

## Heuristic Evaluation of [ePa]

### Work in groups based on what project you evaluated [1 hr]

1. Work on shared Google doc (template provided in assignment spec)
2. Person with highest number of issues found goes first:
  - a. Move all issues found to the template
  - b. Note who else found same issue (add their anonymized IDs "A, B, C"); others cross issue off list so you don't repeat
  - c. Agree on wording of issue (someone else may have described better)
  - d. Agree on severity
2. Repeat (b) with person with next most issues **remaining** until everyone has gone
3. Add summary tables as described in template
4. Clean up/finalize report and submit by emailing the final submission to the CA (one per group)

### 1. Problem

ePa is an app that maximizes the use of existing parking spots by helping users find parking spots in real time based on location, reserve spots in advance, and rent out private parking spots for profit.

### 2. Violations Found

#### 1. H2-4 Consistency & Standards / Severity 3 / Found by: A, C, D

The interface used the string "Save" on the first screen for saving the user's profile, but used the string "Update" on the second screen. Users may be confused by this different terminology for the same function.

Fix: Use the same string on each screen.

#### 1. H7: Flexibility and efficiency of use

##### Severity 2

##### Found by B

When a user wants to select multiple spots, they have to click on each one followed by clicking add (For example, to reserve 3 spots, would have to : click → add → click → add → click → add). This is very tedious when you're reserving multiple spots.

Fix : Allow batch selection and adding. For example a user can click, and drag his finger, without lifting over multiple dots to select more than one spot.

#### 2. H5. Error Prevention

##### H6. Recognition rather than Recall

##### H8. Aesthetic & Minimalist design

##### Severity 4

##### Found by A, B, C

While using opacity alone to differentiate between regular parking spots and EPA spots is minimalist, the opacity is difficult to detect by users who are not as color-sensitive. The user more prone to making an error on the app because they will most likely not notice the difference between the two.

Fix : Potential fixes include using a simple distinctly shaped icon (perhaps of the similar color) for one of the options or to further push the contrast between the two.

Alternatively, using icons or different colors for the two types of parking spots may be easier to distinguish than remember what the opacities refer to which type.

**3. H2: Match between system and the real world**

**Severity 2**

**Found by B**

Having to switch between find and reserve mode can be confusing. If I'm actually looking for packing, I would first think of searching or finding regardless of whether I'm looking for an epa spot or just any other packing spot.

Fix : Show find and reserve in a sequential order. Only show differences between spots after they've been found and right before a user reserves a spot.

**4. H7: Flexibility and efficiency of use**

**Severity 3**

**Found by A, B**

When a user is renting out a spot, there are a lot of pages with just one input per page. As a result, they have to click on next after the addition of a single piece of info. So when a user decides to change username after they've entered their location, they are forced to click the back button three times -- definitely not fun!

Fix : Put all related information in a single page to reduce number of navigation clicks or Have a progress bar on the top of the screen, where you could easily access the previous pages by simply pressing the button corresponding to the page you want to go back to.

**5. H4: Consistency and standards**

**Severity 1**

**Found by B**

In find mode (when the find screen is active), you enter your destination first, but when reserve mode, the destination field is below the time fields, suggesting that a user enter the destination after entering reservation time. This inconsistency throws off the user and can cause decision fatigue.

Fix : Entering the destination should always come first no matter whether you're reserving or finding. Hence moving the destination field to the top on every screen would result in a more smooth transition and user experience.

**6. H7: Flexibility and efficiency of use**

**Severity 3**

**Found by A, B**

The use of the color green to highlight that a spot is reserved can be problematic for people with color vision deficiency. Also, some of the dots are too small and are very hard to spot in both the "Find" and "Reserve" screens.

Fix : Use a differently shaped dot and a lower wavelength color to highlight that a spot is

reserved and also set a minimum size for the dots.

**7. H4: Consistency and standards**

**Severity 1**

**Found by B**

When renting out space. The very top bar contains a button to toggle the sidebar and a back button. This is not inline with the iOS look & feel.

