote article on it

Figure 3: Complex Task

Design Evolution

Simple Task: Collaborate on Information Collection


orchids are dying!?
PROJECTS
Orchid research
Immigration crisis story
Blockchain!
JDRC
BATCH EDIT
Project...
Label...
DONE
9:41
13 pipe bombs sent to prominent Democrats...
Cesar Sayoc Jr. suspect, custody, 56 Aventura...
Trump: "never allow political violence to take root...
Projects
Done
space
return
Bomber identity still unidentified
Talk to Jamie about potential interview...
13 pipe bombs sent to prominent Democrats...
Cesar Sayoc Jr. suspect, custody, 56 Aventura...
Trump: "never allow political violence to ...
George Soros and Hungary propaganda...
Edit all entries:
Project
Flagged
Done
Projects
Pipe bombs sent to prominent politicians
45 elements
Last: Nik M.
Orchids dying; city council refuses comment ...
12 elements
Last: John D.
FEC files charges against Tesla CEO Elon Musk
21 elements
Last: Amy Z.
More staffers on Hill are going to see pay raises
Ask
Search
8:10
Edit
Stories
+
Mayor-Elect Supports RCV
9/26 City Council Meeting
Mayo Clinic expanding to S…
Walz expected to carry 1st…
Timberwolves charity at Civ…
Back
Story Entries
Info
Mayor-...rts RCV
'Rank...morning
'Rank C...litically'
Current: Mayor-Elect Supports RCV
Brede mentions Polliquin and...
RCV active in Maine
Rochester RCV advocacy
Minnesota purplest state in th...
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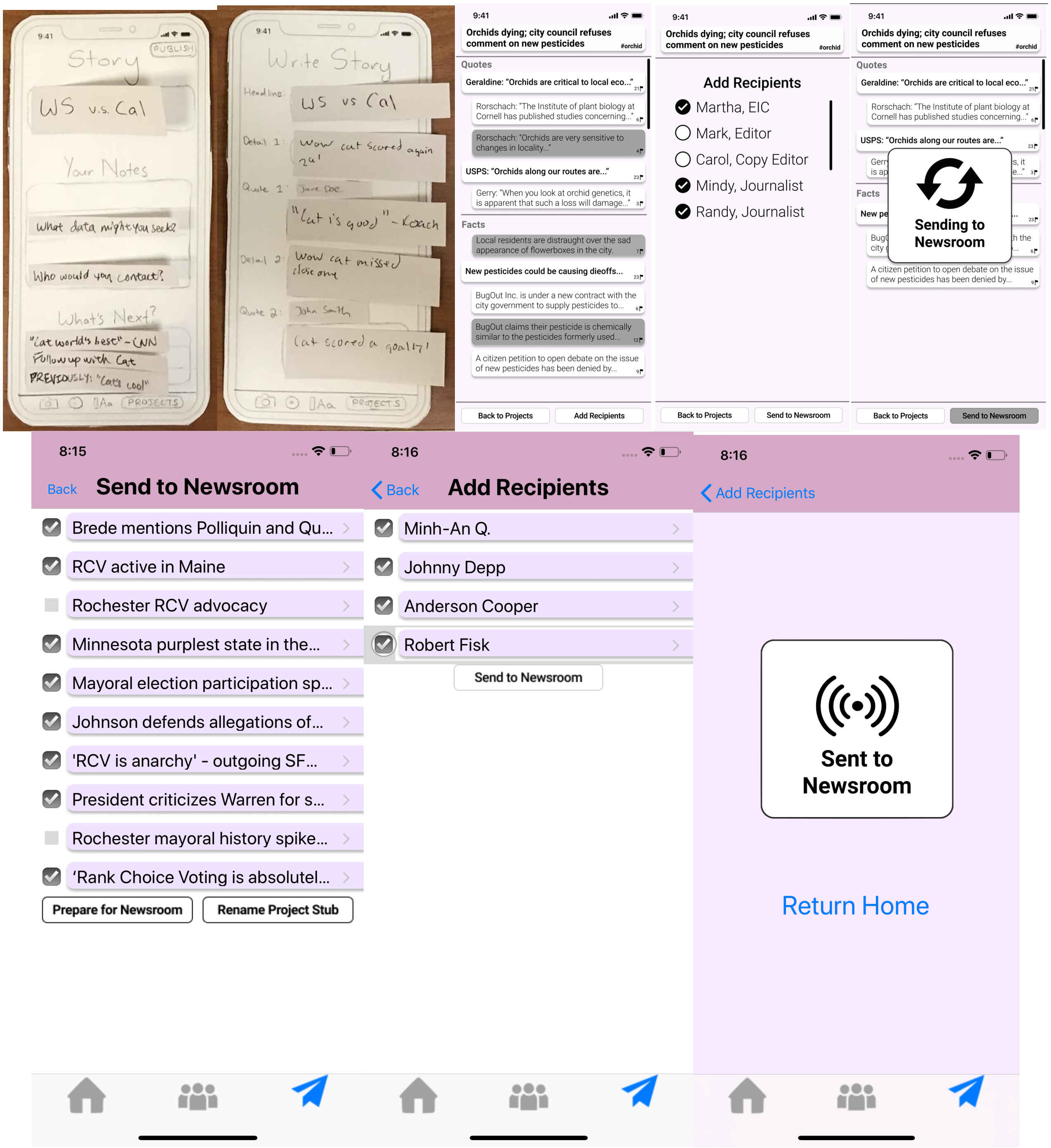
'Rank Choice Voting is absolu...

