



# Open Standards in the RF and DSP Domains

October 1, 2020

Christopher Schnelle & Matthew Winchester  
Open Systems Development Branch

# Outline

- Why Modular Open Standards
- MOSA Myths
- Open Standards RF & DSP  
Research at GTRI

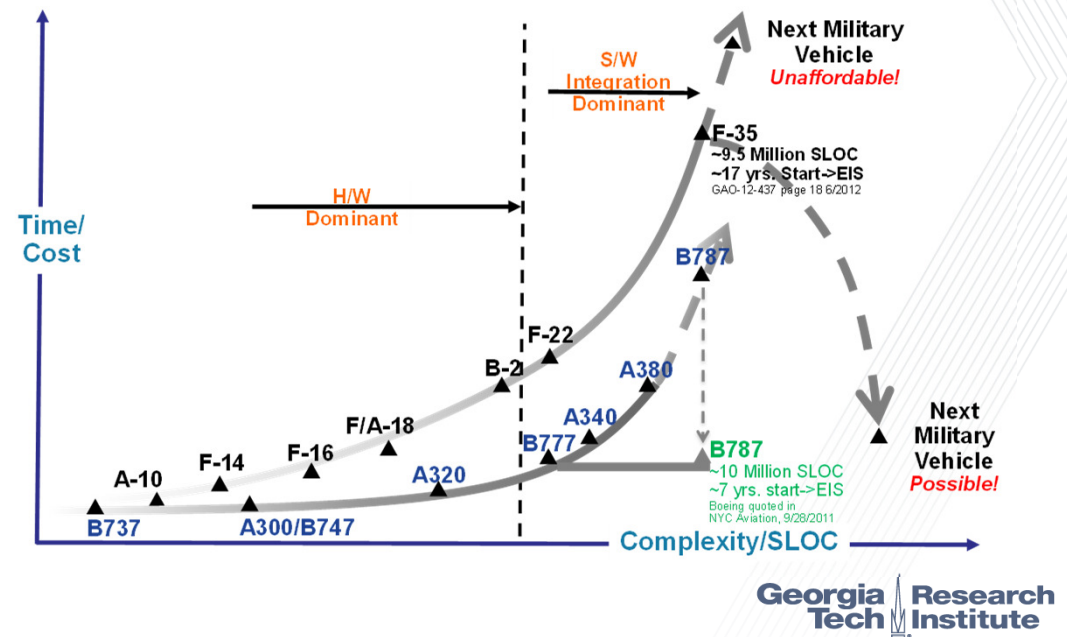




# Why Modular Open Standards

# Benefits of MOSA

- Shorter Development Cycles
  - Enables Reuse of Modules
  - More of the shelf components/modules
  - Multi-Vendor Support
  - Reduced Training Requirements
  - Increased tool support



# Benefits of MOSA

- Reduced Life Cycle Costs
  - Eliminates Vendor Lock
  - Increases Competition
  - Enables Re-use of Modules
  - Enables Larger Production Quantities
  - Reduced Training Requirements





# MOSA Myths



# Things You Hear About Modular Open Standards

- Open Standards are a Security Risk



# Things You Hear About Modular Open Standards

- ~~Open Standards are a Security Risk~~
- Untrue
  - “Security by Obscurity” does not work
  - Open Standards are vetted by a large technical audience
  - Open Standards encourage development of third party security tools



# Things You Hear About Modular Open Standards

- ~~Open Standards are a Security Risk~~
- We will Have to Give Up Our Intellectual Property



# Things You Hear About Modular Open Standards

- ~~Open Standards are a Security Risk~~
- ~~We will Have to Give Up Our Intellectual Property~~
- Untrue
  - MOSA Standards only define module interfaces. How you make your module do what it does is your IP
  - For most systems, the Government need only know the function of the systems modules and their interfaces to maintain those systems



# Things You Hear About Modular Open Standards

- ~~Open Standards are a Security Risk~~
- ~~We will Have to Give Up Our Intellectual Property~~
- We will Lose Revenue



