Dynamic Tactical Communications Networks (DTCN) Enabling Capability Industry Day Opening Remarks

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What is an EC?

An Enabling Capability (EC) is/are:

- Technologies at a Technical Readiness Level (TRL) such that is has undergone analytical and experimental critical function and/or characteristic proof-of concept (TRL 3 or higher)
- Fills defined naval requirement and resource sponsor needs
- Can be matured to System prototyping demonstration in an operational environment (TRL 6-7)
- Is accepted for transitioned to a Program of Record (PoR) the Fleet/USMC using PoR Transition Funds

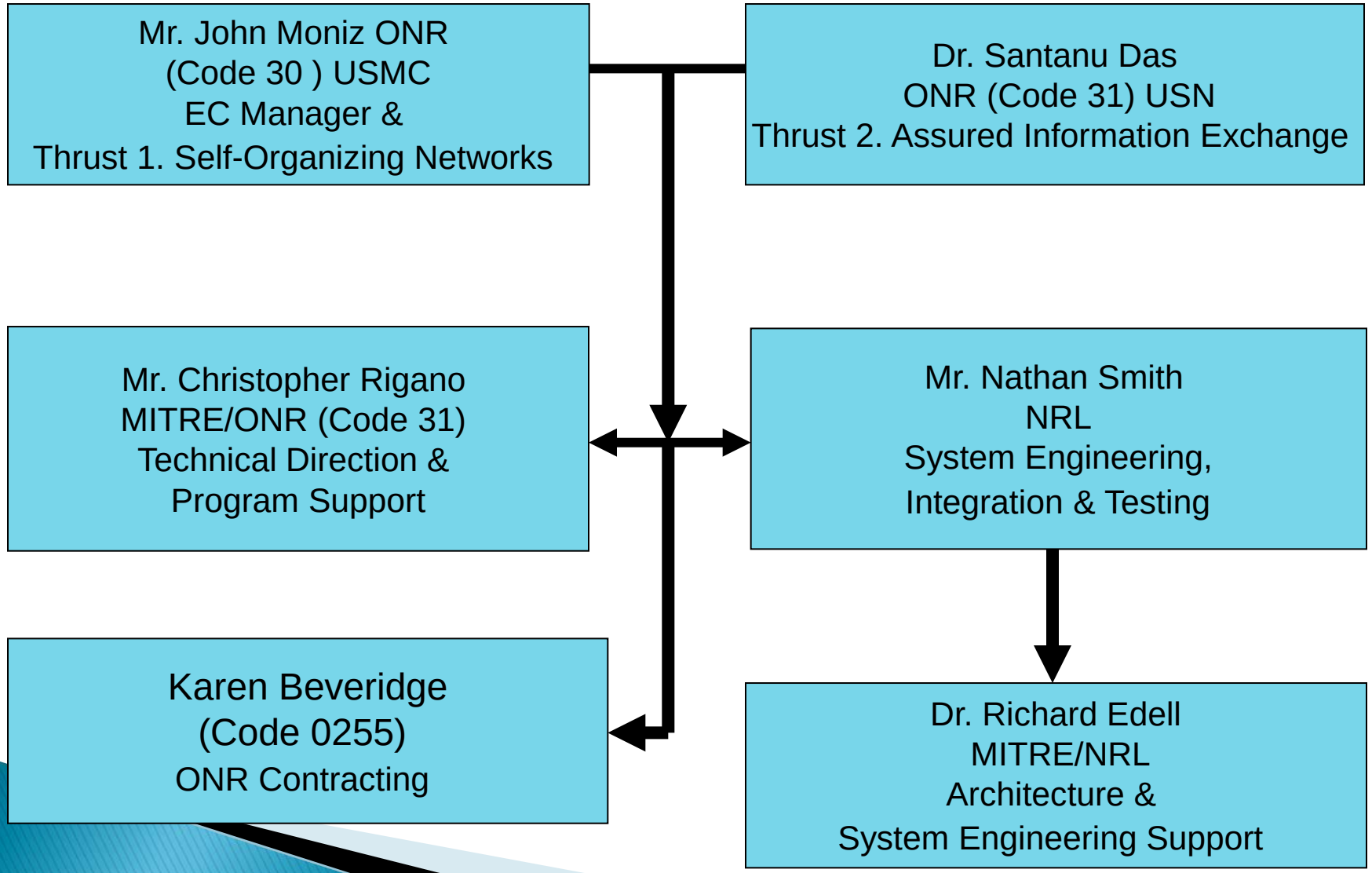
An EC transitions to a program of record through Technology Transfer Agreements (TTA). There are three Levels A, B, C:

