
Colombo
Air Symposium
2019

RE-DEFINING THE AIR STRATEGY

FOR A SMALL AIR FORCE

SLAF PERSPECTIVE

INTRODUCTION

" Not to have an adequate Air Force in the present state of the world is to compromise the foundation of national freedom and independence "

Sir Winston Churchill
14 March 1933

INTRODUCTION

- National Security Environment
- Multiple Air Power Options
- Air Forces with Limited Resources

Cont...

…cont **INTRODUCTION**

STRATEGIC OBLIVION!!

Cont…

…cont **INTRODUCTION**

- **SLAF - Post Humanitarian Operations**
  - **Transition from War to Peace**
  - **New National Security Challenges**
  - **Challenges to Maintain a Potent Air Capability**

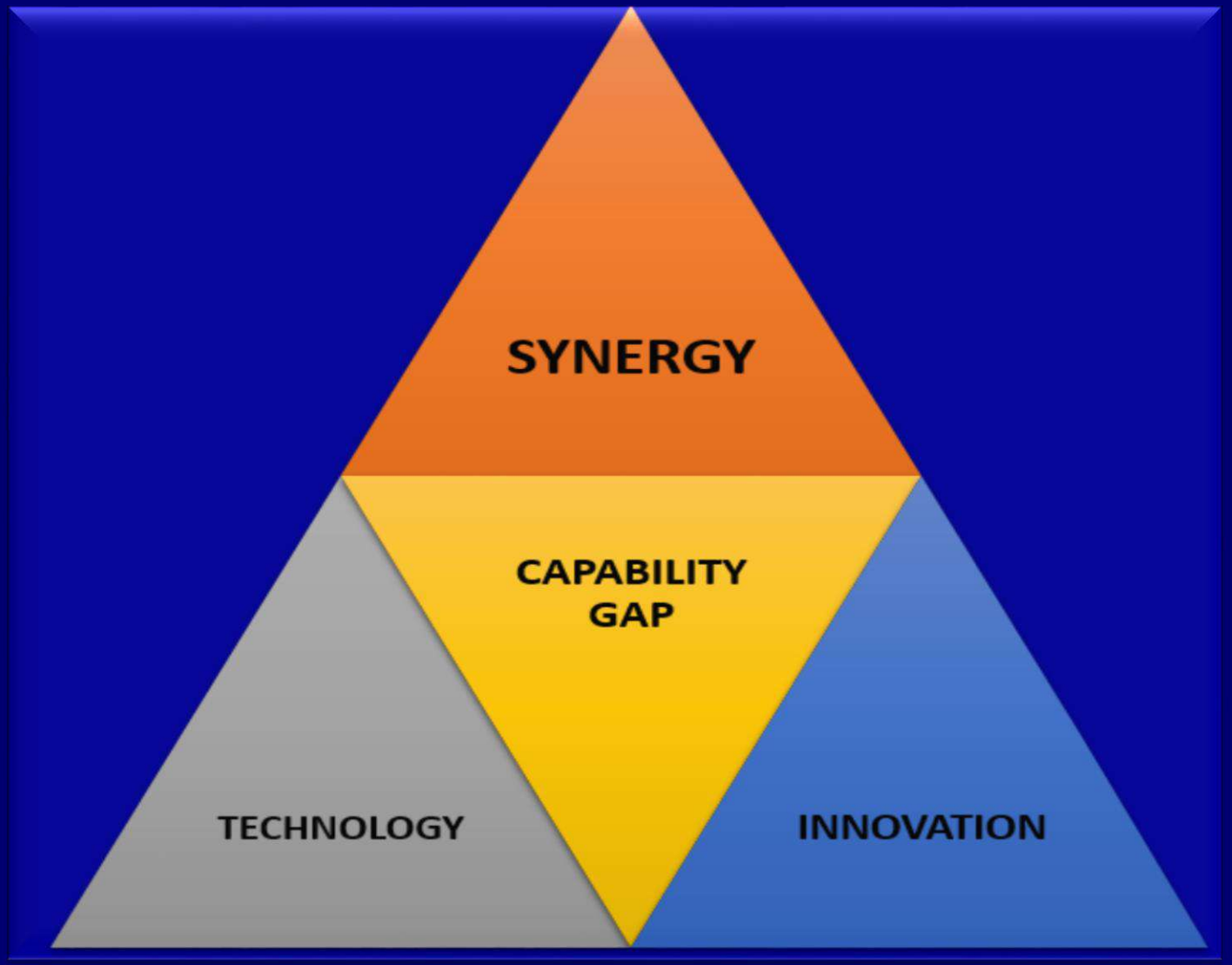
Cont…

…cont **INTRODUCTION**

CAPABILITY GAP !!!

Cont…

…cont **INTRODUCTION**



OVERVIEW

- Small Air Force - Defined
- National Security Challenges of Sri Lanka
- SLAF - Re-Defining Air Strategy
- Way Forward - Reduce Capability Gap
- Conclusion

AIM

To re-define the Air Strategy to bridge the Capability Gap in a Small Air Force; in the Context of SLAF

SMALL AIR FORCE

- Defining a “Small Air Force” !!!

Is it a Numerical Inferiority?

or

Capability Gap between Air Power & National Interest!

Cont…

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SMALL AIR FORCE

"This war has gone on for seven years. The Afghans don't understand anymore how come a little force like Taliban can continue to exist, can continue to flourish, can continue to launch attacks. With forty countries in Afghanistan, with entire NATO force in Afghanistan, with entire international community behind them, still we are not able to defeat the Taliban."

HE Hameed Karzai
President Afghanistan 2004 - 2014

…cont

SMALL AIR FORCE

- **Strategic Facts**
  - Full Spectrum of Air Power Operations in pursuit of National Interest
  - Achieve desired level of effect
  - Conduct air campaigning to an extended time

SRI LANKA

STRATEGIC CONTEXT

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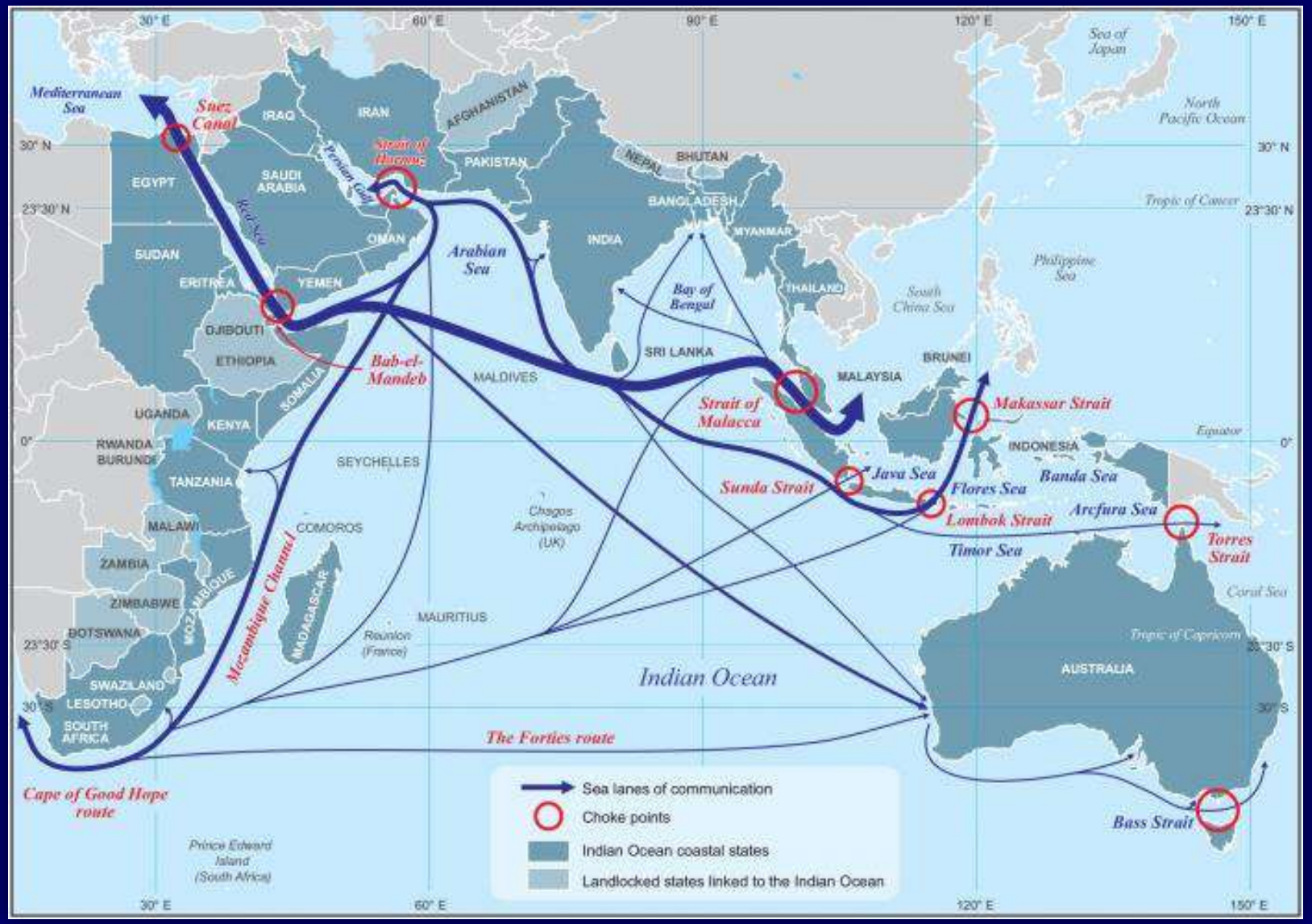
SRI LANKA STRATEGIC CONTEXT



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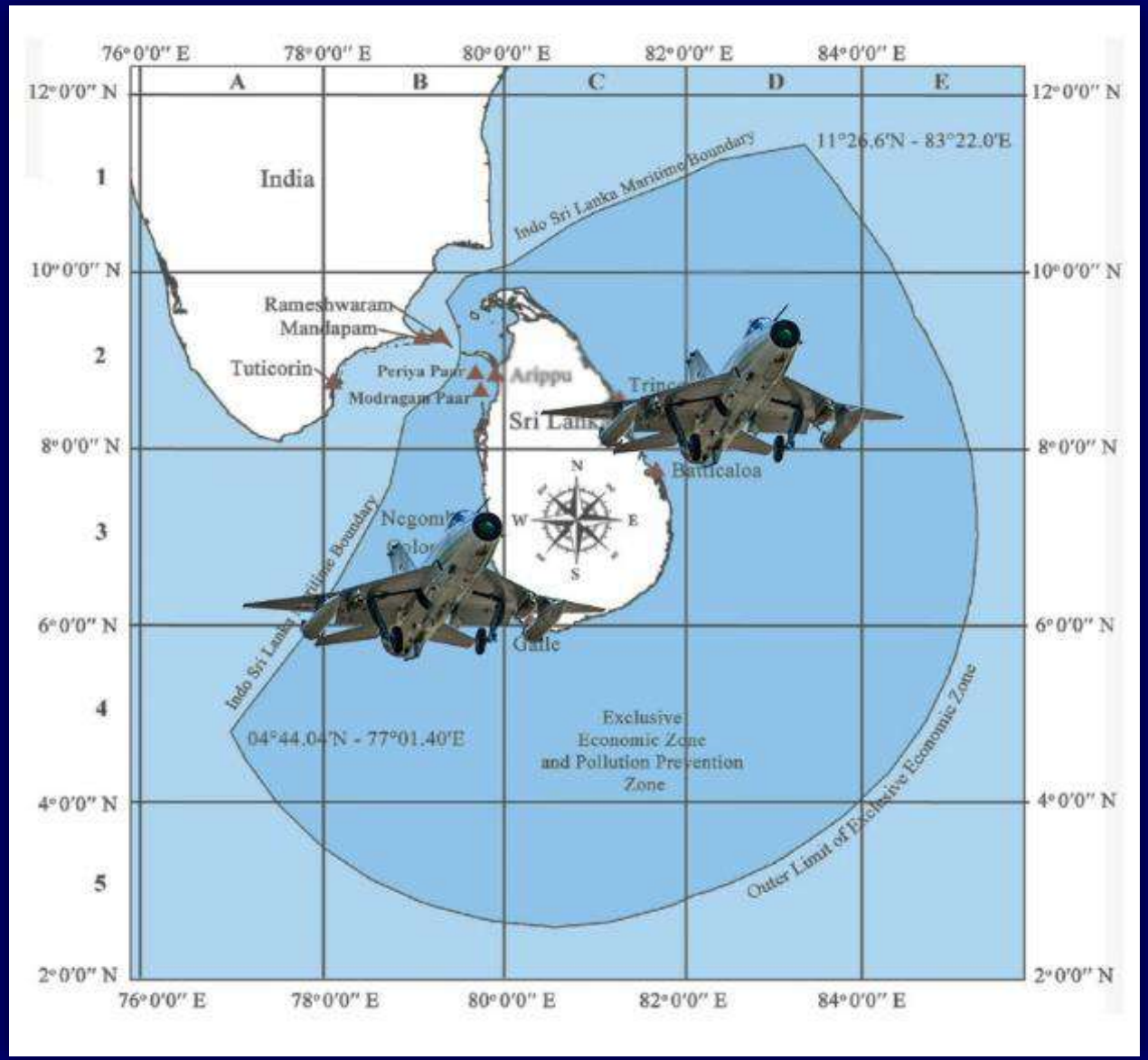
SRI LANKA STRATEGIC CONTEXT



SMALL AIR FORCE

- SLAF Context - Limitations
  - Budgetary Constraints
  - Geo-Political Sensitivities
  - Capability Gap

SRI LANKA

NATIONAL SECURITY CHALLENGES

…cont

NATIONAL SECURITY CHALLENGES

- Pre – 2009 – A Hybrid War

Cont…

…cont

NATIONAL SECURITY CHALLENGES

- Post – 2009 – Shift to Maritime Domain

Cont…

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NATIONAL SECURITY CHALLENGES

- Post 2009
  - Maritime Threats
  - Cyber Security
  - Non – Traditional Threats
    - Transnational Terrorism
    - Asymmetric Air Threats

Cont…

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NATIONAL SECURITY CHALLENGES

- Post 2009 - Maritime Threats

Cont…

…cont

NATIONAL SECURITY CHALLENGES

- Post 2009 – Maritime Threat - Piracy

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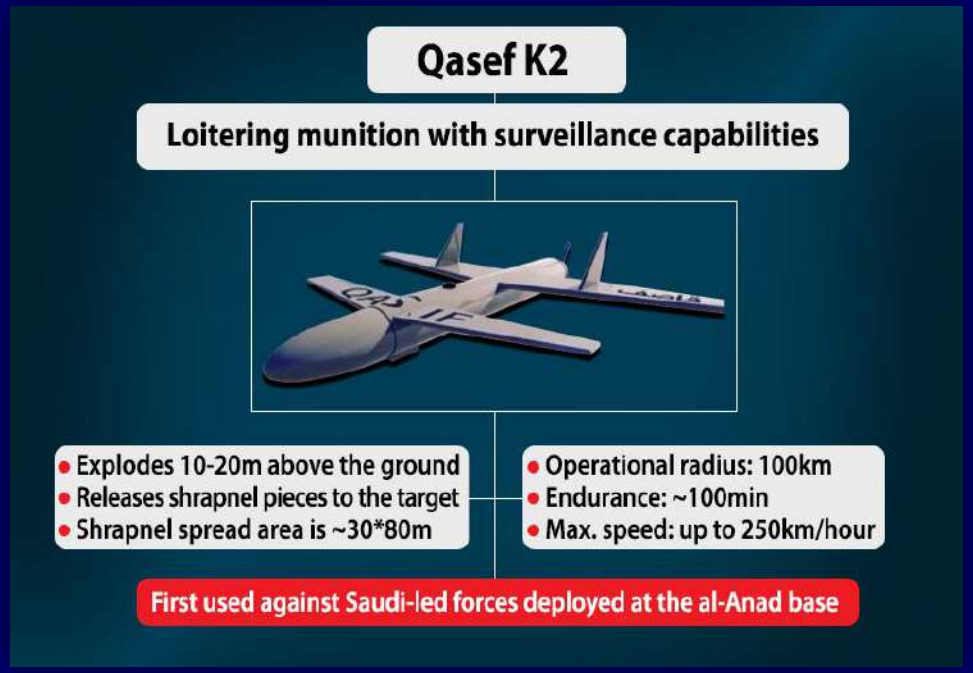
NATIONAL SECURITY CHALLENGES

