



Fortis Adnexus “NexNet”

Concept Exploration into Future
Planetary Command and Control



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Purpose

Introduce a New Concept in Command and Control Delivery

*“Give me a way to coordinate all the
Instruments of National, International,
Non-Government, and Coalition power
In a Single Planetary Command System”*

**FORTIS ADNEXUS: Strong, Powerful, and Robust
Connection “NexNet”**

Overview

- Introduction
- “Poly-Genetic” Operations-A Brief Review
- Conceptual C2 Environment of Tomorrow
- NexNet Concept and Design
- NexNet Environmental Structure
- Capabilities and Applications
- Command and Control Above the Military Level
- Summary and Capture

Introduction

- Global Security Environmental Shift
 - ◆ From “Force-on-Force” to a “Web of Non-State Networks of Terrorists and Fundamentalist Militants”
 - ◆ Complex Aftermath of Regional Crises

Mr. Henry told the contractors that the Pentagon was redefining the strategic threats facing the United States. No longer are rival nations the primary threat – a type of warfare that calls for naval destroyers and fighter jets. Today the country is facing international networks of terrorists, and the weapons needed are often more ~~technologically advanced, flexible and innovative.~~

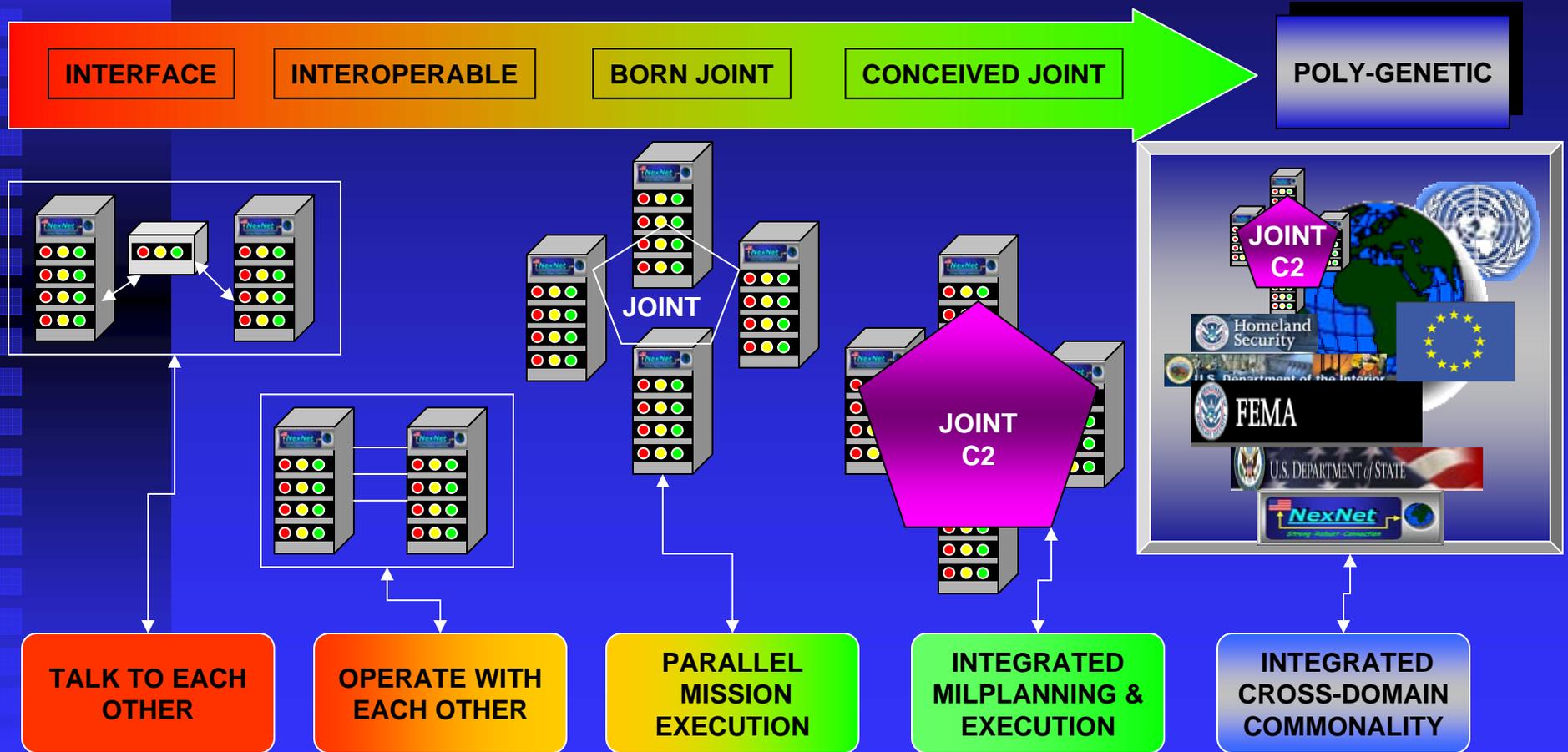
Mr. Ryan Henry, Deputy Undersecretary of Defense for Policy

