



NETWORK CENTRIC WARFARE DOMAIN OF AIR OPERATION

Wg Cdr VPS Gunasekara

MSc (Def & Strat Stu), BSc sp(Hons) in IT, psc

Dte of IT

AFHQ

SEQUENCE

- ▶ Introduction
- ▶ Key concepts and technologies
- ▶ Synergy in Air Power and NCW
- ▶ Instances of using NCW in world theaters
- ▶ Adopting of NCW concepts in SLAF
- ▶ Conclusion





INTRODUCTION

NCW IN AIR OPERATIONS

Network-centric warfare (NCW) is a military concept that focuses on the integration of information, communication, and technology to enable faster and more effective decision-making in air operations



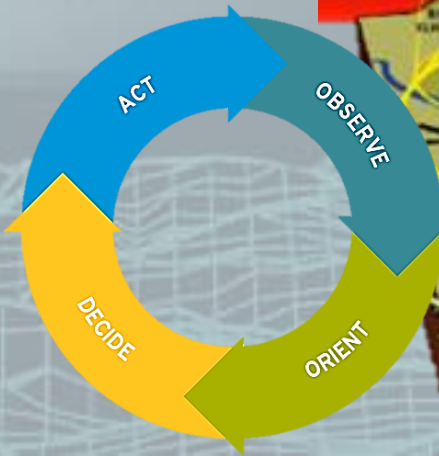
ADVANTAGES OF USING NET CENTRIC CONCEPTS

- ▶ Gaining the information superiority
- ▶ Conducting psychological operations
- ▶ Targeting strategic level
- ▶ Using UAVs and Autonomous systems



BRIDGING TIME AND DISTANCE

- ▶ High level of shared battle space awareness for all the entities which tactically, geographically or hierarchically dispersed
- ▶ Reduce the time it takes collectively to
 - ▶ Observe the situation
 - ▶ Orient themselves to the problem
 - ▶ Decide what to do
 - ▶ And Act accordingly





KEY CONCEPTS AND TECHNOLOGIES

NETWORKED C2 SYSTEMS

Advanced C2 system

- ▶ Monitor and direct multiple aircraft in real time
- ▶ Provide centralised view of the battlefield
- ▶ Process vast amount of data from different sources
- ▶ Effective coordination and rapid decision making
- ▶ Quickly responding the emerging situation



NETWORKED SENSORS

- ▶ Air Ops using Radar, infrared sensors, electro optical sensors
- ▶ Real time detection and Movements of enemy air crafts
- ▶ Weather and other environmental factors
- ▶ Integration and networking sensors will provide comprehensive and accurate picture of air space



NETWORKED COMMUNICATION

- ▶ Air Ops need fast and reliable communication
- ▶ Advance Com Network allow real-time communication between air units and ground controls
- ▶ This allows
 - ▶ Rapid decision making
 - ▶ Coordination
 - ▶ Adjust in changing conditions
- ▶ NCW concepts
 - ▶ Satellite communication
 - ▶ Software Define data links
 - ▶ Advance encryption methods



PRECISION STRIKE

- ▶ PGM allows
 - ▶ Highly accurate targeting
 - ▶ Minimise collateral damages
 - ▶ Increase effectiveness of air strike
- ▶ Can be delivered through manned air craft or UAVs
- ▶ Integration of advance sensors
- ▶ Targeting systems
- ▶ Navigation technologies



INTEROPERABILITY

- ▶ Air Operation often involves multiple air crafts
 - ▶ Different units
 - ▶ Different services
 - ▶ Different countries
- ▶ Effective coordination and communication



