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Request for Quotation (RFQ) 4QTFHS150004
Approach Criteria Evidence

f. Performed usability tests with people

BE focused the BE Safe website towards the general public concerned about the drugs they are prescribed or using, and helping them gain deeper insight into the possible adverse effects and recalls. BE also provided a way for the public to provide the FDA with feedback on its data.

BE used an informal usability testing technique known as Guerrilla Usability Testing during the software development lifecycle of the BE Safe prototype. Guerilla testing is an informal approach used to obtain quick user opinions and feedback on the design of the website in a short amount of time from potential end users uninvolved with the project. Guerilla testing may be conducted either mid-sprint or at the end of a sprint so feedback can be incorporated into the next design decision or future agile project sprints. BE employed the "think aloud" protocol for BE Safe usability testing wherein testers are asked to describe the steps they are taking and to provide feedback while they execute a given task.

Objective

BE conducted usability tests for the BE Safe website to find out whether users could search for drug recalls or adverse reactions easily; filter search criteria based on the available advanced search options (time period, sex, age); and subscribe to a drug recall or adverse reaction email notifications.

Test Material

Tests of the BE Safe website were conducted using a variety of devices (desktop/laptop, tablet, mobile phone); operating systems (Windows, Apple iOS, Android); and browsers (Firefox, Chrome, IE, Safari). A list of the devices used to test the responsive design are listed in the table below.

Category	Device	Operating System & Version	Browser	Browser Version
Laptop	ASUS SonicMaster	Windows 8	Internet Explorer	11.0.9600.17842
			Chrome	43.0.2357.130m
			Firefox	38.0.5
Laptop	Dell Latitude E550	Windows 8	Internet Explorer	11.0.9600.17842
			Chrome	43.0.2357.130m
			Firefox	38.0.5
Laptop	Apple MacBook Pro	OSX 10.9	Safari	7.0.6 (9537.78.2)
			Firefox	38.0.5
Tablet	Windows Surface Pro 3	Windows 8	Internet Explorer	11.0.9600.17842
			Chrome	43.0.2357.130m
Tablet	Apple iPad 3	iOS 8.3	Safari	8.3 [per OS]
Tablet	ASUS Nexus 7	Android 5.1.1	Chrome	5.1.1 [per OS]
Smartphone	Apple iPhone5	iOS 8.3	Safari	8.3 [per OS]

Smartphone	Apple iPhone6	iOS 8.3	Safari	8.3 [per OS]
Smartphone	Samsung Galaxy S5	Android 5.0	Chrome	5.0 [per OS]

Figure 1. Devices Used During Usability Testing

Sprint 3 Test Plan

The BE Safe website test plan for Sprint 3 usability testing is outlined below:

- Identify usability testing objectives
- Identify known usability issues and roadblocks to efficiency, effectiveness, satisfaction
- Define the new features in development and planned for development
- Ask pre-test questions and address tester questions
- Provide URL
- Execute Test
    - Take note of behaviors, comments, errors, and completion successes/failures
    - Ask test questions and address tester questions

BE described the BE Safe features in development at the time of the usability testing to solicit feedback. Those features included: unsubscribe from a specific email notification and share searches via social media (Facebook and Twitter) based on the search results.

Test Tasks

BE asked usability testers to complete the following tasks:

- Search for recalls for a drug
- Search for adverse reactions for a drug
- Filter search results on recalls
- Filter search results on adverse reactions
- Subscribe to recall alerts for a drug
- Subscribe to adverse reaction alerts for a drug

Questions

BE asked usability testers the following questions:

- Pre-Test
    - When you think of a search page, what terms would you use to describe it?
- General
    - What do you think of our landing page?
    - Before clicking the Search icon, what are your expected results based on past experiences?
- Recalls and Adverse Reactions
    - How do you interact with search results page?
    - Can you filter your search results?
    - Before clicking the Subscribe to Notifications link, what are your expected results based on past experiences?
    - Before clicking the Clear Form and Results link, what are your expected results based on past experiences?

