

Heuristic Evaluation

City of Detroit Public Services Map

Feb 27, 2018

Summary

This document aims to provide a high-level overview of the usability heuristics violated by the City of Detroit Public Services Map, according to the Nielsen's 10 Usability Heuristics. The team has evaluated the tool on both mobile and desktop integrations.

"What's this heuristic all about?"

"A heuristic evaluation is a [usability inspection](#) method for computer software that helps to identify [usability](#) problems in the [user interface \(UI\) design](#). It specifically involves evaluators examining the interface and judging its compliance with recognized usability principles (the "heuristics")."

- Wikipedia

There were a few highlighted issues including the automatic zoom functionality of the map, general color-usage throughout the tool, information overloading and inefficient hierarchy of the right-hand menu, and various button locations.

Severity Scores

Severity scores can be used to efficiently allocate resources to address the most pressing issues and can also provide rough estimates for additional usability efforts needed. These severity scores are given to each heuristic violation considering the following 3 major factors:

- The **frequency** of the violation
 - Is this problem common or rare?
- The **impact** of the violation
 - Will it be easy or difficult for the users to overcome?
- The **persistence** of the violation
 - Is this a one-time problem that users can overcome once they know about it?
 - Will users be repeatedly bothered by this problem?

The severity scores follow a **[0 to 4]** scale, representing **[lower to higher]** priority levels:

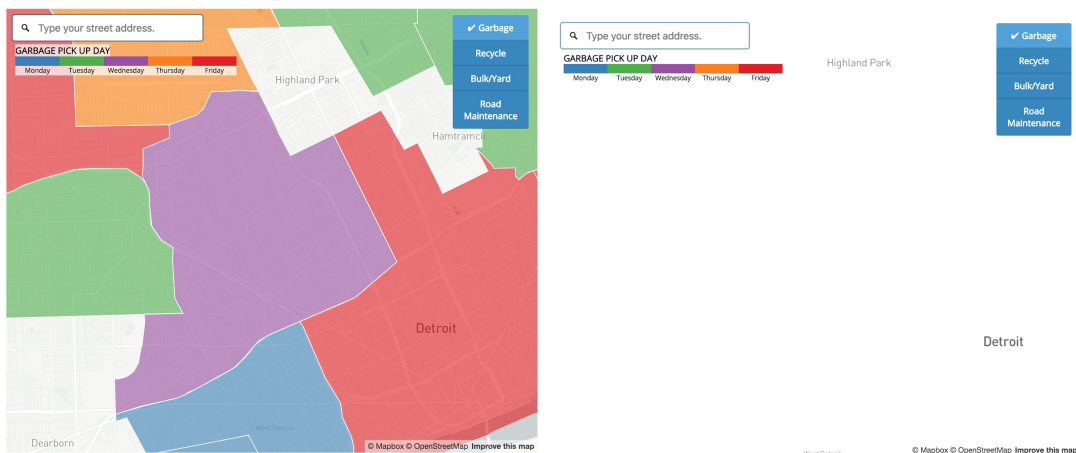
- 0 = Close to none: *"it's not the end of the world, we can skip this one"*
 - 1 = Low priority: *"let's get to this if/when we have time"*
 - 2 = Medium priority: *"it would be nice to have these addressed"*
 - 3 = High priority: *"we need to address this issue as soon as possible"*
 - 4 = Catastrophic: *"stop, drop, and address this violation"*
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System Status Visibility (Feedback)

The system should always keep users informed about what is going on, through appropriate visual feedback as soon as possible.

Score: 3

There are instances where the map turns blank/white during interaction (zooming and dragging). The system does not offer any feedback or status to the user when under such circumstance. Please refer to the two images below:



There is clear feedback for whether the number has been signed up for the text alert; however, it is recommended to clearly tell the user what the system has completed. For example, instead of prompting the users to check his/her phone, it would be better to start the prompt with; "We just sent you a confirmation message. Please check your phone."

☒ Garbage ☒ Recycle ☒ Bulk/Yard Waste

*Phone: (123)123-1233

Check your phone for a confirmation message. X

SIGN ME UP FOR REMINDERS

The only reason why the team rated this heuristic a score of a 3 is because the team was not able to test the system under limited internet connection. Under such limited environments, the system may not be able to properly offer visual system status to the users to inform them to wait. Thus this violation may pose a greater threat to the user experience than currently advised.