- Post 2009 – Trans-national Terrorism

Cont…

NEW PARADIGM - DRONES

- An Asymmetric Air Threat



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NEW PARADIGM-DRONES

- An Asymmetric Air Threat

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NEW PARADIGM-DRONES

- An Asymmetric Air Threat

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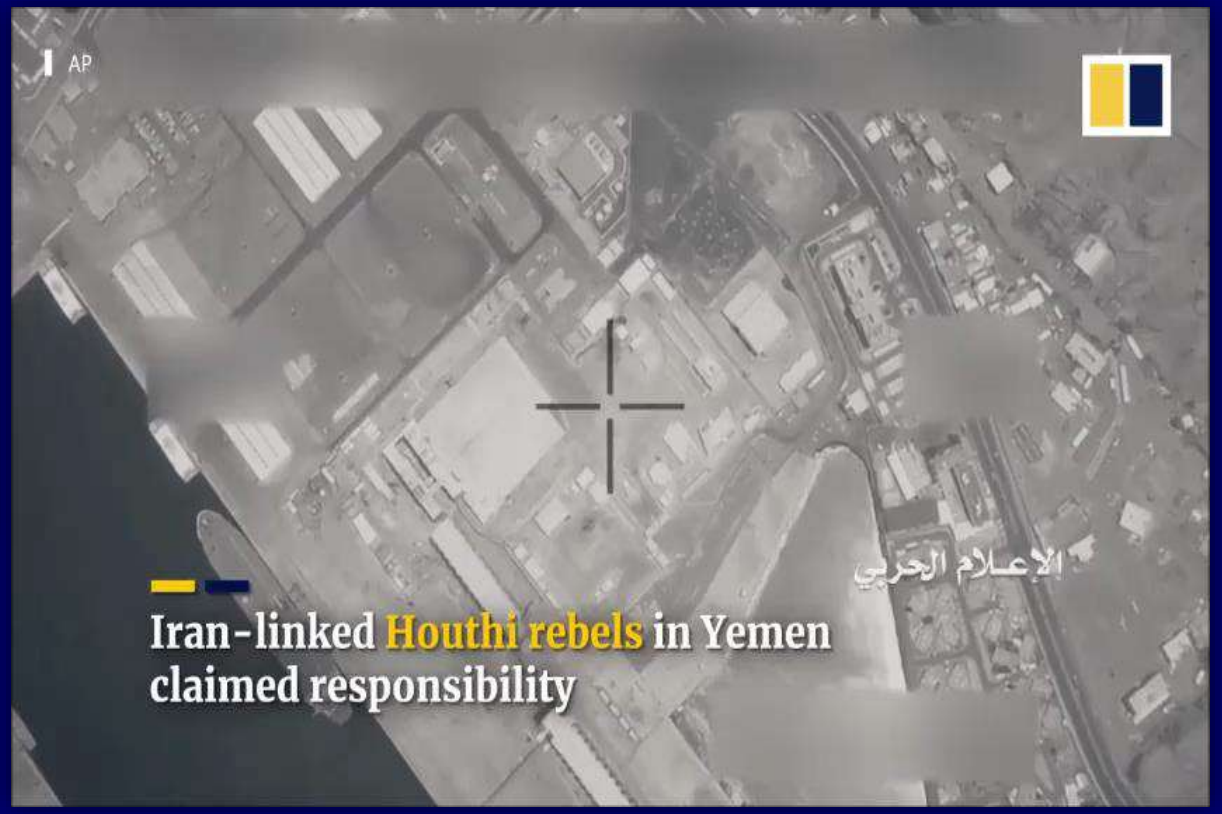
NEW PARADIGM-DRONES

- An Asymmetric Air Threat



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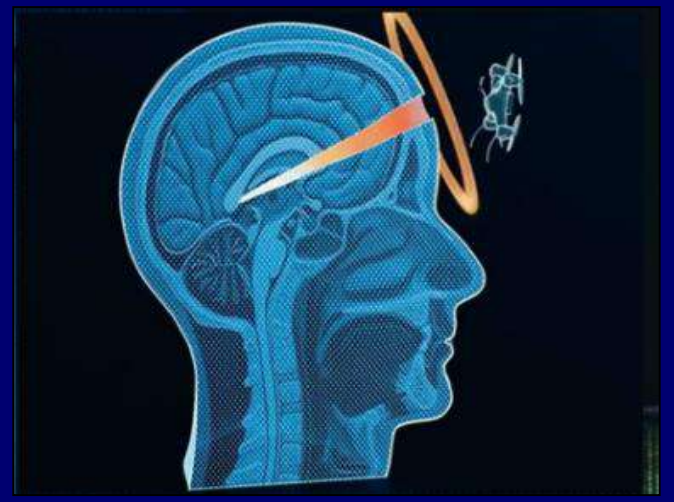
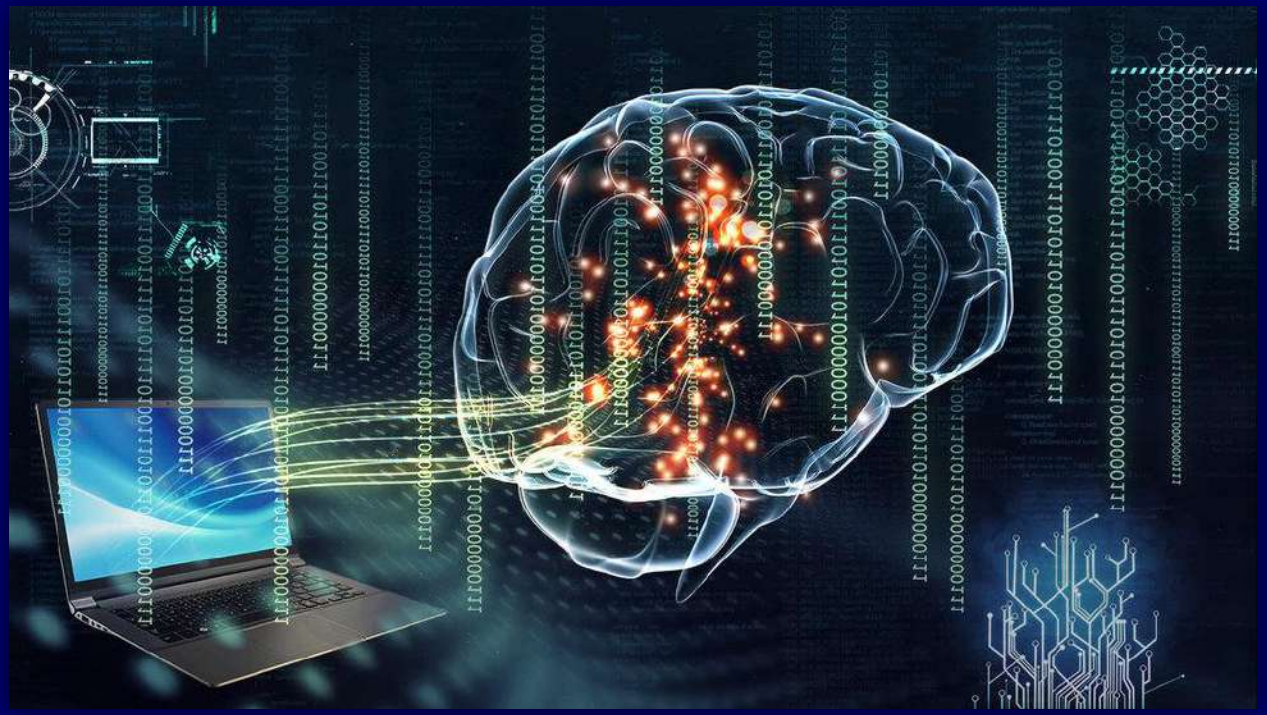
NEW PARADIGM-DRONES

- Augmentation of open source innovations
  - Facial recognition
  - Linking with smart devices
  - Autonomous navigation



CYBER, INFO & PSYCHOLOGICAL WARFARE



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CYBER, INFO & PSYCHOLOGICAL WARFARE

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HADR OPERATIONS

NATIONAL SECURITY INTERESTS

- Territorial Integrity
- Air & Maritime Domain Security
- Eliminate Extremism
- Defence Diplomacy
- Response to Disaster Situations

DEVISING AIR STRATEGY

Cont...

…cont

DEVISING AIR STRATEGY

- Air Power Fundamental Roles
  - Protecting National Airspace
  - Maritime Domain Security
  - Anti Surface Force Operations
  - Air Mobility Operations

Cont…

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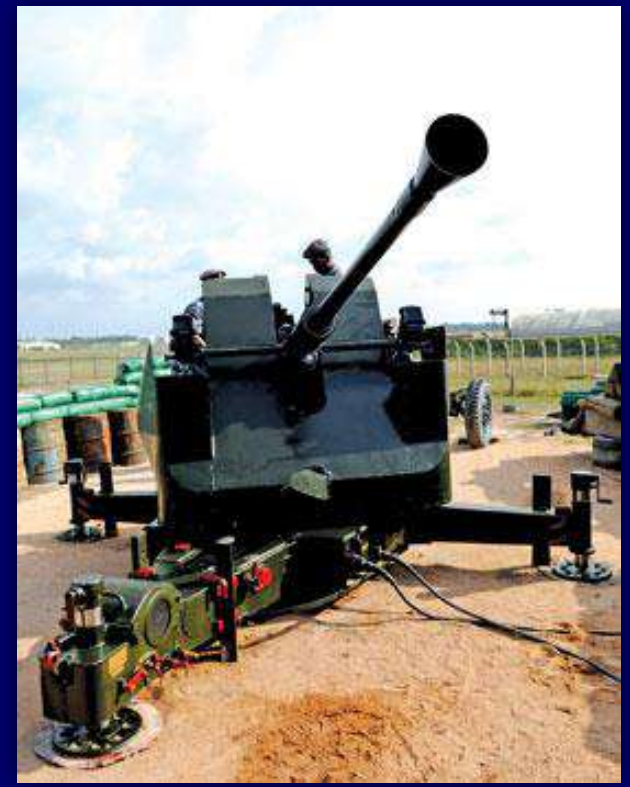
DEVISING AIR STRATEGY

- Air Power Fundamental Roles
  - HADR Operations
  - Cyber Warfare
  - Counter Terrorism
  - International Peace Keeping Operations

FUNDAMENTAL AIR POWER ROLES

- Protecting National Airspace



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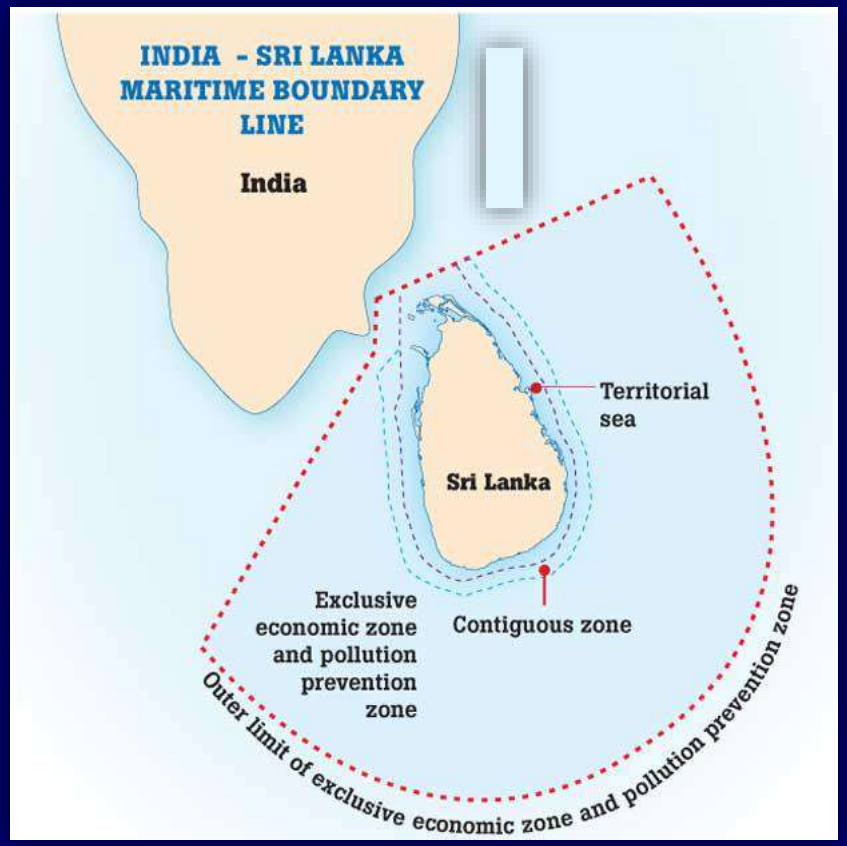
FUNDAMENTAL AIR POWER ROLES

➢ Maritime Domain Security



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FUNDAMENTAL AIR POWER ROLES

- Anti Surface Force Operations

Cont…

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FUNDAMENTAL AIR POWER ROLES

- Air Mobility Operations

Cont…

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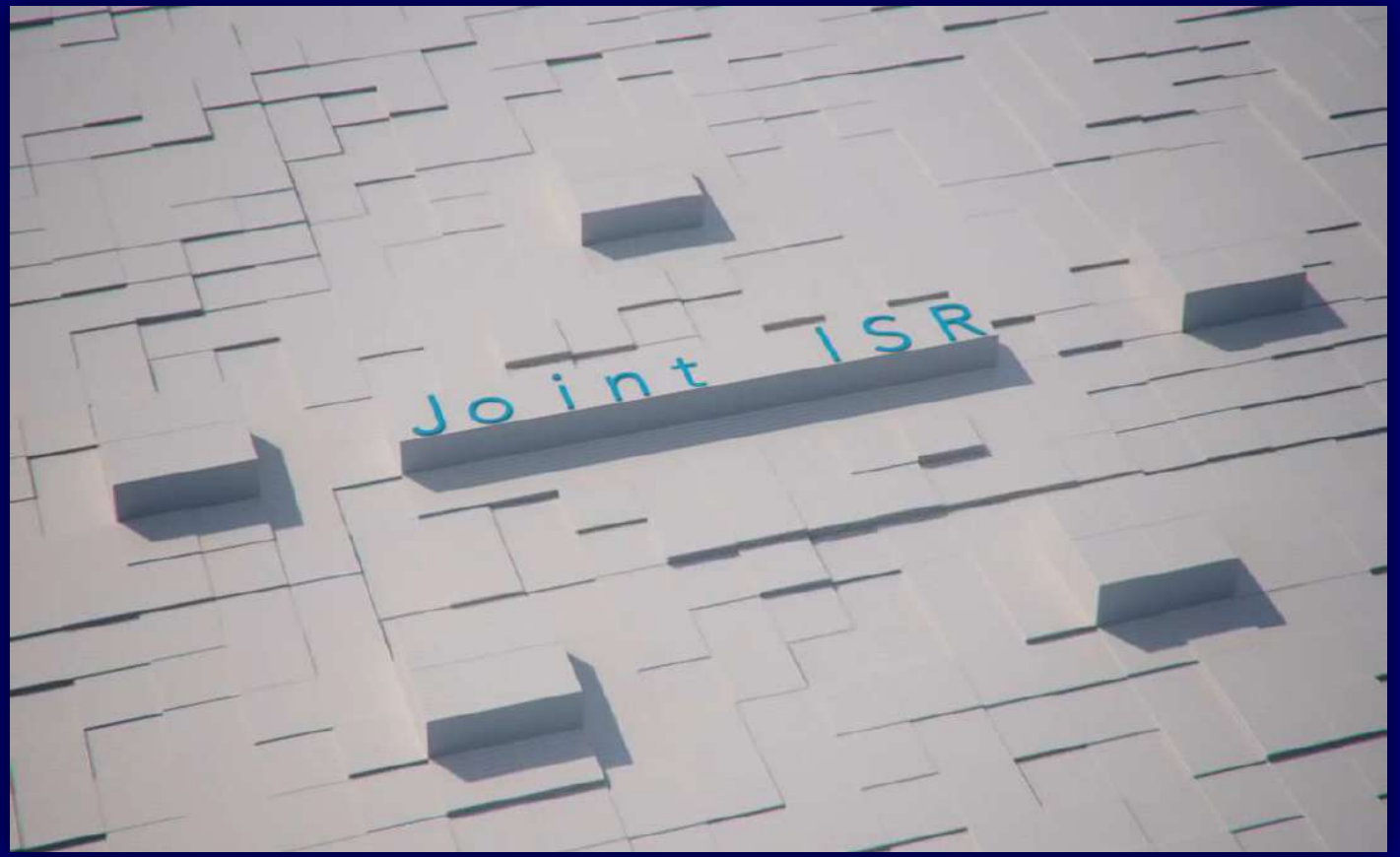
FUNDAMENTAL AIR POWER ROLES

