



U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND ARMAMENTS CENTER

Assured Armaments Reference Architecture (AARA)

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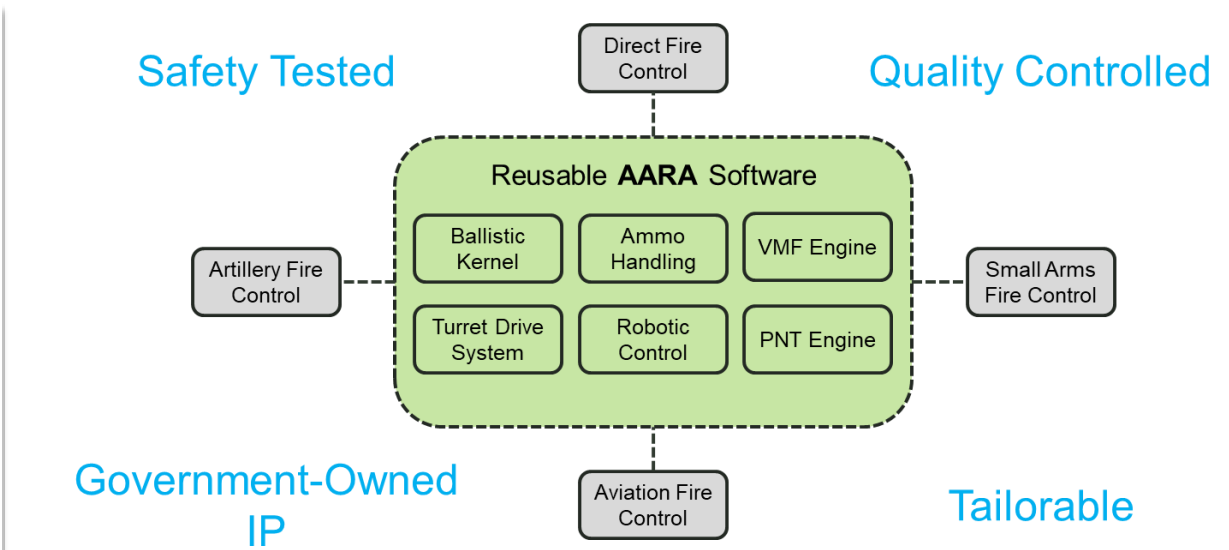
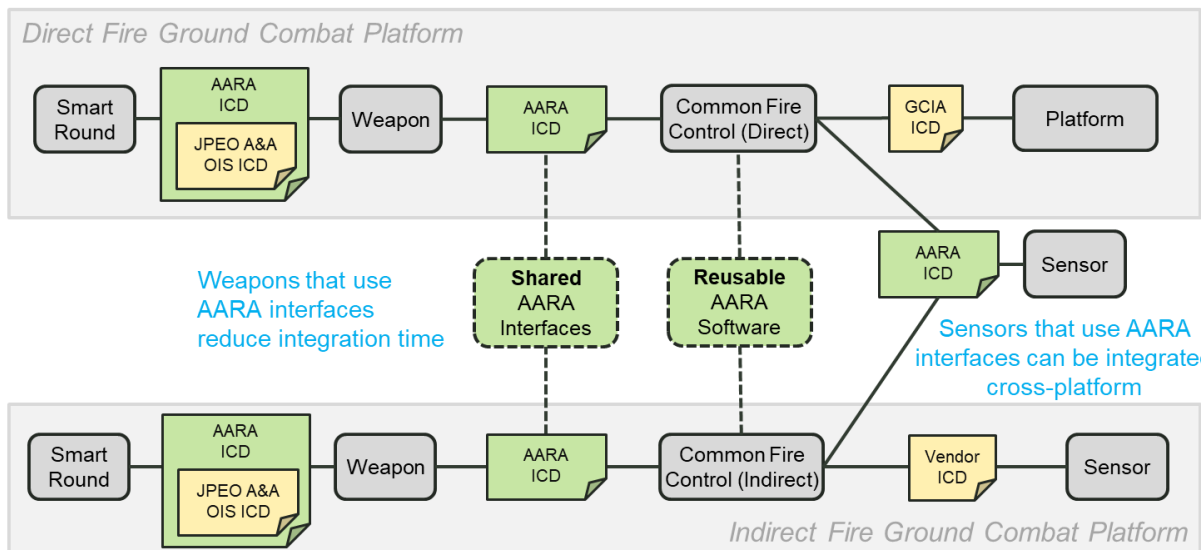
ESIC-SED | MICHAEL A BRATTOLI, FCDD-ACE-SRA

