OTM'10 Keynote

Michael Brodie

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Short Bio

Dr Michael Brodie is Chief Scientist of Verizon Services Operations in Verizon Communications, one of the world's leading providers of communications services. Dr Brodie works on large-scale strategic Information Technology opportunities and challenges to deliver business value from advanced and emerging technologies and practices. He is concerned with the Big Picture, core technologies and integration within a large scale, operational telecommunications environment.

Dr Brodie holds a PhD in Databases from the University of Toronto and has active interests in the Semantic Web, SOA, and other advanced technologies to address secure, interoperable web-scale information systems, databases, infrastructure and application architectures. Dr Brodie has authored over 150 books, chapters and articles and has presented over 100 keynotes or invited lectures in over 30 countries.

Dr Brodie is a member of the USA National Academies Committee on Technical and Privacy Dimensions of Information for Terrorism Prevention and other National Goals. He is an Adjunct Professor, National University of Ireland, Galway (2006-present) and Visiting Professor, Curtin University of Technology, Perth, Australia (2009). He chairs three Advisory Boards - Semantic Technology Institutes International, Vienna, Austria (January 2007 - present); Digital Enterprise Research Institute, National University of Ireland (2003-present); Semantic Technology Institute, Innsbrück, Austria (2003-present); and is a member of several advisory boards - The European Research Consortium for Informatics and Mathematics (2007 - present); School of Computer and Communication Sciences, École Polytechnique Fédérale de Lausanne, Switzerland (2001 - present); European Union's Information Society Technologies 5th, 6th and 7th Framework Programmes (2003-present); several European and Asian research projects; editorial board of several research journals; past Board member of research foundations including the VLDB Endowment (Very Large Data Bases, 1992 - 2004), and of the Advisory Board of Forrester Research, Inc. (2006-2008). He is on the Advisory Board of Chamberlain Studios (2006-present).

Talk

"Over The Moon: Data Integration's Essential Challenges".

R. Meersman et al. (Eds.): OTM 2010, Part II, LNCS 6427, pp. 706–707, 2010.

To understand and communicate reality, man simplifies his perception of reality by creating models that are necessarily simpler than reality. For an Information System and its supporting databases to fulfill their requirements, the databases are modeled by radical simplification of reality by identifying those aspects of reality that are essential to the intended perception, i.e., those that are relevant to the requirements, and eliminating all other aspects; and representing the essential properties of those aspects in terms that meet the requirements within the perceptual and modelling limits of the human modeler.

Data modelling involves human designers using a database design methodology together with data modelling tools, e.g., Entity-Relational (ER) and Relational, based on data models, e.g., ER and Relational, and implemented using a relational DBMS. To be more precise, data modelling is an integral component with Information Systems design and development that involves additional methodologies, models, e.g., workflow, and implementation information, e.g., workflow engines, application servers, and web servers. The design, development, and operation of an Information Systems and its databases in dependent on all of the methodologies, models, and tools. For simplicity, we limit this discussion to the design, development, and operation of databases; even though the requirements, loosely referred as the semantics, of the intended perception can be represented anywhere in the Information System - in the databases, the processes, or the application code.

Just as two or more human perceptions of the same or overlapping aspects of reality are unlikely to be identical, so are two or more databases representing overlapping aspects of reality unlikely to be identical. Different databases are designed and developed at different times, to meet different requirements, by different people with different understandings of reality, using different tools, and different methodologies. Hence, two or more different perceptions or databases are typically distinct and are relatively incomplete, inconsistent, and potentially conflicting.

Over time, business, legal, and other requirements have led to the need to represent the real world more precisely in Information Systems. Large-scale integration beyond the scale of most applications necessarily brings in real requirements that prevent the application of simplifying assumptions normally used to solve theses problems (as lower scale). It is likely that as modelling requirements become increasingly complex and as scale of integration grows, this complexity will arise for future Information Ecosystems and the conventional techniques will no longer work.