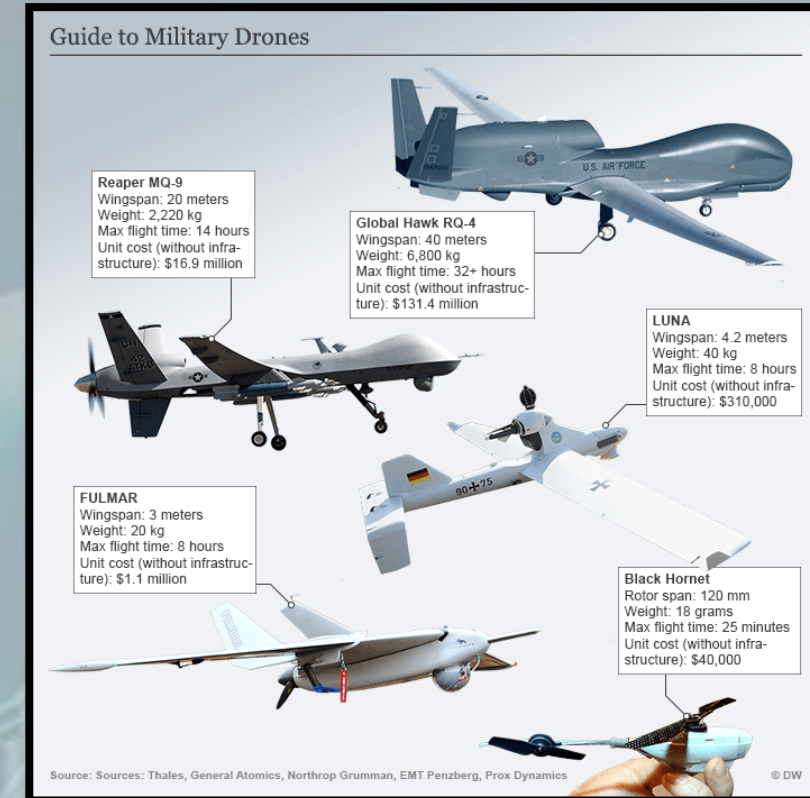
AGILE AND ADAPTIVE FORCE STRUCTURE

- ▶ Composition of force can change rapidly
- ▶ Quickly adapt to changing circumstances
- ▶ Leverage network information



UNMANNED ARIAL VEHICLES

- ▶ Gathering information with minimum risk
- ▶ Delivering weapons or other payload to the target





SYNERGY IN AIR POWER AND NCW

CHARACTERISTICS OF AIR POWER

- ▶ Speed
- ▶ Range
- ▶ Precision
- ▶ Flexibility

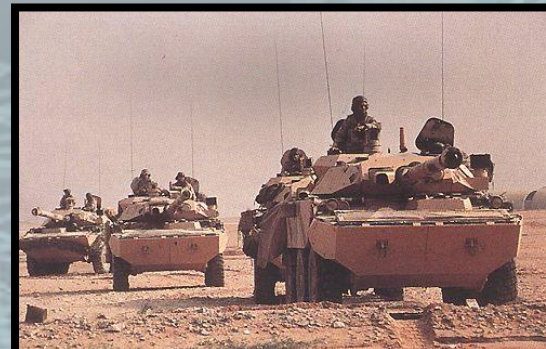




USE OF NCW CONCEPTS IN WORLD THEATER

OPERATION DESERT STORM (1991)

- ▶ ISR
- ▶ C2
- ▶ Precision targeting
- ▶ Logistics and maintenance



OPERATIONS DELIBERATE FORCE & JOINT ENDEAVOR (1995-1998)

- ▶ Tactical Air Command Centre (TACC)
- ▶ Joint Tactical Information Distribution System (JTIDS)
- ▶ Information operations



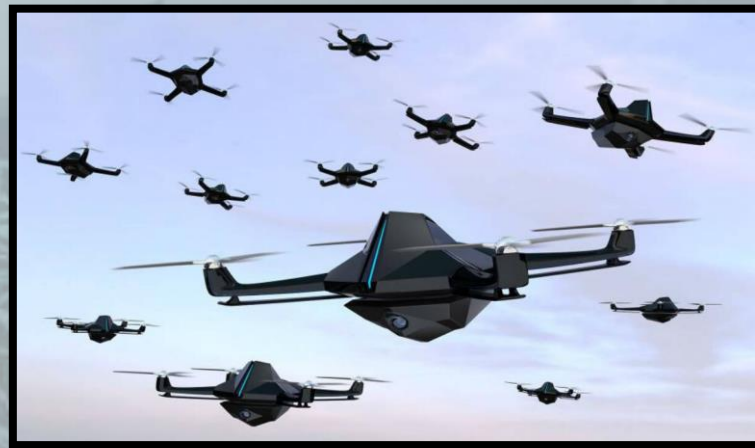
OPERATION ENDURING FREEDOM (2001-2014)