ASSURED ARMAMENTS REFERENCE ARCHITECTURE

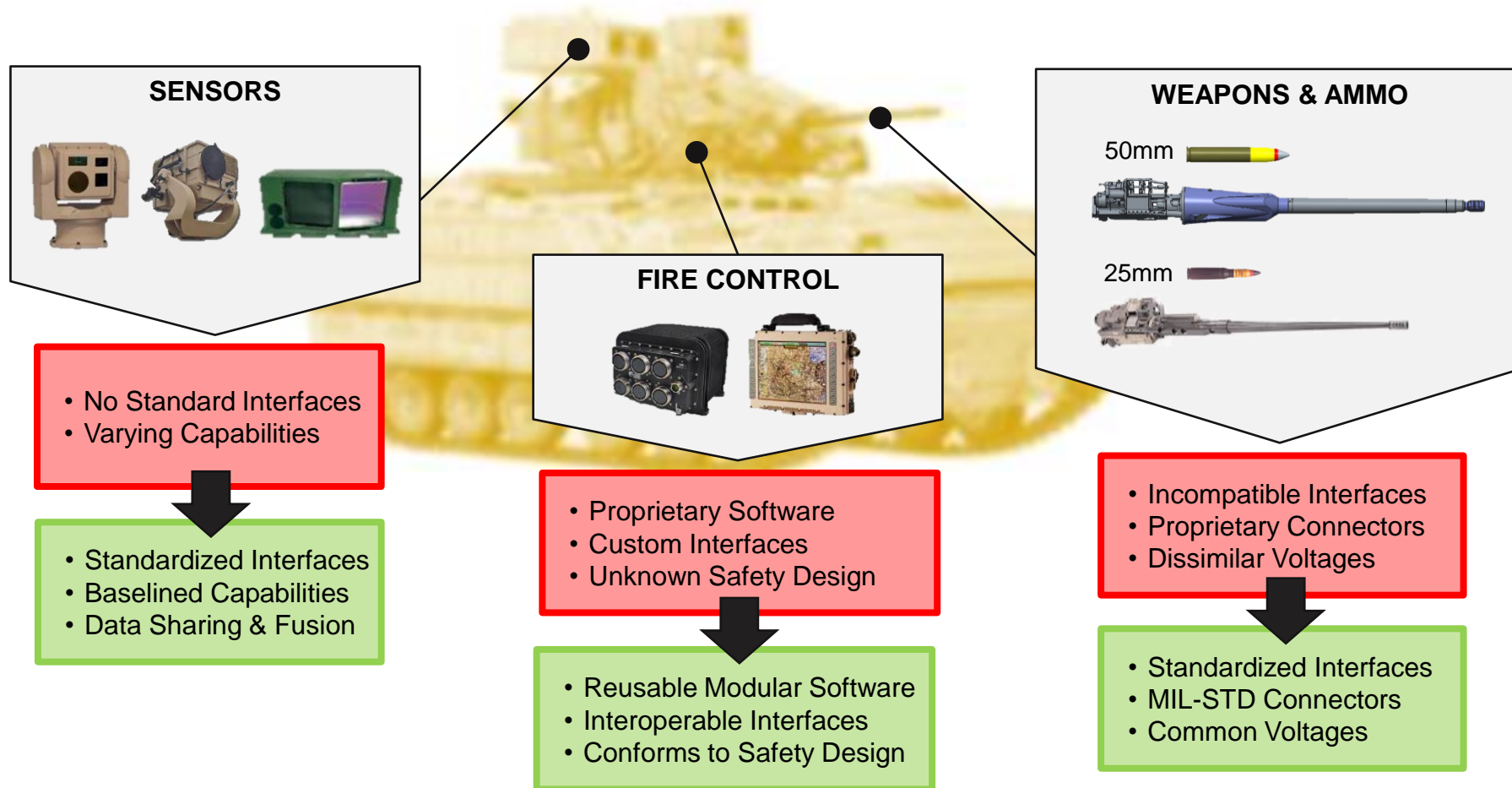


Armaments Center’s Modular Open Systems Approach (MOSA) resulting in architectures that govern internal and external interfaces for integrated Armaments Systems

