

Improving Interoperability Through Gateways and COTS Technologies



Agenda

- Introduction
- Interoperability constraints
- Gateway proposal
- SCA Based Infrastructure
- Conclusions

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JTRS Increment 1 Tactical Networking Capability

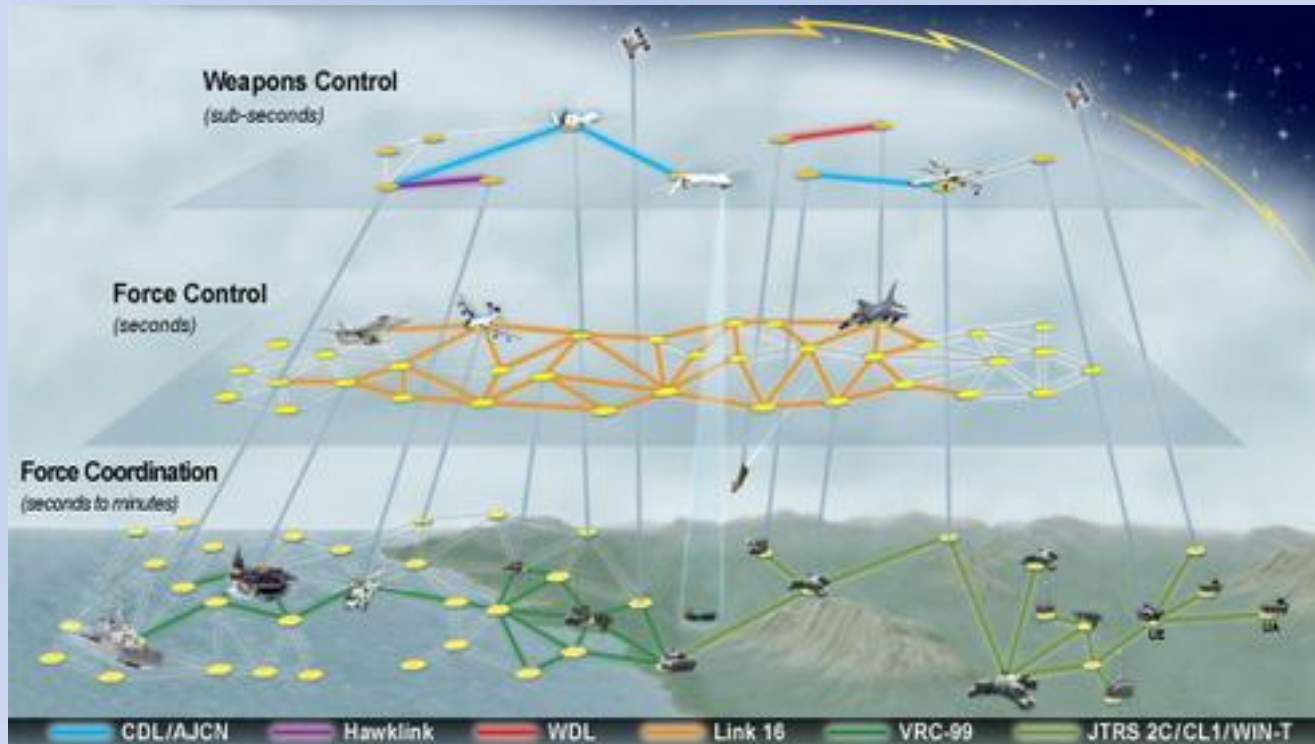


- Multi level information system
- Multi domain information system

Introduction



Global Information Grid

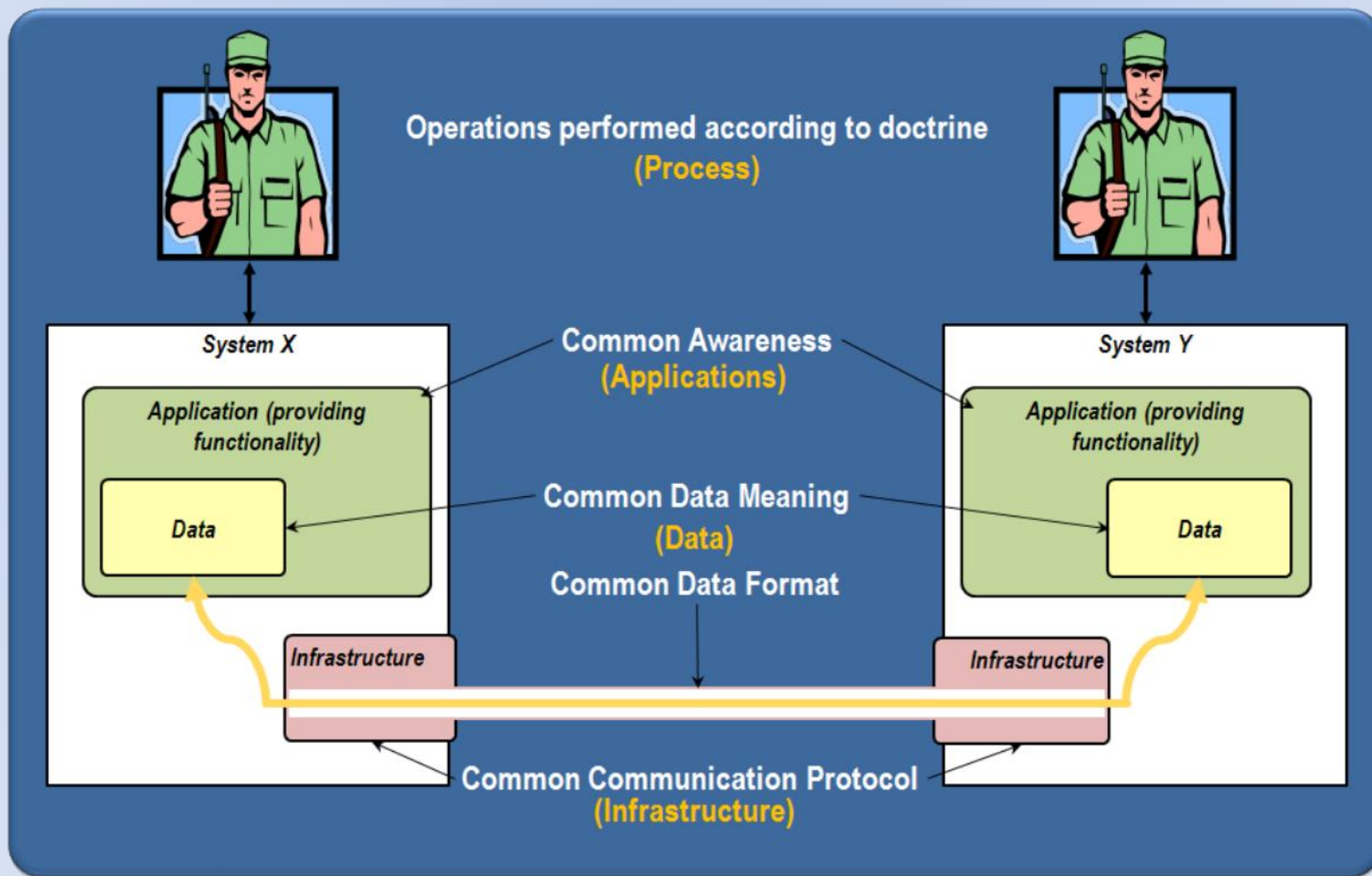


” The Global Information Grid (GIG) must be designed and optimized to support warfighting functions of advantaged and disadvantaged users

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Introduction



Waveform diversity



TETRA: National Security Services
Kenwood: Government Departments
Vertex: Government departments

