Non-formal modelling for interaction design

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ABSTRACT

Motivation – If modelling is included in the requirements analysis phase of a systematic interaction design method, it mostly focuses on some kind of formalism, e.g., task modelling and requirements specification. However, when designing in collaboration with non-expert, stakeholders this will not work.

Approach – This workshop will allow exchange of ideas, experiences, techniques and tools for collaboration with stakeholders of interaction design early in the design process, in order to aim at a more creative as well as more user-centred requirement development.

Limitations/Implications – Our finding will in no way guarantee "the best design solution", but they show a type of creative collaboration between stakeholders and designers in a very early design phase, which allows considering and exploring new solutions before these need to be prototyped or implemented.

Originality/Value – The techniques we intend to discuss are in no way new, however their application early in design in this open ended approach is not well documented and, hence, awareness and comparing notes on successes and failure experiences will allow us to learn from each other and help us develop a general understanding among interaction designers.

Take away message – Non-formal modelling tools and techniques for early collaboration with stakeholders are relatively cheap and, at the other hand, uniquely stimulating techniques for identifying both the boundaries and the opportunities of the design space for interactive systems.

KEYWORDS

Co-design, Stakeholder involvement, Sketching, Paper prototypes, Story telling, Requirements elicitation.

WORKSHOP TOPIC

Experienced in teaching design for public services and for applications aiming at non-professional users, we discovered the need for techniques that allow, and in fact stimulate participation of the intended future users and stakeholders. Asking our students to try out a multitude of techniques like sketching, (paper) prototyping, and storytelling we discovered that this elicited real participation as well as real usable contributions to design.

Using visuals, however, is not without pitfalls. Designers who communicate with stakeholders should be aware of how humans perceive and understand. The human visual system, the "mind's eye", relies in large part on the eye and on the processing and the interpretation of the information processed by the brain. Visual design utilizes both. Additional care must be taken to present and highlight important information. So at least a basic knowledge about perceptual and cognitive issues is needed to avoid a poor usage of different features in visual design.

One of the main issues is drawing a user's attention to where it is needed. Here, the so-called preattentive processing, the step that occurs before the attention of the user is concentrated on the visual image, plays an important role. Preattentive processing is performed automatically on the entire visual field detecting basic features of objects in the display. It is done quickly, effortlessly and in parallel and can therefore greatly improve the intuitiveness of representations. It is a strong instrument for enabling a fast and natural way of acquiring information.

One of the key elements of preattentive processing is the theory of visual or retinal variables, which can be compared effortlessly [1]. Bertin identified eight visual variables: form, orientation, colour, texture, value, size, and position (position counted twice). In addition, he divides the characteristics of perception of visual variables into four groups: associative, selective, ordered, and quantitative perception. The knowledge about visual variables and their perception criteria is essential for an intuitive, user-centred interaction design. A nice example for the effective use of visual variables can be found in the book of Krygier et al., who apply this technique to elementary map design for GIS [2].

All above described techniques have in fact been elaborated and sources as well as resources are available. Teaching design students how to locate and

apply them in a creative way strengthens their ability to develop user-centred solutions from the start.

A key problem of visual design in public services and applications is the lack of time and money. The lack of time means stakeholders can't invest enough time to develop a formal model to define the design process because they are stuck in their principal tasks. The lack of money leads to short term design processes without having enough time for evaluation. On the other hand stakeholders mostly can't really outline their needs because they are often non-professional users, so they can't clearly define their requirements. In fact the design is done based on rare information about requirements followed by the implementation of a rough model as end result. The non-professional users need intuitive, self-explaining systems. If we don't meet this interest, users won't accept a system. Therefore, an important and crucial step is to identify their special needs by involving the users in design decisions. This causes a need of non-formal modelling processes to get reasonable results.

So we need a way to reach an optimized model in interactive design based on the specified needs of the stakeholders. One possible solution might be a more or less "online" evaluation. Once the implementation of different methods has started, the stakeholders have to be involved in the design process by evaluating the current results. This means the implementation has to be based on perceptual and cognitive issues following the steps of the well-known evaluation cycle [3] in a very condensed way. This kind of evaluation tailored for the stakeholders leads to a faster correction of possible faults within the development phase. Implementing a new design method with an immediate evaluation and response by the stakeholders themselves yields to an "online" evaluation to reach the users' desires. While evaluating one method the next method can be implemented. This leads to a user specified and convenient visual design.

This way is less time consuming because in the beginning some coarse requirements are sufficient to get started. During the design process it always takes just some minutes to define the next steps because the users get a visual impression of their ideas. Another advantage is to get a visual result of what might be the final result in an early project stage.

PARTICIPANT SELECTION

We intend to solicit participation based on the acceptance of position statements. Participants will be accepted based on their experience, visions, or research, showing their contribution to the intended discussion.

INTENDED PUBLICATION

We intend to develop our workshop discussion results into a publication to be submitted for pear review, either in the way of a monograph, a journal paper, or a chapter in a handbook, aiming at an audience of interaction designers or teachers on interaction design.

Depending of the outcome of the discussion, more structural outcomes like a website of tools and techniques, or a catalogue of design studies, will be considered.

REFERENCES

[1] J. Bertin: Sémiologie Graphique. Les diagrammes, les réseaux, les cartes. Mouton/Gauthier-Villars, 1967.

[2] J. Krygier, D. Wood: Making Maps: A Visual Guide to Map Design for GIS. The Guilford Press, 2005.

[3] A. Kerren, A. Ebert, J. Meyer: Human-Centered Visualization Environments. Springer, 2007.