- How do you subscribe to an alert?
- Final Thoughts
  - What elements can be introduced for a better user experience?
  - What do you think about the new feature(s) we are developing?
  - What do you think about the new feature(s) we plan to develop?
  - Are there any features or functionality that our website could benefit from?

See Appendix 1 for Sprint 3 usability testing minutes.

Results and Analysis

BE recorded questions, quotes, issues, and ideas/recommendations that came out of the Sprint 3 usability testing session on the whiteboard in a Kanban-influenced approach to facilitate a fast response from the team. We clustered the results in groups and prioritized them by bug fixes or enhancement recommendations for approval by the Product Owner, Brian Schafer.

The following image shows the Results and Analysis step from Sprint 3 usability testing.
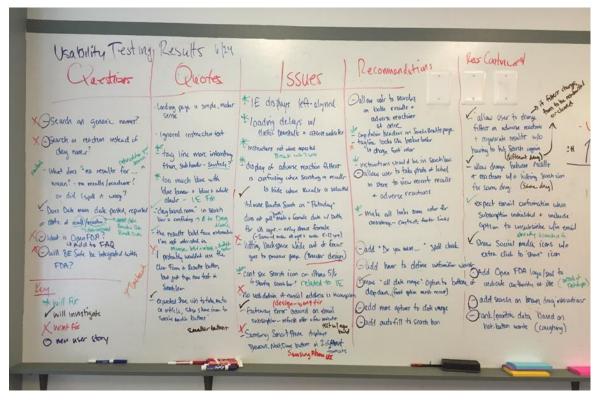

Figure 1. Analysis of Sprint 3 Usability Testing Results

BE evaluated the results of the Sprint 3 usability tests and prioritized the feedback based on 4 categories: Will Fix (green asterisk), Will Investigate (brown checkmark), Won't Fix (red X) and New Story (purple circle). The results were then added to the JIRA product backlog for traceability and prioritization.
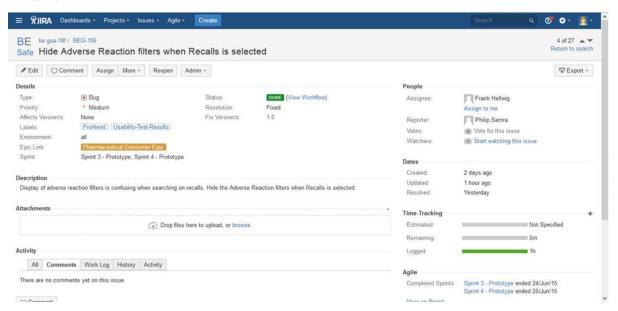
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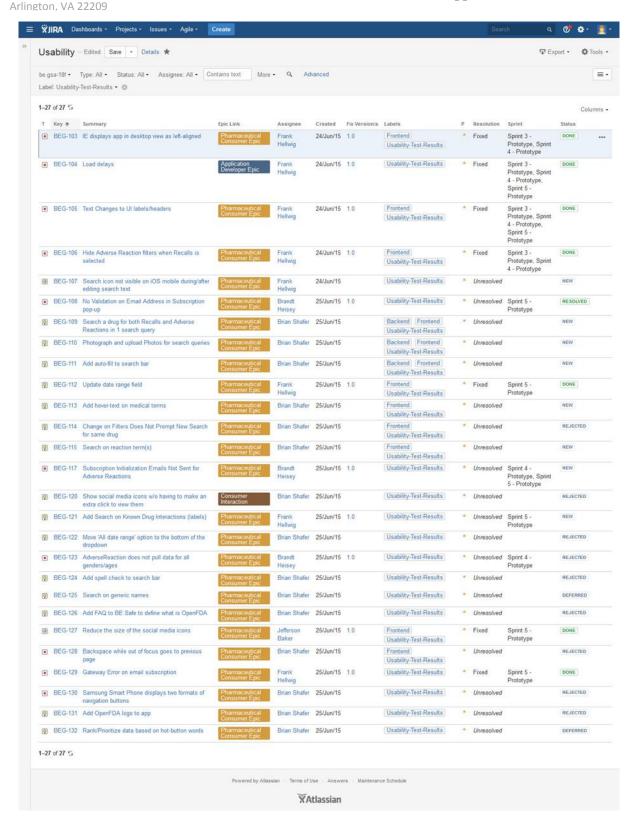**Figure 2. Detailed View of JIRA issue from Sprint 3 Usability Testing Results**

