

P7: DESIGN SPECIFICATION

Track a Pack - HCDE 518A

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Problem Statement

Every day, the typical airport sees around 8 million passengers walk through its gates, each with varying amounts of luggage per passenger. While a traveler's bags are more than likely waiting on the carousel, the fact is, according to a 2015 SITA whitepaper, that each year 24.1 million bags are reported as missing or mishandled (SITA, 2015, p. 5). Of these missing bags, 16% of the luggage is damaged and 3% is ultimately declared lost. A single lost luggage can lead to great feelings of frustration within a traveler and ultimately ruin any business trip, vacation and all around traveling experience. Even if a bag is handled perfectly and reaches its destination smoothly, many travelers still have an underlying anxiety as to the location of their luggage and the fear of it possibly being lost (SITA, 2015, p. 10). Not only is this a problem for consumers, airlines have to deal with the repercussions of lost luggage in the form of backlash from angry customers and lost revenue. In 2014, lost or mishandled luggage cost the airline industry upwards of \$2.4 billion a year (SITA, 2015, p.5).

The goal for this application is to ultimately improve the passenger's traveling experience by eliminating the anxiety of not knowing where your bags are at any given time. It is the intention that our design will improve the journey of flying by allowing passengers to have full visibility and traceability of their luggage throughout their entire traveling venture. Not only will this improve the user's traveling experience by easing their stress and worry of losing their luggage, it will also benefit airlines in the form of saved revenue and increased customer satisfaction and loyalty.

Design Question

The overarching design question that this application will solve is:

How can we improve the experience of airline passengers who check in their luggage?

Audience

This design is primarily for an airline's mobile app developers. This design covers the baggage tracking functionality that will be embedded in a more comprehensive mobile app that the airline's passengers will use during their flight.

Research Findings

To assist and inform on the design we selected three complementary methods for our user research: (1) Surveys and Questionnaires, (2) User Interviews, and (3) Competitive Product Survey.

These are the significant findings that were uncovered from our research:

- 47% of survey respondents flew occasionally (2-5 times a year) and 22% flew often (6-12 times a year).
- An overwhelming amount of survey respondents (83%) indicated that they traveled mostly for pleasure and typically carried and checked one bag, 63% and 56% respectively.
- Surprisingly, 50% of survey respondents indicated having lost a bag and 23% reported damage.
- The three most popular concerns among survey respondents in regards to checking in bags were: loss of bags, damage, and theft.
- The more business-oriented interviewees revealed that they are strongly against checking in bags due to the time wasted waiting for the luggage upon landing and checking in the luggage beforehand.
- Other interviewees expressed that their primary concern was having her luggage lost, as they had had such an experience on previous trips.
- One interviewee was especially dismayed at the lack of communication from the airline in notifying her that her bag was lost and what she had to do to reclaim her losses.
- Another interviewee stated that “there are so many unknowns” about her luggage from the moment she separates with it and that uncertainty causes her discomfort.
- One interview expressed concern with navigating airports and locating the baggage claim carousels, with her going so far as to express a fear of getting lost in an airport.
- Two interviewees stated that they have trouble finding baggage claim and locating their carousel was one of their primary thoughts when exiting the plane.
- Users of pre-existing luggage tracking devices are concerned that GSM is only accurate enough to display a general area that the luggage was in, not its precise location.
- Users were concerned with the battery life of the tracking devices given that if the battery of the tracker should die during the flight users are not be able to receive any updates about their bags.
- Users disliked that even if the locator confirms that the luggage was indeed lost and is able to identify where the bag ended up, it does not provide any assistance in reclaiming the luggage.

Design Solution

Track a Pack is a smartphone app that provide users with real-time status updates about their checked-in bags as the luggage progresses on and off a plane and to its designated baggage claim carousel. Users can also use the app to identify which specific carousel their bag is being sent to in addition to a map with directions of how to get to said carousel.

Through the use of the app, users are provided with more communication and knowledge about their bags in order to ease the anxiety of something happening to their precious cargo. Should something regrettably actually happen to the luggage, the app gives users a sense of power by granting solutions to their unfortunate situation. To this effect, the application also has the ability to handle exceptional issues arising during their travels, such as:

- notify users when their bag has been sent to an incorrect location,
- when a bag is lost, assist the user with having the bag sent to the correct location,
- assist users with reporting lost or damaged bags.

Project Scope

The following lists what is documented within this document. Additional features for future consideration are listed within the out-of-scope section below.

In Scope

- Platforms: Smartphones. iOS and Android devices as these are the two most popular platforms
- Hosts: Pre-established airline mobile apps
- Functions
 - Display status snapshots of luggage loading on and off plane
 - Estimate time of arrival for bag traveling to luggage carousel
 - File claims for damaged bags
 - State damage that occurred to bag
 - Identify that a bag has been sent to an incorrect destination
 - Provide an address for lost bag to be sent to once the bag is located

Out of Scope

- Platforms: Any appliance other than a smart phone
- Functions
 - Registration link to open a browser window to create an account with the airline
 - Error messages
 - Take picture of damaged bag
 - Load picture of damaged bag from photo library on phone
 - Automatically detect if a bag has been damaged
 - Automatically send a lost bag to the correct location
 - Clicking on map expands into a larger map of the whole airport with directions to the carousel
 - "Take Me There Link" opens a native wayfinding app to direct user to the carousel
 - Entering a country outside of the United States for an address entered in the lost bag screen
 - Checking bags in
 - Calculating baggage weight and checked-in baggage costs

