Capability-Based Technical Reference Frameworks for Open System Architecture Implementations

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Better Buying Power 2.0
Promoting Effective Competition for the Life Cycle

This item is continued from BBP 1.0 and will focus on improving the Department's early planning for open architectures and the successful execution of the plan to provide for open architectures and modular systems. This will include the **development of a business model and associated intellectual property strategy** (data rights planning) that can be implemented over the lifecycle of the product, starting while competition still exists.

Enforce open system architectures and effectively manage technical data rights:

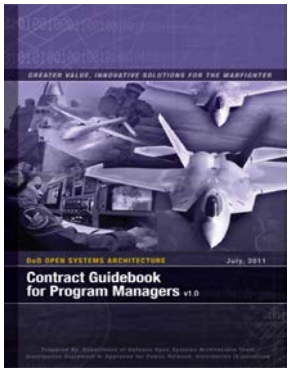
https://acc.dau.mil/bbp

Naval Enterprise OSA Strategy*

OSA Vision: Affordable, Open Platforms that Easily Accommodate Open Modules

- Business changes

- Implementation Tools



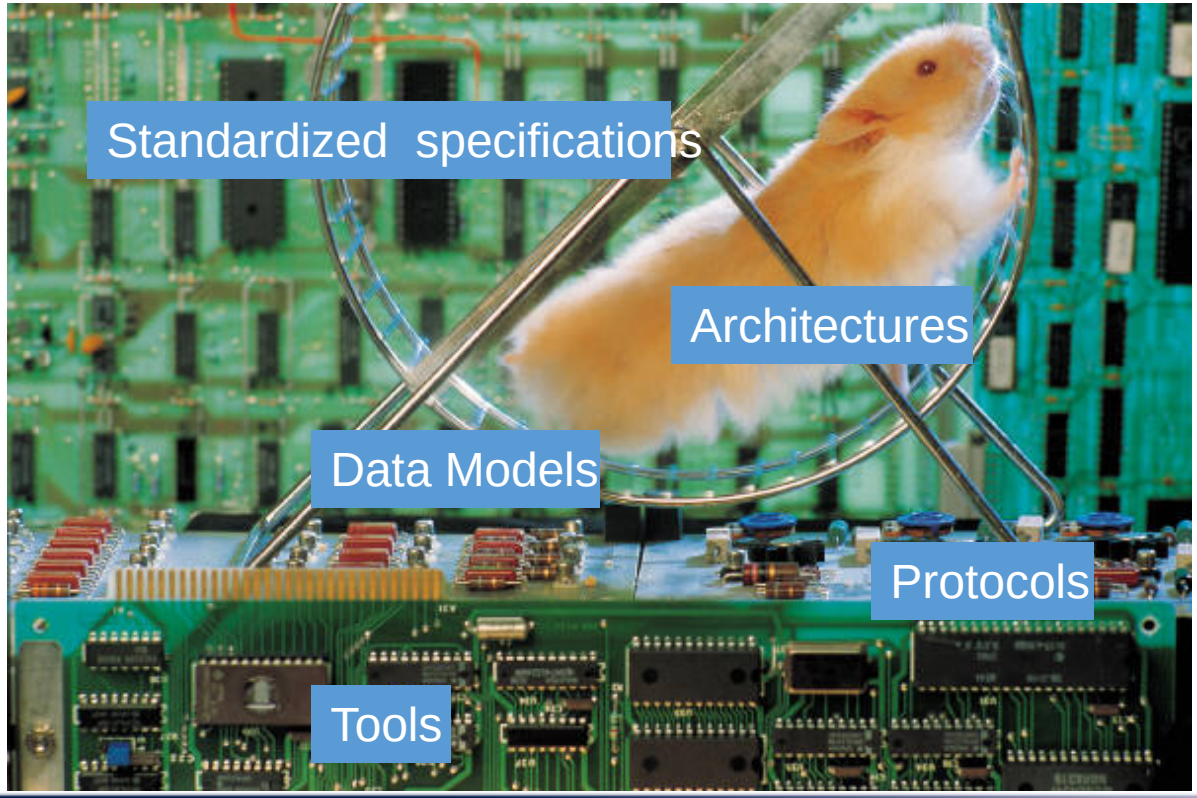
- Technical Reference Frameworks

- OSA Training

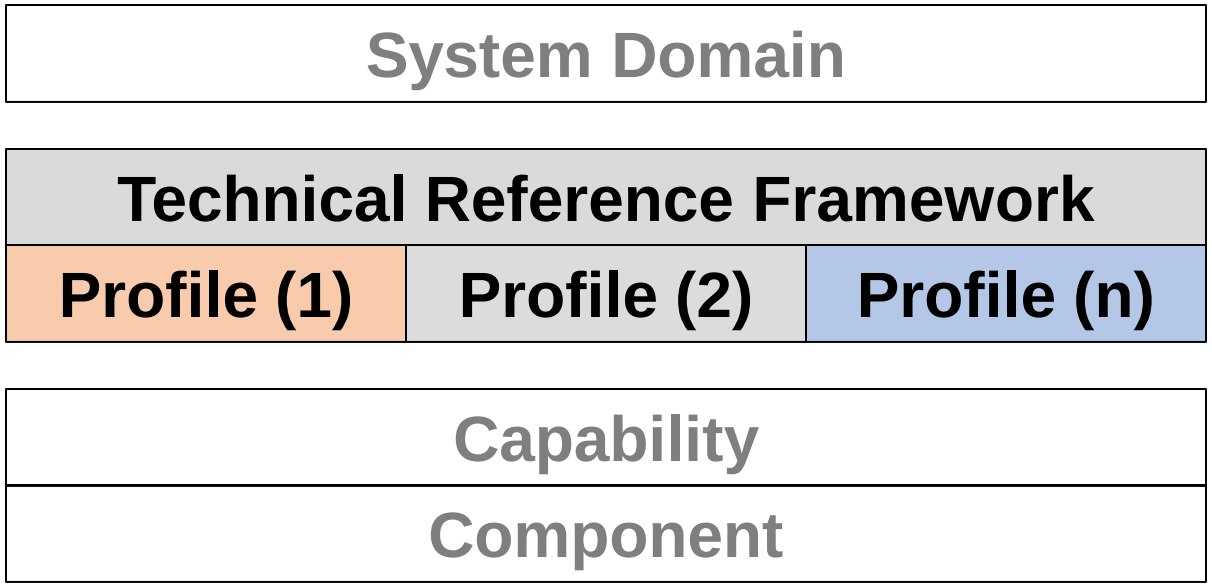
*ASN RDA "Naval Open Systems Architecture Strategy" 26 November 2012

Technical Reference Framework

- Provides a **reusable architecture** for a family of related applications
- An **integrated set** of profiles for the development of components
- Promotes product line **best of breed capabilities** to the warfighter