- Intelligence and Situational Awareness



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FUNDAMENTAL AIR POWER ROLES

➢ HADR Operations

CYBER WARFARE

- Cyber, Information and Psychological Warfare

INTERNATIONAL PEACE KEEPING OPERATIONS

WAY FORWARD

SYNERGY TECHNOLOGY AND INNOVATIONS

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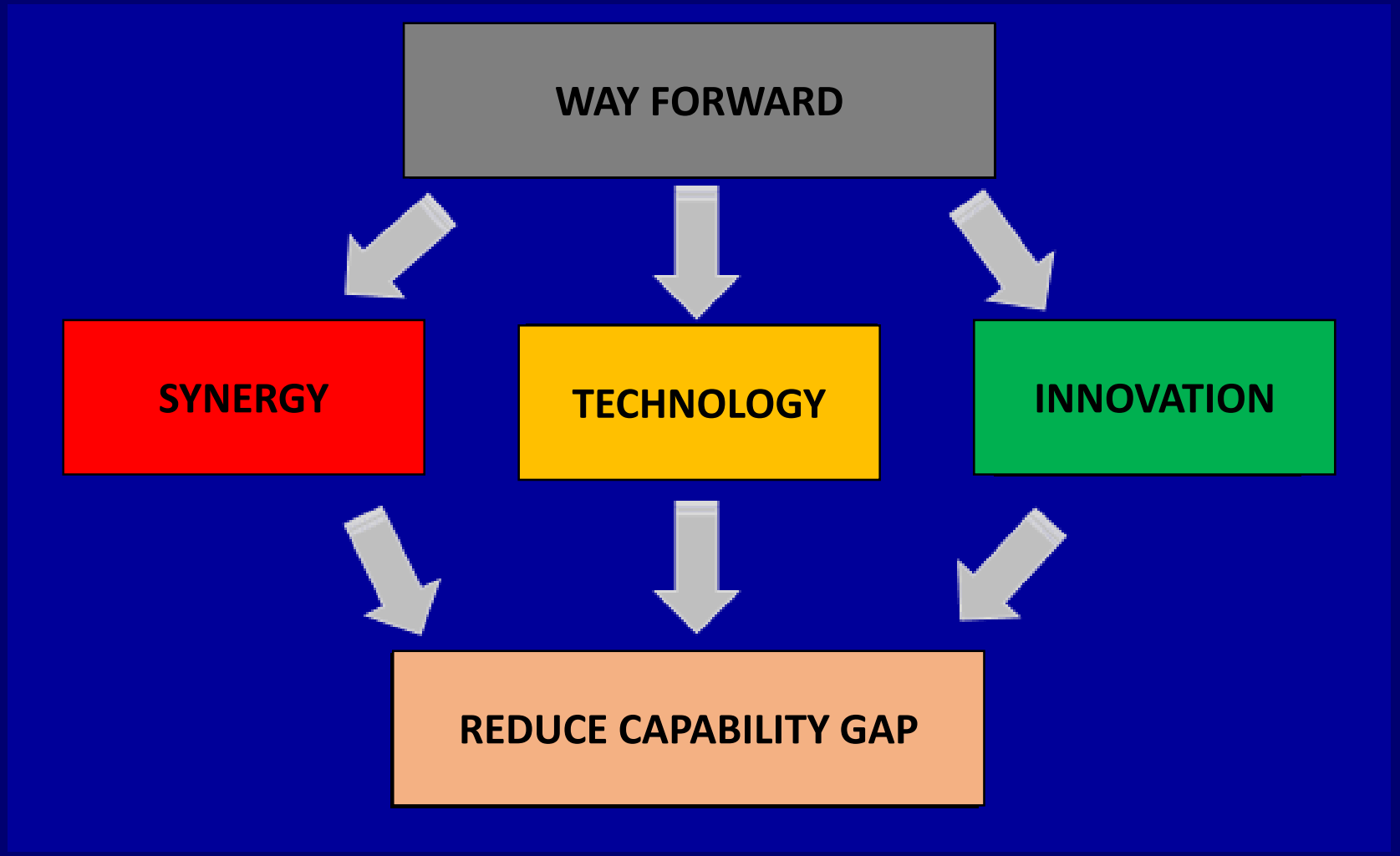
WAY FORWARD



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WAY FORWARD

- **Institutionalization of Air Strategy**
  - **Strategic Guidance**
    - Vision, Mission, Role
    - Doctrine
    - Policy Documents

Cont…

…cont

WAY FORWARD

- **Institutionalization of Air Strategy**
  - **Re-structure**
    - Human Resource
    - Force Structure

Cont…

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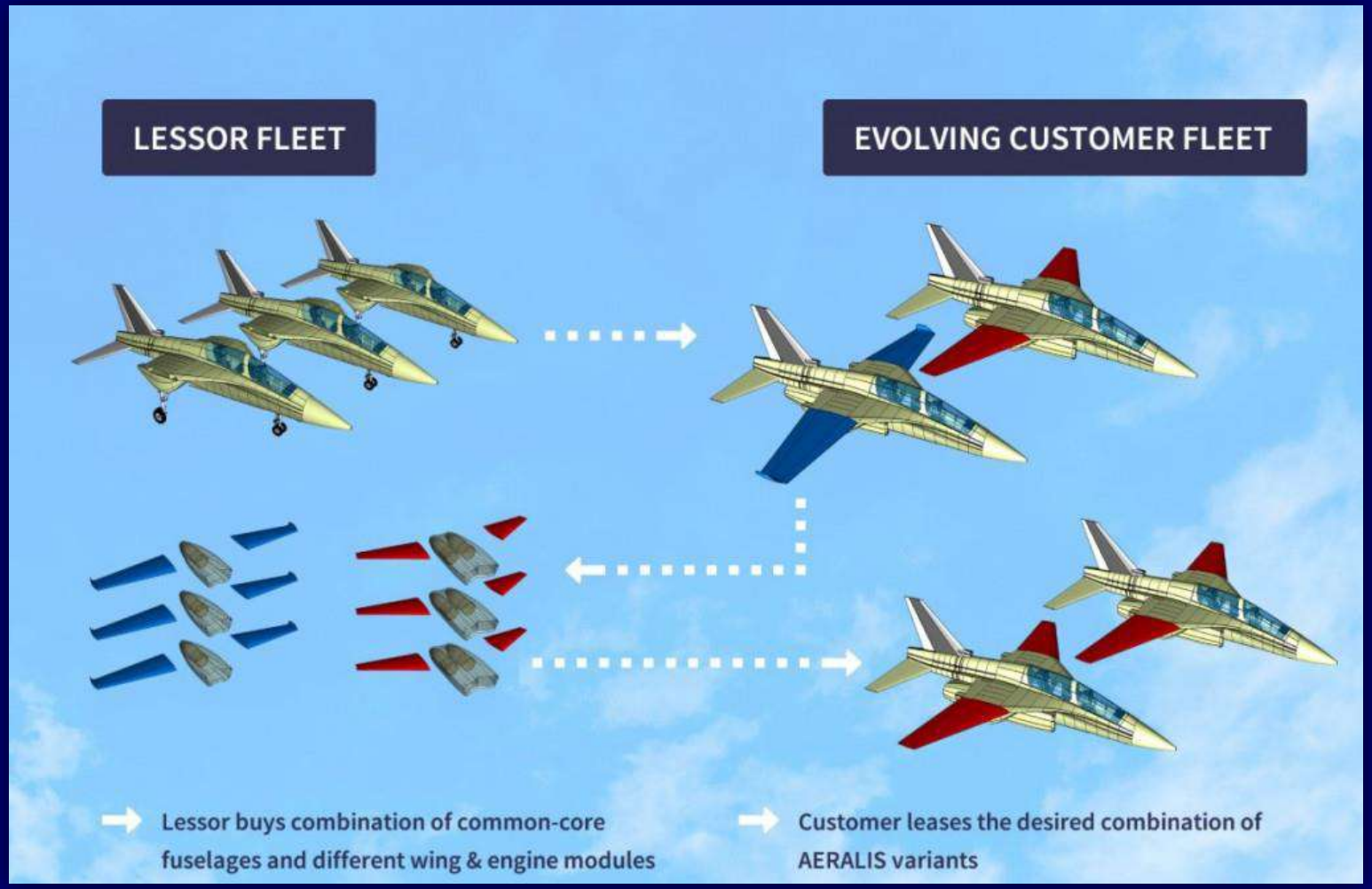
WAY FORWARD

- Planned, Smart & Stretched Re-fleeting



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WAY FORWARD

- Planned, Smart & Stretched Re-fleeting

  - Most Suitable Platform
  - Multi Role Capability
  - Multi Mission Capability

Cont…

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WAY FORWARD

- Technology
  - Proven Capability Gap Filler
  - Simulators
  - CBTs

Cont…

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WAY FORWARD

- Joint Force Employment

  - Air Power – All three domains
  - Demands Omni presence
  - Integration with Land & Naval Capabilities - Synergy

Cont…

…cont

WAY FORWARD

- Joint Force Employment

  - SLAF's increasing presence in Maritime Domain

Cont…

...cont

WAY FORWARD

- Air Diplomacy
  - Modern Technological Proficiency
  - Exchange Programmes
  - Joint Exercises

CONCLUSION

- **Small Air Force**
  - **Capability Gap**
  - **Mitigate through**
    - Synergy
    - Technology
    - Innovation


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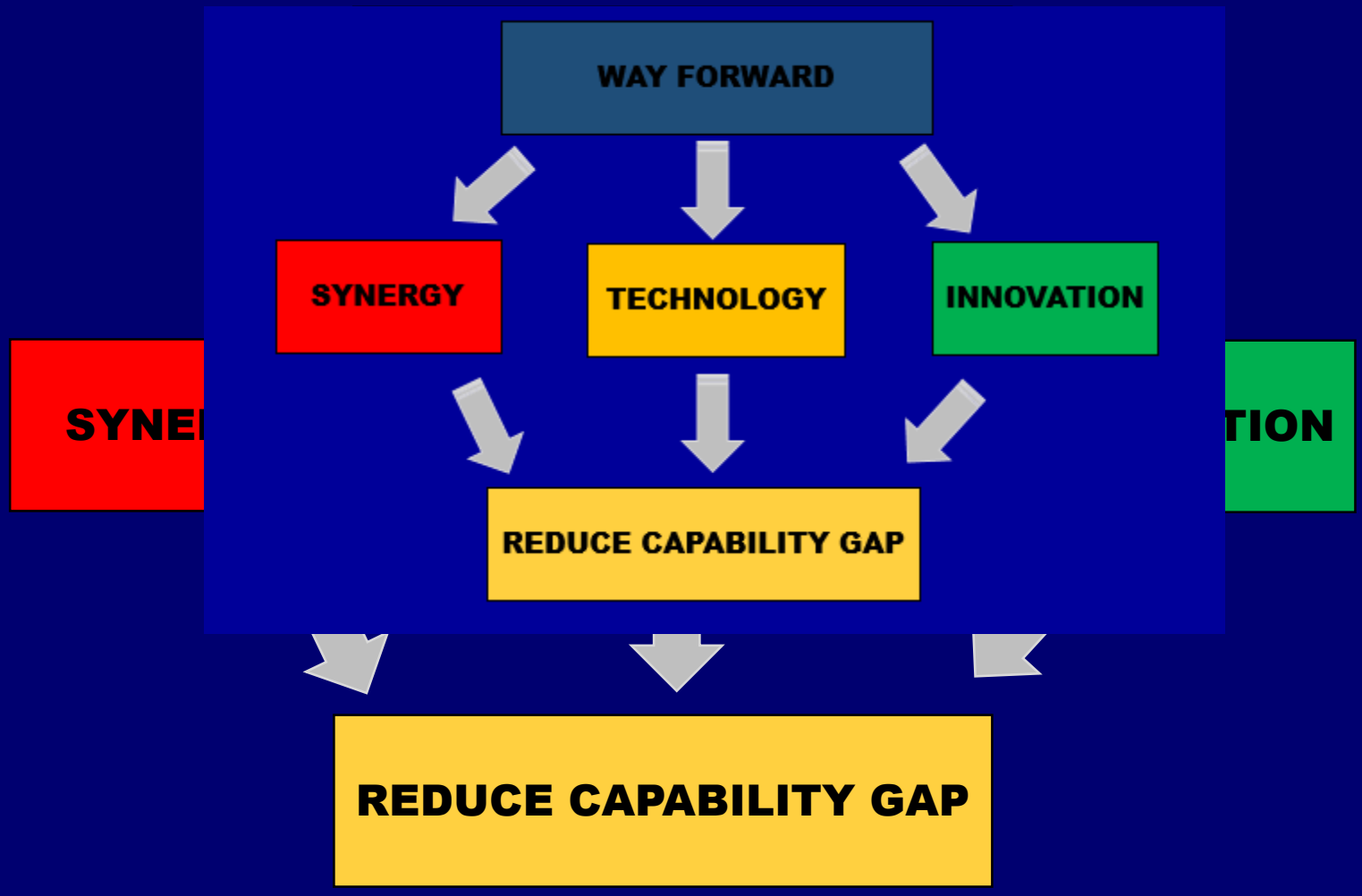
WAY FORWARD


WAY FORWARD
SYNERGY
TECHNOLOGY
INNOVATION
REDUCE CAPABILITY GAP
REDUCE CAPABILITY GAP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THE ASYMMETRIC THREAT

A WEAK ACTORS PERSPECTIVE AND RESPONSES FOR AN AIR FORCE

AIR CMDE I I KUTTAPPA
INDIAN AIR FORCE

SEQUENCE

- INTRODUCTION
- DO THE WEAK WIN ?
- FORMS OF ASYMMETRY IN AIR OPERATIONS
- WHY ASYMMETRIC WARFARE IN THE AERIAL DOMAIN?
- THE THREAT – ITS CLASSIFICATION
- WEAK ACTOR RESPONSES TO AIR FORCE OPERATIONS
  - NEGATION OF DOCTRINAL PRECEPTS
  - RESPONSES TO EBO , PRECISION TARGETING
  - COUNTERS TO CONTROL WARFARE
- SOME SUGGESTIONS TO DEAL WITH THE ASYMMETRIC THREAT
- CONCLUSION

9/11 TYPE ATTACKS

DRONE ATTACKS ON REFINERIES/ INFRASTRUCTURE

DISRUPTION OF ESSENTIAL SERVICES USING UAVs

DELIVERY OF WEAPONS/EXPLOSIVES

AERIAL IEDs

DRONE ATTACKS ON AIRBASES

MILITARY TGTS

USE OF CIVIL HELICOPTERS FOR ATTACK

USE OF LIGHT CIVIL AC FOR BOMBING

DATA THEFT USING AERIAL PLATFORMS

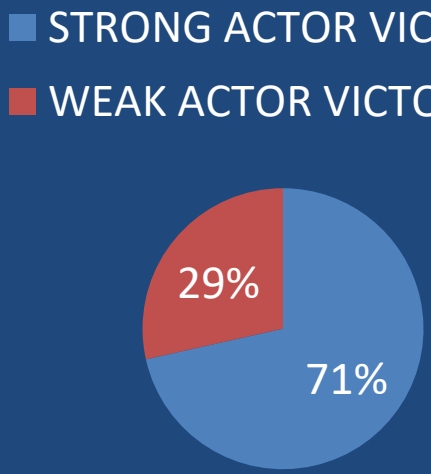
ASSASSINATION ATTEMPTS

BIO CHEM ATTACK ATTEMPTS USING UAVs

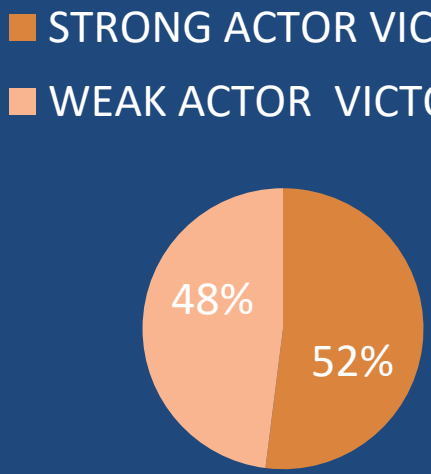
SUB OR NON-CONVENTIONAL AERIAL THREATS ARE ONLY INCREASING IN NUMBER AND BECOMING MORE POTENT AND COMBATING THESE AERIAL THREATS IS LIKELY TO BECOME A MAJOR TASK FOR CONVENTIONAL AIR FORCES (BIG AND SMALL) IN THE FUTURE

DO THE WEAK WIN ?