Objectives	Why	Benefit
Facilitate technology transition	Deliver new capabilities/replacement technologies without changing all components in a system	FIELDING
Improve interoperability	Allow severable software/hardware modules to be changed independently	OPTIONS
Foster innovation	Configure/reconfigure assets – provide operational flexibility to meet changing operational needs	AGILITY
Maximize cost savings/cost avoidance	Reuse validated technology and eliminate redundant development & testing	SAVINGS
Ensure Q/R/S and lifecycle supportability standards	Establish validation & verification criteria to ensure compliance and successful integration	ASSURANCE



AARA – DEVCOM ARMAMENTS CENTER BUSINESS CASE



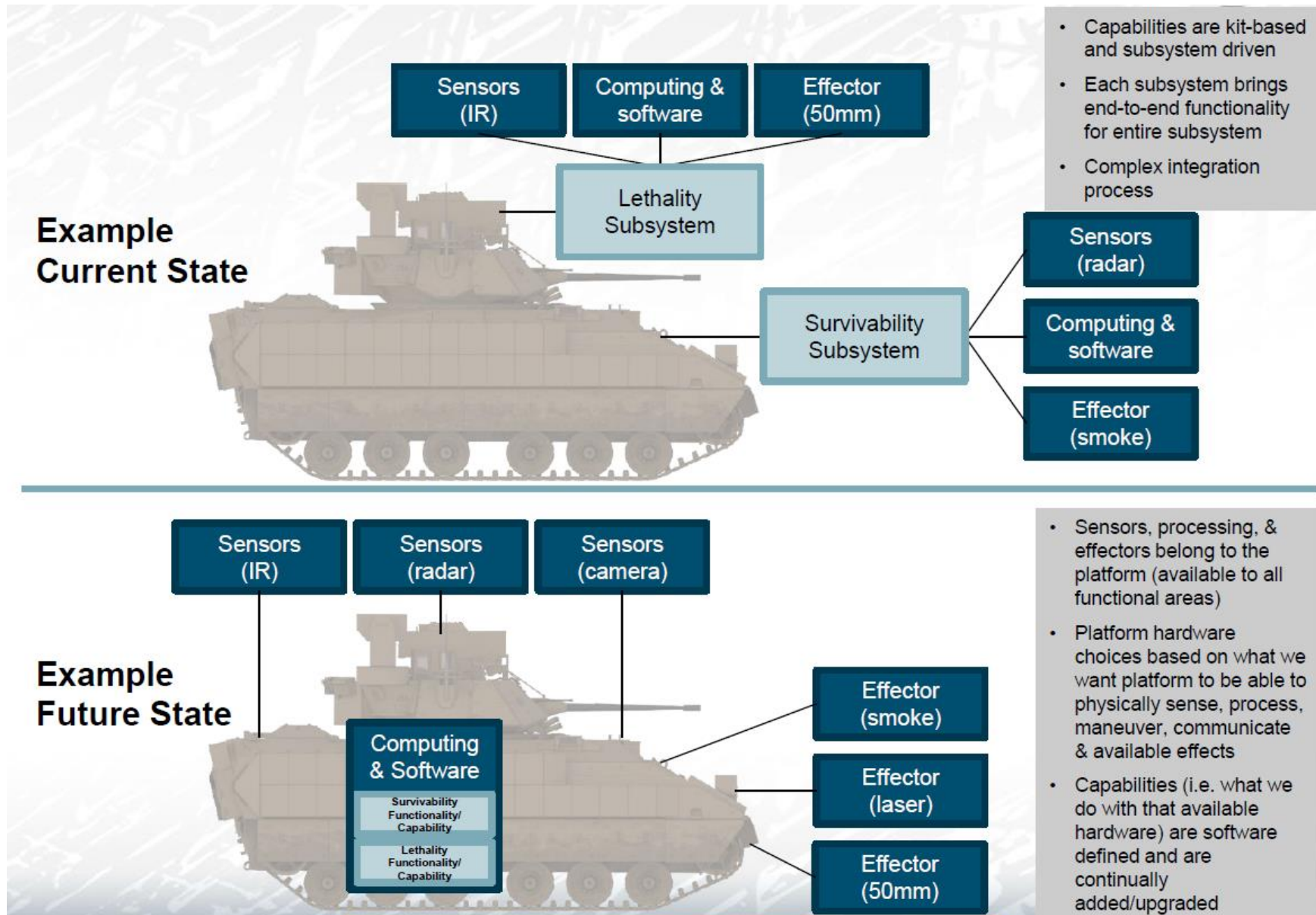
How We Currently Do Business (Non-Modular Open Source Architecture)

