



The Real-time and Embedded Systems Forum

Joseph Bergmann

RT&ES Forum - Wednesday 10 April 02

0900-0915 In3 Update – Terry Blevins, CIO, The Open Group
0915- 0945 RT&ES Forum – Joe Bergmann, The Open Group
-----Introduction to RT&ES
-----Roadmap
-----Progress report
-----Meeting Plans for Boston
0945-1000 Safety Critical Introduction – Dave Emery, The Mitre Corporation
1000-1045 Testing Safety Critical Applications – Geoffrey Bessin, Rational Software
France
1045-1100 Break
1100-1145 DO-178B Solutions – William Boyer-Vidal, Wind River
1145-1230 Safety Critical White Paper Discussion/Update—Dave Emery, Mitre
1230-1330 Lunch
1330-1430 Safety Critical – Wrap-up – Dave Emery et al.
1430-1530 Update Security for RT – Sam Bowser (The Aerospace Corp via conference call)
1530-1600 Break
1600-1730 Hard RT Java update/discussion – Robert Allen (Boeing), Greg Bollella (Sun
Microsystems), Ernst Kessler (NLR)

RT&ES Forum -Thursday 11 April 02

0900-1030 Joint Session-Joint RT/QoS requirements session

1030-1100 Break

1100-1230 Continue Joint-Session RT/QoS

1230-1330 Lunch

1330-1415 RTOS Update – Chris Clark, Lynux Works

1415-1530 Tracing APIs -- Pierre-Jean Arcos/Francois Riche, IEEE PASC SSWG RT

1530-1600 Break

1600-1645 Xenomai (a GNU/Linux-based RT Framework) Philippe Gerum, IDEALX

1645-1715 OMG Update – Dock Allen, OMG RT SIG Chair

1715-1730 INCITS R-1 Update – Russ Richards, R-1 Chair

Mission

Improve the time and cost, to market adoption, of real-time and embedded solutions by providing a forum where we can share knowledge and integrate open initiatives, and certify approved products and processes

Real-time & Embedded Systems Forum

- Vision

- Enable proliferation of real-time and embedded systems based on open systems standards

- Goals

- Provide a forum to bring practitioners in Real-time and Embedded Systems together to accelerate development of standardized systems through development of testing and certification programs



Scope of the Forum

- ❑ Operating system APIs (Application Programming Interfaces)
- ❑ Operating system profile standards
- ❑ Security policy and APIs for Real-time and Embedded Systems
- ❑ Security Protection Profile for Real-time
- ❑ Performance APIs
- ❑ Hard Real-time Java®
- ❑ High Reliability and Safety Critical Software (Initial focus DO-178B)

Real-time and Embedded Systems - Roadmap

Building on 2001 achievements the planned deliverables for 2002 are as follows:

- Test Suites for POSIX Profiles 51 and 53
- Certification program for POSIX Real-time Profiles
- Security Specifications for Real-time & Embedded Systems
- Protection Profile for Real-time and Embedded Systems
- Initiate a Test and Certification Program for Security for RT&ES
- Develop Best Practices for Safety Critical Applications with an initial focus on the avionics domain
- Formalize the Hard Real-time Java Requirements Working Group
- White Papers for Security and Safety Critical Applications

Members

- ❑ **BMC Software**
- ❑ **Conclusive Logic Limited**
- ❑ **Compaq**
- ❑ **Defense Information Systems Agency**
- ❑ **Fujitsu Siemens Computers**
- ❑ **IBM Corporation**
- ❑ **FDS Embedded Systems Co. Ltd**
- ❑ **Hewlett Packard**
- ❑ **Jet Propulsion Laboratory**
- ❑ **Ministry of Defence (UK)**
- ❑ **MontaVista Software, Inc.**
- ❑ **Motorola**
- ❑ **NASA**
- ❑ **NeTraverse, Inc.**
- ❑ **OAR Corporation**
- ❑ **Open GIS Consortium, Inc.**
- ❑ **Open Systems Joint Task Force**
- ❑ **Predictive Systems AG**
- ❑ **ReGis Inc.**
- ❑ **REDSonic**
- ❑ **Rockwell-Collins Inc**
- ❑ **SCO**
- ❑ **Silicon Graphics**
- ❑ **Sun Microsystems Inc**
- ❑ **The Mitre Corporation**
- ❑ **TimeSys Corporation**
- ❑ **Toyota Technology Center**
- ❑ **VenturCom, Inc**
- ❑ **Visa International**