CONFLICTS FROM 1800 TO 2003

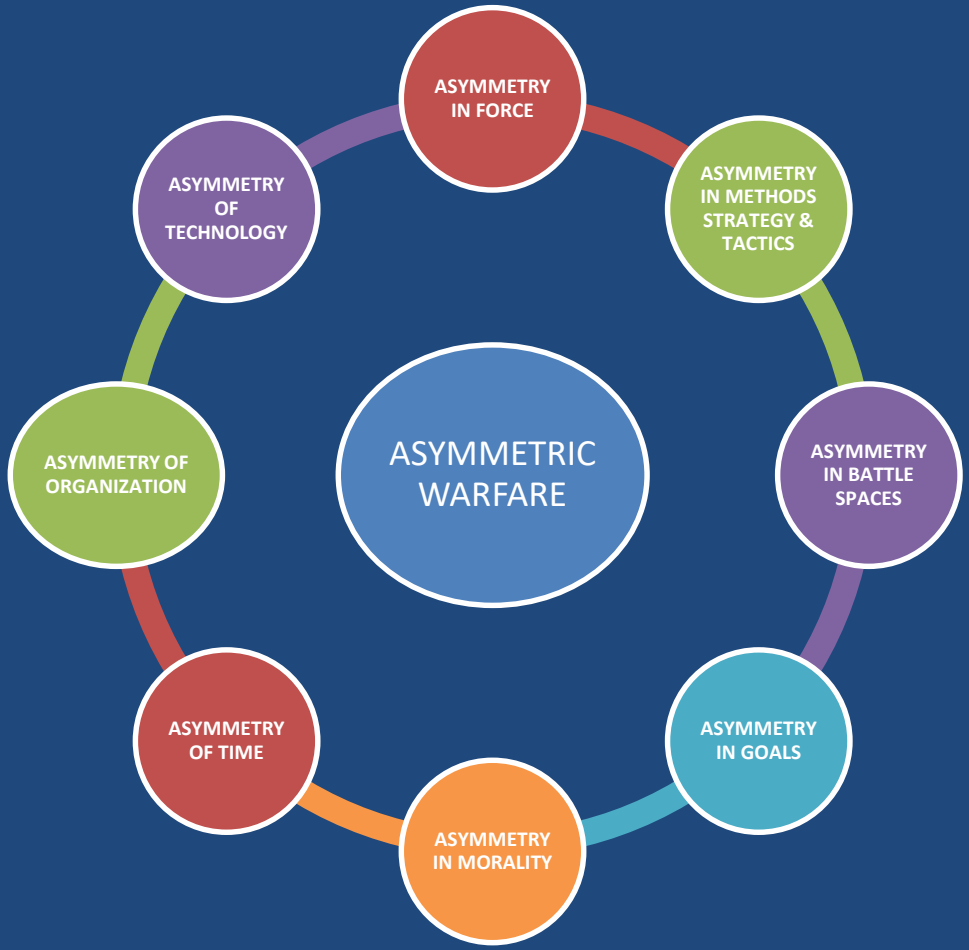


CONFLICTS FROM 1950 TO 2003



SOURCE : IVAN ARREGUIN TOFT , 'THEORY OF ASYMMETRIC CONFLICT CAMBRIDGE PRESS 2005

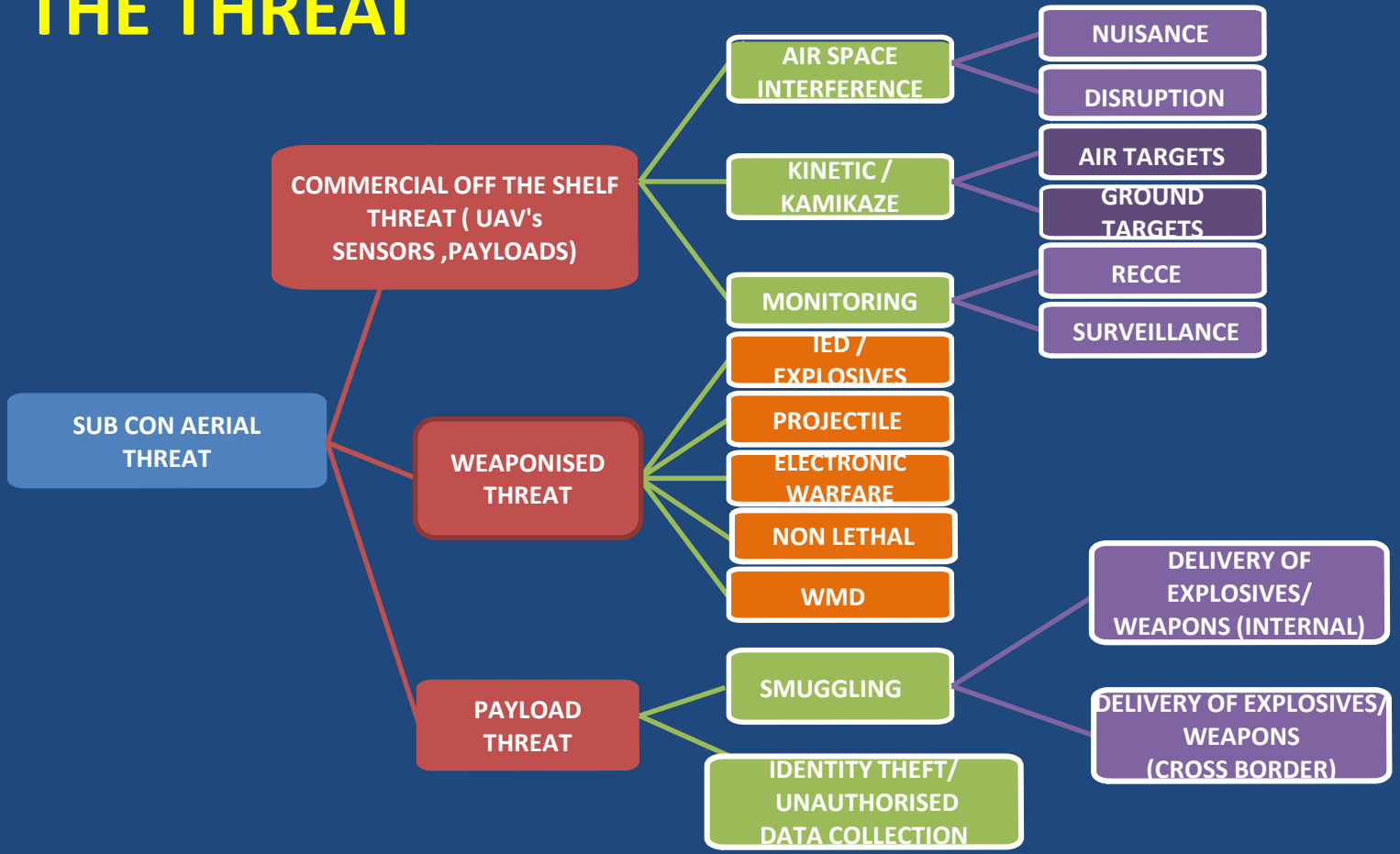
FORMS OF ASYMMETRY IN AIR OPERATIONS



WHY AN ASYMMETRIC APPROACH IN THE AERIAL DOMAIN ?

- AVOID CONTACT WITH FIELDED FORCES
- MEANS AND FREEDOM IN TARGET SELECTION
- VAST PUBLIC AVIATION, COMMUNICATION & MEDIA INFRASTRUCTURE
- EASY AVAILABILITY OF MANUFACTURING, COTS AND OTHER TECHNOLOGIES

THE THREAT


SUB CON AERIAL THREAT
COMMERCIAL OFF THE SHELF THREAT (UAV's SENSORS ,PAYLOADS)
WEAPONISED THREAT
PAYLOAD THREAT
AIR SPACE INTERFERENCE
KINETIC / KAMIKAZE
MONITORING
IED / EXPLOSIVES
PROJECTILE
ELECTRONIC WARFARE
NON LETHAL
WMD
SMUGGLING
IDENTITY THEFT/ UNAUTHORISED DATA COLLECTION
NUISANCE
DISRUPTION
AIR TARGETS
GROUND TARGETS
RECCE
SURVEILLANCE
DELIVERY OF EXPLOSIVES/ WEAPONS (INTERNAL)
DELIVERY OF EXPLOSIVES/ WEAPONS (CROSS BORDER)

THE WEAK ACTOR RESPONSE TO AIR FORCE OPERATIONS

- CLASSIC DOCTRINAL PRECEPTS IGNORED OR NOT CONTESTED
  - FOR EXAMPLE ‘CONTROL OF THE AIR’
- NEGATES LARGE PART OF AN AIR FORCE’S INVENTORY
  - FOR EXAMPLE ‘ AD NETWORK / AIRCRAFT’
- DEFEATING PRECISION ATTACKS
  - NEGATING EBO AND PGMs
- ADOPTING STRATEGIES TO COUNTER CONTROL WARFARE
  - NEGATING THE OODA LOOP

AIR FORCE RESPONSES

- *THE WEAK ACTOR'S APPROACH - TO FUNCTION IN A SPACE WHERE THE WEAPONS, TRAINING AND ORGANIZATIONAL INFRASTRUCTURE THAT A CONVENTIONAL AIR FORCE POSSESSES TO DEAL WITH THREATS IS RENDERED INEFFECTIVE*
- AIR FORCES THEREFORE NEED TO DEVELOP A COMPLETELY DIFFERENT APPROACH
- INDUCT SUITABLE WEAPONS AND SYSTEMS TO GIVE TEETH TO THOSE RESPONSES
- TRAIN AND ORGANIZE THEMSELVES DIFFERENTLY FOR THIS ROLE

WE NEED A COMPLETELY DIFFERENT SUBSET OF AIR POWER RESPONSES

SOME SUGGESTIONS

- BRING DOCTRINAL CLARITY
- INTRODUCE A PARADIGM SHIFT IN VIEWING THE PROBLEM
  - NOT ONLY A LAW & ORDER PROBLEM
- FRAMING LEGISLATION
  - MULTI FORCE/ MINISTRY EFFORT
- EXPANDING AIR FORCE SPECIAL OP CAPABILITIES
  - SPECIAL UNITS (ARMY MODEL)
  - COUNTER DRONE UNITS

“ In light of the rapidly changing nature of warfare , the reduced possibility of large scale conventional conflict and the increased proliferation of sub conventional warfare, air power is a powerful tool that the state could employ to win the war against the non-state actor”

INDIAN AIR FORCE BASIC AIR POWER DOCTRINE : CHAPTER 8

THANK YOU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DOCTRINAL CLARITY

AIR CMDE I I KUTTAPPA , IAF


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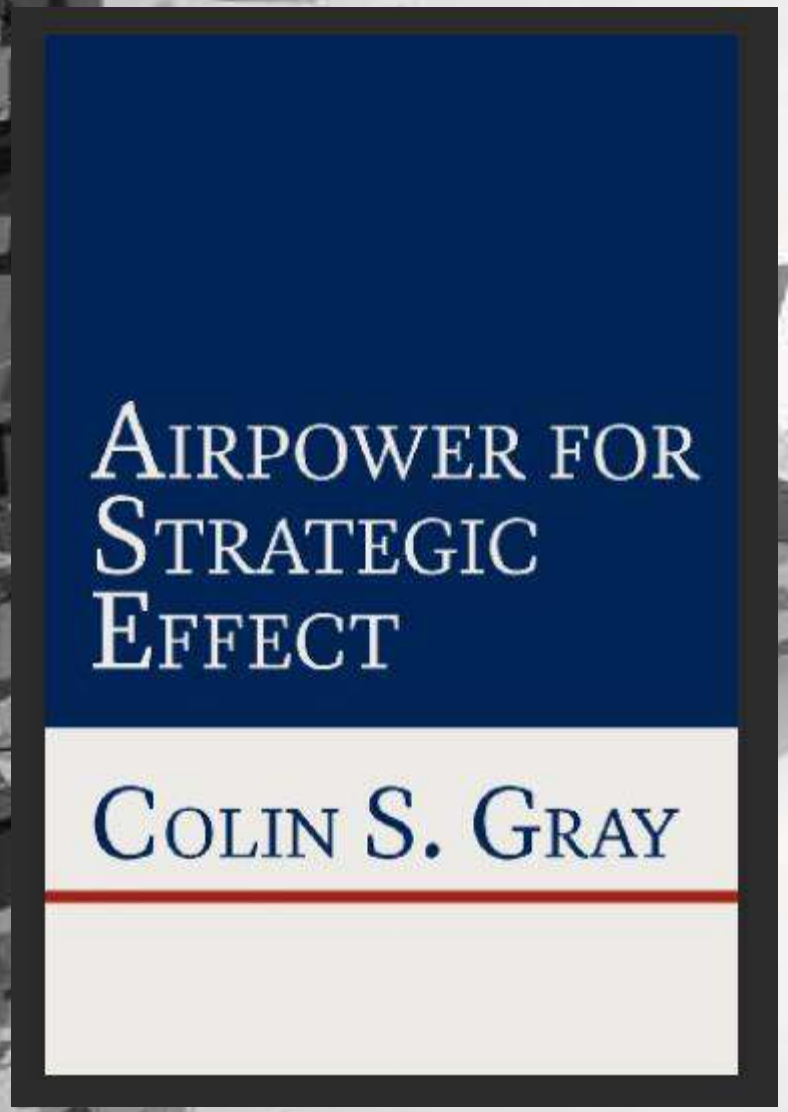
Algorithms & Airpower in 2035

- Dr. Heather Venable,

  U.S. Air Command and Staff College

Views do not represent those of the US Air Force or the US Department of Defense.



