



PurpleTruth: Providing Transparency to Political Bias in the News

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INTRODUCTION

According to Gallup and Knight Foundation's 2017 Survey on Trust, Americans perceive more political bias in the news today than generations ago and it is the average American's top concern when it comes to news consumption [1]. Given the proliferation of "fake news" over social media and the greater concern that the country shares about news bias, readers often have an unanswered question: how do I know if the news article I'm reading is biased? Purple 2 has committed to developing a solution, called PurpleTruth, to answer this question through the use of machine learning algorithms, news article and source verification services and API integrations to existing news websites and aggregators. Our goal is to arm readers with insights about how news articles are biased so that they have more data with which to form their own opinions. PurpleTruth is a 'yardstick' for bias in the news that will foster more objective discussions and bridge the silos felt in discussions today. In this document, we will discuss our approach to developing and testing PurpleTruth and reveal the final minimum viable product (MVP).

STRATEGY & SCOPE

As a first step, the Purple 2 team determined the strategy and scope for PurpleTruth.

OBJECTIVE

The objective of PurpleTruth is to provide a news application that includes an intuitive yet insightful measure of political bias for readers as they are consuming their current news sources. Our goal is to create a machine learning algorithm that can produce a bias indicator, which would be red (conservative), blue (liberal) or purple (neutral), based on natural language processing and crowdsourced feedback for any article online that's from a verified news source. Customers will

be able to see this bias indicator on all versions of the PurpleTruth application, and on any news aggregator or website that integrates with PurpleTruth via APIs.

TARGET CUSTOMER GROUPS, VALUE & MONETIZATION

PurpleTruth will have two primary customer groups seeking different value from the service:

- News consumers: Since bias is such a widespread concern, news consumers are looking for an easy way to see if/how the news they are reading is biased. Our PurpleTruth news aggregation application with the bias indicator is a compelling differentiator to meet that need. Since we will be validating our bias indicator with crowdsourced feedback, and to ensure we are able to aggressively build up a trusted user base, we will not charge news consumers for the use of our application.
- News aggregators and services: We believe that the PurpleTruth service creates additional value-add for customers of existing news aggregators and services who wish to understand the level of bias in what they are reading. This will enable news services to attract more readers to their sites and increase their revenue through increased adoption and viewership. To support our business model, we intend to charge news aggregators and services an up-front fee for the service and integration (which is tiered by the number of articles processed per month) and then a monthly support fee to maintain the API services and provide technical assistance. Since our upfront fee and on-going support fees are less than it would cost companies to develop this service on their own, we believe this will be a compelling value-add for news services. In a future release PurpleTruth will offer a Premium Service for news services who are looking to bias-check their own written pieces.

SCOPE OF MINIMUM VIABLE PRODUCT

The components of our MVP include:

- A free news aggregation mobile application (“PurpleTruth”) with a “Bias Tracker” bias indicator feature. For our MVP, we will focus on breaking news and U.S. political news (while excluding opinion pieces). Our application will present stories from different news sources with a bias checker on each article to enable the readers to read articles from different bias vantage-points.
- A “Bias Check” API that will be made publicly available at a cost. This API will allow news services and aggregators to present a red, blue or purple bias indicator and a “report bias” prompt that will be displayed next to article names on news applications and sites that integrate with our service.
- A web page hosted by PurpleTruth that will utilize the “Bias Check” API for ad hoc requests by users to verify the biases of a news article upon submission.
- A Machine Learning Algorithm based on Natural Language processing will be the core engine driving our Bias Check API and the Bias Tracker on the PurpleTruth application.
- In-house team leading news articles and news source verification, as well as analyzing customer feedback, to ensure quality of our Bias Tracker.
- Full transparency into all internal (human based) processes, independently verified through random audits conducted by an objective third party.

TECHNOLOGY

There are four technical components to PurpleTruth:

- Machine learning algorithm (MLA) that will utilize natural language processing to assign news articles a biasness score.
- This MLA would also make that determination based on whether the news source is verified (based on existing fact check sites) and natural language processing for bias for the article. We will use crowd-sourced feedback about bias for each new source and article to gauge the performance of our algorithm.
- API integration that will allow news applications and websites to display our bias indicator and a “report bias” prompt next to each article.
- Front-end application for users who would like to report bias for a news source or article or would like to go to PurpleNews.com directly to check the bias of an article they are reading. that will be presented as a red, blue or purple bias indicator to each article.
- Hosting services.

MARKET COMPETITION & DIFFERENTIATORS

While there are fact-checking sites and many news services and aggregators in the market, we have not seen a ML driven bias check engine that is similar to PurpleTruth.

APPROACH

To develop our MVP prototype of PurpleTruth, the team started by surveying users to inform our product requirements. From those requirements, the team iteratively developed and tested our prototype.

USER SURVEYS

First, the team did six conversational user surveys to better understand what people are looking for in their news applications and how people feel about bias in the news. From the preliminary interviews, we learned that all of those six people felt the news they consume is biased and that caused significant frustration. Next, the team built a short, more high-level survey to learn more about what people are looking for in a news application to inform our strategy and development efforts. 96 people completed that survey, results can be seen in Appendix 1. From that survey, we learned that most consumers care about breaking and political news over all other topics, and over 75% of respondents felt that bias was one of their top concerns about the news they consume. The team feels this validates that there is a significant market for bias transparency in the news.

PRODUCT REQUIREMENTS

From our customer feedback, the team was able to build out our product requirements. These requirements are captured in Appendix II.

EARLY PROTOTYPES & USABILITY TESTING

From our product requirements, the team developed wireframe application prototypes in a program called Balsamiq, as seen in Appendix III. While designing these prototypes, the team was able to design all MVP user interfaces. Those designs were then moved to Adobe where a more interactive prototype was developed and then user tested. The team's approach to user testing and findings are captured in Appendix IV.