Figure 3. JIRA Issue List of Based on Sprint 3 Usability Testing Results

Sprint 6 Test Plan

The BE Safe website test plan for Sprint 6 usability testing is outlined below:

- Identify usability testing objectives
- Identify known usability issues and roadblocks to efficiency, effectiveness, satisfaction
- Define the new features in development and planned for development
- Ask pre-test questions and address tester questions
- Provide URL
- Execute Test
  - Take note of behaviors, comments, errors and completion successes/failures
  - Ask test questions and address tester questions

BE described the BE Safe features in development and planned for development at the time of the usability testing to solicit feedback. Those features included: search for known drug interactions, graph search results, share search results via email and text message, search a drug for both Recalls and Adverse Reactions in one search query.

Test Tasks

BE asked usability testers to complete the following tasks:

- Evaluate landing page
- Search for recalls for a drug
- Filter search results on recalls
- Subscribe to recall alerts for a drug
- Share search with social media
- Search for adverse reactions for a drug
- Filter search results on adverse reactions
- Subscribe to adverse reaction alerts for a drug
- Share search with social media
- Contribute data via Me Too button
- Search using carousel
- Change search result filters from carousel

Questions

BE asked usability testers the following questions:

- Pre-Test
  - When you think of a search page, what terms would you use to describe it?
- General
  - What do you think of our landing page?
  - Before clicking the Search icon, what are your expected results based on past experiences?
- Recalls
  - How do you interact with search results page?
  - Can you filter your search results?
  - How do you subscribe to an alert?

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- Can you search your search with social media?
- Adverse Reactions
  - How do you interact with search results page?
  - Can you filter your search results?
  - How do you subscribe to an alert?
  - Can you search your search with social media?
  - Tell me how you would provide feedback to the FDA
- Carousel Feature

  - What are your expected results of the images displayed?
  - How would you change the search criteria that was provided by clicking on the image?
- Final Thoughts
  - What elements can be introduced for a better user experience?
  - What do you think about the new feature(s) we are developing?
  - What do you think about the new feature(s) we plan to develop?
  - Are there any features or functionality that our website could benefit from?

See Appendix 2 for Sprint 6 usability testing minutes.

Results and Analysis

BE recorded questions, quotes, issues, and ideas/recommendations that came out of the Sprint 6 usability testing session in the JIRA product backlog. The team prioritized the bugs for resolution and inclusion in Release 1.0, and the remaining enhancement recommendations that needed to be approved and prioritized by the Product Owner, Brian Schafer during the Sprint Planning Meeting for Sprint 7.

The image below reflects the Sprint 6 Usability Testing Results in the JIRA product backlog.
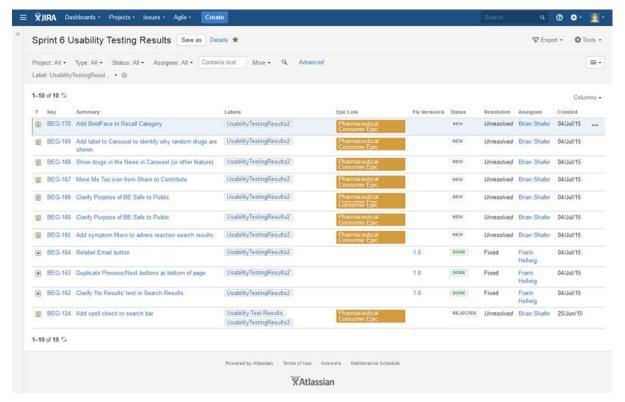
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Figure 4. JIRA Issue List of Based on Sprint 6 Usability Testing Results

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Appendix 1   Sprint 3 Usability Testing Minutes

Meeting Description:	BE 18F Usability Testing – Sprint 3		
Date: 6/24/2015	**Time:** 1:00 pm	**Location:**	BE Corporate Office

