Real-time and Embedded Systems Forum

THE Open GROUP

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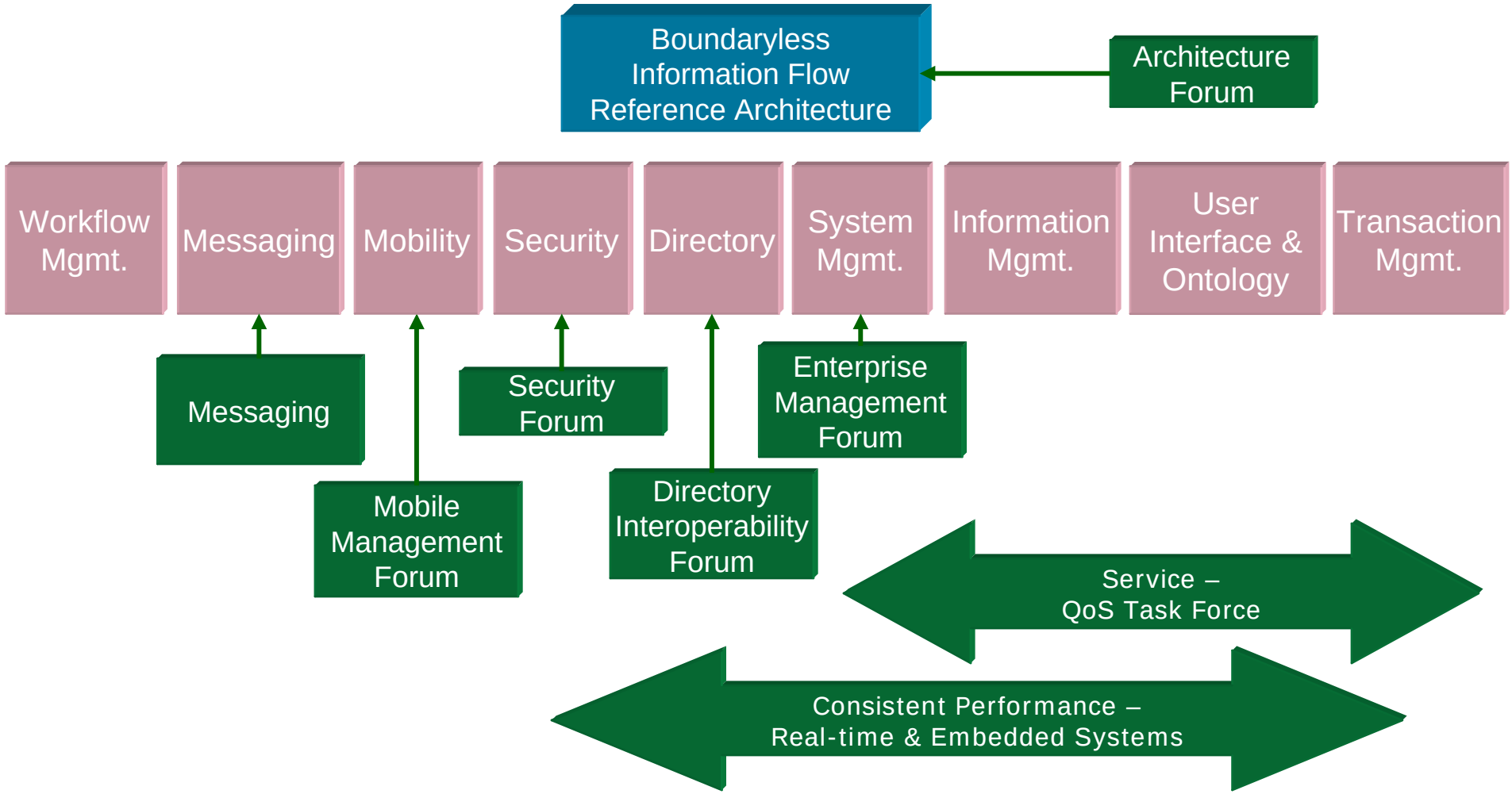
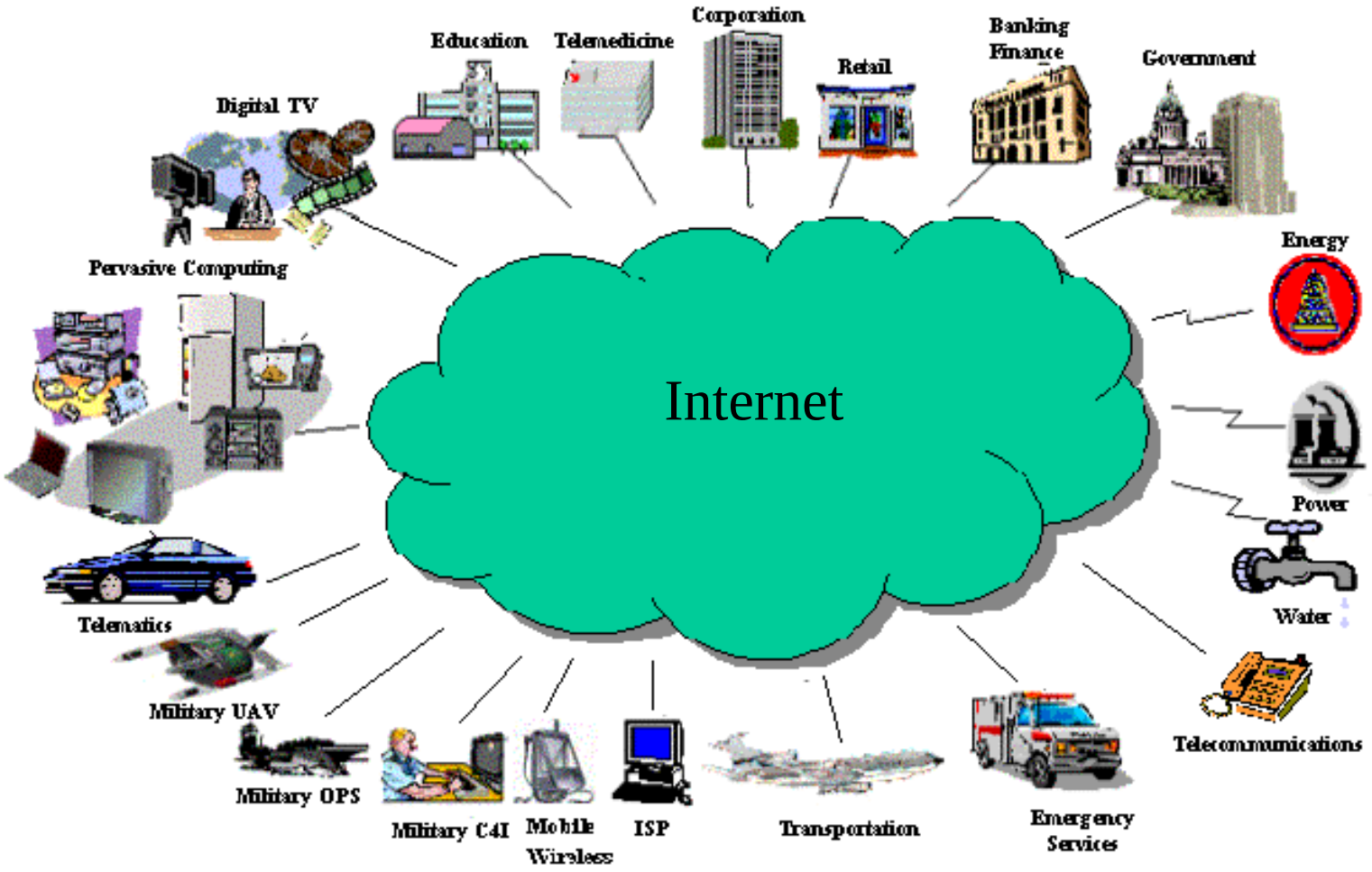
The Open Group Forum Coverage

