Usability in RFP's: The Current Practice and Outline for the Future

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Abstract. Studies show that healthcare and other government systems suffer from poor usability. In this research, we aim to understand the reasons and propose solutions to this problem. We conclude so far that (1) the critical phase where to address usability in government system development contracting is request for proposals (RFP), (2) the appropriate place for usability in a RFP is requirements rather than selection criteria and (3) usability requirements should based on user performance, rather than on design principles, usability guidelines, process requirements, or such. We find that defining user performance based usability requirements is a challenging task and a most relevant subject for further research.

Keywords: Usability; government systems; RFP, request for proposals; usability requirements; performance requirements; process requirements; design requirements; usability measures.

1   Introduction

Government organizations widely suffer from poor usability. Studies show that doctors find the healthcare systems difficult to use [14]. A widely used travel management system is another example of what kind of consequences the usability problems lead to. Users report that making a single travel expense report may take three hours, and requires contacting user support every time.

Why do these kinds of usability problems exist? Obviously, this should not a matter of the application area: commonly used office software (word processing, spreadsheets, etc.) represents at least reasonable good usability. It should be quite feasible to develop usable travel management systems - the web is full of easy-to-use travel services.

We find that it is reasonable to examine the specific context of how government systems are developed. European Union legislation requires that the development of government systems has to be open for free and fair competition. Any interested contractor should be in a position to submit a proposal. Therefore, government authorities must issue a public *request for proposal (RFP)* for the development of a new system.

A RFP is includes two main elements: (1) the requirements for the system to be developed, and (2) selection criteria. The system contractor has to meet – or promise

to meet – the requirements; otherwise it will be excluded from the competition. From those contractors that (promise to) meet the requirements, the one is selected as the contractor who gets the highest points based on the selection criteria.

One selection criterion is always price; in addition there may be quality criteria. The selection criteria are defined so that maximum total is 100 points. The weight for price could be, for example, 60 points, and the weight of quality factors could be 40 points. It is the choice of the purchaser to define what are the selection criteria and their the weights. The selected contractor is then committed deliver what is stated in the requirements in the RFP.

Related Research. Usability in government system acquisition has not been a big topic in literature. A late contribution is a recent book on usability of government systems [2], including one chapter on usability in contracts [7], co-authored by one of the authors of this paper. He also has done earlier research where RFP's issue by Finnish public authorities were examined [10]; and a RFP case study is presented [8].

Lauesen [9] addressed earlier the issue. He proposes usability requirements in performance style and process style) metrics and target values. He, however, does not report practical experience.

Some authors have studied software contracting [1], [11], [4] but their focus has been usability after the system developer is selected.

The aim of our research is to understand how this kind of competitive system acquisition setting explains the poor usability of government systems; and what would be the solutions for improve the acquisition process.

2   Description of the Work So Far

We have achieved the following outcomes so far:

- We conclude that request for proposals (RFP) is the critical phase where usability should be addressed in government system acquisition
- We conclude that the appropriate place for usability in a RFP is requirements, rather than selection criteria.
- We argue that usability requirements should based on user performance, rather than on design principles, usability guidelines, process requirements, or such.

The Criticality of Request for Proposals (RFP) in Government System Development. The system procurement process starts when the government authority launches a RPF. The selection of the contractor is a formal process, with two main steps:

1. Exclude those contractors that to not meet – nor do not promise to meet - the requirements defined in the RFP.
2. Select to contractor that get the highest score based on the selection criteria.

What does this selection process mean from the contractors perspective? Any 'wise' contractor would make a proposal that (1) exactly fulfills the requirements with minimal costs and (2) gets high points in terms of the selection criteria with lowest cost.

As a consequence, it is natural that a wise contractor allocates resources for usability activities in their proposals only to the extent to which usability is among the requirements and selection criteria. If usability is not among the requirements or selection criteria, it is not wise to assign resources to usability, because it would make the proposal less competitive.

As a conclusion, request for proposal (RFP) is a most critical phase in government system development. The contractors consider usability only to the extent that usability is required in the RFP.

What is the Right Place for Usability in a RFP? Usability may be included in the requirements, the selection criteria, or both of them in a RFP.

What would be the right choice? Our conclusion is that *the right place for usability is requirements*.

The reasoning is quite simple: only requirements guarantee that usability is truly considered in the development. Usability of the system must meet the requirements (to the extent that stated in a verifiable way).