Figure 4: Evolution of Simple Task

Our original layout had a page to capture elements in, followed by a page to add tags and categorize them into the appropriate project, and finally a screen with all of your projects. Low-fi testing suggested that the user had to move their thumbs too much to hit the arrow down button, so we made the first screen push items up instead. The heuristic evaluation suggested that the layout was too confusing. Hence, we changed to an intuitive, hierarchical structure. Users first navigate to the appropriate subtopic and can rapidly enter notes there.

Moderate Task: Sending Information to the Newsroom

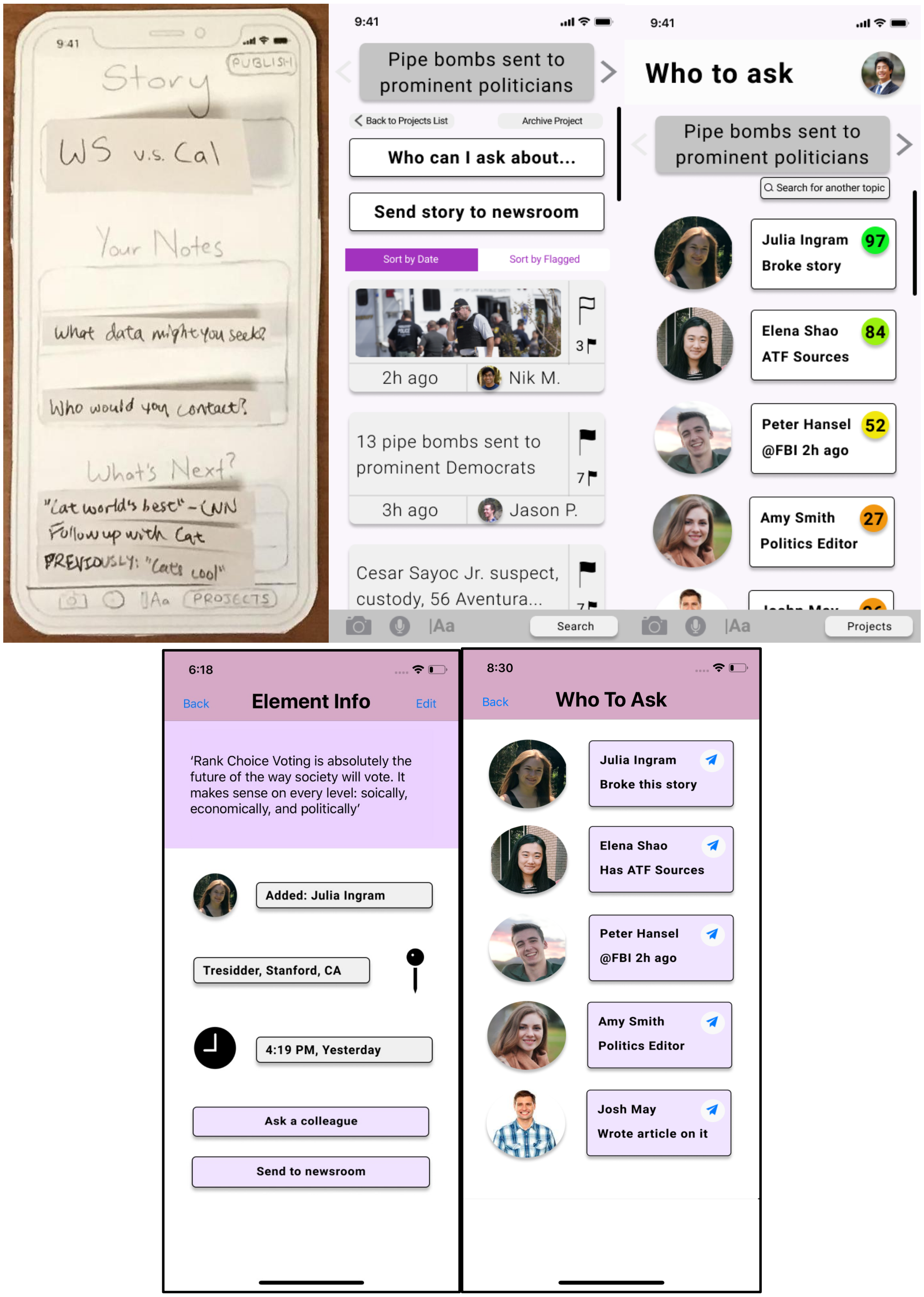


9:41
Story
PUBLISH
WS v.s. Cal
Your Notes
What data might you seek?
Who would you contact?
What's Next?
"Cat world's best" - CNN
Follow up with Cat
PREVIOUSLY: "Cat's cool"
PROJECTS
9:41
Write Story
Headline:
WS vs Cal
Detail 1:
wow cat scored again 2a!
Quote 1:
Jane Doe
"Cat is good" - Coach
Detail 2:
Wow cat missed close one
Quote 2:
John Smith
Cat scored a goal!!
PROJECTS
9:41
Orchids dying; city council refuses comment on new pesticides
#orchid
Quotes
Geraldine: "Orchids are critical to local eco..."
Rorschach: "The Institute of plant biology at Cornell has published studies concerning..."
Rorschach: "Orchids are very sensitive to changes in locality..."
USPS: "Orchids along our routes are..."
Gerry: "When you look at orchid genetics, it is apparent that such a loss will damage..."
Facts
Local residents are distraught over the sad appearance of flowerboxes in the city.
New pesticides could be causing dieoffs...
BugOut Inc. is under a new contract with the city government to supply pesticides to...
BugOut claims their pesticide is chemically similar to the pesticides formerly used...
A citizen petition to open debate on the issue of new pesticides has been denied by...
Back to Projects
Add Recipients
9:41
Orchids dying; city council refuses comment on new pesticides
