



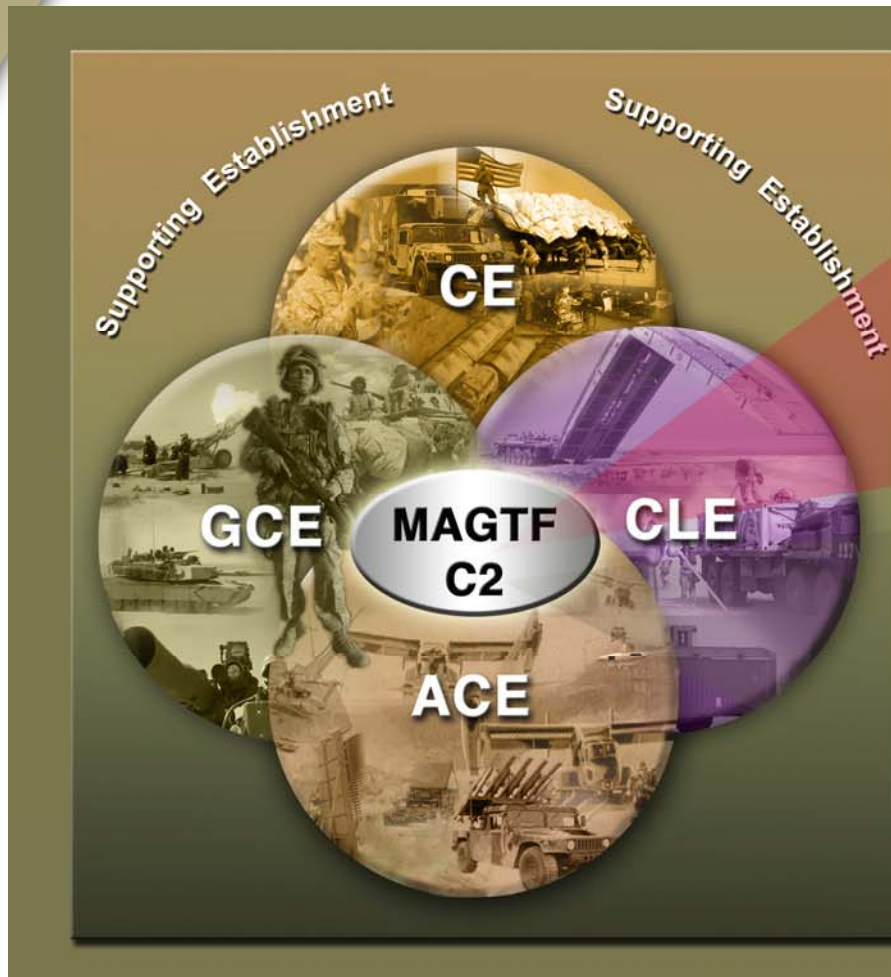
MAGTF C2 Overview

19 Oct 2005

**C2I Division
CDD, MCCDC**



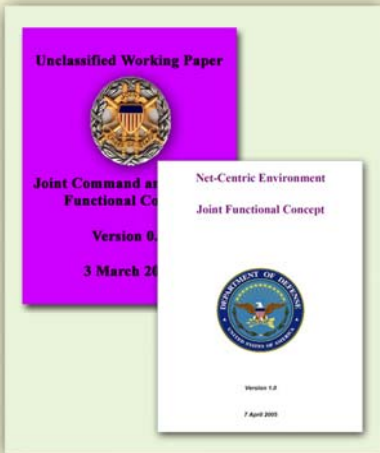
Marine Air-Ground Task Force Command & Control (MAGTF C2)



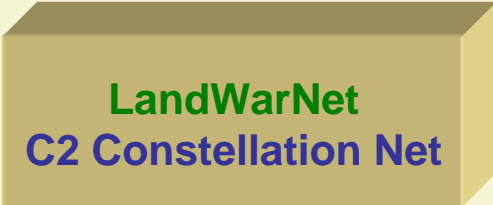


MAGTF C2 Strategy is tied to Joint, Naval & Service Concepts

JC2 & Net-Centric Functional Concepts



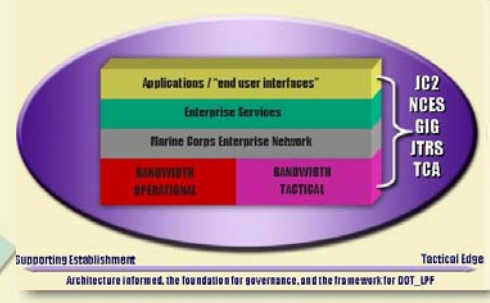
GIG CONOPS



FORCenet Concept



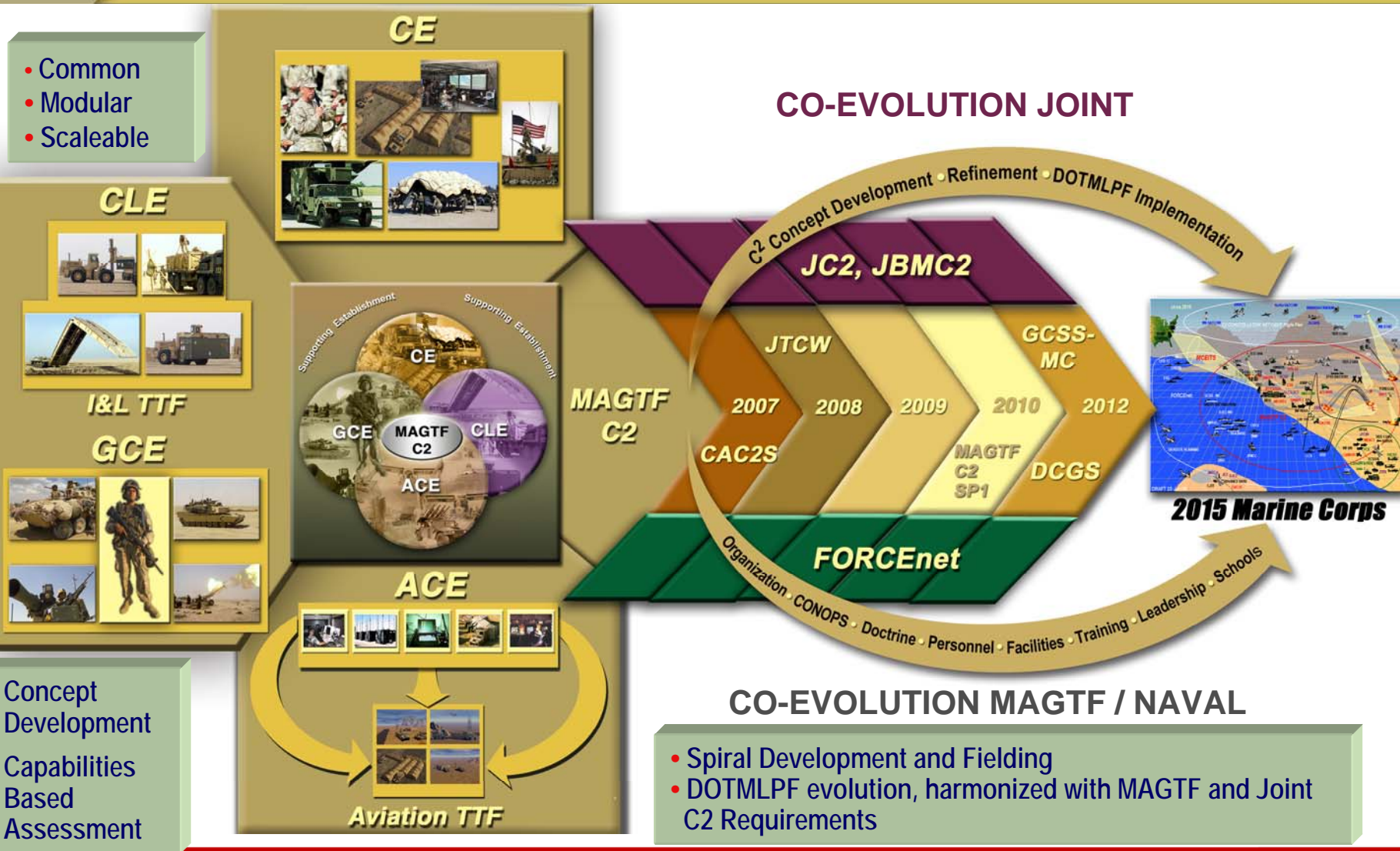
MAGTF C2 Strategy



Supporting Establishment Architecture informed, the foundation for governance, and the framework for DOT_LPF



MAGTF C2 Transition Strategy





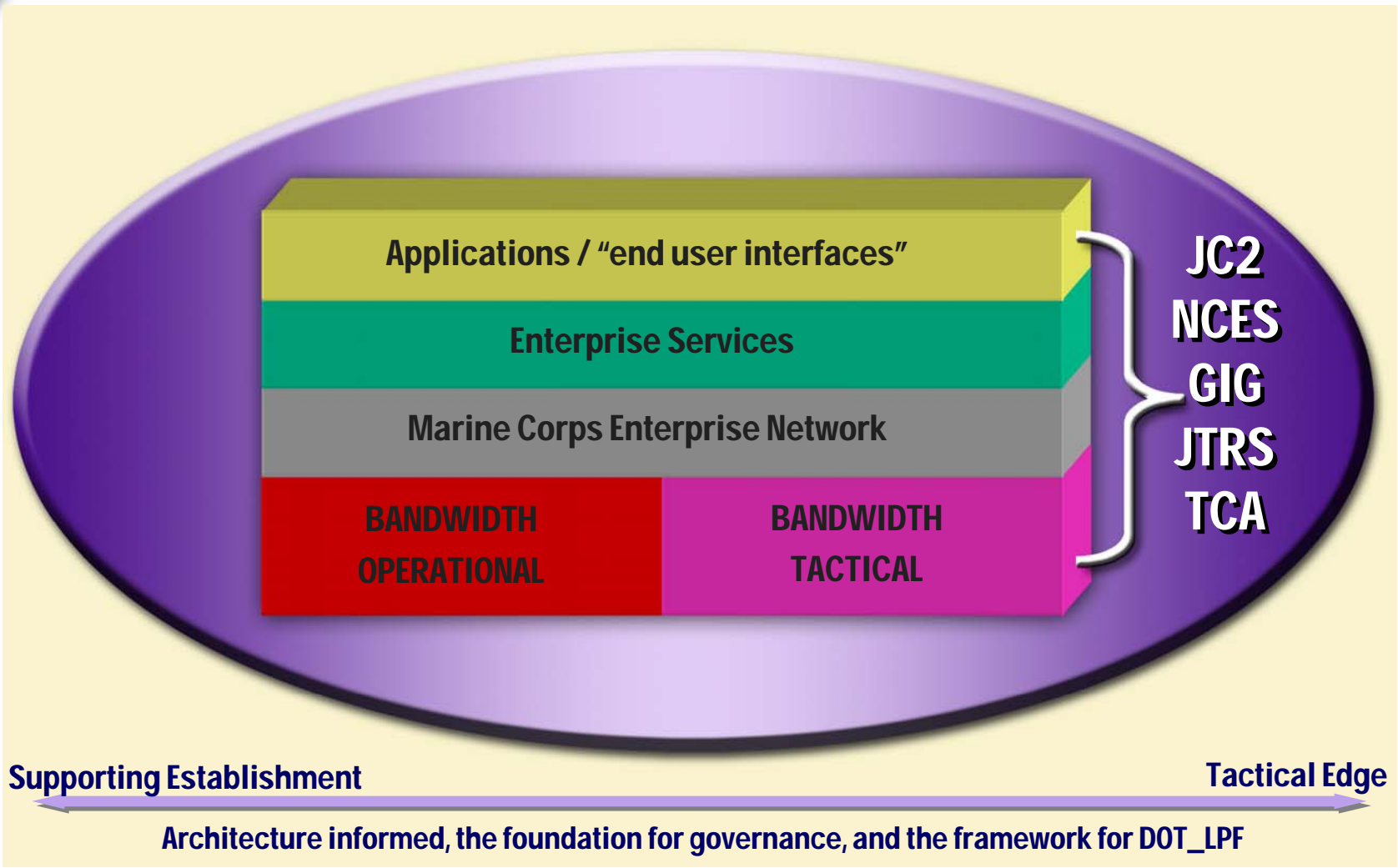
Common, Modular, and Scaleable

- **Common:** MAGTF command echelons use the same equipment. Unique requirements, such as sensors and intel feeds, enter via standard gateway.
- **Modular:** System is designed to enable component utilization that logically supports a variety of configurations for various echelons of C2 across MAGTF.
- **Scaleable:** Software & hardware facilitate Battalion/ Squadron, Regimental/ Group, Division/Wing, & MEF-level command functions for COC by adding or subtracting common and modular components.





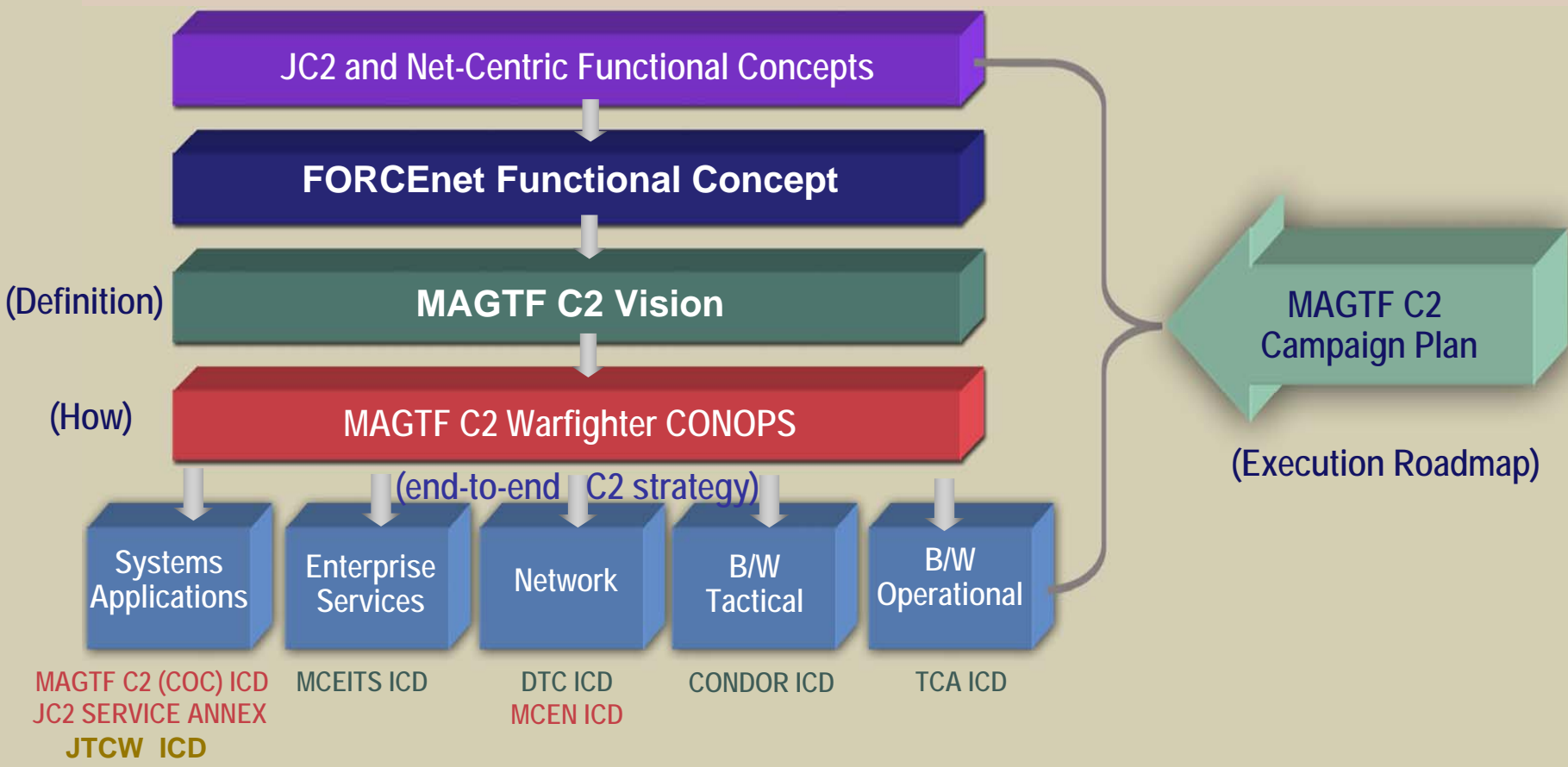
MAGTF C2 Capability Framework





MAGTF C2 End-to-End Capabilities

JCIDS Alignment





MAGTF C2 JCIDS Alignment Strategy

C2 Capabilities



MAGTF C2 COC ICD

MAGTF C2 COC Spiral (1-x) CDDs

MAGTF C2 COC CPDs



MAGTF C2 Campaign Plan

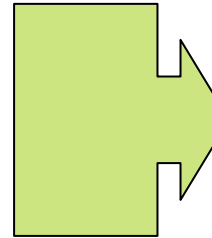
- **Components:**
 - **Vision** :“End to end C2” Strategy
 - USMC cultural and organizational change and approach
 - **Concepts**
 - Joint, Naval (FORCEnet), Service
 - Capabilities
 - **Processes Alignment**
 - EFDS, NCDP, JCIDS, PPBE
 - **Roles and Responsibilities**
 - “Majority & Minority” C2 stakeholders
 - **Integration**
 - DOTMLPF assessments and integrated architecture
 - **Roadmap**
 - “500 Day Plan”



