Human factors in Big Data

Since 2014 I am involved in various (research) projects that try to make the hype around Big Data more concrete and tangible for the industry and government. Big Data is about multiple sources of (real-time) data that can be analysed, transformed to information and be used to make 'smart' decisions. It is mostly technology driven but, as I am an Industrial Designer by education, I started with the role of humans in mind. Why would someone want a service like this? How is he going to use it? Logically I got tasks to look into user adoption, user engagement, behaviour change techniques, user requirements, et cetera.

As Big Data was such a popular term, I started looking for evidence from other research and projects about which human factors to specifically look into when developing Big Data services. I found one article that had perfectly laid out what are the 'Human factors/ ergonomics implications of Big Data analytics' (Drury, 2015). On the one hand Big Data analytics provides human factor specialists with a new and rich way of data collection and data analysis of human behavior patterns (but some challenges arise as well when using this method). On the other hand it also has implication on how human factors knowledge can be applied to develop Big Data services that people are willing and able to use, as well as how to persuade them to change their behaviour.

With plenty of (mostly internet) sources that stress the importance of the human factor in developing successful big data services as a reference I started to form a picture on the different Human Factor disciplines that are of relevance to Big Data analytics. The collection of articles in this magazine is a first step towards creating a knowledge base that can be used for by human factor specialist that want to get, or are already, involved in projects and research that deal with Big Data.

The first article, 'The Human Factors in Big Data', arguments that the role of people in developing Data Driven Innovations (DDI) is critical in three ways: people are asked, requested or required to generate and share data, people are needed to interpret data and find patterns and people have to act in the real world based on the information. A line of thought is presented which can be used in developing DDI to make the role and potential Human Factor challenges explicit.

The second article, 'Visualising Uncertainty', gives insight in how to visualize predictive information. With (big) data becoming the basis for predictions what will happen and prescriptions on how to act based on that prediction, it is necessary to know how to communicate this in such a way that the uncertainty about that prediction or about the effect of the prescription should be made very clear.

The third article gives a guideline with which to measure the quality of dashboards. More than often dashboards are used to communicate results of data analysis back to the people that have to act on the information. With providing more restrictive guidelines and quality measurements dashboards of low relevance for users, or dashboards that are difficult to use are being developed are things that belong to the past.

Reference

Drury, C.G. (2015). 'Human factors/ergonomics implications of big data analytics: Chartered Institute of Ergonomics and Human Factors annual lecture'. *Ergonomics 58,* 5, 659-673.

About the Guest editor

Jenny de Boer, MSc
Medior consultant
Department Human Behaviour and Organisational Innovation
TNO, Soesterberg
Jenny.deBoer@tno.nl