#orchid
Add Recipients
Martha, EIC
Mark, Editor
Carol, Copy Editor
Mindy, Journalist
Randy, Journalist
Back to Projects
Send to Newsroom
9:41
Orchids dying; city council refuses comment on new pesticides
#orchid
Quotes
Geraldine: "Orchids are critical to local eco..."
Rorschach: "The Institute of plant biology at Cornell has published studies concerning..."
USPS: "Orchids along our routes are..."
Facts
Sending to Newsroom
A citizen petition to open debate on the issue of new pesticides has been denied by...
Back to Projects
Send to Newsroom
8:15
Back
Send to Newsroom
Brede mentions Polliquin and Qu...
RCV active in Maine
Rochester RCV advocacy
Minnesota purplest state in the...
Mayoral election participation sp...
Johnson defends allegations of...
'RCV is anarchy' - outgoing SF...
President criticizes Warren for s...
Rochester mayoral history spike...
'Rank Choice Voting is absolutel...
Prepare for Newsroom
Rename Project Stub
8:16
Back
Add Recipients
Minh-An Q.
Johnny Depp
Anderson Cooper
Robert Fisk
Send to Newsroom
8:16
Add Recipients
Sent to Newsroom
Return Home

Figure 5: Evolution of Moderate Task

Our low-fi prototype tried to convert stories into organizational templates, making it easier to write the final story. However, testing our low-fi prototype on real journalists quickly revealed that this wasn't solving a real need; in fact, the reporters often different people from the writers. We learned that the speed at which modern-day journalism moved meant that many new developments had to be sent back to the newsroom (e.g. so it could be tweeted out). Hence, our med-fi prototype allowed the user to send information directly to the newsroom. Our heuristic evaluation revealed that it was not easy to tell which items were being selected by the user. Hence, we added checkboxes in the high-fi prototype screen to make it clear which entries and which recipients were selected.