FINAL PROTOTYPE

Following our user testing feedback, the team was able to design our final prototype, which is shown in Appendix V. The final prototype is also demoed in the team's demo video.

CONCLUSION

Our goal is to arm readers with insights about how news articles are biased so that they have more data with which to form their own opinions. We believe that our PurpleTruth product can be a 'yardstick' for bias in the news that will foster more objective discussions and bridge the silos felt in discussions today, and our survey responses indicate that there's a significant market for this service.

References

- [1] *PERCEIVED ACCURACY AND BIAS IN THE NEWS MEDIA*, A GALLUP/KNIGHT FOUNDATION SURVEY, 2008, knightfoundation.org/wp-content/uploads/2020/03/KnightFoundation_AccuracyandBias_Report_FINAL.pdf.

APPENDIX I - User Survey Results

What's your age?

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What's your age?	18.00	72.00	37.35	10.68	114.04	96

What's your gender?

#	Field	Choice Count
1	Male	36.46% 35
2	Female	62.50% 60
3	Non-binary / third gender	1.04% 1
4	Prefer not to say	0.00% 0
		96

Which of the below political party typology do you feel most aligned with?

#	Field	Choice Count
1	Conservative	12.37% 12
2	Moderate	24.74% 24
3	Liberal	49.48% 48
4	Independent	11.34% 11
5	Other	2.06% 2
		97

Showing rows 1 - 6 of 6

What is your most frequent method of checking the news when you use an online source?

#	Field	Choice Count
1	News Aggregator App (Example: Google News, Apple News, etc.)	29.59% 29
2	News Source App (Example: CNN, AP Mobile)	16.33% 16
3	News Website	25.51% 25
4	Social Media	16.33% 16
5	Podcasts	6.12% 6
6	Other	6.12% 6
		98

Please rank the type of news you're interested in by dragging the topics below from most interested (1) to least interested (6).

#	Field	1	2	3	4	5	6	Total
1	Politics	16.67% 16	38.54% 37	16.67% 16	15.63% 15	9.38% 9	3.13% 3	96
2	Breaking News	61.46% 59	21.88% 21	8.33% 8	6.25% 6	2.08% 2	0.00% 0	96
3	Business / Finance	9.38% 9	12.50% 12	22.92% 22	26.04% 25	19.79% 19	9.38% 9	96
4	Technology	2.08% 2	13.54% 13	23.96% 23	31.25% 30	20.83% 20	8.33% 8	96
5	Sports	8.33% 8	7.29% 7	4.17% 4	9.38% 9	16.67% 16	54.17% 52	96
6	Entertainment	2.08% 2	6.25% 6	23.96% 23	11.46% 11	31.25% 30	25.00% 24	96

Showing rows 1 - 6 of 6

Please rank your biggest frustration with the news by dragging the topics below from most frustrating (1) to least frustrating (6)

#	Field	1	2	3	4	5	6	Total
1	Biasness	51.58% 49	22.11% 21	9.47% 9	5.26% 5	4.21% 4	7.37% 7	95
2	Notification Fatigue	6.32% 6	7.37% 7	29.47% 28	25.26% 24	23.16% 22	8.42% 8	95
3	Overwhelming / Too Stressful	6.32% 6	17.89% 17	22.11% 21	27.37% 26	18.95% 18	7.37% 7	95
4	Lack of Positivity	11.58% 11	13.68% 13	20.00% 19	23.16% 22	22.11% 21	9.47% 9	95
5	Click Bait	21.05% 20	33.68% 32	16.84% 16	10.53% 10	15.79% 15	2.11% 2	95
6	Boring	3.16% 3	5.26% 5	2.11% 2	8.42% 8	15.79% 15	65.26% 62	95

Showing rows 1 - 6 of 6

How likely are you to use a news aggregator app that shows political news from both left and right leaning sources?

#	Field	Choice Count
1	Extremely likely	31.25% 30
2	Somewhat likely	34.38% 33
3	Neither likely nor unlikely	25.00% 24
4	Somewhat unlikely	5.21% 5
5	Extremely unlikely	4.17% 4
		96

Showing rows 1 - 6 of 6

Rank the top things you'd look for in a news aggregator app by dragging the features below from most (1) to least (6) desirable.

#	Field	1		2		3		4		5		6		Total
1	Consolidating stories from different sources	18.75%	18	14.58%	14	12.50%	12	14.58%	14	25.00%	24	14.58%	14	96
2	Transparency / highlighting potential biasness	22.92%	22	21.88%	21	32.29%	31	11.46%	11	8.33%	8	3.13%	3	96
3	Daily briefings / summary of headlines	8.33%	8	18.75%	18	12.50%	12	23.96%	23	17.71%	17	18.75%	18	96
4	Timeliness	7.29%	7	4.17%	4	14.58%	14	20.83%	20	23.96%	23	29.17%	28	96
5	Verified news sources	32.29%	31	19.79%	19	15.63%	15	14.58%	14	12.50%	12	5.21%	5	96
6	Tracing news / stories to their original source	10.64%	10	21.28%	20	12.77%	12	14.89%	14	12.77%	12	27.66%	26	94

