Engineering OODA Systems: Architectures, Applications, and Research Areas

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Abstract. The majority of today's software systems and organizational/business structures have been built on the foundation of solving problems via long-term data collection, analysis, and solution design. This traditional approach of solving problems and building corresponding software systems and business processes, falls short in providing the necessary solutions needed to deal with many problems that require agility as the main ingredient of their solution. For example, such agility is needed in responding to an emergency, in military command control, physical security, price-based competition in business, investing in the stock market, video gaming, network monitoring and self-healing, diagnosis in emergency health care, and in a plethora of other areas. The concept of Observe, Orient, Decide, and Act (OODA) loops is a guiding principal that captures the fundamental issues and approach for engineering information systems that deal with many of these problem areas. However, there are currently few software systems that are capable of supporting OODA. In this talk, we describe an OODA architecture and provide a tour of the research issues, approaches, and sample state of the art solutions we have developed for supporting OODA in the domains of video surveillance and emergency response.

Speaker Bio

Dr. Dimitrios Georgakopoulos is a Senior Scientist in Telcordia's Applied Research. He received his PhD and MS degrees in Computer Science from the University of Houston in 1990 and 1986, respectively, and his BS degree from the Aristotle University in Greece. In Telcordia, Dimitrios has led several multi-million, multi-year research projects in areas that include large-scale collaboration, complex event processing in networks of multimedia sensors, and operation support systems foradvanced broadband services involving high speed data, VoIP, and video gaming. Before coming to Telcordia, Dimitrios was the Technical Manager and Chief Architect of the "Collaboration Management Infrastructure (CMI)" consortial project at MCC. Before MCC, Dimitrios was a Principal Scientist at GTE (currently Verizon) Laboratories Inc., where he led several multi-year R&D projects in the areas of workflow management and distributed object management systems. Before GTE/Verizon Dimitrios was Member of Technical Staff in Bellcore and worked as an independent consultant in the Houston Medical Center where he designed, developed, and marketed one of the first commercial systems for performing computerized patient diagnosis.

Dimitrios has received a GTE (Verizon) Excellence Award in 1997, two IEEE Computer Society Outstanding Paper Awards in 1994 and 1991, and has been nominated for the Computerworld Smithsonian Award in Science in 1994. He has published more than eighty journal and conference papers. He was the Program Chair of the 2007 International Conference of Web Information Systems Engineering (WISE) in Nancy France, and CollaborateCom 2007 in New York. In 2005, he was the General chair of WISE in New York. In 2002, he served as the General Chair of the18th International Conference on Data Engineering (ICDE) in San Jose, California. In 2001, he was the Program Chair of the 17th ICDE in Heidelberg, Germany. Before that he was the Program Chair of 1st International Conference on Work Activity Coordination (WACC) in San Francisco, California, 1999, and has served as Program Chair in half a dozen smaller conferences and workshops.