TRFs in the OSA Context



requirements

reference

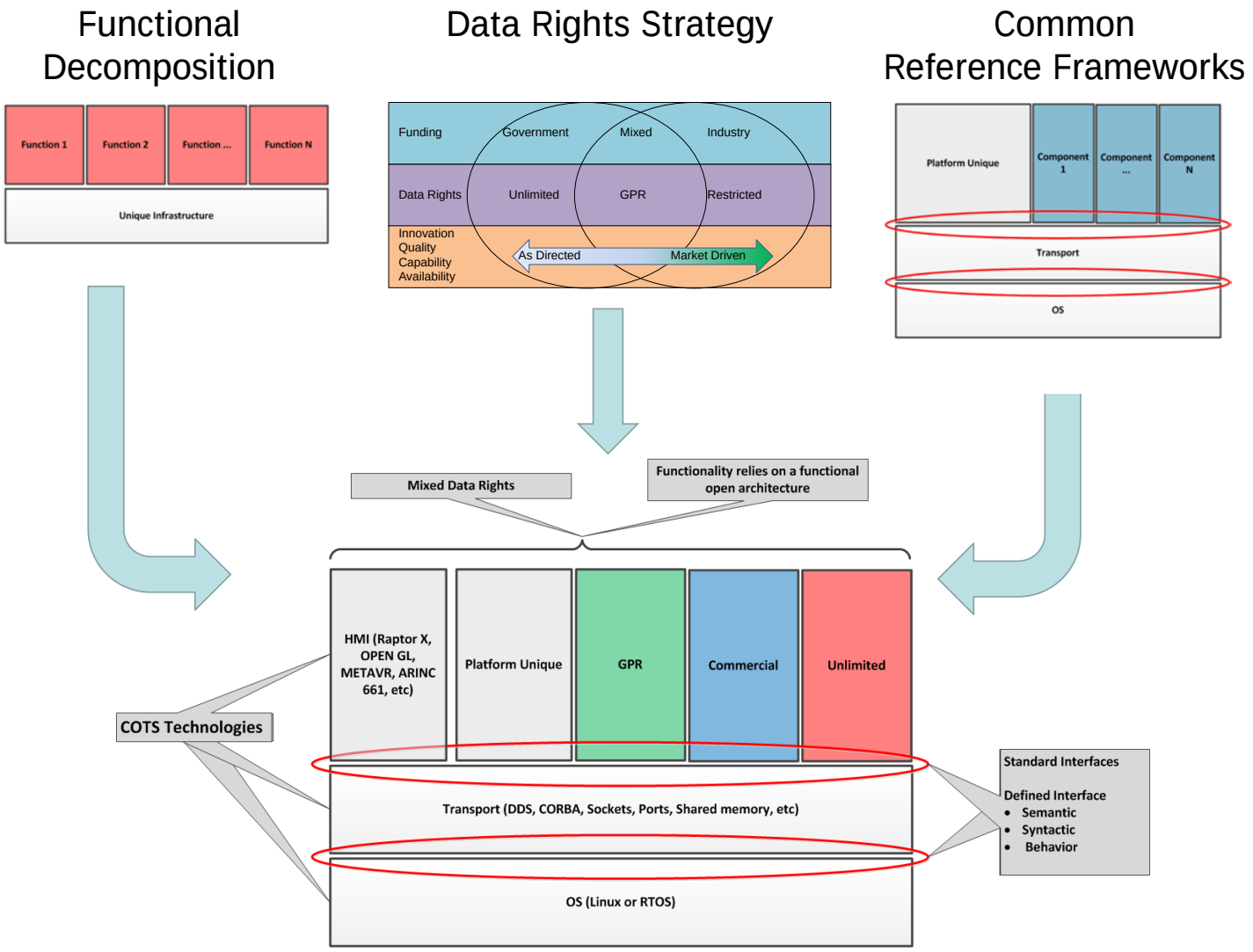
implementation

example profiles:

Portability
Interoperability
General Purpose

A set of (implementation agnostic) attribute profiles that allow components to operate within the context of systems and platforms