- ▶ Use of UAVs for bombing
- ▶ Networked Communication – Joint Tactical Radio System (JTRS)
- ▶ Electronic warfare – Improved Data Modem (IDM)



RECENT USE OF NCW CAPABILITES IN AIR OPS DOMAIN

- ▶ Multi-Domain Command and Control (MDC2)
- ▶ Next-Generation Communications
- ▶ Autonomous Systems
- ▶ Advanced Sensors
- ▶ Cybersecurity





ADOPTING OF NCW CONCEPTS IN SLAF

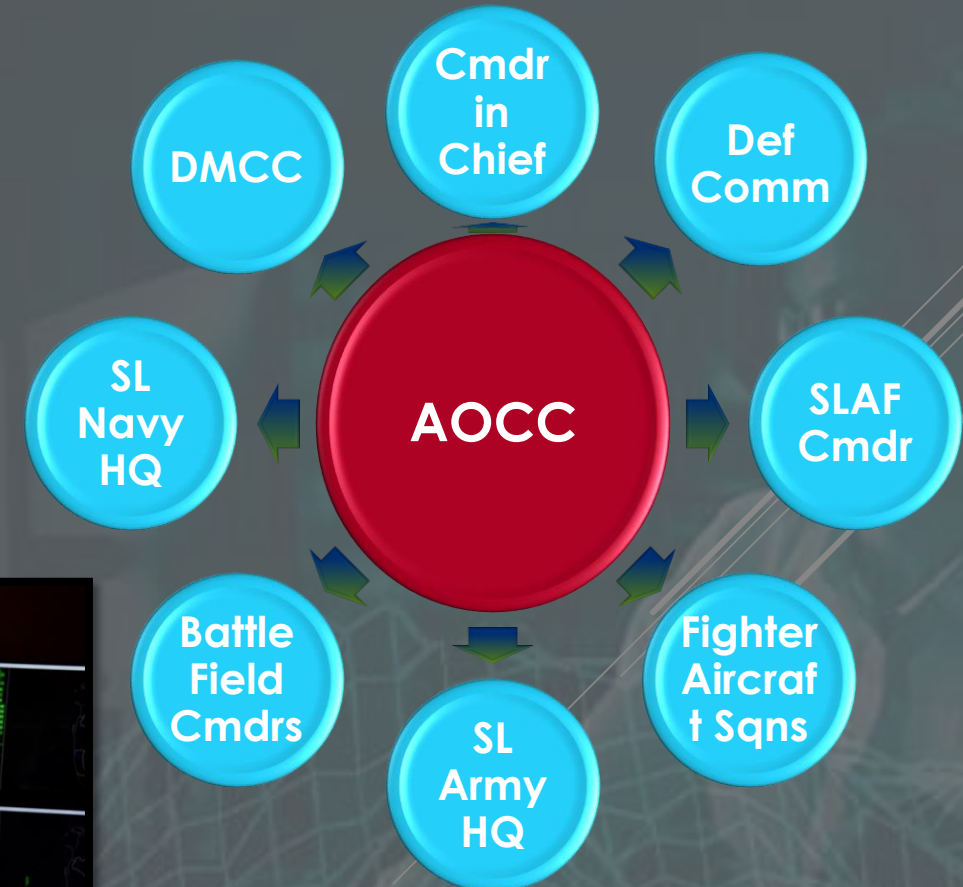
INTEGRATED AIR DEFENSE SYSTEM

- ▶ Integrate Radars, sensors, weapon systems and other systems
- ▶ Link elements in National Air Defence System in Sri Lanka
- ▶ Link with national and international authorities