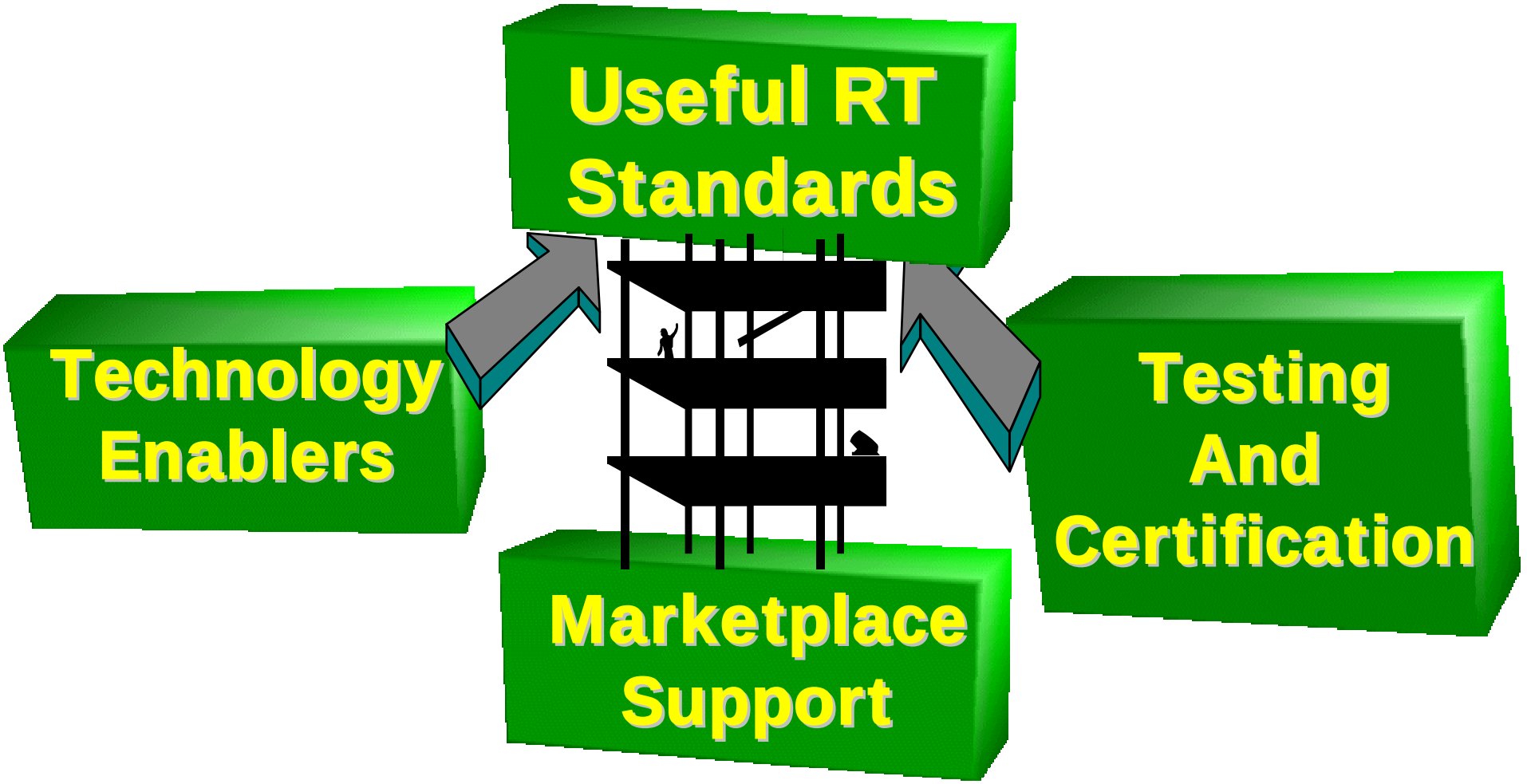


“The Boundaryless Enterprise”



Software with Real-time and QoS features will make the Boundaryless RT Enterprise deterministic, integrated and flexible.

Vision



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

Role

- Leverage The Open Group's diverse membership
- Bring together leading vendors with corporate and government customers
- Advance standards development based on real product solutions
- Establish test tools for suppliers to use to provide confidence in their products
- Deliver an independent certification program that delivers guaranteed conformance to the buyer.