Showing rows 1 - 6 of 6

APPENDIX II - PRODUCT REQUIREMENTS

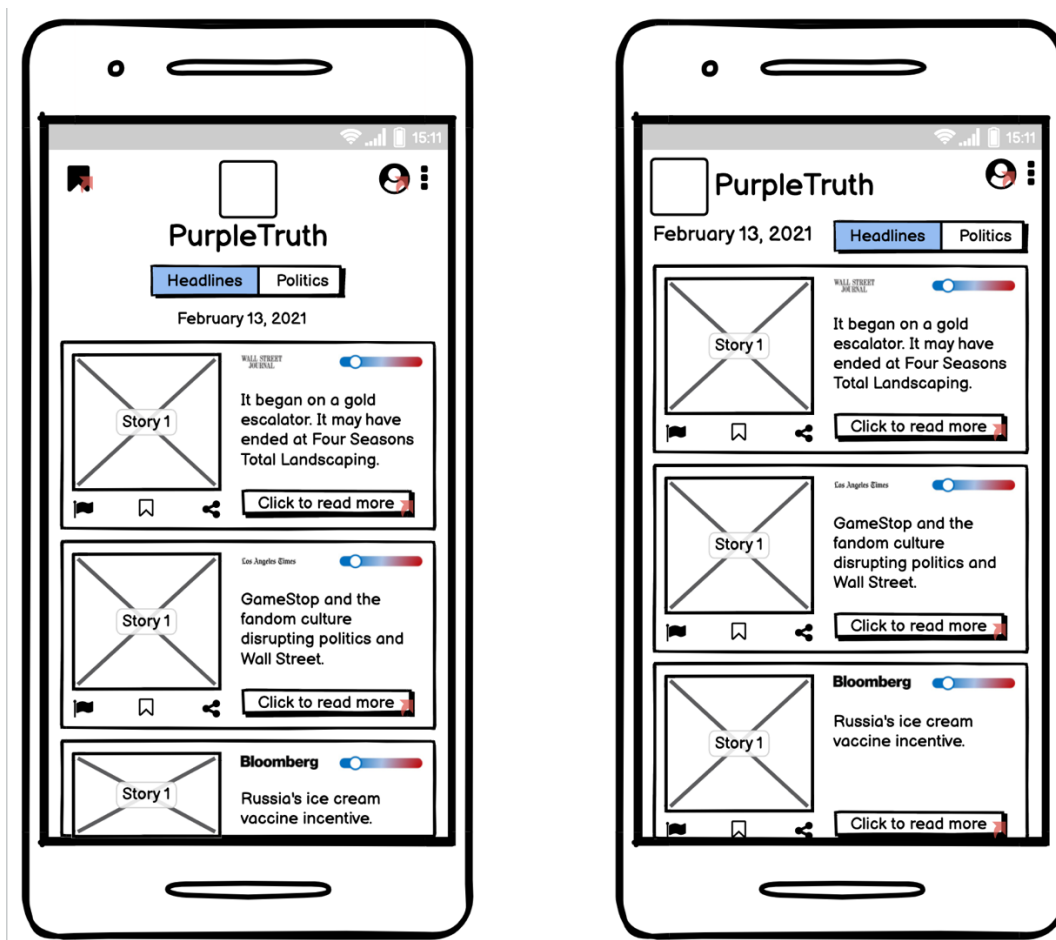
Initiative	Epic	User Stories	Acceptance Criteria	POV
Phone Compatibility	As a customer, I want a compatible news aggregator app that works with my phone.	As a customer, I want an iPhone compatible news application so that I can use it with my device.	iPhone users can access PurpleTruth on their phones	Customer
Phone Compatibility	As a customer, I want a compatible news aggregator app that works with my phone.	As a customer, I want an Android compatible news application so that I can use it with my device.	Android users can access PurpleTruth on their phones	Customer
Advertisements	As a customer, I do not want to see any advertisements while reading news articles.	As a customer, I want to browse the app without seeing advertisements so that I can consume the news without distractions.	1. All Advertisements from articles retrieved from news sources are removed when presented in PurpleTruth 2. PurpleTruth must exclude news articles that are "sponsored advertisement content" within news sources.	Customer
Notifications	As a customer, I want to be able to tailor my notification preferences.	As a customer, I want to be able to tailor my notification preferences based on how frequently I would like to be updated by PurpleTruth so that I can prevent notification fatigue.	Ability for users to tailor notifications by: 1. Daily 2. Weekly 3. News Source 4. News as it breaks	Customer
Notifications	As a customer, I want to be able to tailor my notification preferences.	As a customer, I want to be able to mute or remove PurpleTruth notifications entirely so that I can prevent notification fatigue.	Users must be able to mute / remove notifications. PurpleTruth must adhere to the user device's notification settings.	Customer

