Real-time and Embedded Systems Workshop
Arlington, VA USA - July 10-13, 2006

Workshop Program Summary

MONDAY - July 10, 2006 - Tutorials

0900 - 1230  Real-time Data Distribution Service Tutorial (Part 1)
Track 1  Victor Giddings, Senior Scientist, Objective Interface Systems
Gerardo Pardo-Castellote, Chief Technology Officer, Real-Time Innovations, Inc.

0900 - 1230  Real-time CORBA Tutorial
Track 2  Kevin Buesing, Director of Technology Services, Objective Interface Systems

1030 - 1045  Morning Refreshments

1230 - 1315  Lunch

1330 – 1700  Real-time Data Distribution Service Tutorial (Part 2)
Track 1  Gerardo Pardo-Castellote, Chief Technology Officer, Real-Time Innovations, Inc.
Victor Giddings, Senior Scientist, Objective Interface Systems

1330 – 1700  Using the Lightweight CORBA Component Model to Develop
Distributed Real-time and Embedded Applications
Track 2  Douglas C. Schmidt, Professor of Computer Science, Vanderbilt University
Frank Pilhofer, Software Engineer, Mercury Computer Systems

1500 - 1515  Afternoon Refreshments

1700 – 1800  BOF: Enhancing the High Confidence Software Infrastructure for
DRE Systems
Moderator: Helen Gill, Program Director, National Science Foundation

TUESDAY – July 11, 2006

0900 - 0915  Welcome & Opening Remarks – Program Committee Chair
Andrew Watson, Vice President & Technical Director, Object Management Group

0915 – 1200  Session 1: Fault Tolerance
Chair: Victor Giddings, Senior Scientist, Objective Interface Systems

Investigating Lightweight Fault Tolerance Strategies in Enterprise Distributed Real-time Embedded Systems
Jaiganesh Balasubramanian, Aniruddha Gokhale & Douglas C. Schmidt, Dept. of EECS, Vanderbilt University
Nanbor Wang, Tech-X Corporation

Providing Fault-Tolerant Management in a CCM DRE Environment
Paul Rubel, Joseph Loyall and Matthew Gillen, BBN Technologies
Aniruddha Gokhale and Jaiganesh Balasubramanian, Department of EECS, Vanderbilt University
Priya Narasimhan and Aaron M. Paulos, Carnegie Mellon University
1030 - 1045  Morning Refreshments

Analysis of Passive CORBA Fault Tolerance Options for RT Applications
Robert A. Kukura, Senior Principal Software Engineer, Raytheon and Paul V. Werme, Lead Scientist, NSWCDD

CORBA Fault Tolerance for Mission and Safety Critical Systems
Hakim Souam, Technical Architect, THALES Air Traffic Management

1200 - 1245  Lunch

1300 – 1330  Sponsor Presentation
Meeting the Challenges of Ultra-Large-Scale Distributed Real-time and Embedded Systems
Douglas C. Schmidt, Professor of Computer Science, Vanderbilt University

1330 – 1530  Session 2: Performance and QoS Assurance
Chair: Andrew Watson, Vice President & Technical Director, Object Management Group

Evaluating the Performance of Pub/Sub Platforms for Tactical Information Management
Jeff Parsons, Senior Staff Engineer and Ming Xiong, Vanderbilt University
Gautam Thaker, Project Leader, Lockheed Martin Advanced Technology Labs

Network QoS Assurance in the Presence of Faults
Balakrishnan Dasarathy, Chief Scientist, S. Gadgil, F. Porter, K. Parmeswaran, R. Vaidyanathan, Telcordia Technologies

Open Architecture Computing Environment: DDS Middleware Benchmarking
Bruce McCormick, Engineer, EG&G Inc.

1500 – 1900  Demonstration Area Open

1530 – 1600  Afternoon Refreshments

1600 – 1800  Session 3: Software Defined Radio Implementation Experiences
Chair: Andrew Foster, Product Manager, PrismTech

Performance of Middleware for HBHT Radios
Piya Bhaskar, Systems Engineer, Lockheed Martin

Next Generation Operating Environment
Bruce Trask, Director of S/W Engineering, SDR Products, PrismTech

Composability Problems and Mitigation in Real-time Software Defined Radio (SCA) Systems
David Carlson, President, Chronolytics, Inc. & Raymond Lindenmayer, Sr. Engineering Manager, Harris Corporation

1800 – 1900  Demonstration Area Reception  hosted by

1900 – 2000  BOF: CORBA/e - Future Profiles
Moderator: Andrew Foster, Product Manager, PrismTech
WEDNESDAY, July 12, 2006

0900 – 1200  **Session 4: Applications of Model Driven Development**  
Chair: Ben Watson, Research Program Manager, Lockheed Martin Aeronautics Company

**Model-Driven Agile Development of High Assurance Distributed Systems**  
James Kirby, Jr., Center for High Assurance Computer Systems, Naval Research Laboratory