Participants			* in attendance, # absent, + substitute, % via phone	
1	Lauren Turbeville	*	7	
2	Sarah Joseph	*	8	
3	Ben Ness	*	9	
4	Laura Gross	*	10	
5			11	
6				

Agenda		Presented By
1	Identify usability testing objectives	Lauren Turbeville
2	Identify known usability issues and roadblocks to efficiency, effectiveness, satisfaction	Lauren Turbeville
3	Define the new features in development and planned for development	Lauren Turbeville
4	Ask pre-test questions and address tester questions	Lauren Turbeville
	Provide URL and execute test	Lauren Turbeville
	Ask test questions and address tester questions	Lauren Turbeville

Minutes	
	Lauren introduced concept of usability testing to testers, all of whom are uninvolved with design and development of BE Safe
1	Objective: To find out whether users could easily search for drug recalls or adverse reactions; filter search criteria based on the available advanced search options (time period, sex, age); and subscribe to a drug recall or adverse reaction email notifications in BE Safe.

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	Lauren asked the group to vocalize their thoughts throughout the duration of the test, including what elements could be introduced for a better user experience.
2	Lauren described the BE Safe features currently in development to solicit feedback: sending email notifications, ability to unsubscribe from a specific email notification; and share searches via social media (Facebook and Twitter) based on the search results.

Lauren asked group, 'What do you think about the new feature(s) we are developing?

Laura, Sarah and Ben acknowledged and agreed it sounded consistent with the a subscription feature. |
| 3 | Lauren described the BE Safe features currently in design to solicit feedback: following an adverse reaction search, users have the opportunity to say, 'I had that reaction too' – a 'Me Too' button, if you will that will generate a pop-up for the user to submit feedback. Due to HIPAA concerns, BE Safe would not ask for any personally identifiable information. All information collected is voluntary, including email addresses and consent to contact the user via email.

Lauren asked group, 'What do you think about the new feature(s) we plan to develop?

Laura, Sarah and Ben really liked the concept, Laura would consider using that functionality and acknowledges there are a lot of complainers on social media who would make use of something like this. |
| 4 | Lauren collected Device information:

Category	Device	Operating System & Version	Browser	Browser Version
Laptop	ASUS SonicMaster	Windows 8	Internet Explorer	11.0.9600.17842
			Chrome	43.0.2357.130m
			Firefox	38.0.5
Laptop	Dell Latitude E550	Windows 8	Internet Explorer	11.0.9600.17842	

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				Chrome	43.0.2357.130m
				Firefox	38.0.5
Laptop	Apple MacBook Pro	OSX 10.9	Safari	7.0.6 (9537.78.2)
			Firefox	38.0.5
Tablet	Windows Surface	Windows 8	Internet Explorer	11.0.9600.17842
			Chrome	43.0.2357.130m
Tablet	Apple iPad 3	iOS 8.3	Safari	8.3 [per OS]
Tablet	ASUS Nexus 7	Android 5.1.1	Chrome	5.1.1 [per OS]
Smartphone	Apple iPhone5	iOS 8.3	Safari	8.3 [per OS]
Smartphone	Apple iPhone6	iOS 8.3	Safari	8.3 [per OS]
Smartphone	Samsung Galaxy S5	Android 5.0	Chrome	5.0 [per OS]

5

Lauren asked group for expectations of a search page. Their responses are below.
- Sarah: bar with area to type in, magnifying glass
- Laura: auto-fill
- Ben: drop-down that guesses what you're typing, advanced options/filtering

6

Lauren asked group for thoughts on landing page. Their responses are below.
- Sarah: loading delay; website is left-aligned in IE, ignored instruction text
- Laura: instructions not where expected not intuitive as to which drug name to enter (drug name v. drug brand name), more interested in tagline than subheader, tagline in aqua looks like a broken link. All links should be the same color
- Ben: simple layout makes sense, didn't notice instructions

Questions that resulted:
- Can you do a search of both drugs and recalls at same time for same drug?

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- Can you search for generic drug names?
- Can you take a picture of a medication using smartphone to conduct search?