Introduction (Continued)

- Response to Natural Disasters and Relief Operations
 - ◆ Hurricanes, Tsunami, and Earthquakes
 - ◆ Demanding Huge Responses on Planetary Scale
 - ◆ Prompts Understanding of C2 on a Much Broader Scale
- Driving Change in System Acquisition Euphemisms

Interface > Interoperable > Born Joint > Conceived Joint > To a new construct... "Poly-Genetic"

"Poly-Genetic" Concept



EVOLUTION OF COMMAND AND CONTROL SYSTEM ACQUISITION CONCEPT

“Poly-Genetic” Concept



- Global Fabric of Power and Society
- Broad National and International contributions to security and other operations
- Interdependent planetary relationships
- Linear application of power sources versus power integration in advance of crises
- Katrina Response C2

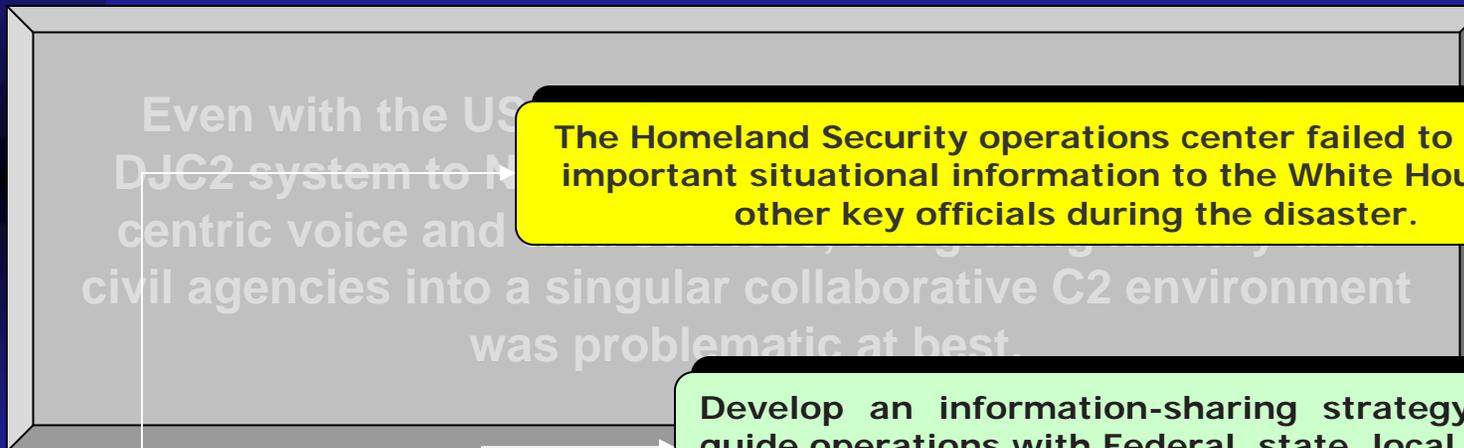
WHAT HAPPENED?