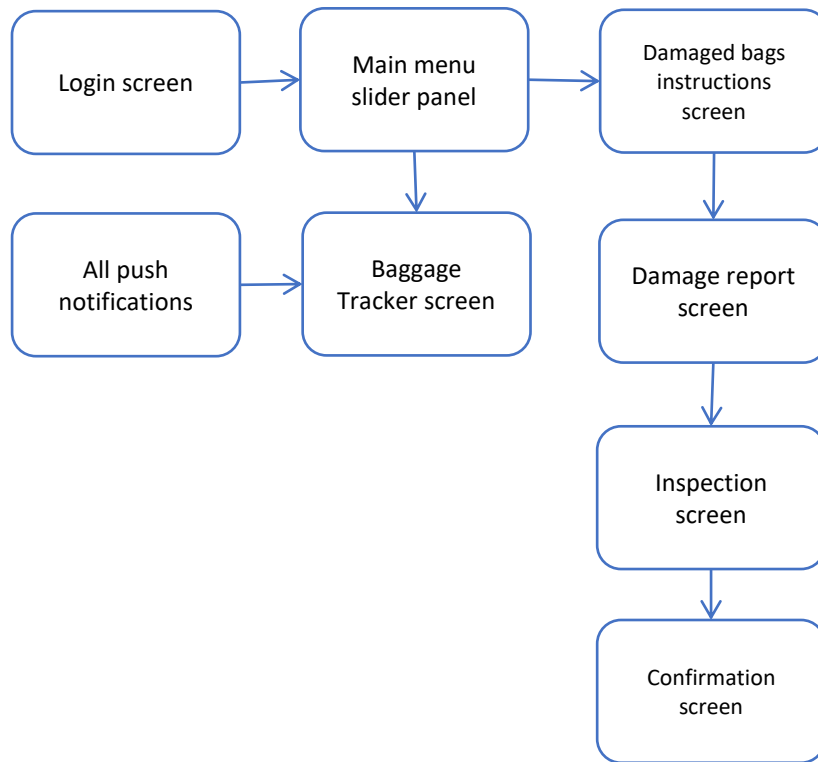
Design Decisions

<p>This is a feature within a smartphone application.</p>	<p>97% of travelers have a smartphone in 2015 (SITA, 2015, p. 3). These devices are ubiquitous and travelers use them for getting notified about important and timely information. From our survey results, 95% of users would find having such an application to be useful.</p> <p>From our user interviews and usability studies, it was determined that travelers already have the airline's official app on their devices. Therefore, the functionality proposed here complements the existing airline application. They do not want another app just for the purposes of tracking their bags.</p> <p>Travelers will require internet access to use this application as the latest bag tracking information are provided as web services online. This shouldn't be prohibitive to most travelers as 74% of airports worldwide offer free unlimited Wi-Fi access to its guests (Garcia, 2016).</p>
<p>Travelers want to know when and where to pick up their bags.</p>	<p>65% of our survey participants indicate they check in a bag. All of our interview participants indicated that when their bags are checked in, they want to know when and where to pick them up. For business travelers interview participants, being able to quickly exit the airport is crucial.</p> <p>Our design devotes more screen real estate to this information and a clickable map to guide users to the exact spot where they can reclaim their bags as this was suggested multiple times through feedback from our usability studies. There is a notification that pops up on the traveler's smartphone with these status messages using the phone's built-in notification system. Clicking on these notifications will take the traveler to the appropriate section within our application.</p>
<p>Being able to easily handle lost and or damaged bags is important</p>	<p>Based on our surveys, 50% of our participants have lost a bag or have experienced a damaged bag before. When there are exceptional circumstances to a traveler's bag, our users have requested more timely information about delayed bags. Our design includes a button where affected travelers can enter the relevant information in a guided process that the airlines will need to reunite travelers with their bags. The goal is to create a seamless experience in a time when users are in a stressful situation via a step-by-step process.</p>

<p>Travelers want to feel like they are in control. Having real time tracking alleviates some of their fears regarding checked bags</p>	<p>Both our surveys and research of industry-related literature show that users desire more control over their bags when it's not with them. 96 out of 233 participants indicated some concerns over lost bags or bags being sent to the wrong location. Giving travelers visibility on the status of their bags will alleviate some of this fear. The SITA whitepaper also indicated that travelers are demanding more transparency. As such, 97% of airlines plan on implementing a similar feature in 2017 (SITA, 2015, p. 5).</p> <p>3 out of 4 usability feedback we received indicated that showing major milestones on their bag's progress is important. The timeline on the Dashboard only displays important milestones about a user's checked bags, such as whether a bag is checked in or made it onto the plane. Intermediate steps are not as vital. The design indicates these important milestones by a larger circle compared to extra status informational checkpoints. These indicators should provide the necessary information to give travelers the insight they so desire.</p>
<p>The application should provide vital information that allows travelers to communicate with airport and airline personnel.</p>	<p>Bags are tracked by airlines using a standardized 10-digit universal unique identifier defined by the International Air Transportation Association (IATA, 2012, p.1). Travelers who need to communicate with an airline and the airport staff will require this information.</p> <p>This design includes this information in an easily accessible location. In the future, this location may be extended to include additional pertinent information such as weight, shipping costs, or an image of the bag.</p>

Process Flow

This is an overview of the user screens present in the design. This also illustrates the high-level navigation structure of the app.



UI Explanation

The user interface (UI) of the baggage portion of the app is designed to have a clean, light, and modern feel. The theme of the design is consistent with Android's Material design. Shades of blue were used to evoke a sense of calm. The airport is often a stressful environment and the app should not add to that stress with harsh colors and bold design. While the app leans on a material design feel, rounded corners are used throughout the app to create a softer feel.

The iconography is intended to be playful and introduce an aura of delight to the user. The icons are primarily flat design, but do have elements of skeuomorphism as seen through the use of relatable icons such as the camera which is a take on a typical looking camera.

The typography used in the app are all the default Android font, Roboto. Depending on the importance of the information, either Roboto light or Roboto thin is utilized. Roboto thin is used throughout the app for default text and Roboto light is used for headings. The text of the app is friendly and playful. Calls to action are friendly and inviting encouraging the user to proceed. Since the user may be utilizing the app during stressful moments, it is important that the app provide reassuring and calming text. Phrases such as "Let's get started" and "Sorry for the inconvenience" give the user a sense of the airline being involved in the process of assisting the passenger. Rather than a typical login text, the phrase "Let's Fly" is utilized to bring some delight to the experience.

Annotated Visuals

Interactive prototype can be found at: <http://2j8gek.axshare.com/#c=2> (password: *blastoff*).



Figure 1: Login screen

#	Element	Description
1	Username field	Text field. Tap to enter username. Hint text: "username".
2	Password field	Text field. Tap to enter password. Hint text: "password". Password entry is masked per mobile standards: when a character is entered, it is visible in the text field. If a subsequent character is entered, the previous character changes to an asterisk "*". Upon exiting the field, all characters should be visually displayed as asterisks.
3	Login button	Active button. On click, proceed to next screen. Both username and password must be provided to succeed. Otherwise, errors messages will be displayed (Out of Scope).
4	Registration link	Link. Will open a browser window to create an account with the airline (Out of Scope).

