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Context

For a class project in a UX-centered class, we were instructed to choose a major travel or airplane site to evaluate and redesign an important component that we found could be better accomplished. Our group of four chose Asiana Airlines, one of South Korea's two major airlines. Since looking for tickets is the first step to many users, we looked to redesigning the flights search engine box (also referred to as web-form or form fill-in box) that users face when they enter the site. We discovered that users found this difficult to use and made it hard for them to get past the next step of choosing tickets.

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1st User Testing Plan

Tasks

1. Imagine you're going on an imaginary family trip to Korea. Choose your departure location and your arrival location accordingly.
2. Afterwards, choose your departure and return dates to be any time from December to January.
3. Choose the number of adults, children, or infant that will be going on this "trip."
4. Choose your seat preference.
5. Now imagine you had a Discount Code and you try to apply it.
6. Now you want to stop by several locations-- switch to multi-city.
7. You realize that you'll just be buying a One-Way ticket. Go back to the home page, and switch to One-Way.
8. Click "Search flight" to continue with the process.
9. Choose the cheapest fare you can find and continue with the process.
10. Select your fare to be CLASSIC and select a flight with the most seats available.
11. Reserve as guest on the next page.
12. Enter your information.
13. Click "Continue" by leaving mobile and email form field blank.
14. Fix your error and continue with the process.
15. When you're on the final page, press "Cancel."

Participant 1

User: Young Suh
Date: 12/10/17
Contact: y3suh@ucsd.edu
Background: UCSD 3rd year student born in Korea; occasionally visits S. Korea. As Asiana Airlines is one of South Korea's two major airlines, he is more than familiar with the name and has used its service before.

Observation Notes
- ❖ "Oh, that's weird that the form looks like it's already filled out."
- ❖ User tries to type in his departure location (what he is used to), but realizes that he isn't able to type anything in the form field.
- ❖ He is only able to double click the form field for the pop-up to appear, or press on the magnifier icon.
- ❖ Only able to "choose" his location from the pop-up list
- ❖ User says he finds this process very tedious
- ❖ User chooses LAX to be his departure location
- ❖ User realizes he can only exit out of the pop-up by clicking "X"
- ❖ "Usually sites allow you to exit out of it by clicking anywhere on the screen"

- ❖ The click response is very slow within the modal
- ❖ It leads me to an <mark>error page with codes</mark>; usually, sites just prevent that from happening
- ❖ "Why is the <mark>title deletable and typable</mark>? That's so weird."
- ❖ The calendar looks outdated, and like the location form field I can't type it and I'm only allowed to click on the calendar button
- ❖ "What does <mark>'Adult1'</mark> mean?"
- ❖ User realizes that the features in the interactive form are <mark>not described well</mark>.
- ❖ "There wasn't much difficulty in doing that, but it's hard to mess that one up"
- ❖ User decides not to apply a discount code after finding out that he has to log in to apply a discount code.
- ❖ "It leads me to another page, and I have to start all over again."
- ❖ User realizes some of the information is saved
- ❖ "It's the same thing as Round-Trip option but not Multi-City. <mark>All three should be together</mark>."
- ❖ He wishes "cheapest fare" could be highlighted or made into an option

Follow-up Questions
1. **How frequently do you travel by plane?**
   Not that frequently, just once in awhile
2. **Have you ever used Asiana Airlines to book tickets? If so, when was the last time you've used it?**
   Yes, a couple times. The last time I've used it was when I went to Korea during the summer.
3. **Do you use any other travel site other than this one? Which one and why?**
   I've used Expedia.com before because it's always the one that pops up first in Google when looking for hotels and also kayak.com
4. **When is the last time you've purchased flight tickets?**
   Less than a year ago
5. **What are some good aspects you've seen by using the specific aspect of site we tested?**
   I guess how they categorized different airports by countries could be useful but they need a better way to present that.
6. **What are some suggestions/improvements you would like to recommend?**
   Be less buggy and not look outdated. More things should be clickable.
7. **What's a feature that's missing in this website that you wish existed specifically for booking tickets?**
   The multi-city could just be in the modal itself, I've seen other sites do it.

