

# Chapter 112

## Big Data and Data Analytics Research: From Metaphors to Value Space for Collective Wisdom in Human Decision Making and Smart Machines

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### ABSTRACT

*The Big Data and Data Analytics is a brand new paradigm, for the integration of Internet Technology in the human and machine context. For the first time in the history of the human mankind we are able to transforming raw data that are massively produced by humans and machines in to knowledge and wisdom capable of supporting smart decision making, innovative services, new business models, innovation, and entrepreneurship. For the Web Science research, this is a new methodological and technological spectrum of advanced methods, frameworks and functionalities never experienced in the past. At the same moment communities out of web science need to realize the potential of this new paradigm with the support of new sound business models and a critical shift in the perception of decision making. In this short visioning article, the authors are analyzing the main aspects of Big Data and Data Analytics Research and they provide their own metaphor for the next years. A number of research directions are outlined as well as a new roadmap towards the evolution of Big Data to Smart Decisions and Cognitive Computing. The authors do hope that the readers would like to react and to propose their own value propositions for the domain initiating a scientific dialogue beyond self-fulfilled expectations.*

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## 1. BIG DATA RESEARCH AS A METAPHOR

In the rich literature related to Big Data Research (Lytras et al., 2015, 2016; Damiani, 2015, 2016; Gudivada et al., 2014, 2015) there are many different perceptions about big data. From hardcore technical approaches to sociotechnical proposition for the value of using advanced analytics for improved decision making the common ground of all perspectives is that this phenomenon has a great potential. In Figure 1, we are elaborating on the basic metaphors related to Big Data Research from diverse views.

The most dominant metaphors about Big Data, are related to the volume, velocity and variety of data. There is a consensus that massive or huge content together with speedy transformations provide a data-rich context for exploitation by intelligent applications capable of applying complex models and analytical capabilities. Based on this perception there is a quest for a data driven value. But the key question related to this is who defines the value and which are the business models that go beyond the traditional information processing for decision making. Here it comes the new metaphor that Big Data Research is about New Business Models, and hence Big Data Research in the Context of Semantic Web Based Information Systems is more challenging. It is not enough to provide the technical value propositions for improved algorithms, sophisticated infrastructures or distributed systems for data management. Without reference to use cases integrated to the reality and the problems of current industry, society and economy, any approach will be out of context.

Figure 1. Big data research metaphors: From 7Vs to 7Metaphors (Lytras, Raghavan, Damiani, 2017)



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