- ↓ Costly interface adaptors & software licensing
- ↓ Lengthy integration time

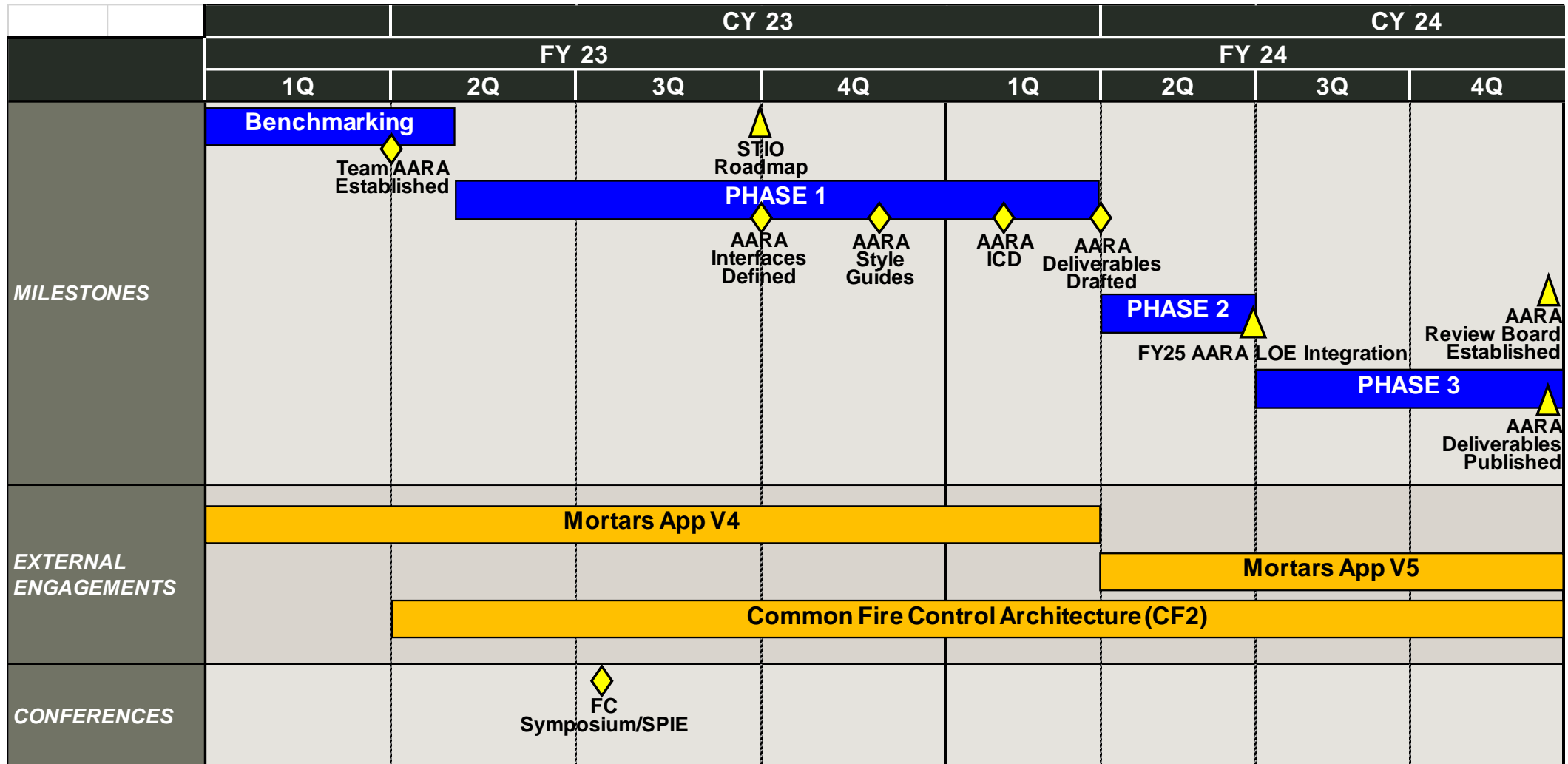
Business with AARA (Modular Open System Architecture)

- ↑ Compete on performance not interface
- ↑ Leverage interoperable software products

