New Technologies—New Design Research?

Keywords: Research Methods; New Technologies; Big Data; Social Media; Science Theory

A conversation held at DRS2016
June 30th 2016, 2:00 – 3:30 PM.
This document is conversation proposal and documentation in one.

Catalysts

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Introduction

New technologies and social media have gained increasing interest in science and here mainly in quantitative research, since many years. The possibilities to collect large amounts of data have led to a new empiricism which already announced “the end of theory in science” (Anderson, 2008; and the replique of Pigliucci, 2009). With the notion ‘Big Data’ we follow the definition of Boyd and Crawford (2012) as “capacity to search, aggregate, and cross-reference large data sets”. Big Data practices can be found nowadays in many different contexts (Mayer-Schönberger and Cukier, 2013) and any kind of limitations or benefits may be different in each context or field. New technologies and social media can also be utilized to conduct qualitative research and design ethnography. This form of research is mainly relying on interviews and observations, which are traditionally supported by the use of photo and video cameras, audio recorders or the like.
New developments in technologies pose new opportunities for the collection and analysis of qualitative data: The ubiquitous presence of smartphones and the increasing availability of new devices, such as drones, smart watches, or fitness trackers, allow for the collection of more data in shorter time, but also the gathering of different information about people’s behavior, location, and opinion. Many of such devices do not only collect pictures, videos, or audio, but also metadata like GPS location, outdoor temperature, and bodily functions. Examples of such technologies are devices that automatically take pictures based on sensor changes (e.g. Autographer, 2013), audio recorders with a time buffer that capture the previous 60 seconds, when activated (Kapture, 2014), fitness trackers that measure bodily functions in accordance with GPS location and daytime (e.g. Nike+ FuelBand, 2012), and wearable “headsets that record your brainwaves and translate them into meaningful data” (EMOTIV, 2014).

Triangulating these different data sources allows the researchers to better understand and interpret people’s activities. For example, the raise of the heart rate when looking at a specific product might reveal underlying emotions regarding the product, or a change of location can be explained by the change of the outdoor temperature, etc. The tendencies of many people to voluntarily document and publish large parts of their lives (described e.g. as life-logging movements or ‘the quantified self’ (Nafus and Sherman, 2014)), facilitates this process. Of course, new technologies can also facilitate the process of analyzing the collected data. Crowdsourcing and Data Mining can help the researcher with crowd-supported or automated data analysis, such as image clustering or identifying different speakers in audio files.

The goal of this conversation session is twofold: 1) to present an overview of existing technologies and demonstrate selected tools to the audience in order to provide them with ideas how to utilize such technologies for their own research. And 2) to discuss the usefulness of the presented technologies and to identify possible pitfalls.

**Research question**

This conversation will discuss the question whether new technological developments provide new opportunities for design research. The possibilities to create new research methods and tools based on new technologies and social media pose some opportunities and challenges at the same time. We want to critically discuss positive and negative implications for design research that come with new technological developments:

- Does new technology-supported research lead to progress in design research?
- Does new technology-supported research provide convincing support for theory development?
- What are the ethical and scientific implications of the development of increasingly data-driven analysis of participants in design research?
The DRS2016 session

#NewTech4DR
Exploring the Opportunities of New Technologies for Design Research

In this DRS Conversation Session, 25 participants explored the opportunities and challenges of new technologies for design research. In particular, the possibilities to measure or study people’s emotions, opinions, ideas, locations, or behaviour were evaluated and discussed. The presented technologies ranged from sophisticated measurement devices like EEG headsets or automatic sensor-based cameras to data mining or crowdsourcing technologies.

After a short introduction of a total of 25 technologies the participants were handed a set of cards describing those technologies in more detail. Inspired by these card-sets, the participants were asked to apply possible technologies to their own research ideas, and to discuss their thoughts and ideas with fellow participants.
Additionally, prepared template cards in four categories were handed out to all participants, along with stickers of the 25 technologies. Now everyone was asked to formulate their thoughts, ideas, and concerns and to indicate the related technology by placing a sticker-icon on the cards: The cards were labelled as follows: 1) This is my favourite technology because..., 2) I would use these technologies to investigate..., 3) I have concerns about this technology because..., 4) my sketch of a future technology for my research.
Within 30 minutes, the participants filled the cards with their ideas and discussed their thoughts within their group. Finally, the experiences and ideas of all groups were discussed in the plenum.
Selected cards with the ideas and comments of the 25 participants were then inserted into the Hybrid Letterbox [http://www.design-research-lab.org/projects/hybrid-letter-box/](http://www.design-research-lab.org/projects/hybrid-letter-box/), in which they were automatically scanned, tagged, and published on Twitter.

The 25 participants produced a total of approximately 100 cards with ideas, concerns, and visions of design research around new technologies. A few results are shown here—a selection of the submitted cards can be viewed via the Twitter Hashtag #NewTech4DR.
I would use these technologies to investigate ... #drs2016 #NewTech4DR

Combined, these could be used to comprehensively investigate interaction properties.

I would use these technologies to investigate ... #drs2016 #NewTech4DR

Behavioral mapping through a space - triangulating self-report what person 'says' vs what they are actually doing.
My sketch of a future technology for my research: #drs2016 #NewTech4DR

Ambient recording via familiar objects already in the home

eg, lamp, Roomba

My sketch of a future technology for my research: #drs2016 #NewTech4DR

Sensor Mouse

To use during user testing
detects temperature, moisture, heart rate, etc.
**References**


About the Catalysts:

Katja Thoring is full professor at Anhalt University of Applied Sciences in Dessau/Germany and Visiting Researcher at TU Delft, The Netherlands. She has a background in Industrial Design and researches on topics such as creative space, innovative research methods, and design education.

Roland M. Mueller is full professor at Berlin School of Economics and Law, Germany. He is an expert in Business Intelligence, Big Data, theory modelling, and lean design thinking.

Petra Badke-Schaub is full professor for design theory and methodology at TU Delft, The Netherlands. She is head of the Design & Methodology section at the Faculty of Industrial Design Engineering at TU Delft and one of the initiators of the SIG Human Behavior in Design in the Design Society.

Alexander Müller-Rakow is a researcher and PhD candidate at the Design Research Lab, University of the Arts Berlin, Germany. His work is underpinned by his interest in experimental interaction design and the impact of digitally-enabled methods.

Erik Bohemia is a Programme Director at the Institute for Design Innovation, Loughborough University London, United Kingdom. Dr. Bohemia’s current research explores changes associated with Globalisation and the impact of these changes on Design.