Complex Task: Find who in your organization to talk to



'Rank Choice Voting is absolutely the future of the way society will vote. It makes sense on every level: soically, economically, and politically'

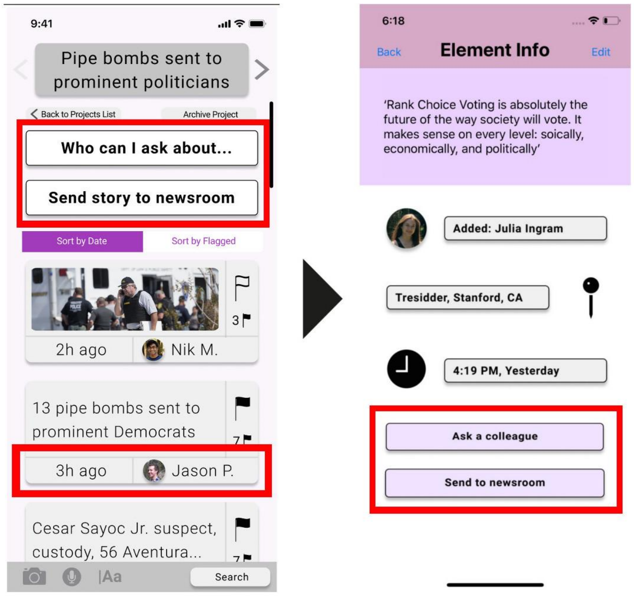
Figure 6: Evolution of Complex Task

Our low-fi prototype displayed "What's Next?" as an agglomeration of different online sources and colleagues who could be contacted about a given story. However, testing our low-fi prototype on journalists revealed that the valuable part of this page was lead generation (specifically, which colleagues would be the most helpful on a given story). Thus, in our med-fi prototype, we pivoted toward building the "Who to ask" feature. Our heuristic evaluation told us that the numbers were unclear and it was not clear how to actually contact these people. Hence, our high-fi prototype removed the numbers and added email icons as clear indicators of how the colleague would be contacted.

Major Usability Problems Addressed

Violations we addressed

Here is a comprehensive list of the changes we made as a result of the level 3 and 4 heuristic evaluations:



13 pipe bombs sent to prominent Democrats

Cesar Sayoc Jr. suspect, custody, 56 Aventura...

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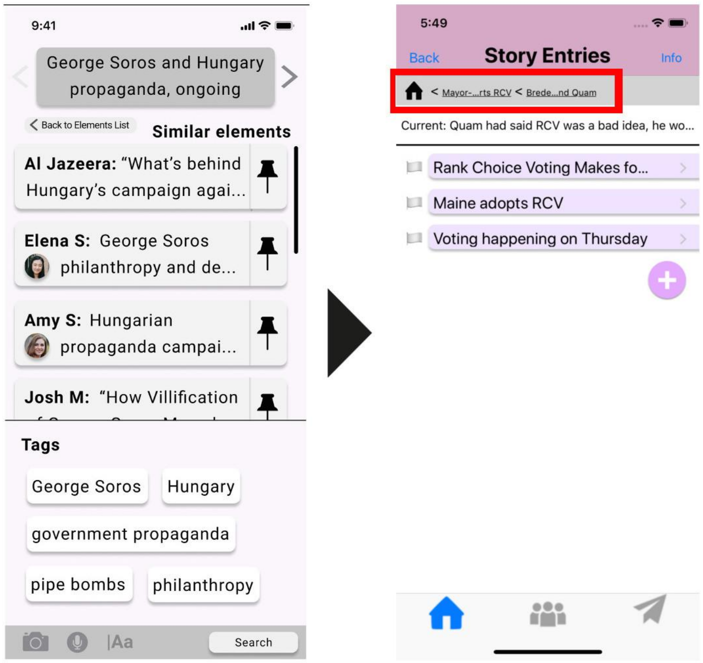
Figure 7: HE eval 1 changes

1. “The place to enter elements appears cluttered and kind of overwhelming.”
   - The new hierarchical structure makes the number of entries on each screen more limited and cuts off the visible text for each entry after a few words (including on the home screen, where story headers are bigger and more spread out). Furthermore, we added more whitespace to separate entries. However, our design space was limited by the text-based nature of journalism; thus, our hi-fi prototype still has a decent amount of text. (See figure 7)



George Soros and Hungary propaganda, ongoing

Al Jazeera: "What's behind Hungary's campaign agai...