Participant 2

User: Daniel Diaz
Date: 12/11/17
Contact: ojq1978@hotmail.com
Background: Recent UCSD grad, works for a market research company, enjoys traveling during his free time.

USER TEST
1. Choose your departure location.
   ○ San Diego
   ○ User initially looking for a search function for finding city but cannot find such a feature.
2. Choose your arrival location.
   ○ Seoul/Incheon
3. Try to choose a departure and return date to be the same date and submit the form.
   ○ When doing so, the user receives no error message, simply a message stating there are no flights for these dates.
4. Afterwards, choose your departure and return dates to be any time from December to January.
   ○ User notes that the interface looks very clunky and outdated. Has to click on several things before the menu they want pops up.
5. Choose the number of adults, children, or infant going on this "trip."
   ○ User does not like the way adults, children, and infants are coded. (Adult1, Children1, Infant1, etc.)
6. Choose your seat preference.
   ○ User has difficulty seeing where to select their seat.
7. Now, imagine you had a Discount Code and you try applying it by clicking the button.
   ○ User can't add discount code now that they are in the confirmation page. They have to go back and redo some of
8. Now you want to stop by several locations-- switch to multi-city.
   ○ Same problem as before, not a lot of editing can be done at this stage of the purchase. Has to start over.
9. You realize that you'll just be purchasing a one-way ticket. Go back to home screen and switch to one-way. What do you see that's same, different, or saved?

- Interface changes a bit, and the user notices that some things such as the cities have remained intact.
10. Click "Search flight" to continue with the process.
11. Choose the cheapest fare you can find and continue with the process.
12. Select your fare to be CLASSIC and select a flight with the most seats available.
13. Reserve as guest on the next page.
14. Enter your information.
15. Click "Continue" by leaving mobile and email form field blank.
16. Fix your error and continue with the process.
17. When you're on the final page, press "Cancel."

Follow-up Questions
1. **How frequently do you travel by plane?**
   - I try at least once a year, this year I've taken 2 trips and will be taking another for New Year's.
2. **Have you ever used Asiana Airlines to book tickets? If so, when was the last time you've used it?**
   - It sounds familiar, but I've never used it.
3. **Do you use any other travel site other than this one? Which one and why?**
   - Orbit because my dad used to use it often. It's user friendly, but I hate all the e-mail spam I get from them.
4. **When is the last time you've purchased flight tickets?**
   - October 17th 2017
5. **What are some good aspects you've seen by using the specific aspect of site we tested?**
   - Not much to be honest. It looks like it was designed in the 1990's and I wouldn't feel comfortable inputting my credit card info into the site. Who knows if its even encrypted or anything like that.
6. **What are some suggestions/improvements you would like to recommend?**
   - I hate having to click the back button so many times to edit things in my itinerary. Maybe I was not using the site correctly, but then I would say its not very user friendly as well. I was very confused using it.
7. **What's a feature that's missing in this website that you wish existed specifically for booking tickets?**
   - Maybe I missed it, but I couldn't select the seat I wanted. I have me options, but didn't show me a map or something like that.

Participant 3

User: Duo Gu
Date: 12/11/17
Contact: 357568904@qq.com
Background: An international student who frequently travel between southern California and China. She wants to fly relatively comfortably in a reasonable price. Asiana Airline has good service so it could be the potential choice for her.

Observation Notes:
In the page that shows flights available from LAX to PEK during summer break (June to September), she found the layout quite confusing.
- The highlighted area seems confusing to her. She doesn't know why the row and column is highlighted. After she tried to select different flight, she realized the highlighted row and column is meant to make comparisons easier
- The lowest fare indication is quite useless because the price is almost the same

After she selected one flight, the website led her to the following page that shows more flight available during that day.
- She doesn't know what's the difference between all those different flights.
- Is any flight cheaper?
- The view area is too small to compare two flights at the same time
- Different flights meant to have different arrival time or connection.