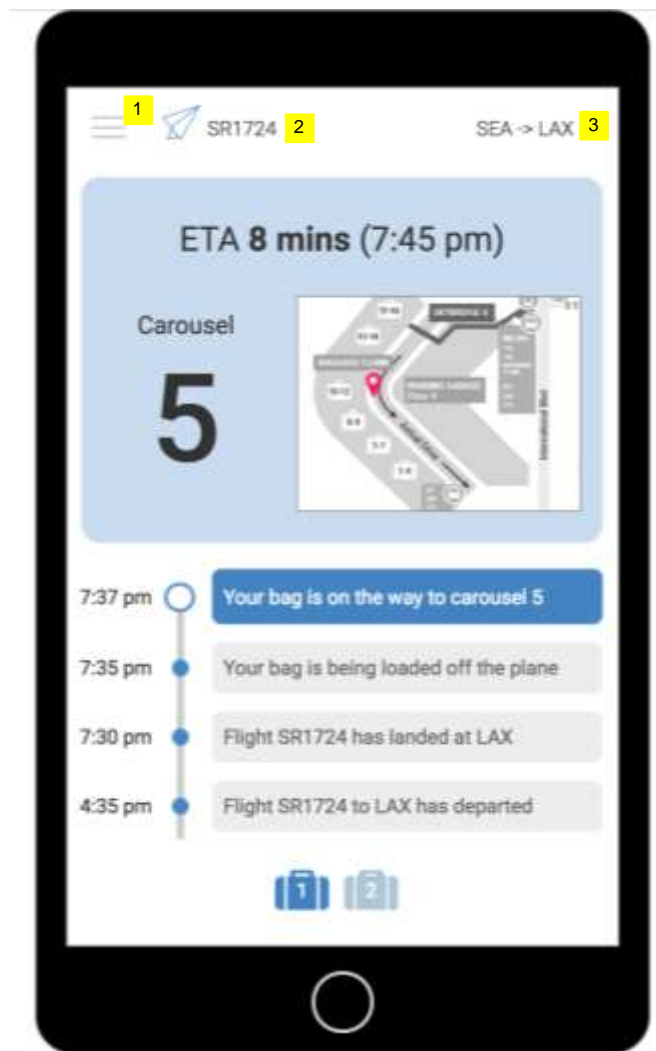


Figure 2: Global app header

#	Element	Description
1	Main menu icon	Icon. On click, menu slides out from the left and overlays the main screen.
2	Flight number	Static text. This text is global for all screens minus the login screen. Displays the currently flight number.
3	Flight path	Static text. This text is global for all screens minus the login screen. Displays the departure and destination airport codes for the currently flight.

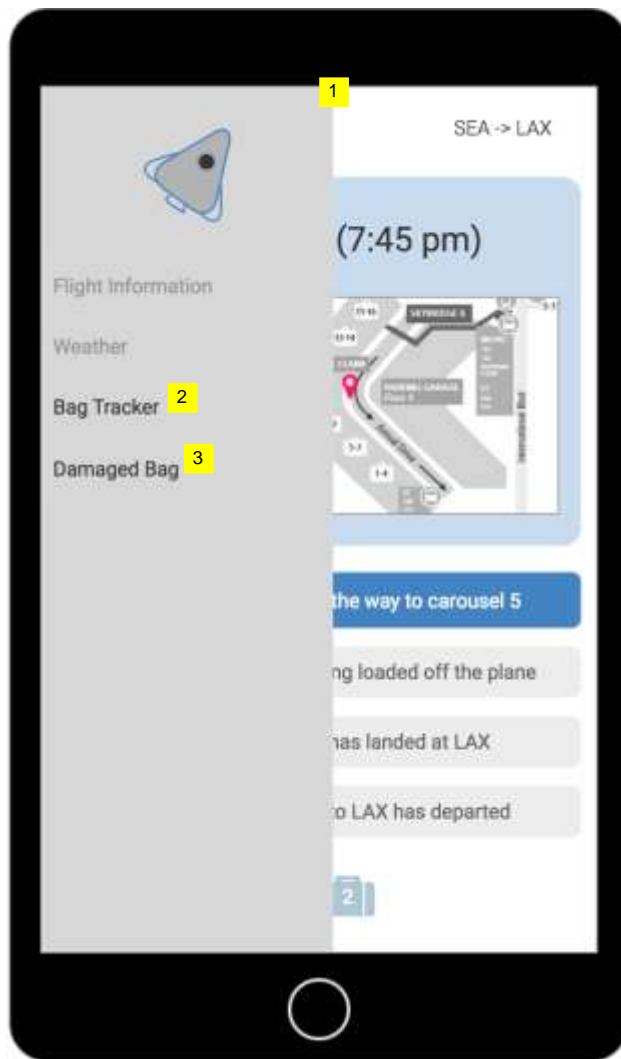


Figure 3: Main menu sliding panel

#	Element	Description
1	Main menu	Sliding panel. Appears on click of <i>Main menu icon</i> element. Slides in from the left. After selecting a menu option or clicking outside of the main menu, slides out to the left.
2	Bag Tracker link	Link. Navigates to the Bag Tracker screens. On first entry, shows the first bag's screen positioned at the top of the scrollable area. Otherwise, maintains the context that the user was previously in.
3	Damaged Bag link	Link. Navigates to the <i>Damaged Bag instructions</i> screen.