Activities

- **Working Areas:**
  - RT Operating System Profiles and Certification
  - Security for RT and Embedded Systems
  - Safety/Mission Critical Applications
  - Real-time Java for Mission/Safety Critical Environments
  - Open Architecture for Real-time and Embedded Systems
  - Real-Time QoS Vendor Challenge
- **Liaisons:**
  - IEEE PASC SSWG RT
  - The Object Management Group
  - INCITS R1
  - Society of Automotive Engineers
  - J Consortium
  - Java Community Process
  - Embedded Linux Consortium
  - NIST PCSRF
  - UDI Consortium
  - NATO Research Task Group on Validation, Verification and Certification of Embedded Systems
  - NSA SPOCK
  - DISA COE AOG
  - US Army WSTAWG (US Army OE)
  - Process Control Systems Cyber Security Forum
  - ARINC 653 Group

Champions

- Forum Co-Chairs
  - – Lt Col Glen Logan, OSJTF/ Dave Emery, Mitre
- Working Groups
  - Profiles and Certification – Lt Col Glen Logan, OSJTF/Joe Gwinn, Raytheon
  - Security for RT – Sam Bowser, The Aerospace Corporation
  - Safety/Mission Critical Applications –George Romanski, Verocel/ Dave Emery, Mitre
  - Safety/Mission Critical RT Java – Robert Allen, Boeing
  - Open Architecture for Real-time and Embedded Systems – Lt Col Glen Logan, OSJTF/Scott Lewis, IBM
  - RT QoS Vendor Challenge – Dock Allen, Mitre

Members

- AXE Inc.
- Carnegie Mellon University, Software Engineering Institute
- City University (London)
- Decisive Analytics Corp.
- Finite State Machine Labs
- Florida State University
- Fujitsu
- Defense Information Systems Agency
- Georgia Tech University
- Hewlett-Packard Co.
- IBM Corporation
- J Consortium
- Jet Propulsion Laboratory
- Lockheed Martin Corp.
- LynuxWorks Inc.
- MIT, Embedded Systems Lab
- Matsushita Electric Works, Ltd.
- MontaVista Inc.
- NASA Goddard Space Flight Center
- NEC
- Objective Interface Systems
- Open Systems Joint Task Force
- Ohio University
- QNX Software
- REGIS
- Ricoh
- Silicon Graphics
- Smiths Aerospace
- Sony Corporation
- Sun Microsystems Inc.
- Teamcall Ltd.
- The Boeing Company
- The Mitre Corp.
- TimeSys Corp.
- Toyota InfoTechnology Center
- Universidad de Cantabria (Spain)
- University of Idaho
- University of York (UK)
- US ARMY WSTAWG
- US Navy (POC:NSWC)
- Veriserve Corp.
- Verocel
- Wind River

Current as of July 29, 2003

RT&ES Forum Membership Benefits

- Full voting participation in either the customer or supplier council
- Eligible for election to the Board of Directors (As representative of the customer or supplier council)
- May attend public parts of The Open Group quarterly meetings
- Full voting participation in forum decisions
- Eligible for election to the steering committee of the RT&ES Forum
- Eligible to be a Chair of a forum specific working group
- Right to participate in all forum working groups – currently six
- Influence the direction and outcome of the forum and working groups through the right to vote in the consensus activities
- Early access to evolving specifications insuring product compatibility
- Early access to new test suites
- Insure early access to the marketplace for compliant products
- Balloter on all specifications submitted for Company Review within the forum
- Reviewer of all specifications submitted for Company Review
- Network with potential customers, suppliers, cross industry forums and other consensus consortia
- Market Intelligence to insure products fulfill customer requirements
- Access to members only section of the WEB, eMail associated with the forum
- Receive The Open Group electronic newsletter and other information about The Open Group

RT&ES Forum Working Group Deliverables CY2003

RT Operating System Profiles and Certification.