AIR OPERATIONS AND COMMAND CENTER

- ▶ AOCC with C2 capabilities
- ▶ Real- time situation awareness
- ▶ Capable to handle Joint Operations
- ▶ Successfully operated in humanitarian operation



USE OF PRECISION GUIDED MUNITIONS

SLAF used PGMs in air strikes

- ▶ Enhance the accuracy
- ▶ Enhance the effectiveness
- ▶ Minimize the collateral damages



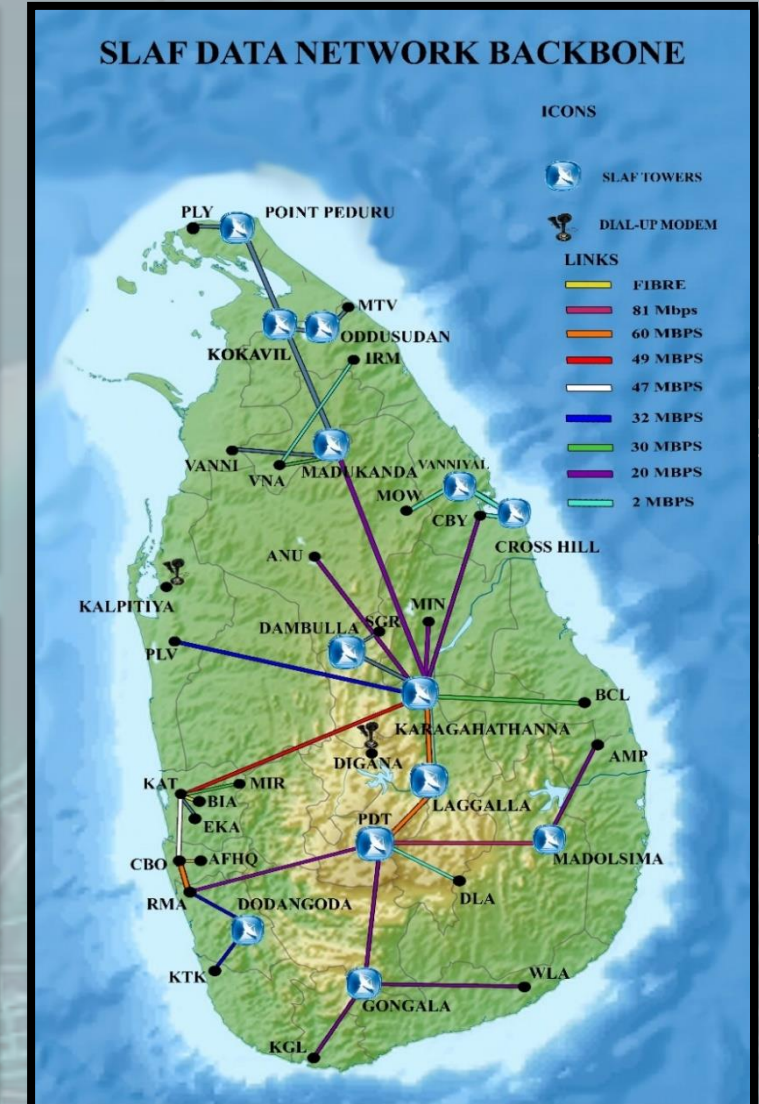
UNMANNED ARIAL VEHICLES AND DRONES

- ▶ Using UAVs and drones for ISR operations
- ▶ Sensors and Cameras
- ▶ Using SLAF Island wide LAN to data communication



