Data Analytics Opportunities in a Smarter Planet

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ABSTRACT

New applications of computing are being enabled by instrumentation of physical entities, aggregation of data, and the analysis of the data. The resulting integration of information and control permits efficient and effective management of complex man-made systems. Examples include transportation systems, buildings, electrical grids, health care systems, governments, and supply chains. Achieving this vision requires extensive data integration and analysis, over diverse, rapidly changing, and often uncertain data. There are many challenges, requiring both new data management techniques as well as new mathematics, forcing new collaborations as the basis of the new "Data Science". Needs and opportunities will be discussed in the context of specific pilots and projects.

1. BIOGRAPHICAL SKETCH

Brenda Dietrich is an IBM Fellow, Vice President and Chief Technology Officer for Business Analytics in IBM. She provides technical guidance for IBMs Business Analytics software strategy and products, and provides leadership for the analytics software community within IBM. Previously she led IBMs research activities in Business Analytics and Mathematical Sciences, and supports software products and consulting in these areas. She was responsible for both basic research in computational mathematics and related fields, and the development of novel business applications based on the application of mathematical models within industry. She has been the president of INFORMS, the worlds largest professional society for Operations Research and Management Sciences, and is an INFORMS Fellow. She serves on the Board of Trustees of SIAM. She has served on university advisory boards for Northwestern, CMU, MIT, and UC Berkeley, and on advisory boards for NSF sponsored Math Research Institutes. She holds more than a dozen patents, has co-authored numerous publications, and co-edited the book Mathematics of the Internet: E-Auction and Markets. She holds a BS in Mathematics from UNC and an MS and Ph.D. in OR/IE from Cornell. Her personal research includes manufacturing scheduling, services resource management, transportation logistics, integer programming, and combinatorial duality.

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