Working with the IEEE PASC SSWG RT group, major suppliers and users of real-time systems the working group will -

1) Publish a Certification Program for a Generic POSIX Real-time Operating Systems – Q3

2) Draft a Real-time Operating Environment Profile and Certification Program – Q2

Security for Real-time

Working with providers of real-time operating systems, middleware, applications and major users of the real-time systems the working will -

1)Finalize a Security Protection Profile for "Protected Kernels" based on the Common Criteria – Q2

2) Verify Security Requirements for the Real-time Protection Profile based on Use Cases from the RT&ES Forum Members – Q3

3) Develop a Certification Program for the Real-time Protection Profile – Q4

Safety/Mission Critical Applications.

Working with both COTS component developers and system integrators to remove barriers for the use of COTS in mission/safety-critical Systems the working group will –

1) Develop Best Practices for the documentation and related services that a COTS vendor should provide with a product targeted to the mission/safety critical marketplace – Q2 (Will be delayed to Q3)

2) Develop an end-to-end safety verification assurance argument for approval by the cognizant government agency or certification authority – Q4

Real-time Java for Mission/Safety Critical Environments.

Working with RT Java developers, systems integrators and major users of mission/safety critical environments the working group will --.

1) Develop a JSR for approval through the Java Community Process. The JSR will focus on creating a safety-critical Java profile – Q2

2) Organize a Real-time Java Expert Group under the auspices on The Open Group – Q3

3) Based on the approval of the JSR develop a RT Java profile/specification/ for Mission/Safety Critical Applications – Q3 (Optimistic View)

4) Real-time Java for Mission/Safety Critical Reference Implementation – Q4 CY2004 (Optimistic view)

Open Architecture for Real-time and Embedded Systems.

This is a new working group. Deliverables will be agreed to at the April 2003 meeting.

Successes

- **Test Suites for IEEE POSIX 1003.13**
  - Profiles 52 and 54
- **White Papers**
  - Conformance
  - Safety Critical
- **Security for Real-time and Embedded Environments RFI issued**
  - Response from three industry players
- **Agreement to develop family of Real-time Protection Profiles under the Common Criteria**
- **Consensus to develop RT Java JSR for Safety/Mission Critical Environments**
- **Agreement to develop Dynamic Resource Management Standard**
- **6 Active working groups**
- **43 Active members**

Beyond the Quarterly Meeting - Accomplishments

- **Real-time Java for Mission/Safety Critical Environment**
  - October 29, 2002 meeting in Irvine California
    - Objective was to develop a way forward with all major RT Java parties participating in the process. The meeting was a success with 12 attendees. Consensus was reached to develop two RT Java JSRs for Mission/Safety Critical Environments. This work is to be progressed at the San Francisco Meeting.
- **Security for Real-time and Embedded Systems**
  - November 14, 2002 meeting in Chantilly, Virginia
    - Objective was to achieve consensus on the basis for a Security Profile for MLS Security under the Common Criteria. Meeting was a success with 36 attendees and consensus on the approach to a Protection Profile draft.
- **University Out Reach Program**
  - Program Launched in October 2002
    - Objective is to enlist the help of Universities to accomplish basic work in Security for RT and RT Java for Mission/Safety Critical. Nine Universities are members -- 4 more in process. The expectation is that by July we will have 20 universities in the program.
- **Security for Real-time and Embedded Systems**
  - March 6, 2003 meeting Hanover, Maryland
    - Objective was to give a “final scrub” to the proposed “Restricted Kernel” Protection Profile. The meeting was a success with 37 participants. The final version of this Protection Profile will be introduced on 30 April.

Agenda RT&ES Forum Boston

Overview July 22-25, 2003

- **Security for Real-time (22-23 July)**
  - MLS without restricted kernel
  - Security Update for Process Controls
  - PKPP and POSIX Discussion
  - Why Common Criteria is Failing
  - MILS Tutorial
  - MILS and Middleware
  - MILS for Web Services
  - Breakout Work Sessions (23 July Morning)

- **RT Operating Systems Profiles & Certification (22 July Afternoon)**
  - Real-Time Operating Environment Product Standard Candidate – Future Combat System SoSCOE
  - Update IEEE POSIX 1003.13
  - Update ARINC 653 Standard
  - Discussion -- Certification of Product Standards