In the next page, she typed in the guest information for ticket.
- When she input the phone number, she had to format her phone number into 4 parts. She had to experiment a little to find that how many digits are allowed in each input box.
- When she input the date of birth, she had to use the dropdown menu to find the year she was born. There's no way for directly type in her year of birth.
- After she clicked next, an error message showed up saying that she didn't log in. She had to change the account to guest to continue.

In final confirmation page, she tried to change the seat of the third flight.
- There's an option for changing seat
- It directed her back to the seat selection page, but she had to go over the seat selection for all flights to edit the the one in the third flight.

Interview Questions:
1. **How frequently do you travel?**
   ■ Two or three times per year
2. **Have you ever used Asiana Airlines to book tickets? If so, when was the last time you've used it?**
   ■ no

3. **Do you use any other airline/travel site other than this one? Which one and why?**
    - Ctrip
    - Qunar
    Never tried other sites
4. **When is the last time you've purchased flight tickets?**
    - July 2017
5. **What are some good aspects you've seen by using the site?**
    - Easy to find cheap tickets at certain time of year
        - Calendar view
    - Hotel bundles
6. **What are some suggestions/improvements you would like to recommend?**
    - Search result page can adopt the calendar view, which is easy to find the cheapest flight.
7. **What's a feature that's missing in this website that you wish existed specifically for booking tickets?**
    - Comparing price
        - Not sure which day is the best
        - Better in calendar view
    - maybe more filter?
        - Less connection staying time
        - Easier way to compare two flight of the same day

Analysis of Results of 1st User Tests

Through user testing, we were able to learn that many users struggled with

Participant 1

1. **User control and freedom**: user isn't able to perform specific actions they assume might work here, such as typing in the departure location or freely exiting out of a dialogue.

2. **Match between system and real world**: User had difficulty understanding why numbers of Adults were displayed as Adult1, Adult2, and so on instead of conventional listing of numbers.

3. **Error Prevention**: When user left a form field blank or incorrectly, the system only prevents this after it's submitted while it could be prevented in the process of filling the form out.

Participant 2

1. **Error recovery**: If user accidentally put the return date as the same as departure date, the website only shows no flight but fail to notify user that their date might be wrong. The website could display possible suggestions or identify the error for user.
2. **Error Prevention**: After clicking applying promotion code, user has to choose between login or go to regular search result page. However, user can't just cancel the action. The website could let user know before clicking that user need to login to apply promotion code.
3. **Consistency and standards**: User saw that multi-city option redirects him to another page, which wasn't consistent with one-way and round-trip options.

Participant 3

1. **User control and freedom**:
The website requires the user to type in the phone number in their required way. User has to think about how to format the phone number. There's lack of freedom for user to just type in the phone number in the easiest way.
2. **Flexibility and efficiency of use**
When changing the seat, user has to go over the seat selection for all flights again. The whole process is redundant since sometimes user only wants to change seat of certain flight.
3. **Error prevention**
When submitting guest information, user has to manually change the account option to guest. If not then there will be error message. Often time user doesn't have account for the airline. The error can be avoided by setting default option as guest.

Main Component of Redesign

The main component that we chose to fix is the ticket search engine for searching flight tickets on the homepage of the website. This is because we found that users struggled through this crucial first step of booking flight tickets. Many novice and

even expert users can be turned away from using the actual Asiana Airlines site to purchase tickets because of its current complications. Rather, they might use a general travel meta-search engine site such as Expedia or Priceline due to their ease and efficiency of use.

This component is critically significant because users face this first thing when they enter the site. As Krug mentioned, "If it's not clear to [users what they're] looking at in the first few seconds, interpreting everything else on the page is harder, and the chances are greater that [they'll] misinterpret something and get frustrated." Thus, we focused on enhancing and improving the efficiency and consistency of the module, so that the website can establish more credibility and trust.

Many of our usability problems arose from the form fill-in box itself, and some of the issues with this include the lack of consistency, match between system and real world, and user freedom.

Original form fill-in box on the home page of the Asian Airlines website.

