

Session 4 - Commercial SDR

Wednesday 13:30 – 15:30

David K. Murotake, Ph.D.

Session Chair

Chair, SDR Forum Markets Committee

dmurotak@scatechnica.com

Mobile: (603) 321-6536

www.scatechnica.com

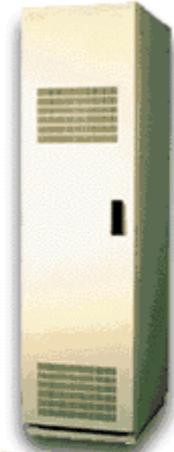
Session 4: Commercial SDR

- 1330 1350 **Introductory Remarks**
 - Chair: Dr. David K. Murotake, SCA Technica, Inc.
- 1350 1430 04-1 **Reconfiguration Metamodel**
 - Dr. Nancy Alonistioti, Christos Anagnostopoulos & Gerasimos Stamatelatos, University of Athens
- 1430 1510 04-2 **Applicability of the SCA to Commercial SDR Implementations**
 - Dr. Shahzad Aslam-Mir, Chief Technology Officer, PrismTech
- 1510 1515 **Public Safety Requirements**
 - Fred Frantz, Chair SDR Forum Public Safety SIG
- 1515 1530 Session 4 Q&A - Discussion

Commercial SDR Applications



- Consumer/commercial wireless
 - Cellular/PCS
 - WLL
 - WLAN
 - 3G, B3G ~ 4G
 - Smart antennas
- Smart Cars
 - Telematics, ITS
- Public Safety Communications



Commercial SDR Standards

CPRI

Common Public Radio Interface



- Immediate past: carefully guarded proprietary standards
- Permissive FCC regulations for SDR – good news for SDR
 - NPR for cognitive radio and adaptive spectrum utilization
- Current/immediate future:
 - Competing, diverging recommendations
 - OMG
 - SDRF (Software Defined Radio Forum)
 - E2R (End to End Reconfiguration)
 - CPRI (Common Public Radio Interface)
 - OBSAI (Open Base Station Architecture Initiative)
 - OMA (Open Mobile Alliance)
 - WWRF WG-6 (Reconfigurability)
 - 3GPP1, 3GPP2
 - MESA (Mobility for Emergency and Safety Applications)
- Strong (and emotional) commercial *anti-JTRS* SCA sentiment



Wireless World Research Forum

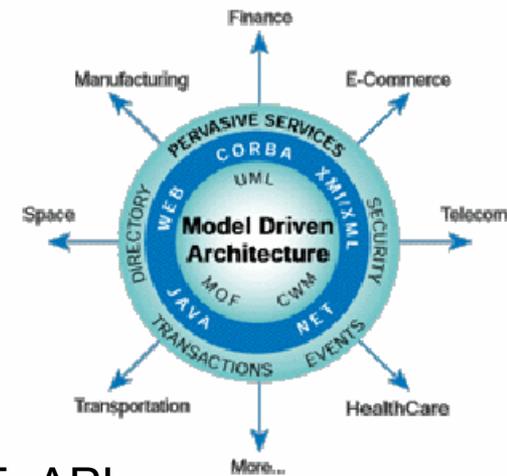


A partnership
between



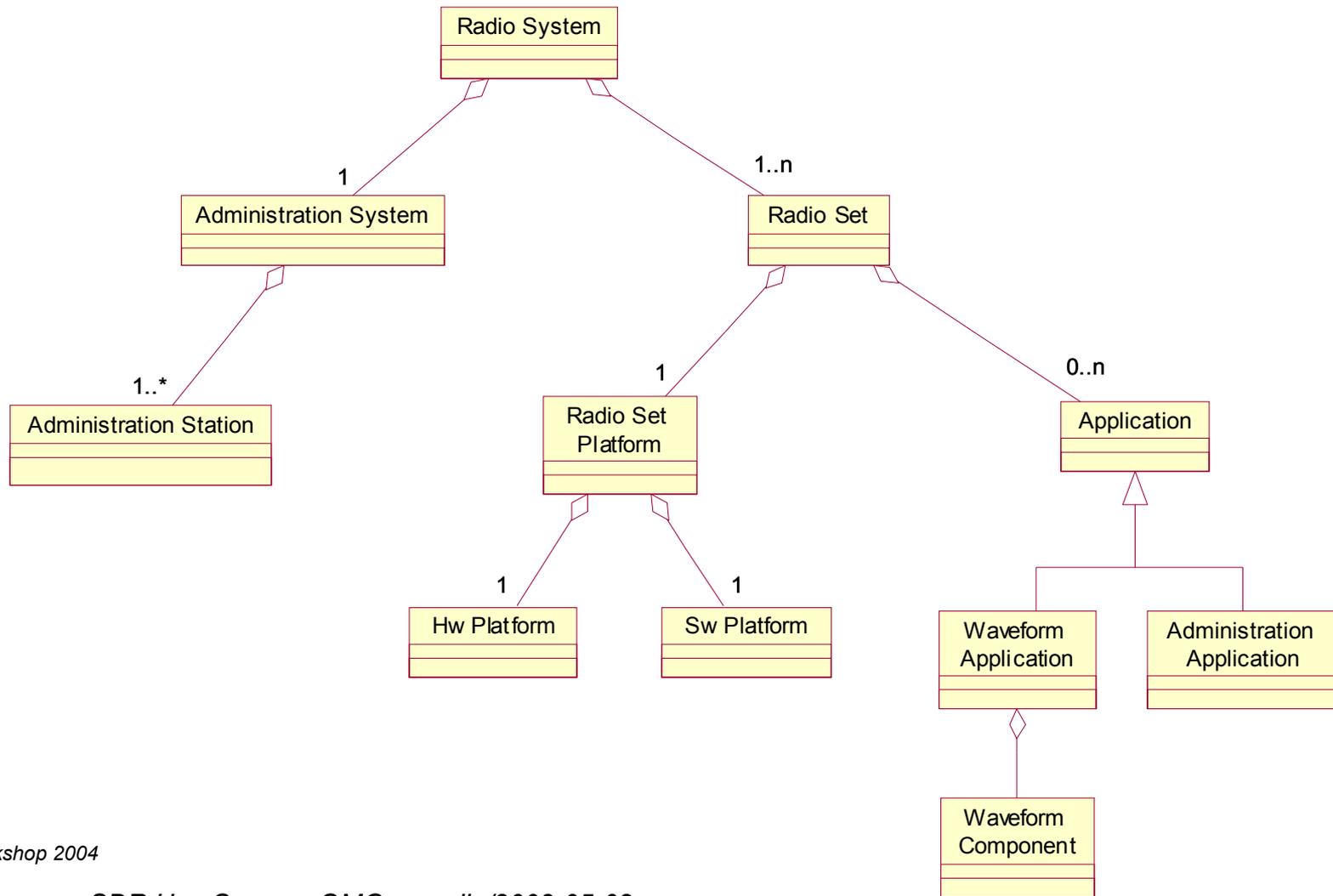
MDA – The Way Forward for Commercial SDR SW Standards?