Elena S: George Soros philanthropy and de...

Amy S: Hungarian propaganda campai...

Josh M: "How Villification

George Soros
Hungary
government propaganda
pipe bombs
philanthropy

< Mayor-...rts RCV < Brede...nd Quam

Current: Quam had said RCV was a bad idea, he wo...

Rank Choice Voting Makes fo...
Maine adopts RCV
Voting happening on Thursday

Figure 8: HE eval 2 changes

2. "On elements screen, unclear that we're here. The projects screen is more clearly marked with what this page is, but elements screen is not clearly labeled, and it makes it confusing what screen we're currently on."
   - We completely eliminated an "elements" screen, opting for a stories screen. Furthermore, we added breadcrumbs to show the user where they are in the hierarchy. This way, the user knows exactly where they are and how they got there. (See figure 8)
3. "I'm very confused how to assign an element to a project. Where does the user do this? My intuition says I should click on the element and see if it's assigned to a project or not, and then have the option to assign it to a project, but it's not there."
   - Now, wherever a user adds an item, it's automatically added to the currently visible category. This is intuitive because the user knows exactly where the entry is going to be stored in the app.
4. "Is there any way to add tags or remove them? Or can you only have tags that the AI generates? Would be nice to give the user more agency in choosing these tags and having a clear + button as well as remove button."
   - We completely eliminated the concept of tags. This is because the new hierarchical system makes it very clear where items are located.

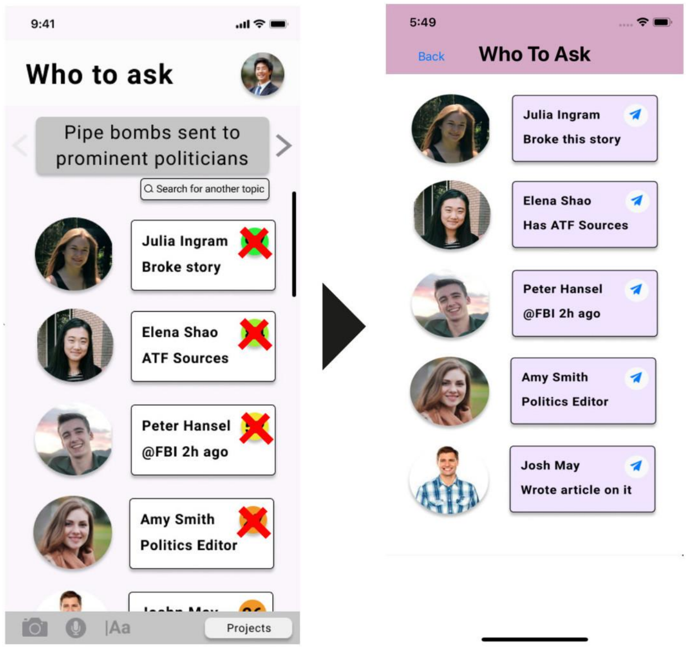


Figure 9: HE eval 5 changes

5. “I’m confused what the numbers in colored circles mean on the “Who to ask” tab. Do these numbers quantify how sure the AI is they’ll be helpful? Are they measuring how many contributions they’ve made to similarly tagged elements? How credible or experienced they are?”
   - We eliminated the ratings, opting for a (still-ordered) list of colleagues to contact. With the details about why a colleague is relevant to the story, we believe it should be evident to the user as to why they would want to contact those individuals. (See figure 9)