- **Level C TTA** – Required in the first year of S&T development. It explains the intentions of the requirements/resource sponsor, science and technology sponsor and acquisition program sponsor (Signed 2009)

- **Level B TTA** – Required at the end of the first year of S&T execution. The Level B represents an increased commitment from the requirements/resource sponsor, science and technology sponsor to develop, deliver, and integrate the product into an acquisition program (In-Review Process for July, 2010)

- **Level A TTA** – Required by 01 July before the last year of S&T execution. It is the final and full commitment of the requirements/resource sponsor, science and technology sponsor, and acquisition program sponsor to develop, deliver and integrate an FNC Product into an acquisition program.
  (The final Step and Measure of Success!)

DTCN Team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What is DTCN?

- Naval Capability (FNC)
  - Office of Naval Research (ONR) EC program
  - Period of performance from FY09 to FY13
  - TTA with OPNAV N2/N6 Requirements Sponsors & PMW-160 Automated Digital Networking System (ADNS) PoR.
  - Systems Engineering, Integration and Test Supported by NRL

- EC Objective:
  - Provide the additional IP communications amongst tactical users within a limited area of responsibility (AOR) without critical dependencies upon resources from the wide area network (WAN) [i.e., outside of the AOR] for mission essential applications

Why do we need DTCN?

Our environment has unique challenges not found in the commercial environment

- Topology & bandwidth changes
- Desire to use same network for critical and non-critical applications
- Mix of radios as technologies and CONOPS evolve
- Multiple Security Domains (NIPR, SIPR, JWICS, etc)
- Continuity of Operations in LOS and BLOS within Areas of Operation and reachback mechanisms for improved C4ISR under near-peer threats

Key DTCN Focus

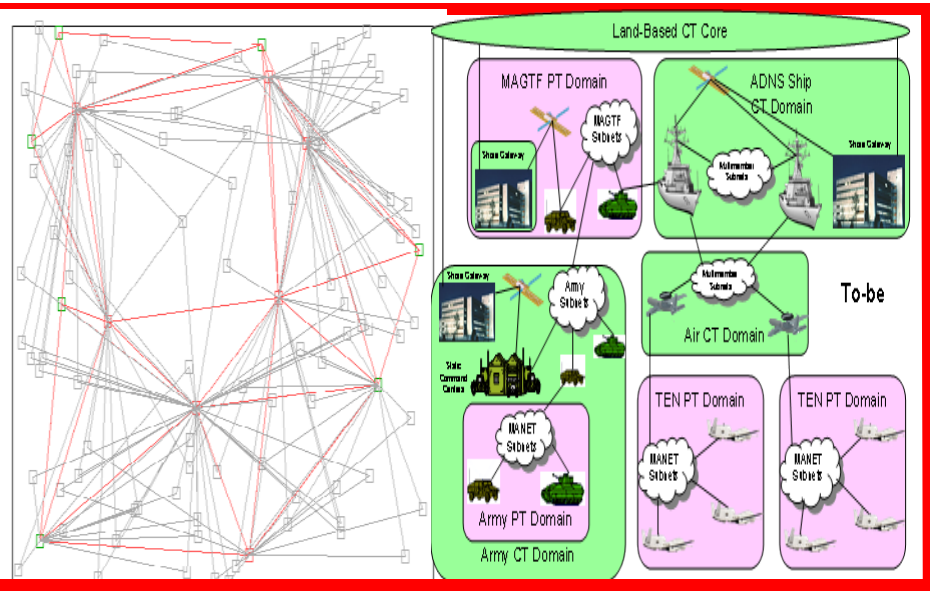
- Traffic Management
  - Aligning many mechanisms, across layers, to prioritize critical applications

    (vs. mainstream Internet "max-min fairness")
  - Functions in environment with dynamic bandwidth

    (vs. dependence upon Class-Based Weighted Fair Queuing (CBWFQ))

- First-class solutions
  - Routing protocols to react to environment changes

FNT-09-02 DTCN EC Summary



Objective:

Provide the IP routing infrastructure network communication amongst tactical users within a limited naval area of responsibility (AOR) without critical dependencies upon resources from the wide area network (WAN) [i.e., outside of the AOR] with minimum human intervention:

- **Thrust 1 Self-Organizing Networks (SON):** Traffic Management Policy *Management*; Dynamic Network Core; Radio-Router Interface; minimum of human intervention
- **Thrust 2 Assured Information Exchange (AIE):** Traffic Management Policy *Enforcement*; Asymmetric Networks; WAN Access via Tactical Core; In-Line Network Encryptor (INE) Support / Adaptation