Alignment

- **MAGTF C2**

- Applications/ "End user interface"
- Enterprise Services
- Marine Corps Enterprise Network
- Bandwidth

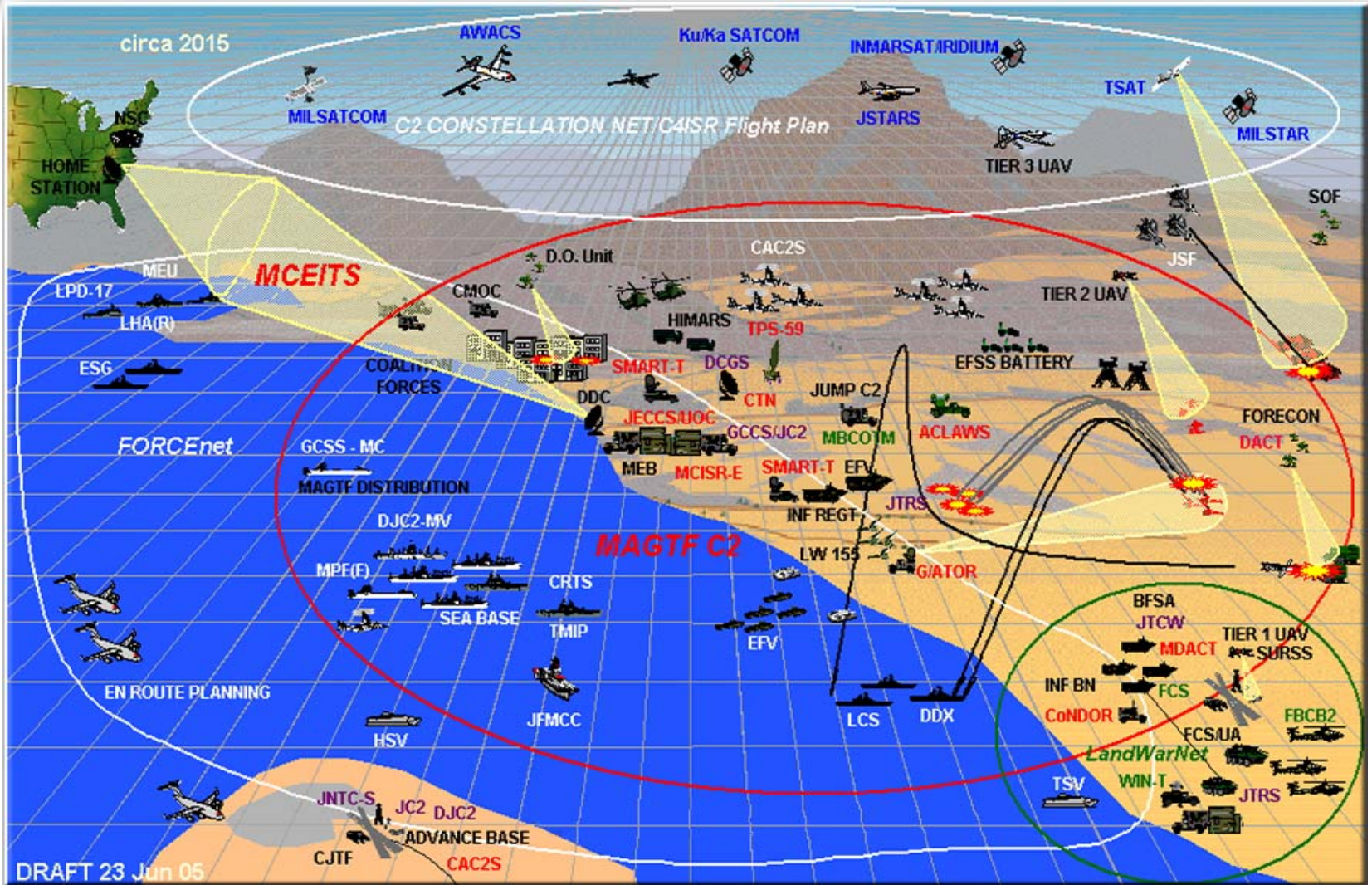


- **LandWarNet**

- Warfighting Mission Area (MA)
- Business MA
- Network Transport/ Services MA
- Intelligence MA



MAGTF C2 Notional Operational View



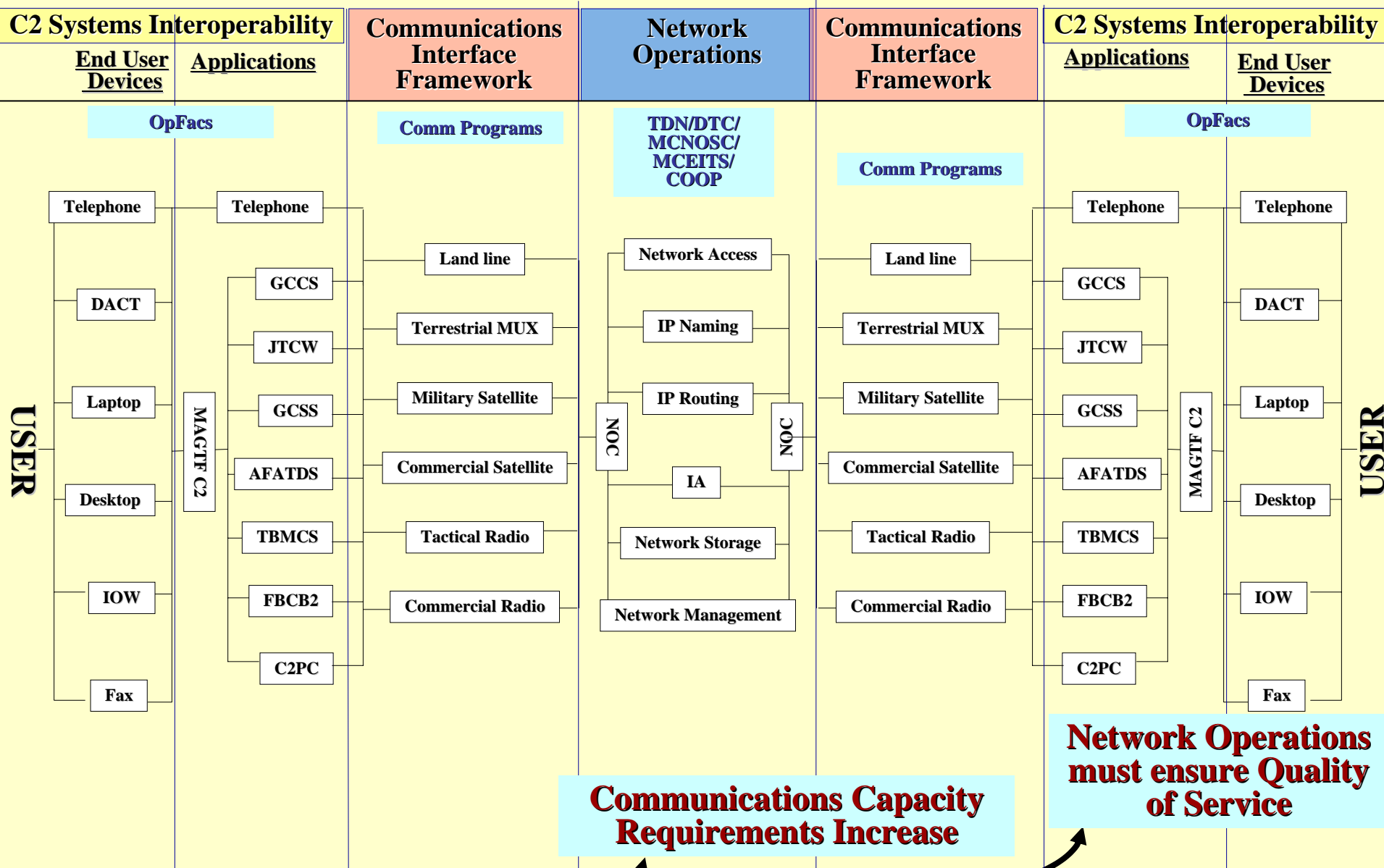


Questions?



Back-Up

Capability To Engineering



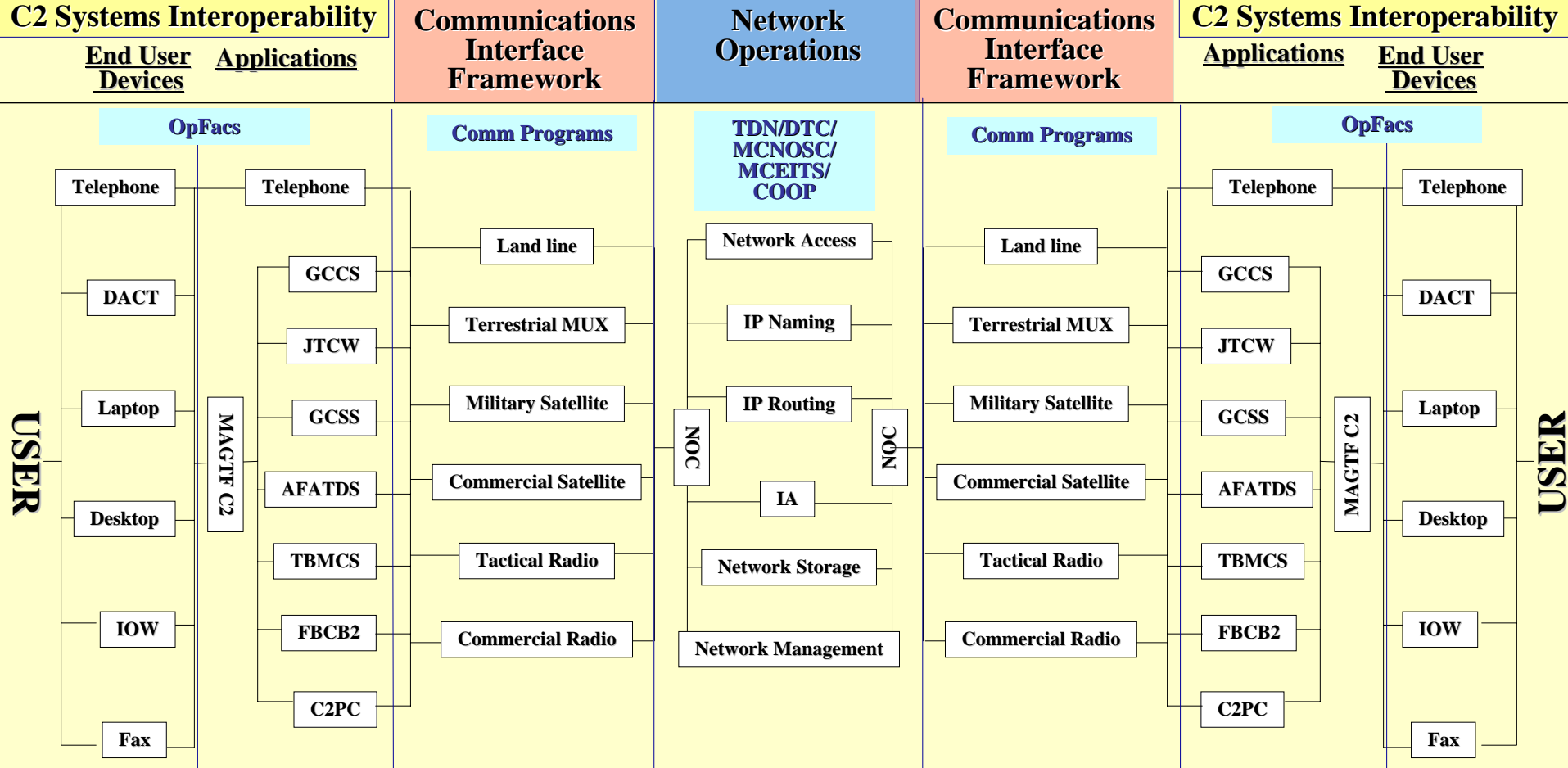
USER

USER

As Users increase or their need for Applications Increases

Communications Capacity Requirements Increase

Network Operations must ensure Quality of Service



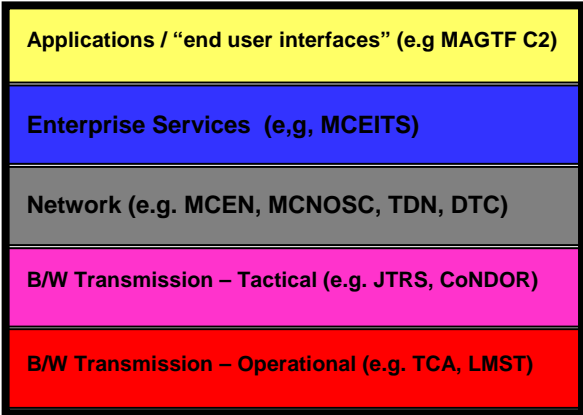
Understanding the technical interfaces between these different systems enables analysis of network's ability to support the required mission.

- # of Subscribers using Secure Email (SMTP) defines the Number of Servers required.
- Amount of this traffic delivered to other CPs (Geographic Nodes on the Battlefield) defines the link requirements.
- The equipment used in this link defines the performance of the link.
- Information such as transmission delay, packet size, protocol use and physical connectors are required for analysis.

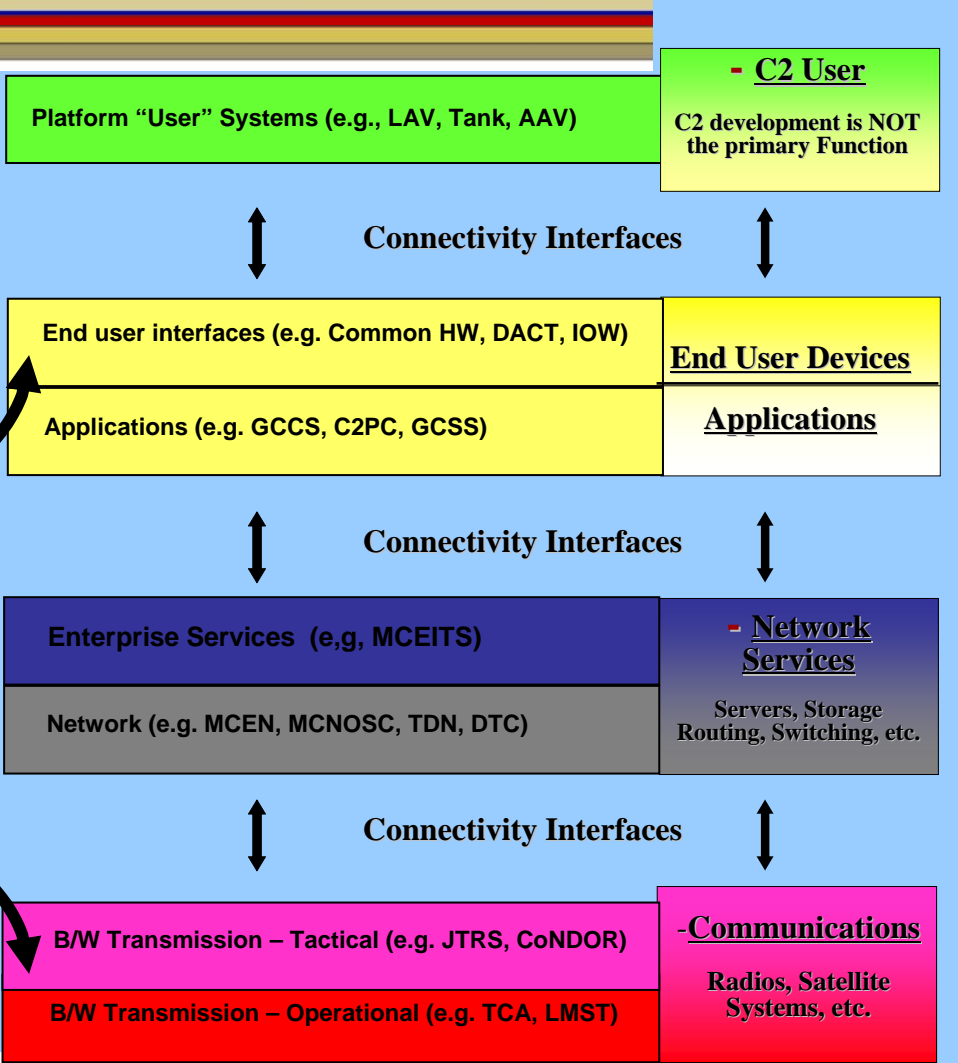


Mapping Capability To Architecture

**MAGTF C2
"Reference Model Layers"**



Layers grouped by capability



C2 Capability Categories

**C4I Material
Solution
Categories**



Database Support

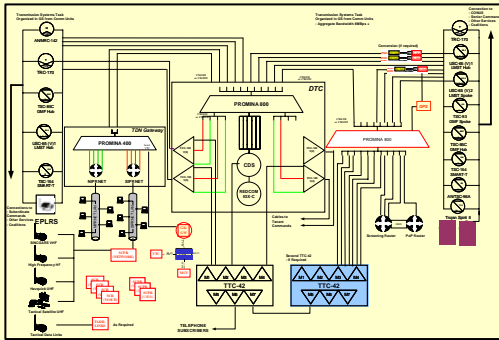
- **MCASE** provides a ready made tool to enhance-
 - **Create Object-oriented database**
 - **Flush out the Attributes of the object ONCE**
 - reuse multiple times
 - Protocols, Connections, Components, applications, delay, spectrum
 - **Validate and Verify** Database
 - Maintain Configuration Control of Data
 - Remove outdated data
- **Each C4I End Item requires an SV, TV and ISP**
 - **Build the Attributes of MCASE to this end – automatic *Program Support!!***
- **Use the database to define linkages and equipment to predict future C4I Capability Needs**



