UX Strategy as a Kick-starter for Design Transformation in an Engineering Company

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Abstract
Digitalization is driving established companies to become software providers. To succeed in software, these companies must excel beyond traditional engineering and take user experience seriously. How do you make this kind of a change? In this case study, we describe a start of a UX improvement program at a global company with a number external and internal software offerings, but no culture of utilizing design or dealing with user experience. The story starts from the design research, leads to a UX strategy framework and an eventual launch of a UX transformation project. We explain the elements of UX strategy developed in the project and provide insights on what are the key actions and enablers, such as the executive buy in, for a such project. Our goal with this report is to inform the UX researchers of the need for strategic UX work as an enabler of practical UX.

Author Keywords
Design strategy; User experience; Organizational development; Design practice; Industrial UX.

ACM Classification Keywords
D.2.10. Management: Software process models
Introduction

In 2013, Jeff Immelt the CEO of GE wrote [4] that “every industrial company will become a software company.” Given the ongoing megatrends of digitalization and digitization (see Fig. 1), this is inevitably happening. This will require that many traditional industrial companies develop their offerings to enable excellence also in the software domain.

Apple is the poster child for a modern technology company. It is also an outspoken proponent of design-driven innovation. However Apple is not necessarily the appropriate role model for all industrial companies seeking to secure their future in software and service-driven business. Particularly companies that have a long industrial heritage, or a strong engineering culture, can find the transition troublesome or belittle its impact [2]. Old companies may be awakened to a reality in which new customer and end-user demands exceed their capability to deliver new qualities such as user experience, cross-channel experience or brand.

What can industrial companies find when they go looking for improved, competitive software? We have witnessed the brief era of usability engineering [7] that later turned into user and customer experience (UX and CX). More recently design in general and UX design in particular has began to attract more management attention as it has been repeatedly associated with financial success and increased innovativeness in the media popular among business leaders [1, 8].

To achieve a new level of UX in a big organization requires strategic thinking. Only after strategic initiative can practical UX to succeed. Although this strategic aspect been recognized for a long time, there’s been little discussion of UX strategy at HCI forums besides a course by Liam Friedland and Jon Innes offered at CHI 2004-2006. We think that all present and future UX professionals should be aware of the strategic background for their work. The presentation of this story of strategic “UX” is also motivated by sharing a framework for strategic UX work we’ve used.

Background

This case study is a story of an industrial, engineering company with thousands of employees worldwide. They produce high tech solutions with great engineering skill. This company is making progress in digitalizing their processes and products. Recently, they also committed to UX improvements across a portfolio of digital products. As a design and development consultancy, our team helped them to initiate the UX improvement work. The client organization wishes to remain anonymous and from now on I will refer to it as Generic Company, or GC for short.

This project was initiated by a high level GC stakeholder who perceived the urgent need to improve their software UX. Since the initial negotiation, we as an outside partner, involved a small off-site team (two core members, two supporting members). We initiated the UX transformation process in a matter of months from the conception to the first steps of implementation. Our work initially focused on the employee experience with support applications (e.g. enterprise resource planning). At the time of the writing, the implementation process had just began.

We next describe our strategy work in steps of design research, strategy design, and the start of implementation efforts.
Design Research

Research phase was a knowledge construction period. The core team fathomed the GC’s existing process of software development, working culture, and staff competences. It involved interviews with various company stakeholders, mostly from the division responsible for internal software offering.

Our core team carried out the interviews usually on a one-to-one basis to minimize time use and waste on the client side, to maximize learning, and to avoid group think. The intimate interviews were considered essential as in a “focus” group setting, people tend to rationalize things and may seek agreement where none exists. Several people were interviewed twice or thrice as the need to iterate and refine our learning and improvement ideas arose. All interviews were videorecorded and the recordings were shared with the supporting team to improve communication. They were also consulted for fact checking as necessary.

As a part of the design research, we also performed light weight usability evaluation of some of the systems. This helped us to understand the current level of user interface (UI) design better, as well the influence of restrictions from back-end systems on front-end user-interface design.