The way the passenger options was presented was not very self-intuitive to our users and led to some confusion as to what exactly the function of these drop down menus was.

It's not made clear which search box is for departing flights and which is for arrival because neither are labeled until the user clicks on them. Upon trying to enter information into the departure location search box, user is not allowed to type – they can only manually choose from the list of locations displayed, slowing down overall function of the form.
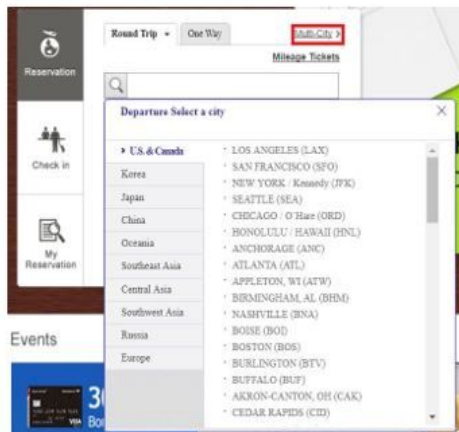
Multi-city isn't consistent with the round trip and <u>one way</u> options – instead, it links to another page, creating confusion for the users and forcing them to re-enter data they might have already inputted.

The page that the multi-city link redirects to – it's essentially the same as the previous fill in form, thus it doesn't make sense for it to be on a separate page.

Working Mockup of Two Redesigns

Prototype 1

https://invis.io/GREY9OJW9

Prototype 2

https://projects.invisionapp.com/share/N7EYW91ZP#/screens/269395462_1_First

2nd User Testing Plan

1. Imagine you're going on an imaginary quick round trip to LAX with your family from San Diego.
2. Type in your destination.
3. Choose your returning date to be the last day of December.
4. Choose your seat preference.
5. Your family consists of 2 adults and 2 children-- choose accordingly.
6. You realize that you'll just be buying a One-Way ticket. Switch to One-Way.
7. Your parents decide they want to stop by another city to visit family there. Switch to Multi-City.
8. Check-in to your flight in preparation for it.
9. Go to reservations and log-in to your account to view them.

Prototype 1

Participant 1

User: Eric Li
Date: 12/12/17
Contact: ericli0208@yahoo.com
Background: College student at UCSB, occasionally travels to Asia over summers to visit family.

Observation Notes

- Pretty straightforward, each step is easily followable and doesn't take much time to find the right place to input information
- Calendar interface makes selecting dates extremely easy
- Why is there a different layout for the number of adults versus number of children/infants? User thought this was inconsistent
- Having one-way, round-trip, and multi-city options all clearly visible at the top makes switching between them fast and convenient
- Multi-city layout is a little confusing - why is there another flying from option after the first? User thought from/to syntax didn't work well for multi-city flights

Participant 2

User: Jimmy Lau
Date: 12/13/17
Contact: jimmyjrlau@yahoo.com
Background: Recent college grad, currently working in San Francisco. Hobby is traveling, often takes flights to different countries during holidays.

Observation Notes
- Easy to navigate interface
- User liked having all the information in the same fill-in-form menu - made it easy to access all the information
- Scroll down menus are self-intuitive, make adding passengers easy
- User thought the calendar feature looked like Google Calendar, relatable to and easy to select dates
- Multi-city should be more consistent with the other flight options, have different seat options/passenger options in case more or less people join the flight

Participant 3

User: Jintong Wu
Date: 12/12/17
Contact: jintonglive@unc.edu
Background: College student at University of North Carolina, Chapel Hill. He's an avid fan of different airlines.

Observation Notes
- In multi-city page, there's no clear separation between each flight segment
- Why the input is not preserved after switching to one-way?

Prototype 2

Participant 1

User: Eric Li
Date: 12/12/17
Contact: ericli0208@yahoo.com
Background: College student at UCSB, occasionally travels to Asia over summers to visit family.