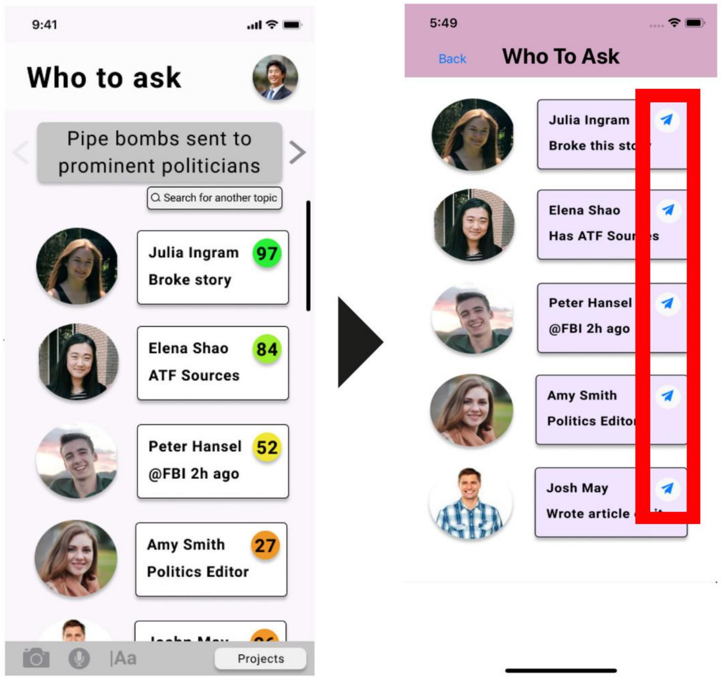


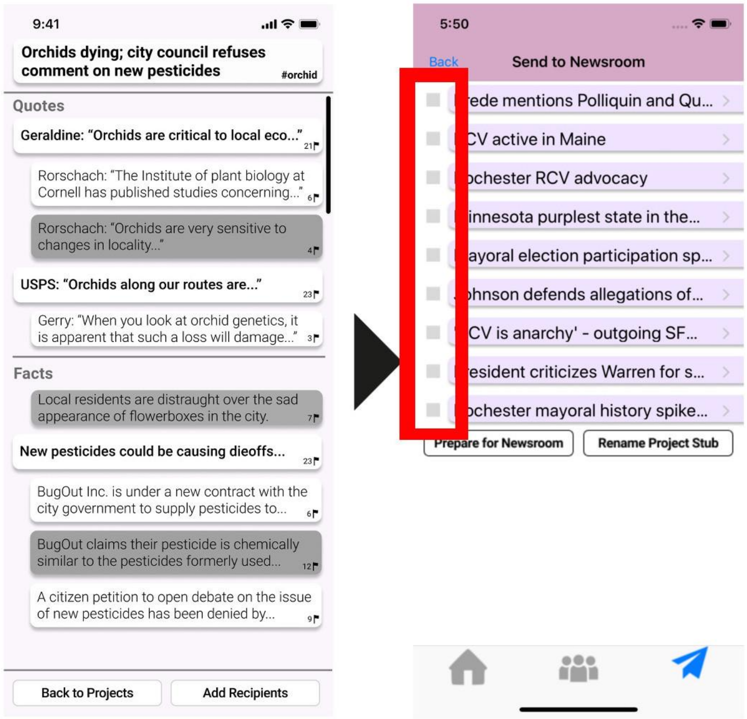
Figure 10: HE eval 6 changes

6. “I know this is just a medium-fi prototype, but it seems like the task of asking someone about a story or element is not quite complete. What happens when you push on someone to ask? Does it

automatically send a message to them? How do you know if this worked? This taskflow seems a bit incomplete. Is the user supposed to reach out to them themselves?”

- We added a clear “email” button, signalling that you can click on the button to contact them directly. We were limited by the scope of this class and could not fully build out this feature; ideally, we would have an in-app messaging platform. (See figure 10)

7. “I’m confused on the elements view with the “Edit all entries: Project, Flagged” appearing below (opposed to the keyboard), what the down arrows are. I would think they would be to re-order the elements, based upon queue systems I’ve previously interacted with where you often press and hold on a similar icon and are able to re-order them. However, when I click on this down arrow, I’m brought to a detailed view of the element, either because this feature isn’t yet working or it’s designed to be a “dropdown” detail view of the element.”
    - We eliminated the down arrow concept throughout the app. We traded the option for categorizing successive elements in different categories for navigating to the right category before item entry. This means that entering successive items is a little slower, but we believe the gained organizational power and simplicity makes the decision worthwhile.
8. “No “back” button in the Who to Ask to go back to the specific project, you can only go back to the general Projects page which is clunky and doesn’t help users recover if they decide they don’t want to ask any of the people suggested.”
    - When you ask about a specific element, there is now a back button that returns you to the same originating screen. This matches the conceptual model that users have about the organizational structure of the application.