The research phase took approximately five weeks. The work concluded on schedule as our confidence about the culture and practices felt solid enough to move forward with the strategic UX plan.

Components for a UX Strategy

Even though UX has been in the spotlight for well over ten years, it has never received as much managerial attention as it does now. Consequently, there is more to UX than ever as the skills related to UX work have differentiated, new tools became available, and new ways of working, such as data-driven design, suggested. However, there are no well known frameworks to define what the scope of UX work entails, so each UX strategist has to find their way.

In our strategic work, we rely on a framework visualized in Figure 2. This SC5 Design Strategy Framework is our tool for analysis and synthesis of strategic UX work. It divides the action points for design transformation into six categories: design process, human resources, designer tools, data & analytics, management tools, and change management. Together these populate the roadmap for UX transformation. Although the implied actions take an effect over different timelines, we are intentionally not using “strategic” vs. “tactical” vs. “operational” for simplicity. Next I will describe these elements in detail.

Strategy tools

Our research showed that UX was not a managed thing at GC. Thus the strategy work had start from the fundamental design strategy tools that help to coordinate and direct design. In this case, we initiated the creation of three tools: UX design principles (including UX targets [5]), UX mission statement, and a UX philosophy. These are tightly interconnected but serve a different purposes.

Mission statement and design principles provide a meaning for the transformation project. Mission is the overarching goal for the transformation. In this case, it was simply stated as “Creating a customer-centered
software development culture that enables consistently outstanding UX of GC software.”

**Design principles** take input from the company’s strategic objectives to present high level goals for design. This ties company strategy into design work by and tells what to aim for. Each subsequent design project should align its aims with these design principles, or experience goals. For instance, these goals could be Trust, Proudness, Difference, and Wow (as in [10]). They must be descriptive and principled, clearly expressing what is valued and giving an idea on how this could be achieved (e.g. trust through reliability). In our case, we can disclose the design principle of mobile and terminal device independent design of interfaces (“responsive front-end design”).

**UX design philosophy** gives the ground for recreating the development (or design) process model. It extends the design principles (goals) by instructing how to do things. For instance, we sought human centricity and the involvement of end-user representation across the process. In the future, we proposed seeking a data-driven and evidence-based design culture.

**Change management**
Making organization to deliver new qualities can require difficult changes. Changes require power and will. The power usually follows money. But the change also needs a face, person who embodies the change, both as a symbol and as a concrete workhorse for design leadership. In our case company GC, that somebody was absent at the time of our design investigation.

One of the first things we crafted was a job description of UX leader. This would be a vice president or C-level character who could sustain the UX efforts over a long term at GC. This kind of recruitment would be a notable investment and a sign for the whole organization that the company is seriously paying attention to UX. Recruitment and finding the organizational slot for the UX leader was left for the GC’s top level management.

The next part was to rally the rest of the personnel onboard. For us, this meant focusing on two activities: communicating change and co-creating it. Communication means spreading the word about what is happening, why it is done, and how things will change. Co-creating strategy elements is a form of communicating the transformation. The motivation is to engage the community of people who will be affected by the transformation and through co-design empower them to influence the change (see, e.g., [10] for an example).

At the start of the project, we involved only the most central GC stakeholders. This meant the product and business owners, product team Scrum masters, and managers of the internal products organization. For instance, the stakeholders were invited to workshop on the central goals of the transformation. In future, the communications duties would reside with the UX leader. We also handed out a schematic roadmap shown in Figure 3 as a large poster to remind of the future tasks.

**Human resources**
Through our research, we learned that there was minimal design expertise residing in the otherwise very skilled company. There was a variable level of awareness with regards to UX work. This indicated the need to acquire new competences and to further educate the stakeholders about the utilization of...
design. As role descriptions were heavily employed in the organization’s setup, separate role-based UX responsibilities for existing staff were also proposed and will be created later on. We also planned a curriculum of UX and design related workshops and lectures for the stakeholders.