Use of Database & Node in Analysis

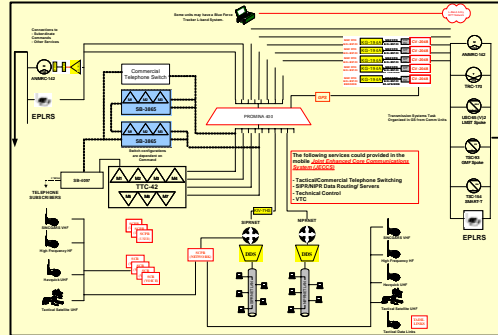
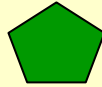
- **Statistical Analysis inherent in Performance and Configuration Management provide realistic validation of Network provisioning.**
 - *Proof that the subscribers can get the requested service*
 - *Proof that each piece of equipment connects and is sufficient for the task*
 - Ensure the Node can support ALL of the subscribers and services requested.
 - **Predict failures and gaps in the architecture**
- **Understand the attributes of the equipment – analyze how they work together.**
- **Use actual test events to validate the analysis**
- **Use these to develop verifiable models**

Baseline Nodal Definitions



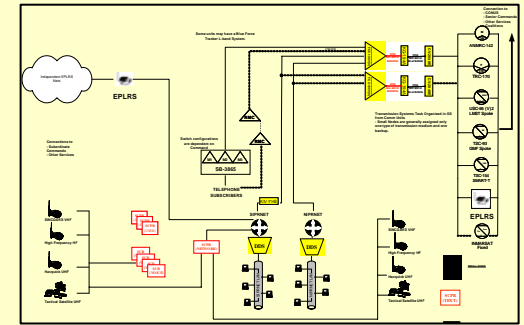
Major Node:

- Provisioned to support up to 1500 subscribers
- All Major Applications and Services
- Data Communications minimum of
 - 2 Links to Senior/STEP
 - 3 Links Adjacent
 - 4 Links Subordinate



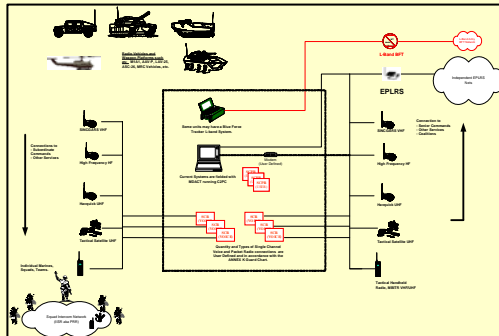
Medium Node:

- Provisioned to support up to 500 subscribers
- All Major Applications and Services
- Data Communications minimum of
 - 1 Links to Senior/STEP
 - 3 Links Adjacent
 - 4 Links Subordinate



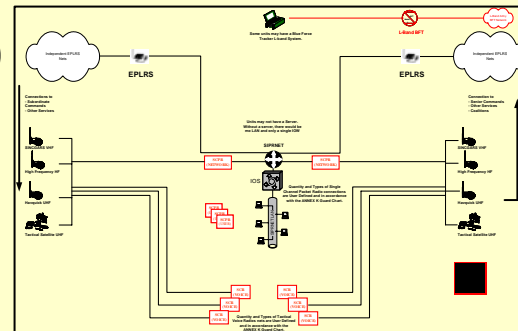
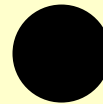
Small Node:

- Provisioned to support up to 150 subscribers
- Combat Related Applications and Services
- Data Communications minimum of
 - 1 Links to Senior/STEP
 - 3 Links Adjacent
 - 4 EPLRS/CONDOR Subordinate



Mobile Node:

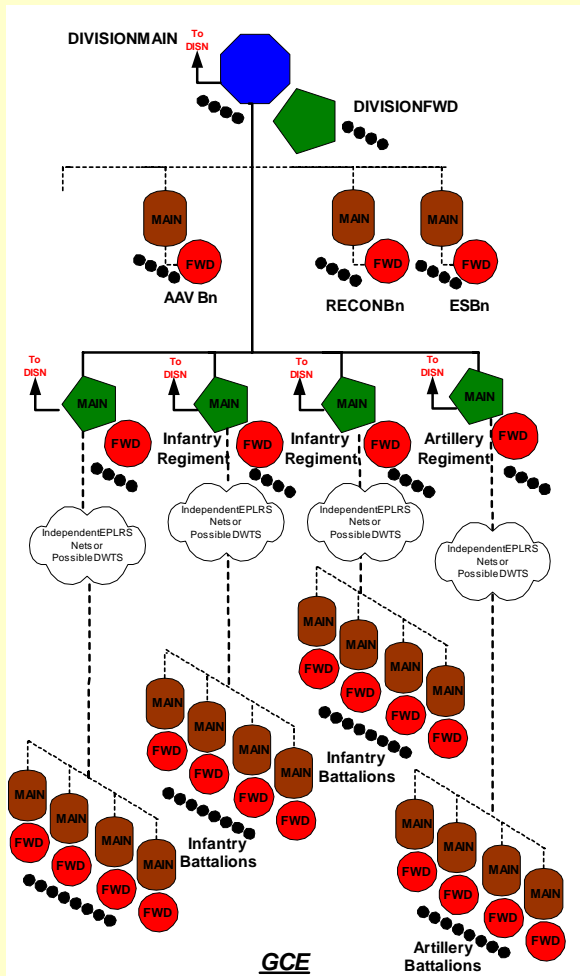
- Provisioned to support up to 25 subscribers
- Essential Applications and Services
- Data Communications minimum of
 - 1 CONDOR Intranet Link



Individual Node:

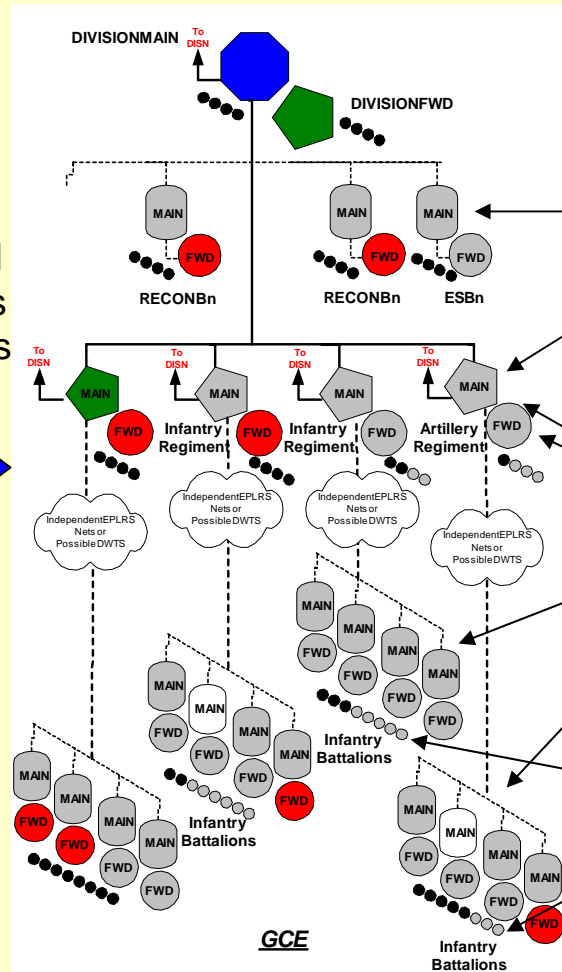
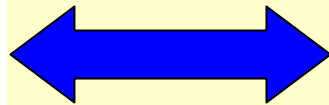
- Provisioned to support up to 4 subscribers
- Essential Applications and Services
- Data Communications minimum of
 - 1 EPLRS Link into CONDOR Intranet

Strategic Planning through Nodal Depictions



Warfighter Approved Nodal Capability Set –
What they Want

Gap and Overlap
Analysis of Actual
T/E, Current PORs
and POM Initiatives



Analyzed Nodal Capability Set
–
What they can actually deploy

Recommended Capability
Categories necessary to
Support in POM.

Network
Services

Bandwidth
Transmission

End User
Devices

\$
SE&I Assistance in
Strategic Planning

2005 2006 2007 2008 2009 2010 2011 2012 2013

Current Capabilities

Analysis of POM Submissions along Capability Categories

POM-08

Field POM-06 Capabilities

Capability Categories Needed

- Apps Alignment (CAC2S Inc 1)
- End User Devices
- OTM/OTH Comms

Analysis of POM Submissions along Capability Categories

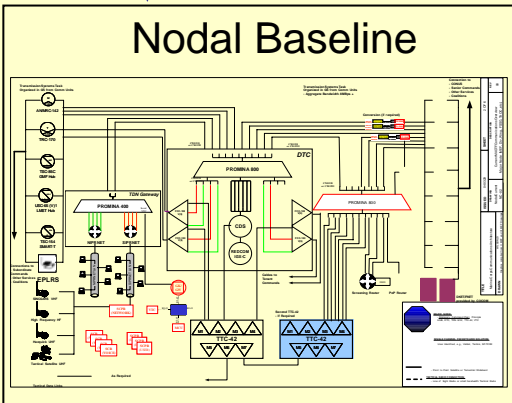
POM-10

Field POM-08 Capabilities

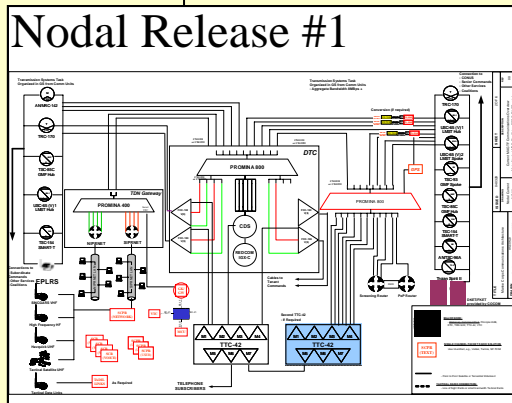
Capability Categories Needed

- Apps Air- Grd on one Screen
- Telephone and VOIP
- Operational Bandwidth
- Tactical Bandwidth
- NetOps

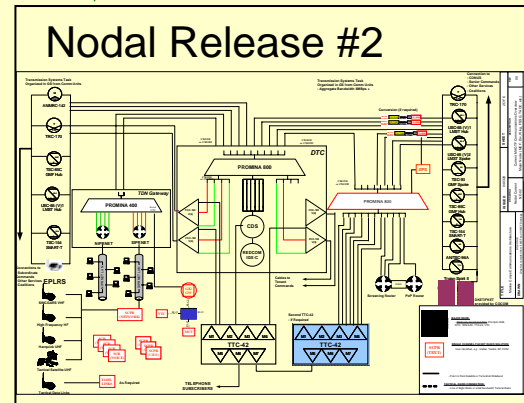
Nodal Baseline



Nodal Release #1

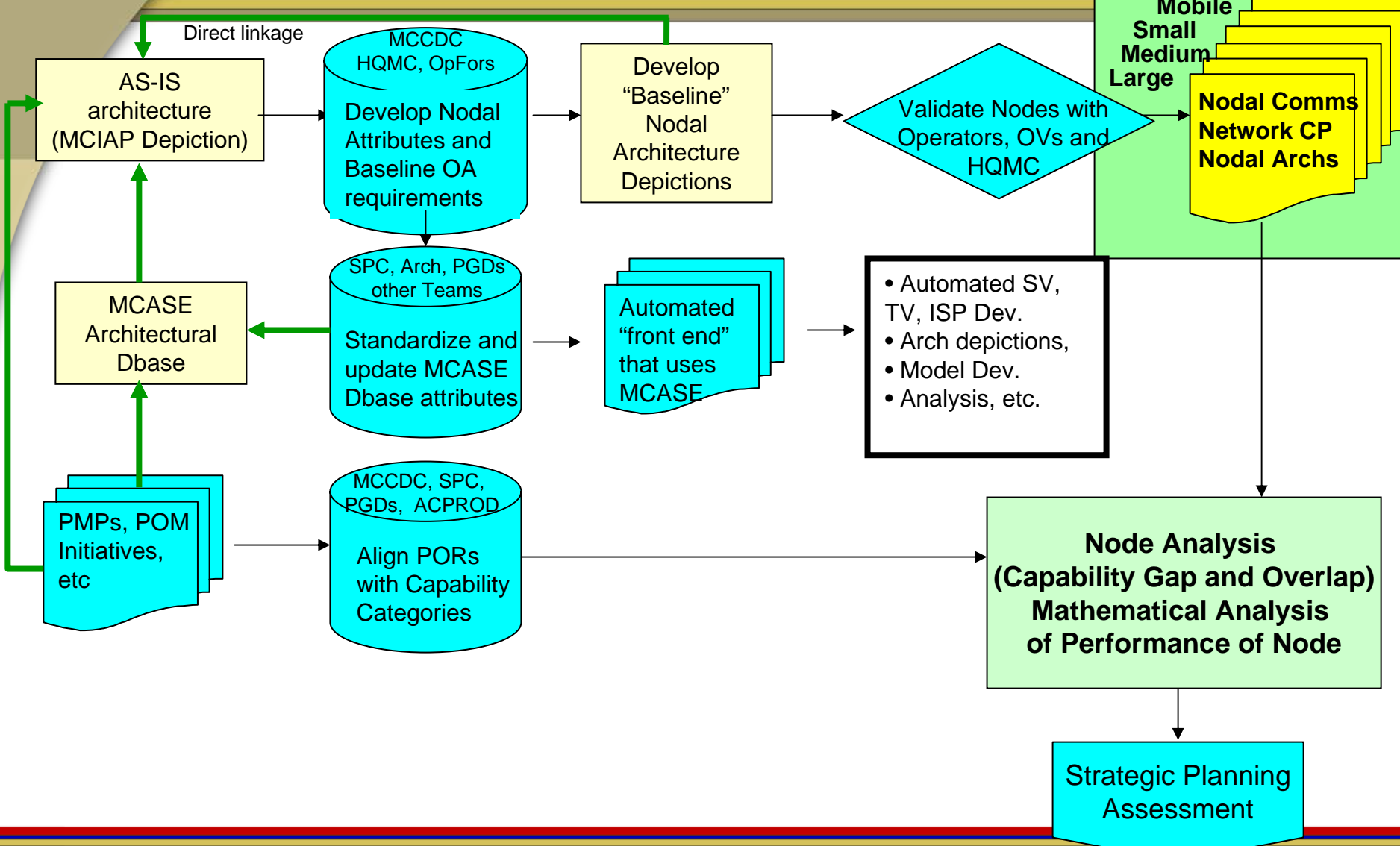


Nodal Release #2



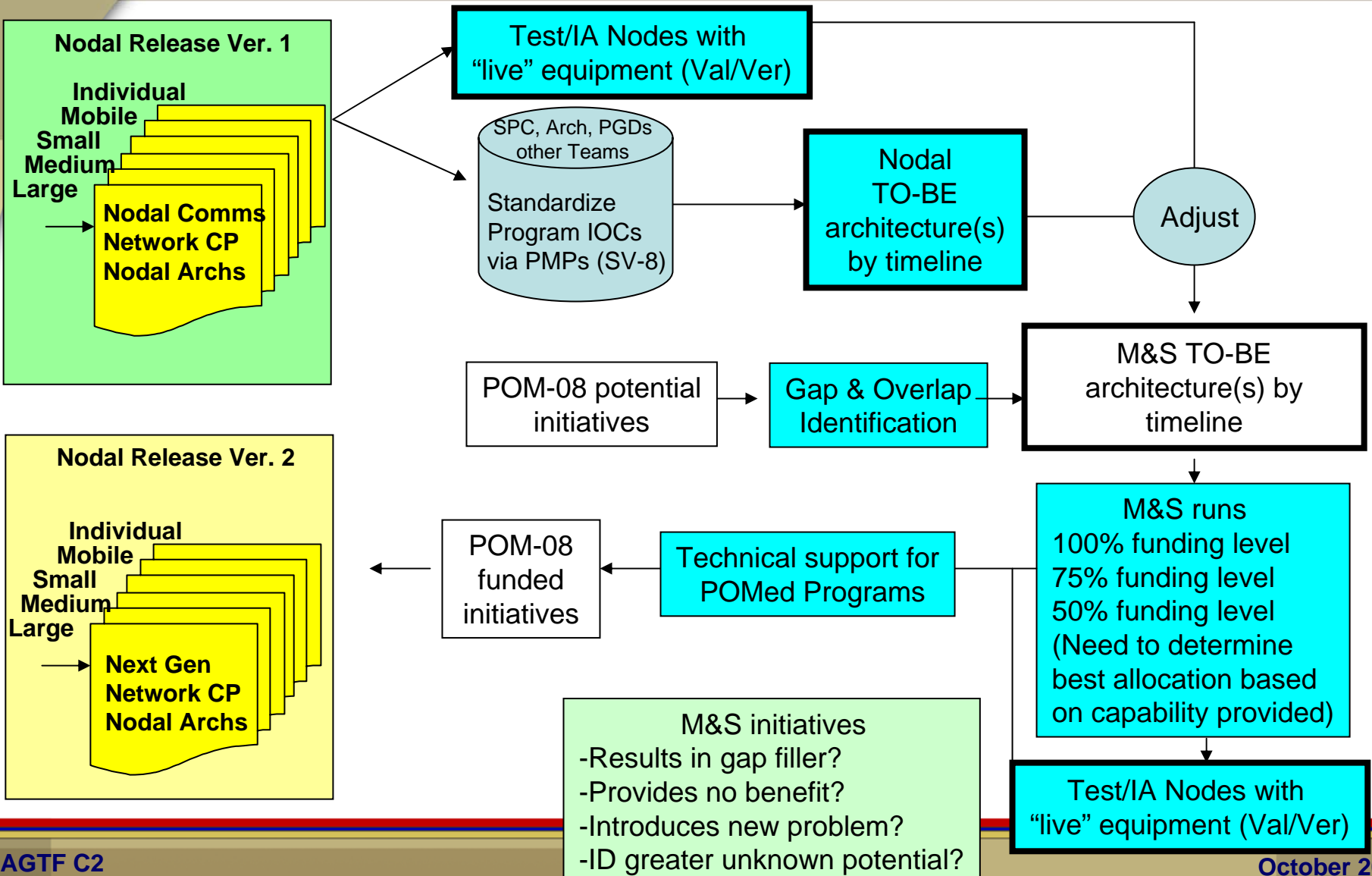


Architecture Build





Strategic Planning Process





Concepts, Capabilities, & Requirements Generation

Commanding Generals Combined Arms Center (CAC) & Marine Corps Combat Development Command (MCCDC) sign MOU Jun 05 to manage LandWarNet (BC) & MAGTF C2 development:

- Overarching “combat development” umbrella document
- Doctrine / functional concept / capability development coordination
- Capability decomposition and metric development
- Joint requirements generation
- Integrated architecture development
- Conduct risk mitigation
- Coordinate S&T efforts
- Guide systems development, interoperability, & integration

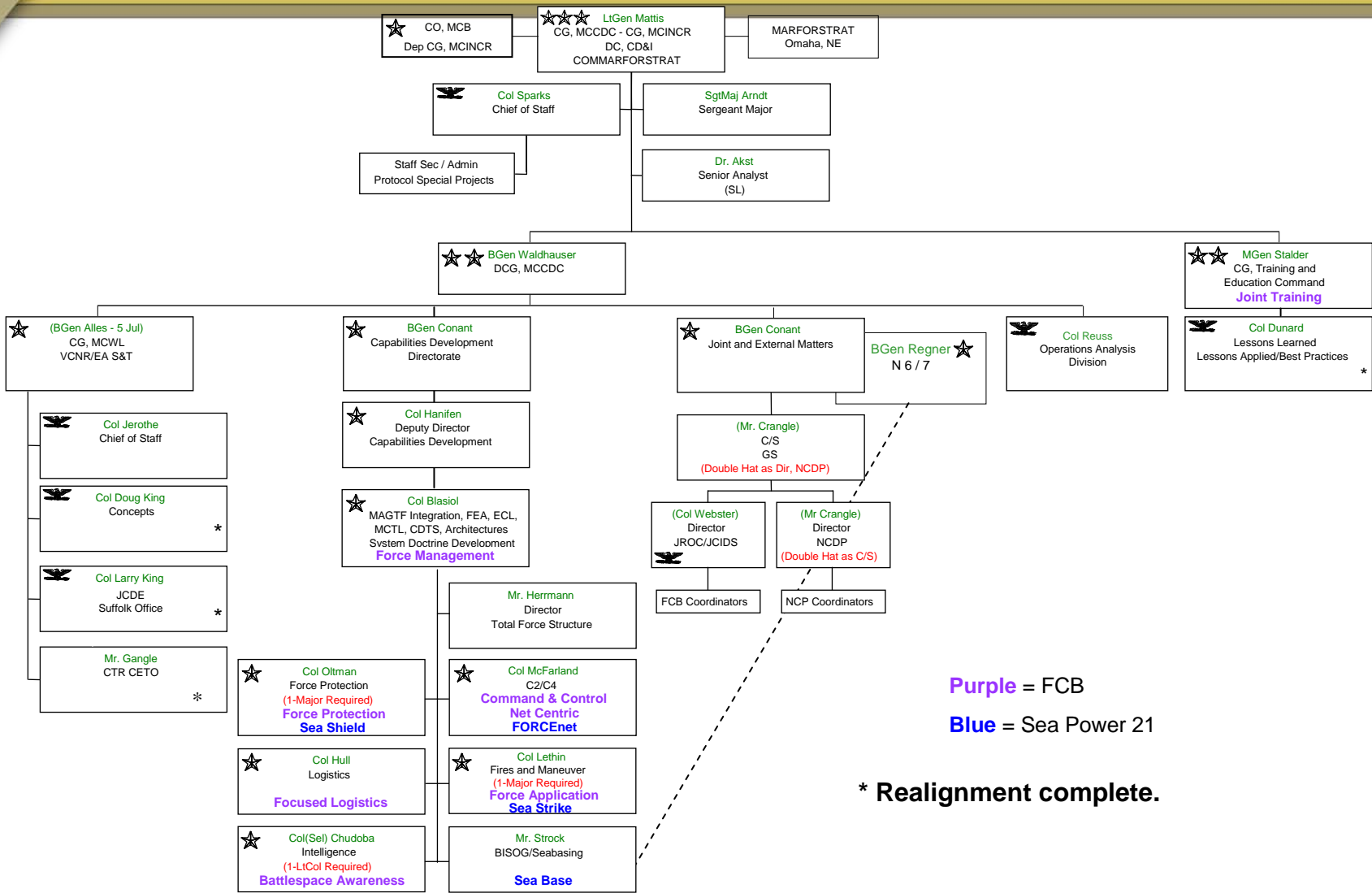


Agenda

- **C2 Integration Division**
- **MAGTF C2 Transition Strategy**
- **MAGTF C2 Campaign Plan**
- **Programs of Record (PORs)**
- **MAGTF C2 Combat Operations Center (COC)**
- **Common, Modular, & Scaleable**



MCCDC Combat Development Organization

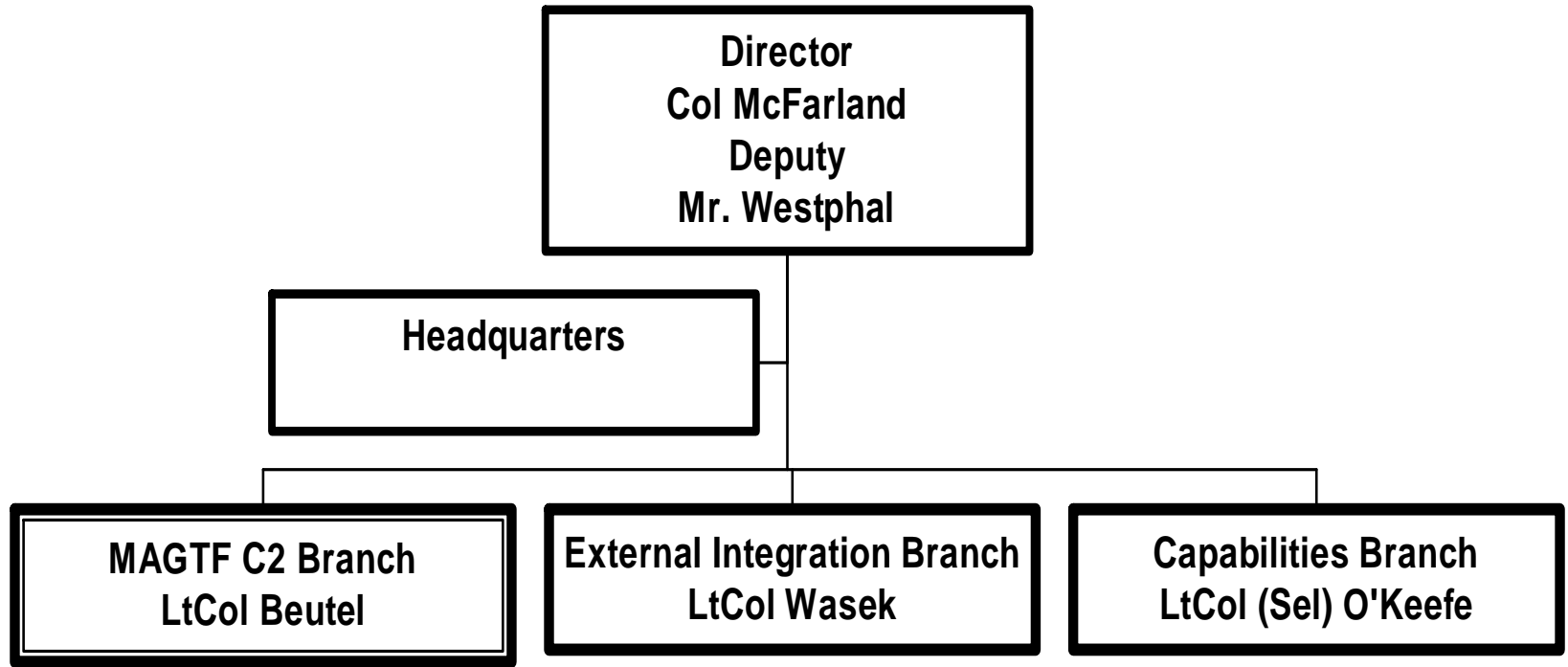


Purple = FCB
Blue = Sea Power 21

* Realignment complete.

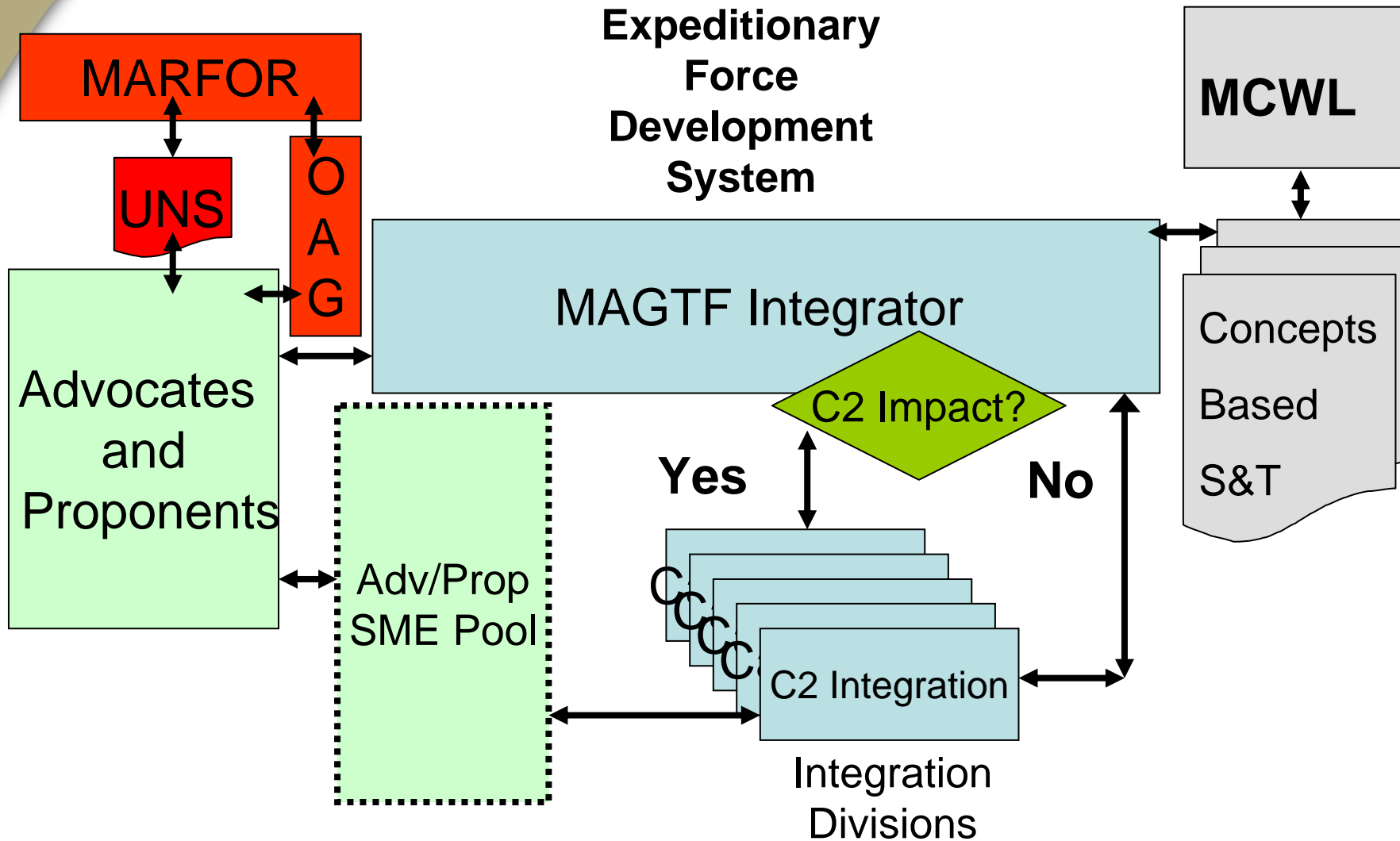


C2 Integration Division





Governance/Advocacy Process for C2 Issues





Background

- **Traceable to MAGTF OC requirements circa 1997**
- **MROC Decision MROC DM2004**
 - C2 capabilities and related programs must be approached in a “**holistic manner.**”
 - Inter-relationship and inter-dependency of C2 programs must be considered
 - Provide required capabilities to elements of the MAGTF from garrison to tactical environment as seamlessly as possible.



MAGTF C2 Vision

- ***MAGTF C2 enhances lethality and effectiveness across the range of military operations through better decision making and shared understanding.***
- ***It is an intuitive & holistic environment of people, processes, and technology that enables network-centric operations throughout the enterprise, & empowers the innate initiative of warfighters at all levels in the context of the commander's intent***
 - *A strategy to harmonize all aspects of command and control concepts, requirements, training, and doctrine.*
 - *A process to provide governance over the C2 community to ensure that we meet the objectives of the strategy across the enterprise*
 - *A system that will provide common, modular, and scalable material solutions from the lowest tactical level across the MAGTF at all echelons*

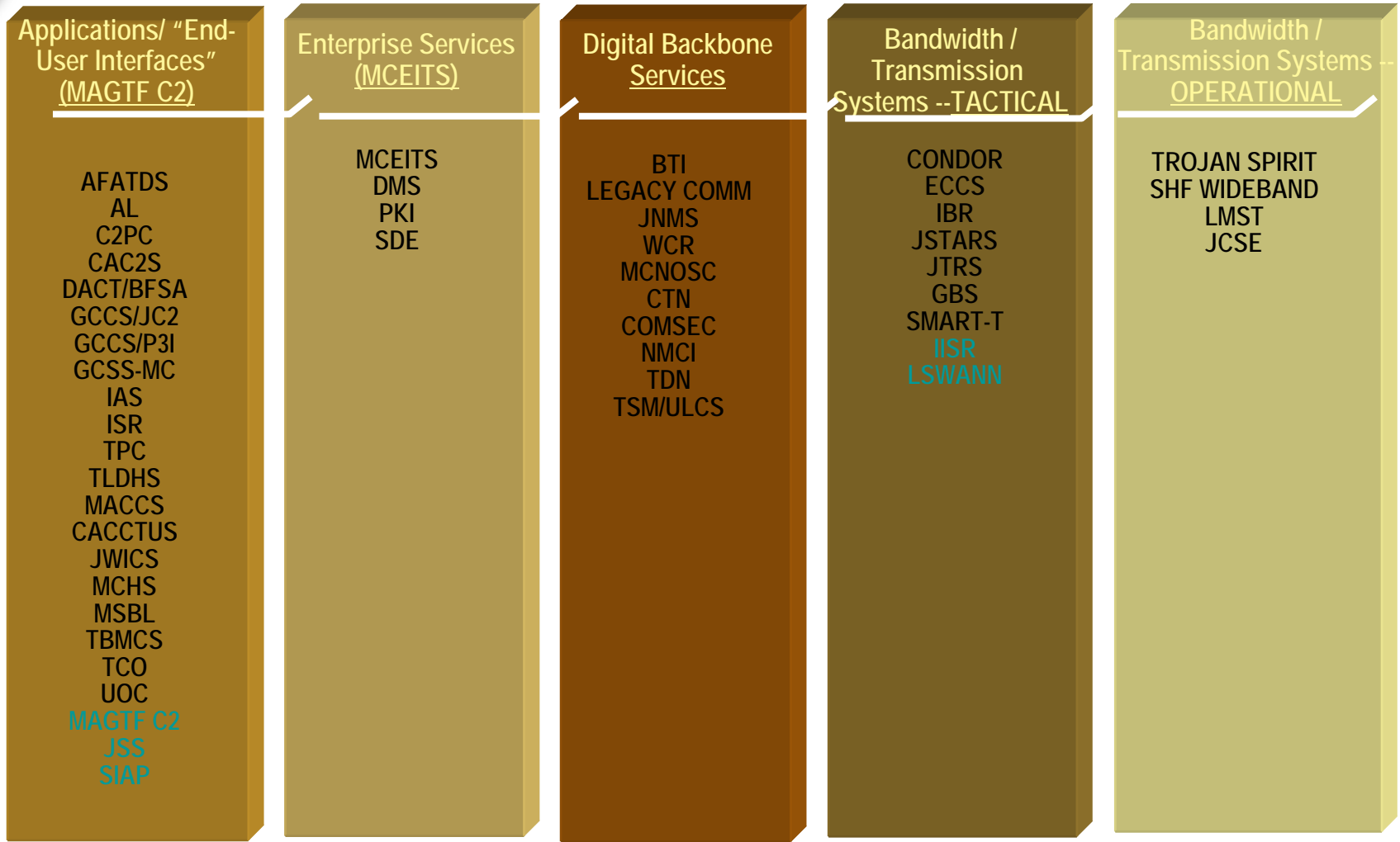


Layer Terms of Reference

- **Systems (Applications & End User Equipment):** End User information technology programs (software) and equipment (hardware) that enhance the ability to Command and Control.
- **Enterprise Services:** Provides the operating system and other supporting applications, services and interfaces (i.e., SDE, storage, collaboration, messaging, etc.) to users throughout the network.
- **Network:** Provides basic DISN services pulled from the GIG; DSN, the IP backbone (NIPRnet and SIPRnet) connectivity to the GIG.
- **Bandwidth Tactical:** "The terrestrial bandwidth communications essential for the planning, directing, and controlling of fires, movements or maneuver within the operational area to accomplish missions and tasks"
- **Bandwidth Operational:** Provides mobile, robust, space-based bandwidth communications essential for the employment of military forces to attain strategic and/or operational objectives through the design, organization, integration and conduct of strategies, campaigns, major operations and battles.