Group consensus:
- Adverse reactions advanced options should only display if adverse reactions is selected. Otherwise, confusing
- Too much blue on page with blue and white cloud wallpaper and subheader

7	Lauren asked group for expectations of a search results page, subscribe button and clear form button. Their responses are below. Group consensus: • Search results page: list of results with short summary under header, Google-like view that takes you to a new view of the page • Subscribe button: populate email address and click submit • Clear form button: clears search
8	Lauren asked to execute searches on both recalls and adverse reactions, using filters and subscribe to alerts for both recalls and adverse reactions Lauren asked group for thoughts on search results page. Their responses are below. • Sarah: should capitalize headers on search table, recall details have boldface on text im not interested in – should be reversed; probably wouldn't use the clear feature; Samsung phone has 2 sets of navigation buttons • Laura: no auto-correct for misspelled medical terms – add, 'Do you mean…' spellcheck; include hover text to define medical terms; search on 'pataday' does not show males for 'both' filter, but they exist under 'male' filter; same with ages – not all inclusive; add search on reactions (coughing); hitting backspace while out of focus takes user to previous page in browser; taglines should not be blue; no change on subscribe pop-up if email address is incomplete; gateway error occurs; expect email confirming subscription initialized with option to unsubscribe; helpful for site to have FDA logo to show authority • Ben: does not associate share icon with share concept – thought share icon would take him to related articles; replace share icon with 3 social icons to reduce number of clicks; move 'all date range' to bottom of drop-down field and list most recent first; wants to see more options in the date range drop-down; would like to be able to

change the filters on an adverse reaction search without having to hit search icon again - not clear that the user needs to clear the search –; cant see search button on iphone after search term entered

Questions that resulted:
- Does 'no results' message mean I spelled it wrong? Or there are no results?
- Does 'date' mean date posted, date reported or date occurred?
- What is OpenFDA?

Action Items	Owner	Status	Due Date	Completion Date
1 Lauren to take feedback to team for analysis and prioritization. See JIRA for action items in task format	all	Open	6/24	6/25

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Appendix 2   Sprint 6 Usability Testing Minutes

Meeting Description:	BE 18F Usability Testing – Sprint 6	
Date: 7/3/2015	**Time:** 3:00 pm	**Location:** Meridian Hill Park, Washington DC

Participants			*** in attendance, # absent, + substitute, % via phone**	
1	Lauren Turbeville	*		
2	Christina Patterson	*		
3	Robert Adams	*		

Agenda		**Presented By**	
1	Identify usability testing objectives		Lauren Turbeville
2	Identify known usability issues and roadblocks to efficiency, effectiveness, satisfaction		Lauren Turbeville
3	Define the new features planned for development		Lauren Turbeville
4	Ask pre-test questions and address tester questions		Lauren Turbeville
	Provide URL and execute test		Lauren Turbeville
	Ask test questions and address tester questions		Lauren Turbeville

Minutes	
1	Lauren introduced concept of usability testing to testers, all of whom are uninvolved with design and development of BE Safe Objective: To find out whether users could easily search for drug recalls or adverse reactions; filter search criteria based on the available advanced search options (time period, sex, age); and subscribe to a drug recall or adverse reaction email notifications in BE Safe and share BE Safe with others. Lauren asked the group to vocalize their thoughts throughout the duration of the test, including what elements could be introduced for a better user experience.

