Heuristic Evaluation of User Experience –
Case Nokia

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ABSTRACT
Along several years, Nokia has utilized user experience heuristics for assessing design prototypes with a panel of internal experts. In this paper, we describe how we have tailored the traditional heuristic evaluation method to suit the needs of a large multinational corporate.

HEURISTIC EVALUATION
Heuristic evaluation method [3] has traditionally been used for evaluating usability against a set of principles, e.g. the 10 usability heuristics by Jakob Nielsen [4]. Heuristic evaluation of user experience (UX) in a broader sense seems to be rare, which, we believe, is due to the situational nature of UX. It is hard to derive universal UX heuristics that would imply good UX for all kinds of users in various different situations with various kinds of products and services. This is a core reason why UX heuristics need to be tailored for the different evaluation cases. The few examples of UX heuristics have indeed been developed for specific cases: UX of cross-platform social networking systems [7], playful experiences of games [1], and persuasive health technologies [2].

A few years ago, we reported heuristic evaluation as one of the most potential methods in the early phase of product development [6]. The main benefits include

- fast application of the method after building the infrastructure for systematic heuristic evaluation
- possibility to run the evaluation in different parts of the world simultaneously
- possibility to evaluate early ideas that are not articulated very clearly yet
- experts can understand the future developments that will influence the UX of futuristic concepts.

The main challenges in heuristic evaluation of UX include setting up the infrastructure for systematic and rapid heuristic evaluation, and foreseeing how ordinary users will experience the concept once it comes out. The heuristics should be formulated so that the latter challenge can be alleviated.

OVERVIEW OF THE EVALUATION CONTEXT
UX123 is an infrastructure established inside Nokia for evaluating the UX design competitiveness of mobile products in a systematic manner. The UX123 team serves product development with a pool of internal experts on different sites of the company. A set of UX heuristics has been developed to make the evaluation systematic. Whenever a new evaluation is needed, a subset of evaluators is recruited to assess the UX of a given user journey on the given products against the heuristics. Competitor products are assessed with the same set of heuristics. The evaluators report their findings in a review workshop and the UX123 team analyses and categorizes the findings and reports to the product team as well as other stakeholders. The evaluation can be done in different phases of product development.

Below we describe how the method-resources [8] have been tailored over time in different evaluation cases within Nokia.

Participant recruitment
The principles of expert recruitment are the same in all evaluation cases: experts are senior UX design professionals with experience from product development both inside and outside of Nokia.

Design representation
Since heuristic evaluation is conducted in various different phases of product development, the representation of the design that experts evaluate varies accordingly. In the early phase, the representation may be a concept demonstration, in a later phase an actual prototype. Experience has shown that UX heuristics are best applied to concepts that allow or simulate interaction. Concepts without interactive aspects tend to demonstrate aspects such as visual design well, whereas other aspects such as input mechanisms often cannot be assessed. As a result, all of the heuristics may not be applicable and a holistic assessment of the UX may not be possible.

The UX123 evaluation process includes competitor evaluations. Naturally, these devices are products on the market.

Heuristics
As described in Introduction, the UX heuristics need to be domain specific. UX123 team has developed a set of UX heuristics that address, and are broken down from three main categories: the aspect of pleasure or delight when

using mobile devices and services; smooth task flow; and actual and perceived effort. The heuristics reflect both current understanding of what enables good UX in this domain and Nokia's strategic aims in increasing its competitiveness. The heuristics are the same for all UX123 evaluation cases, but the significance of the different sections within the heuristics varies, according to what is the competitive situation of the evaluated product. For example, in some cases there may be specific interest in how competitive the physical design of a product is, whereas in another review it may be more significant how competitive is the social networking experience.

Task definition

Since the products are different in the different evaluation cases, also the tasks that the experts do during the evaluation differ case by case. As user experience is highly situated, the tasks will be tied to a user story that describes a potential usage situation. Without imagining the use situation, it is hard for experts to project the end user experience. The product or service development team together with the UX123 team defines the suitable set of stories for the evaluation.