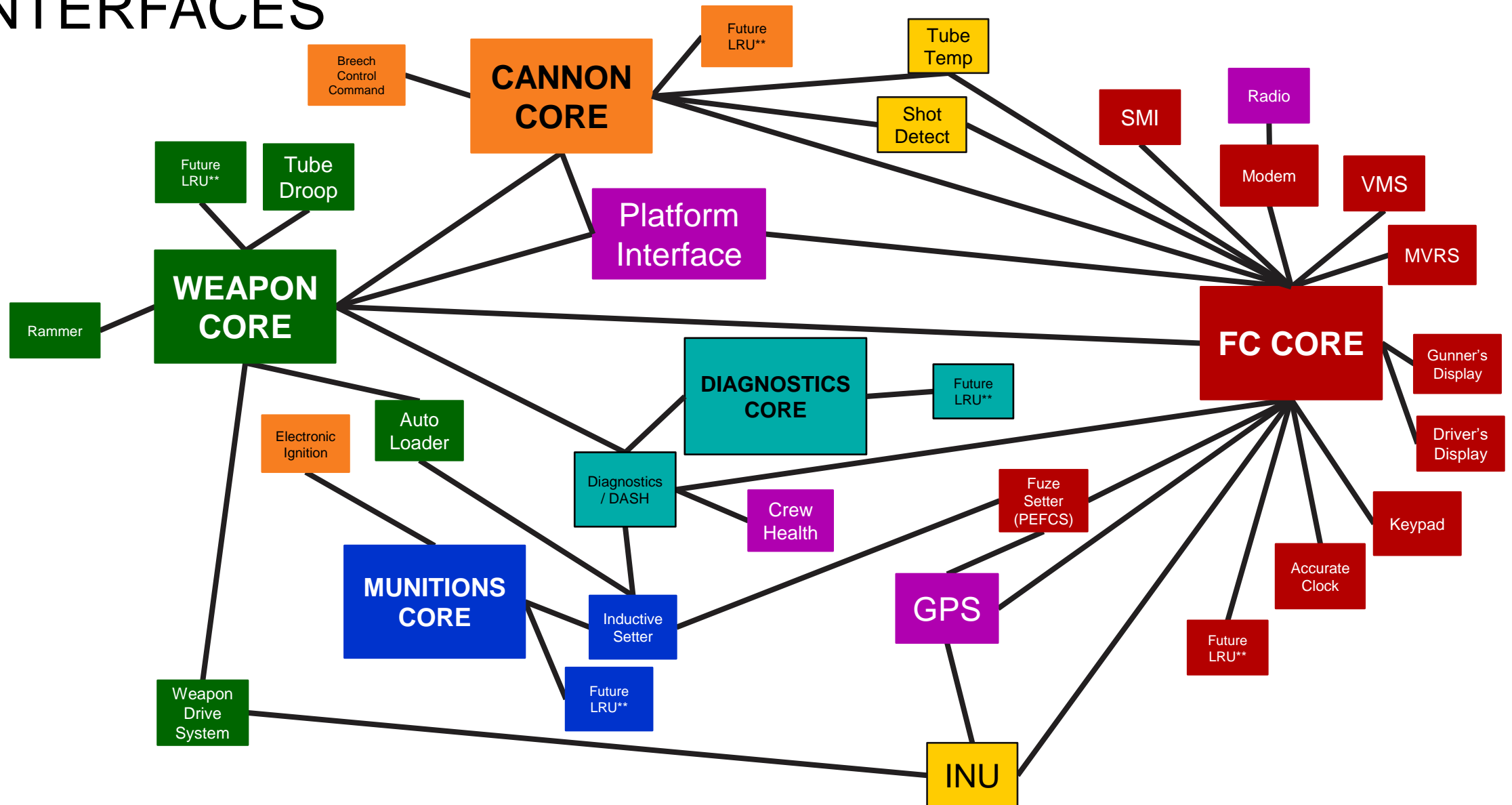
CURRENT AND END STATE



AARA SCHEDULE

