A Heuristic-Based Review of the Usability of the OSHA Website with respect to Communication Tower Hazards

Aiman Al-Allaq
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Assessing the OSHA website/Communication Towers Functionality

• Jakob Nielsen's 10 general principles for interaction design. They are called "heuristics" because they are broad rules of thumb and not specific usability guidelines.

• https://www.nngroup.com/articles/ten-usability-heuristics/
Measuring the OSHA website/Communication Towers Functionality

• **Visibility of system status:** The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

• **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.

• **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.

• **Consistency and standards:** Users should not have to wonder whether different words, situations, or actions mean the same thing.

• **Error prevention:** Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.
Measuring the OSHA website/Communication Towers Functionality

• **Recognition rather than recall:** Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

• **Flexibility and efficiency of use:** Accelerators — unseen by the novice user — may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

• **Aesthetic and minimalist design:** Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

• **Help users recognize, diagnose, and recover from errors:** Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

• **Help and documentation:** Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.
For the first heuristic, the OSHA website, regarding the topic of communication towers and their standards. The website does fairly okay when it comes to displaying information and topic related subjects. i.e., latest standards, and news related to the topic (under the Highlights window):
Visibility of system status

Moreover, the website offer users an opportunity to share their feedback regarding their own experiences by providing an email (oshacommtower@dol.gov) along with a phone number (1-800-321-OSHA(6742)) for immediate feedback.
Visibility of system status

However, it can be seen that, this method for providing feedback, is not optimal, since it is limited to two ways only.

A fix can include providing multiple contact points for users to provide their feedback or submit queries depending on certain topics.
Visibility of system status

Another preferred way is to allow “online feedback forms” to collect users feedback and categorizes it depending on topic for further processing.
Match between system and the real world

Next, we can see that the OSHA website display an overview to “Communication Towers” is easy to understand language, and terms relevant to people who are involved in the field, and even newcomers.
Match between system and the real world

Resources

- **3M recalls fall prevention device over safety concerns**
  DBI-SALA Lad-Saf Sleeve - Stop Use and Recall/Replacement (English) (Spanish), August 30, 2016

- [National Safety Stand-Down To Prevent Falls in Construction webpage](#)
  - Poster for Communication Tower Industry (PDF)

- Fall from a Telecommunications Tower: FATAL Facts (PDF). OSHA Fatal Facts.

- [Preventing Falls in Construction](#). OSHA’s Fall Prevention Campaign.

- Fall protection. OSHA Safety and Health Topics Page.

- The **Telecommunication Industry Registered Apprenticeship Program (TIRAP)** is a joint venture of telecommunications companies, industry associations, and the U.S. Department of Labor (“DoL”) that develops DoL-credentialled apprenticeship programs available to qualified employers for career development of the telecommunications workforce:
  - FCC and DOL announce wireless apprenticeship program. The Wireless Infrastructure Association is orchestrating the Telecommunications Industry Registered Apprenticeship Program (TIRAP). [DOL/FCC Fact Sheet (PDF)](#).
  - TIRAP [Educational videos](#)
Standards however, may seem a bit complicated and difficult to understand for novice users, which might require some additional information to clear.

**Standards**

*Construction Industry (29 CFR 1926)*

- **1926 Subpart M** - Fall protection [related topic page]
  - 1926.501 - Duty to have fall protection
  - 1926.502 - Fall protection systems criteria and practices
  - 1926.503 - Training requirements
- **1926 Subpart E** - Personal Protective and Life Saving Equipment [related topic page]
  - 1926.104 - Safety belts, lifelines, and lanyards
  - 1926.105 - Safety nets

*General Industry (29 CFR 1910)*

- **1910 Subpart R** - Special Industries
  - 1910.268 - Telecommunications
- **1910 Subpart I** - Personal Protective Equipment [related topic page]
  - 1910.132 - General requirements
User control and freedom

• As for user navigation and control. Again, the website does somewhat good in providing users with easy ways to navigate through the website, integrated with the current web browsers capabilities. An example of that the “Back to top” button, which is essential for this kind of websites.

• However, it should be mentioned that, for new users, after going deep into articles, he/she can easily be lost, with no clear indications as to how to get back.
Consistency and standards

The OSHA website does a good job in being consistent in keeping up the platform conventions and the standards in handling and displaying information regarding the topic. From categorizing information, displaying latest standards, and showing latest news and incidents.

The is the typical standard when it comes to “Government” sites, and usually, that what the user expects from such sites. They are not innovative, however, they are what we expect them to be.

Adding to much “innovation” without the actual need for it can be considered wasteful, due to the high operational and development cost for the modern websites.
Error prevention

We have two types of errors:

- **Slips** (when users intend to perform one action, but end up doing another, often similar, action):

  The site limited scope and specific topic tend to limit the functionality of the site, hence reducing the possibility of slips which can be expected in more complicated applications. The whole site consist of clicking topics and reading them. That’s it.

- **Mistakes** (when users have goals that are inappropriate for the current problem or task):

  Clicking all available options and topic selections, again we can see that there isn’t much space for user mistakes, due to the site’s limited functionality.
Recognition rather than recall

Again, with the site simple functionality, there is no use for “memory” when users are interacting with the sites roles, and rather, it relies on “recognition”, in accordance to what has been mentioned earlier (i.e. the site consistency to standards and its user-friendly environment).
Flexibility and efficiency of use

As for the site flexibility and ease of use. Taking into consideration all the previous aspects and measuring heuristics we used, to certain extent, the site can be deemed to be fairly flexible and easy to use, again, in part due to its limited focus and functionality. With few user interaction options available, not much can be done in that regard.

However, using the same control parameters used by the OSHA website (tap selection, list choices, and content navigation controls) on a “heavier traffic” website, it is very probable that the site will do somewhat poorly, since it doesn’t cater to “all” users (at lease in terms of displaying the information in different industry-based context).
Aesthetic and minimalist design

The site tries to keep a minimalistic design that agrees with the content it displays the standards for typical government sites we talked about earlier, however, there are some “repetitive” options that could be highlighted in different way, increasing the site functionality.

This shows what can be considered as a “Bad design” feature, and, eliminating repetitive options could lead to better utilization and elevate user confusion.
Lastly, summing up all the measures above, no “help and documentation” is critically needed, due to the site limited purpose and functionality. More work needs to be done on the heuristics that bear some weak features, which could render the site utilization in a great way.
Thank you