PUBLIC SAFETY



Proprietary Military Protocol

MILITARY

Waveform Interoperability

Military and government interoperability to commercial networks shall be a valuable resource to handle broadband information exchange requirements

Wifi (IEEE 802.11)	: 2.4 GHz
WiMAX (IEEE 802.16)	: typical 5 GHz
GPRS/EDGE/HSDPA/LTE	: 800 – 1.2 GHz
L-band Satcom	: 1-2 GHz
S-band Satcom	: 2-4 GHz

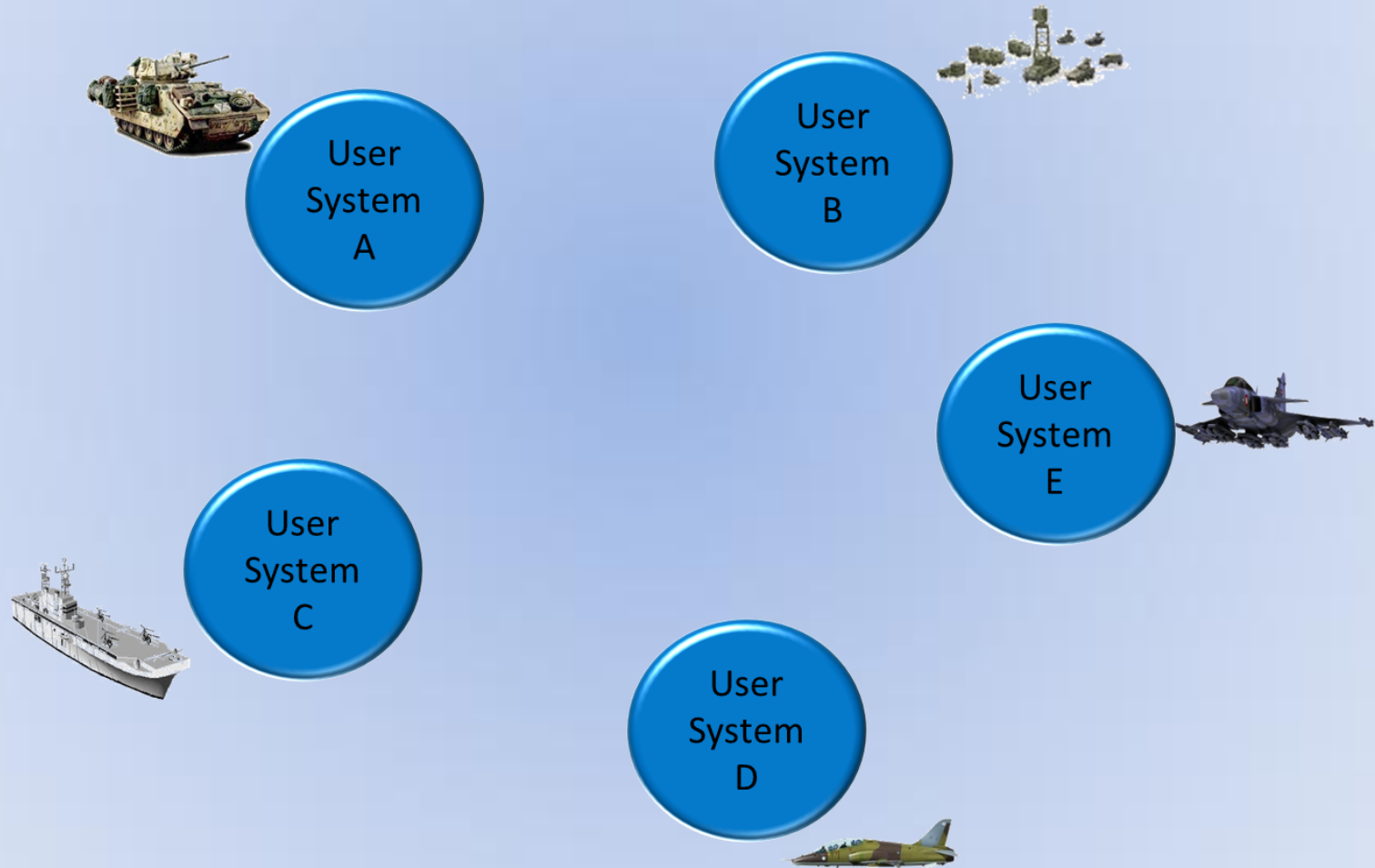
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Gateway Features

- Accepts information from different infrastructure types.
- Information adaptation between systems.
- Resolve dissimilar implementations.
- Provide global information routing capabilities.
- Provide information filtering capabilities.
- Could provide global information statistics for network management

