

Building an Adaptive Multimedia System using the Utility Model

Lei Chen

Siara Research Canada
305-8988 Fraserston Court
Burnaby, B.C., Canada V5J 5H8
E-mail: glchen@siara.com
Phone: (604) 433-0597 Fax: (604) 433-0257

Kin F. Li

Associate Professor
Department of Electrical & Computer Engineering

Eric G. Manning

Professor
Departments of Computer Science and Electrical & Computer Engineering

University of Victoria

Victoria B.C., Canada V8W 3P6
E-mail: {kinli,emanning}@sirius.uvic.ca
Phone: (250) 721-8683 Fax: (250) 721-6052

Shahadat Khan

Director, Research and Development
Infranet Solutions
Suite 409-100 Park Royal
West Vancouver, B.C., Canada V7T 1A2
E-mail: skhan@infranetsolutions.com
Phone: (604) 921-5993 Fax: (604) 921-5909

Abstract

We present our experience of building a prototype system based on the Utility Model for adaptive multimedia. The Utility Model is proposed to capture the issues and dynamics in multi-session multimedia systems where the quality of service (QoS) of individual sessions is adapted to dynamic changes of available resources and of user preferences. We present the design and implementation of our prototype multimedia system, and report experimental results. We demonstrate that the Utility Model supports two types of adaptation: reactive adaptation for systems where only a subset of the applications follows the adaptation model, and proactive adaptation for systems where all the applications follow the adaptation model. Our results demonstrate that the Utility Model may be effectively used for dynamic quality adaptation in real-time multimedia systems.