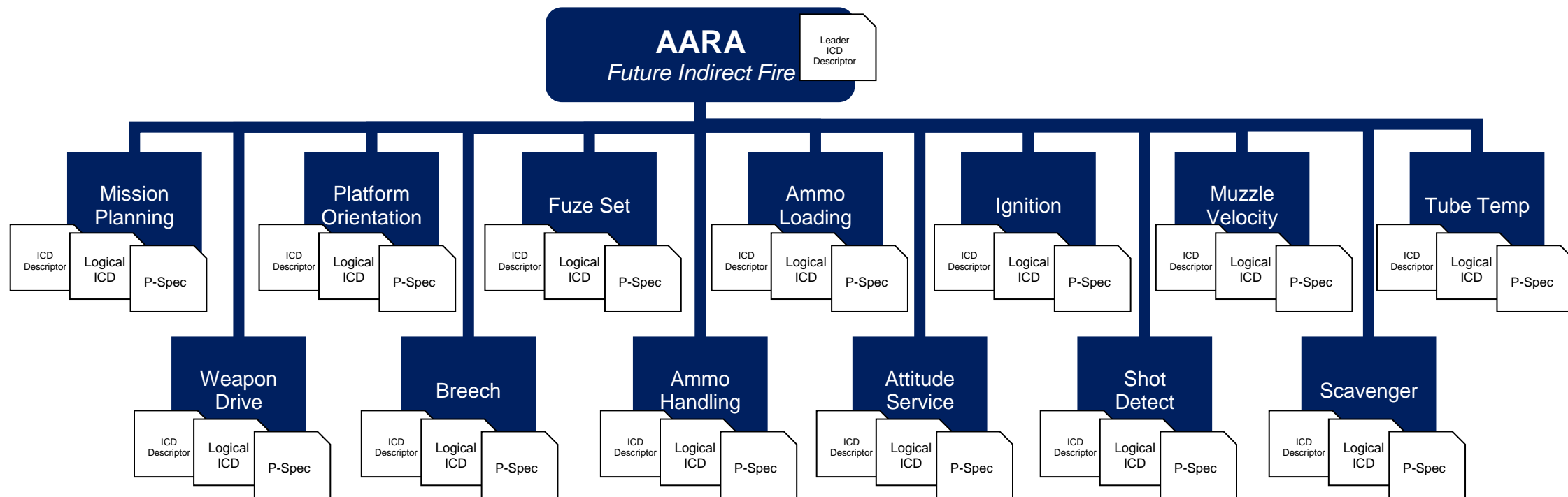
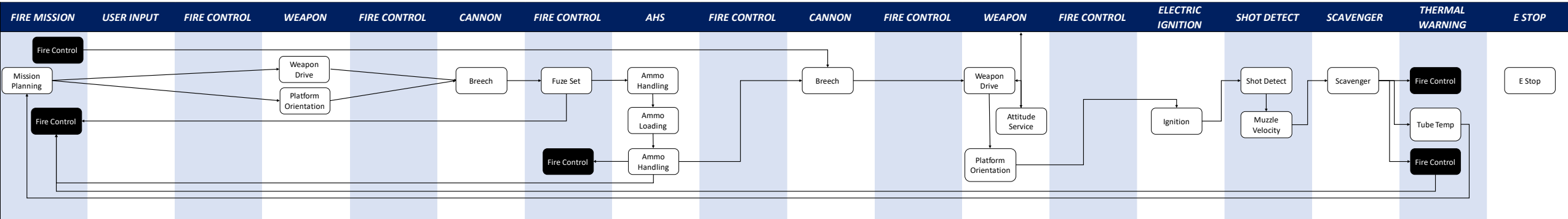


