Big Data and Simulations for the Solution of Controversies in Small Businesses

S

Milena Janakova
Silesian University in Opava, Czech Republic

INTRODUCTION

General perspective of the chapter is focused on the use of big data and intelligence in the field of information technology. Information technology (IT) supports the majority of the realized activities. The press is focused on time and quality. There are also competitions, customer preferences and downward pressure on prices and costs. In this situation, new products and services have to address both existing and new customers. Such innovations actively use information technology and available information from the Internet. Good and bad advice, experiences or requests are immediately available for everyone via successful story. (Concessao, 2016) The behavior of individuals in a global information society reveals similarities with regard to the collective behavior of animals in nature. Swarm intelligence provides inspiration for various fields such as economics, biology and also computer science.

The global information society creates data in various formats and data is stored in many sources. Data (big data) is everywhere around us. The well-known databases (Barbucha et al., 2015) are default data source, but there are many other sources such as the Internet, e-mails, chats, and also personal notes in PDF or text files. The volume of data is as large as the ocean or the universe. Users of information technology swim in the data without lifebuoys in all companies and organizations. Everyone wishes to get knowledge immediately in the needed format, but knowledge is not data. There are difficulties that cause ambiguous tasks, unrealistic expectations, faulty data or inadequate procedures and processes. The special problems create a large volume of available data.

The objective of interest is native support of sustainable development based on big data and intelligence in the field of information technology. (Acharjya et al., 2015) In this situation, there is a spectrum of well-known approaches and the fields that are oriented on big data and intelligence such as artificial intelligence, business intelligence, competitive intelligence, customer intelligence, swarm intelligence and also computational intelligence. At first glance, working with data must use all suitable approaches for correct data analysis with respect to sustainable development. Sustainable development is important for supporting society's continuous development without crises. (World Development Report, 2015) The question is "How can be solved existing problems responsibly?" The easy way is to depend on governments or luck. Another way is to merge power of mankind based on cooperation and communication. In this situation, big data brings good results.

BACKGROUND

Working with big data requires optimal IT support, skills of IT users, and more predictive analytics. Sense and simplicity are in the forefront. Interest is focused on true story formation. For these goals, there is computational intelligence bringing IT power to problem solution. The basic step is correct problem formulation in a complex view. CPU speed, memory size, disk volume, and network connection are not critical elements. Information

technology has enough resources to work with big data. (Information Technology Market Reports, 2015) The question is to find the best data for the required analysis and to create a suitable story for the given reality. The main role of computational intelligence must be focused on helping with data analysis and predicting further development to break unexpected conditions in society. (Covington, 2016) Market competition creates other hard requests on realized activities, computers and their software, and also IT users. We need a solution that is better, faster, more user-friendly, more complex, and more predictive.

Regardless on the wide spectrum of hardware, software, available methods and verified methodologies, there are big data projects that end with mistakes. There is contradiction between expectations and reality. IT users rely on information technology as a unique tool supporting realized tasks and processes for solving existing problems, but they are often disappointed over achieved results. IT users often must say "It doesn't work." An active solution takes inspiration from nature, specifically swarm intelligence with links to business intelligence. In many cases, foundation work is simulation. The benefit is easy creation and modification of simulations without demands on finance, material, or human resources.

MAIN FOCUS ON EXISTING CONTRAST

Big Data and Controversies

IT product development is perceived with a wide spectrum of conditions and preferences. Optimal IT implementation must be evaluated based on the available IT product, technology issues, data difficulties, company philosophy, employment approach, motivation, the aims and concept, management support, end users, the learning process, security of application, measurement and evaluation. The perception of IT implementation

is a difficult process with a number of relationships. This volume information is beyond human capacity and a suitable arrangement is needed.

For optimal implementation, the verified methods and system architectures are defined (Crawley et al., 2015), but there are doubts about disproportionate demands on IT users, implementation teams, human resources, finances and time, or societal stability. From a long-term perspective of existing controversies, big data will bigger and bigger, and the pressure on reducing costs for resources will continue to be greater and greater. The frequently used keywords show the rapidly expanding sphere of interest in the area of big data in detail: Analytics - 4 380, Big Data – 4 330, Business Intelligence – 2 550, Data Architect - 911, Data Mining - 2 080, Data Science – 4 370, Data Warehouse - 408, Database – 1 460, Excel – 3 800, Hadoop – 2 410, IoT (Internet of Things) – 1 800, Operations Research - 513, Predictive Modeling - 898, Python – 1 130, SQL - 945, Statistician – 1 090, Visualization – 2 620. (Graville, 2013 - 2015; Big Data Science on twitter, 2015)

Controversies also bring absence public of optimal software implementations. Many surveys show an existing disillusionment from results based on processes with data and information. (Gartner Newsroom, 2015) The natural question is "How do data, information, and knowledge help with difficulties in the global society?" Big data is able to derive various relations about the actual reality (useful as well as useless) based on optimal visualization. (Clark, 2014) The global information society and their governments need more. (Simon, 2014) For everyone, there are important changes:

- The exchange of goods and services, data and information.
- The dependence on information technology in all activities.
- The perception of individuals and collective behavior like people themselves.
- The rhythm of life of modern civilization.

Related Content

Conditioned Slicing of Interprocedural Programs
Madhusmita Sahu (2019). *International Journal of Rough Sets and Data Analysis (pp. 43-60).*
www.irma-international.org/article/conditioned-slicing-of-interprocedural-programs/219809

Multi-Level Service Infrastructure for Geovisual Analytics in the Context of Territorial Management
Giuseppe Conti, Raffaele De Amicis, Stefano Pifferand Bruno Simões (2010). *International Journal of Information Technologies and Systems Approach (pp. 57-71).*
www.irma-international.org/article/multi-level-service-infrastructure-geovisual/39000

A Good American President
James George, Abdullah Murrar, Pankaj Chaudharyand James Allen Rodger (2021). *Encyclopedia of Information Science and Technology, Fifth Edition (pp. 1550-1577).*
www.irma-international.org/chapter/a-good-american-president/260288

The Internet Behavior of Older Adults
Elizabeth Mazur, Margaret L. Signorellaand Michelle Hough (2018). *Encyclopedia of Information Science and Technology, Fourth Edition (pp. 7026-7035).*
www.irma-international.org/chapter/the-internet-behavior-of-older-adults/184399

A Grounded Theory Study of Enterprise Systems Implementation: Lessons Learned from the Irish Health Services
John Loonamand Joe McDonagh (2009). *Information Systems Research Methods, Epistemology, and Applications (pp. 58-72).*
www.irma-international.org/chapter/grounded-theory-study-enterprise-systems/23468