Problem identification

As we outlined in the Introduction, UX123 evaluates the competitiveness of UX design in mobile products. Problems are identified from two perspectives. First, from the perspective of how good the UX of the product is overall. Second, from the perspective of the specific competitive situation of the product. A problem found from the perspective of good UX design becomes less significant from the competitive angle if it is shared by all competitors. On the other hand, something that may not negatively impact the existing UX, for example the absence of a feature, may become a problem from the competitive angle if competitors offer that feature and it becomes a user expectation.

Problem classification

According to the guidance of heuristic evaluation, the experts classify the found problems by indicating the related heuristic for each problem. They classify the problems under the heuristics. This was also the case in UX123 when the experts were not very familiar with the heuristics.

Once the experts got familiar with the heuristics, they did not check the list in detail anymore. They rather reported found problems either under the main theme of the heuristics or without explicit reference to specific heuristics at all. The responsibility of precise problem classification thus shifted from experts to the UX123 team that collected and analyzed the experts' reports. The benefit of this is that when assessing the products, experts can focus on identifying and describing problems and not worry about classification, while still conscious of the specific principles and focus outlined by the UX123 heuristics.

When it comes to assessing problem severity and fixing, UX123 provides a suggestion based on competitive analysis for the product development team, but the team and product owners ultimately decide which problems to prioritize when improvements are made. In other words, the responsibility for fixes or changes in the product lies not with the UX123, the UX assessment program, but with the product team and the relevant stakeholders. When it is relevant and possible, the UX123 team follows up the fixes and improvements to the problems pointed out in reviews, in order to track the impact of the assessment work.

Reporting format

In the early days of UX123, the evaluation results were used to raise awareness on UX and flag the importance of competitive UX design within the company. This meant the reports were optimized for a strong impact at the management level, through rich visual material that illustrated problems as well as strengths found in UX competitiveness, and through comprehensive argumentation that would be hard to dismiss without action. This technique of influencing was successful, and UX123 gained visibility, trust and an influential position in the organization.

Thanks to this initial impact, UX123 became an established activity supporting the product development teams as well as senior leaders in decision-making. The reports now serve the teams and leaders by providing data from the heuristic evaluation. Reporting has shifted from heavy reports with thorough visual evidence to a combination of spreadsheets describing problems and strengths in detail, relevant for product development, and executive summaries that show more competitive analysis, relevant to leadership. Reporting formats are adjusted according to the needs in each evaluation case.

HOW COMPANY STRATEGY AFFECTS THE METHOD

Companies investing in UX naturally do so to make their customers happier, but also to differentiate from competition and strengthen the brand image [5]. Designing products and services that would enable UX unique to a specific company requires in-depth investigation of the brand and mission of the company, as well as those of the competitors. We see it essential that any wider heuristic UX evaluation initiative is aware of and adjusts its goals and operations to the company strategy.

When UX design is not present in the company strategy as a factor in gaining competitiveness, along with the task of the UX evaluation itself it becomes an important task to exert influence and argue for the significance of the findings. The UX123 program was created in this type of a context and was successful in the task of influencing through rigorous competitive analysis and thorough reporting that provided concrete examples of competitive strengths and weaknesses. In global scale product and service development no product or business decision is

made based on one data source only. UX123, however, became one of the significant sources for the momentum where the end user perspective and UX gained more ground in decision making.

In cases where UX design is present in the company's strategy and is recognised as an asset for competitiveness, which is the current context for the UX123 program, it becomes purposeful for a heuristic UX evaluation program to draw from the strategy. It may be possible to derive specific heuristics from the strategic goals, and when reporting the results to decision makers and aiming for an impact, references to the strategy are effective.

CONCLUSION

If we had applied heuristic evaluation as it was defined in 1994 [4], the attempt would have most likely been a failure: the impact on making more competitive products would have been extremely limited, and the exercise would have been short lived. By adjusting the method to cover UX aspects and comparison to competitors, by drawing the expertise from a wide network of internal professionals, by the core team taking responsibility for problem classification and by finding suitable reporting formats, the UX123 program in Nokia has been highly successful. The evaluations have had direct impact on products and services, either resulting in design changes or supporting designs that enable good UX but may increase cost or development time. Indirectly, across designer and decision maker levels, the program and the evaluations have increased awareness of current UX competitiveness, and UX design as a competitive asset in general. This awareness ultimately has an impact in decision making around entire product portfolios and company strategy.

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