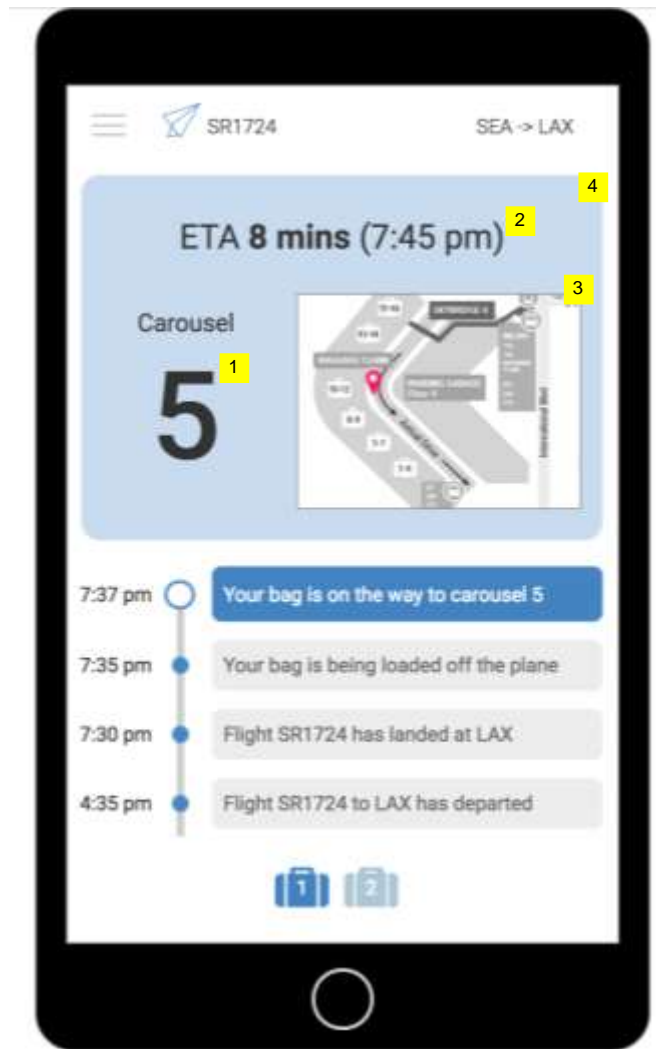


Figure 4: Bag Tracker screen

#	Element	Description
1	Carousel number	Dynamic text. Displays the carousel number for where the bag will arrive.
2	ETA	Dynamic text. Displays the estimated time of arrival of the bag using both duration “8 mins” and a timestamp “(7:45pm)”. The duration text is bolded.
3	Map image	Image link. The map image shows a map of the airport with a pin at the correct carousel. On click, it expands into a larger map of the whole airport with directions to the carousel (Out of Scope).
4	Baggage claim tile	Tile. This element only appears upon landing if the carousel number and ETA are finalized.

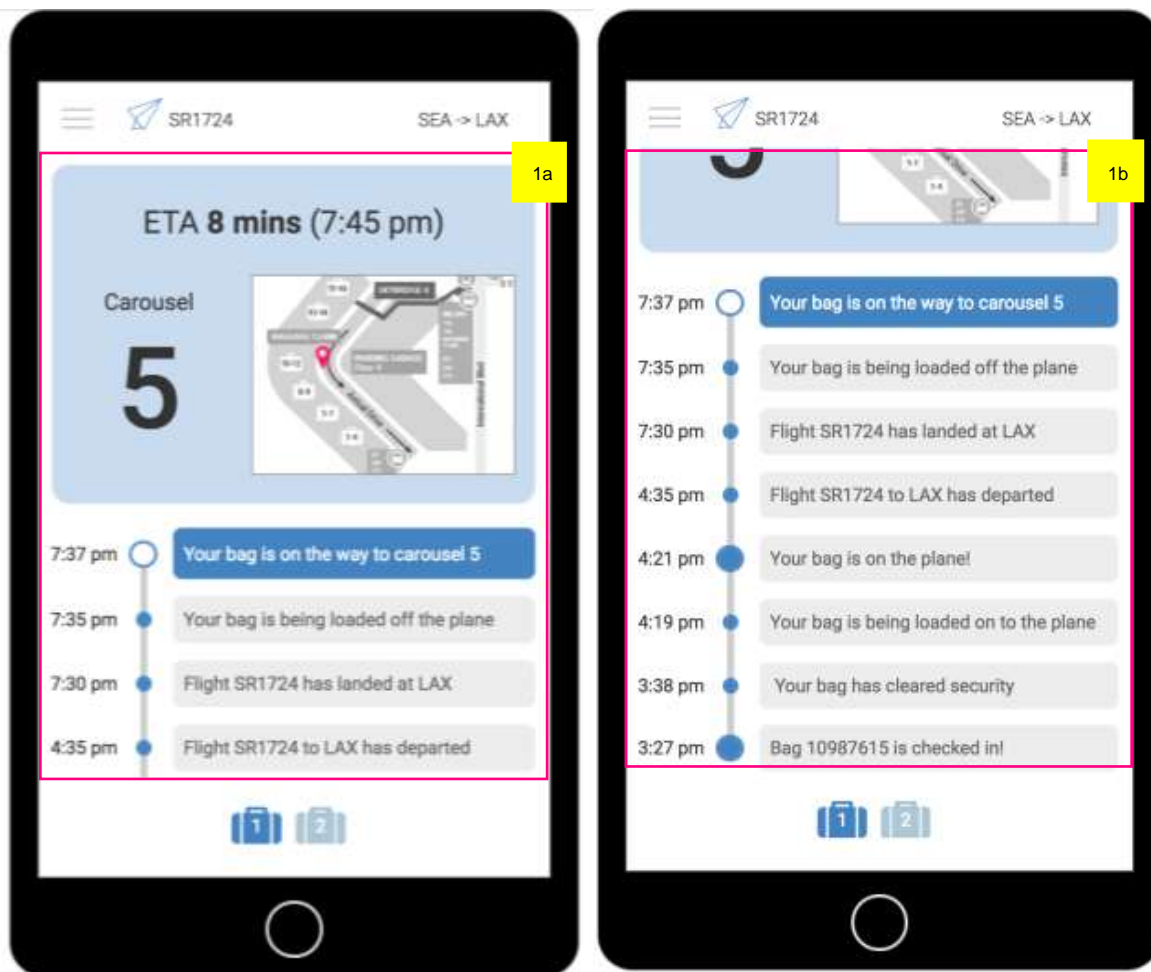


Figure 5: Bag Tracker screen showing additional information in a scrollable view

#	Element	Description
1a – 1b	Bag Tracker scrollable area	Scrolling screen. The Bag Tracker screen scrolls vertically to display the full history of bag notifications. The pink box denotes the scrollable area and excludes the <i>global app header</i> and the bag selector icons.

