

Heuristics for Silver Conformance

for Evaluation and Public Comment

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Definitions

A **heuristic** is an individual rule or criterion that enables a person to simplify a complex rational decision making or problem solving process into a judgement call. For example, in order to answer a high level question of variable interpretation like “does it work?”, one could create or apply a series of more specific questions as individual criteria that help answer the larger question, like “does it turn on when power is supplied to it?” They are usually expressed in the form of a principle instead of a question. For example, “Turns on.”

A **set of heuristics** is a list or group of such criteria that can all be applied to a subject. For example, a series of questions one would ask to determine if a product meets a need or set of needs.

A **heuristic evaluation** is a prescriptive process or methodology whereby human evaluators with domain knowledge of the subject space evaluate the subject against the set of heuristics, then rate and apply a score from within a defined range for each heuristic. The score is then totalled for each individual evaluator and then averaged across evaluator totals, and a final report is generated. This report should include the individual scores, the cumulative

scores, the average or mean score, a summary, and recommended remediation against any areas that scored lower than a defined threshold – usually 50% of the possible score, or middle of the range. Most importantly, more than one evaluation should be completed, and the manner of applying a score is as objective to the heuristic as possible – as the outcome will be the subjective opinion of the evaluators. Domain expertise is then also important.

History

A large number of resources were considered and thoroughly reviewed for the purpose of creating sets of heuristics that could apply to the accessibility of ICT (information and communication technology) and used in determining conformance to accessibility guidelines. Some of these sources are provided at the end. This includes professional and academic perspectives both for and against the use of heuristic evaluation, which is still debated today.

Currently, testing and determining accessibility conformance is facilitated by both programmatic and/or automated and manual human evaluation methods. Silver research confirmed that the human evaluation – even by experts – produces widely variable results, where the largest degree of overlap of identified issues was 80% consistent between any two evaluators.

Rationelle

The assumption is that heuristic evaluation can support measuring and determining accessibility conformance. Since a heuristic evaluation should be conducted by two or more expert evaluators, this embraces the issue of inconsistency identified above as a positive. The resulting score should be more objective and trustworthy when there is more than one evaluator.

Popular Sets

Neilsen & Molich [1990,1994] — *complete text at end of document*

1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

Bowles & Box [2011] — *complete text at end of document*

1. Made for humans
2. Forgiving
3. Accessible
4. Self-evident
5. Predictable
6. Efficient

7. Trustworthy

Proposed Sets for Silver | in-progress

Modality [of input, interaction, output, consumption]

(aligns to the Functional Performance Statements of EN 301 549)

1. Use with or without vision
2. Use with or without limited vision
3. Use with or without perception of color
4. Use with or without perception of depth
5. Use with or without photoreceptive or vestibular trigger
6. Use with or without hearing
7. Use with or without limited hearing
8. Use with or without vocalization
9. Use with or without gross motor ability or mobility
10. Use with or without limited dexterity or fine motor control
11. Use with or without limited cognition
12. Use with any combination of any of the above

Note from Cybelle:

Mobility and motor control

Sensory - visual and auditory

Cognitive - includes wide-range of conditions, neurodiversity and functional impacts

Mental health

Chronic

Other medical

Other - includes intersectional, unclassified age-related disability and disabilities that don't fit neatly into category or diagnosis.

Principles

(aligns to and extends the Principles of WCAG)

1. Perceivable
2. Operable
3. Understandable
4. Robust
5. ?? (proposed by John Foliot on 12/4 or 12/7 – cannot locate in minutes)

Impact

(aligns to severity and priority)

1. Performant
2. User Control, Agency and Preference
3. Logical Order
4. Context, Modality and Method
5. Progressive Enhancement / Fault Tolerant

Evaluation & Score | in-progress

Evaluators should have domain knowledge – not only in the product area, but in the heuristic area. For example, if the product is a navigation and wayfinding web application and the heuristic is the modality of mobility (or more specifically, ambulatory), the

evaluator should understand: usability and accessibility principles of the web; physical navigation; and have an impairment and/or scenario in which their mobility is limited.

A possible scoring mechanism is a range of zero(0) to four(4), where a 0 or 1 would fail, and a 2 or higher would pass. An inherent challenge is when an individual heuristic does not apply.

Sources

General / Usability / User Experience

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Accessibility

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Full Text of Popular Heuristic Models

(Used without permission to publish. Included for private review.)

Nielsen & Molich

10 Usability Heuristics for User Interface Design [1994b]

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. Follow platform conventions.

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.

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.

Bowles & Box

Undercover UX heuristics [2011]

A good website is:

- **Made for humans.** Is the site relevant and useful? Is it enjoyable? Does it match users' mental models—that is, their understanding of how the site should work? Does the site speak in user-friendly language? Does it offer the right level of user control?
- **Forgiving.** Does the site prevent errors? When errors do occur, are they clearly explained and easy to recover from? Does the site minimize the user's mental workload?
- **Accessible.** Is the text legible? Does the site cater to color-blind users? Is there unnecessary animation? Does the site work with assistive technology such as screen readers?
- **Self-evident.** Is it clear what and who the site is for? Is it easy to navigate? Is the layout logical, with the most important information prominent? Do the icons and graphics make sense?

- **Predictable.** Is the site consistent? Does it use known web conventions? Are there good defaults for user input? Does the site remember user preferences?
- **Efficient.** Are text, imagery, and structure concise? Is the site responsive, giving good feedback? Does it prioritize the most important tasks?
- **Trustworthy.** Is the site accurate? Is its content up-to-date? Are there any bugs? Does the site keep its promises?