# Things You Hear About Modular Open Standards

- ~~Open Standards are a Security Risk~~
- ~~We will Have to Give Up Our Intellectual Property~~
- ~~We will Lose Revenue~~
- Untrue (If you are good at your job)
  - Lower Cost of MOSA based systems will allow for more system upgrades
  - Upgrades no longer locked to the incumbent (larger volumes)
  - If you build a better ~~mouse-trap~~ module, the world will beat a path to your door





# Open Standards RF & DSP Research at GTRI

# Improving the Family of MOSA Standards

- Working to Eliminate Areas for that Allow Vendor Lock
  - For example, call out SOSA or HOST instead of OpenVPX
- Working to Call Out Existing Standards Where Ever Possible
  - No need to reinvent the wheel when you can take advantage of an existing standard's infrastructure
- Developing SysML models of MOSA Standards and Investigating their Use
- Developing Conformance Tools
  - FACE CTS

OpenVPX™

CMOSS



MORA  
Modular Open RF Architecture

COARPs

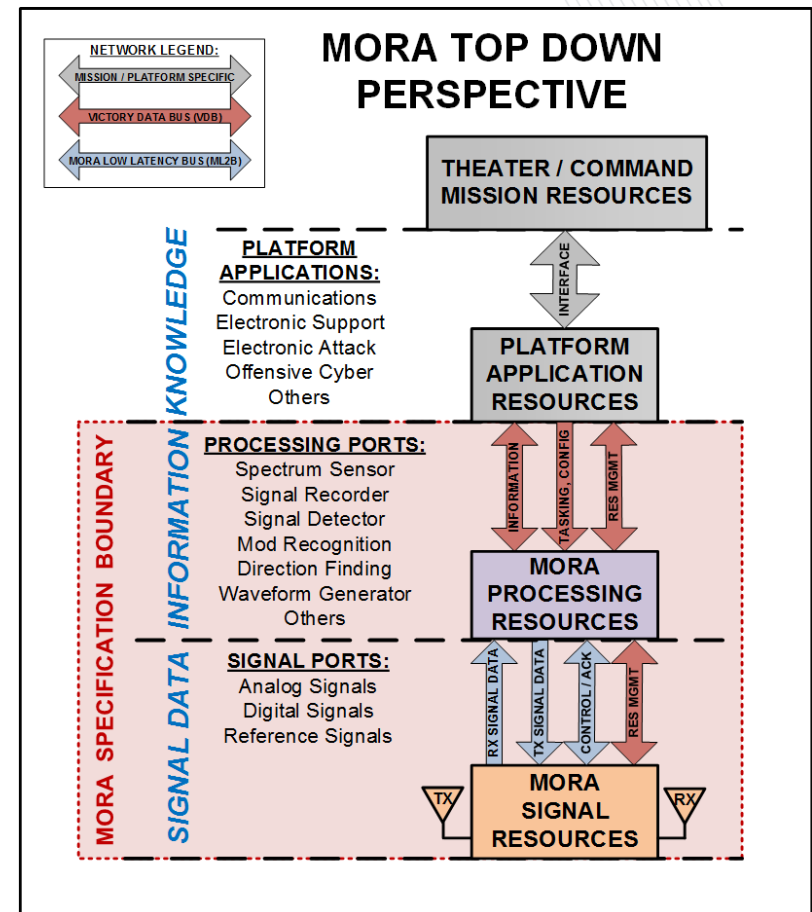


SOSA™  
Sensor Open Systems Architecture  