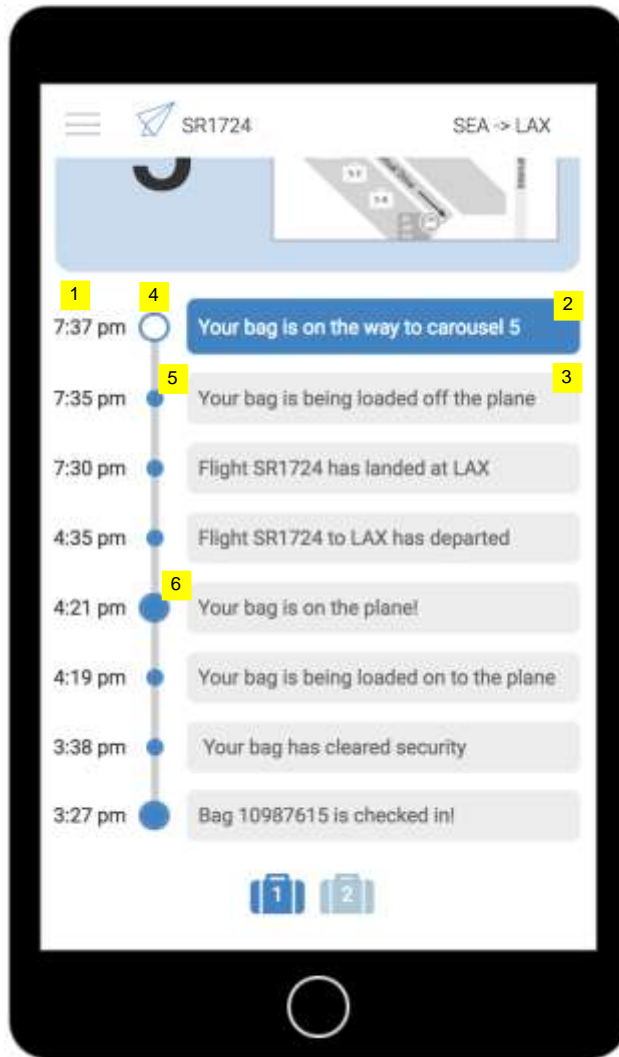


Figure 6: Bag Tracker screen details

#	Element	Description
1	Notification timestamp	Static text. Timestamp for when the corresponding notification was sent.
2	Current notification tile	Tile. Tile containing the most recent notification about the bag. Tile is blue and visually distinct from the past notification tiles.
3	Past notification tile	Tile. Tile containing a previous notification about the bag. All past notification tiles are greyed out and visually distinct from the <i>Current notification tile</i> element.
4	Current large marker	Image. Circle inline with the current notification tile. White fill, blue outline.
5	Past small marker	Image. Circle inline with a past notification tile. This small circle is used for updates that would not produce a push notification.
6	Past large marker	Image. Circle inline with a past notification tile. This large circle is used for updates that would product a push notification.

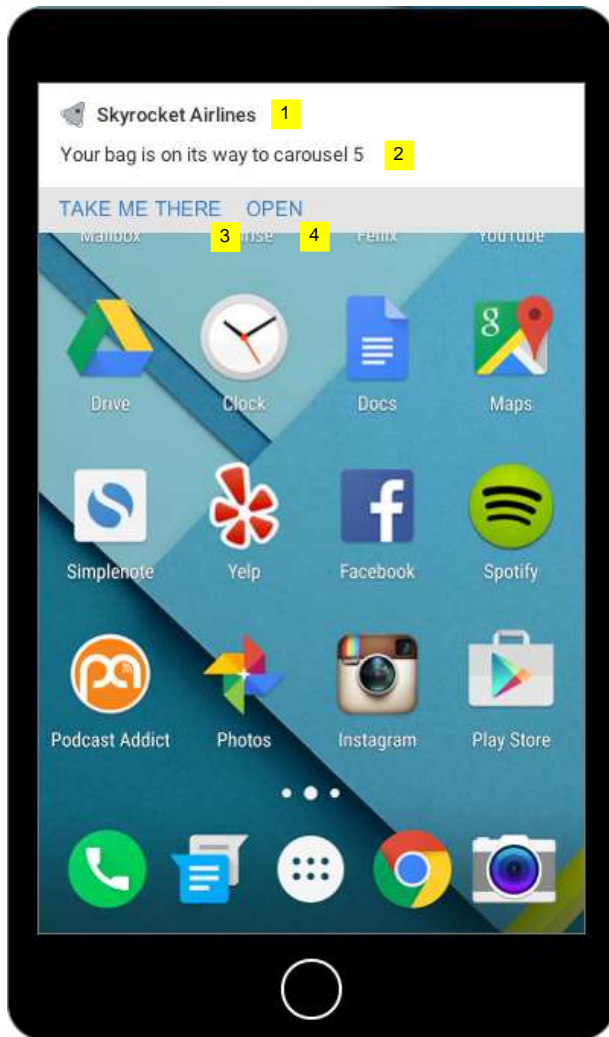


Figure 7: Push notification

#	Element	Description
1	App name	Static text. Contains the name of the app in accordance with device push notification standards.
2	Notification text	Static text. Contains the actual text of the notification. Should match exactly what appears in the in-app notification tile.
3	Take Me There link	Link. Opens a native wayfinding app to direct user to the carousel (Out of Scope).
4	Open link	Link. Opens the airline app and displays the <i>Baggage Tracker screen</i> .

*Note: This is one example of a push notification. All the other notifications are Out of Scope for the prototype.

