



MRT-C – How do we get to Utopia?

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DISA C5I LNO



Objectives

- Whoami?
- What is MRT-C, and KT-C?
- Why do we care?
- What role DISA plays
- Challenges
- Path Forward



Mission Relevant Terrain – Cyber / Key Terrain - Cyber

- **Mission Relevant Terrain in Cyberspace (MRT-C)** as defined in OPORD 17-0106 is all devices, internal and external links, operating systems, services, applications, ports, protocols, hardware, and infrastructure that supports critical data paths vital for mission success. Of note, this may be infrastructure outside of our physical control, may be heavily contested, and may demand logically and physically redundant paths.
- **Key Terrain in Cyberspace (KT-C)** is the equivalent of high ground in the physical world. It is terrain in cyberspace that affords intrinsic advantage (like a firewall that logs traffic that we can analyze). Typically, this is infrastructure we control (have admin rights and physical access to) and must be specifically defended as any compromise may compromise the mission.
- In order for Mission Planners to effectively plan, they must be intimately familiar with the technical details of the cyber terrain they're planning on traversing as well as the mission's requirements.
- This "Terrain" is always changing. It undergoes continuous change as infrastructure and software are in constant flux. A method of tracking these relationships must be implemented and available to the planners.

Physical Dimension

Air Domain

Land Domain

Sea Domain

MRT-C lives up here too...

Cyber Domain

MRT-C lives down here

Another Dimension



Example of Joint Operation Enabled by C5I





The Future Will Be Faster

"...as the most innovative nation in the world, I would hope that the industrial base could take that, combined with other actions, and move faster." - ADM Aquilino

In order to be keep up, we must continually stay on top of emerging technologies without opening vulnerabilities in our own systems. This requires:

- Continuous Education.
- Promote innovation.
- MRT-C Mapping Solutions must be **technology agnostic**
- Flexible and scalable
- Vigorously question the need for something **New**
Just because an industry is trending, doesn't mean it brings value! Question everything.
- **We must strive not just to map the MRT-C, but to ultimately maneuver within it!**
Dynamically leverage multiple flexible data paths to route around disruption.