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2	Lauren described the BE Safe features planned for development to solicit feedback: search for known drug interactions; graph search results; share search results via email and text message; search a drug for both Recalls and Adverse Reactions in 1 search query Lauren asked group, 'What do you think about the new feature(s) we plan to develop? Christina and Robert said the new features sound good.
3	Lauren collected Device information: <table><tr><th>Category</th><th>Device</th><th>Operating System & Version</th><th>Browser</th><th>Browser Version</th></tr><tr><td>**Laptop**</td><td>ASUS SonicMaster</td><td>Windows 8</td><td>Internet Explorer</td><td>11.0.9600.17842</td></tr><tr><td></td><td></td><td></td><td>Chrome</td><td>43.0.2357.130m</td></tr><tr><td></td><td></td><td></td><td>Firefox</td><td>38.0.5</td></tr><tr><td>**Laptop**</td><td>Apple MacBook Pro</td><td>OSX 10.9</td><td>Safari</td><td>7.0.6 (9537.78.2)</td></tr><tr><td></td><td></td><td></td><td>Firefox</td><td>38.0.5</td></tr><tr><td>**Tablet**</td><td>Nexus 7</td><td>Android 5.1.1</td><td>Chrome</td><td>5.1.1 [per OS]</td></tr><tr><td>**Smartphone**</td><td>Apple iPhone6 Plus</td><td>iOS 8.3</td><td>Safari</td><td>8.3 [per OS]</td></tr><tr><td>**Smartphone**</td><td>Apple iPhone6</td><td>iOS 8.3</td><td>Safari</td><td>8.3 [per OS]</td></tr></table>
4	Lauren asked group for expectations of BE Safe Website. Their responses are below. • Christina: expects to feel safer about drugs prescribed • Robert: expects to be able to find drug information he needs;
5	Lauren asked group for thoughts on landing page. Their responses are below. • Christina: Looks good.

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	• Robert: Not enough information about the site's purpose. If I know why I'm using BE Safe, it's straight to the point Questions that resulted: • What is the purpose of this site?
6	Lauren asked group for expectations of a search results page. Their responses are below. • Christina: find information on the drug I search • Robert: The drug I search for will be in here
7	Lauren asked group to execute searches on both recalls and adverse reactions, using filters and subscribe to alerts for both recalls and adverse reactions. Their responses are below: • Christina: 'No Results for Search' – assume either (1) there are no recalls or (2) drug isn't in database (3) maybe I spelled it wrong -- Suggestion: "No recalls/adverse reactions for [drug] in [time period searched]; Medications are hard to spell. Add auto-correct in addition to auto-fill • Robert: Previous and Next buttons should be duplicated at bottom of 10 results b/c that's when user decides to move to next page; Typographic hierarchy would be nice on Recalls. Example. Search on 'aspirin' for recalls and get "Subpotent Drug: …" or "Incorrect/Undeclared Excipients:…" etc.; Email button leads me to believe I can email these search results to myself/others. Would not think "Email" = subscribe. Consider relabeling button to 'Subscribe' or 'Alert Me'; Searching for adverse reactions to 'aspirin' with filters on Male & Adult 26-39, I get 2500+ results. I don't want to page through results 10 at a time. Would be nice if I could sort the search results on symptoms for specific drug I've searched on. Example. I have had issues with dizziness for other asthma medications I've taken. Has anyone in search criteria reported 'dizziness?' Questions that resulted: • What am I subscribing to: alerts to recalls or adverse reactions (or both) of the drug? or alert me with updates on drug? Need to read instructions before I understand what I'm subscribing to.

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8	Lauren asked group to share their searches and provide feedback for both recalls and adverse reactions. Their responses are below: Group consensus: • Do not expect to see Me Too button under Share icon. Think of Me Too as more of a 'contribute feature.' Questions that resulted: • Move Me Too icon under separate 'Contribute' section?
9	Lauren asked group to execute a search using the carousel and then modify those search results. Their responses are below: • Christina: Agreed with Robert's assessment • Robert: Carousel acts as I would expect (taking me to more information on the drug), but it's not intuitive as to why these random drugs are being showcased. Suggest adding a label to indicate they are the top 100 prescribed; 100 seems like a lot of drugs to feature; Would more interested in seeing drugs that are in the news in the carousel (i.e. major recalls instead of random drugs)
10	Lauren asked group to share their final thoughts on BE Safe, suggestions and thoughts on features in development/planned for development. Their responses are below: • Christina: Liked the graphing feature • Robert: Site is fast, results come up quickly. Suggestions peppered throughout.

Action Items	Owner	Status	Due Date	Completion Date
1 Lauren to take feedback to team for analysis and prioritization. See JIRA for action items in task format	Lauren	Open	7/3	7/3