- **Open Architecture for RT (23 July)**
  - Information Briefing Lockheed Martin Real-time Open Architecture Approach
  - DRM Standards Initiative
  - Distributed Communications
  - Draper Lab report on "Maturing MOSA" study
  - JCAA/MOSA
  - Roadmap Discussion
  - Open Architecture Methods for Real-time -Joint Session w/ Architecture Forum

- **Safety Critical RT Java (24 July)**
  - Formalize SC Real-time Java Expert Group
  - Basing Safety-Critical and Mission-Critical Java Specifications on RTSJ
  - Review work breakdown schedule to complete Specification, TCK and Reference Implementation
  - Identify source of resources to complete identified work
  - RT Java/RT CORBA Synthesis
  - Distributed RT Java
  - Ada Safety Critical Lessons Learned
  - Forward to Mission Critical RT Java
  - Other Issues

- **OOT and Safety Critical Applications Discussion (24 July Evening) Delayed until October**

- **Safety/Mission Critical (25 July Morning)**
  - Generation of COTS Artifacts for Traceability Proposal
  - Discussion and Way Forward

See next 5 slides for detailed agenda

Security for Real-time Agenda
Boston July 22-23, 2003

- **Security for Real-time (July 22, 2003)**
  - 0900-1000 Introduction,Update Discussion – Sam Bowser, The Aerospace Corp
  - 1000–1030 MLS Without Restricted Kernel – Dr Victor Yodaiken, FMS Labs
  - 1030-1100 Break
  - 1100–1200 Process Controls Security Update – Joe Weiss, Kema Consulting
  - 1200-1330 Lunch
  - 1330-1400 MILS and POSIX Discussion – Bill Beckwith, Joe Gwinn
  - 1400-1445 Why Common Criteria is Failing – Dr John Shapiro, John Hopkins University
  - 1445-1545 MILS Tutorial – Ben Calloni – Lockheed Martin
  - 1545-1630 MILS and Middleware – Bill Beckwith, OIS
  - 1630-1745 MILS for Web Services – Bill Beckwith, OIS
  - 1745-1800 Wrap-up - Sam Bowser, The Aerospace Company
- **Security for Real-time Work Sessions (July 23, 2003)**
  - 0830-1200 As determined by Work Group

RT Profiles & Certification Agenda
Boston July 22, 2003 (Afternoon)

- **Profiles & Certification**
  - 1400-1500 FCS SoS COE – Paul Schoen, Boeing FCS Program (Joint Session with COE Forum)
  - 1500-1530 IEEE POSIX 1003.13 Update – Joe Gwinn, Raytheon
  - 1530-1600 Break
  - 1600-1630 ARINC 653 Update – Paul Prisaznuk, Airlines Electronic Engineering Committee, ARINC
  - 1630-1730 Profile Certification Discussion – Joe Bergmann

Open Architecture for RT Agenda
Boston July 23, 2003

- **Open Architecture**
  - 0900-0915 Introduction – Lt Col Glen Logan, OSD AT&L OSJTF
  - 0915-1030 JCAA/MOSA – Joe Schaff, NAVAIR; Professor Lund, AVSI (Texas A&M)
  - 1030-1100 Break
  - 1100-1145 Draper Labs Report on “Maturing MOSA “ Study – Larry Brock, Draper Labs
  - 1145-1230 Distributed Communications – RTI, TBD
  - 1230-1300 Proven Path, Lockheed Martin, Shawn Mulvaney- JSF Program
  - 1300-1400 Lunch
  - 1400-1430 DRM Standards Initiative, Ohio University, David Fleeman
  - 1430-1600 Roadmap Discussion, Lt Col Glenn Logan, OSD AT&L OSJTF
  - 1600-1730 Open Architecture Methods for RT – Terry Blevins, The Open Group; John Spencer, The Open Group; Allan Kennedy, Kennedy Carter Ltd.; Joint Session with Architecture Forum