Sensor Integration Simplified™

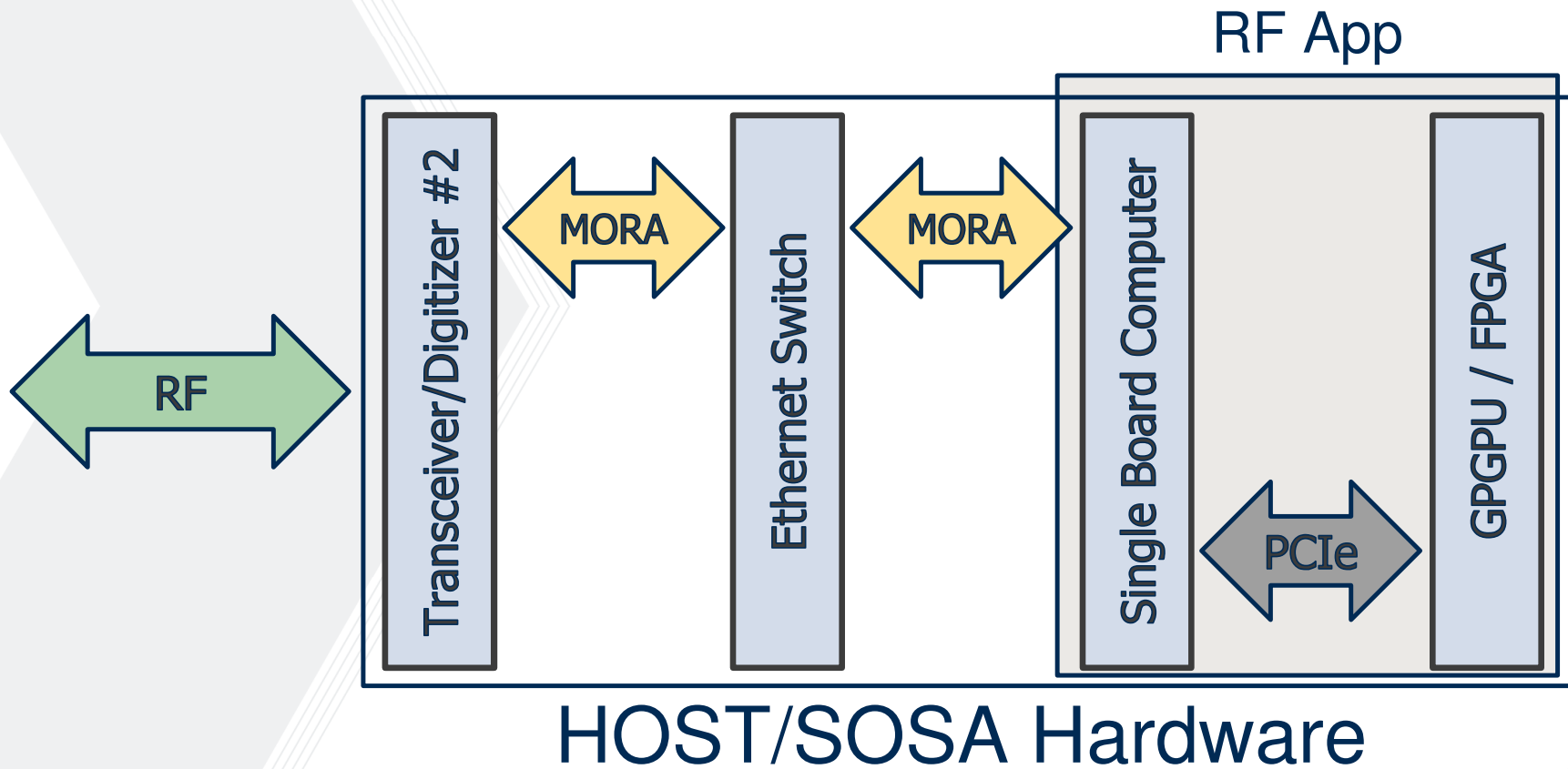
Georgia Tech Research Institute

# MORA – Modular Open RF Architecture

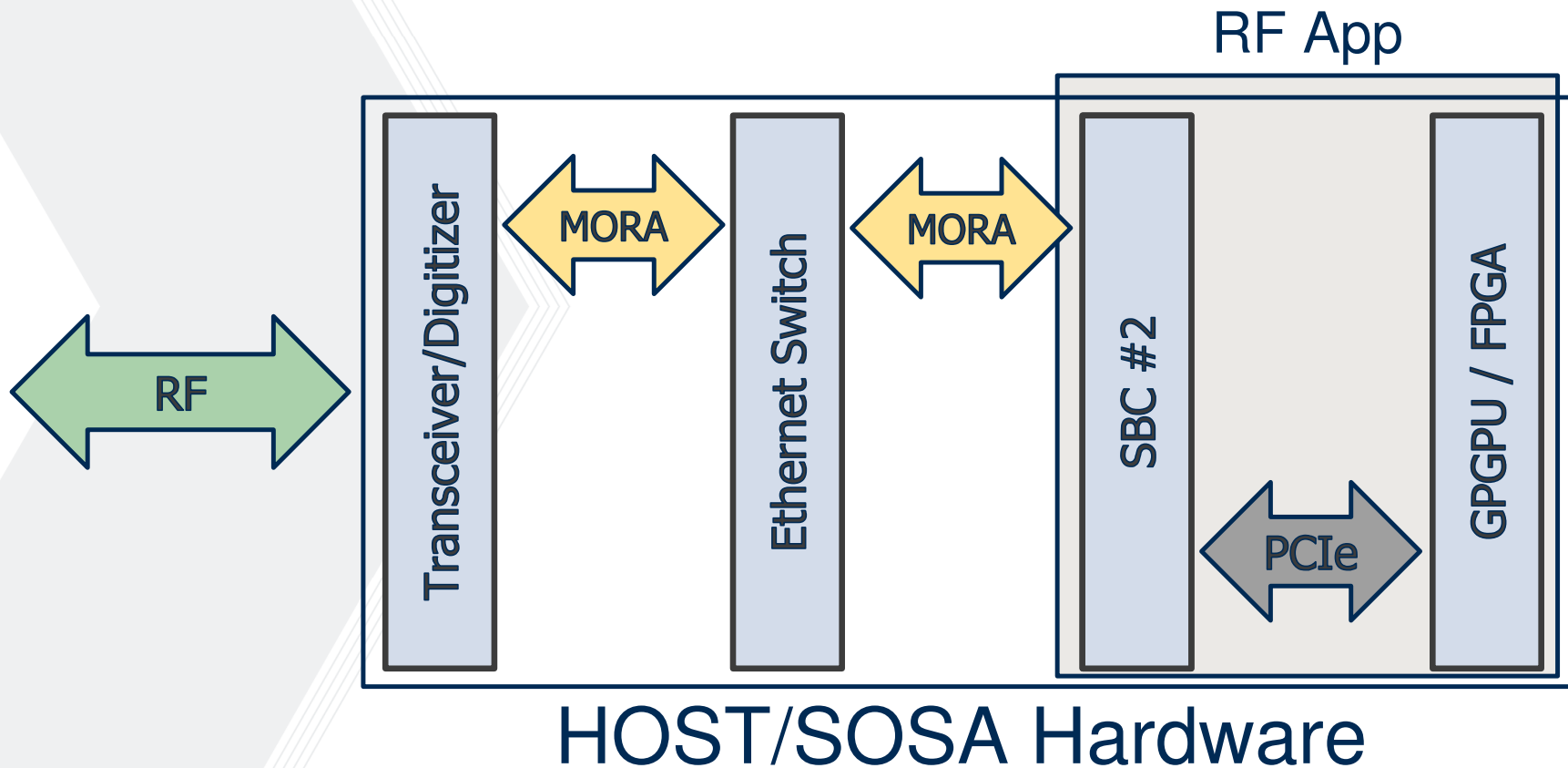
- RF extension for CCDC C5ISR Center's VICTORY Open System Architecture
- Provides an architecture and set of interface standards for RF systems
  - Supported message types include IQ / real signal data, command, and context
- Frequently used in comms / software defined radio (SDR) applications
- Common architecture and message set suitable for other RF modalities