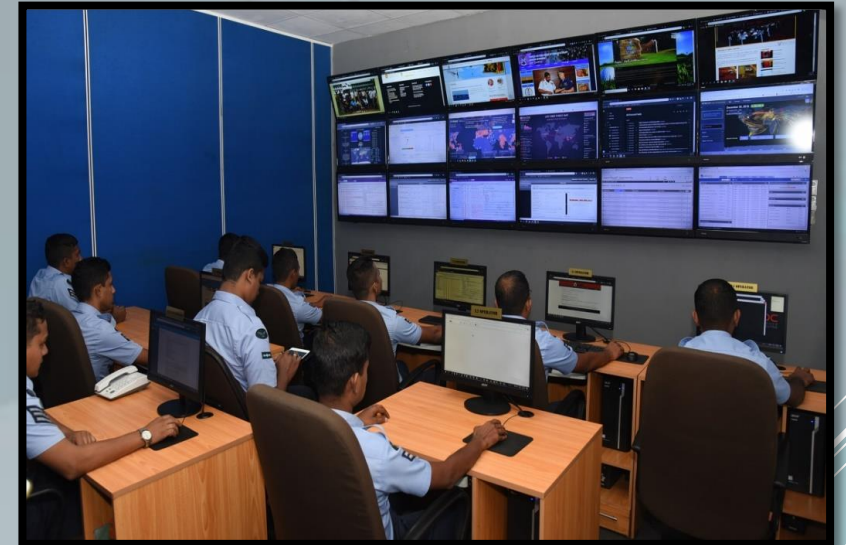
NETWORKED COMMUNICATION SYSTEM

- ▶ Secured Island wide LAN
- ▶ LAN connects
 - ▶ Air craft fleets
 - ▶ Ground stations
 - ▶ SLAF Automated systems
 - ▶ Surveillance Systems
 - ▶ Radar Network



CYBER SECURITY

- ▶ Secured SLAF digital systems and Network
- ▶ 24x7 Monitoring center
 - ▶ Defensive Ops
 - ▶ Offensive Ops
 - ▶ Forensic Ops
 - ▶ Cyber Intelligence Ops
 - ▶ Cyber Audits
 - ▶ Information warfare
- ▶ Protecting national critical infrastructure



NETWORK ENABLED LOGISTICS AND SUPPORT SERVICES

- ▶ Automated
 - ▶ Logistic Management systems
 - ▶ Aircraft Maintenance systems
 - ▶ Humane resources management systems
 - ▶ Other Resources management systems
- ▶ AI and VR systems



EPAS Sri Lanka Air Force EQUIPMENT PROVISIONING & ACCOUNTING SYSTEM

W0006 Fg Off RM Senanayake AFHQ KIT Log Out

MRP >> Kit Items Last Issue Details

Details

New

Service Number : w0006
Name : RM SENANAYAKE
Rank : Fg Off

Issued (Present Year) :-

S/No	Item No	Item Description	Qty	Last Receipt Date	Last Receipt Qty	Details
1	SLAF8475002029	Face Mask (Cloth)	3.00	09/29/2022	1	Issue Details
2	SLAF8495005008	Jacket Blazer Officer	1.00	06/02/2022	1	Issue Details
3	SLAF8410002016	Shirt - Short Sleeve Red Sea Rig White - Lady Officers	1.00	02/08/2022	1	Issue Details
4	SLAF8410002024	Shirt Short Sleeve Working Dress - Airwomen (Size - 14 1/2")	5.00	04/30/2022	1	Issue Details
5	SLAF8410010003	Skirt and Jacket Mess Kit Lady Officers (1C)	1.00	06/02/2022	1	Issue Details
6	SLAF8410001007	Slack Working Dress (Made To Measure) - Lady Officers	2.00	09/21/2022	2	Issue Details

HRMIS SRI LANKA AIR FORCE HUMAN RESOURCES MANAGEMENT INFORMATION SYSTEM

GENERAL INFORMATION Back

Initial Photo F1250 Photo New Photo [Board Proceeding Report](#)

Service No : 04140
Rank : Fg Off
Name : P L Weerakoon
Full Name : Pasindu Lakpriya Weerakoon
Branch : Information Technology Engineering
Status : Serving

Appointment	Formation	Location
Software Duties	No 01 IT Wing	SLAF B' Rma



CONCLUSION



SPACE



CYBERSPACE



AIR



LAND



MARITIME



MULTI-DOMAIN OPERATIONS