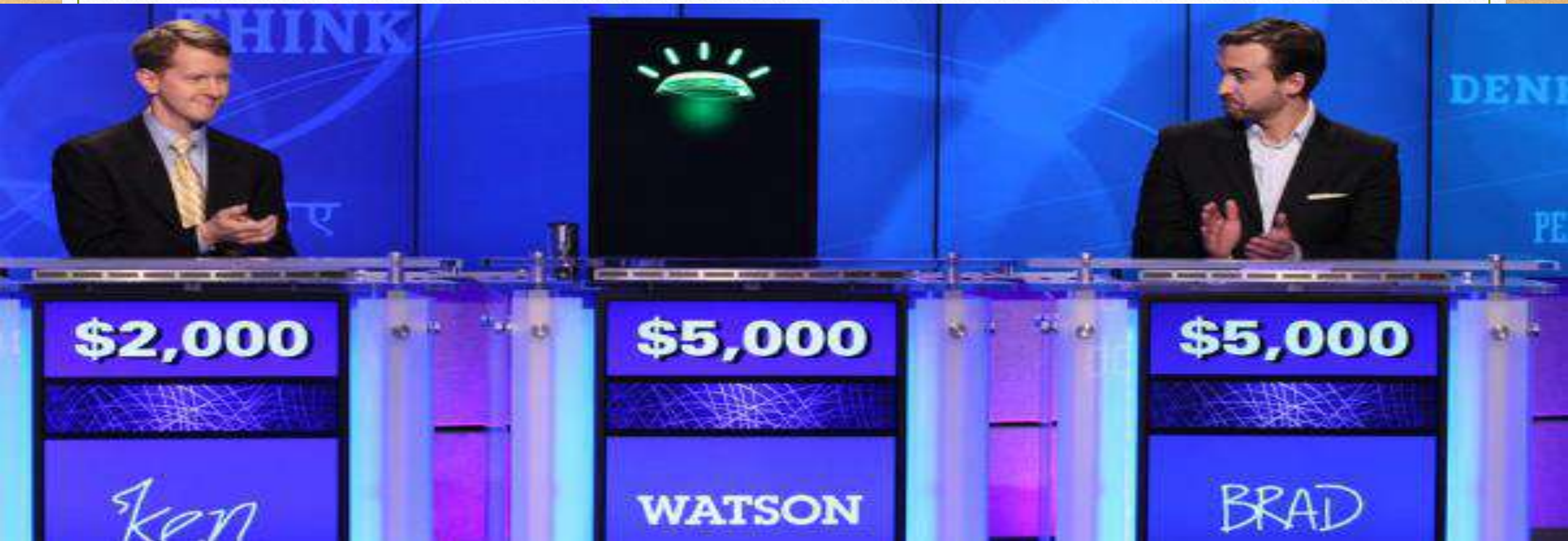
Air Forces & Technological Change:

Silver Bullet Syndrome

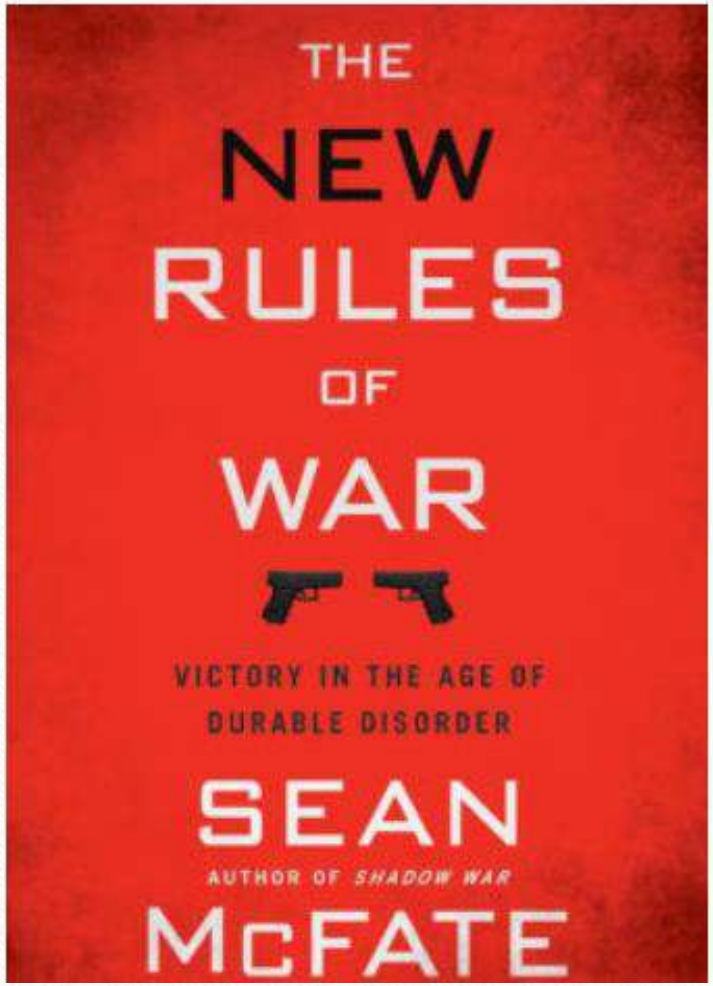
Future of AI?

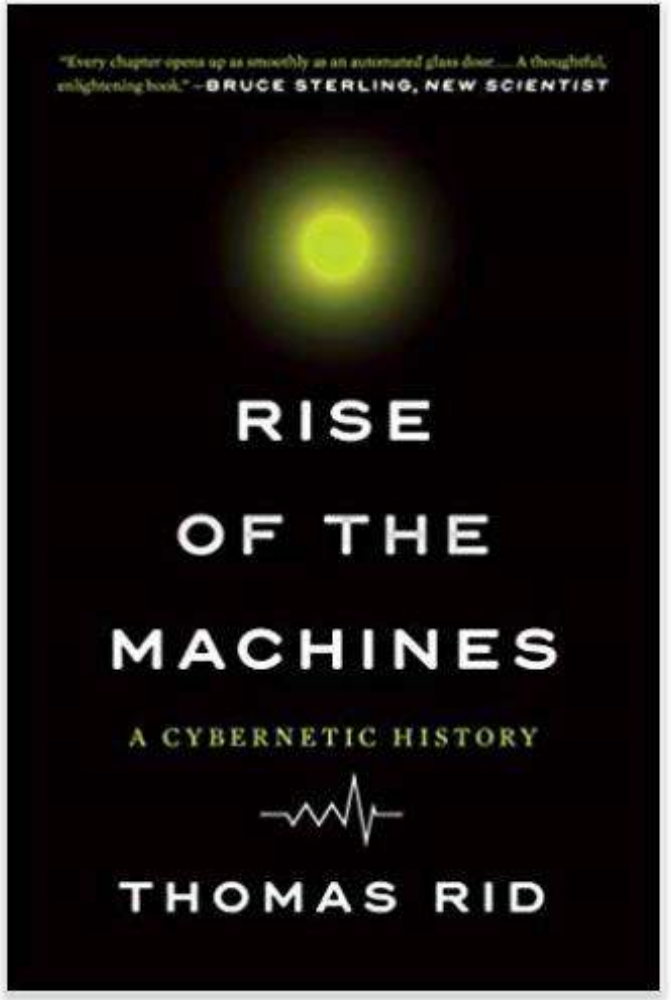
- ANI=artificial narrow intelligence
- AGI=artificial general intelligence

ANI ⟷ AGI

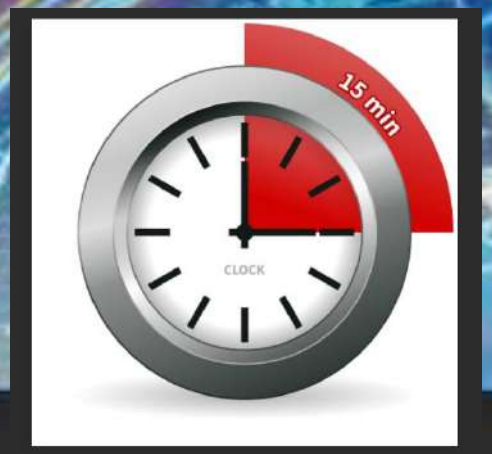


AI as Hype


THE
NEW
RULES
OF
WAR
VICTORY IN THE AGE OF
DURABLE DISORDER
SEAN
AUTHOR OF SHADOW WAR
McFATE


"Every chapter opens up as smoothly as an automated glass door.... A thoughtful, enlightening book." –BRUCE STERLING, NEW SCIENTIST
RISE
OF THE
MACHINES
A CYBERNETIC HISTORY
THOMAS RID

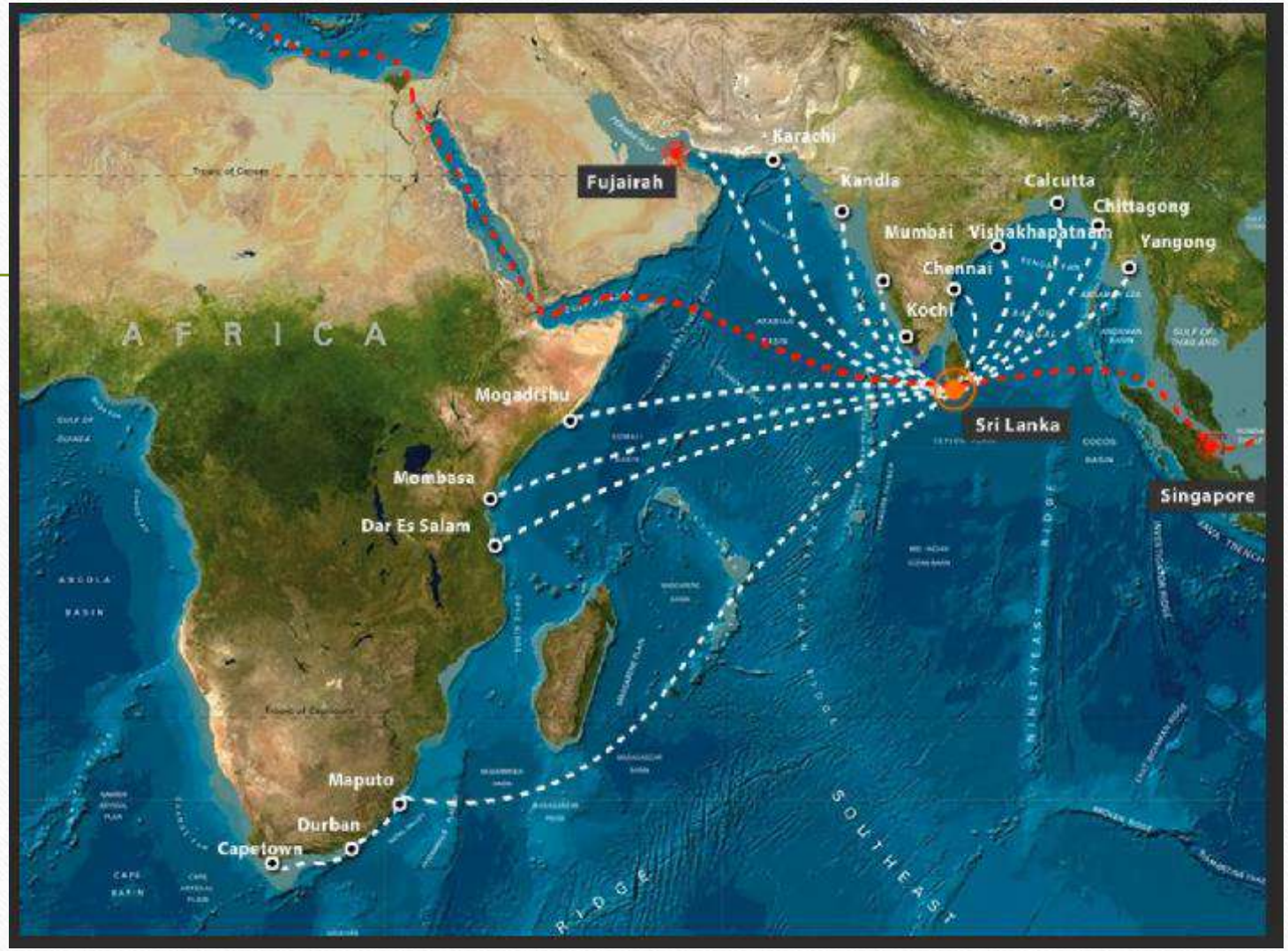
AI as Hyperwar



AI as LikeWar

AI for the SLAF

SLAF as the epicenter of AI in the Indian Ocean?



Future of airpower?

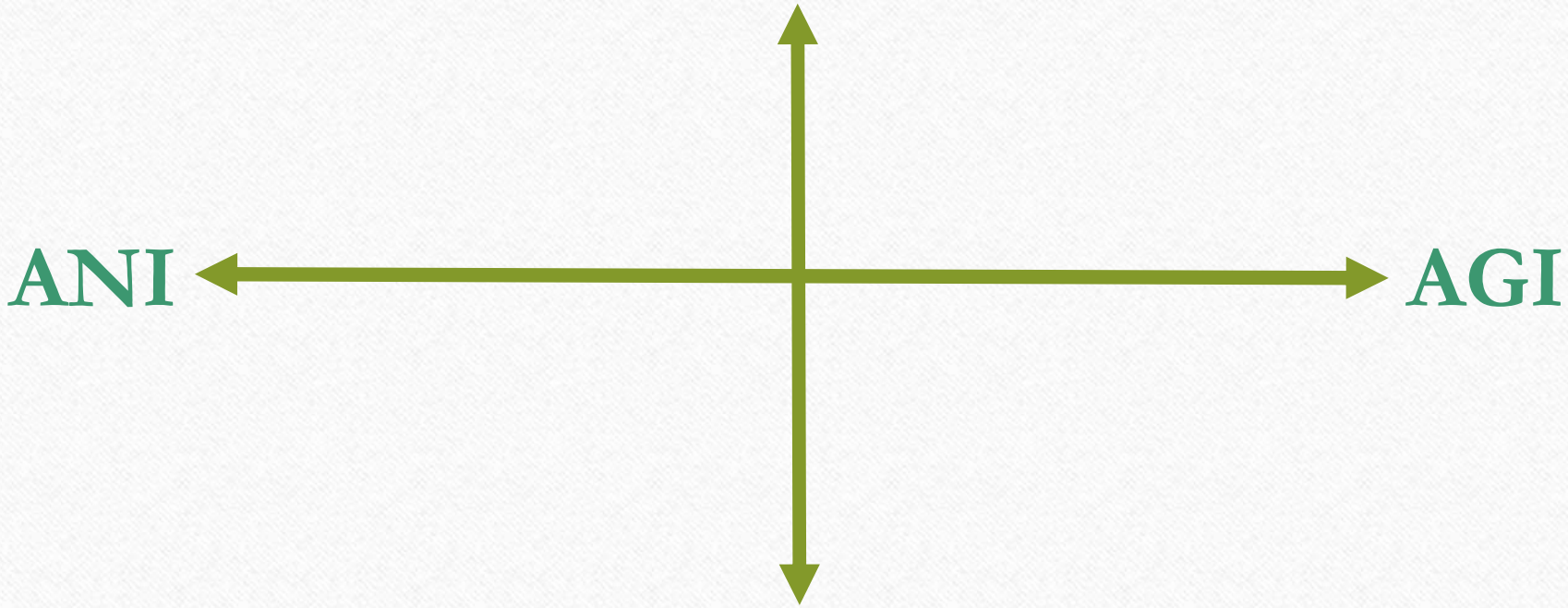
Ingenious Airpower

"To be a well accomplished, resolute and an ingenious air power capable of fulfilling the aspirations of the nation and preserving the sovereignty and territorial integrity of the island"