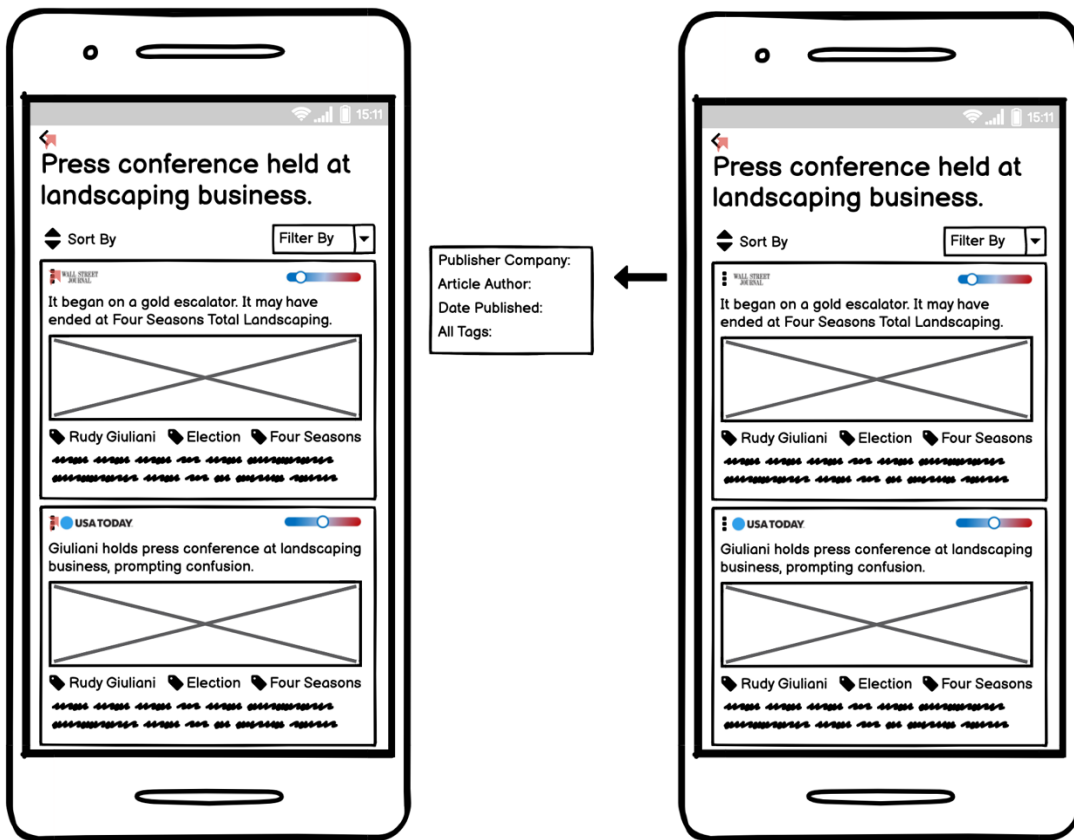
Notifications	As a customer, I want to be able to tailor my notification preferences.	As a customer, I want notifications to be brief and to the point so that I can consume the news quickly.	Notification message should be 1 sentence maximum.	Customer
Verified News Sources	As a customer, I want verified news sources in my news aggregator app so that I know where the news came from.	As a customer, I want every news article to clearly display the name of the source publication so that I can easily distinguish where each article came from.	The source for each news article displayed in PurpleTruth must be clearly visible.	Customer
Verified News Sources	As a customer, I want verified news sources in my news aggregator app so that I know where the news came from.	As a customer, I want to read political news from sources that have been validated by experts so that I can trust what I am reading.	News articles must only be displayed in PurpleTruth if the news source has been flagged in our back end systems as validated. If a news source is no longer valid, news articles from that source must stop appearing	Customer
Verified News Sources	As a customer, I want verified news sources in my news aggregator app so that I know where the news came from.	As a customer, I do not want to see any clickbait links in articles so that I can trust the sources that I am reading.	No articles identified as clickbait must be displayed within the app at any times.	Customer
Transparency / Highlighting Potential Biasness	As a customer, I want verified my news aggregator app to highlight potential bias from every news source.	As a customer, I want a clear indicator on each article to indicate the biasness of the article so that I can quickly identify the biasness of the news source.	Show red to blue progress bar and indicate where the article's biasness is on the scale. Every time a Article is displayed within the app, the "bias tracker" indicator must be displayed. The "bias tracker" must correspond with the bias score associated with the article as per the bias check engine	Customer
Transparency / Highlighting Potential Biasness	As a customer, I want verified my news	As a customer, I want to submit my feedback on an	Show a feedback button within the app.	Customer

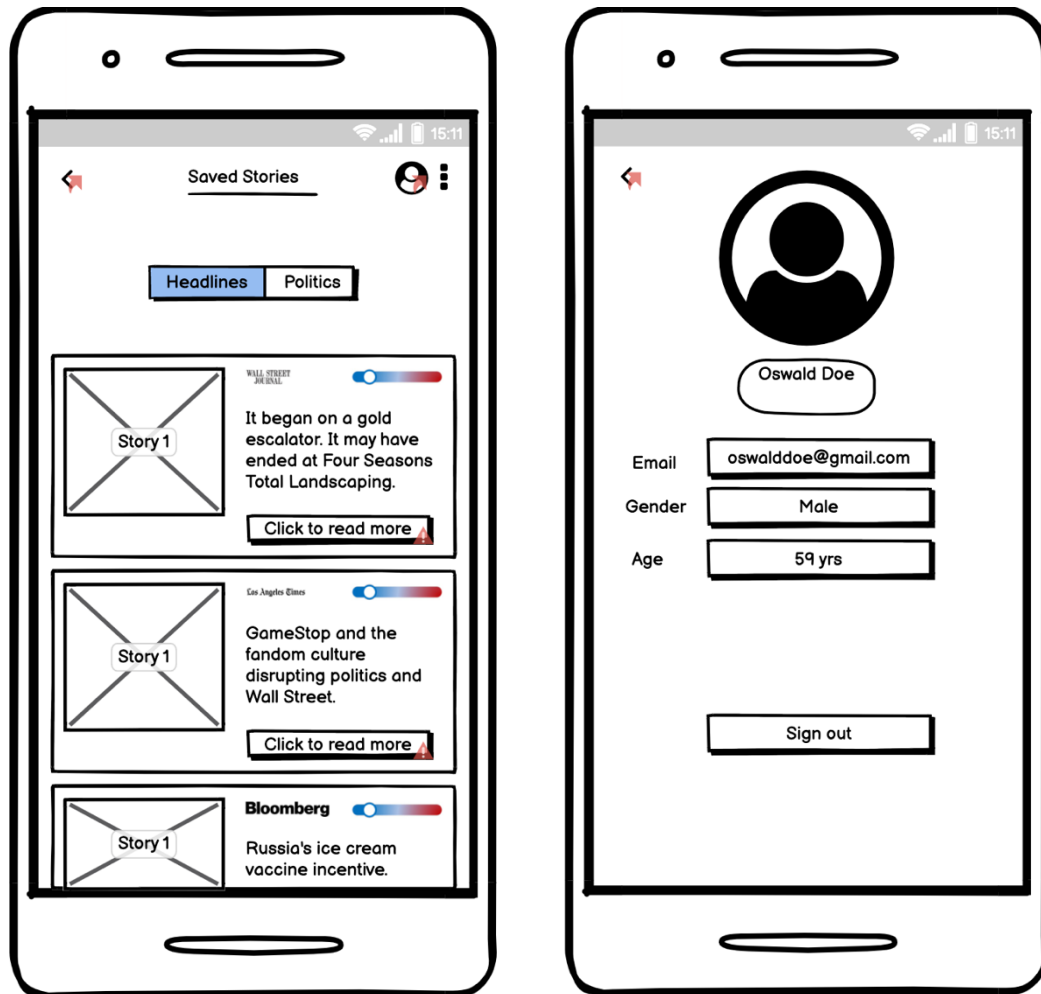
	aggregator app to highlight potential bias from every news source so that I can be aware of them.	article if I feel that it's mislabeled.		
Stories	As a customer, I want news stories to be easily consumed.	As a customer, I want news articles with similar content to be aggregated into one section so that I can browse through different stories with ease.	Display all of today's stories in the app home page in a scrollable format. On the app's main page, the most recently published article and source must be displayed along with a link to display more information	Customer
Stories	As a customer, I want news stories to be easily consumed.	As a customer, I want to be able to easily read all news articles that has similar content in one view so that I can read more into a particular story and form my own opinion.	When customer tap on a story, it will take them to a different page with all news articles associated to that story. Each article must be relevant to the main topic / story that the user has selected to view. Each article displayed must have the relevant source displayed, along with the relevant bias tracker indicator.	Customer
Monetization	As a PurpleTruth business owner, I want a monetization plan for the app.	As a PurpleTruth business owner, I want the ability to publish our API and propriety bias engine to interested third parties (corporates, other news app's) so that I can monetize my idea.	1. API Access is governed through a CRM system that confirms whether a paying customer (third party in our case) can access it or not. 2. Strict access control through strong authentication and authorization protocols. 3. Core ML / NLP engine to remain obfuscated at all times to external users.	Business