Gaps/Requirements

- Range of WarfareC2 (ROWC2) Tactical IP
- Network Operation Without Space (NOWS) Tactical IP
- Expeditionary warfare - Networking-On-The-Move

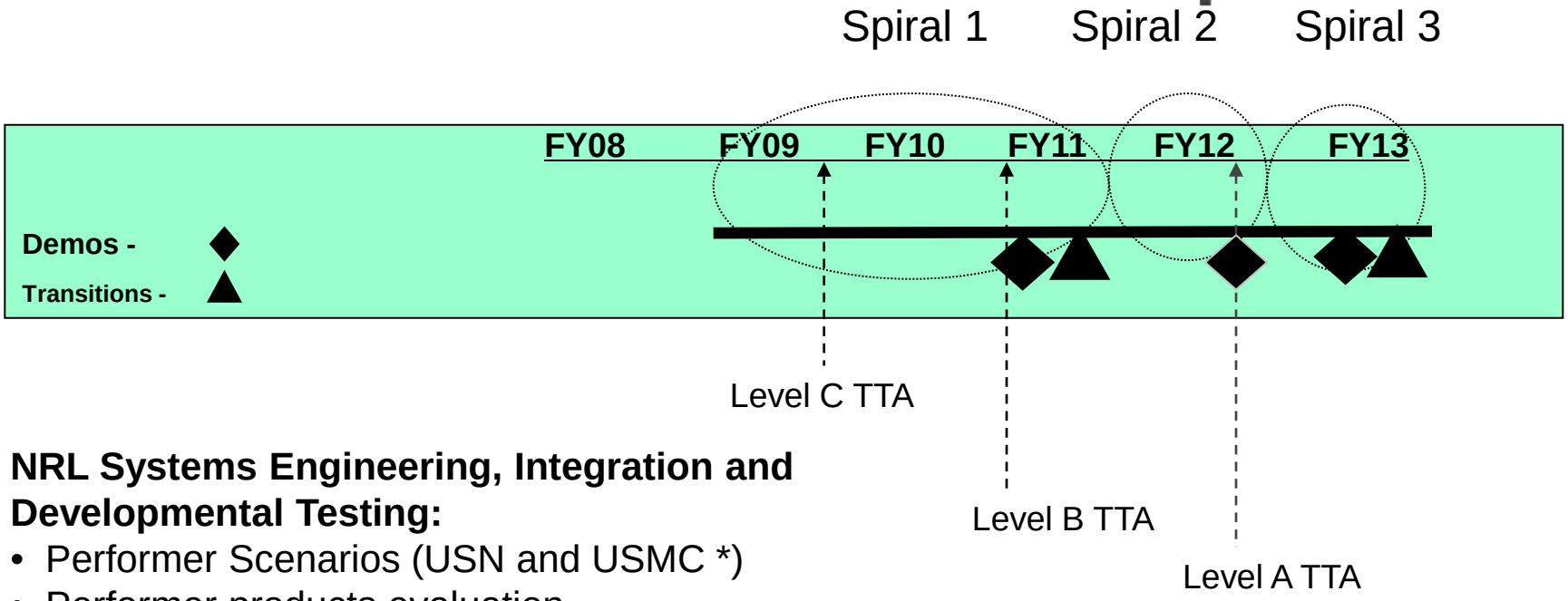
Warfighter Pay-off

- Adapt to available links of opportunity to assure priority movement of critical data within the Area of Responsibility (AOR) and through reachback gateway networks when available
- Ensure timely exchange of Critical C2 (Chat, Situation Awareness, email, files, Video, etc)
- Shortened kill chain through Ad-Hoc re-tasking and targeting of warriors, weapons and sensors
- Enabling tactical IP services proliferation through a reliable communications to support Naval Tactical Ops.

DTCN Spiral Overview

- Spiral 1 (FY10/11):
  - Basic Connectivity (single routing domain core)
  - Traffic Management (TM) Policy Enforcement
- Spiral 2 (FY12):
  - Enhanced Connectivity (multi routing domain core)
  - WAN Connectivity via Tactical Core
- Spiral 3 (FY13):
  - Asymmetric Networks (“Split-IP”)
  - TM Policy Management/Monitoring

Notional Schedule and Spirals



NRL Systems Engineering, Integration and Developmental Testing:

- Performer Scenarios (USN and USMC *)
- Performer products evaluation
- Performer product integration
- Performer and Resource sponsor accessible simulation and modeling
- Demo and Transitions coordination and execution

USMC has no current TTA.