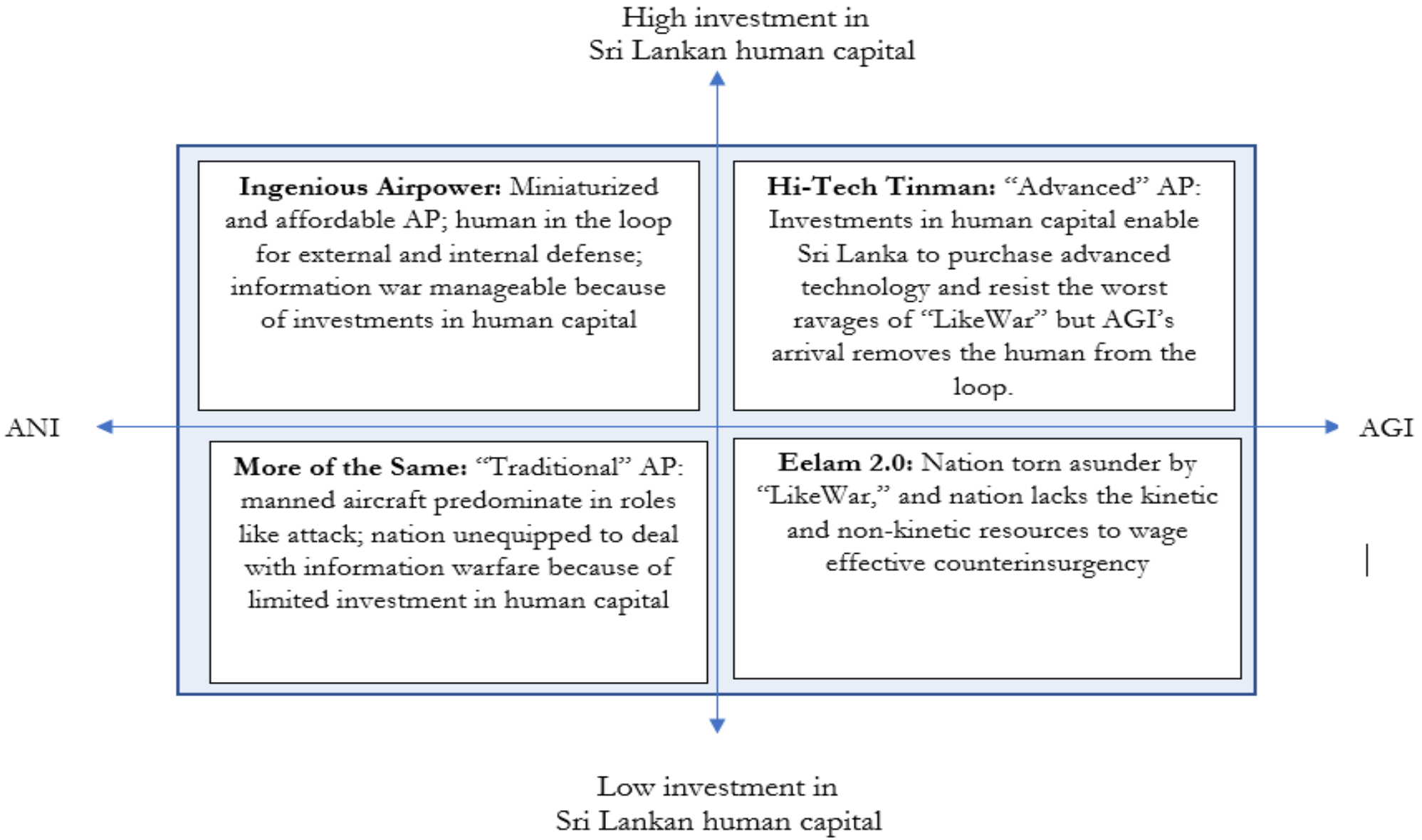
Human Capital=Strategic Investment

Four Futures

Substantial investment in education

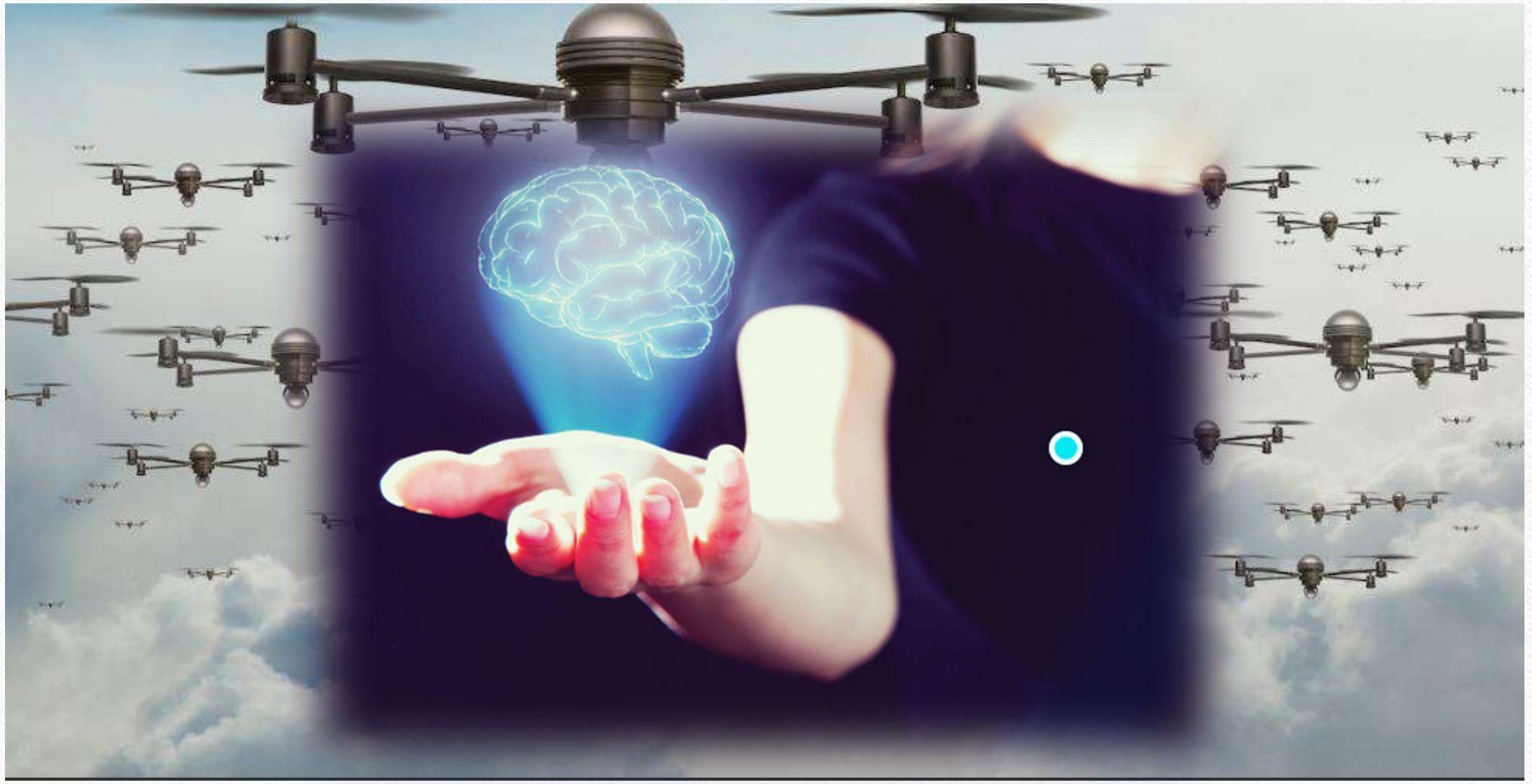


Minimal investment in education


High investment in
Sri Lankan human capital
Ingenious Airpower: Miniaturized and affordable AP; human in the loop for external and internal defense; information war manageable because of investments in human capital
Hi-Tech Tinman: "Advanced" AP: Investments in human capital enable Sri Lanka to purchase advanced technology and resist the worst ravages of "LikeWar" but AGI's arrival removes the human from the loop.
ANI
AGI
More of the Same: "Traditional" AP: manned aircraft predominate in roles like attack; nation unequipped to deal with information warfare because of limited investment in human capital
Eelam 2.0: Nation torn asunder by "LikeWar," and nation lacks the kinetic and non-kinetic resources to wage effective counterinsurgency
Low investment in
Sri Lankan human capital

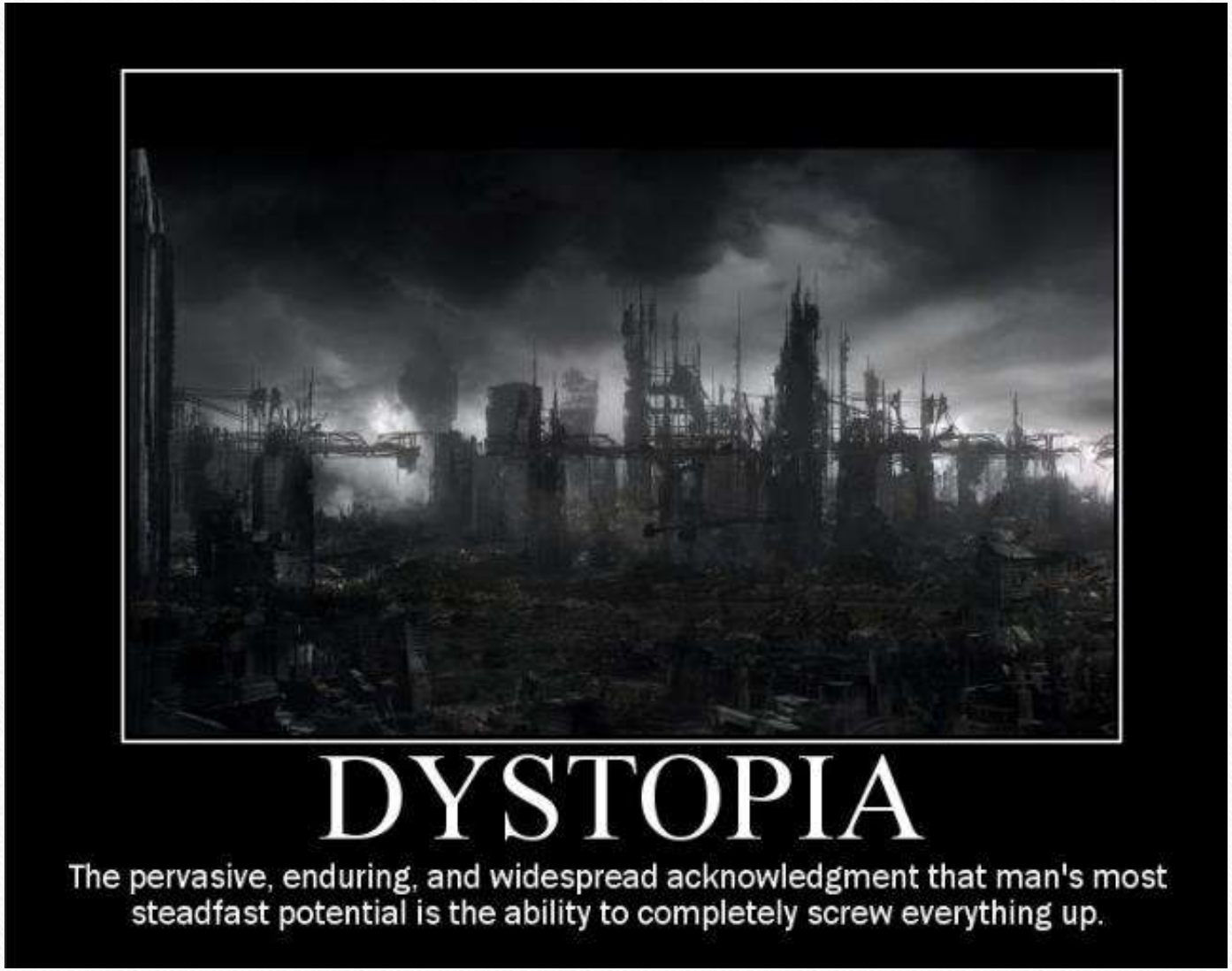
Scenario One: Continued Evolution

Scenario Two: Ingenious Airpower



Scenario Three: Hi-Tech Tinman

Scenario Four: Eelam 2.0




A proud tradition of
ingenious airpower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The Evolution of Small Air Power
-Development of the JSDF from Inception to Today-

Introduction of F-104

F-35

Lt. Col. Shunei Tamura
Strategy Instructor Office, Education Department
Air Command & Staff College Koku-Jieitai

Japan Air Self-Defense Force (JASDF)

Coke ＋ Jet ＋ Tie

→ Koku-Jieitai

Development of the JSDF Air Power

- **JSDF becoming its own air power (1954~1960s)**
- **Reinforcing autonomous defense and strengthen relations (1970s~the end of the Cold War)**
- **Enlargement of the air power role (The end of the Cold War~)**

3

JSDF becoming its own air power (1954~1960s) 1/5

Ceremony to mark establishment of Defense Agency (July 1, 1954)

The core of JSDF air power

- **150 aircraft , 6738 personnel (Koku-Jieitai)**
- **60 aircraft (JMSDF)**

JSDF becoming its own air power (1954~1960s) 2/5

Pilot Training

Handing Over (F-86D)

Receiving aircraft including maintenance equipment, facilities, training

JSDF becoming its own air power (1954~1960s) 3/5

- **Japan's Policy**
  - **prioritizing the economic revival**
  - **depending on the U.S. for defense**

- **the Basics of Defense Policy**
  - **centrality of Japan-U.S.**
  - **build-up of defense capability step by step**
    - **used only in the event of an attack**
    - **kept to the minimum necessary for self-defense**

JSDF becoming its own air power (1954~1960s) 4/5

Transition of radar site

Scramble-take off operations

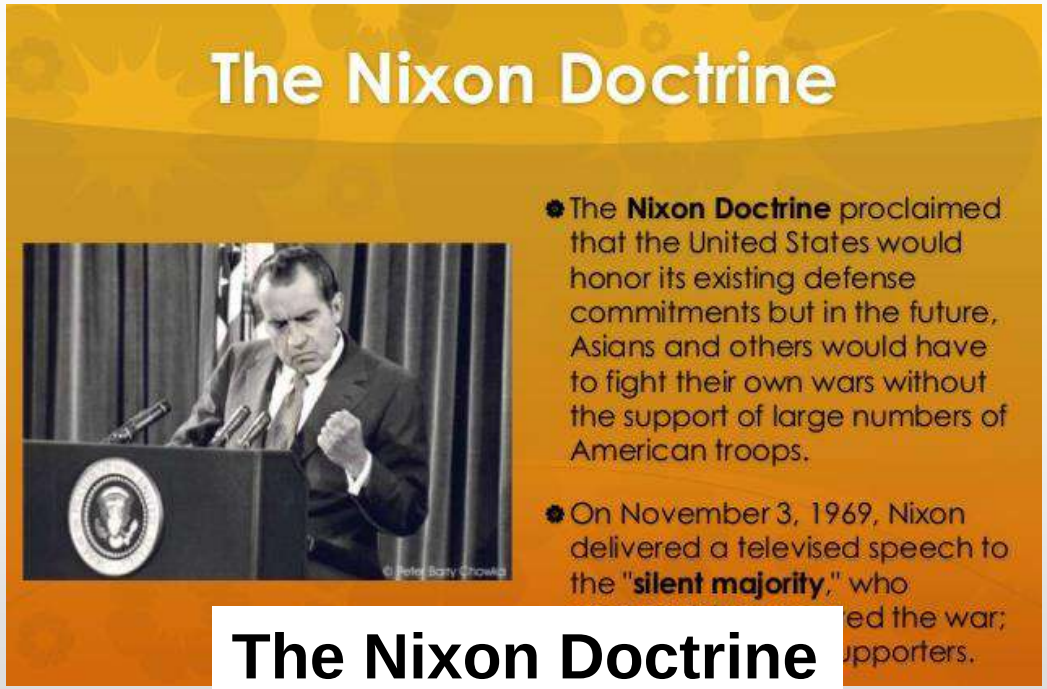
JSDF becoming its own air power (1954~1960s) 5/5

Characteristics of the process of air power development

- Transition from U.S. under U.S. military's support
- Focus on air defense under Basic Defense Policy

Reinforcing Autonomous Defense and Strengthening Relations (1970s~the end of the Cold War) 1/5

Security environment changed tremendously



The Nixon Doctrine

Settlement between the U.S. and China

Reinforcing Autonomous Defense and Strengthening Relations (1970s~the end of the Cold War) 2/5

- **Exploring the Autonomous Defense of Japan**

- **Basic Defense Force Concept**
  - **included in NDPO (1976)**
  - **possess the minimum necessary defense capability**

※NDPO: The National Defense Program Outlines

Reinforcing Autonomous Defense and Strengthening Relations (1970s~the end of the Cold War) 3/5

Soviet military jet
TU-16 Badger

Rim of the Pacific Exercise
(RIMPAC)

Japan-US guidelines(1978)

-defense cooperation expanded to operations

-clarified the division of roles and complementary relationship

Reinforcing Autonomous Defense and Strengthening Relations (1970s~the end of the Cold War) 4/5

Modernization and Improvement by required by U.S

Introduction of F-15

Anti-submarine patrol aircraft (P-3C)

Introduction of E-2C

Reinforcing Autonomous Defense and Strengthening Relations (1970s~the end of the Cold War) 5/5

Characteristics of the process of air power development

- Trying to explore the Self-Defense Force (Basic Defense Force Concept)

- Deepening the relations with U.S.