DEFINED MODULES, SUBSYSTEMS, AND INTERFACES



- Benet
- WS&T
- FCSTD
- Shared
- METC
- NLSRT
- External Control

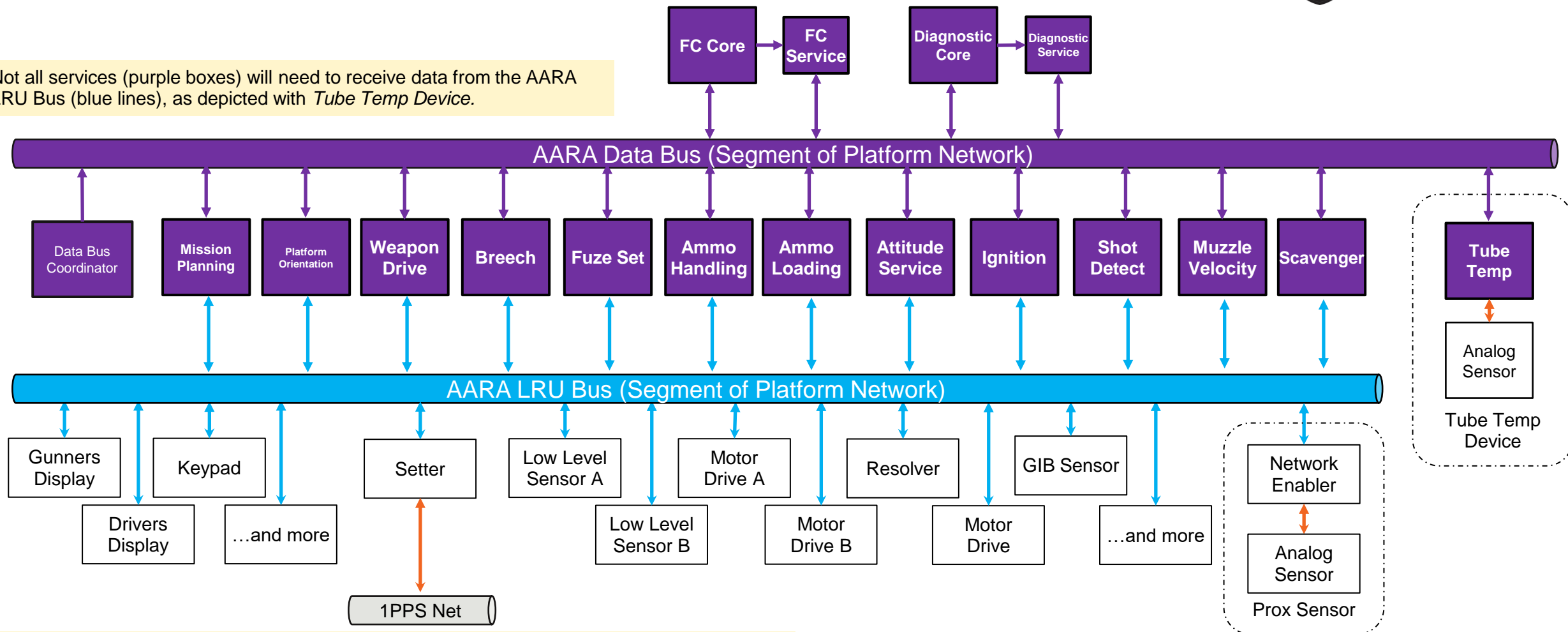
FUNCTIONAL ARCHITECTURE DERIVED FROM KILL CHAIN



AARA FUNCTIONAL ARCHITECTURE



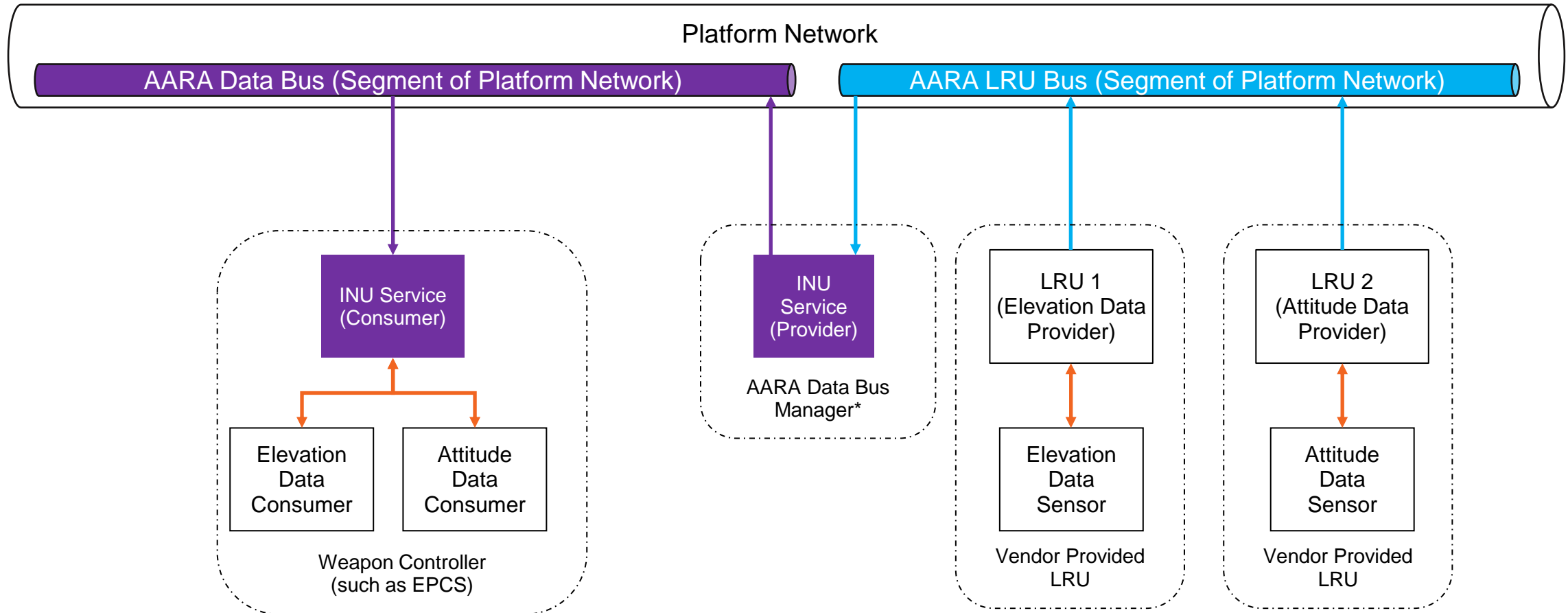
Not all services (purple boxes) will need to receive data from the AARA LRU Bus (blue lines), as depicted with *Tube Temp Device*.