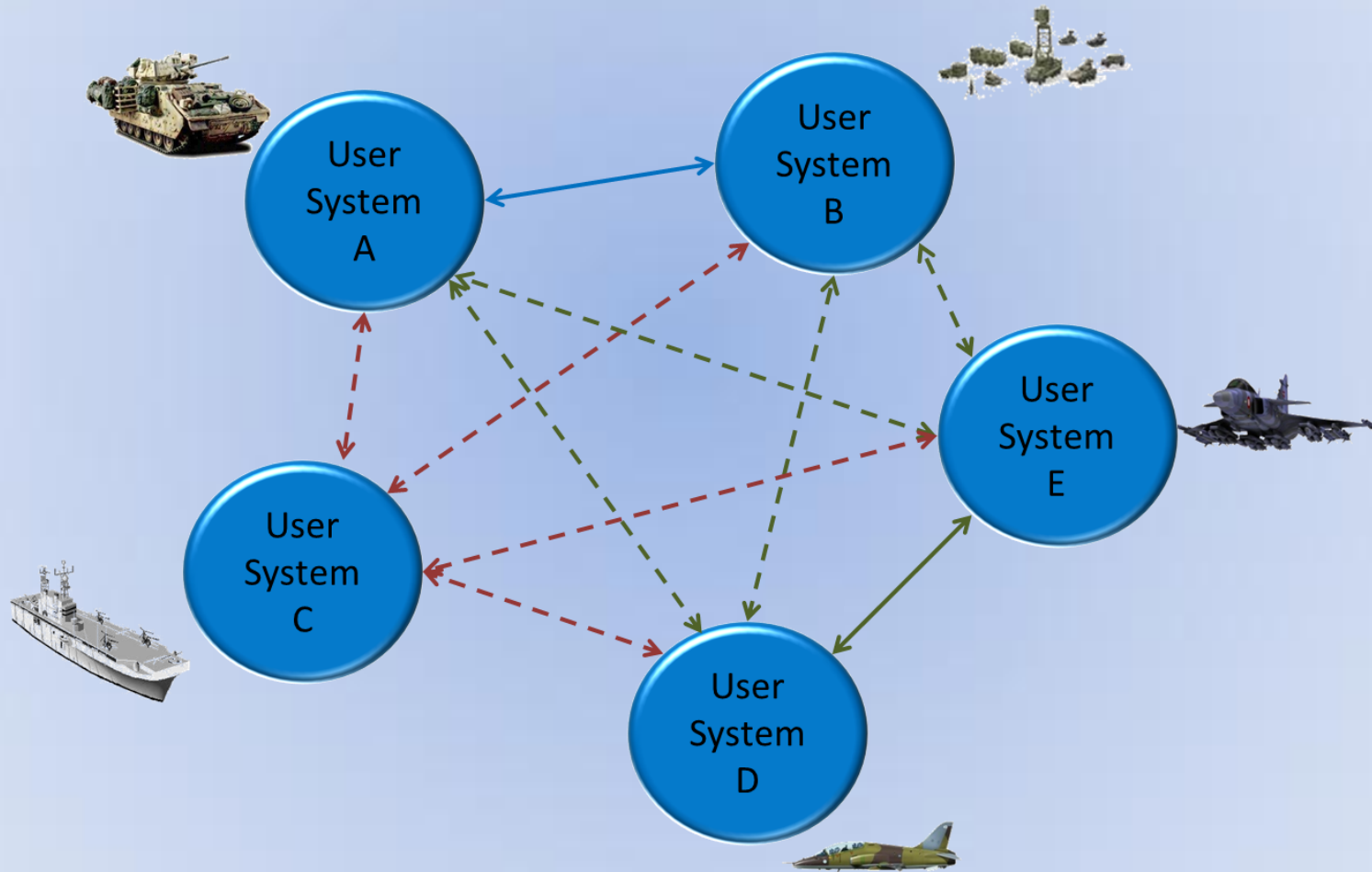
Gateway Features






Interoperability Status (Silo Development)