Fix: Only leave the button that toggles the side bar at the upper left. Whenever a user starts filling out their info, allow them to go back and forward by swiping.

**8. H10: Help and Documentation**

**Severity 2**

**Found by B**

When renting out, the information fields only contain icons, which do not suggest format or size of the expected input.

Fix : In addition to the icons, add text or info that will suggest the expected input. For example for phone number, you could add the placeholder text 650 000 0000 with a very low opacity.

**9. H10: Help and Documentation**

**Severity 3**

**Found by B**

When renting out, I had no idea what a “spot certificate” is. As a new user, this is the point I’m most likely to give up on the registration.

Fix :At the very bottom of the page, add a some description describing what a spot certificate is.

**10. H4: Consistency and standards**

**Severity 3**

**Found by A, B**

After selecting a parking spot in find mode and getting directions, Clicking the “X” shows a new screen telling the user they’ve arrived. This is confusing since most user’s expectations are that the “X” means cancel the current route.

Fix : Allow the user to confirm cancellation of route once they click on the “X” button at the bottom.

**11. H3: User control and freedom**

**H7: Flexibility and efficiency of use**

**Severity 3**

**Found by A, B**

When users have found a spot and chose to stop navigation, a screen “You’ve arrived” pops up. In the screen, a button at the bottom reads “Navigate to destination”. This is both unnecessary and confusing because the user might have just selected something by accident and wants to pick another spot or might have already arrived.

Fix: Remove this screen or completely or get rid of the “Navigate to destination” button or

provide an option to navigate to a different destination (make the button read “Navigate to a different destination”)

## **12. H6. Recognition rather than recall**

### **H8. Aesthetic & Minimalist design**

#### **Severity 2**

#### **Found by B, C**

The enter destination text field is not easily recognizable. As a user, I would have to take a second or so every time to actually locate it and know where to click before I start typing. This is because contrast between the map and the destination search box (and other pop up boxes) is hard to see.

Fix : Make the destination text field more visible by adding a border around it and a slight glow on the border so it sticks out more. Or consider adding a stronger drop shadow to push the destination layer further forward, or lightly color the map such that the base color is not bright white.

## **13. H1. Visibility of System Status**

#### **Severity 2**

#### **Found by C**

Address of Parking Spot screen has no visual feedback for which locations have been selected.

Fix: It may benefit from a map indicating the location selected, not just the raw address or coordinates since the latter have less meaning to the user.

## **14. H1. Visibility of System Status**

#### **Severity 2**

#### **Found by C**

After selecting an image, there is no indicator of which image or if an image has successfully been uploaded.

Fix: Adding a picture of the parking spot could also show the selected the image to make sure the user choose the right one.

## **15. H4. Consistency and Standards**

#### **Severity 3**

#### **Found by C**

Some pages have a back button on the top left while others don't. It shifts where the menu button is. It's unclear whether you are developing for Android or iPhone, but typically menu icons are on the left for Android because those phones already have a back button in place, while iPhone doesn't.

Also, some screens have Back button on the top left while payment screen has a back button within the page. Pick one method and be consistent about it. (I personally prefer the back button on the page, not the title bar.)

Fix: Maybe move the menu to the right side if you intend to keep the back button on the left, or

develop for Android where there is a built in back button.

#### **16. H4. Consistency and Standards**

##### **Severity 1**

##### **Found by C**

The cancel spot pop up has Yes on the right and No on the left, which seems off to me (might be a cultural thing). Cancel spot yes button is also green, which suggests it is the default action.

Fix: Consider switching the order and making the No button stand out more. If canceling spot is not the default, maybe lessen its contrast to the No button.

#### **17. H4. Consistency and Standards**

##### **Severity 2**

##### **Found by C**

Cancel spot yes/no buttons are differentiated by color. Confirming reservation back/pay buttons are not, even though they are asking similar proceed/don't proceed questions. Same comment for 'sounds good' and 'cancel rent-out' with different button colors, sizes, and space distribution.