Enlargement of the air power role (The end of the Cold War~) 1/4

Drastically change in the security environment

Gulf War (1991)

PKO in Cambodia (1992–1993)

Enlargement of the air power role (The end of the Cold War~) 2/4

Responding to new threats, the expansion of international cooperation, gray zone situations, contemporary warfare which combined across all domains

9/11 terrorist attacks in the United States (2001)

North Korea's ballistic missile firing (1998)

Enlargement of the air power role (The end of the Cold War~) 3/4

National Defense Program Guidelines (NDPG) was revised 5 times (1995, 2004, 2010, 2013, 2018)

- **Further utilization of JSDF capabilities (1995NDPG)**
- **Multifunctional, flexible, effective defense force (2004NDPG)**
- **Focused on SDF operations (2010NDPG）**
- **Further joint operations (2013NDPG)**
- **Adaptation to warfare that combines capabilities in all domains (2018NDPG)**

※NDPG: National Defense Program Guidelines

Enlargement of the air power role (The end of the Cold War~) 4/4

Characteristics of the process of air power development

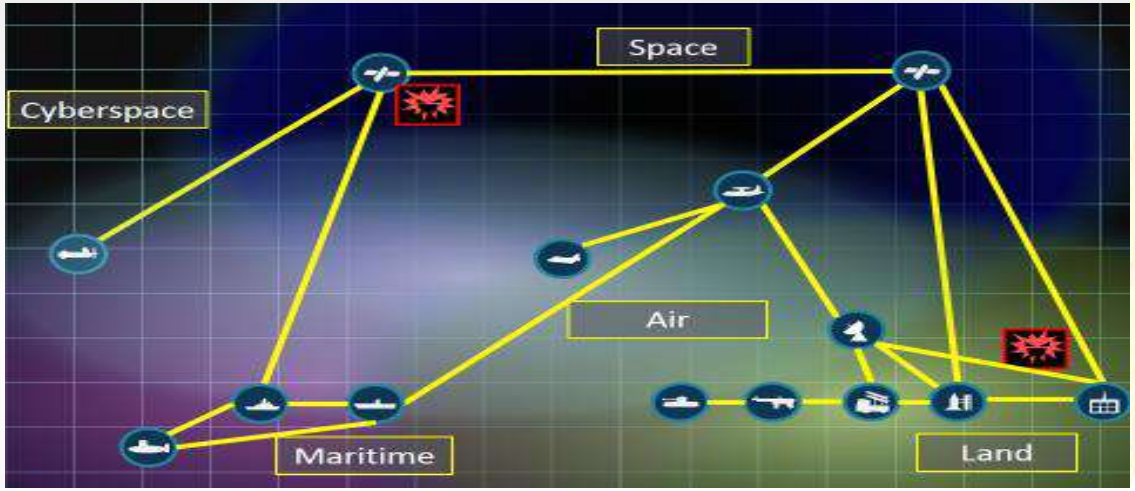
- **Expansion of air power role responding to security environment**
  - **Expansion of the area of activity**
  - **Improvement of functions**
  - **Adaptation in the use of all domains**

Aerial Refueling/Transport Unit

surface-to-air missile PAC-3

Space domains

JSDF's efforts for future air power



Future Military Operation >>>
Cross-domain Operation

Introduction of long-endurance unmanned aerial vehicle Global Hawk
(to be deployed in FY2021)

Defense Cooperation and Exchanges

Defense Exchanges Defense Cooperation	• Overseas student exchanges, research exchanges • High-level and working-level exchanges • Unit-to-unit exchanges • Goodwill training • Capacity building assistance • Range of cooperation in non-traditional security (including joint training) • Joint exercise • Joint response

Professional airmanship program (Jul 2019)

Japan-Australia Joint Exercise (Sept 2019)

Joint exercise (Oct 2018)

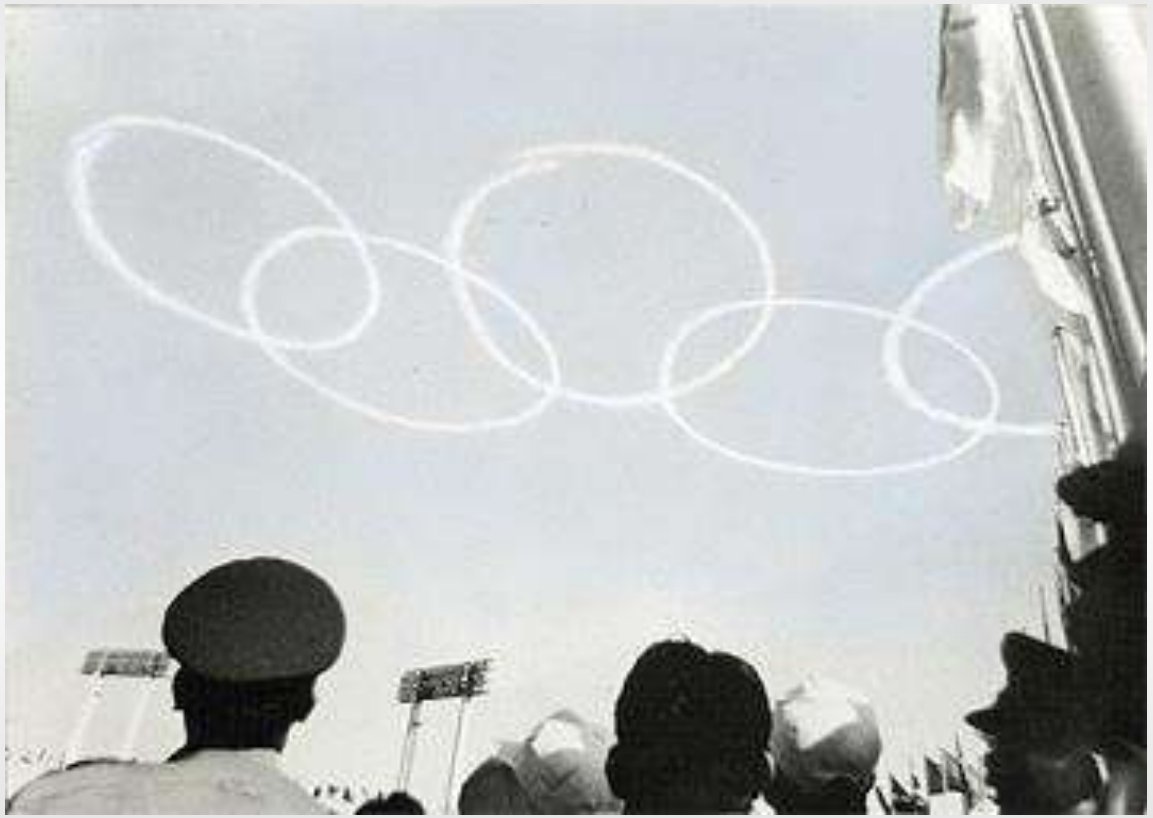
Defense Exchanges with Sri Lanka

Japan-Sri Lanka Defense Ministerial Meeting (21 Aug 2018)

friendship call at Mattala Rajapaksa International air (U-4 unit) (19 Mar 2019)

Sri Lanka Air Force, Koku-jieitai in Hyakuri air base (U-125)

Tokyo Olympic and Paralympic Games 2020



Tokyo Olympic Games in 1964

Thank you for your kind attention.


Colombo
Air Symposium
2019

Staying Relevant - Fiscal, Technological, and Operational Challenges facing Smaller Air Forces

Malinda Meegoda

Lakshman Kadirgamar Institute of International Relations and Strategic Studies (LKI), Sri Lanka

Colombo Air Symposium 2019

24 September 2019

LKI
LAKSHMAN KADIRGAMAR INSTITUTE
OF INTERNATIONAL RELATIONS AND STRATEGIC STUDIES

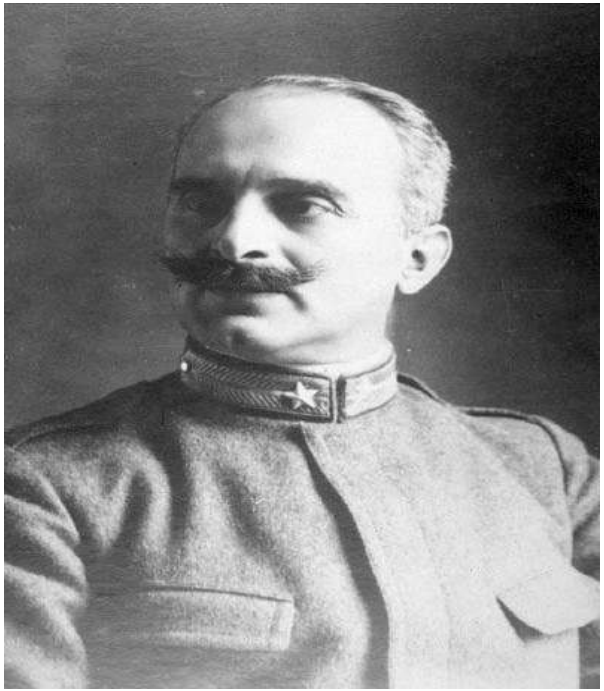
Air Power Challenges

Defining Small Air Force

- An air force that for a variety of economic, social and strategic reasons have chosen not to employ the complete air power spectrum.

- Problems facing Airpower strategists
  - Airpower strategists fail to forecast the increasing lethal capabilities of aerial warfare.
  - Overestimated airpower capabilities as a lethal force to meet a nation's strategic and security objectives
  - Air Power has a relatively shorter operational history compared to Sea Power
  - A majority of studies conducted on air power is from the perspective of larger powers.

Douhet and Air Power



An overview of Sri Lankan Air Power –

- Possess very limited offensive air capabilities
  - Possess a limited number of ageing fixed wing combat aircrafts
- Since 2009 operations have mostly focuses on
  - Search and Rescue Operations
  - Humanitarian Assistance and Disaster Relief
  - Transportation of Goods and Personnel
- No Airborne Early Warning Control (AEW&C) systems
- Do not possess any advance surface to air weapons platforms to serve any air defence needs.
- Sri Lanka Navy does not have its own naval aviation wing, and relies on SLAF for air support.

Combat capable aviation fleet sizes and defence expenditure of significant military forces operating in the Indian Ocean Region

Country	Number of Combat Capable Aircrafts Marine Aviation*	Number of Combat Capable Aircrafts Air Force*	Defence Expenditure 2018 (USD billions current figure)	Defence Share of GDP % (2018)	Share of Government Spending % (2018)
Australia	-	163	26.7	1.9	5.1
China	374	2397	250.0	1.9	5.5
India	69	849	66.5	2.4	8.7
Indonesia	-	102	7.4	0.7	4.3
Iran	3	334	13.2	2.7	15.8
Kenya	-	38	1.1	1.2	4.8
Malaysia	-	66	3.5	1.0	4.3
Pakistan	7	425	11.4	4.0	18.5
Singapore	-	134	10.8	3.1	17.1
South Africa	-	50	3.6	1.0	2.9
Sri Lanka	-	30	1.7	1.9	10.1
Thailand	3	149	6.8	1.3	6.3
United States	1042**	1478	648.8	3.2	9.0

Source: International Institute for Strategic Studies (IISS). Military Balance 2018, and Stockholm International Peace Research Institute (SIPRI) Military Expenditure Database

Sri Lanka's Current Security Challenges – Reorienting Air Power capabilities to meet maritime security challenges

- Sri Lanka is also situated in one of the most strategic geolocations in the world with a number of active shipping lanes passing through its Exclusive Economic Zone (EEZ)
- The total area of Sri Lanka's EEZ is more than seven times its actual land area, which presents a number of maritime security challenges.
- Some of the most pressing non-traditional security threats include;
  - Illegal, Unauthorised and Unregulated (IUU) fishing,
  - Drug trafficking
  - Human smuggling
  - Maritime piracy
  - Humanitarian Assistance Disaster Relief (HADR), and Search and Rescue (SAR) operations.
- Unlike other medium to large maritime powers operating in the Indian Ocean, Sri Lanka does not have extensive air support in the maritime domain.
- Capability gap: Sri Lanka lacks the capacity to monitor the maritime domain from the air due to the lack of adequate maritime patrol aircraft, and search and rescue helicopters

Planners need to be cautious about future acquisition plans

- The lead time involved in introducing a new aircraft and associated weapons platforms is especially high in comparison to other military hardware.

- The base price of an aircraft could change from the announcement to the date of delivery.

- Currency fluctuations, delays and rising costs of spare parts all could add to the cost of maintaining the aircrafts.

Air-Sea Integration (‘Jointness) between SLAF and SLN as a way forward.

- Establishing a joint Naval and Air Command could be a long term strategy.
- ‘Jointness’ could help meet the evolving security needs in the maritime domain.
- It has to be planned with care or could lead to
  - Unwanted inter-service rivalry
  - Information Gaps and Unclear Chains of Command
- The model should be tailormade to Sri Lanka’s defence needs and other models used in other countries may not work.
- Strengths and Weakness of the two service branches need to be thoroughly analysed.

Vision and Rationale

Vision

- The eventual goal should be to develop a commonality of vision and purpose to synergise the strengths of each other's capabilities to forge a unified fighting force.

Rationale

- The two branches of the service are naturally the services that will venture into territorial defence outside Sri Lanka's immediate land boundaries.
- Jointness could also allow the two services to develop concurrently with the evolving technological shifts, and help avoid one particular branch of the armed forces from falling behind the other.

Asymmetric warfare, UAVs, and Counter Insurgency operations

- With the growing consumer market for UAVs, and due to its dual-use nature the field of aviation based production is becoming more dispersed.
- These brings new security challenges
  - No substantive drone technology anti-proliferation regime is currently in place.
  - Non-state actors (e.g. Daesh) started weaponizing drones for a variety of missions including conducting
    - surveillance in the battlefield
    - distributing propaganda, and
    - dropping explosives on civilians and military units.

Non-State Actors and Drones

Image Source: from Muhammad Hamed/Reuters published in the New York Times (January 31, 2017)

Counter Drone Warfare – A role for Smaller Air Forces

US Counter-Drone Exercise - ‘Black Dart’

- The ability to problem solve against such patterns of attack.
- Some of the solutions may come from a smaller air force such as the SLAF, as with other larger air forces.
- The Sri Lanka Air Force could especially look to conduct research and development on ‘non-kinetic capabilities’
  - electronic and offensive cyber-attacks to disrupt hostile and unauthorised UAVs.

Other Non-Lethal avenues for UAV use

- Monitoring the maritime domain, especially against unwanted incursions by illegal fishing vessels, drug traffickers, and other non-state actors engaging in illicit activities in the Indian Ocean.
- The second function drones could serve the SLAF's needs is in Search and Rescue missions on both land and sea.
- Humanitarian and Disaster Relief missions could also benefit from drones to survey the extent of areas affected in the aftermath or during an ongoing natural disaster event.