**Applying Model-Driving Engineering to Evaluate the QoS of Distributed, Real-time, Embedded Systems**  

1015 - 1045  **Morning Refreshments**

1000 – 1600  **Demonstration Area Open**

**Model-Driven Engineering of Fault Tolerance in Enterprise DRE Systems**  
S. Tambe, A. Gokhale, J. Balasubramanian, K. Balasubramanian, D. Schmidt, ISIS, Vanderbilt University

**Model-Driven Optimizations of Component-Based Systems**  
Krishnakumar Balasubramanian, and Douglas C. Schmidt, Vanderbilt University

1200 - 1245  **Lunch**

1300 – 1330  **Sponsor Presentation - PrismTech**  
Keith Steele, CEO, PrismTech

1330 – 1530  **Session 5: Exploiting the Potential of DDS: Application-Design Patterns and Model-Driven Development**  
Chair: Gerardo Pardo-Castellote, Chief Technology Officer, Real-Time Innovations, Inc.

**DDS Use Cases: Effective Application of DDS Patterns, and QoS**  
Gordon A. Hunt, Principal Engineer, Real-Time Innovations, Inc.

**Model Driven Development and DDS**  
John Russell, Product Manager, PrismTech

**Realizing Data Distribution Services through MDA**  
Sam Mancarella, CTO, Sparx Systems and Davis Ford, Chief Consultant, Zeno Consulting, Inc.

1530 – 1600  **Afternoon Refreshments**

1600 – 1800  **Session 6: Real-time CORBA: The New Paradigm**  
Chair: Joseph M. Jacob, Senior Vice President, Objective Interface Systems, Inc.

**Using CORBA for Automated Stock Trading**  
Carlos O’Ryan, CTO, Automated Trading Desk, LLC

**Real-Time CORBA for Mission Critical Systems - Space Vehicle Static Testing**  
Felicia Pravina J.T., Senior Software Engineer, Technical Lead, Sankhya Technologies

**CORBA/e: The New CORBA for Embedded Systems**  
Victor Giddings, Senior Scientist, Objective Interface Systems

1800 - 2000  **Workshop Reception hosted by**  

2000 – 2100+  **BOF: Open-source Middleware for Distributed Real-time and Embedded Systems**  
Moderator: Douglas C. Schmidt, Professor of Computer Science, Vanderbilt University
THURSDAY, July 13, 2006

0900 – 1145  **Session 7: Components**  
Chair: Douglas C. Schmidt, Professor of Computer Science, Vanderbilt University

*Provisioning Dynamic Reconfiguration and Redeployment Capabilities for Enterprise DRE Systems*  
Gan Deng, Douglas C. Schmidt, and Aniruddha Gokhale, ISIS, Vanderbilt University

*A Decision-Theoretic Planner for DRE Systems*  
John S. Kinnebrew, Nishanth Shankaran, Gautam Biswas, Dept. of EECS, Vanderbilt University  
Dipa Suri & Adam S. Howell, Lockheed Martin Advanced Technology Center

1015 - 1030  Morning Refreshments

*Using Containers to Enforce Smart Constraints on Real-time Systems*  
Gabriel Moreno and Scott Hissam, Senior Members of the Technical Staff, Software Engineering Institute, Carnegie Mellon University

*Component Approach to Real-time and Embedded Systems*  
Vincent Seignolde, Embedded Software Architect, THALES,  
Ansgar Radermacher, Embedded Software Researcher, CEA and Colin Wigham, Consultant, PrismTech

1145 - 1230  Lunch

1245 – 1400  **Session 8: Certification and Security**  
Chair: Gordon Uchenick, Mentor/Principal Engineer, Objective Interface Systems

*Using CORBA Object References as Authorization Tokens – A Good Idea or Not?*  
Sebastian Staamann, Director of Security Products, PrismTech

*Toward Certification of Adaptive Distributed Systems*  
Lonnie Welch, Professor, Ohio University; John M. Slaby, SW Architect Paul R. Work, Engineering Fellow, Raytheon

1400 – 1515  **Session 9: The Real-Time Specification for Java: ORB and Case Study**  
Chair: E. Douglas Jensen, Chief Scientist, Information Technologies Directorate, MITRE

*Java for Real-time Enterprise Systems*  
Andrew Foster, Product Manager, PrismTech

*Examining the Use of RT Garbage Collection in a Prototype U.S. Surface Navy Combat System Application*  
Fred Weindelmayer and Tim Childress, Naval Surface Warfare Center Dahlgren Division

1515 – 1530  Afternoon Refreshments

1530 – 1730  **Session 10: Integrating Heterogeneous Middleware Technologies: Bridging Real-Time, Enterprise, and Domain-Specific Systems**  
Chair: Carlo Cloet, Senior Applications Engineer, Real-Time Innovations, Inc

*Unifying the Global Data Space using DDS and SQL*  
Gerardo Pardo-Castellote, Chief Technology Officer, Real-Time Innovations, Inc.

*Interoperability between DDS and HLA Simulations*  
Bruno Calvo Chevillat, Nextel Engineering Systems

*Using DDS to enable the Real-Time Enterprise Service Bus*  
Gerardo Pardo-Castellote, Chief Technology Officer, Real-Time Innovations, Inc.  
Gordon Hunt, Principal Applications Engineer, Real-Time Innovations, Inc.