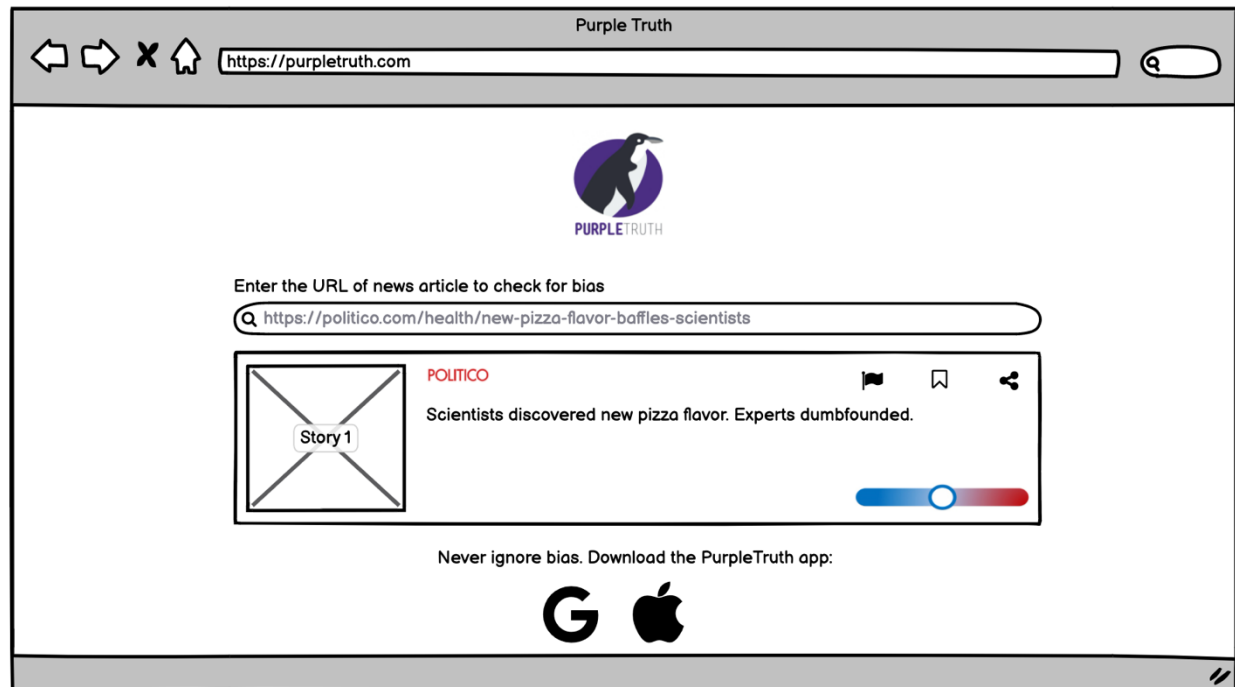
			4. API to accept either a URL for an article, or article contents itself, to return a Bias score back to the consumer.	
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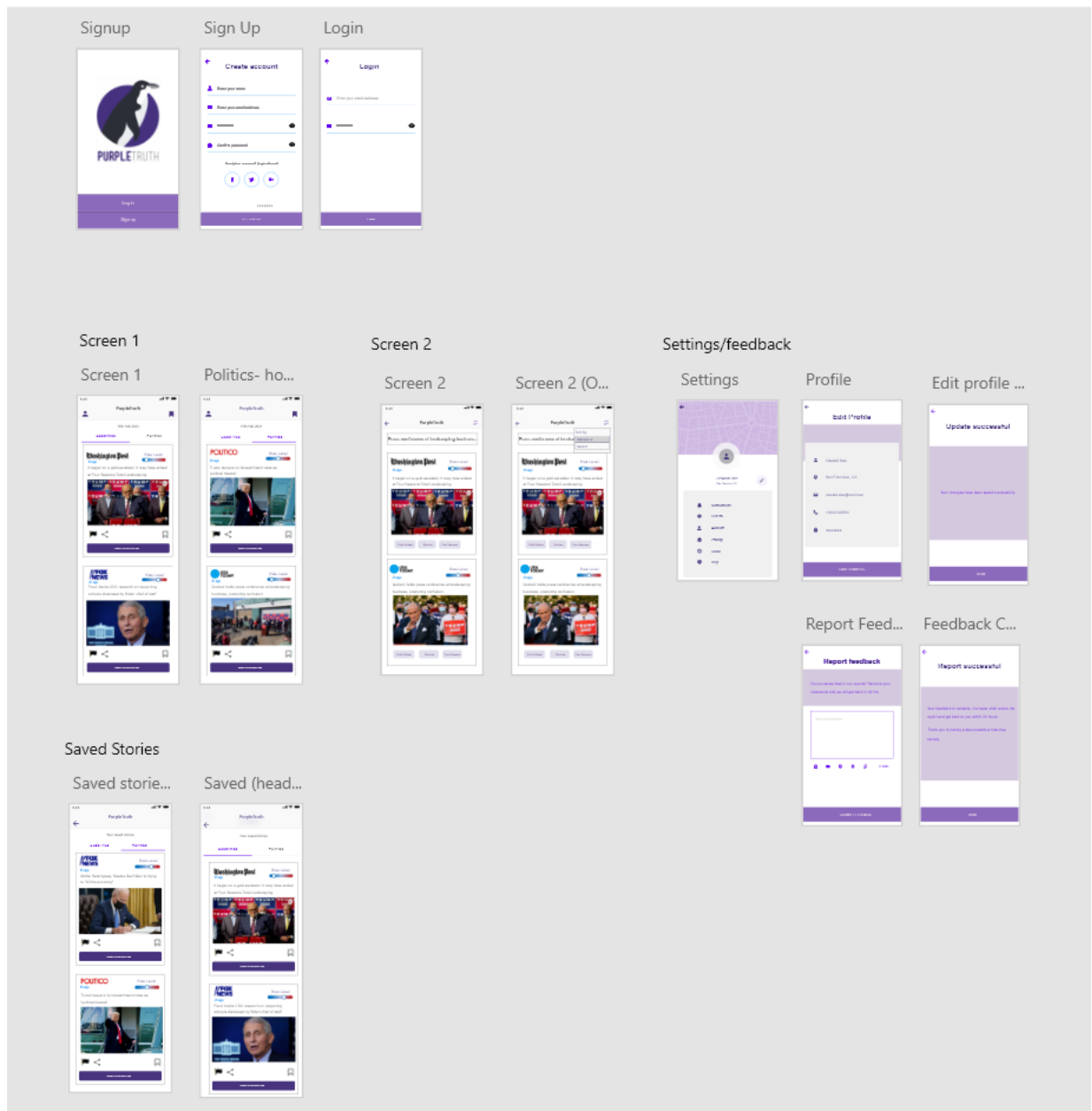
APPENDIX III - EARLY APPLICATION PROTOTYPES











