Emerging Technologies of Network Centric Systems and Applications

P. Fathima Rifaa and Reem Bin Tamim

Abstract--- *Net-Centric Environment is a framework for full human and technical Connectivity and interoperability that allows all users and partners to Share the information they need, when they need it, in a form they can understand and act on with confidence, and protects information from those who should not have it. Net-Centric can be viewed as an interconnection of a system of computers, communications, data, applications, security, people, training, and other support structures that provide local and global information processing and service needs.*

Network Centric Systems (NCS) develops and produces mission solutions for networking, command and control, battle space awareness, and air traffic management. Programs include civilian applications, command and control systems, integrated communications systems, and netted sensor systems. NCS continues to remain focused on the needs of today's war-fighters by providing mission systems integration for the Homeland Security and Intelligence, Surveillance and Reconnaissance missions.

Keywords--- *Network Centric Systems, Combat and Sensing Systems, Net Enabled Emergency Response*

I. INTRODUCTION

THE Net-Centric Environment is a framework for full human and technical Connectivity and interoperability that allows all users and partners to Share the information they need, when they need it, in a form they can understand and act on with confidence, and protects information from those who should not have it. Net-Centric can be viewed as an interconnection of a system of computers, communications, data, applications, security, people, training, and other support structures that provide local and global information processing and service needs.

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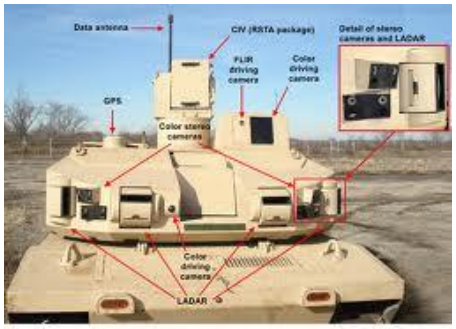
II. THE MAJOR APPLICATION AREAS OF NETWORK CENTRIC SYSTEMS SECURITY AND TRANSPORTATION SYSTEMS

Security and Transportation Systems is a leader in delivering transformational command and control capabilities through its position as a Mission Systems Integrator.

Security and Transportation Systems delivers best-in-class capabilities in the areas of Air Traffic Management, Comprehensive Systems Solutions, Integrated Command Systems, Security Solutions and Strategic Transportation Systems.

- *Combat and Sensing Systems*



Black Knight's sensor systems

Combat and Sensing Systems (CSS) is the Applications for integrated and net-enabled ground combat surveillance, target engagement, battlefield information and force protection solutions. With a broad international and domestic customer base, CSS provides a common view of the battlefield and decisive, unmatched advantages for the war-fighter.

State-of-the-art target acquisition, weapons fire control, reconnaissance and surveillance thermal imaging systems, which enable the war-fighter to "own the night" Cost-effective, world-leading electro-optical and infrared

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technologies that can be commonly applied for a wide range of combat sight and thermal imager requirements

RF technology-based systems for vehicle and force protection combat ID, threat detection and high band communications.

Networked sensing and battlefield information systems for improved lethality and reduced time to target.

Virtual immersive tactical training and mission support solutions

- *Integrated Communication Systems (ICS)*

Integrated Communication Systems (ICS) is a leading provider of military communications solutions for Defense transformation and cutting edge integrated network solutions span the radio and light spectrum, enabling knowledge dominance required to control the battlefield and win.

- *AML-Systems*

(Airborne Multi-Intelligence Laboratory)

One of the applications of Net centric is AML (Airborne Multi-Intelligence Laboratory).

The AML was unique in that it was able to collect radio signals and then immediately confirm its targets with an advanced High Definition Electro-Optical / Infrared sensor from FLIR systems.

AML provides a readily reconfigurable platform to rapidly test, explore, identify and validate how multiple sensors and onboard systems interact, and how to best apply them for use in military and non-military markets.

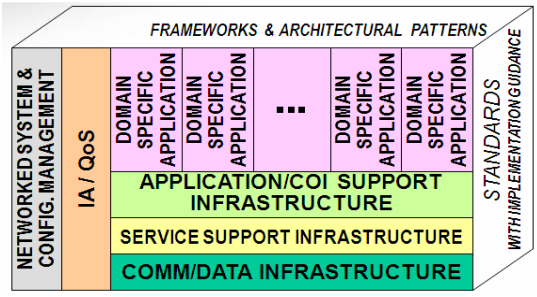
AML flies support missions for the Army's Intelligence and Information Warfare Directorate (I2WD), and is one of several sensors collecting information to support friendly forces. In a matter of seconds, the AML acquires high quality intelligence with its onboard sensors, relays that intelligence to its ground station, which then transmits the data immediately to the Army's Distributed Common Ground System for further analysis and distributes to the Army's battle command system.

- *Flying ISR Test Bed Systems*

Predicated on expediting the fielding of ISR technologies, this highly adaptable system can be used to validate how sensors and processors interact, and how to best apply them for use in military and non-military markets. A re-configured business jet, the AML is equipped with a full suite of collection systems as well as wideband and narrowband data-links. Built-in on-board processing and analysis provide rapid data correlation. An open software and hardware architecture permits rapid, affordable technology insertion. Ample rack space and large, flexible, payload bays enable different equipment, sensors, processors, and communications equipment to be rapidly exchanged.

III. What do Net Centric Systems Support?

Net Centric systems supports for assessing compliance with specific architecture guidelines & ref models, selection of appropriate architectures, comparison between similar entities, Conduct of SCOPE analyses.



IV. Applications For Defense

1. Network Centric Warfare Communications
2. Vehicle Networks
3. System Monitoring
4. Video
5. Messaging
6. Chemical / Biological Sensor Equipment
7. Portable Networks -Transit Cases
8. Weapons Systems
9. GPS Tracking
10. Voice

V. Who is using Net Centric Systems and Applications?

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Network Centric Operations Industry Consortium (NCOIC), Net Enabled Emergency Response (NEER) IPT Sense & Respond Logistics (S&RL) IPT

- *Who are the Stalk Holders of Net Centric Systems?*
  - Members of Net centric systems are Global Leaders like:
  - Academic institutions,
  - Air Traffic Management providers,
  - Service providers,
  - Consulting Engineering,
  - Logistics,
  - Defense-Suppliers and All military services,

  - Multinational, Government agencies,
  - Human service agencies,
  - Integrators, Commercial systems,
  - Defense systems,
  - IT firms, Communications,
  - Data management,
  - Human-Machine interface,
  - Information-Assurance.

VI. Conclusion

The Emerging Network Centric Systems Applications enhances the capabilities of Ability to create/produce information; store, share, and exchange information and data; Ability to process data and information. to employ geo-spatial information; Ability to employ information; Ability to find and consume information; Ability to provide user access; Ability to access information; Ability to validate/assure; Ability to install/deploy; Ability to operate/manoeuvre; Ability to maintain/survive and Ability to provide Network services.

Today we stand at the threshold to a network-enabled future. To maximize the possibilities of networked coordinated collaboration and action, a common approach, used by all, is essential. Industry, through its unique ability to rapidly define, design, and test field cutting-edge technology, is the best suited to develop a technical infrastructure that will enable systems and platforms to operate as a global network, and to deploy this capability to all end users.

I hope with the close collaboration with government and industry players, these resources are for scientists, engineers and software developers working on the transformation to network centric operations. We have to adopt common open standards, share best practices and processes and encourage collaboration, enabling the industry to develop compatible products that will help end-users achieve greater efficiency.

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