		Send Data				
						
Receive Data		YES	NO	NO	NO	NO
		NO	YES	NO	NO	NO
		NO	NO	YES	NO	NO
		NO	NO	NO	YES	NO
		NO	NO	NO	NO	YES

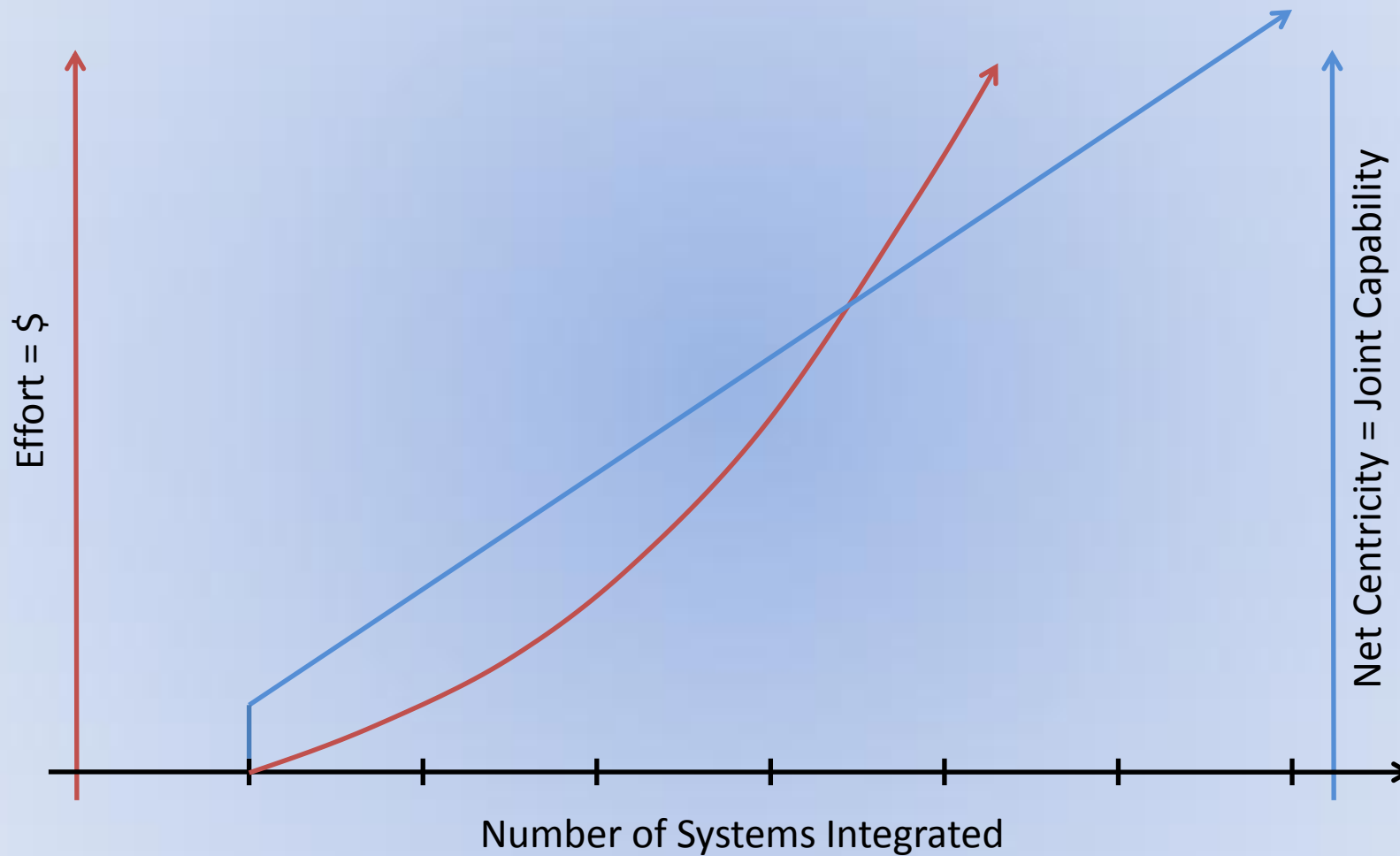
Traditional Interoperability Approach



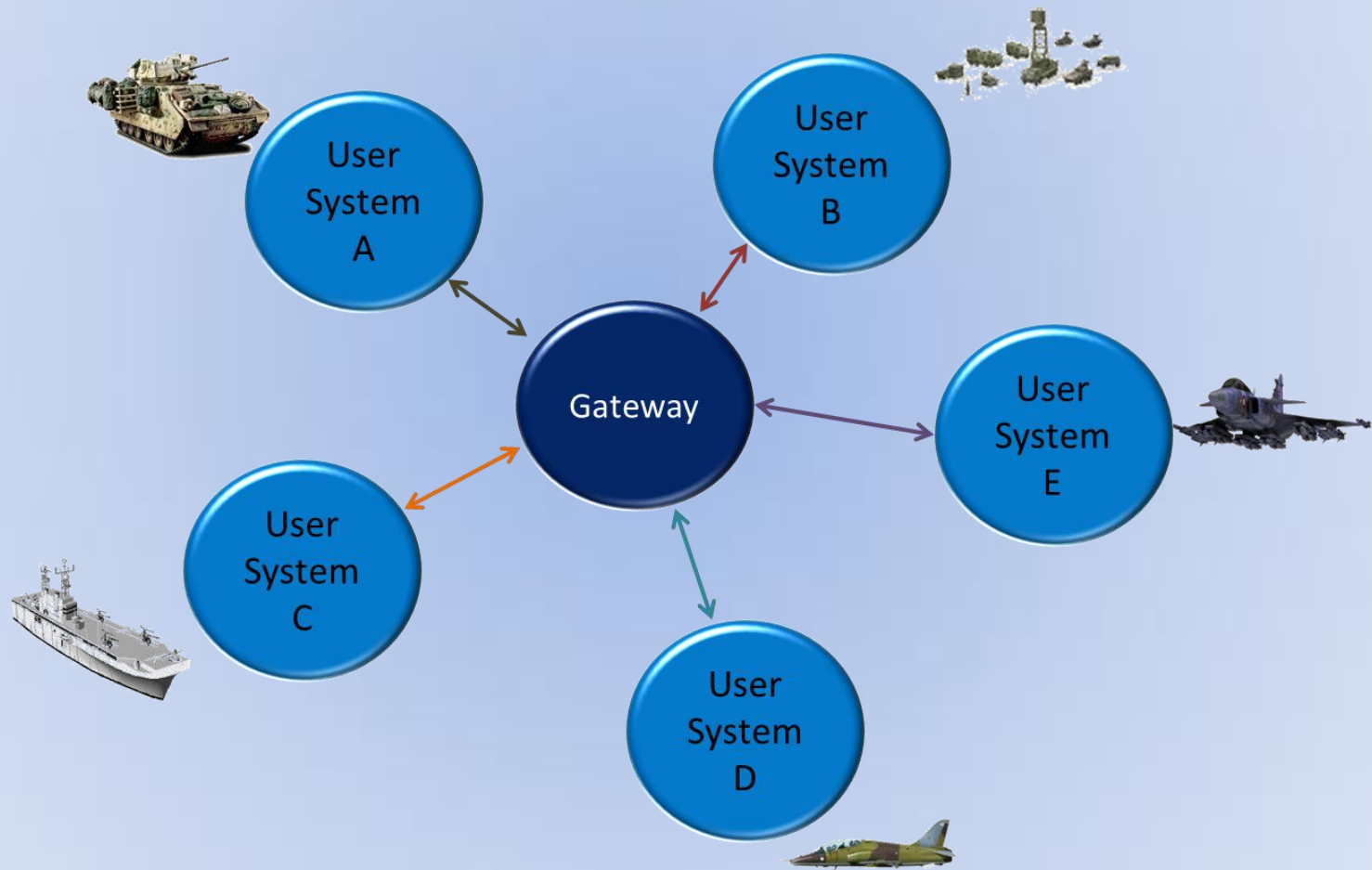
Interoperability Status (Traditional Approach)