“Poly-Genetic” Concept



Even with the USJFCOM deployment of the prototype DJC2 system to New Orleans, with its excellent military-centric voice and data services, integrating military and civil agencies into a singular collaborative C2 environment was problematic at best.

“Poly-Genetic” Concept



The Homeland Security operations center failed to provide important situational information to the White House and other key officials during the disaster.

Develop an information-sharing strategy to guide operations with Federal, state, local and coalition partners. (QDR Extract)

GOVERNMENT RESPONSE

"We need a national [communications] system that ensures operability, survivability and interoperability,"
(Frances Townsend, Homeland Security Advisor)

The Conceptual C2 Environment of Tomorrow

- Future “operations” no longer just “joint”...but a coherent application of multiple sources of power
- Requires extensive real-time, effective collaboration...essential for success
- Requires capability & understanding of conducting operations across governments, non-government organizations and coalitions
- Network-Centric solution on broad collaborative scale

The Conceptual C2 Environment of Tomorrow (Continued)

- All sources of power and support will access a planetary C2 network and tool set capable of planning and executing operations on a broad scale
- Fully dynamic and flexible C2 environment that transcends agency boundaries
- C2 that goes beyond “conceived joint” to one that is “poly-genetic” in design, employment, and mandate
- Generate the mandate at the highest levels of governments...that should say...

The Conceptual C2 Environment of Tomorrow (Continued)

“Give me a way to coordinate all the Instruments of National, International, Non-Government, and Coalition power In a Single Planetary Command System”

Let's look at a solution!



Concept & Design

- A disruptive innovation in thought and function
- Links participants via web-enabled access to the NexNet core environment
 - ◆ Gateway to legacy C2 systems
 - ◆ Shared data bases
 - ◆ Centrally managed common collaboration capability
-  Shares concept of a “Service-Oriented Architecture” (SOA)



Concept & Design (Cont)

- Provides a single network gateway for all participants
 - ◆ Manages security level access
 - ◆ Runs in “multi-level” security protocol
 - ◆ Single point of entry into NexNet
- Provides redundant powerful set of applications for planning, communication, and execution of complex “operations” for:



STATE AND LOCAL
GOVERNMENTS
AND AGENCIES

FEDERAL AND
NATIONAL
GOVERNMENT

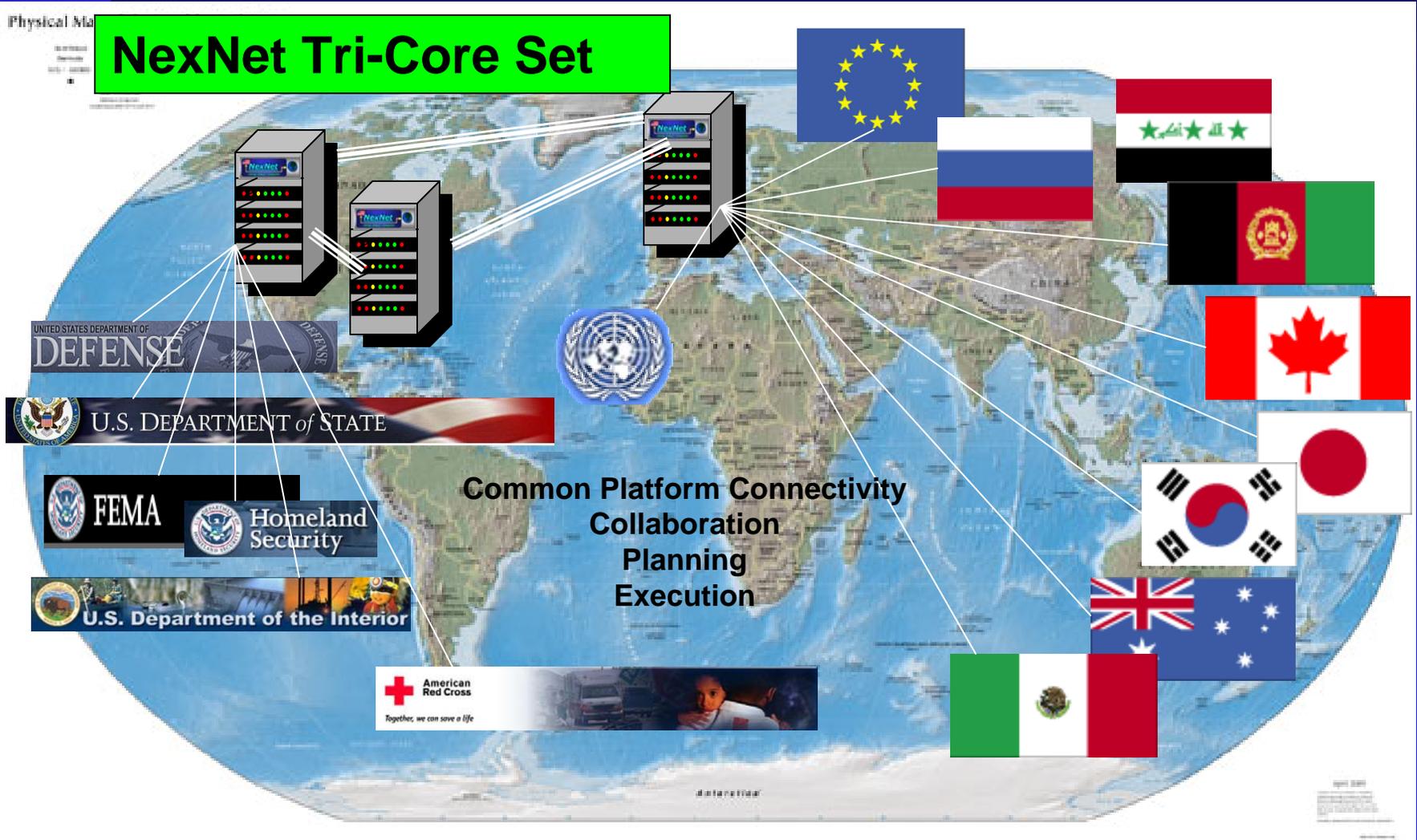
INTERNATIONAL
AGENCIES

NON-
GOVERNMENT
ORGANIZATIONS

NexNet- Operational View



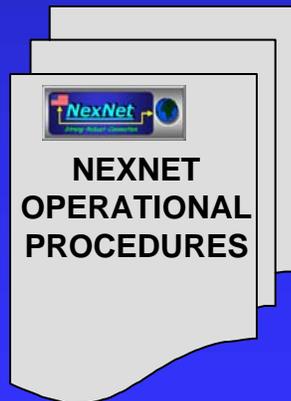
NexNet Tri-Core Set





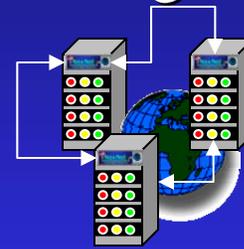
Environment Structure

- Three integrated components:
 - ◆ NexNet Tri-Core main processors
 - ◆ Participants
 - ◆ Procedures



NexNet Tri-Core Processor Set

- Backbone of connectivity and application processing
- Each component identical maintaining constant interface with the other two
 - ◆ One “Active”
 - ◆ One “Hot-Parallel”
 - ◆ One in “Rest” but maintaining data base images and applications mapping
- Geographically separated for passive kinetic defense
- Operates in a multi-level security field (Access to applications, data, communications, and displays commensurate with security level of the user)



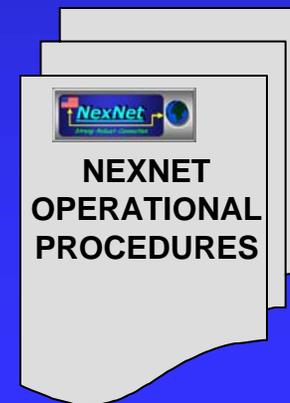
NexNet Users

- Requires the right people and agencies to be active in NexNet for it to function
- Essential for standing units, agencies, and organizations plan together in advance of crises to effect coordinated execution
- People > Energy in form of information, intelligence, commands, instructions, and collaboration > "Self-Organizing" power