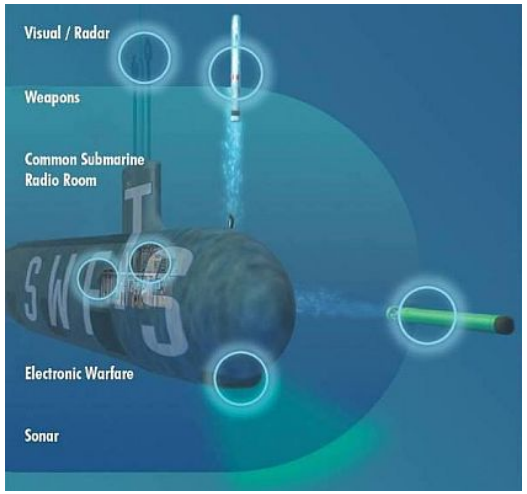
Holistic OA Approach



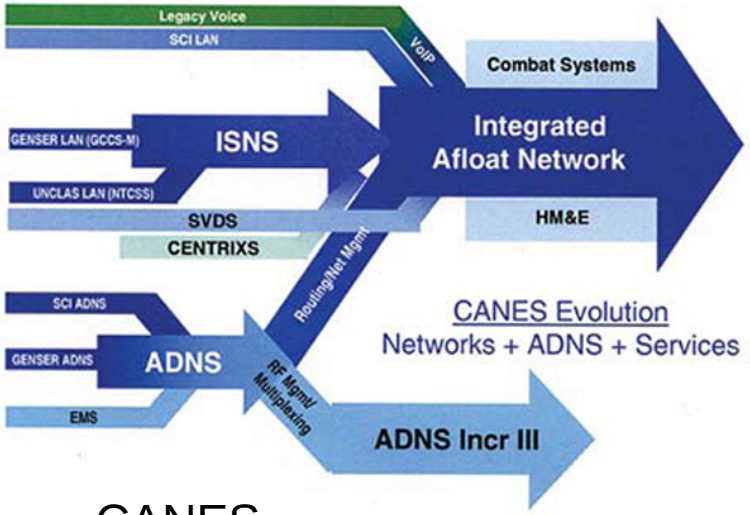
Technical Frameworks Enable Buying Choice

FACE™
Future Airborne Capability Environment

Open Interfaces - SPIES



SWFTS



CANES

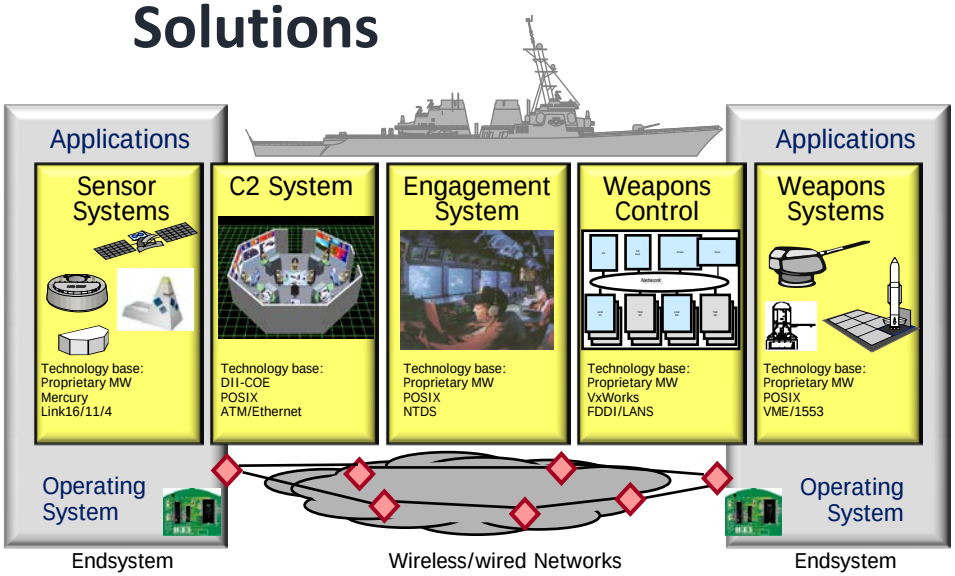
Example Attributes of a Technical Reference Framework