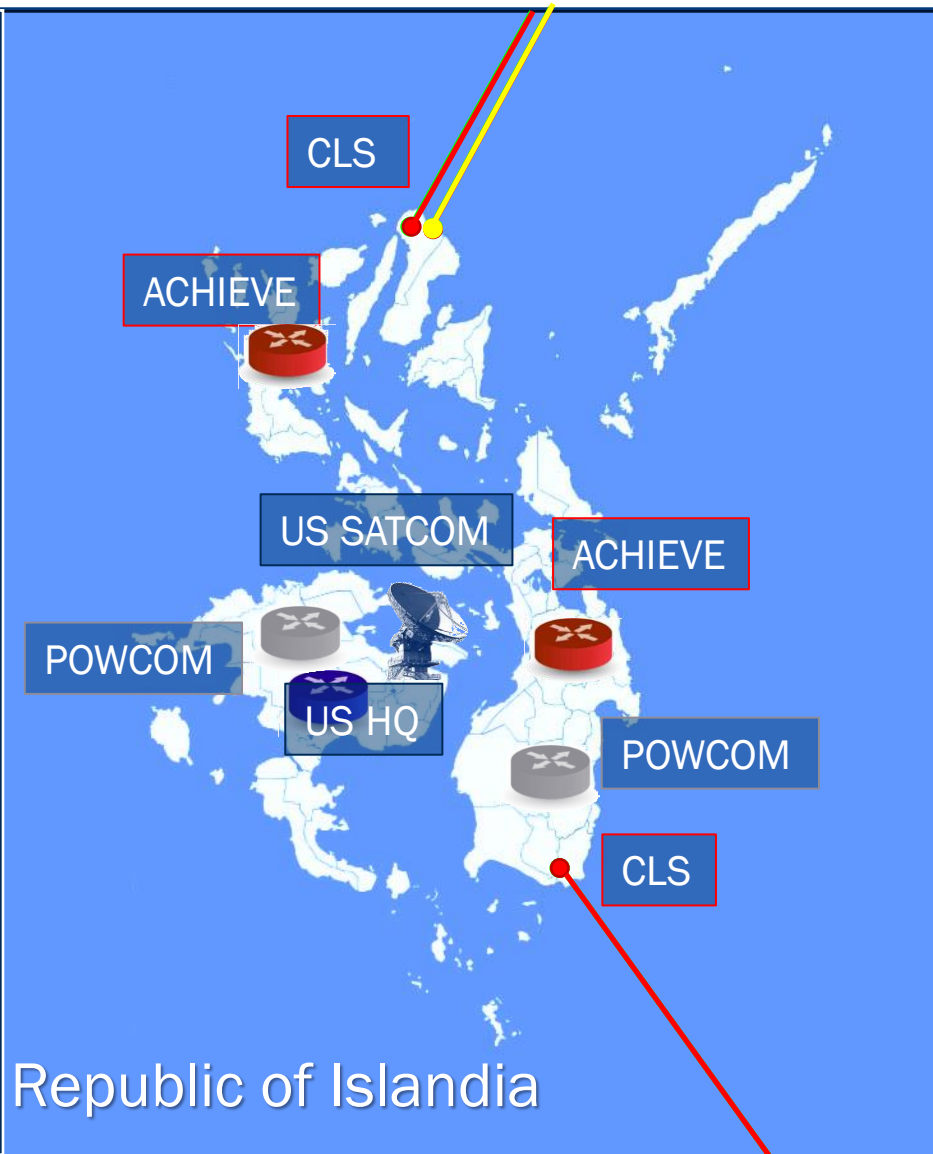
An Ideal Visualization Tool

OPERATION EPIC TYPHOON

NIPR Email
NIPR Browsing
NIPR Chat

SIPR VTC
SIPR Email
SIPR Browsing
SIPR Chat

CENTRIXS Chat
CENTRIXS Email



13-APR-24 2200 HQ SVR Backups Complete
 14-APR-24 1613 **** Severe WX Advisory ****
 14-APR-24 2200 HQ SVR Backups Complete
 15-APR-24 2200 HQ SVR Backups Complete
 15-APR-24 0913 **POWCOM RTR-B.1 **Degraded****
 15-APR-24 2200 HQ SVR Backups Complete
 16-APR-24 1830 HQ RTR-A.1 Routine Maint. Completed



Avoiding the “Hunger Games”



A well mapped MRT-C allows for much greater management in low-bandwidth conditions. In addition to prioritization of applications and users, the **bandwidth footprints** of applications must be known.



DISA - Significance of MRT-C

• ANALYTICS AND TESTING

• COLLABORATION

• COMMAND AND CONTROL

• COMPUTING SERVICES

• CONTRACTING AND ACQUISITION

• CYBERSECURITY

• DEVSECOPS

• NETWORK CONNECTIONS

• SPECTRUM

Guarantee us
access so we can
FIGHT!

DISA Powers
ACTIVATE!