SC Java Agenda
Boston July 24, 2003

- **SC Java (July 24, 2003)**
  - 0900-0915 - Introduction – Robert Allen, Boeing
  - 0915-1000 - Ada Safety Critical Lessons Learned – Ben Brosgol, Ada Core Technologies
  - 1000-1045 - Mission Critical RT Java, A JPL View – William Reinholtz, NASA/JPL
  - 1045-1100 - Break
  - 1100-1200 - RT Java/RT CORBA Synthesis – Bill Beckwith, OIS
  - 1200-1230 - Distributed RT Java – Doug Jensen, Mitre
  - 1230-1330 - Lunch
  - 1330-1430 - Basing Safety-Critical and Mission-Critical Java Specifications on RTSJ – Kelvin Nilsen, NewMonics
  - 1430 1530 - An approach to SC RT Java RI - John Anton, Kestrel Technology
  - 1530-1600 - Break
  - 1600-1630 - Taking the next step – Dave Lounsbury/Doug Wells, The Open Group
  - 1630-1730 - Identify source of resources to complete identified work and other issues- All

Safety/Mission Critical Applications
Boston July 25, 2003 (Early Morning)

- **Safety/Mission Critical**
  - 0830-1000 Generation of COTS Artifacts for Traceability – George Romanski, Verocel
  - 1000-1030 Break
  - 1030-1200 Discussion and the Way Forward – George Romanski et al.

What happened in Boston

Hyatt Harborside, 22-25 July 2003

- **RT Profiles & Certification --**
  - **Update from IEEE PASC SSWG RT - POSIX 1003.13**
  - **Update from ARINC – ARINC 653**
  - **FCS SoSCOE Potential Certification Candidate**
  - **Next meeting mid-September**
- **Safety Critical Real-time Java**
  - **Continued discussion on specification requirements.**
  - **Information briefing on approaches to Specification/RI/TCK Development**
  - **Discussion on Business Plan – next Business Plan meeting late-August.**
- **Security for Real-time --**
  - **Commitment to conduct additional work sessions to facilitate development of additional Common Criteria RT Protection Profiles – early September meeting.**
  - **Commitment to develop approach for MILS for Web Services**
  - **Information briefing Common Criteria shortfall**
- **Safety Critical –**
  - **Proposal for common tools and XML Tags to support Security/Safety Critical Systems in preparation of artifacts for traceability.**
- **Open Architecture for Real-time**
  - **Update on Modular Open Systems Approach**
  - **Roadmap Discussion**
  - **DRM Standards Development Commitment – next meeting late August**
  - **Joint Meeting with Architecture Forum**

Proposed RT&ES Forum Agenda for Washington

Sheraton Premiere at Tysons Corner, Virginia 21-24 October 2003

- **Focus on Commercial Real-time Environments**
  - **Requirements for Commercial RT Applications to include Avionics, Telematics and Pervasive Computing**
- **Open Architecture WG**
  - **Commonality of various OA Approaches**
  - **Modular Open Systems Approach (MOSA) Going Forward**
  - **DRM Standards Development**
- **Security for RT WG**
  - **MILS for Web Services**
  - **PP for Commercial RTOSs**
  - **Security for SCADA**
  - **Security for Middleware**
- **RT Profiles and Certification WG**
  - **Develop RT Certification Profile based on US Navy OACE, FCS SoSCOE, US Army OE**
- **Safety/Mission Critical Applications**
  - **Specification Development for XML Tags for Traceability**
- **Safety/Mission Critical RT Java WG**
  - **Ratify Business Plan**
  - **Specification Development**
- **Potential New Items**
  - **Software Development for RT Environment**
  - **High Assurance Systems**
  - **Software Assurance to include requirement for conformance tools**
  - **Quality of Service Software Issues for RT Environments**
  - **Applicability of OOT in Safety Critical Environments**
  - **Database Requirements for RT**
  - **Procurement issues concerning adherence to Open Systems, Open Standards and Certification**
- **Other RT Organizations considering to collocate for the October meeting**
  - **SAE SA5, US Army WSTAWG/OE, IEEE PASC SSWG RT, FCS Architecture Group**

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Source: Wind River

http://www.opengroup.org/rtforum

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