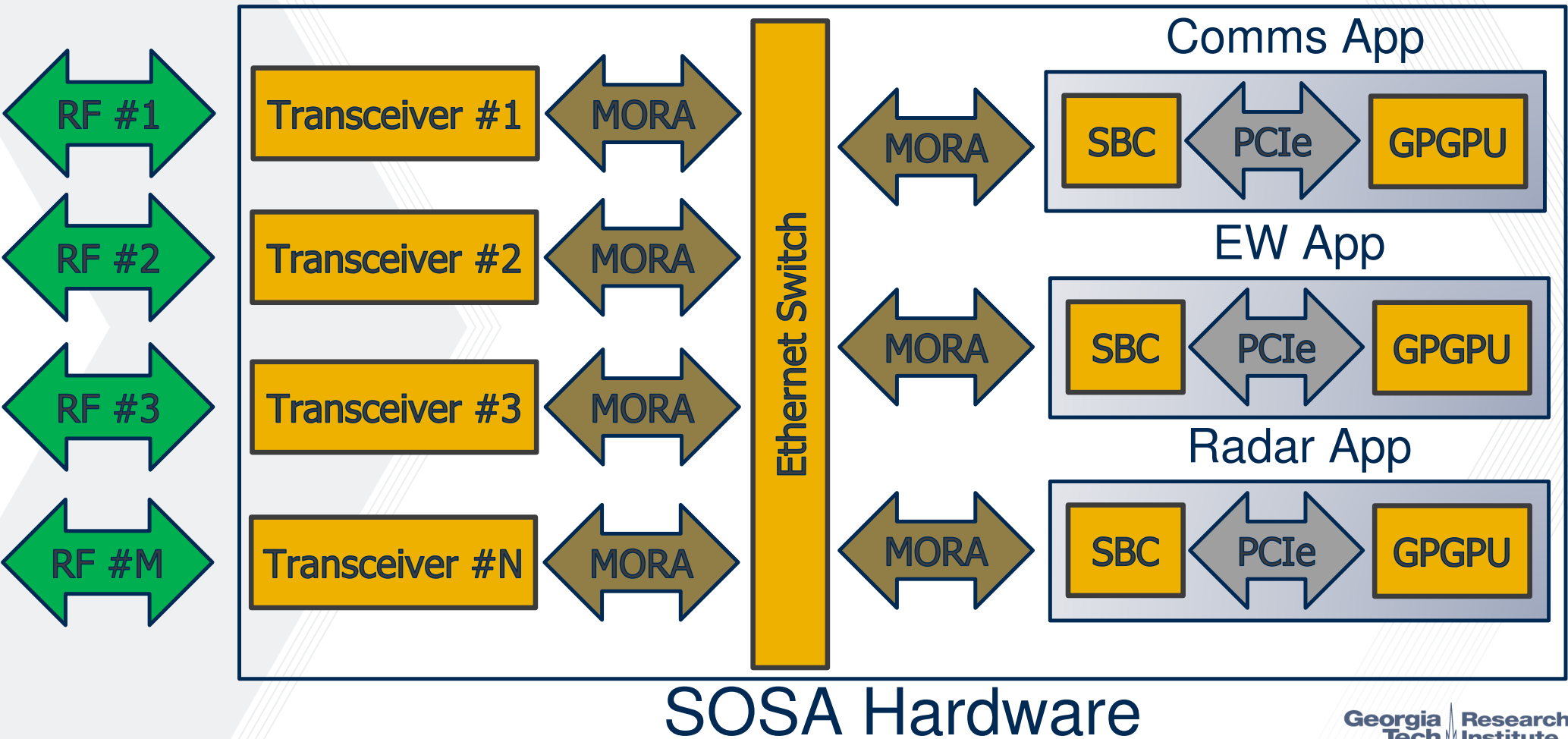
# Open Standards for RF: Front End Interoperability



# Open Standards for RF: Back End Interoperability



# Expanding the Use of MORA



# DSP Processing, How and Where

- Investigations in when to use CPUs, GPU's, and FPGAs
- Investigations comparing C Language and OpenCL