Notional Binned PORs

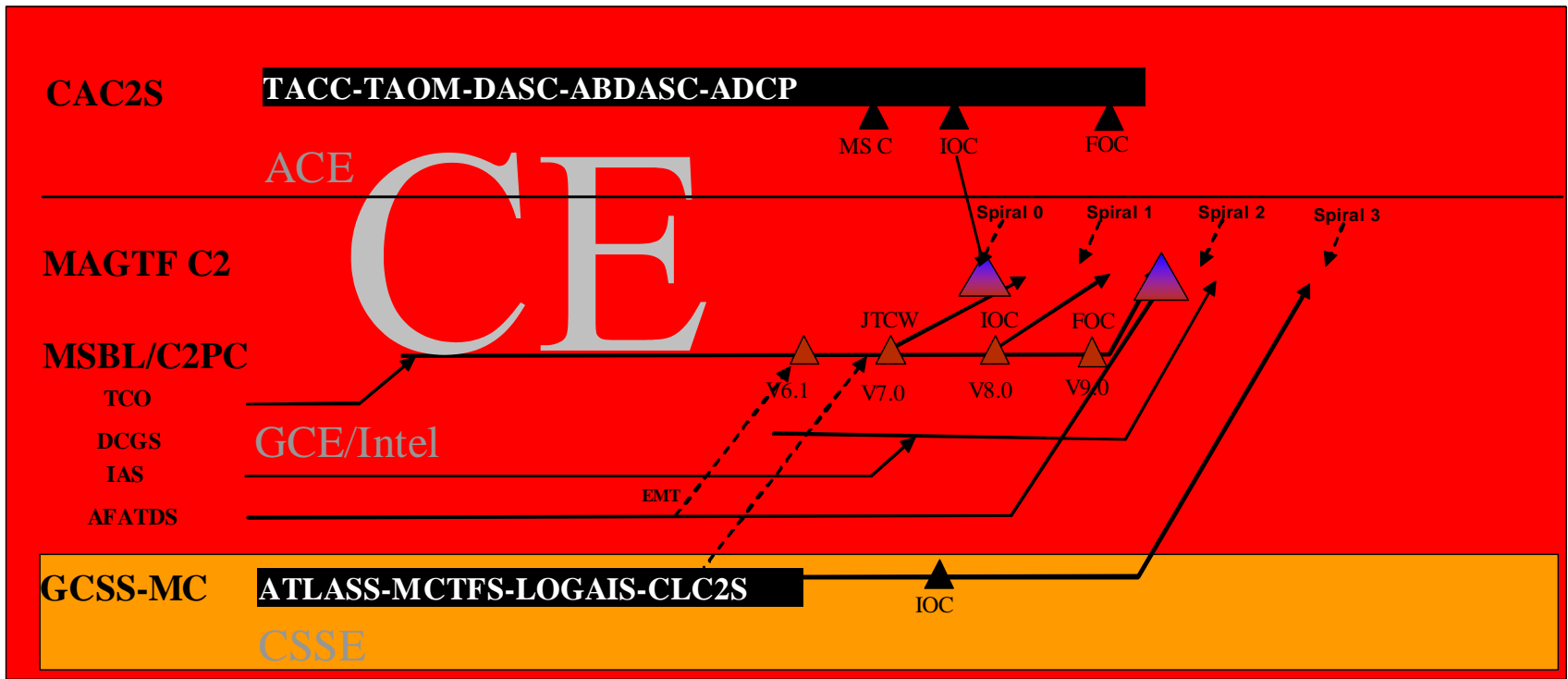




MAGTF C2 Software Baseline Integration (recommended)

Programs

1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015



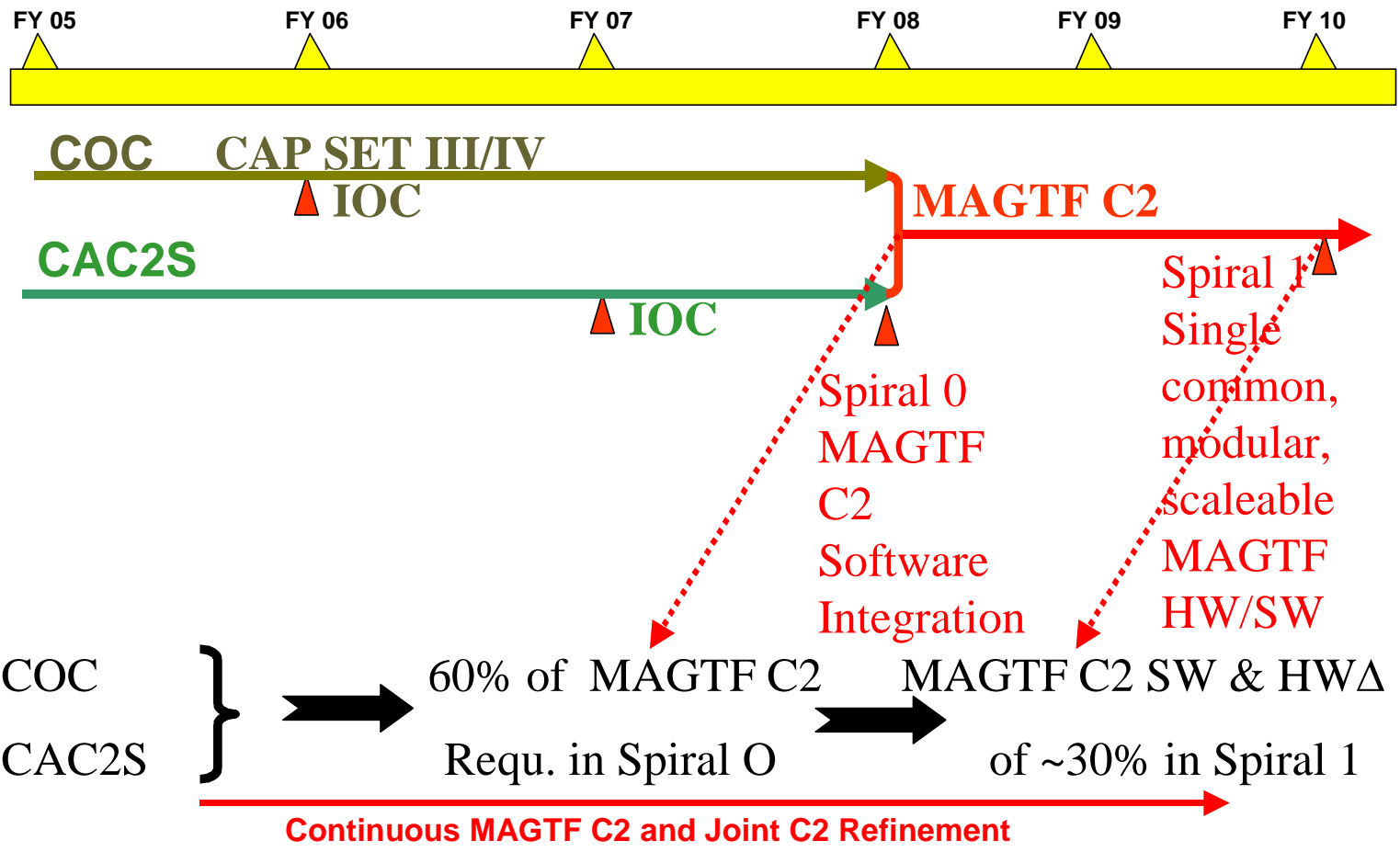


MAGTF COC Defined

- **Combat Operations Center (COC): generic term used to describe the body of specific capabilities for MAGTF C2 applications and OPFACs described in the Operational Requirements Document (ORD).**
- **ORD describes 4 capability sets (CAPSETs):**
 - CAPSET I: MEF-level COC
 - CAPSET II: MSC-level
 - CAPSET III: Regimental, MWSG, MEU, CSSD-level
 - CAPSET IV: Battalion, MAG, MWSS, CSSD-level



COC & CAC2S to MAGTF C2





COC Applications Today



MEF Battlespace



Deep Battle



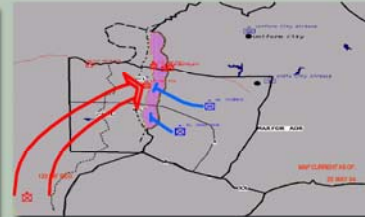
Graphical Op Oder



Theater



Op Intel



Close Battle



CTT/JWARN

Un-Fused Tactical Picture

**Command SA Requires
Manual Viewing of 5-10
Tiled Pictures**



MAGTF COC Crawl

- **CAC2S Increment 1 (FY 07 IOC)**
 - Ground picture with C2PC 6.2 and CAC2S capabilities in separate windows
 - Real time Air Picture
 - Near and Non-real time fusion
 - Integrated ground SA



MAGTF COC Walk

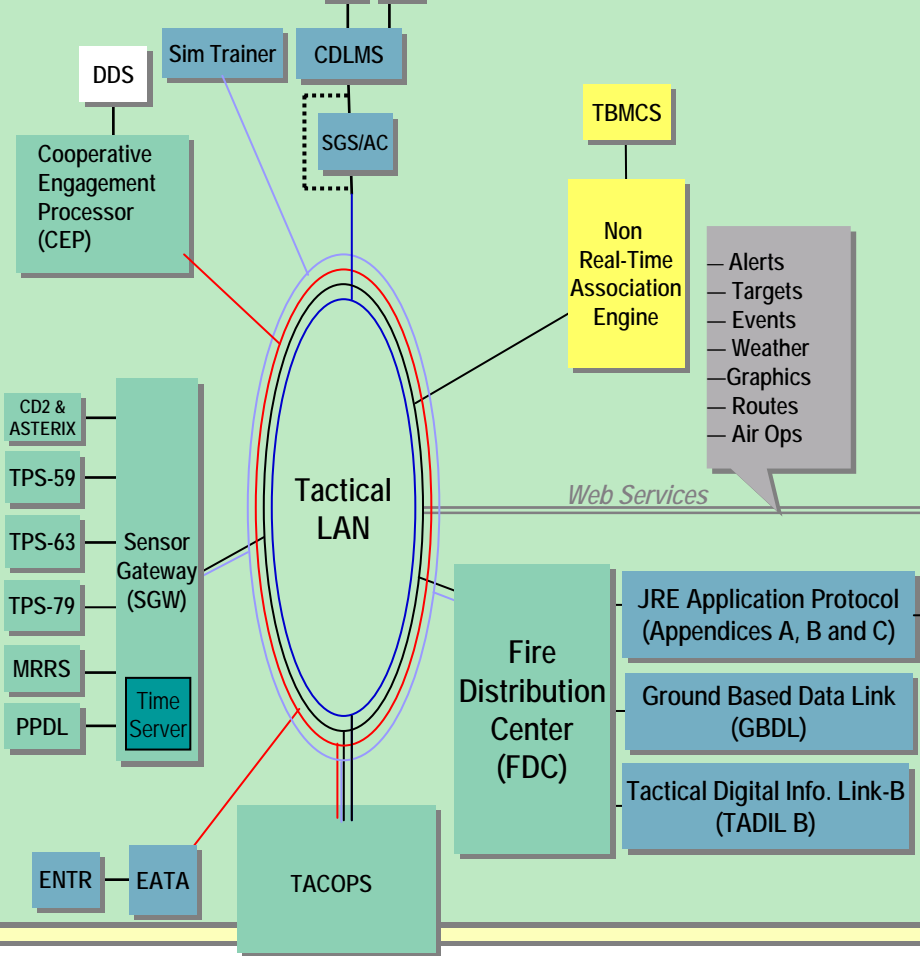
- **MAGTF C2 Spiral 0 (FY 08)**

- Integrates CAC2S Increment 1 and C2PC version 7.0
 - All the capabilities inherent in CAC2S and C2PC on one screen
 - CLC2S (LOG) injectors
 - IOS (INTEL) Injectors
 - Real time air situation
 - Air tracks over ground FSCMs fused to TBMCS and AFATDS data
 - Integrated Air/Ground Picture
- Increased interoperability (examples: JTCW & JBFSA)
- Collaborative Expeditionary Planning for the entire MAGTF (WEEMC/JADOCS)
- Improved modularity and scalability

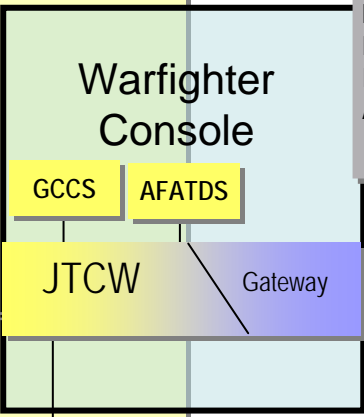


MAGTF COC Spiral 0

CAC2S Inc-1

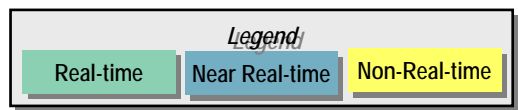
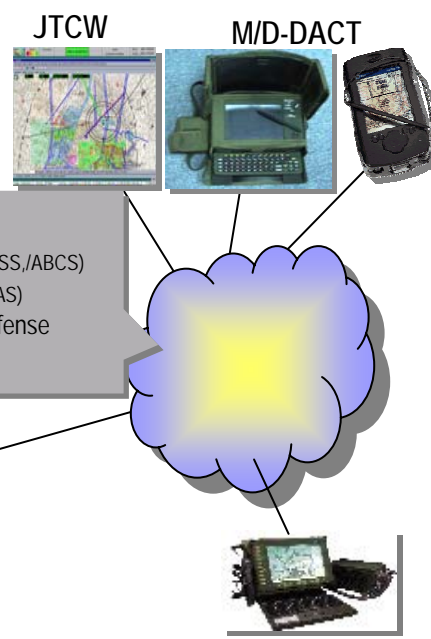


MAGTF COC Spiral-0



- Tracks
- Surveillance
- Intelligence
- Information Management
- Weapons Coordination and Management
- Air Control
- Platform and System Status
- National use

JTCW Spiral-0





MAGTF COC Run

- **MAGTF C2 Spiral 1 (FY-10)**
 - True fused C2 for planning, execution, COP, sensors and weapons within multifunction nodes
 - Truly scaleable, common, and modular across the MAGTF and at all echelons

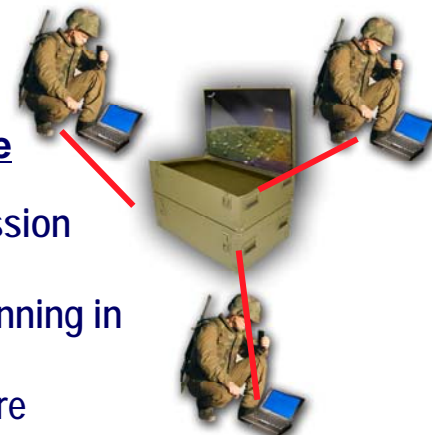


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- **Scaleable:** Software & hardware facilitate Battalion/Squadron, Regimental/ Group, Division/Wing, & MEF-level command functions for COC by adding or subtracting common and modular components.