Liaisons

- ❑ IEEE PASC SSWG RT
- ❑ INCITS R1
- ❑ OMG
- ❑ Society of Automotive Engineers
- ❑ J Consortium
- ❑ Java Community Process
- ❑ UDI Consortium
- ❑ Department of Defense Real-time Advisory Group
- ❑ US Army Weapon Systems Technical Architecture Working Group

Activities

Sub-Group	Activity
Testing and Certification	<ul style="list-style-type: none">❑ Test tools for suppliers to establish confidence their products conform❑ Test tools for application developers❑ An independent certification program for suppliers' products that delivers guaranteed conformance to the buyer.
Profiles	<ul style="list-style-type: none">❑ Build upon existing work, such as the IEEE POSIX 1003.13 Profiles, extending them to address market requirements.❑ Possible extensions include a selection of Linux RTOS APIs
Security	<ul style="list-style-type: none">❑ Specification development for Security for Limited Resource Environment❑ Develop Protection Profile❑ Develop Certification Program
Windows	<ul style="list-style-type: none">❑ Interface between DCOM/COM and CORBA❑ Standards for interoperability

Planned Activities

Sub-Group	Activity
Languages/ Middleware	<ul style="list-style-type: none">❑ Distributed Communications❑ Object-oriented technologies❑ Hard Real-time Java❑ Messaging Services
Software Development	<ul style="list-style-type: none">❑ Methods and Procedures❑ Standardized Tools for quality software and to check interfaces used to fit the small footprint
Critical Safety and Mission Critical RT Applications	<ul style="list-style-type: none">❑ Develop Best Practices and tools to aid in the certification for DO-178B and other critical safety mission critical RT applications – to include mission applications in support of aviation, transportation, telecommunications, banking and finance, energy, and essential military and civil government services.
Embedded Systems	<ul style="list-style-type: none">❑ Standardized Tools for Optimization and Debugging

Anaheim January 2002 Agenda

Wednesday

- RT Linux Interest Group
 - Real-time and Linux
 - POSIX Threads and Linux
 - POSIX Real-time Profile including a working session with IEEE PASC SSWG-RT
- Parallel Session in the afternoon on Safety Critical

Anaheim January 2002 Agenda

Thursday

- ❑ Track 1
 - ❑ Joint Session with QoS in the morning
 - ❑ Hard Real-time Java
 - ❑ Real-time access to Database
- ❑ Track 2
 - ❑ Security for Real-time and Embedded Systems
- ❑ Thursday Evening – BOF Open Systems Military Applications (Lt Col Glen Logan, OSJTF)

Report on RT Working Groups January 2002

- Testing and Certification Group -- Did not meet**
- Real-time Profiling Group**
 - 56 attendees
 - Successful meeting with IEEE PASC SSWG RT. Possibility of an “Austin Group” approach on new RT Profiles. IEEE PASC SSWG RT to meet at Paris meeting.
- Joint Real-time and QoS Working Group**
 - 35 attendees
 - Successful meeting – to be continued in Paris
- Hard Real-time Java requirements**
 - 55 attendees
 - Agreement to develop framework to cooperate through The Open Group RT&ES Forum

Report on RT Working Groups January 2002

Security for Real-time and Embedded Systems Group

- 34 attendees
- Two vendors presented response to RFI for RT Security
- Five vendors to work on a final specification RT Security
- Vendors to supply use cases to validate RT security requirements
- Commitment to develop a Real-time Protection Profile
- Joint meeting with “Classic” Security Group