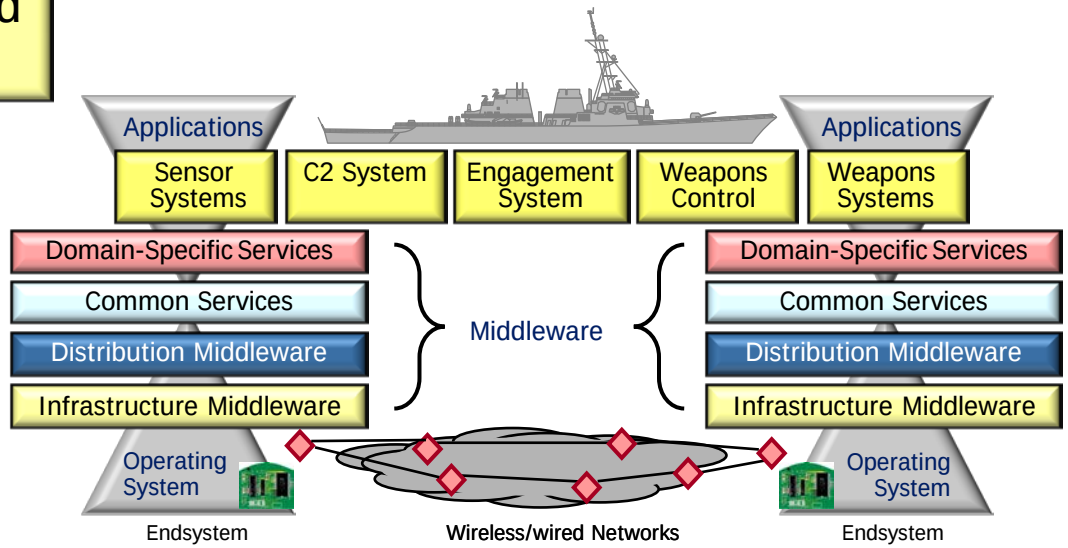
- Federated Acquisition/Integrated Operation (integratability)
- Data Driven (portability)
- Expandable (Adaptable, Scalable, Extensible)
- Authoritative Governance (published and discoverable)
- Reduced Complexity (Modular Design, Minimized Coupling, Clear/Concise/Consistent)
- Be Open (Use of Open Standards, Support Re-Use, Utilize Central Services)
- Be Secure (Compliant, Certifiable, Reliable)
- Portability
- Defined Intellectual Property and Data Rights

Domain architects will create their own TRFs from a list of common profiles

TRFs Convert Stove Pipes into Layered/ Modular/ Reusable Solutions

Stove-piped versus layered & modular



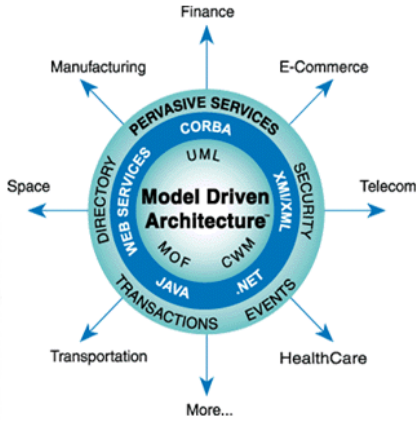


TRF's Rely on Published Open Interfaces & Standards

- appropriate governance models best suited for defining, adopting, & publishing the open interfaces & standards
- Relevant examples include
  - International standards bodies
  - Vendor-centric "de facto standards"
  - Managed Government/Industry consortium