		Send Data				
						
Receive Data		YES	YES	NO	NO	NO
		YES	YES	NO	NO	NO
		NO	NO	YES	NO	NO
		NO	NO	NO	YES	Yes
		NO	NO	NO	YES	YES

Effort vs. Capability











Gateway Approach



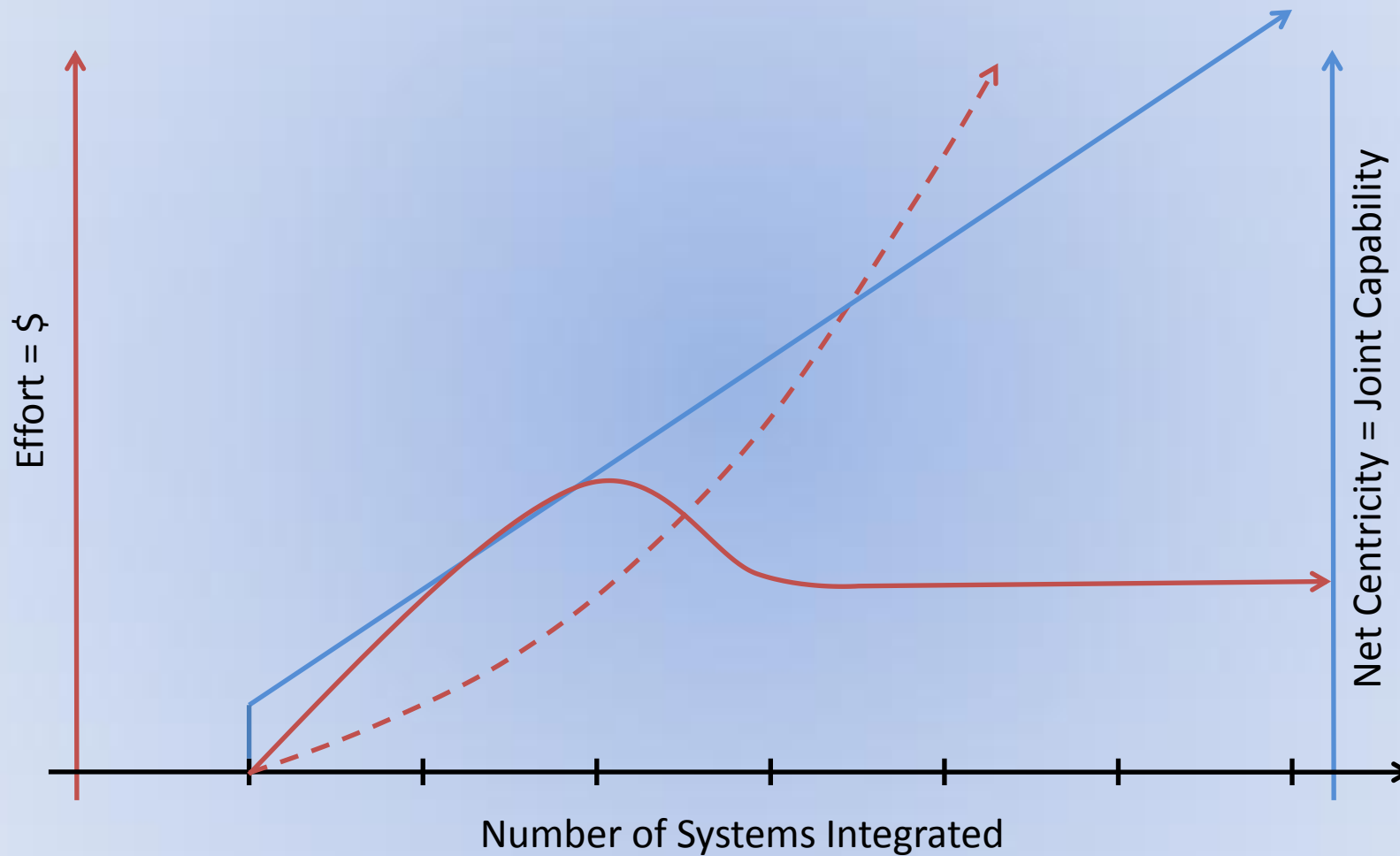
Gateway Integration

		Send Data					
					Gateway		
Receive Data		YES	NO	NO	Integrated	NO	NO
		NO	YES	NO	Integrated	NO	NO
		NO	NO	YES	Integrated	NO	NO
	Gateway	Integrated	Integrated	Integrated		Not Integrated	Integrated
		NO	NO	NO	Not Integrated	YES	NO
		NO	NO	NO	Integrated	NO	YES