- MDA allows efficient development of commercial model(s)
 - Based on SWRadio and other components
- Embrace architectural diversity
- Standardize SW models and APIs
 - SWRadio PIM/PSM
 - Evolutionary developments
 - Commercial PIM possibilities
 - Handheld, RBS, BSC, Smart Antenna, etc.
 - Allow migration from legacy architecture CF, OE, API
 - Commercial PSM platform possibilities
 - WinCE, PalmOS embedded OS (handheld)
 - J2ME + ORB (handheld), J2EE (RBS, BSC, etc.)
 - POSIX RTOS + CORBA (RBS, BSC, etc.)
 - Mutli-processing RTOS, data parallel CORBA (smart antenna, etc.)
- MDA “tour de force”



OMG Radio System Components

(Usable for Commercial SDR!)



Our Challenges

- Marketing challenge for commercial SDR
 - The term “SCA” causes widespread negative, emotional, knee-jerk reaction within commercial wireless manufacturing and service provider community. Why?
 - USA Defense association
 - CORBA association (bloatware, high overhead, low performance, high maintenance, not appropriate for hand-helds)
 - Semantics: find *something else* to call the SCA
 - “Acura” vs “Honda”, “Lexus” vs “Toyota”, “Altima” vs “Nissan” vs “Datsun”
 - Once chosen, use the name consistently
 - Need to find a “killer app”
 - Hardware Abstraction Layer? Smart Antennas? Fault management? Secure download? Trusted Software Radio Platform? PSM for Commercial Reference Platform?
 - Develop a Reference Implementation of commercial SDR CF & APIs
 - Future collaboration with SDR Forum? Open Source Reference Implementation (OSRI)
- Educate
 - MDA lets you pick your own OE/middleware platform
 - PIM lets you re-use the component model for SW radio
 - MDA lets you map current or new PIM to appropriate PSM
- Evangelize and Recruit
 - Work closely with other groups especially SDR Forum
 - Recruit wireless manufacturers and service providers
 - Transition other software models, CF’s, API’s, platforms

Conclusions

- Various commercial SDR reference architectures and recommendations are in evolution
 - Diverse user and industry groups can address needs and perspectives of different user domains, platforms and technologies
- OMG should be used as the focus for unified *software standards*.
 - Core frameworks, and API's
 - Operating environments and middleware including embedded/high performance
- The standards should be based on the SWRadio PIM and PSM, and associated specifications
 - SWRadio
 - Lightweight Log Services
 - Deployment and Configuration
 - Including secure download of waveforms
 - Lightweight CCM
 - Lightweight Services
 - Waveform API
 - Hardware abstraction API
 - Smart Antenna API

Public Safety Interest in SDR

Fred Frantz
Chair, SDR Forum Public Safety SIG

Fred.Frantz@L-3Com.com

Public Safety Interest in SDR-1

- Current state
 - In US, market dominated by small number of vendors
 - Significant installed base uses proprietary protocols
 - Standards discussion focused on messages between devices and infrastructure, infrastructure to infrastructure
 - Traditionally fragmented market (50000 customers)

Public Safety Interest in SDR-2

- Key recent and ongoing activities
 - SDR identified as key long range technology by Dept. of Justice National Institute of Justice (CommTech program)
 - Definition of requirements
 - Broadband (international) – Project MESA SoR
 - Overall comm (US) – Project SAFECOM SoR
 - Discussion of SDR technical and regulatory issues
 - SDR Forum Public Safety Special Interest Group
 - RFI on Application of SDR Technology to Public Safety Requirements about to be published—opportunity to weigh in on role of SCA, OMG standards, etc. can meet public safety requirements
 - Joint meeting with European public safety/E2R – Mainz Germany