Match Between System and the Real World

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

Score: 3

The system does speak the residents' words in plain-English; however, there are some terms that may be confusing to the residents such as: Road Maintenance and ADA Ramp. There are missing common conventions regarding the 'interactive' map where it lacks zoom buttons and the ability to drag the map across different directions. Some navigators do not serve well as guiding users to the right pack of information, like "Information", "City Engineering Division".

User Control and Freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

Score: 4

The system does not support the users in the freedom of taking back their mistakes. For instance, when in the calendar view within the tool (shown below),

February 2018							Print
Sun	Mon	Tue	Wed	Thu	Fri	Sat	
28	29	30	Garbage pick up	Bulk pick up	1	2	3
4	5	6	Garbage pick up	Recycle pick up	8	9	10
11	12	13	Garbage pick up	Bulk pick up	15	16	17
18	19	20	Garbage pick up	Recycle pick up	22	23	24
25	26	27	Garbage pick up	Bulk pick up	2	3	4
11	12	13	Garbage pick up	Recycle pick up	15	16	17
18	19	20	Garbage pick up	Recycle pick up	22	23	24
25	26	27	Garbage pick up	Bulk pick up	2	3	4
11	12	13	Garbage pick up	Recycle pick up	15	16	17
18	19	20	Garbage pick up	Recycle pick up	22	23	24
25	26	27	Garbage pick up	Bulk pick up	2	3	4

The users can freely move between different months, without a simple way to go back to the current date. And on mobile browser, the schedule would occupy the entire screen and no “Back” button provided for exiting the page.

In addition, while interacting with the phone-reminders, the input form does not check for errors and offer users no way to edit or take back their mistakes.

☒ Garbage
 ☒ Recycle
 ☒ Bulk/Yard Waste

★Phone:

Check your phone for a confirmation message.

SIGN ME UP FOR REMINDERS

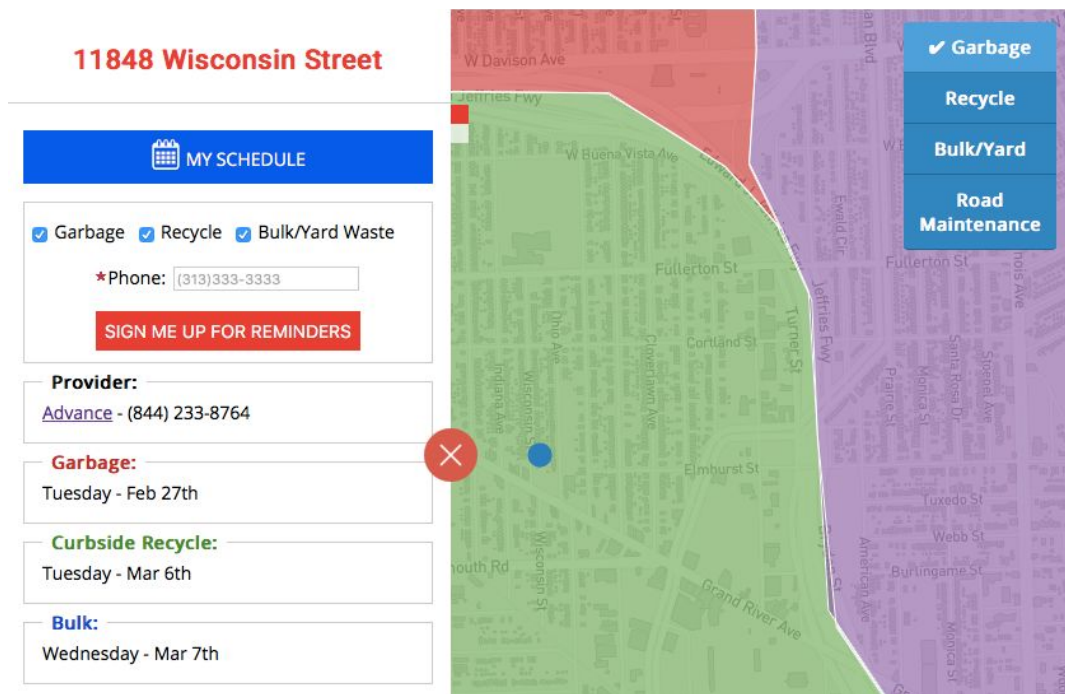
Once you sign up, there is no going back! Neither when you enter a wrong phone-number. Residents with that wrong phone number may forever suffer with unsolicited garbage reminders.