Malicious Cyber
Actors



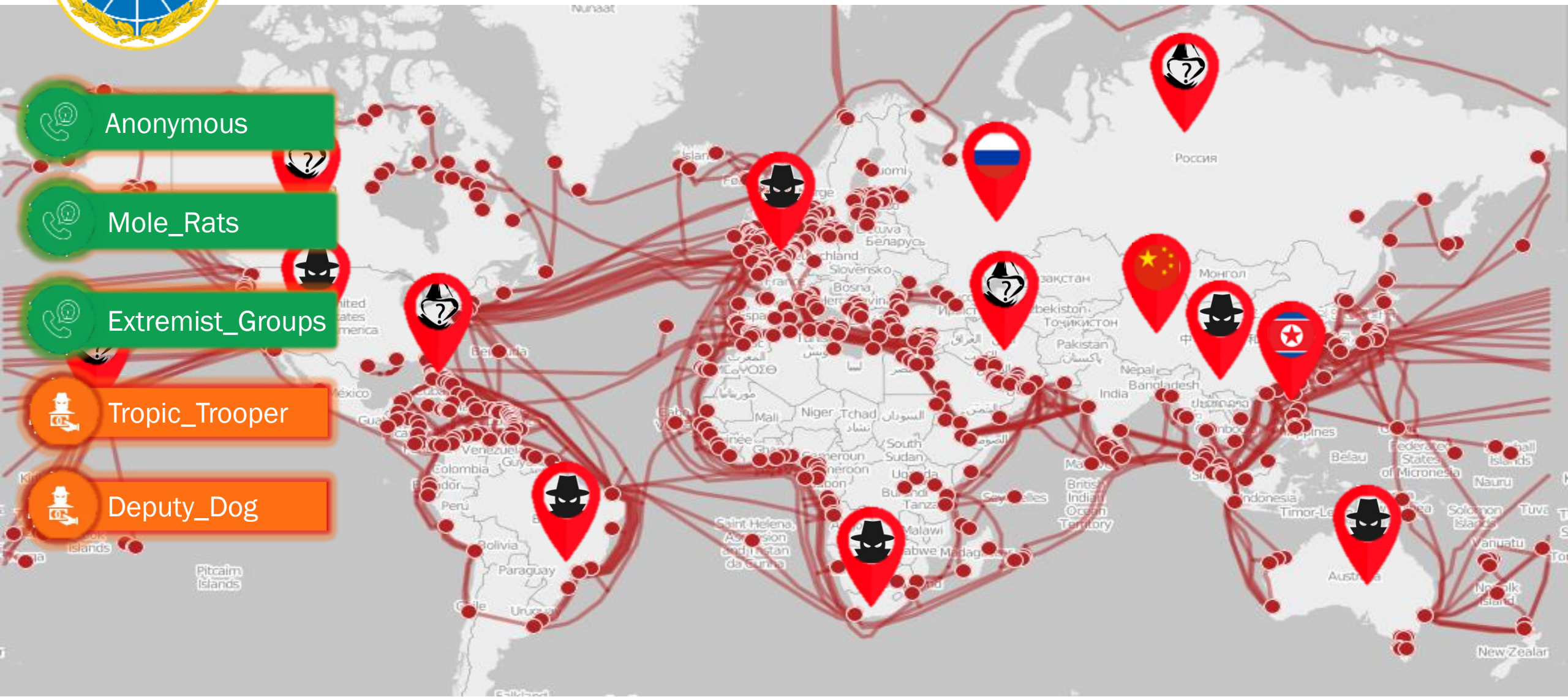
DISA - A Brief History





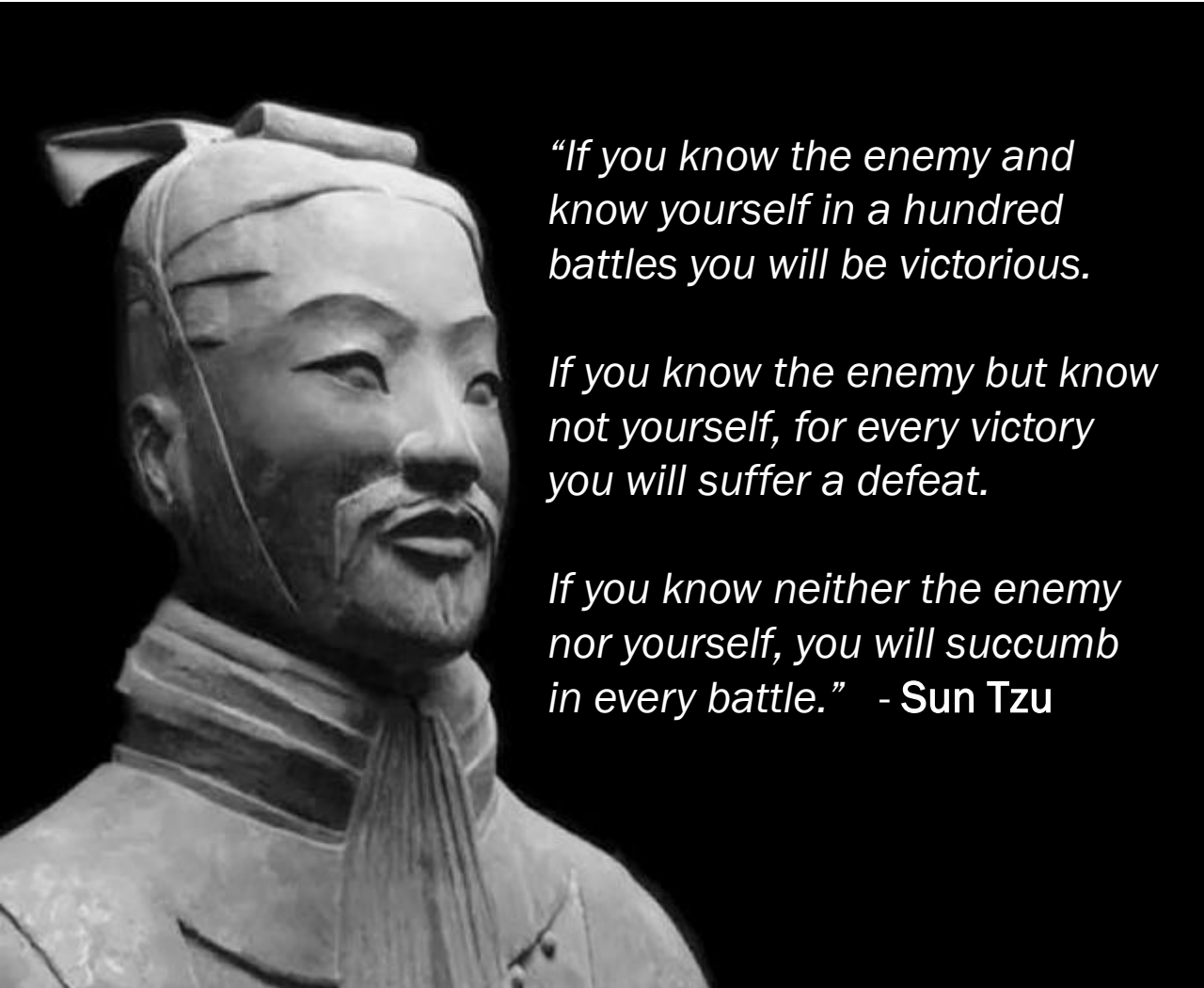
DISA - Competition in MRT-C

- Anonymous
- Mole_Rats
- Extremist_Groups
- Tropic_Trooper
- Deputy_Dog





We Must Master Ourselves



"If you know the enemy and know yourself in a hundred battles you will be victorious.

If you know the enemy but know not yourself, for every victory you will suffer a defeat.

If you know neither the enemy nor yourself, you will succumb in every battle." - Sun Tzu

In order to be effective in the 21st Century, we must continuously look inward.

Just as the antithesis of security is convenience, the arch-nemesis of mapping MRT-C is complexity.

Especially as we adopt new technologies, we have to ensure we do not lose knowledge of ourselves. This requires:

- Vigilant observation
- Constant re-evaluation of MRT-C and KT-C
- Honest and humble self-assessment.
- Reject blind pursuit of consumer trends.
- Robust methods of tracking.



Mission Assurance Decision Support System

Dashboard Missions ASIs Events Map Dagger Admin

Search DISA

Last updated 04/05/2021 20:42 Refresh Edit dashboard Select dashboard

Mission Status

0% Operational Total 0	0% Operational HazC... Total 0	0% Degraded Total 0	0% Degraded HazCon Total 0	100% Failed Total 3
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System Status

Name	Sub-Type	PMO	AO
System 101	Electric Power		
System 102	Electric Power		
System 103	Electric Power		

Open unscheduled events (6)

- This is an event
23 0000Z Apr 2021
Location: Miami Gardens, FL
Event ID: DISA-4
- e2e test for event resources
Location: Naval Surface Warfare Center Dahlgren Division, Virginia
Event ID: DISA-6
- Outage of 10101
12 0000Z Jan 2021
Location: Fort Belvoir, Virginia
Event ID: DISA-8
- MADSS II training event and report
Location: Naval Surface Warfare Center Dahlgren Division, Virginia