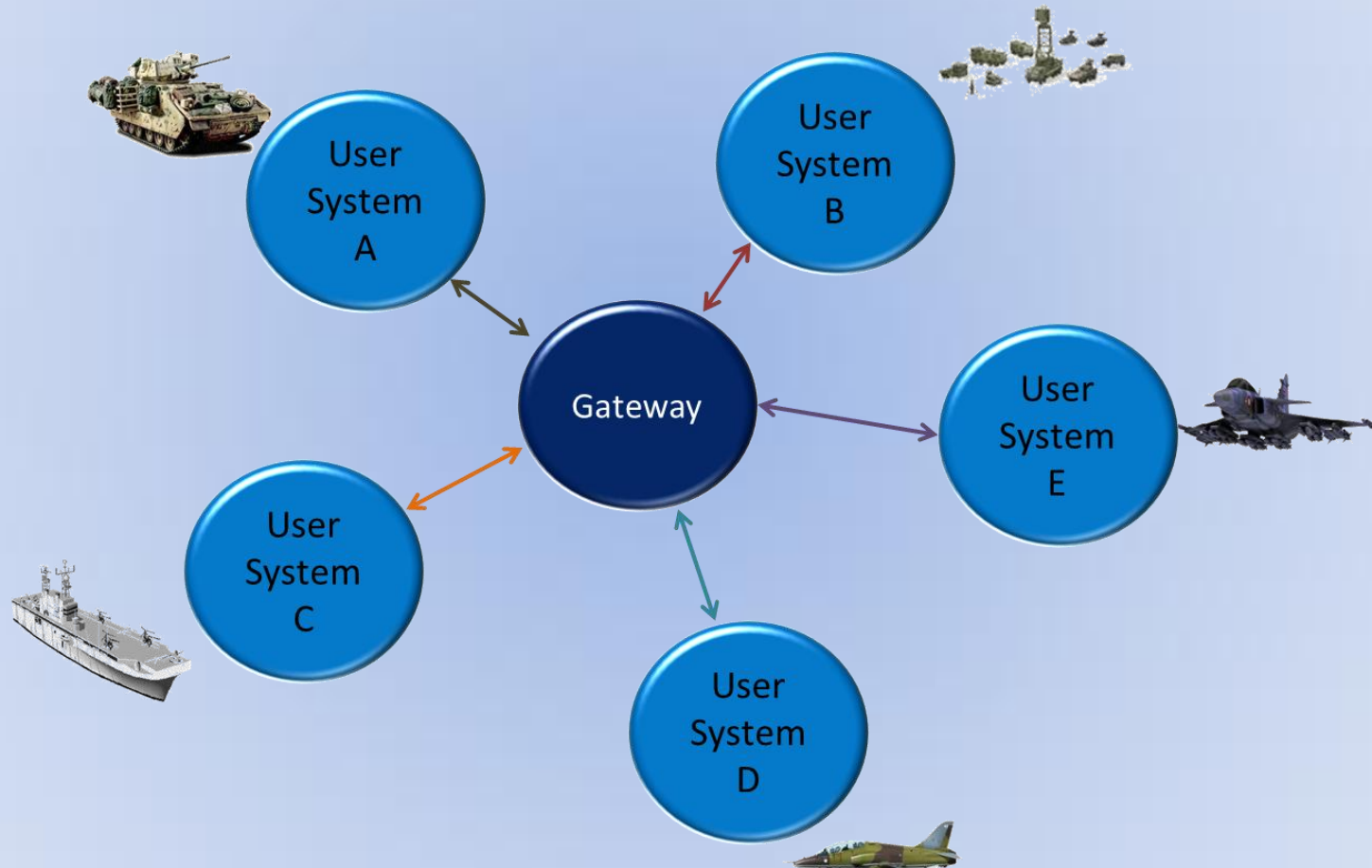
Interoperability Status (Gateway Approach)

		Send Data					
					Gateway		
Receive Data		YES	YES	YES	Integrated	NO	YES
		YES	YES	YES	Integrated	NO	YES
		YES	YES	YES	Integrated	NO	YES
	Gateway	Integrated	Integrated	Integrated	YES	Not Integrated	Integrated
		NO	NO	NO	Not Integrated	YES	YES
		YES	YES	YES	Integrated	YES	YES