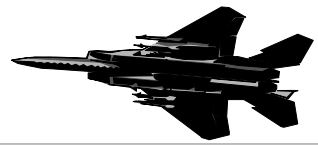
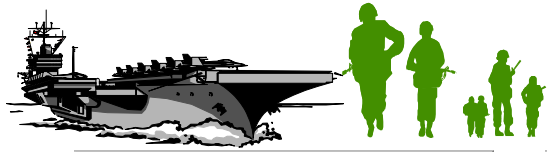
Safety Critical

- 29 attendees
- Information briefings on DO-178B certification experience and the upcoming military transition to DO-178B
- White Paper to have final review at April meeting

Additional Agenda items for July Meeting

- ❑ Architecture for Real-time and Embedded Systems
- ❑ Requirements for Pervasive Computing to include Telematics
- ❑ Real-time Access to Data
- ❑ Directory Services for Real-time
- ❑ Enterprise Management for Real-time Environments
- ❑ Security Protection Profile Development for Real-time Environments
- ❑ Update on Distributed Communication for Real-time (POSIX 1003.21 Update)

Original Orientation of Real-time and Embedded Systems Forum



Army

Navy/Marines/CG

Air Force

Joint, Intel

- AALPS
- ACGS
- AFATDS
- AMBISS
- AMDWS
- AMDPCS
- AMPS
- ANGSC-52
- ASAS
- ASD
- ATCS
- ATLAS
- BCTP
- BMC3
- BSM
- CINC CSA
- CNCMS
- CNPS
- CR/HMS
- Crusader
- CSCE
- CSSCS
- CTIS
- C4IJM
- DCARS
- DTSS
- FATDS
- FAAD C21
- FCS
- FIRESTORM
- GCCS-A
- IBDAS
- IMETS
- JTT
- JTRS
- ISYSCON
- LW
- MCCCC
- MFCS
- PEGEM
- RCAS
- SAS
- TAIS
- TCAIMS
- THAAD
- THAADBMC3I
- TPSOPS
- TSIU
- UAV
- WARSIM