Geraldine: “Orchids are critical to local eco...” 21

Rorschach: “The Institute of plant biology at Cornell has published studies concerning...” 6

Rorschach: “Orchids are very sensitive to changes in locality...” 4

USPS: “Orchids along our routes are...” 23

Gerry: “When you look at orchid genetics, it is apparent that such a loss will damage...” 3

Local residents are distraught over the sad appearance of flowerboxes in the city. 7

New pesticides could be causing dieoffs... 23

BugOut Inc. is under a new contract with the city government to supply pesticides to... 6

BugOut claims their pesticide is chemically similar to the pesticides formerly used... 12

A citizen petition to open debate on the issue of new pesticides has been denied by... 9

□ ede mentions Polliquin and Qu...

□ CV active in Maine

□ ochester RCV advocacy

□ innesota purplest state in the...

□ ayoral election participation sp...

□ ohnson defends allegations of...

□ CV is anarchy' - outgoing SF...

□ esident criticizes Warren for s...

□ ochester mayoral history spike...

Figure 11: HE eval 9 changes

9. “In the “Send to Newsroom” screen, you’re able to click “Prepare for Newsroom” without selecting any of the individual elements and don’t get an error message saying you must select one. Since the Prepare for Newsroom seems like it’s clickable at this point without selecting any, it’s a bit misleading for the user to click it and then just sit there and wonder if the entire set of elements was sent, or nothing.”
   - We added checkboxes to select which items are being sent to the newsroom. This way, there is no ambiguity about which items have been selected. (See figure 11)
10. “When the user is selecting which quotes, facts, recordings, etc, to send to the newsroom, they are not currently given the option to see all of their selections in one place. While in the example in Marvel this is fine (since you can see all the selections), this would be an issue with more items present in a scrollable format.”
   - Our hi-fi prototype allows you to easily see which selections you’ve selected and which ones are unselected. Furthermore, we made this screen scrollable on the hi-fi prototype.

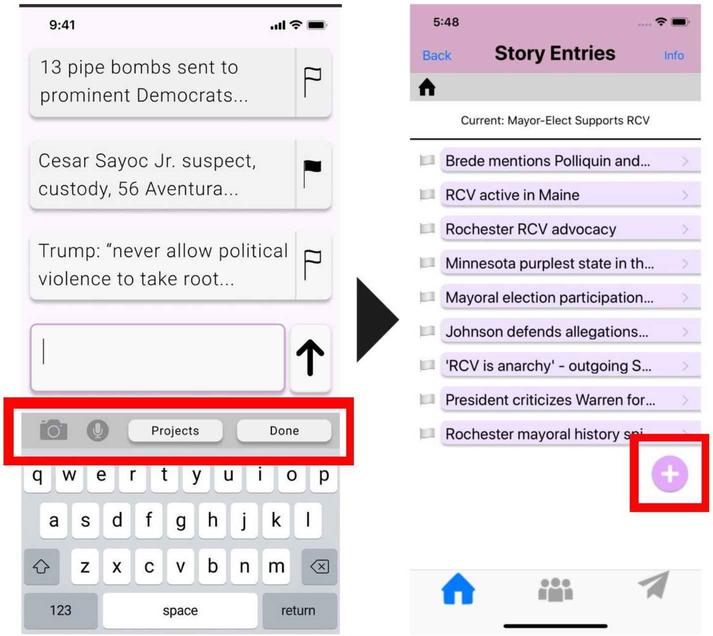


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Figure 12: HE eval 11 changes

11. “Strange to have various modalities and navigation buttons in the bar traditionally used for autocorrect. Makes them hard to find.”
   - We removed the buttons from that location, and added them either (i) elsewhere on the screen or (ii) removed them altogether. Since text entry is no longer our number one priority of the app, it’s made redesigning navigation much easier to do well. (See figure 12)
12. “It makes sense that clicking “Done” on the elements view with text brings me to a view of elements where I can filter by projects and flagged. However, I don’t see why clicking “Done” at this point brings me to a view of Projects, and not just a view of elements with the filters I’ve specified. I think Done would mean like “opt out” and not that I want to proceed to a view of Projects.”

- We've completely removed this filtering screen, and the way of adding elements to the app has completely changed. Thus, this is no longer an issue. This fits in to our redesign of the navigation process, hopefully making everything more intuitive.