OASIS

FACE™
Future Airborne Capability Environment



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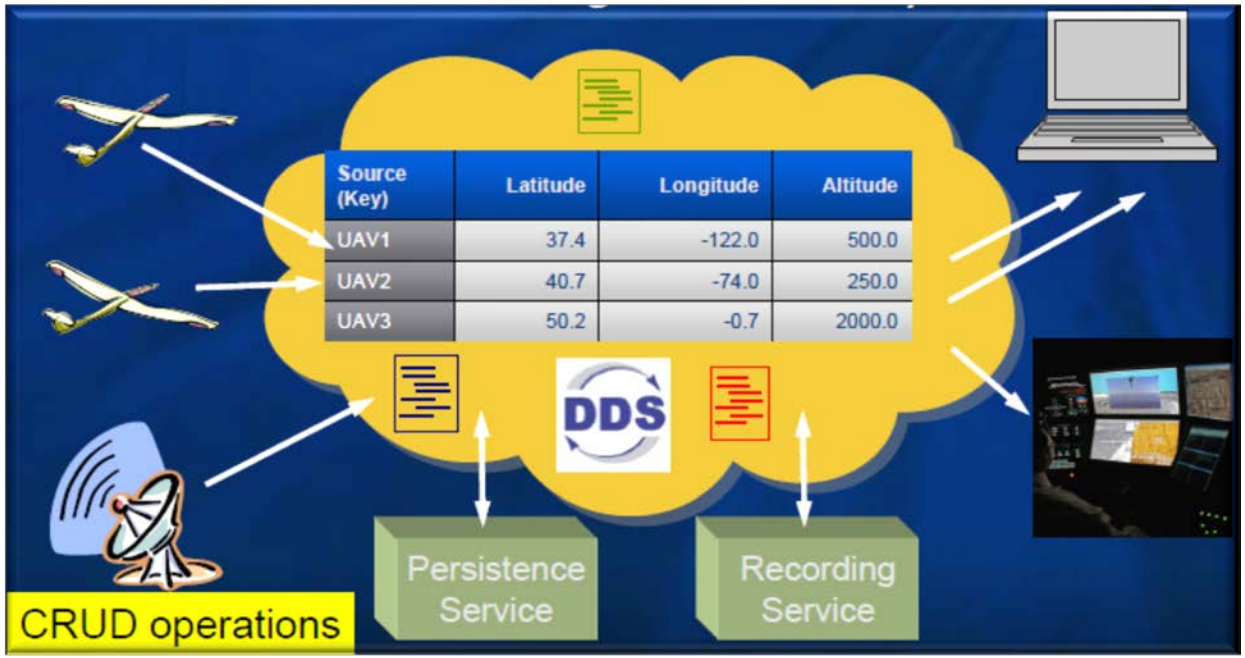
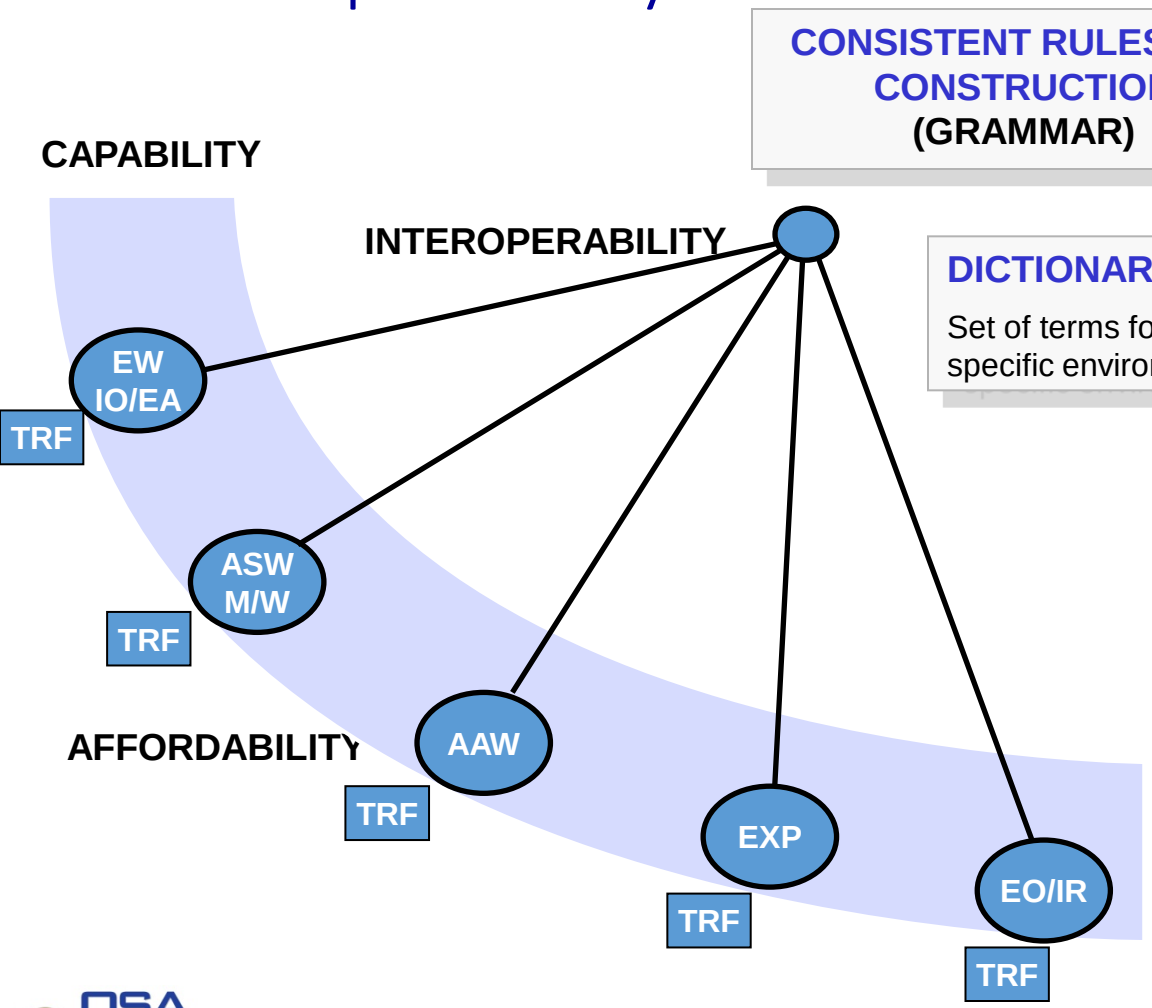
TRFs are built upon on Common Data Models & Protocols

