Real-time and Embedded Systems Forum

Spotlight

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Software with Real-time and High Assurance will make the Boundaryless RT Enterprise deterministic, integrated and flexible.
The Open Group Forum Coverage

Boundaryless Information Flow Reference Architecture

User Interface & Ontology
Messaging
Supply Chain
Security
Identity Mgmt.
Directory
Information Mgmt.
System Mgmt.
Transaction Mgmt.

Messaging Forum
OTTF Forum
Security Forum
Directory Interoperability Forum
Enterprise Management Forum

Dependability through Assuredness ™
Predictable Execution
Real-time & Embedded Systems

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Real-time & Embedded Systems Forum

- **RTES Vision**
  - Employ widely supported and open real-time standards and enabling technologies to deliver testable and certifiable, cost-effective, mission-capable systems.

- **RTES 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 Coverage

Dependability through Assuredness™
Predictable Execution
Real-Time & Embedded Systems Work Areas

|----------------------------|--------------------------------------------------|--------------------------------------------|-------------------------------|----------------------------|

IEEE POSIX® RT Standards, Profiles & Certification
RT (Security & Safety) Critical Systems MILS
Safety Critical RT Java/JSR302
Secure Mobile Architecture
Real-time & Embedded Systems Forum
“Dependability through Assuredness™”
RTES Forum Activities

**Work Areas:**
- Dependability through Assuredness™
- OA for RT – Architecting to the Edge™
- TOGAF™ to the Platform
- Cross Domain Security for RT – Mils™ Architecture
- RT Java for Safety/Mission Critical Environments – JSR302
- High Assurance, Safety Critical Environments
- Safety/Mission Critical Applications
- Mils™ APIs Standard (POSIX & ARINC 653)
- Independent Evaluation & Certification Scheme for COTS Components/Systems
- Component Competition Readiness Levels (CCRLs)
- IEEE POSIX RTOS Profiles and Certification
- Secure Mobile Architecture
- Product Standards and Certification for:
  - SCADA – Smart Grid
  - Medical Devices
  - Consumer Electronics
  - Intelligent Transportation Systems

**Liaisons/Affiliations:**
- The Object Management Group
- IEEE PASC SSWG RT
- Society of Automotive Engineers
- NATO Research Task Group on Validation, Verification and Certification of Embedded Systems
- INCITS CS1
- US Army COE
- Navy PEO (IWS) – Open Architecture
- Process Control Systems Cyber Security Forum
- ARINC 653 APEX Working Group
- Association for Enterprise Integrators
- High Confidence Medical Device Software and Systems Workshop
- DHS Software Assurance Working Group
- Network Centric Operations Industry Consortium
- Center for Advanced Defense Studies
- OMG SwA Working Group

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RTES Forum Members

Current as of 20 October 2012

- AIM
- Aonix
- Architecting-the-Enterprise
- AXE, Inc
- Capgemini S A
- Carnegie Mellon University, Software Engineering Institute
- City University (London)
- Danish Ministry of Science Technology & Innovation
- DDC-I, Inc
- US Department of the Navy
- eFlow
- eValley Inc
- Finite State Machine Labs
- Florida State University
- Fujitsu Limited
- Forschungszentrum Informatik
- Georgia Institute of Technology
- Green Hills
- IBM Corporation
- JAXA
- Kestrel Technology
- Kingdee
- Lockheed Martin Corp.
- LynuxWorks Inc.
- MIT, Embedded Systems Lab
- NASA Goddard Space Flight Center
- Objective Interface Systems
- DUSD/AT&L
- Ohio University
- QNX
- Pryrrhus software
- Raytheon
- REGIS
- Real-time Innovations
- Sony CSL
- Teamcall Ltd.
- The Boeing Company
- The Mitre Corp.
- Universidad de Cantabria (Spain)
- University of Idaho
- University of Nagoya
- University of Tokyo
- University of York (UK)
- Verocel, Inc
- Wind River

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Safety Critical on-going standards/project activity in The Open Group Real-time and Embedded Systems Forum
JSR-302: SC Java Current Summary

- Safety Critical Application: Mission, optionally restartable, statically analyzable:

- Simple application and infrastructure model
- No Garbage Collector, no reflection, no finalizers, no heap memory
- Three Compliance Points (Levels 0, 1, 2)
  - Level 0 provides a cyclic executive (single thread), no wait/notify
  - Level 1 provides a single mission with multiple schedulable objects,
  - Level 2 provides nested missions with (limited) nested scopes
- Specification writing completed
- Initial specification 2Q 2011 – Final Specification 1Q 2012
- Reference Implementation being implemented as open source RTSJ-compliant Java executable on any RTSJ-compliant JVM
- Two companies have built product based on JSR 302 – Aicas and Atego
  - http://www.aicas.com
EC Projects Related to Safety Critical

- Current projects -- Composition with Guarantees for High-integrity Embedded Software Components Assembly (includes Multicore)
  - JEOPARD
  - CHESS
  - CHARTER
- New EC Opportunities
  - Framework Programme for ICT – Provides funding for many technology areas
    - Networking
    - Cloud Computing
    - Security and Trust
    - Identity Management
    - Smart Grid
    - Cognitive Systems
    - Robotics
    - Smart components
    - Nano technologies
    - Etc.
On The Horizon

- Independent Evaluation and Certification Scheme for High Assurance COTS Security Components and Systems to include International Mutual Recognition
- An Open Group “Mils™” Brand
- Complete a Tool Chain for “TOGAF to the Platform” activity to ensure “Dependability through Assuredness™”
- Additional Java Specification Requirements (JSRs) to include Multicore and Security
- Multicore Standard APIs – to be submitted to IEEE PASC
- Assurance Cases/Templates/Patterns WG
- Mils™ Development Practices Working Group WG
- Planning to Respond to an 1Q 2012 Call for Proposals from the EC Under Framework 7 for a High Assurance Security Framework