Marine Transportable

- Laptops for initial mission planning
- Continue Mission Planning in transit
- Initial capability ashore
- Liaison support



Marine Portable

- Task organized for mission requirements
- Operational Transit Case Configuration
- Plug into shipboard C4I systems—situational awareness
- Reach-Back Capability – reduced footprint ashore



COC

- Extend Naval C2 ashore
- Task organized
- Single or Multi-Function Nodes
- Full Array of C2 Functions
- Sensor integration
- Joint interoperability





MAGTF C2 Portfolio

	TODAY	Spiral 0 S/W Build # PORs Integrated	Percent of Applications integrated in Spiral 0	Spiral 1-X
APPLICATION & SYSTEMS	23	14	50%	TBD
ENTERPRISE SERVICES	4	n/a	n/a	TBD
NETWORK	10	n/a	n/a	TBD
BANDWIDTH (TACTICAL)	9	n/a	n/a	TBD
BANDWIDTH (OPERATION)	4	n/a	n/a	TBD
TOTAL	50			

50 PORs in
MAGTF C2
Portfolio

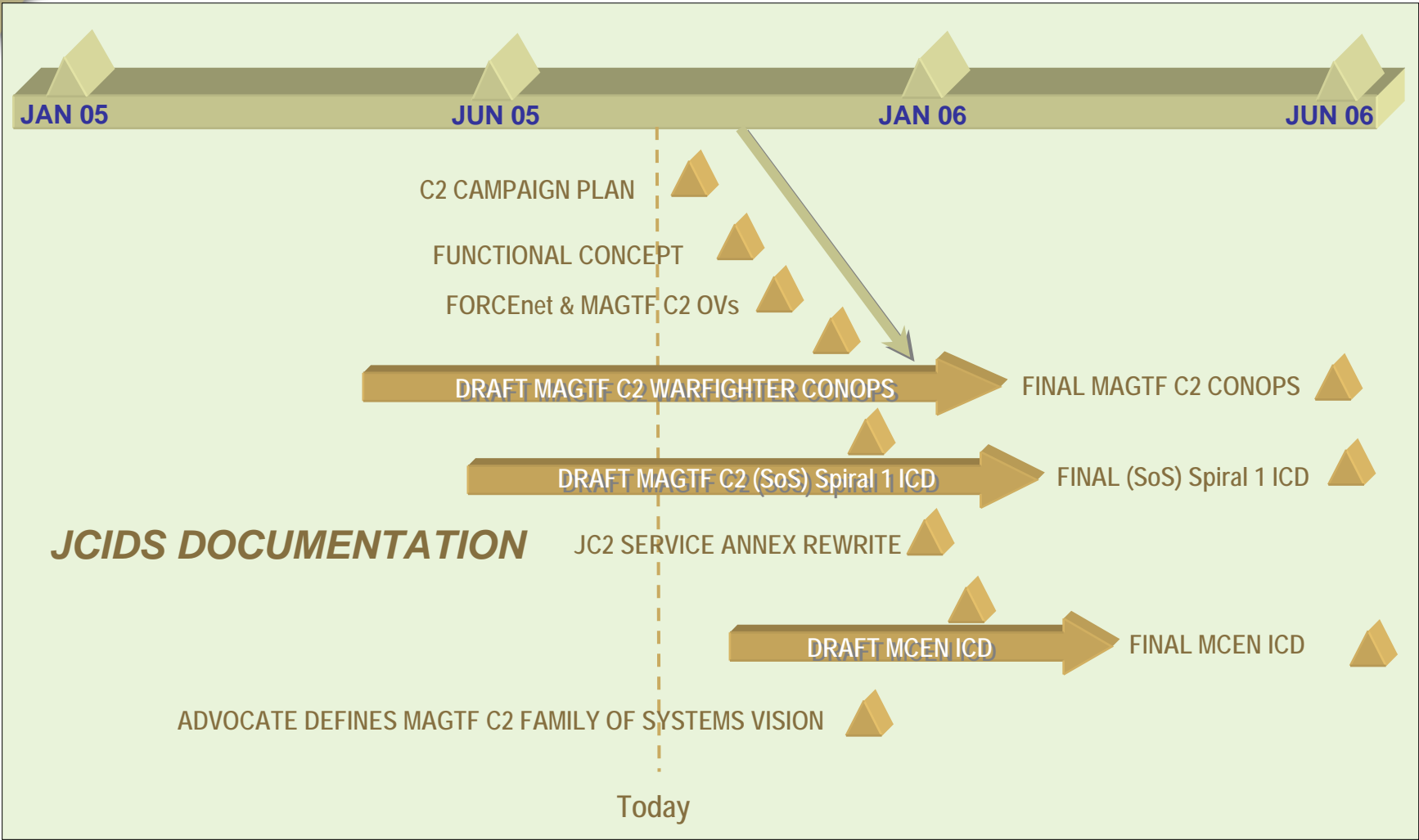


End-to-end MAGTF C2 Strategy

- **... a methodology for delivering an “... end to end, fully integrated, cross functional set of MAGTF C2 capabilities that include forward deployed as well as reach back” functions IAW MROC DMs 39-2004 & 29-2005**