- Common data models & protocols help achieve interoperability between hardware and/or software applications & services
- These common data models & protocols simplify data interchange & exchange between components from different suppliers or components implemented using different technologies.



Rules for Construction Lead to Interoperability



CONSISTENT RULES FOR CONSTRUCTION (GRAMMAR)

DICTIONARY

Set of terms for a specific environment

Coordinated Data Models

IMPROVED ABILITIES TO:

- Extend
- Integrate
- Replace
- Scale Up

RESULTS OF INTEROPERABILITY

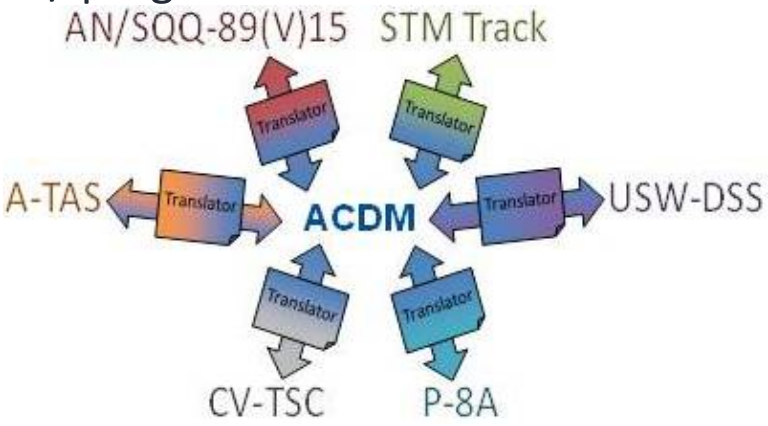
What is a Common Data Model and Why is it Important?

- Common data models define the terminology that a program uses for all of its data sources and the relationships that exist between different data items
- A common data model enables data interoperability between applications
- A Government owned data model can provide protection from a vendor lock on their interfaces
- Ensure interoperability between applications
- A Common Data Model
  - Allow applications to loosely coupled
  - Applications can upgrade at their own pace, because the data model provides for a common exchange

Navy Implementation of a Data Model

The Anti Submarine Warfare (ASW) Community of Interest Data Model (ACDM)is:

- An information exchange model
  - A standard to support moving information between systems
  - Designed to provide unambiguous interpretation
- Intended as a living model
  - Continually evolve to the changing needs of the ASW community
  - Grow in capability as the sophistication of ASW systems increases
- Developed to be Flexible
  - Support interoperability between software platforms
  - Extensible/scalable for individual system / program needs
- Broad in scope
  - Tracks and situational awareness
  - Sensor metrics and sensor data
  - Mission planning
  - Simulation and training
  - Reconstruction and analysis



In The End

Better Buying Power

Naval OSA Strategy

Payloads over Platforms

Affordable Programs

Speed to Fleet

Product Lines

Technical Reference Frameworks

Innovation

It’s about sustaining innovation