APPENDIX IV – USER TESTING

PurpleTruth – Usability Test 1

Prototype Version: M1.0 (Mobile App)

Link: <https://xd.adobe.com/view/2a4d8c1c-ff17-49b0-b214-91d6645858c9-7f1e/?fullscreen&hints=off>

Brief: PurpleTruth is a mobile / web-based application that is designed to leverage Machine learning to highlight the level of political bias present within news articles. The mobile application will also aggregate and display these news articles to the end user.

Prototype details:

1. Primary focus: Front End usability and user feedback on proposed features.
2. Features available:
 - a. Log in.
 - b. View stories with bias indicator.
 - c. View articles for each story with bias indicators.
 - d. Flag articles for feedback.
 - e. View saved articles.
 - f. View sorting options.
3. Features Unavailable:
 - a. No back user management / news source connectivity.
 - b. Bias API not connected - Bias levels are not AI driven.
 - c. Ability to save and share articles not activated.
 - d. Ability to manage user details not activated.
 - e. Notification management not enabled.
 - f. Keyboard functionality in mobile view.

Tester Name: Michelle Kim

Test Date: Feb 12, 2021

#	Test Steps	Observations
1	Click on Sign up Do not enter any details Click on Get Started	Clean and straightforward UI
2	View Articles on the home page. Try out the two different tabs. Click on “Read more articles” for the first article under Headlines. Try out the sorting options for the detailed articles page.	“Read more articles” button – Is this to read more articles about the same story from different news sources? Sorting options are clear but not sure if I would ever sort by Relevance since you’re already viewing articles that are relevant
3	Flag an article for feedback. Click on Submit in the feedback screen.	What is the difference between “DONE” and the “SUBMIT FEEDBACK” buttons?
4	Click on Saved Articles.	Would recommend just having a single tab than 2 tabs
5	Click on the user icon to check your profile.	Screens are intuitive