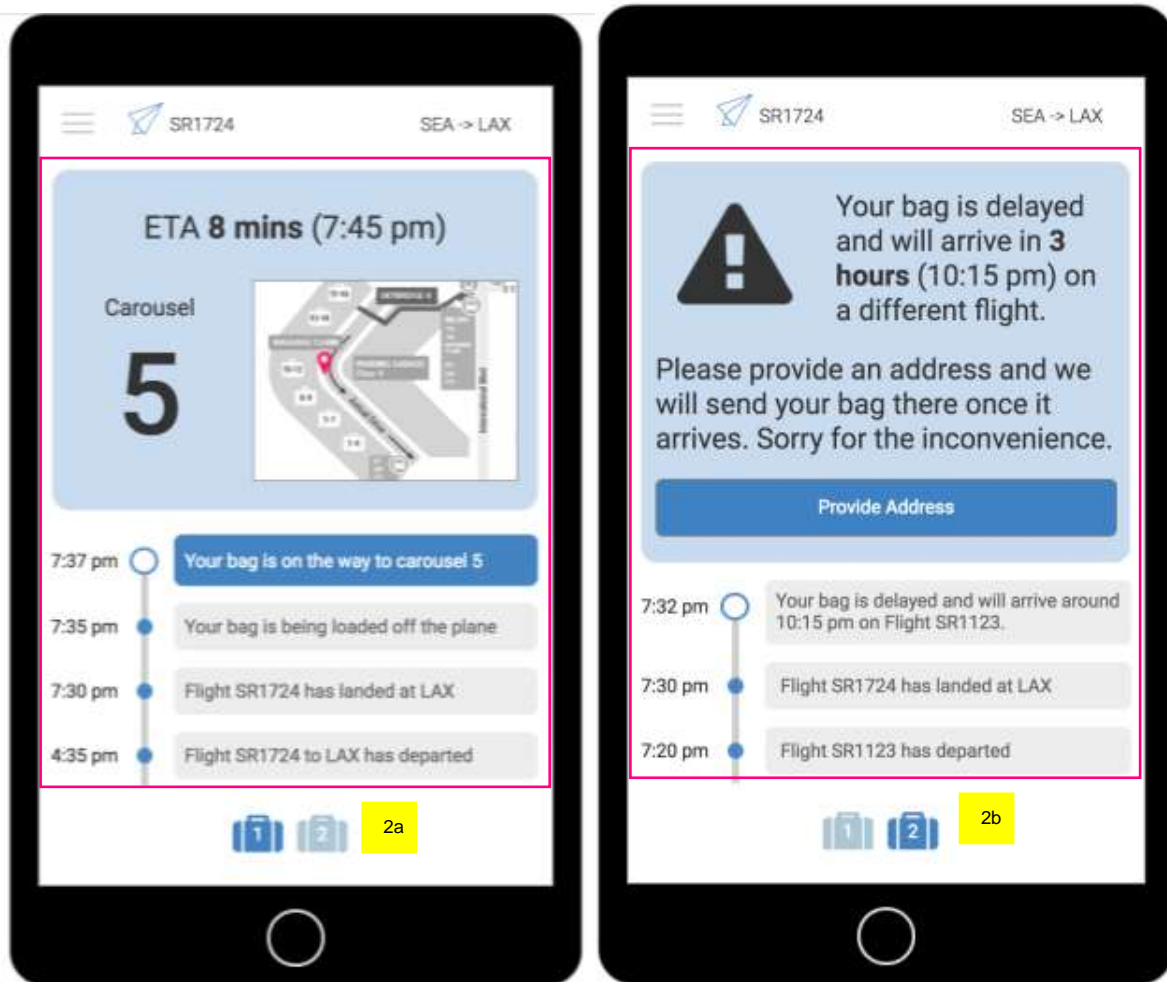


Figure 8: Bag Tracker screen showing multiple bags

#	Element	Description
2a – 2b	Bag Tracker swiping area	Dynamic screen. The two bag icons at the bottom are clickable. The default state is to have #1 selected. Each icon displays the history for a different bag. When bag #2 is selected, the bag #1 screen slides out to the left and the bag #2 slides in from the right simultaneously. Vice versa for when bag #1 is selected. The pink box denotes the dynamic area and excludes the <i>global app header</i> and the two bag icons themselves. Users can also swipe left and right to toggle between the two bags.

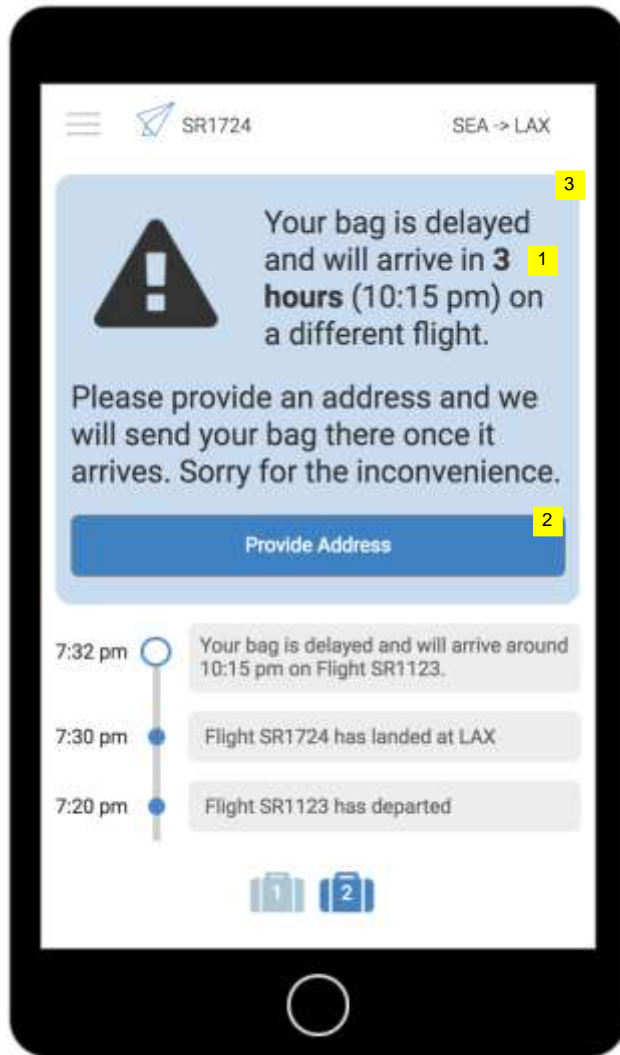


Figure 9: Bag Tracker screen showing a delayed bag

#	Element	Description
1	Delay time	Dynamic text. This text is an estimate of how long a lost bag is delayed. Time is shown in duration "3 hours" and a timestamp "(10:15pm)". The duration is bolded.
2	Address button	Active button. Click to open the <i>Provide address light box</i> .
3	Lost bag tile	Tile. This tile only appears if the bag is delayed or lost.