Fix: Maybe they should be more similar in coloration or consistent is design

#### **18. H7. Flexibility and Efficiency of Use**

##### **Severity 2**

##### **Found by C**

Clicking on a low opacity spot to reserve (on find page) brings up the reserve page, but after clicking on a spot to reserve, it switches to a fresh reserve screen and does not automatically bring up a pop-up for if a user can add.

Fix: Consider adding this to minimize the number of clicks a user has to go through.

#### **19. H8. Aesthetic & Minimalist design**

##### **Severity 2**

##### **Found by C**

Renting out parking space first screen has the title in a grey, while the first box that seems actually intractable is the name field. The coloring suggests a different information hierarchy, that name is the most important. The grey titling also makes it look like material design text input suggestion text, but missing the bottom line that typically indicates an input box.

Fix: Consider moving the name box to top of page if most important, or more clearly indicating if the grey text is actually a text input box, or even separate out the inputs to different screens if both are equally important.

#### **20. H10. Help and Documentation**

##### **Severity 3**

##### **Found by A, B ,C**

The prototype doesn't have any in-app onboarding at the moment or any place to get help or how-to instructions. As a first time user I'm confused about what I should do when I open the

app or what the different colors and spot sizes mean. While this might not be a problem for returning users, it might make it harder for new users to get started.

Fix : Add a help / info button at the top right such that the user can refer to when not sure what something means. Have a mini tutorial to teach users what each button type means and how it works.

**21. H1: Visibility of system status**

**H5. Error Prevention**

**Severity 2**

**Found by A, C**

Confirm reservation screen has no feedback for which slots a user has actually selected, which may be important. Also when users have reserved a lot, the user is given a confirmation email. However, the user should be allowed to see the exact spots the user have reserved even after receiving the confirmation email so they can still know where their spots are reserved on the map without going to check from their email.

Fix:. Maybe the top half of the confirm reservation can have a map with only the selected reserved spots indicated. Also change the color of the spot to green to show that that spot has been taken by the user after reservation, and turns back to orange after the reserved time is over.

**22. H1: Visibility of system status**

**H5. error prevention**

**Severity 3**

**Found by A**

One problem with the rent-out task is that it does not give the user a summary of what the user have just inputted/submitted in all the previous input fields. This poses a problem as if users want to double check what their input is, they have to go back and check through everything again.

Fix: Have a confirmation screen telling the user to review all the details of what the user will be renting out.

**23. H3: User control and freedom**

**Severity 2**

**Found by A**

There is a main problem here, where the user cannot control when to stop renting out the parking spots when the user should be able to be in control of their choices.

Fix: The user must be able to choose to stop renting out their space after a specific time, or at the user's discretion.

**24. H1: Visibility of system status**

**Severity 3**

**Found by A**

The user should be able to see all possible parking spots, including the ones which have been

taken so that they know where they could park in the future, or where to reserve in advance, and the colors for such spots should be greyed out.

Fix: Show spots that are taken besides showing only open spots.

**25. H6: Recognition rather than recall**

**Severity 2**

**Found by A**

The user should be able to know which spots they have reserved, and what times they have reserved for those specific spot by simply clicking on a reserved spot and get a summary of the reservation.

Fix: In the home page, in addition to showing which spots they have reserved, add a tooltip to show a summary of the reserved spot after clicking on it.

**26. H7: Flexibility and efficiency of use**

**Severity 2**

**Found by A**

The user should be able to exit out of the rent out forms by just one tap instead of so many back buttons to press.

Fix: Have a cancel button at the bottom of the screen, where when clicked, cancels the rent-out and goes back to the home screen.

**27. H9 : Help users recognize, diagnose, and recover from errors**

**Severity 3**

**Found by B**

Whenever I add multiple spots for the sake of reservation, there is no easy and intuitive way to change the number of spots from something like 3 to 2.

Fix : When in reserve mode, make the total field editable. On click, let the user choose which spot(s) to drop.

**28. H1: Visibility of system status**

**Severity 2**

**Found by A**

The user should be able to know how many spots are at the spot he's trying to find on the "Find" screen so that he/she can decide whether it is worth going to that spot. Eg. if there is only 1 spot available at that location, should the user risk going there and have that spot taken by someone else?