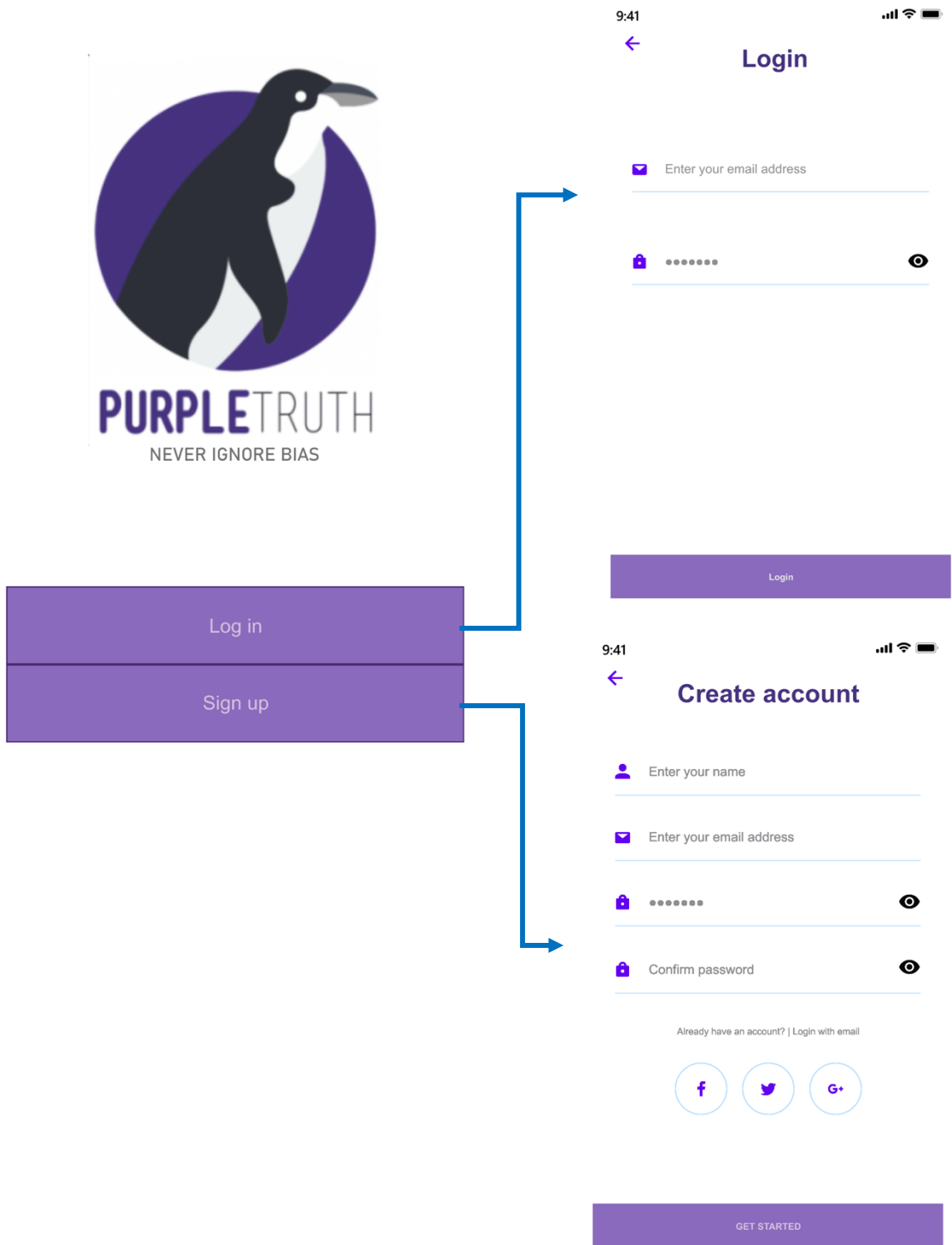
Usability Questions:

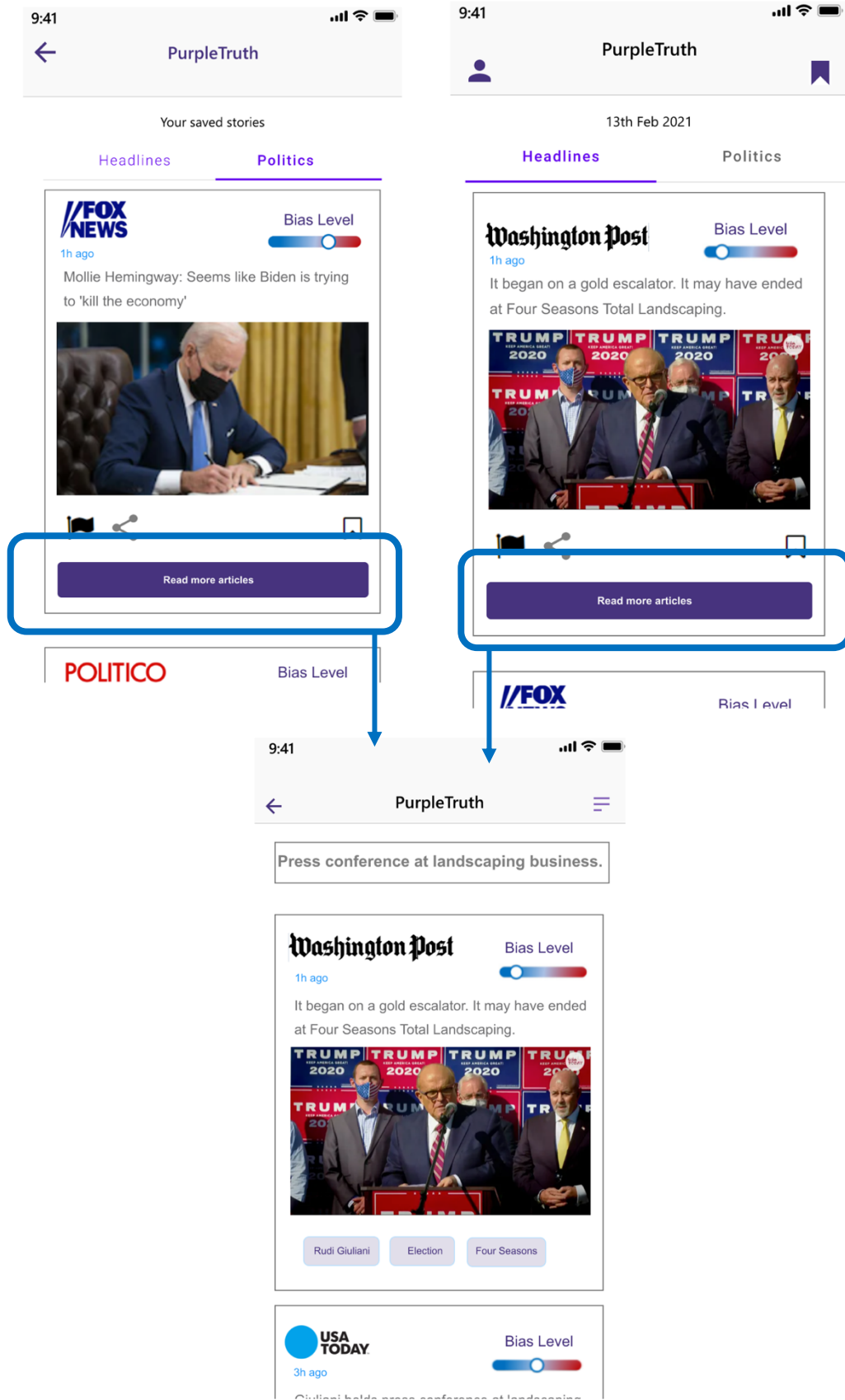
1. Overall reaction to prototype – Positive | Negative | Neutral.
Positive
2. What worked well?
Overall design is nice and simple – It’s clear what the purpose of this app is as opposed to other apps that combine news sources
3. What did not work well?

