In development for 2 years
  - First SCA 4.1 workshop was 21-22 Nov 13 at Raytheon, San Diego

Technologies and features of the new version
  - Cyber Hardening
  - Performance
  - Scalability
  - Configurability
  - Future-proofing

Commercial industry provided much of the technology and design of SCA 4.1

SCA 4.1 will be submitted to the DoD IT Standards Registry (DISR) in FY16

Benefits to the Warfighter
  - Cyber Hardening
  - Smaller Radios
  - Longer Battery Life
  - Faster Bootup
  - Better Connections with External Devices such as Android
  - Future-proofing
SCA Continues to Distinguish Itself from Competing Standards

- SCA provides a framework similar to iOS and Android but allows flexibility

- SCA is different from iOS or Android through the expression of waveforms in software (Software Defined Radio)

- The SCA is managed and controlled through an open systems standards body

- The SCA isolates the waveform from the radio set, enabling portability of waveforms across radio missions and manufacturers
SCA Radios – In Widespread Deployment

- Handhelds such as AN/PRC-154, AN/PRC-152, AN/PRC-148 have been fielded in quantities of over 300,000

- Airborne, manpack, and multichannel radios include MIDS-JTRS, HMS Manpack, AN/PRC-117G, FlexNet, Phoenix, Freedom 350, KOR-24, CRIIS, Talon, Sidehat, Sidewinder, and many more …
Architecture Changes in SCA 4.1

Architecture

- SCA 4.1 introduces a single base component that is applicable for both platform and application software

  - Earlier versions of the SCA had mixed components and interfaces, complicating the specification
  - A smaller number of components are reused across the full radio domain

- The reorganization will streamline implementations and allow better software tooling to be developed for SCA developers
Cyber Hardening in SCA 4.1

- Secure computing practices have evolved since the first SCA version
- Push model registration provides more secure communication between components
- As part of the architectural refactoring, the principal of least privilege was applied to all communication within the architecture
- Access and visibility of all software components has been reduced to only what is absolutely needed
- This minimizes system exposure to a ‘rogue’ software component within the radio

```
DomainManager
+ applicationFactories: ApplicationFactorySequence
+ applications: ApplicationSequence
+ deviceManagers: DeviceManagerSequence
+ domainManagerProfile: string
+ fileMgr: FileManager
+ identifier: string
+ installApplication(string) : void
+ registerDevice(Device, DeviceManager) : void
+ registerDeviceManager(DeviceManager) : void
+ registerService(Object, DeviceManager, string) : void
+ registerWithEventChannel(Object, string, string) : void
+ uninstallApplication(string) : void
+ unregisterDevice(Device) : void
+ unregisterDeviceManager(DeviceManager) : void
+ unregisterFromEventChannel(string, string) : void
+ unregisterService(Object, string) : void
```

SCA 2.2.2
1: Request for Data
2: Information only on Request

SCA 4.1
1: Always Sends Information

Waveform Component
Domain Manager

Cyber Hardening in SCA 4.1
Reducing the Cost of the Radio – Scalability and Flexibility

- SCA 4.1 reduces software development and testing by tailoring functionality and interfaces not required for the radio’s mission

- Earlier versions of the SCA had a one-size-fits-all model

- In SCA 2.2.2, a component had to implement all of the interfaces whether they were specifically needed for the component or not
Improving Performance

- The SCA has little impact on waveform data throughput
- The software components of the waveform communicate among themselves without any SCA overhead or interference
- During startup, there can be substantial dynamic configuration and loading of software components
- The new port communication and push registration significantly reduce the time to boot the radio or launch a new waveform
- This extends battery life, reduces the processor size and resources necessary to perform the mission
Future-Proofing

• SCA 4.1 has been written as a modular specification, permitting new technology to be inserted into tactical radios

• As an example, there are emerging technologies to replace CORBA such as ICE or zeroMQ

• SCA 4.1 is written to allow new transports to be substituted for CORBA, which most SCA developers to date have preferred

• New to SCA 4.1 is multicore processor support