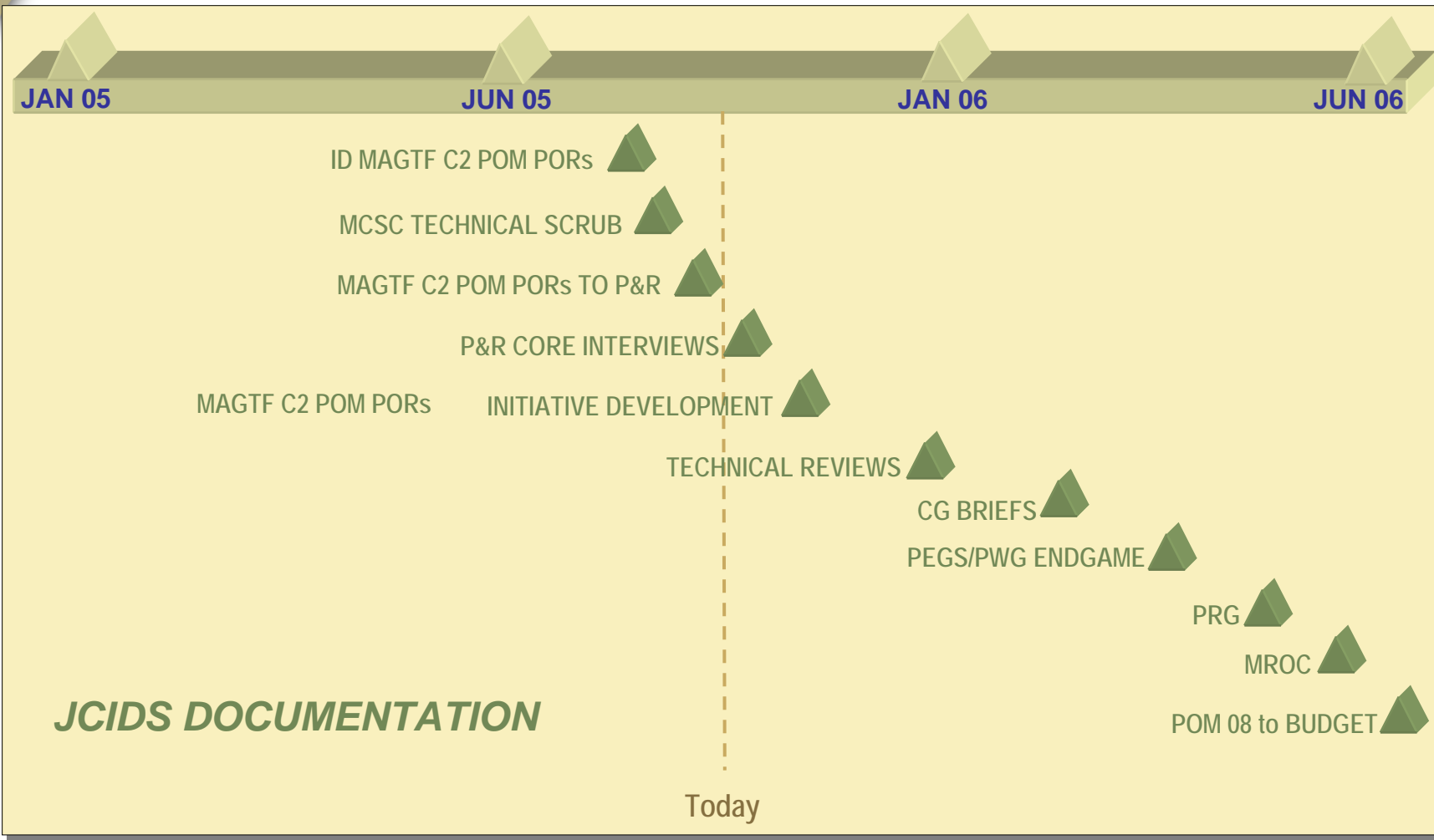


MAGTF C2 500 Day Plan



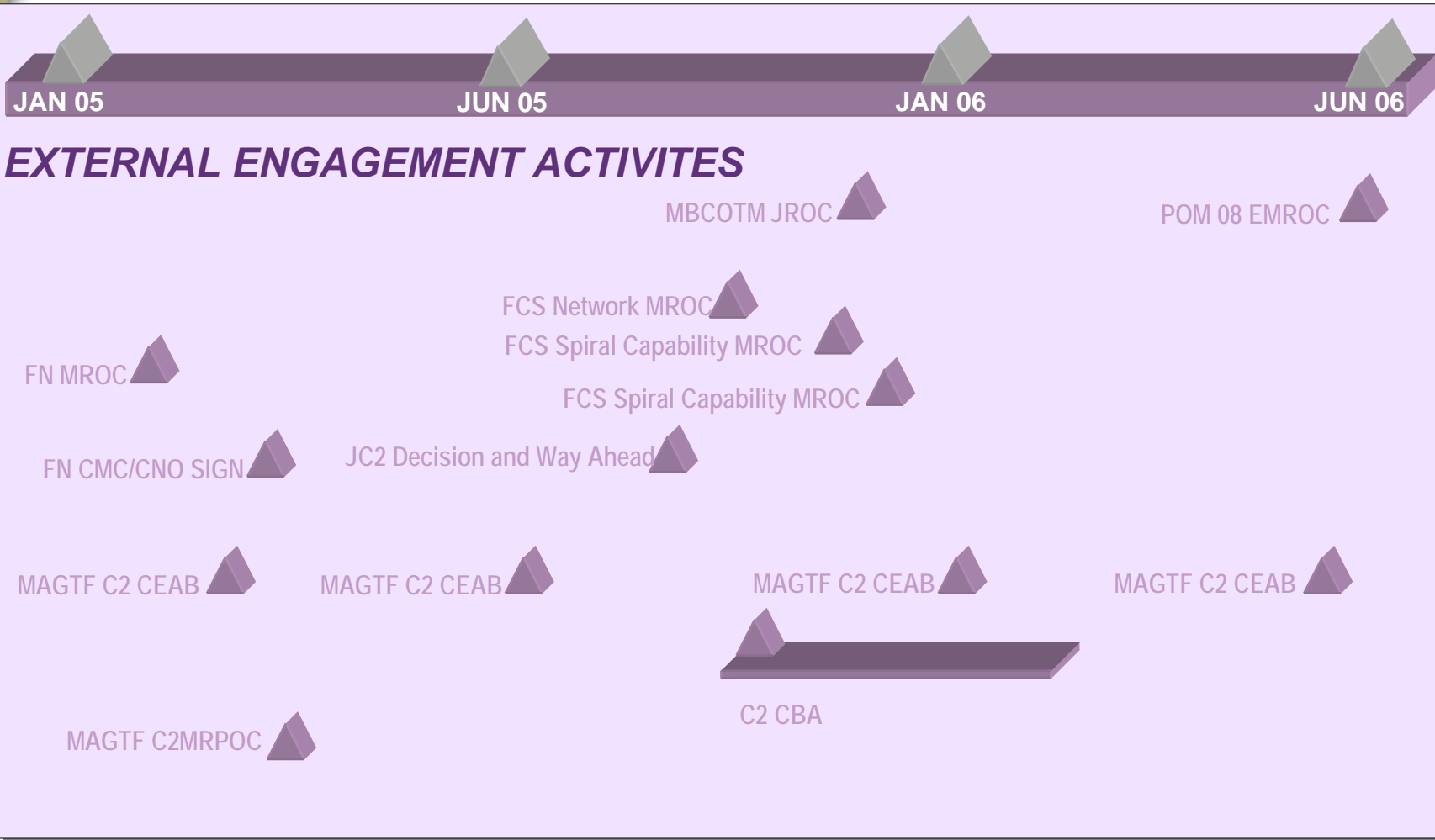


MAGTF C2 500 Day Plan



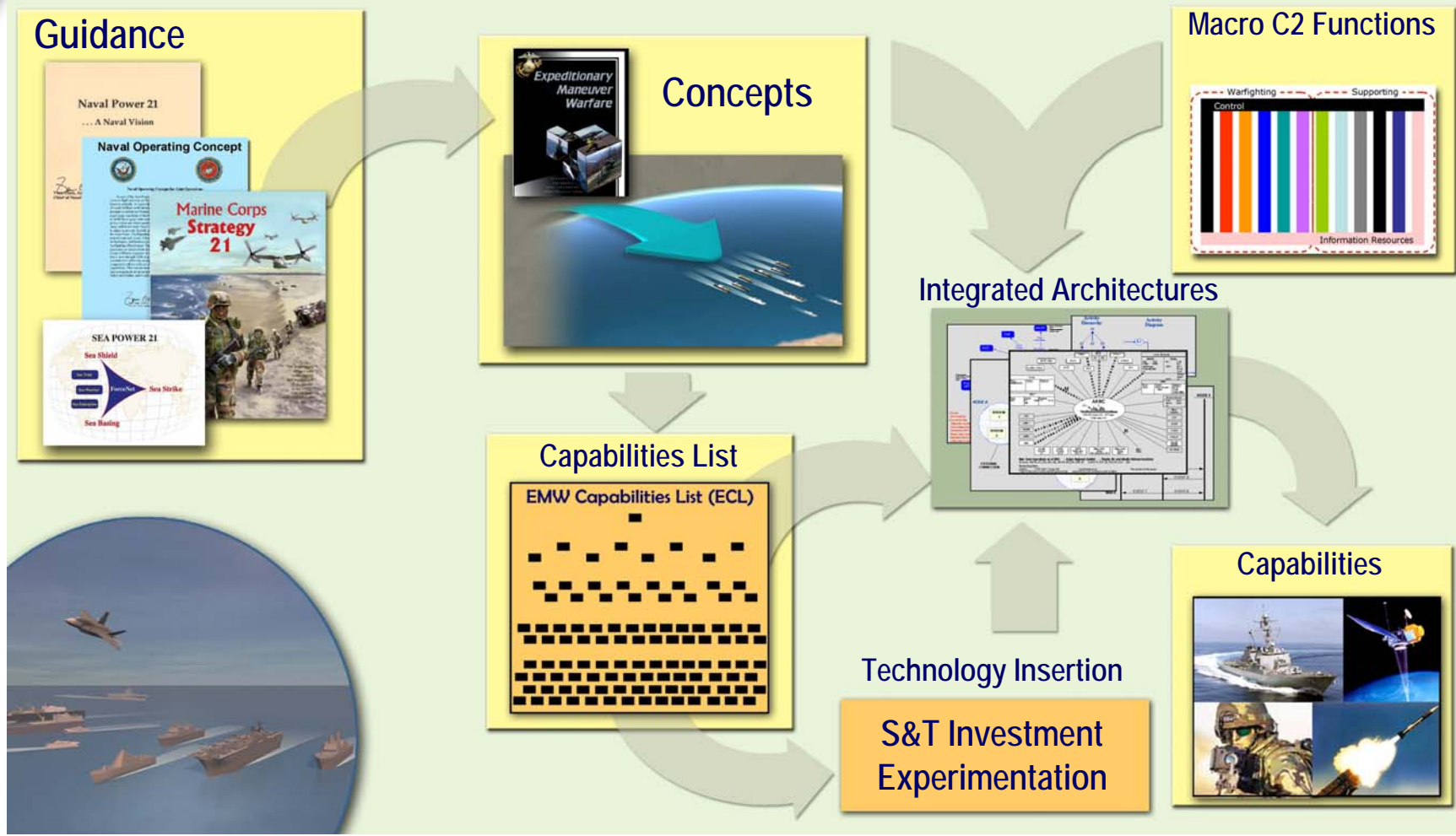


MAGTF C2 500 Day Plan



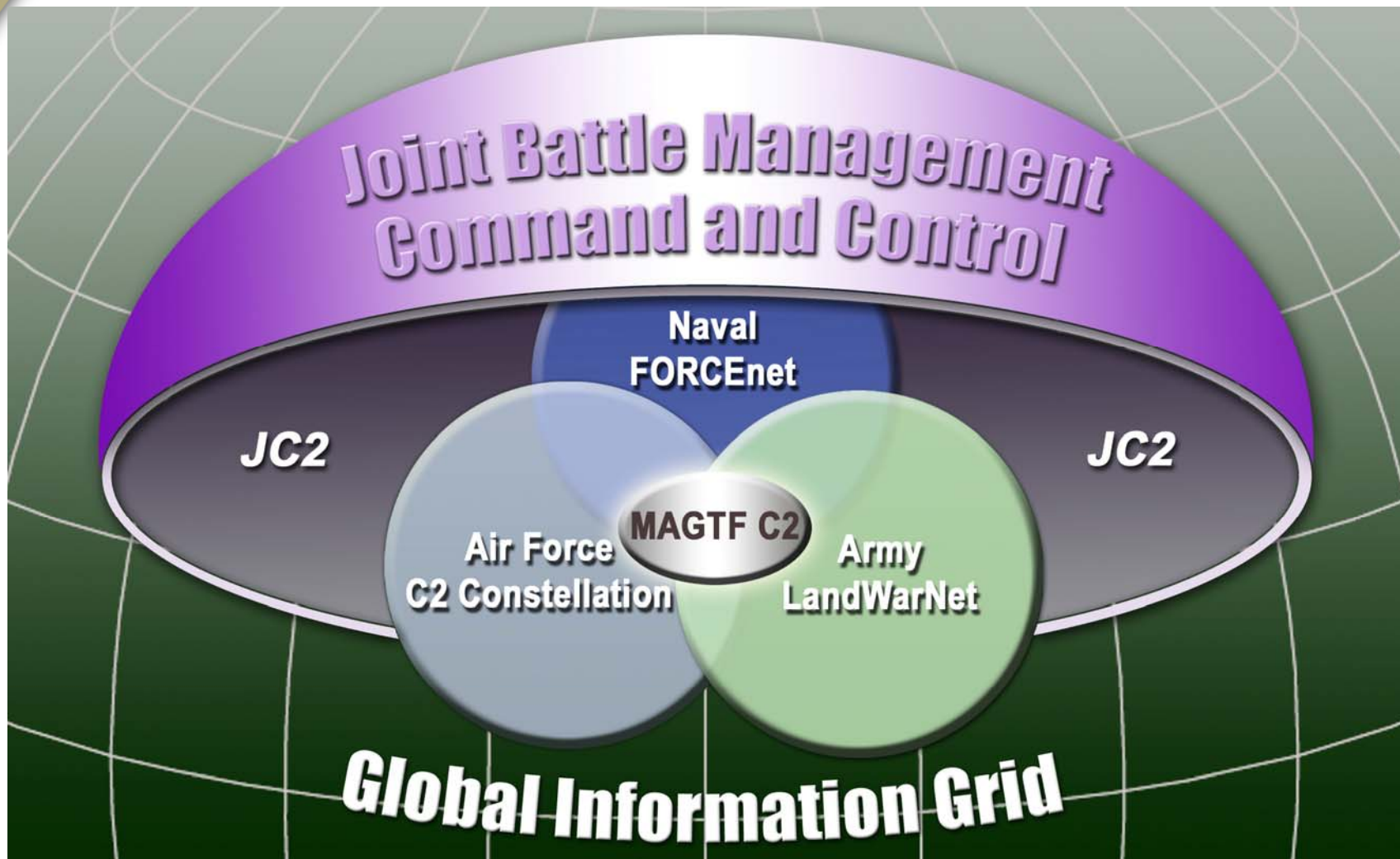


MAGTF C2 Strategy is based on a Concept-Based Development Process





MAGTF C2 Integrates into the Joint Architecture





Linked to the GIG through FORCEnet





FORCEnet Capabilities mapped to MAGTF C2 Layers

	Robust all nodes	Reliable status	Reliable tracking	Store/ retrieve	Process/analyze	Shareable/visible SA	Distributed Grp SA	Auto Decision Aides	Info assurance	Mult Sec Domains	Interop various sys	Disconnected ops	Self test/diagnose	Upgrade quickly	Enable rapid decision
Applications		X	X		X	X	X	X	X	X	X	X		X	X
Enterprise Services				X	X		X	X	X	X		X	X	X	
Network					X		X		X	X		X	X	X	
Bandwidth Tactical	X									X	X			X	
Bandwidth Operational	X									X	X			X	



MAGTF C2 Center of Excellence

- **Focal point for DOTMLPF implications of MAGTF C2 Strategy**
- **The C2 COE serves as the central Marine Corps agency for command and control training and education issues within the Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities (DOTMLPF) process in order to synchronize the art and science of MAGTF C2 training and education requirements from the individual warrior through all levels of MAGTF commanders and their staffs.**

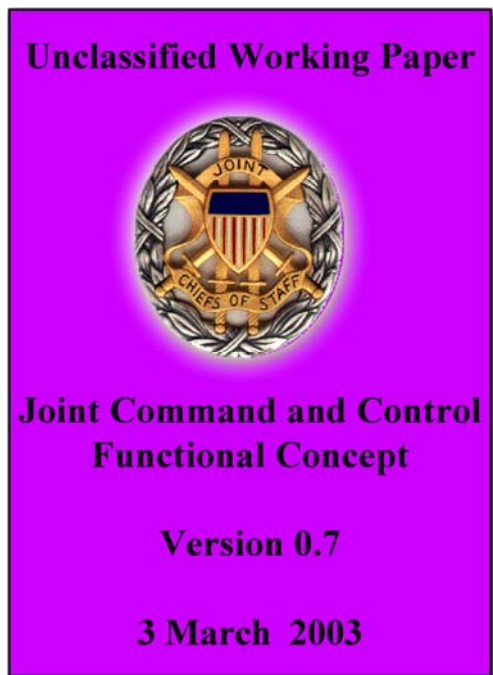


Way Ahead

- **Continue Detailed Requirements Traceability and program reviews while developing long-term strategy and Requirements Documentation ISO MAGTF C2 Spiral 1**
 - Draft MAGTF C2 Functional Concept
 - Draft C2 Campaign Plan
 - Draft MAGTF C2 Warfighter CONOPS
 - MAGTF C2 ICD
- **DC, CD BPT provide Programmatic guidance based on MAGTF C2 Strategy ISO POM-08 FEA**



JC2 Functional Attributes



- Superior Decision Making
- Shared Understanding
- Flexible Synchronization
- Simultaneous C2 Processes
- Dispersed Command and Control
- Responsive & Tailorable Organizations
- Full Spectrum Integration
- Shared Quality Information
- Robust Networking

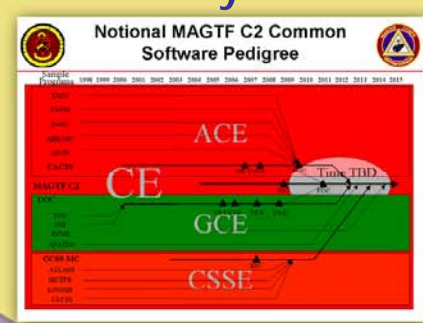


C2 Campaign Plan



"end to end C2" Strategy

C2 System



Enterprise Services Support Structure

Marine Corps Enterprise Network

Tactical Bandwidth

Operational Bandwidth

FORCEnet
JBMC2/JC2



AMCB

BACK UPS



Collaboration

- **... is a powerful tool in achieving optimal solutions and overcoming disagreement. It enables us to function as part of a larger team, within our own staff, the DoD, the interagency, & ultimately with our Coalition partners. The power of a team is vastly superior to that of an individual--whether that team be composed of people or of nations.**
- **Standardized, interoperable, & readily available tools, which facilitate collaboration across a broad set of partners, are needed. Such collaboration tools can help us overcome the tyrannies of time and distance and enhance speed and precision in execution. Common operating pictures and common data packaging are essential. We must create or adopt those tools with the greatest applicability.**

16th CHAIRMAN'S GUIDANCE TO THE JOINT STAFF 1 Oct 05



Collaborative Areas

- **Operational Capabilities & Requirements**
- **Architectures**
- **Training**
- **Programs**
 - Contractual Requirements
 - Development
 - Test and Evaluation
 - Fielding
 - Sustainment



Acquisition & Systems Commands

Memorandums of Agreement (MOAs)

Command and Control

- Common Ground Tactical Communications Architecture
- Maneuver Control System (MCS) Migration to Joint Tactical COP Workstation (JTCW)
- Single Platform / Dismounted C2/Situational Awareness (SA)
- USMC/USA FCS Unit of Action (UA) C4ISR Systems
- Joint Warning and Reporting Network (JWARN) Management
- Joint Combat Identification Marking Systems (JCIMS) Development



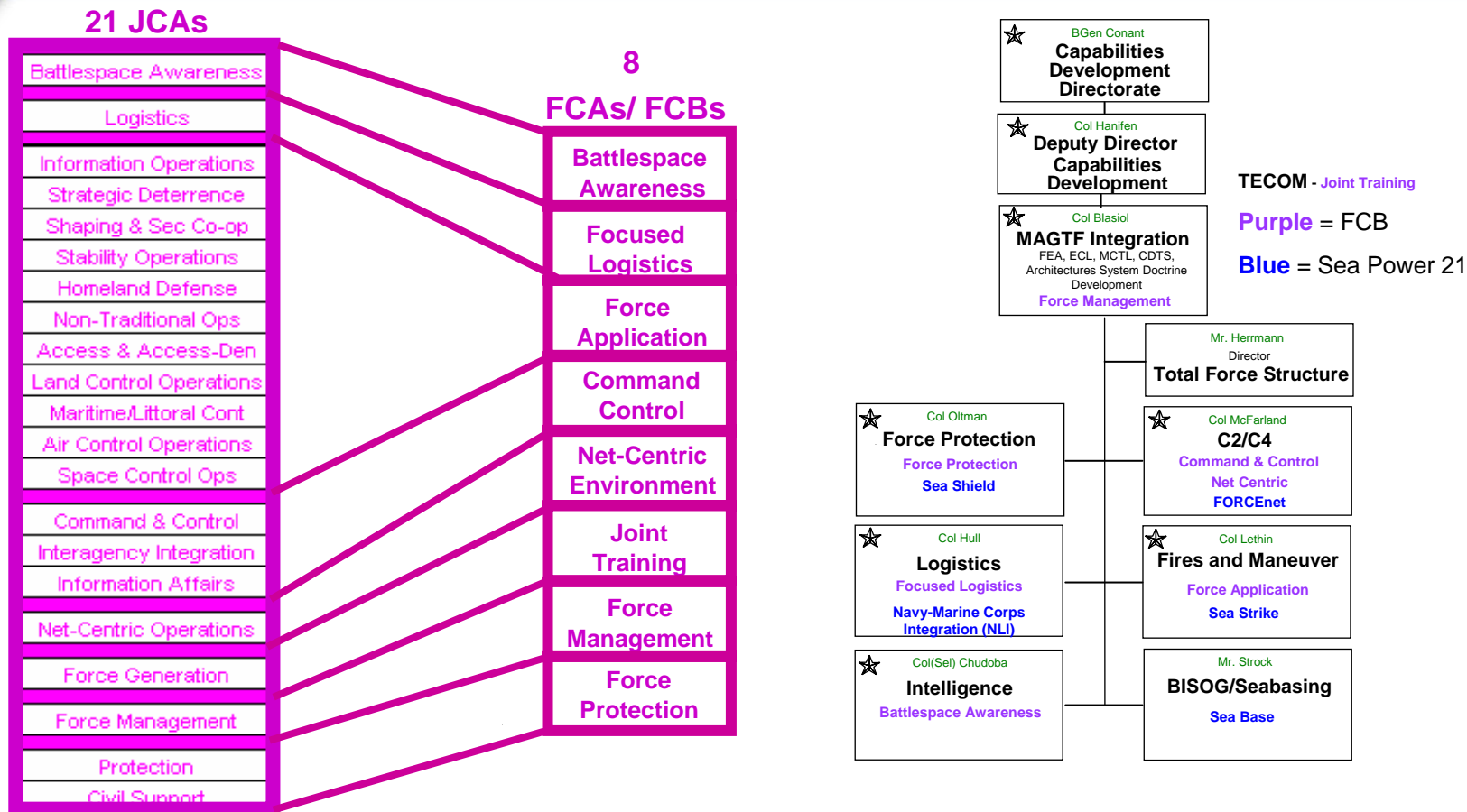
DC, CD&I

**HQMC
REALIGNMENT
MEETING**

19 AUG 05



CDD Directorate FCB/SP 21 Mapping



NOTE: Force Management is too diverse for a single Integration Division to manage. Battlespace Awareness shares both Intelligence and Command & Control. For “span of control” management, Battlespace Awareness was placed under Intelligence.

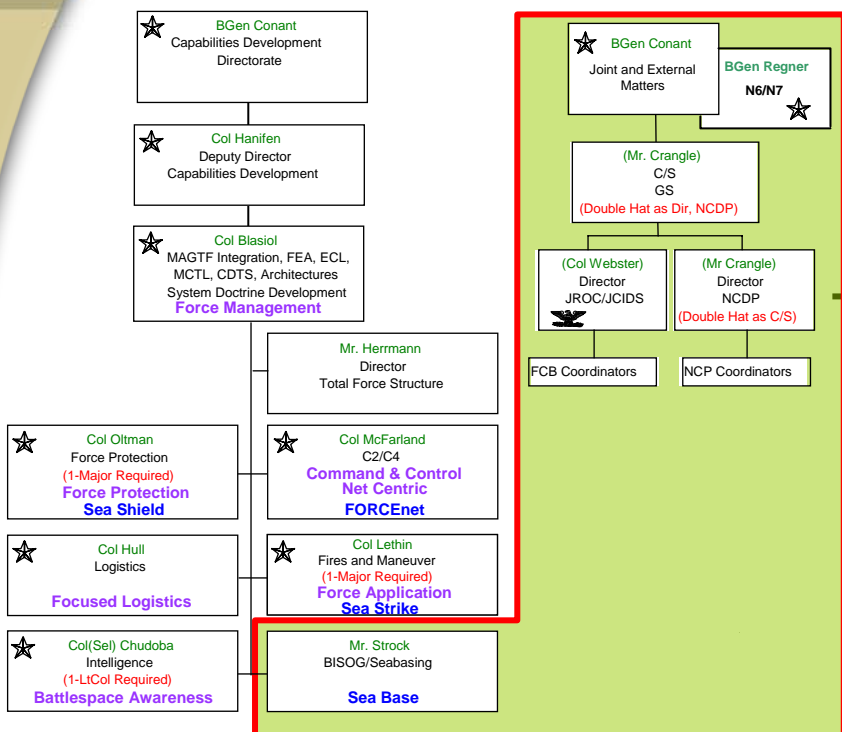


Joint & Navy Combat Development Integration

★ BGen Regner
N 6 / N 7

“PROPOSED”

- Closely integrate the development of naval warfighting requirements of mutual concern to the Navy and Marine Corps.
- Designated N7M - report directly to the Head, Warfare Integration (N7F).
- Direct access throughout the N6/7 directorate.
- Coordinate between the OPNAV and HQMC staffs as necessary to ensure a full and balanced consideration of Marine Corps equities in NCDP
- This officer shall:
 - Arrange for Marine Corps GO & SMEs as necessary to support NCP/MCP development (i.e., seminars, wargames, offsite);
 - Attend N6/7 and N7F staff meetings; provide summaries as appropriate to DC(CDI) & DC(P&R);
 - Arrange for additional Marine Corps participation/representation at N6/7 and N7F staff meetings as appropriate;
 - Prepare, review & deliver reports & presentations as appropriate to the N6/7 N-codes and the 3* BOD, reflecting Marine Corps assessments of the NCDP;
 - Prepare, review & deliver reports & presentations as appropriate to the HQMC staff, the MRB & MROC, reflecting Marine Corps assessments of the NCDP;
 - Review and comment and/or arrange for Marine Corps staff review and comment on OPNAV NCDP documents to reflect MC assessments.
- DC, CD&I - Reporting Senior. N7F will provide FITREP comments
- Nothing in the MOA will be construed as limiting, marginalizing or replacing the authorities vested in the Head, Expeditionary Warfare (N75) pursuant to 10 USC 5038.



TECOM - Joint Training

Purple = FCB

Blue = Sea Power 21

[NOTE: BISOG applies to every Capability Directorate.]