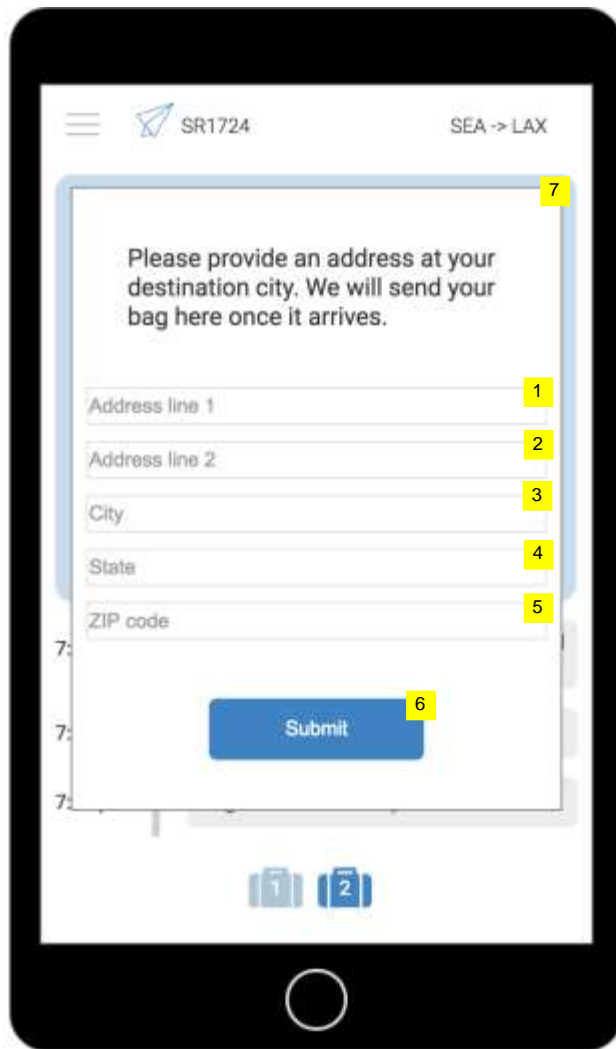


Figure 10: Provide address light box

#	Element	Description
1	Address line 1 field	Text field. Hint text: "Address line 1". Mandatory.
2	Address line 2 field	Text field. Hint text: "Address line 2". Optional.
3	City field	Text field. Hint text: "City". Mandatory.
4	State field	Text field. Hint text: "State". Mandatory.
5	ZIP code field	Text field. Hint text: "ZIP code". Mandatory.
6	Submit button	Active button. On success, will close the <i>Provide address light box</i> . Will only success if all mandatory text fields are filled out. Otherwise, error messages will be displayed (Out of Scope).
7	Provide address light box	Light box. Appears over the screen upon clicking the <i>Address button</i> element. The available address fields will be customized based on the arrival country (currently tailored to USA; other countries: Out of Scope).

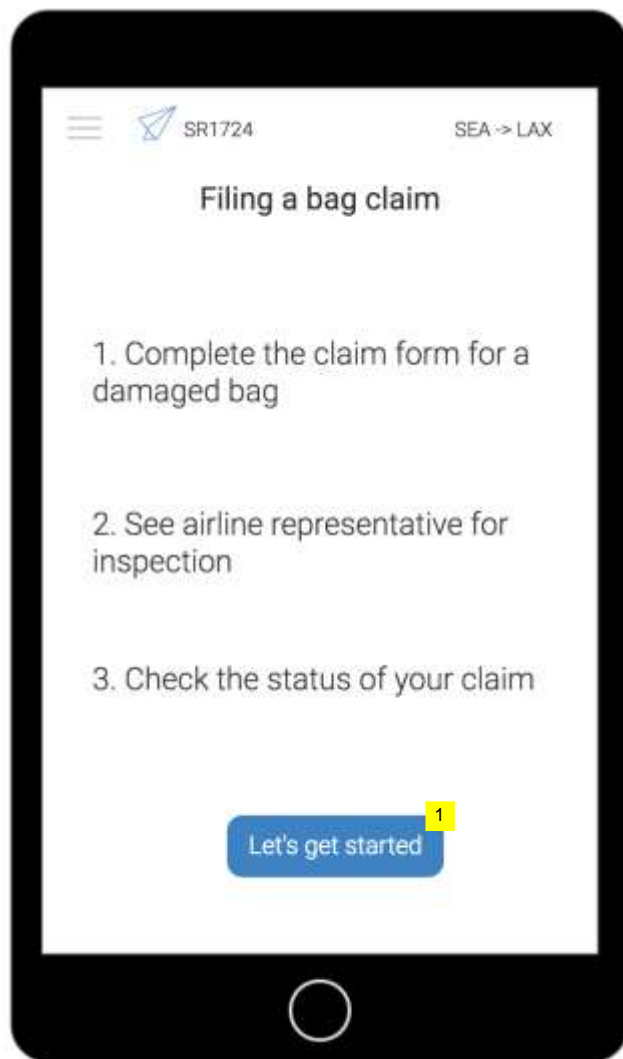


Figure 11: Damaged bags instructions screen

#	Element	Description
1	Get started button	Active button. Click to continue to the next screen in the damaged bags workflow.