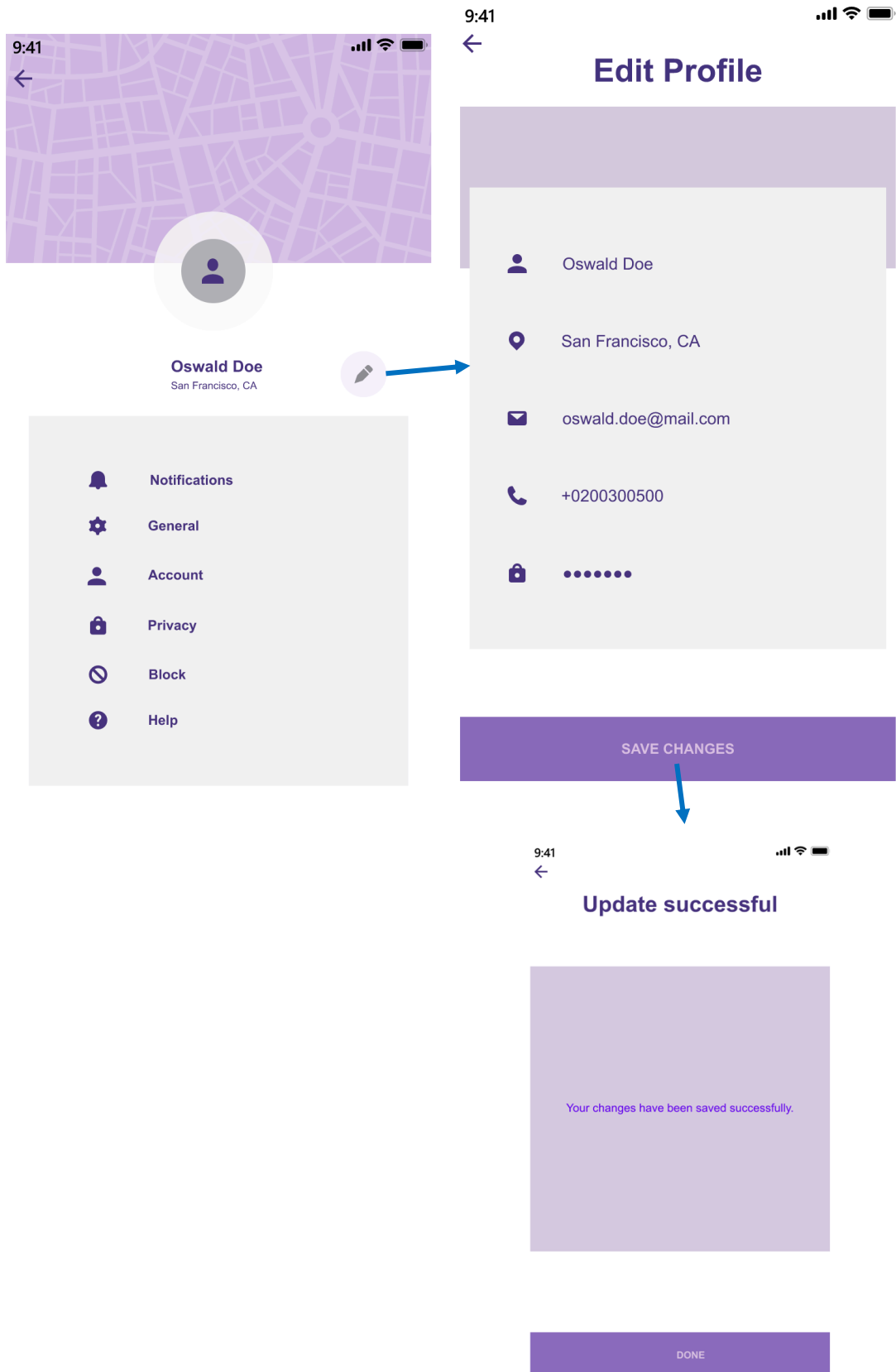
The “Read more articles” button could be renamed to be a little bit more specific (i.e. Read similar articles) since the user can scroll down to read more articles as well

4. What features would you like to test further in the prototype?
It would be cool to test out the ability to save user preferences on the bias level and/or filter out articles based on that preference level.
5. Any other comments.
Love the concept! Would totally use this app 😊

APPENDIX V - FINAL APPLICATION PROTOTYPE







9:41
←



Report feedback

Do you sense bias in our reports? Send us your comments and we will get back in 24 hrs.

Your comments



DONE

SUBMIT FEEDBACK

9:41
←



Report successful

Your feedback is valuable. Our team shall review the report and get back to you within 24 hours.

Thank you for taking a step towards a bias-free society.

DONE