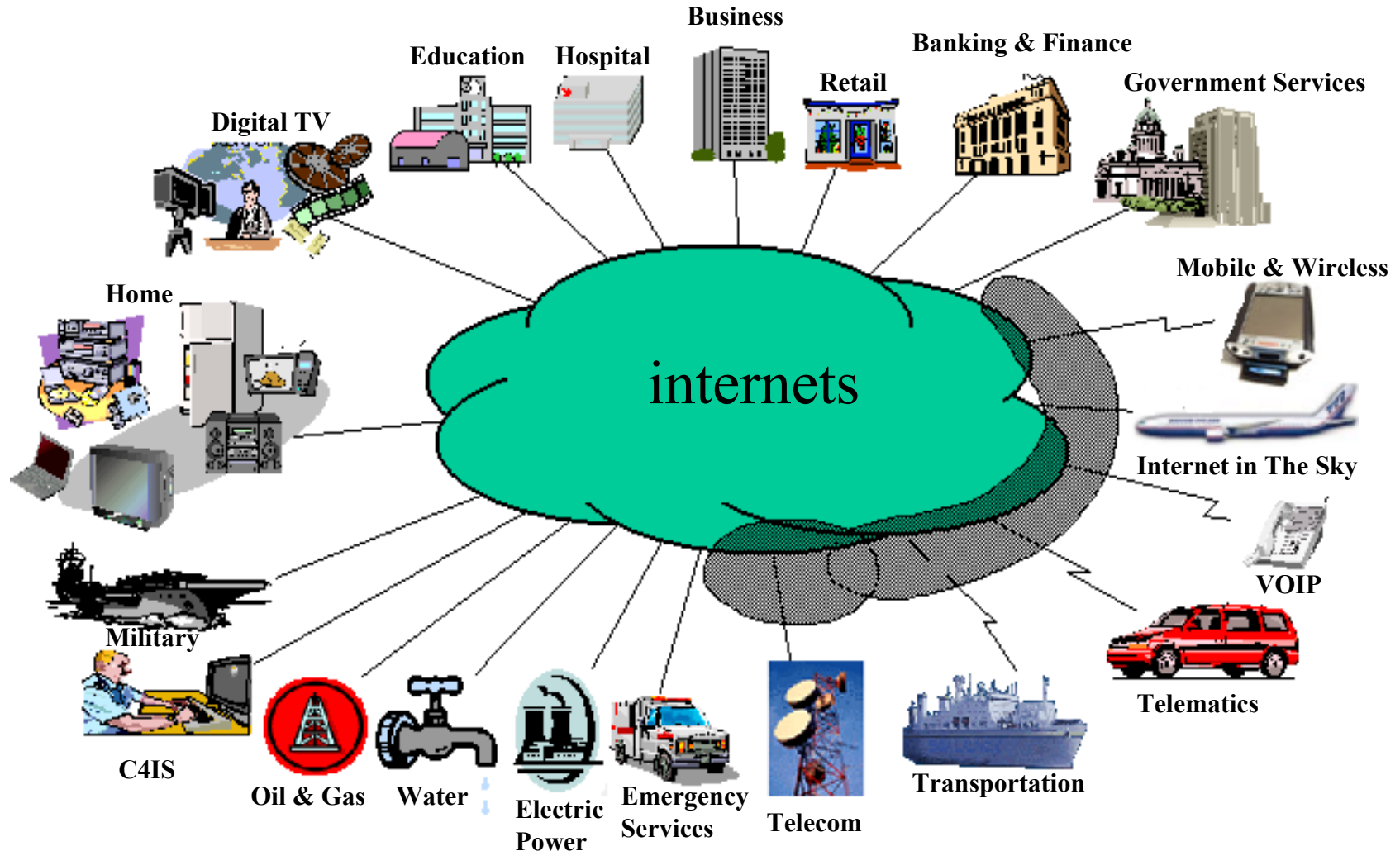
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- AEGIS
- CADRT
- COMDAC
- CCS
- CEC
- CUB
- CV/TSC
- GCCS-M
- JCCX
- IUSS
- JMPS UPCs
- KSQ-1
- LAMPS
- MEDAL
- METOC
- MPA
- MPAS
- MSBL
- NAVSS1
- NFCS
- NSPF
- NSS
- NSSN
- PTW
- REDS
- SFMPL
- SH60 MPS
- SRMT
- SCCS
- TACLOGS
- TAU
- TEAMS
- TERPEES
- TCAC
- TDSS
- TTWCS
- VTC

- AFWeather
- AMC BDM
- AMS
- AWACS
- A2IPB
- CSEL
- DCAPEES
- Defense IEMATS
- FORTE
- GBS
- GCCS-AF AETC
- GCSS-AF IF
- IMDS
- IMOM
- ISC2S
- MAMS
- Rosetta
- SBMCS
- STRATCAT
- TBMCS

- AFDI
- ARTDF
- COP
- FIOP
- GALE
- GCCS
- GCCS-I3
- GCSS
- JCALS
- JDISS
- JDP
- JMC SID
- JMPS
- JSCGS
- JSF
- JTAT
- Joint Tactical Term
- Joint Targeting Tool
- JWARN
- MEPED
- MIDB
- TNP
- JCACTD



“The Real-time Enterprise”



In³-- Pervasive Computing -- Telematics

Software with real-time features could make companies more integrated and more flexible.

Bottom Line on Real-time Standards...

Enterprises need commercially available products that seamlessly work together and can be integrated into existing business process and manufacturing and distribution systems.



Scalability, Interoperability & Reliability!!!

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<http://www.opengroup.org/rtforum>



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