

Software Communications Architecture Compliant Software Defined Radios -

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The Software Communications Architecture (SCA) has been published by the Joint Tactical Radio System (JTRS) Joint Program Office (JPO) to provide a common open architecture that can be used to build a family of radios across multiple domains.

Last year, the authors introduced the SCA to the HPEC community and described the overlap between the Software Defined Radio (SDR) domain and the HPEC domain. We presented the standardization efforts led by two organizations, the Software Defined Radio Forum (SDRF) and the Object Management Group (OMG).

The standardization of the SCA is an ongoing effort. In this year's presentation, we will discuss the current standing of the SCA and the development efforts in progress by the previously mentioned organizations. We will also present our SCA compliant SDR implementation.

The SCA was a standard adopted by the SDRF. A JTRS-sponsored Change Control Board has managed changes to the SCA. In parallel with the SCA evolution, the Software Radio (SWRADIO) Domain Special Interest Group (DSIG) is forging a more encompassing SCA-based standard (see <http://swradio.omg.org>). Domain-specific requirements are expressed in a SDR RFP. Platform requirements address far more than software radio requirements and include:

1. Embedded System Distributed Component Framework (File Services, Devices and Domain Management)
2. Security APIs (Type Separation, Key Management, Crypto, Authentication, Auditing and PKI)
3. Radio Components Interfaces (I/O (audio, serial, etc.), RF Physical, ...)
4. Radio Services (Light Weight Log, Light Weight Naming, Real-Time Notification and Timer Services)
5. Deployment and Configuration

Mercury has developed an SCA reference implementation that uses the Future Multiband Multimode Modular Tactical Radio (FM3TR) waveform. A simple, low-bandwidth waveform, the FM3TR requires a minimum number of SCA components to operate. In this presentation, we will explore and present the advantages and difficulties of implementing a SCA-compliant software defined radio and explain why our implementation can be used to define a Minimum SCA OMG Specification.

Format: oral presentation

Topic Areas:

- Future Program Office Needs for Embedded Computing Technologies
- Embedded Computing for Global Sensors and Information Dominance
- Algorithm Mapping to High Performance Architectures