

### **Developing Tools for Movement Oriented Design of Digital Multimedia Systems:**

Movement Oriented Design (MOD) is a new paradigm that helps in developing multimedia systems viewed as a collection of Movements; each Movement being a micro-story with a 'begin', a 'middle' and an 'end'. MOD aims to bridge the semantic gap between the task of story telling and the programming paradigms currently being used for multimedia creation. In this project we are investigating models, processes and programming environments to develop Movement Oriented Design tools for:

1. Brainstorming.
2. Plot generation.
3. Storyboarding.
4. Content Development.
5. Authoring.
6. User Modelling.

The MOD paradigm has been proposed by Dr. Sharda, and presented at various international venues. This new multimedia design paradigm is already being investigated at three universities (apart from Victoria University) with intellectual support from Dr. Sharda:

- Fraunhofer IAO - University of Stuttgart IAT, Germany: Virtual Competence Centre for Professional Training, "Investigating the Application of Movement Oriented Design to Technology Enhanced Learning Systems," with Dr. Till Becker.
- RWTH Aachen University of Technology, Germany: Informatik V (Information Systems, "Movement Inspired Storytelling," with Dr. Ralf Klamma, and Dipl.-Inform. Marc Spaniol as thesis co-supervisors for Mr. Carsten Conrad.
- UAE University, College of Software Engineering, "Application of Movement Oriented Design to active learning approach for computer-based learning," supervised by Dr. Halil Erhan

### **Technology Enhanced Learning in EC's PROLEARN program.**

[PROLEARN](#) is a 'Network of Excellence' financed by the IST (Information Society Technology) programme of the European commission dealing with technology enhanced professional learning. PROLEARN plans to focus on the development of innovative learning resources and their use for professional training in SMEs and larger companies, thus bridging the gap between

research and education in universities and professional training and lifelong learning. PROLEARN Virtual Competence Centre.

Project type: Network of Excellence, Start date: 1 January 2004, Duration: 48 months, EU funding: 6.006.600 €, Number of partners: 19, Project co-ordinator: Learning Lab Lower Saxony, Hannover (DE), Contact: Dr. Ing. Martin Wolpers.

- A Technology Enhanced Learning Scenario for Meta-Design Corporation. [PDF](#)

### **Leading Edge Developments in Tourism ICT and Related Underlying Technologies.**

Information and Communication Technology (ICT) systems and products are expected to play an important role in the future development of sustainable tourism. This project will investigate various core ICT technologies and the pathways for research into their application to sustainable tourism. A scoping study will be carried out to identify future research and development areas and related projects that will support the Sustainable Tourism CRC's strategic objectives.

### **Developing a Tourism Ontology for Web-based Intelligent Tourism Information Systems.**

Semantic Web-based intelligent tourism information systems of the future will require a Tourism Ontology that supports meaningful communications between the various computing entities. This project investigates processes and tools for developing a Tourism Ontology to facilitate the development of intelligent tourism information systems and products.

### **Combining the Art, Science and Technology of Multimedia.**

Creating meaning with multimedia requires theories, models and techniques covered by arts, science and technology; this predicated combining knowledge from these three faculties. This long-term research entails developing models and theories for creating links between the arts, science and technology of multimedia. Two such models being developed – and their Semantic Web-based implementations investigated – are: The Multimedia Creation Circles (MuCiCle, pronounced as musical), and the Multimedia Design and Planning Pyramid (MUDPY).

### **Meta-Learning on the Semantic Web.**

Meta-learning systems that make effective use of multimedia and Internet communications to enhance learning outcomes are needed to keep pace with the demands of the 21st Century. The primary aim of this project is to develop meta-learning systems using Semantic Web technologies to support learning for life.

**Quality of Service Management for Multimedia Communications: Investigations on Usability of Interfaces for Desktop and Portable Systems. Ph.D. project for Dr. Mladen Georgievski**

In this project Mladen created new models for user-centred Quality of Service management in networked multimedia applications. He developed and conducted usability investigations on innovative interfaces for desktop and mobile devices, which will deliver the quality users want, at the right price, for futuristic systems, including mobile video conferencing. Mladen's work and publications have received many accolades internationally.

**Multimedia Performance Preview and Enhancement Tool (MUPPET)** is a computer-based multimedia tool for managing performance workshops. This tool includes features such as: script annotation and projection; multimedia content projection; performance video capture and storage; segmentation of stored video; facility to add metadata to the stored video and other multimedia content; performance review by scriptwriter, director and actors. A proof of concept implementation of MUPPET is currently a Masters thesis project.

**Protocols for Reliable Satellite Broadcast Communication, Ph.D. project of Dr. Ivan Jutrisa, Completed 1999.**

In this project we develop a Reliable Satellite Broadcast Transmission (RSBT) protocol. The protocol development process used the SDL Formal Description Technique. X-Melba, an SDL tool-kit developed at CITRI was used for protocol specification. NETWORK II.5 simulation package was used to test the protocol operation.

**Digital Image Compression on Parallel Computer Architectures, Ph.D. project of Dr. Savitridevi Bevinakoppa, Completed 1997.**

Parallel processing techniques for image compression were developed in this project. These techniques were implemented on three parallel computers. Modeling and simulation of image compression on advanced parallel computer architectures were carried out to demonstrate their efficacy.

Thesis published as: Still Image Compression on Parallel Computer Architectures, Savitri Bevinakoppa, Kluwer, 1998, ISBN 0-7923-8322-2.

**Aspects of Parallel Topologies Applied to Digital Transforms of Discrete Signals, Masters by research project of Mr. Rod White, Completed 1995.** In this project techniques and algorithms for solving discrete transforms on parallel computer architectures were developed. Efficient parallel algorithms and processor topologies were investigated for discrete Walsh, Cosine, Haar and D4 Daubauchies transforms. It was found that the parallel algorithms for these transforms could all be implemented efficiently on the Hypercube topology.