Preliminary Proceedings of an ESTEC Workshop on

Communication Networks and Distributed Operating Systems within the Space Environment

ESTEC, 24 – 26 October 1989
CONTENTS

KEYNOTE ADDRESS 7

SESSION 1 - PROTOCOL SPECIFICATION AND TESTING 11

Chairman : Prof. Dr. Ken Turner
University of Stirling

Co-chairman : Mr C. Taylor - ESA

CHAIRMAN'S REPORT 13

On Protocol Engineering Using LOTOS
Juan Quemada et-al - University of Madrid

The Use of Formal Methods in Conformance Testing
Mark Gambol - Logica

Performance Testing in the Scope of the Communication Area
Hoan Vu Mang et-al - Trasys

The Use of Simulation for Protocol Definition
A. Charalambides et-al - Matra Espace

Simulation of Communication Networks with TOPNET
M. Ajmone Marsan et-al - University of Milan

Hierarchical Modelling Methodology for Performance Evaluation of Local Area Networks
Achille Battaglia et-al - Aeritalia SAipA

Modelling, Simulation and Evaluation of Communication Systems
Reinhard Bahre - Fraunhofer Institute of Information and Data Processing

Modelling and Performance Testing of the RODNET Protocol
C.J. Shelford et-al - British Aerospace

Performance Issues with the SAE LTPB and the IEEE 802.4 Protocols
Pascale Minet - INRIA

Network Modelling and Comparison of FDDI and SAE High Speed Data Buses
K.C. Shi et-al - ERA Technology Ltd.
Interconnection Alternatives Using OSI Mechanisms in the DRS Environment
GMD-FOKUS/CNR-CNUCE
R. Popescu-Zeletin and L. Lenzini

CCSDS-Ground Network Interfacing Issues
A. Della Torre et-al - CARLO GAVAZZI SPACE

Future ESA Communications Infrastructure Station
Network Management
M. Goetzelmann - SOFTLAB

Connecting Heterogeneous L.A.N.'s with High-Speed Gateways
H. Lemcke - STOLLMAN

An approach to Corporate Network Management
R. Venken - BIM

The Columbus DMS Network
R. Roques - MATRA

Columbus DMS interconnection system assembly (ISA)
communication services and design
T. Cavallini - SELENIA SPAZIO
<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Broadband Communication Networks: Design Issues</td>
<td>R. Nazzarelli et-al - INTECS</td>
</tr>
<tr>
<td>The UDMS Communication Architecture</td>
<td>V. Calamita et-al - INTECS</td>
</tr>
<tr>
<td>FDDI Tx and Rx Module Realisation</td>
<td>Dr. K. Schumacher et-al - ANT</td>
</tr>
<tr>
<td>Fiber Optic Implementations of Media and Topology for High Performance L.A.N.'s within the Space Environment</td>
<td>A. Birkedal - ERICSSON</td>
</tr>
<tr>
<td>Design and Implementation of ROD NET L.A.N. and Interfaces</td>
<td>R.P. Mathur et-al - BAe</td>
</tr>
<tr>
<td>Autonomous Spacecraft DMS Design Concepts and Technologies</td>
<td>P. Donzelli et-al - LABEN</td>
</tr>
<tr>
<td>The On-Board segment of the Columbus and Hermes CCSDS AOS data system</td>
<td>F. Cantini - SELENIA SPAZIO</td>
</tr>
<tr>
<td>An IEEE 802.3 deterministic protocol for real-time LANs</td>
<td>M. Diaz-Nava - APTOR</td>
</tr>
</tbody>
</table>
SESSION 4. DISTRIBUTED SYSTEMS

Chairman : Dr. H. Zimmermann
Chorus-Montigny Le Bretonneux

Co-chairman : Mr F. Gomez Molinero - ESA

CHAIRMAN'S REPORT

Critical Issues in Distributed Real-Time Computing
G. Le Lann - INRIA

A Portable Common Execution Environment for the Space Station
A. Burns - University of Bradford

The Amoeba Distributed Operating System
A.S. Tanenbaum et-al - VU Amsterdam, CWI Amsterdam

A High Performance Distributed System for On-Board Distributed Data Management Systems
S. Arevalo et-al - ESTEC

Chorus: A Support for Distributed and Reconfigurable Ada Software
M. Guillemont - Chorus Systemes

Columbus Operating System: Experimental Results
B. Labreuille et-al - MATRA, IPL, TECSIDEL

The Architecture of a Distributed Real-Time Executive for On-Board Applications
A. Bogliolo et-al - INTECS Sistemi, Universita de L'Aquila

Dragoon: Distribution and Reconfiguration of Ada Programs
Rami Bayan et-al - GSI TECSI, Politecnico di Milano, TXT

The RelaX Distributed Transaction Mechanism and the Tool-set for its Evaluation
R. Kroeger - GMD

Naming in the PEACE Distributed Operating System
M. Sander GMD FIRST