Observation Notes

- Step-by-step is a major difference compared to the first prototype
- Feels slower paced, might not be convenient for people in a hurry
- User liked that search results when looking up a destination bring up related options when you are typing, making searching streamlined and fast
- The "confirm itinerary" overview is a nice touch, lets the user make sure they have all the right details down before booking their flight
- Multi-city layout is much more self-intuitive than the one in the first prototype - having them listed in order of destination is more understandable
- User thought the other tabs at the top are a little distracting - what are packages and groups?

Participant 2

User: Jimmy Lau
Date: 12/13/17
Contact: jimmyjrlau@yahoo.com
Background: Recent college grad, currently working in San Francisco. Hobby is traveling, often takes flights to different countries during holidays.

Observation Notes
- Interface is not as appealing aesthetically as the first one - next/back buttons take up too much of the screen
- Step by step process is distinctive, but user felt it wasn't customer friendly
  - Buying plane tickets should have all info laid out in one place at the same time, right now to double check he has to go back to previous pages
- Felt that overall it was more inconvenient to have step by step compared to the first
- Liked multi-city layout's simplicity - having destinations laid out in order
  - Could need a redesign though in case passenger is departing from a different city from the one they arrived at, instead of having each city linked to the next in a multi-city trip

Participant 3

User: Jintong Wu
Date: 12/12/17
Contact: jintonglive@unc.edu

Background: College student at University of North Carolina, Chapel Hill. He's an avid fan of different airlines.

Observation Notes
- He find it uncomfortable that he can't see all the things he has input during the process.
- Not sure why preferred seating and class is necessary

Analysis of Results of 2nd User Tests

To analyze the user test for two prototypes, we listed the pros, cons (heuristic or general problems) within each design. We also included a preference section to see which redesign is more preferred out of the three: Original, Prototype 1, or Prototype 2.

Prototype #1
Pros
- Information is well organized
- All information is on the same page, leading to easy access/viewing for users
- Many options available to accelerate the search process

Cons
- Multi-city page could improve on visual distinction between different flight segments

Preference (how many users prefer this one or original)
   3

Prototype #2
Pros
- User can easily focus on one information each time
- Less likely for user to make mistakes

Cons
- Unable to review all information while going through the process
- Lack of indication of system status (how many inputs are needed)

Preference (how many users prefer this one or original)
   0

Why Our Redesign Is Better

Our first prototype fixed many problems the original site had. For one, the search feature for different departure and arrival points is significantly improved - in the original one, the user had to scroll through the entire list of airports provided by Asiana Airline, as there was no way to manually search up airports. The first prototype addresses this problem by making it so that users can now directly type in the city name or airport name in the search boxes to find the airport they're looking for. In addition, the one-way, roundtrip, and multi-city options are now combined into one panel so that user can stay on the same page when searching up flights. This is a drastic improvement over the original website, where clicking multi-city would redirect to a different landing page and lead to users having to input all their information there instead.

In our second redesign, we tried a different and quite unconventional approach. We used a step-by-step approach where each part of the process had its own, separate page. In doing so, we thought that users would focus on one part of the search at a time, helping eliminate the possibility of human errors. Although a multi-step design could possibly lower the efficiency of the process since users have to fill in information one step at a time, we thought that the overall efficiency would not be greatly influenced because users still need to input the same information they normally would have in any other circumstance. The same fixes to the airport search functions and one-way/roundtrip/multi-city are applied to this prototype on top of these changes.

After the second round of user tests, we found several problems in our redesigns. In the first prototype, the multi-city section was still confusing for multiple users. One problem in this is the lack of visual distinction between flight segments for departing and arriving flights. This problem is easy to solve since we can simply put dividers between each pair of flights. The other problem is that the concept of multi-city isn't very self-intuitive to users. Some people might think of multi-city as a connection flight (e.g. SAN to LAX and LAX to PEK). One possible solution is to incorporate multi-city to the one-way section. Multi-city could be redefined as there being multiple flights before reaching a final destination. Thus, we can simply add an "add another flight" option in the one-way page. Whether this design is better than multi-city design remains unknown until more research is done.