Fix: Show how many available spots there are in a location so that the user doesn't have to get there and find that there are no spots left already.

**3. Summary of Violations**

Category	# Viol. (sev 0)	# Viol. (sev 1)	# Viol. (sev 2)	# Viol. (sev 3)	# Viol. (sev 4)	# Viol. (total)
H1: Visibility of Status			4	2		6

CS 147 Autumn 2016: Assignment 9 (Heuristic Evaluation Group Template)

Instructor: James Landay

H2: Match Sys & World			1			1
H3: User Control			1	1		2
H4: Consistency		3	1	2		6
H5: Error Prevention					1	1
H6: Recognition not Recall			2			2
H7: Efficiency of Use			3	2		5
H8: Minimalist Design			1			1
H9: Help Users with Errors				1		1
H10: Documentation			1	2		3
<b>Total Violations by Severity</b>	<b>0</b>	<b>3</b>	<b>14</b>	<b>10</b>	<b>1</b>	<b>28</b>
<b>Note: check your answer for the green box by making sure the sum of the last column is equal to the sum of the last row (not including the green box)</b>						

#### 4. Evaluation Statistics

Severity / Evaluator	Evaluator A	Evaluator B	Evaluator C	Evaluator D	Evaluator E
sev. 0					
sev. 1		66%	33%		
sev. 2	36%	29%	50%		
sev. 3	70%	70%	20%		
sev. 4	100%	100%	100%		
<b>total (sev. 3 &amp; 4)</b>	73%	73%	27%		
<b>total (all severity levels)</b>	46%	50%	50%		

**\*Note that the bottom rows are *not* calculated by adding the numbers above it.**

#### 5. Summary Recommendations

Overall, this is a sleek and clear UI. One of the main issues is the lack of consistency when moving between screens, particularly back buttons and confirmation buttons. The various locations of the back button need to be consistent across the app. Also, the two types color tone of the available parking spots are hardly visible, and do not make much intuitive sense. Here we should add a different color/icon to indicate the differences. Another problem here is that the option of cancelling both the rent-outs and reservations are missing. Another issue was that since the UI overall is very minimalistic and clean, the various input boxes that are white on white background do not show up too well and generally is a simple fix by pushing the contrast more. For user input forms (e.g. renting out a spot) could benefit with more visual feedback of what state the form is in. Additionally, It would be good to see a slightly different use of the "Find" and "Reserve" mode. It's worth rethinking their placement and the continuity between them. Also, another problem is the arrival confirmation screen. For users who chose the wrong parking spot and clicking the "x" button to cancel the trip and receive this "You've Arrived" screen could be very annoying as the user just wants to cancel the trip and go straight to picking another spot. Altogether, this app has plenty of potential and is a very strong UI, and we are excited to see how it turns out.

### ***Severity Ratings***

- 0 - don't agree that this is a usability problem
- 1 - cosmetic problem
- 2 - minor usability problem
- 3 - major usability problem; important to fix
- 4 - usability catastrophe; imperative to fix

### ***Heuristics***

#### **H1: Visibility of System Status**

- Keep users informed about what is going on

#### **H2: Match Between System & Real World**

- Speak the users' language
- Follow real world conventions

#### **H3: User Control & Freedom**

- "Exits" for mistaken choices, undo, redo
- Don't force down fixed paths

#### **H4: Consistency & Standards**

#### **H5: Error Prevention**

#### **H6: Recognition Rather Than Recall**

- Make objects, actions, options, & directions visible or easily retrievable

#### **H7: Flexibility & Efficiency of Use**

- Accelerators for experts (e.g., gestures, kb shortcuts)
- Allow users to tailor frequent actions (e.g., macros)

#### **H8: Aesthetic & Minimalist Design**

- No irrelevant information in dialogues

#### **H9: Help Users Recognize, Diagnose, & Recover from Errors**

- Error messages in plain language
- Precisely indicate the problem
- Constructively suggest a solution

#### **H10: Help & Documentation**

- Easy to search
- Focused on the user's task
- List concrete steps to carry out
- Not too large