If usability is among selection criteria, good usability naturally contributes to the total points of the proposal. But it is always possible that a contractor with low – even zero - points in usability will be selected. A contractor that gets low points from usability but high points from other criteria may be selected if the total sum of points is higher than with competitors.

How Should One Define Usability in Requirements in RFP's? We have concluded that usability must be in requirements of a RFP. To have impact, usability requirements should be such that their satisfaction truly results to a usable system.

What makes such requirements? The requirements should be verifiable, valid, and comprehensive:

- Verifiable: It is possible objectively determine whether a requirement is satisfied or not. Actually, if a 'requirement' is not verifiable, it is not a true requirement at all.
- Valid: The content of the requirement is correct, so that its satisfaction means that the system is appropriately usable.
- Comprehensive: The requirements cover the system substantially enough.

In an earlier study on government issued RFP's [10], it was found that usability was included in requirements with four main types of approaches:

- General usability requirements
- Usability process requirements
- Usability design requirements
- User performance requirements

Which types of requirements are verifiable, valid, and comprehensive?

General Usability Requirements. An example of a general usability requirement is "The system must be easy to use".

These kinds of general 'requirements' are, simply, not requirements at all because they are not verifiable. These kinds of statements do not have any impact on system development. A contractor does not need to pay any attention to this kind of 'requirement'.

Process Requirements. Examples of process requirement are that a contractor "must do three cycles of prototype – usability testing"; or "the contractor must present a proof, declaring that the system was usability inspected".

These kinds of process requirements have a problem: there is a risk that the contractor cannot provide a satisfactory design by "three iterative cycles". The reason is simple: if the original design is poor, even a large number of usability tests do not guarantee good usability.

Another problem with process requirements is that processes as such do not ensure quality. The CUE studies [12] have shown that the quality of even the very basic activity, usability testing, may greatly diverse.

Design Requirements. Design requirements are about requiring to follow general design guidelines, such as 9241-110 [6]; examples:

- "The format of input and output should be appropriate to the task."
- "The steps required by the dialogue should be appropriate to the completion of the task."

We find these kinds of guidelines most relevant to the system. We conclude, however, that these kinds of requirements are problematic.

First, we could not think any other way of referring a guideline in a measurable way, but the number of design solutions that violate the guidelines. And the only target value that we could think of was 'zero': no violations against the guidelines accepted. And this is obviously not realistic.

Another problem is that most of the guidelines are not verifiable; e.g. the examples above.

User Performance Requirements. Our conclusion is that the only valid way of defining usability requirements is through user performance. In other words, one should state in the requirements how well users should perform – carry out their tasks and achieve the desired accomplishments – with the system to be developed.

If one can define valid and comprehensive enough performance requirements in a verifiable way, they form a solid basis for truly achieving usability.

3   Future Work

Our research has indicated the need for developing a pragmatic method for defining user performance based usability requirements.

We find this a challenging task because usability is always context sensitive:

- The method should guide for determining appropriate measures. Which should one measure: effectiveness, efficiency or satisfaction?
- The method should also guide to defining the target level: how good usability one should aim at?

- It is essential to define the right user accomplishments; this is also a challenging task if one wishes to cover the users' world comprehensively.

There are other interesting research questions, too. So far, earlier research has examined RFP's issued in Finland [10]. It would be interesting to do similar studies in other countries. Especially, do practices in other European countries differ the ones in Finland?

It also would be interesting to learn where the current – and inappropriate – practices of RFP's stem from?

Recommendations for Practice. Our two basic pieces of advice for practitioners – i.e. to the government authorities, who prepare RFP's - are:

1. Include usability in the requirements, rather than in selection criteria
2. Base usability requirements on user performance; do NOT use general requirements, design guidelines nor process requirements

The challenge is that how define such user performance based requirements in a valid, verifiable and comprehensive way. As said, this is a challenging task that we find a new research agenda. Therefor, we can give another, a bit provocative advice: Unless you know how to define proper user performance based usability requirements – do NOT include any usability requirements or criteria in a RFP at all! This way you at least avoid self-delusion: thinking that *some* usability requirements would lead to usability. (As the history shows, this is simply not true).

Impact on HCI Community. Usability requirements has not been a major research topic recently. The main papers are from 1980's, such as [3][16][5][13], and[15].

Our conclusions indicate that usability requirements should be considered in practitioners' work – especially among government authorities – and in the research focus again. There is a need for methods for defining valid, verifiable and comprehensive usability requirements. It just seems that such requirements are critically needed to ensure the usability of government systems.

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