Developing a Usability Ranking System for Findings in Health Information Technology Products

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Abstract
Resources for addressing usability issues identified by practitioners are often limited and teams look to usability professionals for help in prioritizing the issues. Health Information Technology (HIT) products face an additional level of complexity due to the intertwined relationship between usability issues and potential patient safety issues. Human Factors Engineering (HFE) team within the Office of Informatics and Analytics of the Veterans Health Administration (VHA OIA) developed a usability ranking system, sensitive to the specific challenges of HIT products, to help teams prioritize resolution of usability findings. The system considers factors focused with the findings themselves, including user experience impact, organizational impact, and frequency of the problem. Constructed with “checklist style” definitions for each level, the system helps practitioners more consistently select the appropriate initial ranking.

The Rating System
VHA HFE evaluates HIT products’ strengths and weaknesses to assist development teams with improving their usability. We call these strengths and weaknesses “findings.” HFE has developed a ranking system to help business owners prioritize resolution of the findings:

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<th>Usability Rating</th>
<th>Description</th>
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<td>Priority 1: Critical</td>
<td>Causes frequent task failure or accidental task failure from which recovery is not possible. Causes extreme user irritation and/or task abandonment. Likely to diminish the credibility or reputation of the VA product. Causes system/sub-system failure (i.e., produces system error or “crash”).</td>
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<td>Priority 2: Important</td>
<td>Causes frequent task failure or accidental task failure from which recovery is not possible. Causes extreme user irritation and/or task abandonment. Likely to diminish the credibility or reputation of the VA product. Causes system/sub-system failure (i.e., produces system error or “crash”).</td>
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<td>Priority 3: Minor</td>
<td>Causes occasional task failure after which recovery is possible. Causes user delays and/or moderate dissatisfaction, but some users are able to recover in order to complete the task. Expected to negatively impact usability, possibly leading to discontinuation at a level that users might opt to discontinue use. May diminish the credibility and/or reputation of the VA product.</td>
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<tr>
<td>Priority 4: Suggestion</td>
<td>Causes occasional task failure after which recovery is possible. Causes user delays and/or moderate dissatisfaction, but some users are able to recover in order to complete the task. Expected to negatively impact usability, possibly leading to discontinuation at a level that users might opt to discontinue use. May diminish the credibility and/or reputation of the VA product.</td>
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How the System Was Developed
In the creation of this ranking system, VHA HFE drew upon published material and explored the unique challenges in applying severity scales to HIT products within the VA health system. We discussed the following topics in the adoption of our system:

- User experience impact of the problem
- Organizational impact of the problem
- Market impact of the problem
- Persistence of the problem
- Frequency with which the problem occurs
- Consistency of the ranking system with other VA certifying bodies (such as OIA Informatics, Patient Safety and VA developing rankers)
- Conflict in language within a medical context (e.g., “critical”) Use of this ranking system with quantitative usability metrics
- Academic validity of the system

Employing the System
To maintain consistency in communicating usability issues within VHA, regardless of the usability evaluation method employed, HFE categorizes all findings using the ranking system. The system relies on observed user behavior and frequency. This does not adjust for severity of usability problems.

Applying the System
When applying to the system to this type of method, the practitioner employs his/her judgment in estimating the potential for task failure and the frequency with which the issues may occur.

Consistency in Ranking
It is not uncommon for practitioners to find different weaknesses and/or disuse on the rank due to practitioners’ challenges identifying the severity. The system is designed to aid consistency by providing a standardized “checklist style” set of definitions by which findings are ranked. In addition, VHA HFE employs a series of examples gathered from previous evaluations to guide ranking decisions.

Conclusions
Ranking the severity of usability issues is not a new concept. Usability practitioners have likely been providing severity ratings to development teams as long as they have been providing feedback on product usability. Severity feedback is often used to prioritize resources to fix the most serious problems and to roughly estimate the need for future usability study. VHA HFE incorporates changes to this system by changing practitioner challenges and soliciting feedback. We have shared the VHA HFE program offices and development teams (such as the After Action Review process).

References
1. “You can’t ‘Checklist’ a Fix” (If you have a ‘Fix’ problem, you have an Usability Problem) Starting from the 319-13 Embraced Millennials on Human Factors in Computer Systems (http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.345.3831&rep=rep1&type=pdf)

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