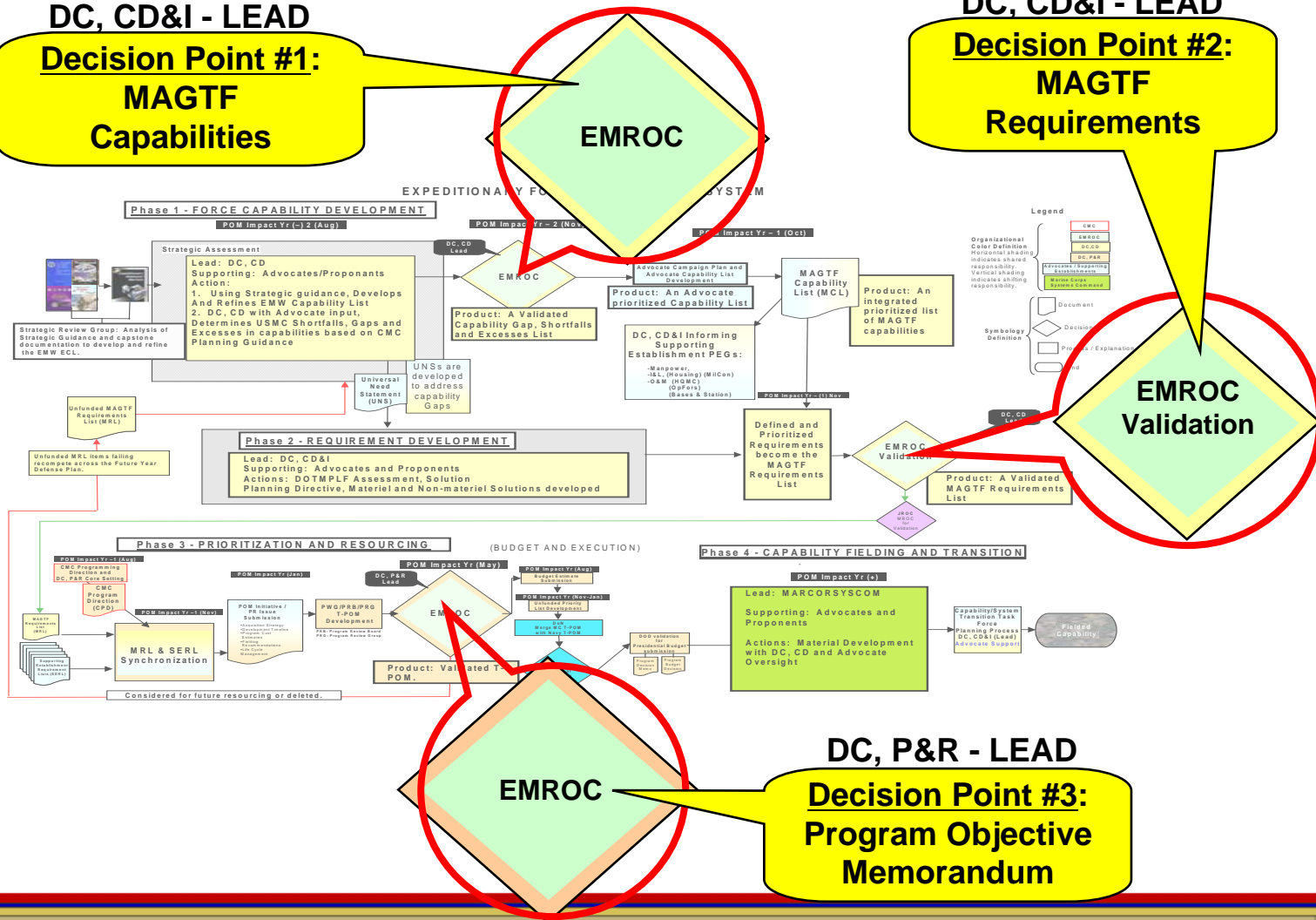


DC, CD&I and DC, P&R Venture: Tomorrow's PPBES

A Mutually Supporting Combat Development and Resource Allocation Process

DC, CD&I - LEAD
Decision Point #1:
MAGTF
Capabilities

DC, CD&I - LEAD
Decision Point #2:
MAGTF
Requirements

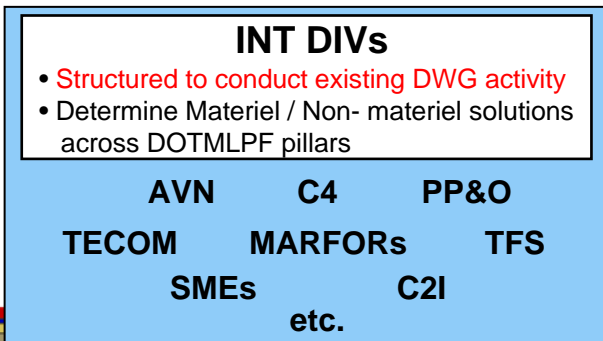
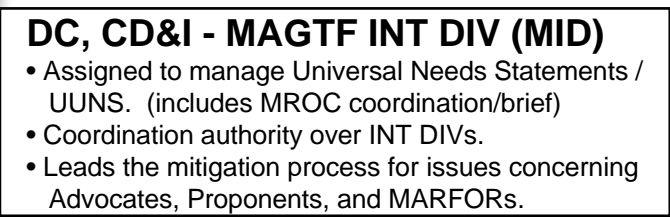
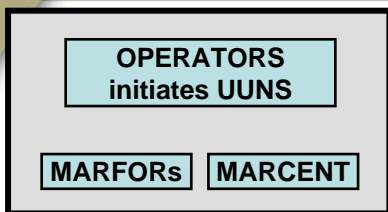


DC, P&R - LEAD
Decision Point #3:
Program Objective
Memorandum

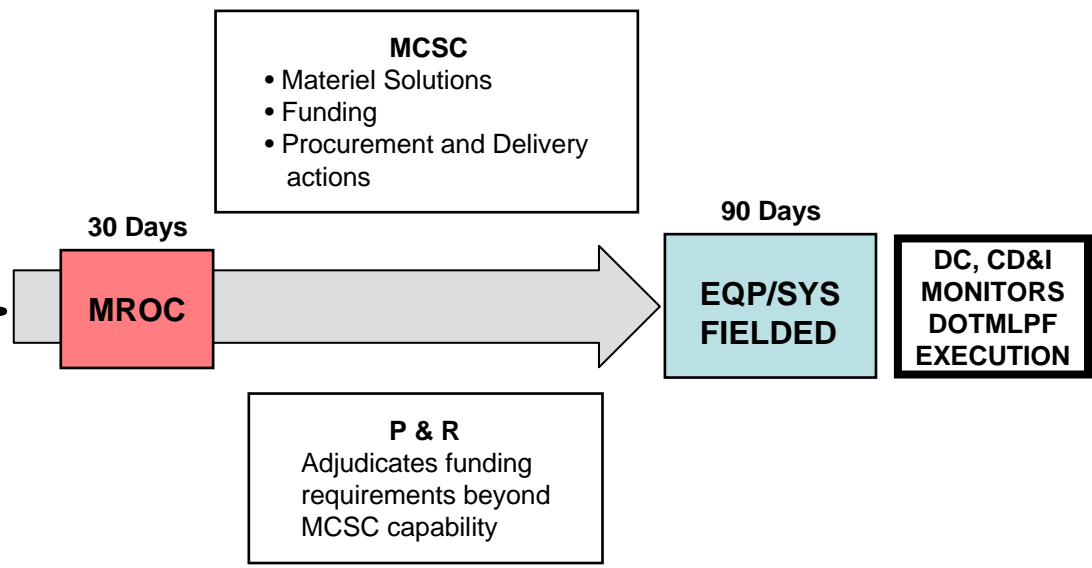


UUNS Process

“SEAMLESS” to Combat Development Reorganization



The Combat Development Reorganization can implement MARADMIN 424/04 “UUNS Process” seamlessly at any time during the PPBE process . The reorganization is designed to foster an “Integration Environment” that can more smoothly and efficiently receive a capability need, conduct DOTMLPF assessments, obtain MROC decision, and procure/deliver the capability within the target timeline of 90 days.

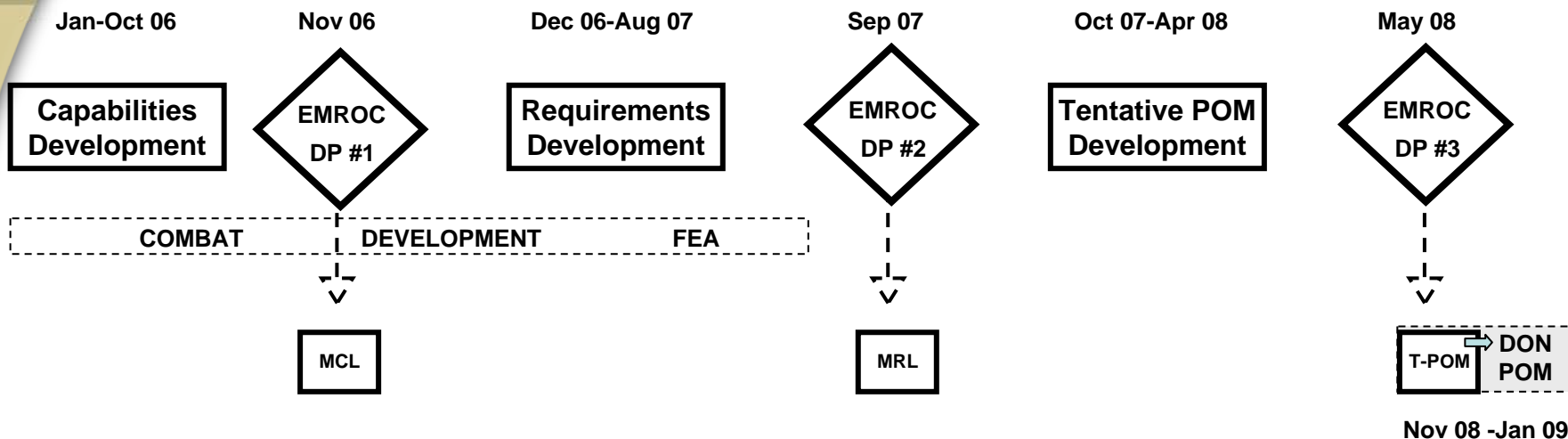




Simplified PPBE (POM 10)

POM-08 CD FEA (1 Jun – 31 Oct 05)

Current CD FEA for POM-08 began on 1 Jun and will complete by 31 Oct. EMROC will convene in NOV 05.



MAGTF Capability List (MCL).

- Integrated/Prioritized capabilities list
- Derived from the ECL/ACLs
- Identifies prioritized capabilities to compete in the POM process.

MAGTF Requirements List (MRL).

- MCL used as baseline
- Fiscally informed requirements list with assigned Relative Benefit Value (prioritization)
- Materiel / non-materiel alternatives identified
- Used to identify warfighting capabilities/programs and is synchronized with the **Supporting Establishment Requirements List (SERL)** to develop the Tentative POM

Tentative POM

- CMC approves
- Navy and Marine Corps T-POMs are combined into the DoN POM and submitted to SECDEF



DC, CD&I

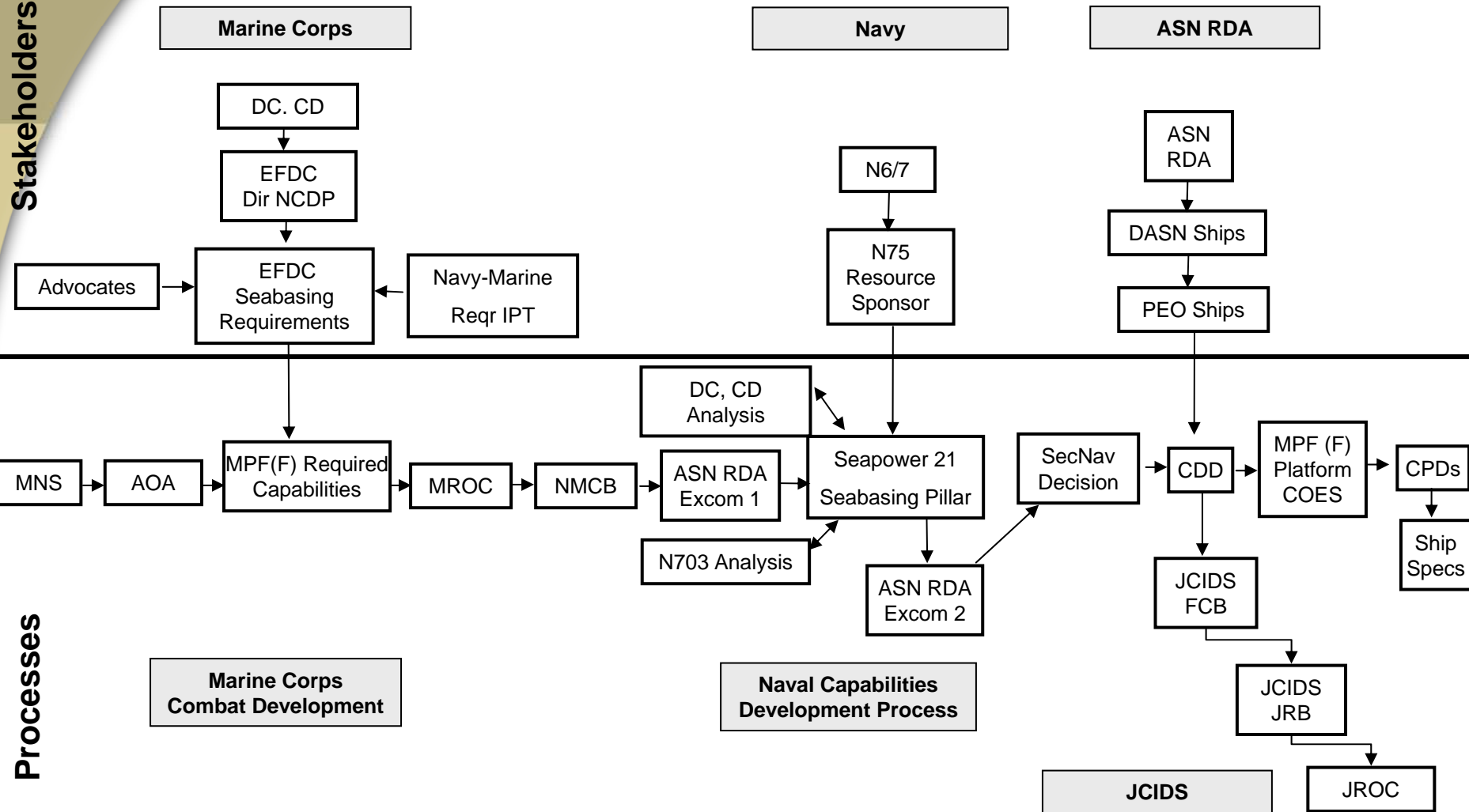
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USMC CD – NCDP – JCIDS MPF (F) Case Study

Stakeholders

Processes





PPBE Present/Future

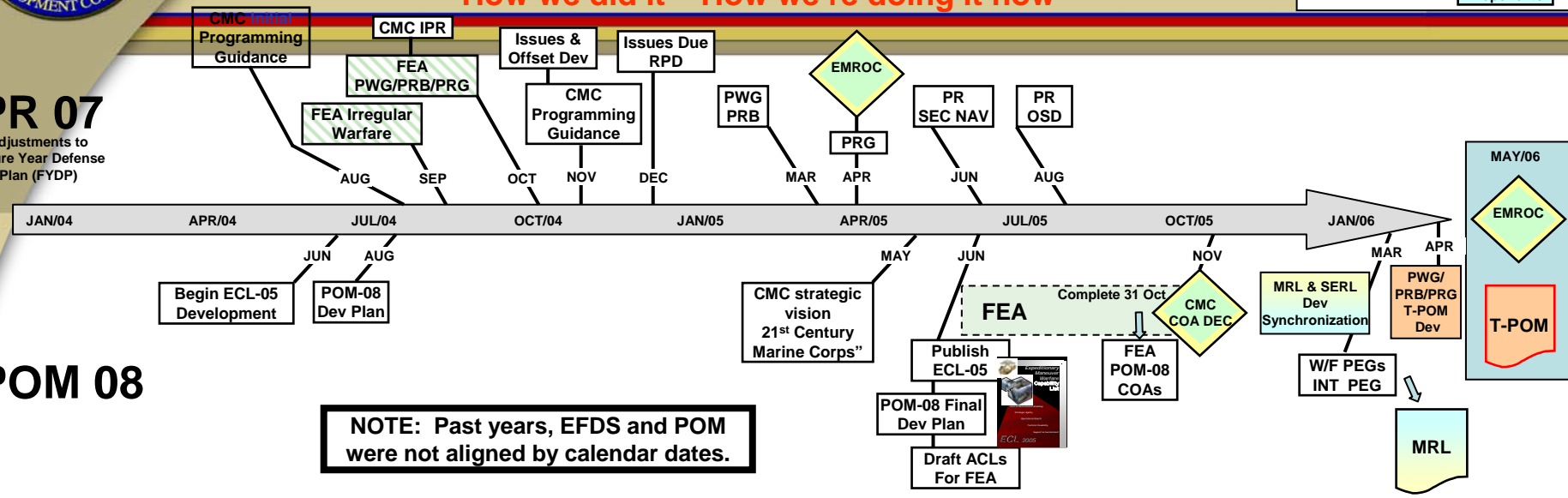
“How we did it – How we’re doing it now”

Organizational Color Definition
 Horizontal shading indicates collective efforts. DC, CD&I responsible to develop MCL & MRL

EMROC
DC, CD
DC, P&R
Advocates Proponents

PR 07
 Adjustments to Future Year Defense Plan (FYDP)

POM 08



“How we need to do it”

NOTE: No longer a need for the Warfighting System PEG

PR 09
 Adjustments to Future Year Defense Plan (FYDP)

POM 10
 MAGTF C2