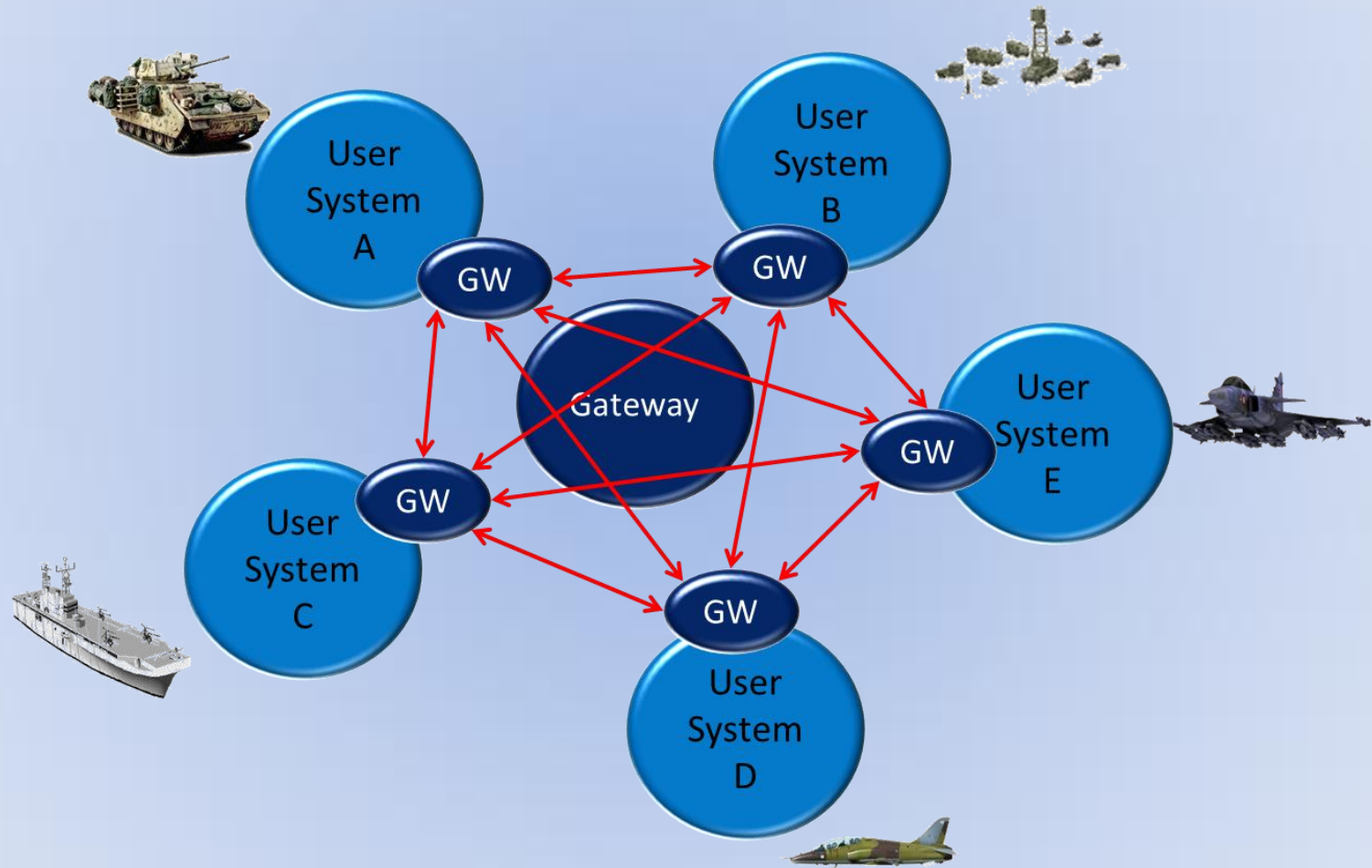
Effort vs. Capability



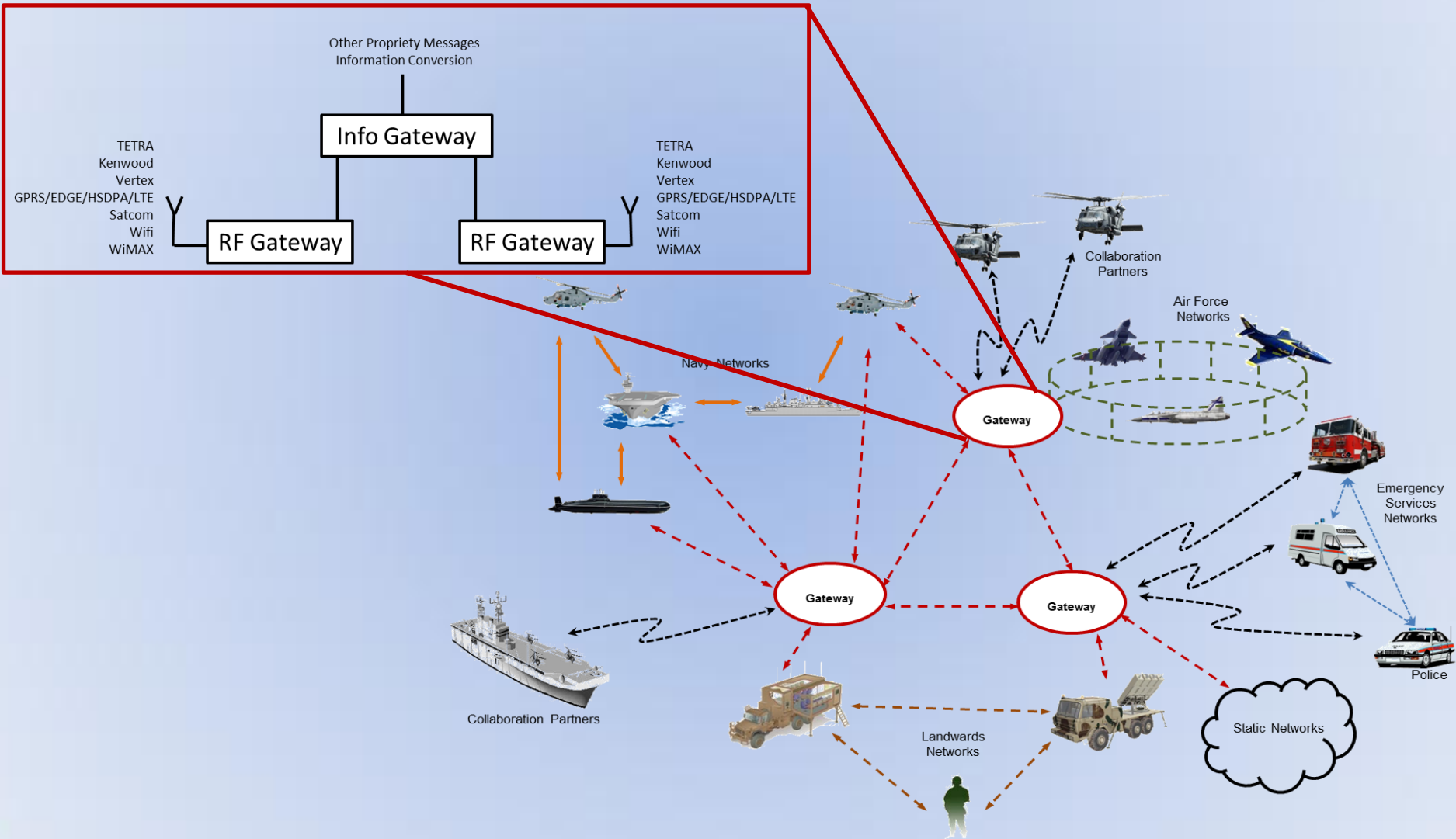
How do we transform to a Mesh network?



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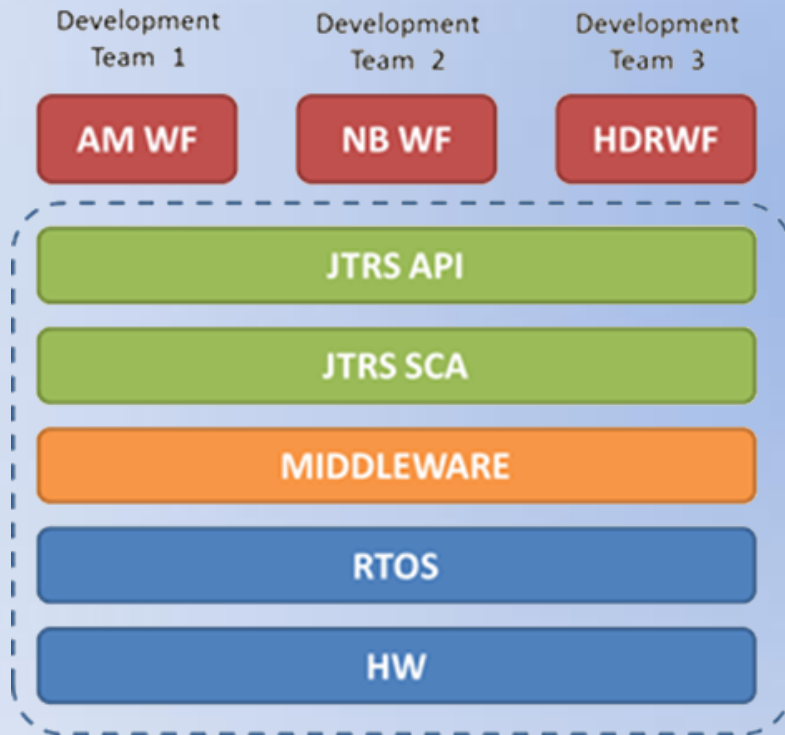