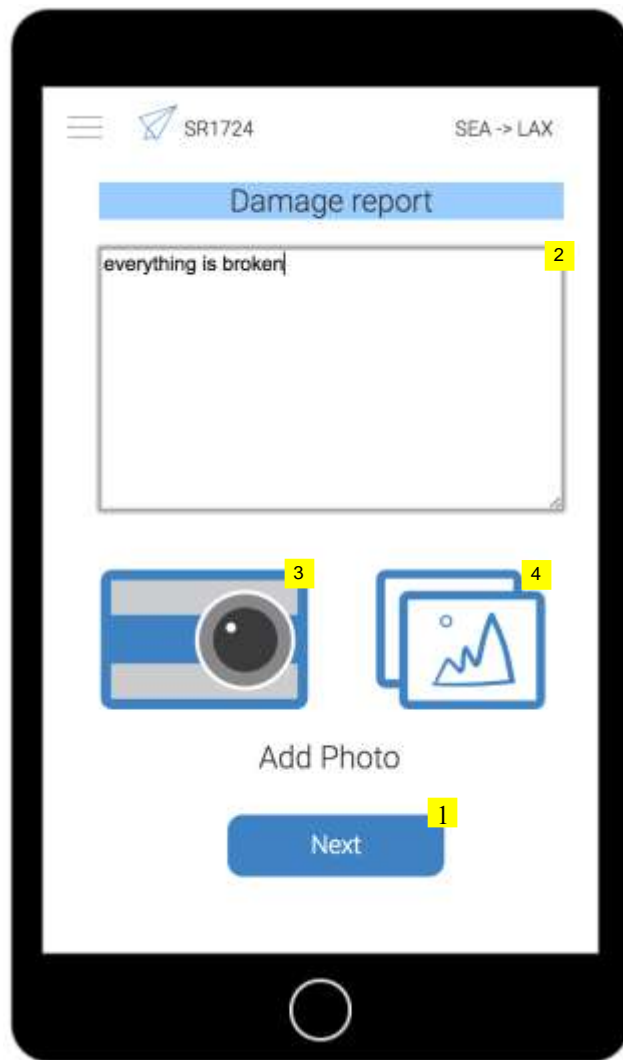


Figure 12: Damage report screen

#	Element	Description
1	Next button	Active button. Click to continue to the next screen of the damaged bags workflow.
2	Damage description field	Text field. Hint text: "Tell us what was damaged".
3	Photo icon	Icon link. On click, opens the phone's camera app to take a picture of the damage (Out of Scope).
4	Gallery icon	Icon link. On click, opens the phone's photo gallery to upload an existing photo of the damage (Out of Scope).

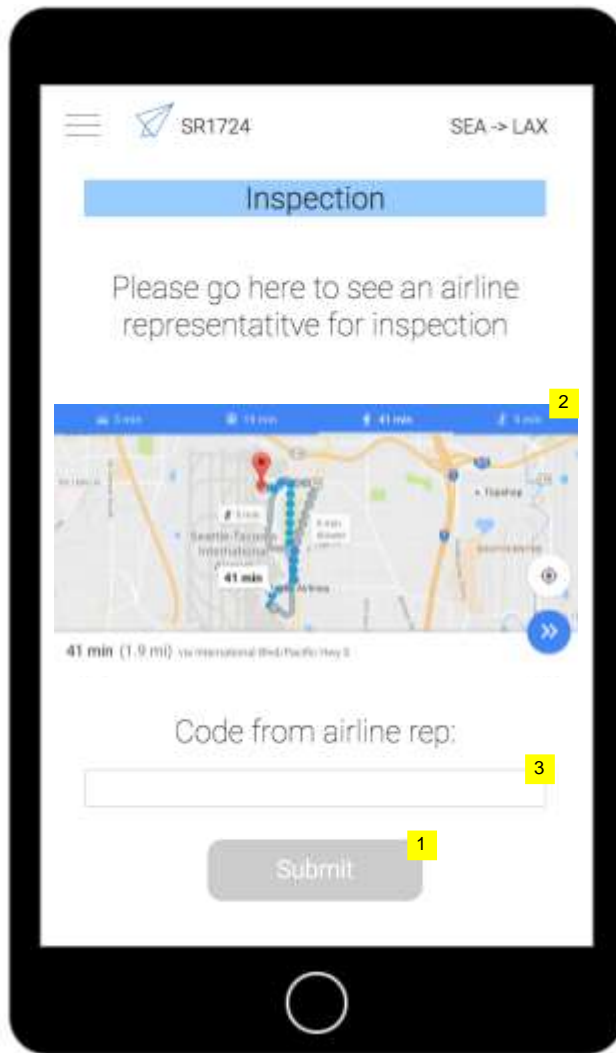


Figure 13: Inspection screen

#	Element	Description
1	Submit button	Disabled button. Becomes active once the <i>Code field</i> element is populated. Once active, on click, a successful submission will lead to the <i>Confirmation screen</i> . A failure will result in an error message (Out of Scope).
2	Map image	Image link. Map with directions to the nearest airline baggage check center. On click, it will open a native wayfinding app (Out of Scope).
3	Code field	Text field. No hint text. <i>Submit button</i> element does not become active until this field is populated.

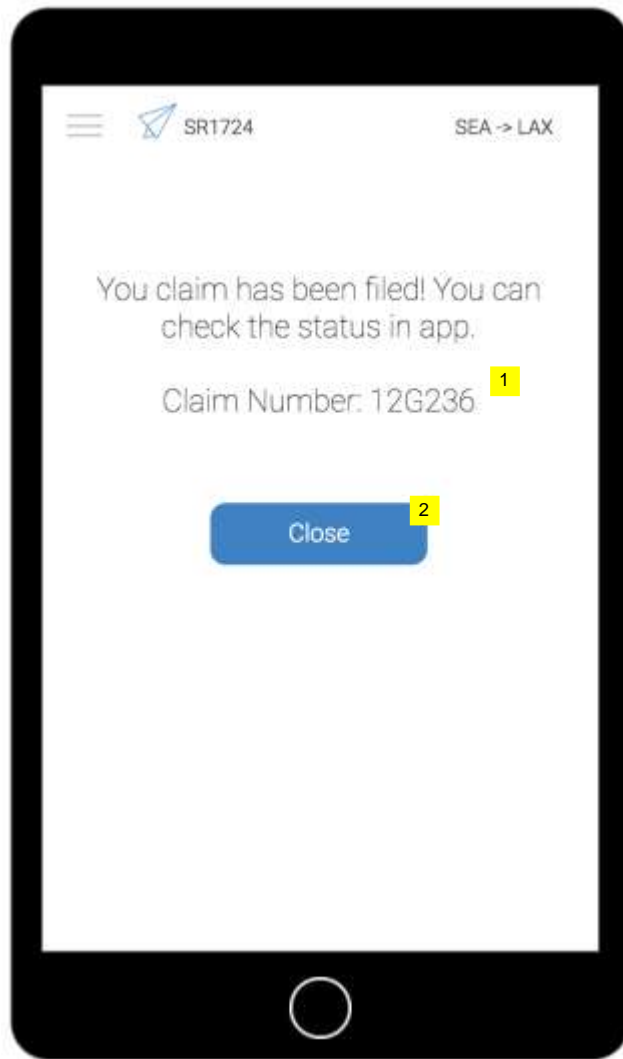


Figure 14: Confirmation screen

#	Element	Description
1	Claim number text	Static text. Shows the claim number once it is generated successfully.
2	Close button	Active button. On click, directs the user back to whatever screen they were on before coming to the Damaged Bag workflow.

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