NexNet Procedures

- Vast spectrum of users requires established operating procedures>Clear and Concise
- Participants in an “Operation” will be directed to NexNet by the Operational Authority or Government
- Protocols established by the NexNet controlling authority will guide all users for integrating into:
 - ◆ Planning
 - ◆ Collaboration/Coordination
 - ◆ Execution via NexNet



NexNet Functional Capabilities and Applications

- NexNet has three functional capability groups

Collaboration Group

**Operational Planning
& Execution Group**

**Situation Awareness
Group**

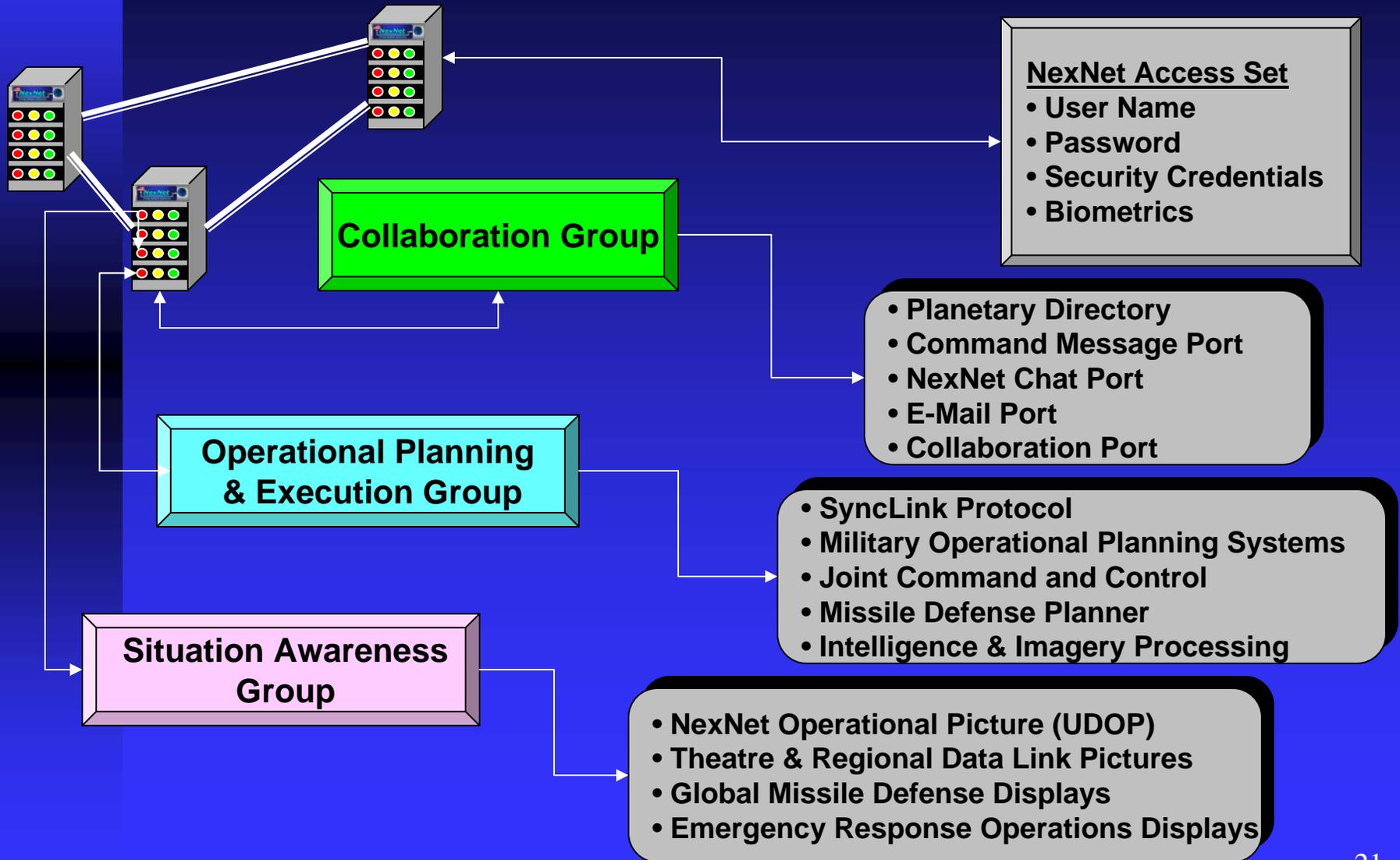
- Applications and tools within each group are accessed via the gateway using NexNet Access Set (NAS) credentials