Asset Status

Name	Sub-Type	Location	Owner
CIRCUIT 10101	Circuit	LOCATION 101 - LOCATION 106	ORG 101
CIRCUIT 10102	Circuit	LOCATION 102 - LOCATION 107	ORG 102
CIRCUIT 10103	Circuit	LOCATION 103 - LOCATION 108	ORG 103



Mission Assurance Decision Support System

Dashboard Core objects ASIs **Events** Map Dagger Admin 15:45Z

Event dashboard
Advanced search
COMSTAT report
Daily activity report
Distribution lists
Contacts
Contact categories

Events

Last updated: 10/05/2022 15:45 Z Refresh Edit dashboard Select dashboard

Unscheduled events (6) Show hidden events?

Mission 101 XoFY Impacts Test Event (test-data) 06 1923Z Oct 2022 DISA-106	Related assessments	None
Event for AF 1 (test-data) 05 1923Z Oct 2022 AF-1	Related assessments	DISA-10123 ● Outage DISA-10124 ● Degraded DISA-10125 ● Operational hazcon
Event for AF 2 (test-data) 05 1923Z Oct 2022 AF-2	Related assessments	DISA-10126 ● Degraded hazcon DISA-10127 ● Operational hazcon DISA-10128 ● Degraded hazcon
Report testing event open unscheduled 03 1923Z Oct 2022 DISA-104	Related assessments	None
GTMSAR-126 03 1923Z Oct 2022 DISA-3	Related assessments	None
GTMSAR-122 01 1923Z Oct 2022 DISA-1	Related assessments	NORTH-333 ● Operational hazcon STRAT-123 ● Degraded

ASIs starting in 7 days (6) Show hidden ASIs?

Preliminary Approval DISA-1234 06 1240Z Oct 2022 – 22 1240Z Apr 2023	Related assessments	None
Awaiting Review DISA-2 07 1240Z Oct 2022 – 14 1240Z Oct 2022	Related assessments	NORTH-333 ● Operational hazcon SOUTH-132 ● Outage STRAT-123 ● Degraded
Cancelled STRAT-5 07 1240Z Oct 2022 – 22 1240Z Jan 2023	Related assessments	AF-300 ● Degraded AF-301 ● Operational hazcon DISA-790 ● Operational hazcon NAVY-703 ● Failure NAVY-704 ● Degraded STRAT-300 ● Failure
Awaiting Review DISA-1 08 1240Z Oct 2022 – 07 1240Z Dec 2022	Related assessments	NORTH-222 ● Outage

High priority ASIs (1) Show hidden ASIs?

Awaiting Review AF-1 14 1240Z Oct 2022 – 29 1240Z Nov 2022	Related assessments	DISA-456 ● Operational hazcon SOUTH-133 ● Degraded
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In Summation

MRT-C is a moving target!

In order to support the War Fighter we must not only understand MRT-C, but account for the relationships and impacts of every element even as they dynamically change.

It is therefore absolutely crucial to develop and map the MRT-C for a given mission not just during planning but continuously throughout that mission's lifetime, no matter the complexity.

There is no conquering the Cyber Domain, only the struggle to support the physical domains until they achieve victory. Ergo, the MTR-C Utopia can never be reached, and yet we must strive for its ideal to ensure victory on the battlefield.

"We have no room for complacency and history makes it clear that America has no preordained right to victory on the battlefield."
- General James Mattis





Acknowledgments

[1] United States Cyber Command
Cyber Warfare Publication 3-0.1, Identification of Mission Relevant Terrain In Cyberspace

[2] United States Cyber Command
USCYBERCOM OPORD 17-0106, Identification and Mapping of MRT-C Supporting Critical Assets

[3] Maj E Pederson (USAF), MAJ D Palermo (USA), MAJ S Fancey (USA), LCDR T Blevins (USN)
DOD Cyberspace: Establishing a Shared Understanding and How to Protect It, 2022

[4] D Raymond, T Cross, G Conti, M Nowatkowski
Key Terrain in Cyberspace: Seeking the High Ground, 2014



Questions?



DISA: The premier IT and telecommunications provider for the US military