UX competence acquisition would start with UX Leadership as already mentioned. However, that would only serve strategic and management needs. In addition, a UX team was envisioned that would be skilled in human centered process, service design, interaction design, visual design, prototyping, and user research. In addition to these elementary digital design skills, future would probably show demand for skills in data analytics and evidence-based design. The easiest way for GC to start was to insource this expertise and marry it with their existing development resources tightly and smartly.

**Development Process**
We observed that the existing agile, Scrum-based software development process model at GC had some issues. Focusing on the ones relevant to UX, the most serious one was the disregard for design. Although design is not in the core of Scrum, variations of Lean UX philosophy [6] address the fact that there it is often necessary to do design work within development sprints. In the case company, design had been conducted by whatever resources available as there was no dedicated designer in any of the numerous project teams. Similarly, no aspects of UX were included in the testing criteria that would define when the development work was acceptable for use (or in Scrum terms, the Definition of Done was purely functional, works or fails).

Our proposal was that after acquired the human resources, GC should pilot projects with a human-centered software development process. We further specified a new development process, in the spirit of ‘agile waterfall.’ This model would enable a single design team to work with multiple product teams by producing designs in advance, but providing testing and design support during development. The most important aspects of the new process were:

1. Professional design
2. Consistent end-user representation
3. User testing

**Designer tools**
Modern UX design (i.e., interaction and UI design) relies heavily on tools that allow re-use of tested and tried design patterns. We found little explicit signs of using any such scaffolds in the client organization. One business unit had outsourced a style guide which had fallen out of use, likely because didn’t serve any particular development team or project well enough.

Our solution proposal included starting a living style guide project that would establish overall design templates, visual design guidelines and interaction patterns that could be used across the product portfolio. Style guide requires attention and authority to keep it up-to-date. Systematically utilization of the guide could followed through design reviews. This builds the company brand through a consistent design language but require strong UX Leadership.

We proposed personas as the other important design instrument. They are vehicle to drive user
representation and presence throughout the design and development process. It helps to concretize that the software is designed for somebody. In this case, we advised to conduct qualitative research of people in different business roles to create personas.

Data & analytics
Final step of becoming a UX-focused company relates to enabling data-driven design culture. This involves first collecting data, then making use of it. Our analysis of the case company’s software indicated that although many of the applications were web-based (instead of using dedicated client software), hardly any behavioral analytics was collected, analyzed or utilized. Thus the first step was to prepare for data collection requiring well known, compatible web analytics platforms.

The next step is to figure out the added value of data. In UX work data can be used for task analysis to find out the currently most frequent and laborsome duties for optimization through design. Once the current performance is quantified, UX leader can set goals for improvement that can be strived for through design. In this, we prefer to use UX frameworks such HEART [9].

A data-informed design culture is impossible to build overnight. We outlined the action plan and placed advanced analytics use to the relatively distant future on the GC UX capabilities roadmap.

Putting it to Practice
To start, we created a roadmap to indicate how the different action points relate to each other and what their ideal timing was. However, as the first parts of this plan are now executed, it is clear the plan will be refined based on how the plan’s first steps succeed.

We were well aware of that our UX strategy plan could not address all potential problems and unknown unknowns. One of the risks we identified was the scaling of the new development process. How does it work across products, or how many designers will they need to make an impact in the organization and across the portfolio? Through practices such as design reviews and style guide use there is a hope of finding a coherent and well scaling solution to challenges throughout the company. Much depends on bringing in competent design leadership.

Conclusions and Discussion
We have described a project in which a UX strategy framework was utilized to initiate a major change in a way big company develops its software products. This project started with an executive buy in. Without an initial commitment and continuous support from C-level stakeholder there would have been no chance of this project even producing an informed plan of the necessary change. Top-level support enabled us, strategic UX workers, to get access to people, information and tools necessary for research, to pitch solutions, and help out in implementing improvements.

There is a philosophical discussion to be had on the topic of whether a separate UX strategy, such as sketched here, is necessary. Some argue that UX should be part of the product strategy [3]. This is desirable future development also for our case company and we communicated this to GC.

However, if you have a portfolio of products with no UX thinking what so ever, you want to coordinate the efforts to enable UX improvement. The way you do that is through a UX strategy. This was where we started.
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References