In the second prototype, the major problem is the lack of system status and error recovery. The already filled content doesn't show up. One user reported that it's hard for him to recall what he typed in. Since user can't review the filled content, they can't go back to any point of search to modify the input. This is a major drawback of multi-step design. Our solution will be to make filled content remain visible so that user can modify it anytime they want. System status visibility problem can be solved by placing a progress bar.

Overall, both of the prototype solutions we came up with had their own merits, with definite pros and cons for each one. Based on user testing, Prototype 1 was the preferred redesign, but in no way does this mean it's a complete answer to fixing all of the flaws present in the original Asiana Airlines website. There's still a lot of work and testing to be done on both ends, but we are confident that an ultimate solution will be created in the long run.
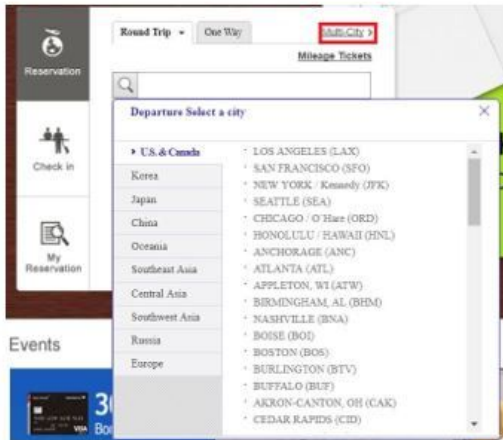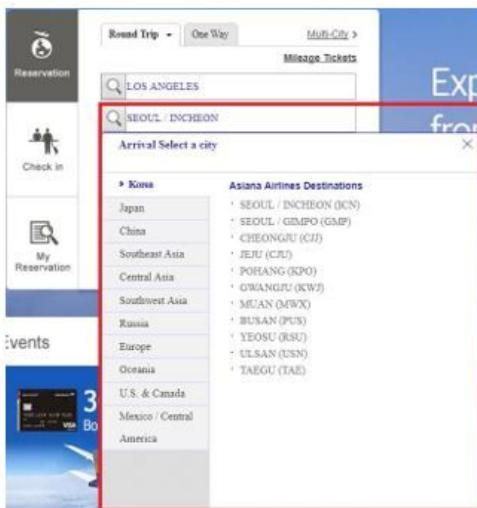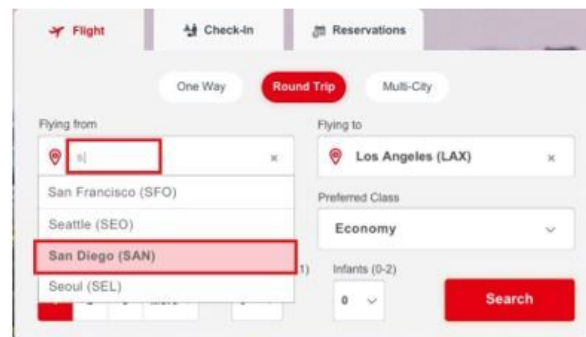
Multi-city option links to a separate page, taking away from a streamlined search process.
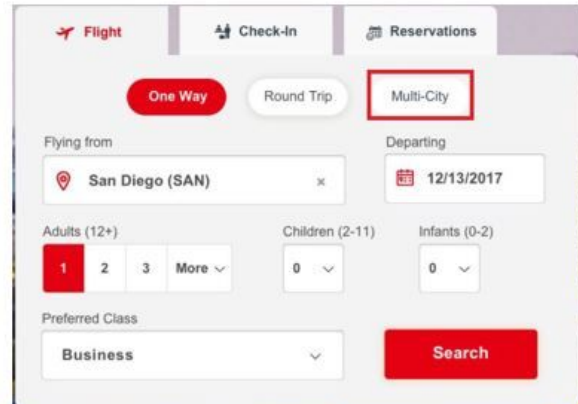
Multi-city options are now integrated into the fill-in form, making it much more easy to access without leaving the page.

Upon attempting to search for airports, there's no option to manually input them — users must go through the entire list provided.

Manual search now integrated, with search options being presented based on what is related to the input of the user.

The original site compared to our Prototype 1 redesign.