

Design sprints integrating agile and design thinking: A case study in the automotive industry.

Motivations. There is very limited scientifically valid literature about design thinking (DT) in spite of its success in the industry and the education and in spite of the resulting growing number of DT-related success stories depicted on the Internet. To the best of our knowledge, the rare contributions published in scientific forums about DT either confuse it with other methodologies involving a design process or criticize it for its lack of validity. For example, we found two literature reviews about DT (Baker & Moukhliiss, 2020; Razzouk & Shute, 2012) including papers which do not refer even once to the expression “design thinking” and which instead document or discuss other methodologies such as human-centered design, contextual design, usability engineering, design science or software engineering. In addition, there are two recurring concerns regarding DT (Hernández-Ramírez, 2018; Kolko, 2018; Vinsel, 2017): (1) a lack a definition of what DT actually is, as it remains unclear whether DT is an innovation, exploratory or participatory process, an approach based on interdisciplinary, a set of methods and techniques or a discipline; (2) a lack of scientific work documenting the evaluation of whatever outcomes DT produces. Nevertheless, DT undoubtedly has gained momentum over the past few years, presumably because it makes design accessible for anyone to achieve: no more need for understanding a process reference model describing processes, methods or best practices; no more need for skills or expertise in design; no more need for evidence-based evaluation of the outcomes.

Contribution. This paper is a case study reporting on a series of “design sprints” carried out by four master students of (Anonymous University) in the context of a 3-month internship which took place at (Anonymous Organization), a company whose core-business is the automotive industry. The expression “design sprints” refers to an iteration of the 5-phase DT process: Empathize, Define, Ideate, Prototype and Test. The goal of the internship is to test-and-refine prototypes for road sign assistance and adaptative cruise-control technology. The design sprints involve methods such as survey research, field observation, customer journey mapping, six hats, video prototyping, user tests. The contribution of this case-study is twofold: (1) render an account on how (Anonymous Organization) implements DT: from the processes that are actually executed to the selection of supporting methods and tools to the use of the DT outcomes within the organization; (2) investigate whether and how the outcomes of such design sprints are being evaluated, questioned or criticized.

Method. We adopt a case-based approach involving field observations and semi-structured interviews. With a role of participating observers, the four first authors conducted the observations of design sprints: processes executed, supporting methods associated with each process and the outcomes produced. Additionally, the collected data about the decision-making processes involved in the planning of design sprints and the execution of processes, about the control mechanisms involved in the evaluation of the design sprint outcomes. The fifth author conducted the interviews of three employees in the organization: a human-machine interaction expert, a senior development engineer and a product owner (Scrum method).

Results. The data collection allows us to document (1) the execution of the design sprints, (2) the lessons learned regarding decision-making and problem solving, (3) the recurring problems associated with design sprints, and (4) the possible ways to improve organizational efficiencies while implementing DT. These findings allow us to discuss the rationale between the choice of DT as development methodology at the expense of human-centered design, and to reflect on the integration of DT and agile methods.

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