NexNet Access Set

- User Name
- Password
- Security Credentials
- Biometrics

FUNCTIONAL VIEW 

NexNet Functional View



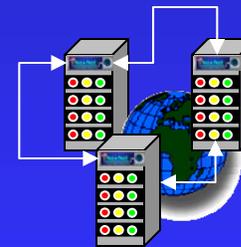
NexNet Collaboration Group



Collaboration Group

- Planetary Directory
- Command Message Port
- NexNet Chat Port
- E-Mail Port
- Collaboration Port

- Capability for military forces to effectively collaborate with civilian counterparts
- Provides set of common collaboration tools for all users
- Tools run on the Tri-Core
- Provides real link between:



MILITARY FORCES

STATE AND LOCAL GOVERNMENTS AND AGENCIES

FEDERAL AND NATIONAL GOVERNMENT

INTERNATIONAL AGENCIES

NON-GOVERNMENT ORGANIZATIONS

Operational Planning & Execution Group



Operational Planning & Execution Group

- SyncLink Protocol
- Military Operational Planning Systems
- Joint Command and Control
- Missile Defense Planner
- Intelligence & Imagery Processing

- Direct access to current & future C2 planning and execution applications (TMBCS, GCCS-J, NECC, C2BMC, GCCS-I3)
- Employs *SyncLink* protocol to enable direct access
- NexNet Gateway controls security access to applications
- Provides warfighters and operators access to information and data bases made available via NexNet

Situation Awareness Group



**Situation Awareness
Group**

- NexNet Operational Picture (UDOP)
- Theatre & Regional Data Link Pictures
- Global Missile Defense Displays
- Emergency Response Operations Displays

- Provides a menu of operational and battlespace situation awareness tools to NexNet users
 - ◆ User-Defined Operational Picture (UDOP)
 - ◆ Theatre or regional combined data link displays
 - ◆ Global Missile Defense display
 - ◆ Tailorable Emergency Response Operations display for natural disaster response operations
- Employs *SyncLink* protocol to enable direct access
- Tools made available to users based on NAS credentials for security

Command and Control Above the Military Level

- C2 in the Network-Centric Age is transitioning beyond the military to incorporate a wide spectrum of organizations, agencies, coalitions, and enterprises
- Recognize the C2 “Gap”
- Acknowledge the essential need for executing C2 at a level above (but inclusive) of the military
- Bring about self-organizing application of power sources
- Mandate for the NexNet concept should originate at the National level
- Building a NexNet must transcend the traditional military acquisition process

Summary and Capture



POLY-GENETIC

FORTIS ADNEXUS:



- Planetary community increasingly more interconnected on every level of government, society, and commerce
- Responses to conflict and crises demand a coordinated application of power resources across organization, political, and agency boundaries...in a “Poly-Genetic” construct
- Provides the meaning of the need for a “Strong, Powerful, and Robust Connection”
- Portrays a C2 Environment that emerges from traditional C2 to a higher plain of thought
- This change in C2 direction is inevitable and clearly the call has been sounded

Thank you for your participation. Questions?

Disclaimer: The views in this presentation are strictly those of the author and do not represent the official position of the L-3 Communications-Titan Group, Inc., nor any agency or entity of the United States Government