Consistency and Standards

Users don't like to wonder whether different words, colors, or actions actually mean what they think it means. Users like it best when they don't have to assume things.

Score: 3

Some of the titles are color coded with the same set of colors used throughout the map, which inconsistently represents information. Each color should be reserved for a certain action or emotion, for example, the color red should be reserved to denote a mistake or an error made by the system or the user.



Colors should be used wisely and consistently on this system as colors play a major role within the map, and there are many buttons throughout. In addition, both the 'X' button and the 'back' button are located in highly unconventional areas of the interface, forcing the user to search for those functionalities.

Error Prevention

A carefully designed software that prevents a problem from occurring is even better than a good error message! Either eliminate error-prone conditions or present users with a confirmation notice before they commit to an action.

Score: 2

Selecting an out-of-bounds area within the map tool should indicate to the user that an invalid area has been selected. The system should warn the user that this is the case and a valid area of focus should be selected.

Recognition Rather than Recall

A trustworthy software always does the heavy-lifting for the users. Forcing users to remember information from one page to another, like phrases or lists of recyclable items, generally doesn't make them happy. Users generally like things to be remembered for them.

Score: 2



When a location selected, the map will be zoomed and the user lose sight of the color indicator. Users need to remember what the colors represent unless they close the detailed information window to go back to the overview map.

In addition, when interacting with the calendar view of the tool, the current date should always be shown at the top of the calendar so that the user does not have to manually remember the current date.

Flexibility and Efficiency to Use

Shortcuts and keeping the click-counts few. Giving users quicker ways of doing things in and around the tool helps them get better at using the tool! Saving their time and effort will make them like your software.

Score: 3

Generally, the system is not flexible and requires many clicks to navigate through. Clicking anywhere on the map will automatically zoom in and label the selected address. Users are forced to exit out of this move and take back the action, where the system suffers in efficiency. The users also aren't able to click and drag the location pin. Users cannot flag or save their frequently used location as well.

Aesthetic and Minimalist Design

Every irrelevant information competes with relevant information for memory space in the users' brains! Keeping text short and simple helps the users retain helpful and relevant information for longer.

Score: 3

The road and maintenance map does not relate to the waste collection map. Firstly, when pinning a location, the detailed information does not include any information about road and maintenance. Secondly, the function of the road and maintenance map is unclear-- no instructions about what to do with the map.

There are many redundancies on the website. Take Contact information as an example. There are "Join Mail List", "Contact Us" Tab on the right side bar. And also sign up text phone number and report phone numbers above and below the map.

Error Recognition, Diagnosis, and Recovery

Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

Score: 3



Yikes! When choosing an area within the map, where information isn't available (example: outside of Detroit), the system should provide the users with proper feedback. Simple warning or error messages can effectively guide the users towards proper use of the tool. Also providing users with quick and easy ways to take back their mistakes relieves their stress levels!

In addition, when entering an invalid address, similar approaches can be considered.

Help and Documentation

Although it is best if the system can be used without documentation, it may be necessary. Such information should be easy to access, pertains to the user's tasks, list concrete steps to be carried out, and not be too lengthy.

Score: 2

The system offers endless amount of information regarding the Public Services of the city; however, it offers the users little help in sifting through the helpful information and leaves the user without clear direction. Helpful information is as good as none, if users can't find them quickly enough.

Above the map, there is a short paragraph that roughly explains how to interact with the map. The team was concerned with the quality of this small piece of information, as it may sound too vague for some users. For example, the short introduction prompts the user to type in their phone number... but where? Such instructions may confuse users even before primary interaction with the tool.

External References

<https://www.nngroup.com/articles/ten-usability-heuristics/>

<https://www.nngroup.com/articles/how-to-rate-the-severity-of-usability-problems/>