13. "When adding a new story, there is an "up arrow" and a "done" button next to one another. Both of these buttons can be used for similar a function, that being sending out the text you just entered. A user could be confused as to which one of these buttons sends out their update."
    - The way of adding stories has completely changed, and we believe the way of navigating through this process is very intuitive now. With these buttons and screens removed, there is no lack of clarity of what each button does.

Violations we did not address:

14. "In the "Send to Newsroom" taskflow, after selecting the elements we wish to send and clicking "Add Recipients" there appears to be no way to go back to the previous screen to change the selection. Instead, we have to go all the way back to Projects and can't edit our work of selecting the elements, or proceed with 'Sending to the Newsroom'"
    - Due to technical difficulties, we were not able to address this violation. We agree that it is something that should be fixed, and would be if we had more time.
15. "When the user is adding recipients to add a story to a newsroom, there is currently only a radio button group of options. However, it is possible for journalists to be sending this to external or other members, so it is imperative to have the ability for them to add in additional emails/people in this field."
    - The app is intended for use within a news organization. Therefore, we did not incorporate this suggestion.
16. "The preview for what sending the information to the newsroom would look like, doesn't allow users to make edits to certain quotes or make changes if reporters made mistakes in documenting information. This prevents users from recovering from mistakes and can be fixed simply by adding an edit button to this page."
    - Allowing users to edit individual entries in the "Send to Newsroom" screen would quickly become unwieldy; users should be editing the project elements in the respective project screens. Thus, we opted to not address this, thereby encouraging the user to make these changes in the screen designed for it.

In summary, we found that most of our issues were related to navigation and understanding where in the app you were at all times. As a result, as we built our hi-fi prototype we made sure that all navigation was as intuitive as possible. The tradeoff here was a slightly slower entry process (because the user has to navigate first), but our testing showed that this was a worthwhile change. This led to our hierarchical structuring of data (i.e. projects have elements, and each element itself can have subelements), our bottom bar menu, and breadcrumbs. Additionally, we took some emphasis off "rapid idea entry" and instead added a plus button, available in almost every screen.

Prototype Implementation

Tools Used

We built our High-Fi prototype in Swift 3.0, Apple's native programming language for iOS. We also used Xcode for our IDE and simulator and Github for versioning and collaboration. Most of our views were constructed with UITableViews, which provided a reasonable base for the structure of our layouts. We built a custom encoding scheme using NSCoding in order to have persistent data. The actual data in the app was stored using a custom tree design.

Difficulties with Tools

NSCoding was very frustrating, particularly in getting our tree hierarchy to work. We also found it difficult to code intuitive navigation systems, as coding UINavigationController in Swift can be a very complicated process, especially with many different screens and the tab bar controller we used for our bottom-bar menu. Finally, none of us had used GitHub before, so we had several issues working collaboratively on the code. This was especially a problem when working on storyboards, as we found GitHub didn't have an intuitive way to merge different storyboards. At several times, elements had to either be recoded or we had to restrict ourselves to working in different files at the same time. Finally, we found it difficult to make the app function on products other than the iPhone X.

Prototyping Techniques

We did not utilize any Wizard-of-Oz techniques. However, we did hard-code all of the initial stories, elements, and individuals available for collaboration. Users can still add their own stories and story elements, and we made sure that these additions would stay persistent. We also hard-coded the suggested collaborators; in the final application, the list of people who would be best to collaborate with would vary based on what the user is looking for help on.

Incomplete Features

We were able to implement enough features to fully execute our three tasks. However, given more time, we would be excited to build other features into Captiva. We want to be able to capture any kind of elements, including photos and videos. To make navigation even easier, we think it would be best to have a search feature that helps you find the information bit you are looking for. We also believe there should be a profile page--perhaps a fourth item on the bottom menu--that allows the user to log in, their user/contact information, see who's in their organization, and edit any of these details. Finally, we hope to make the app available on platforms other than an iPhone X.

Summary

Captiva is an iOS application that helps journalists to capture new information collaboratively, communicate with the right colleagues, and send information back to the newsroom in incremental updates. Captiva addresses key bottlenecks in the journalism process today, streamlining the process of researching and synthesizing a finished piece for publication. Through numerous rounds of interviews with journalists coupled with brainstorming and prototyping, we narrowed in on a few essential features for news organizations. Furthermore, our work has taught us valuable skills about the iterative design process, which we are excited to apply in future design endeavors.