Any sensor (white boxes) whose data is provided to the AARA LRU bus may need a “network enabler” between the sensor and the data bus, as depicted with the *Prox Sensor*.

↔ AARA Defined Service (Protobuf Msg)
 ↔ AARA Defined Data (Protobuf Msg)
 ↔ Non-AARA Defined Protocol / Discrete Electrical Signal

FUNCTIONAL ARCHITECTURE SERVICES



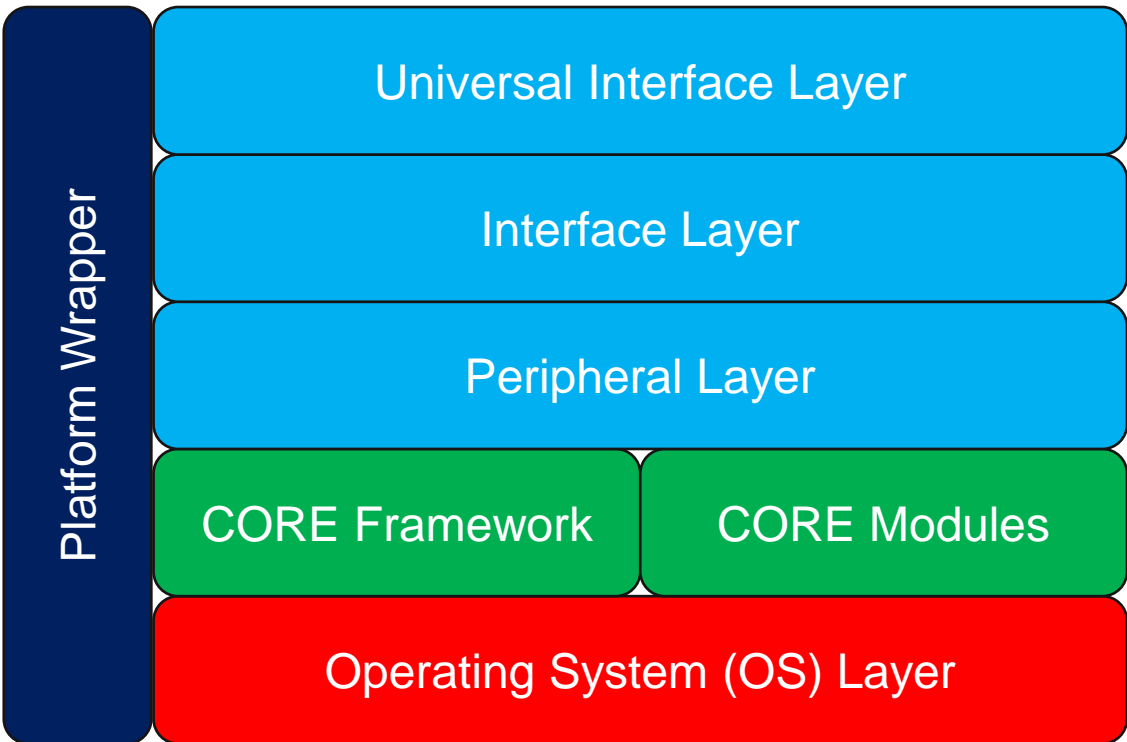
* Arrows are drawn single directional because that is the flow of referenced data, despite traffic going both ways

= Likely/possible hardware abstraction

* Handles Publish-Subscribe and any other additional logic needed

AARA Defined Service (Protobuf Msg)
 AARA Defined Data (Protobuf Msg)
 Non-AARA Defined Protocol / Discrete Electrical Signal

AARA FC DEVELOPMENT STACK



Specialized Development for the platform integration.

Data Exchange Design and Implementation (IE: Serial, Ethernet, etc)

ICD Interfaces if not AARA Compliant or already supported

The Core Fire Control (FC) AARA Framework and shared module code

The OS Layer depending on system requirements, processing needs, and legacy / 3rd party support.

Legend