Future Network Topology



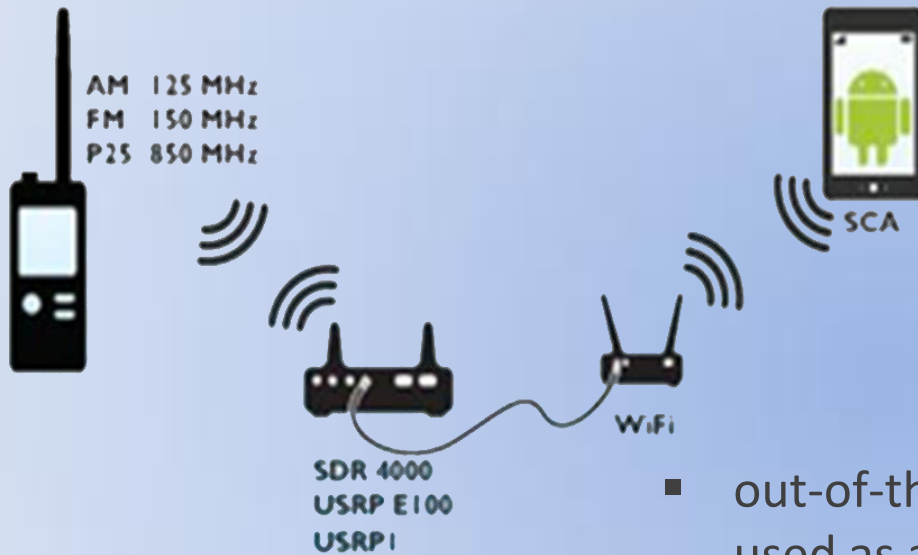
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- JTRS API's enables highly portable communication WF
- Team based development
- No need to share the SCA stack
- Reducing time to deploy

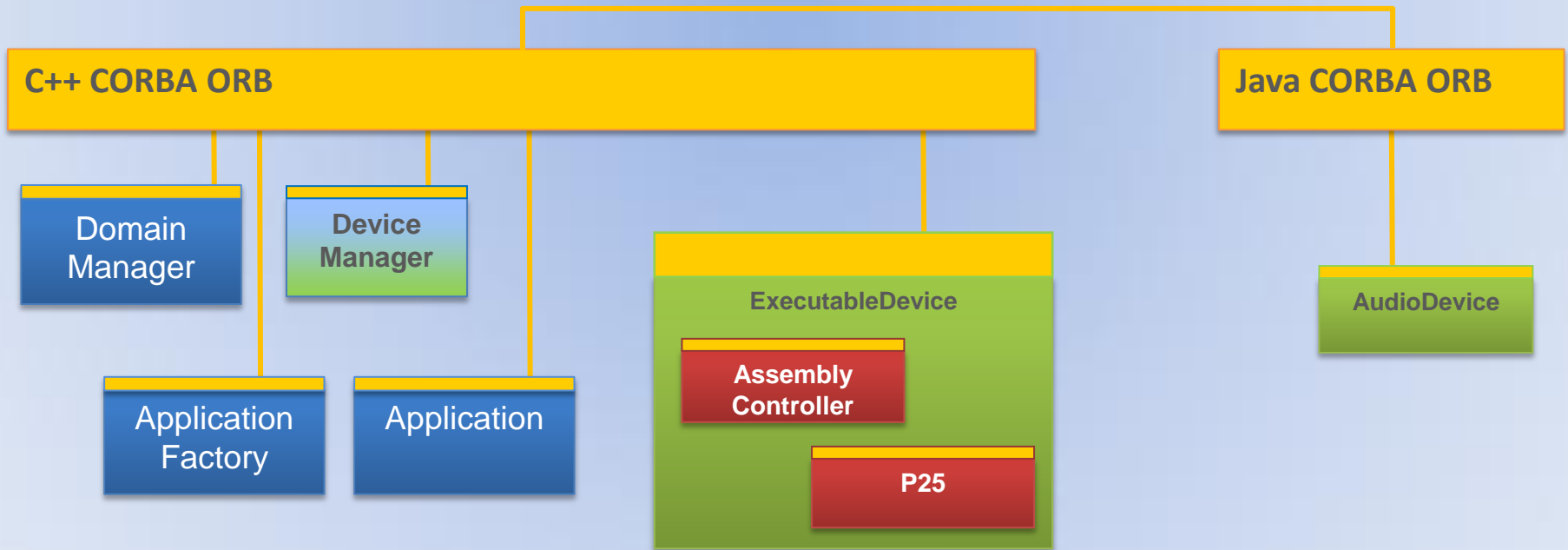
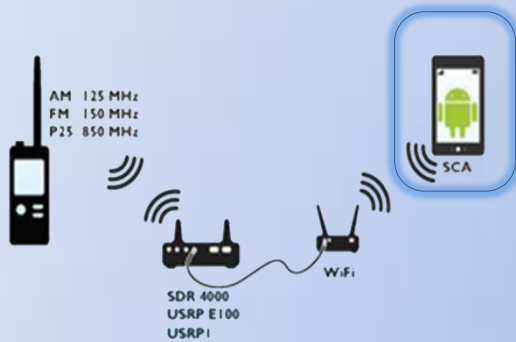
Success history



- out-of-the-box Android smartphone can be used as an information gateway
- JTRS SCA based public safety waveforms: AM, FM and APCO-P25.
- Prove successful communications between the commercial handset and the smartphone

ANDROID SCA GATEWAY IMPLEMENTATION

Success history



Future SCA Gateway



- Receive in either one of the waveforms and select another one for transmission
- Suitability and the success of the SCA standard
- Pulls down the myth of CORBA performance

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Conclusions

- Interoperability problem
- Information Gateway as solution
- Usage of Standards (SCA) and COTS to streamline the Waveform development
- Success history with the Android Gateway

Conclusions

Standards don't always
mean interoperability



Conclusions



BUFF



KINGCOBRA

BEST OF BOTH WORLDS!