SLAF – Innovation and Collaborations

Seed Bombing Campaign

Cloud Seeding

Key Takeaway

The SLAF as with other smaller air forces needs to make continuous and concerted efforts to transform itself into a highly innovative, adaptive and learning organisation

- More R&D
- Develop Ever Evolving Stringent Evaluation Guidelines on Future Procurement
- Greater Collaboration with Private Sector and other Learning Institutes
- Inter-service cooperation

Sri Lanka Air Force
24th & 25th October 2019
COLOMBO AIR SYMPOSIUM-2019
"A Small Air Force: Way Forward in Achieving Future Vision"

Passage Plan to Exploit Internal Strengths

Presented by

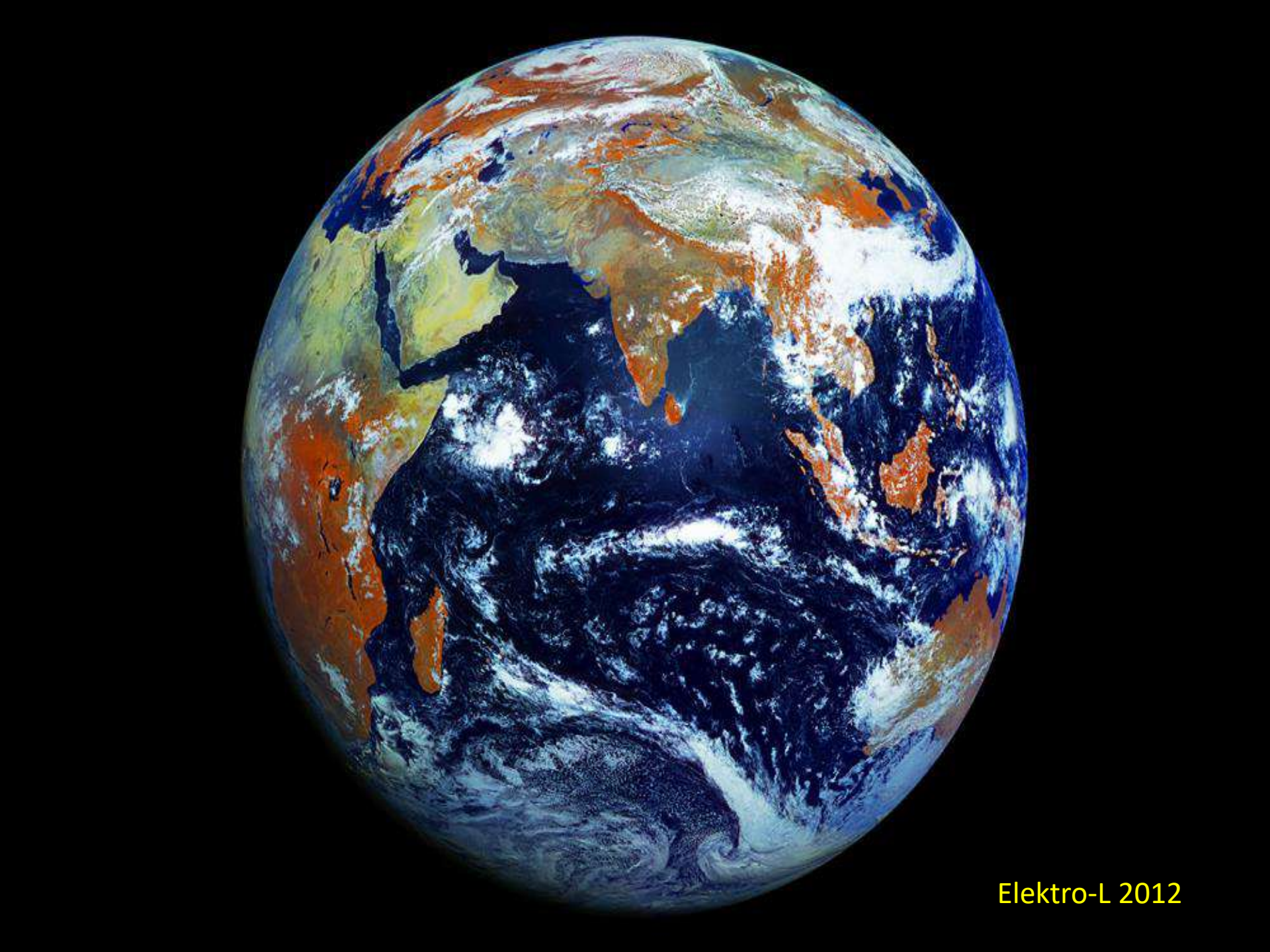
Rear Admiral YN Jayarathna

RWP & Bar, RSP, USP, ndu, psc

MSc (Hydroagraphy), Goa

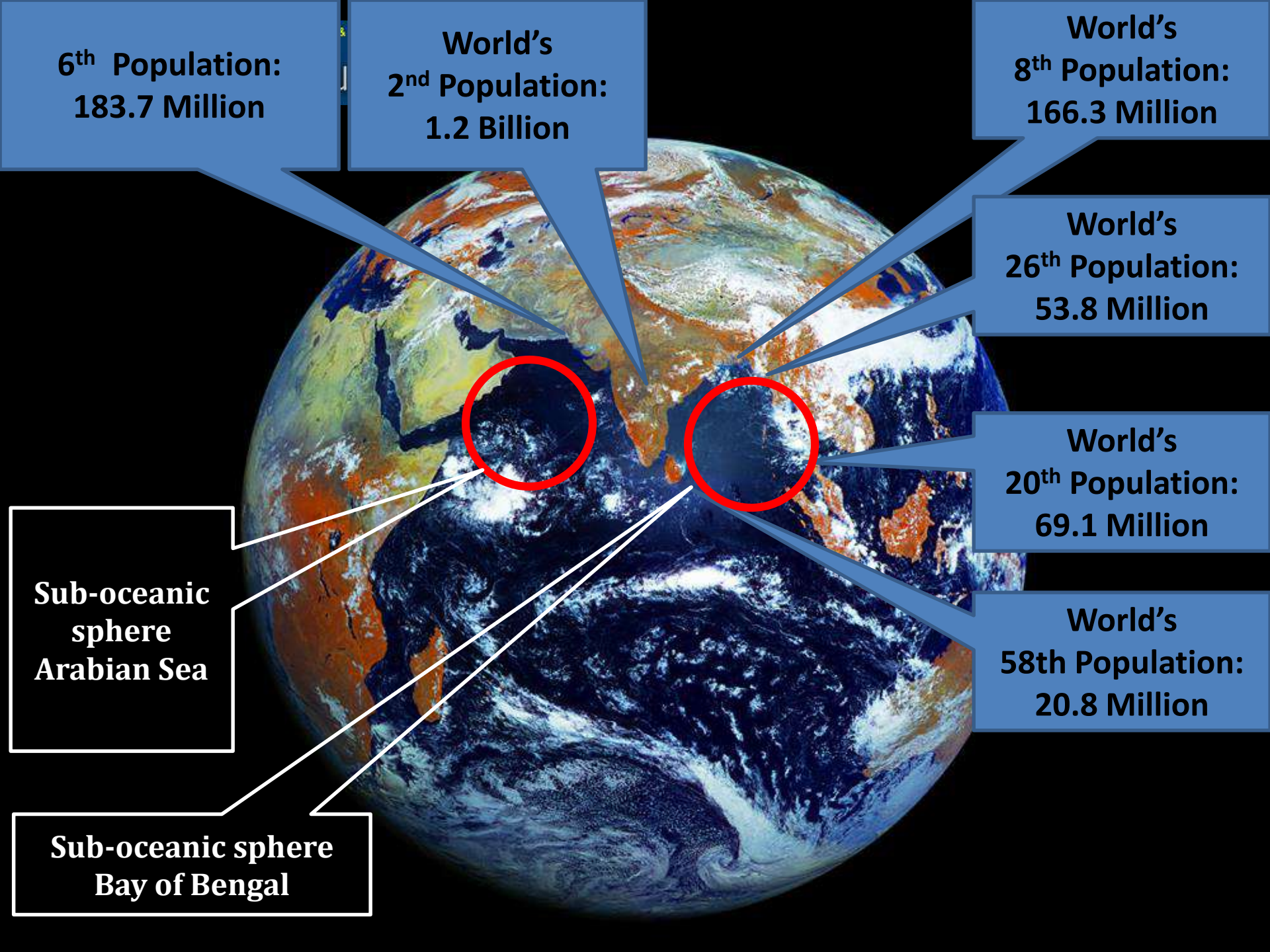
MSc (Defence Studies), Kelaniya

MSc (MS&NSSS), Beijing

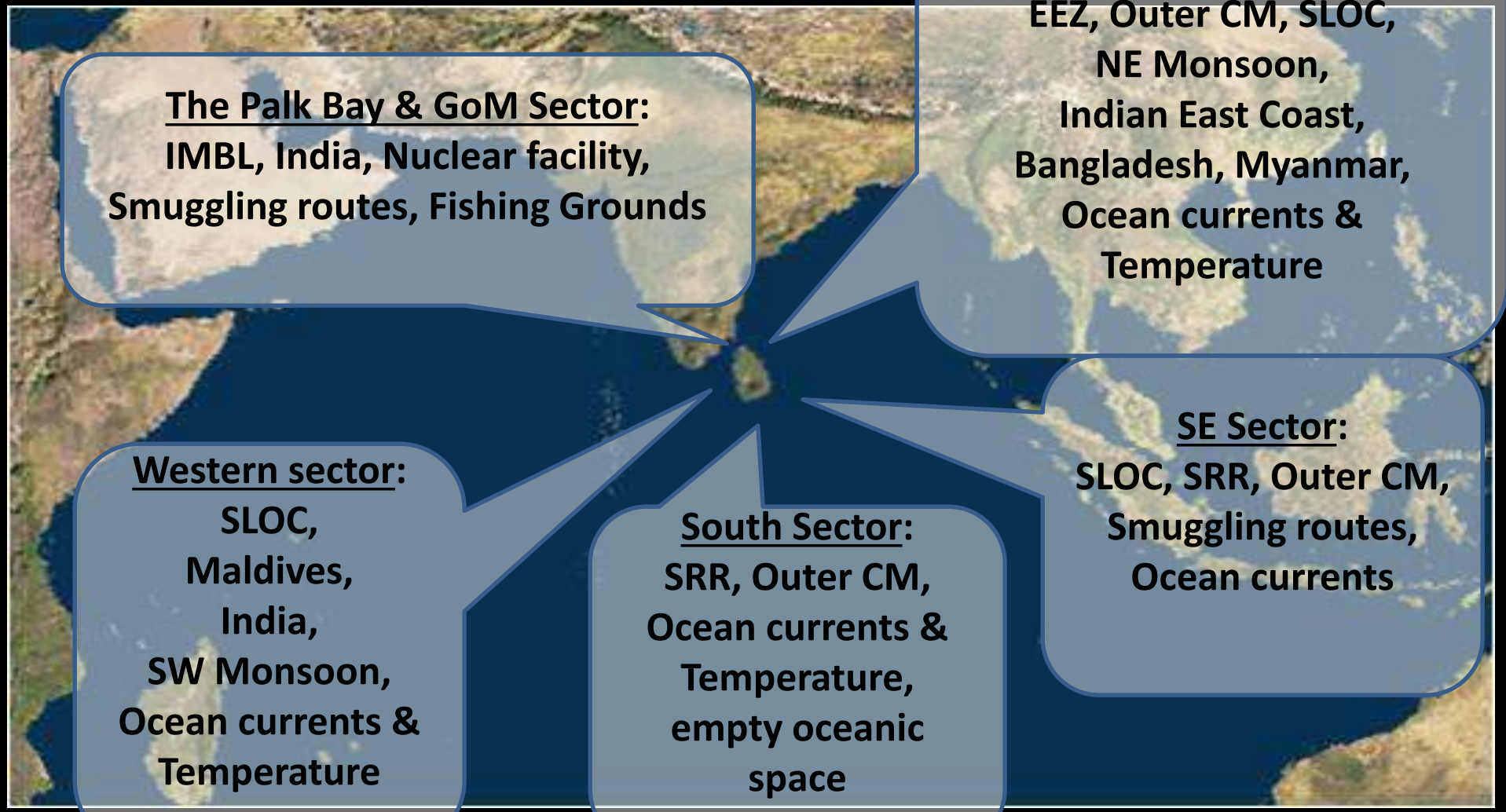

Elektro-L 2012

Analysing Internal Strengths….

- Location in the Indian Ocean
  - Strategic Harbours
  - Sea Lanes Of Communication (SLOC)
  - Search & Rescue Region (SRR)
  - Monsoon “Midpoint” in Indian Ocean
  - Last High Ground towards South Hemisphere
- Expanding Navy
- Ability to convert airfields for layered response
- Skilled Technical Crew
- Flexible Bureaucratic procedures


6th Population: 183.7 Million
World's 2nd Population: 1.2 Billion
World's 8th Population: 166.3 Million
World's 26th Population: 53.8 Million
World's 20th Population: 69.1 Million
World's 58th Population: 20.8 Million
Sub-oceanic sphere Arabian Sea
Sub-oceanic sphere Bay of Bengal

What will be the National Interests for an Island State



Bay of Bengal:
EEZ, Outer CM, SLOC, NE Monsoon, Indian East Coast, Bangladesh, Myanmar, Ocean currents & Temperature

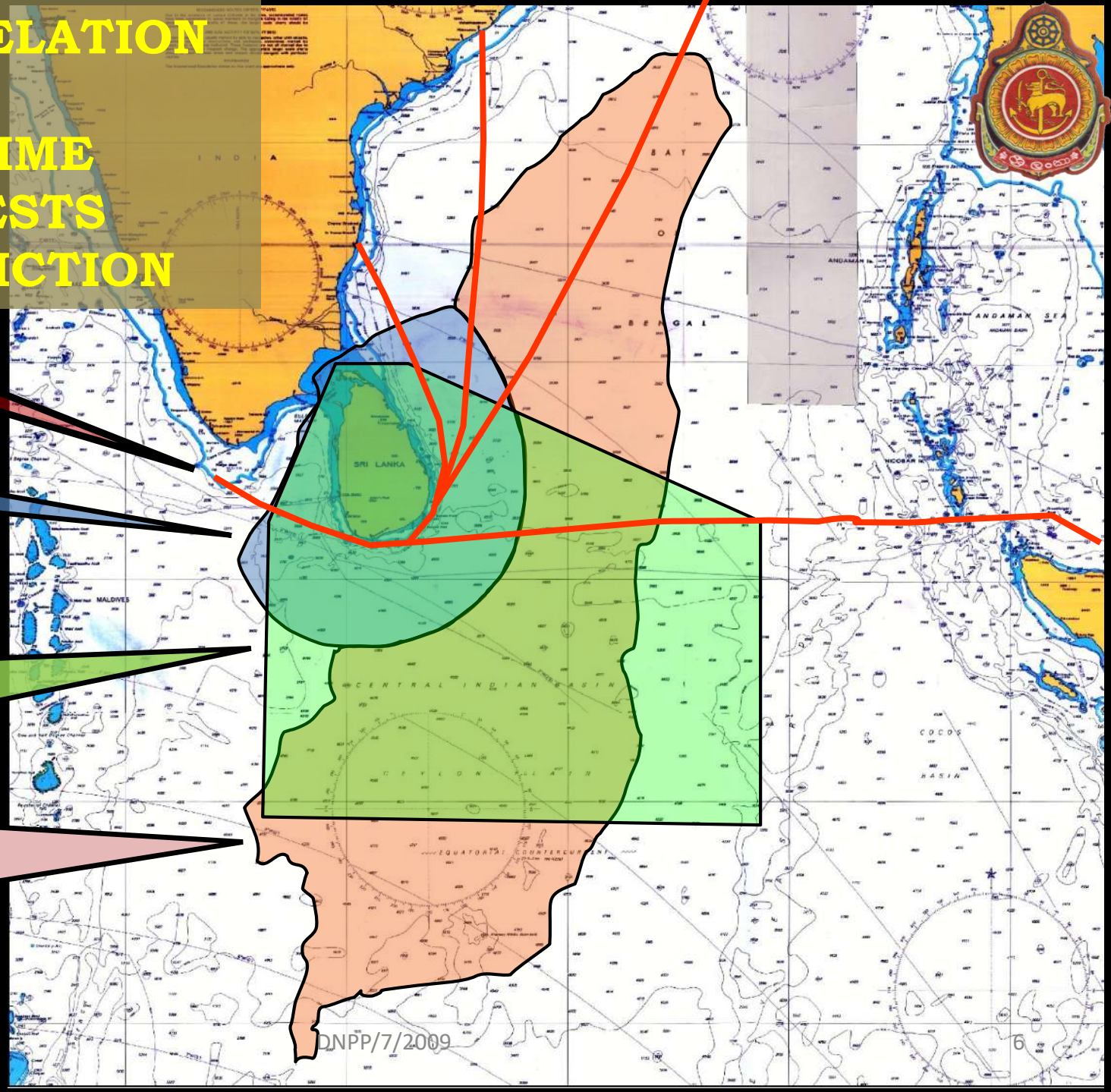
The Palk Bay & GoM Sector:
IMBL, India, Nuclear facility, Smuggling routes, Fishing Grounds

SE Sector:
SLOC, SRR, Outer CM, Smuggling routes, Ocean currents

Western sector:
SLOC, Maldives, India, SW Monsoon, Ocean currents & Temperature

South Sector:
SRR, Outer CM, Ocean currents & Temperature, empty oceanic space

THE CO-RELATION OF MARITIME INTERESTS & JURISDICTION

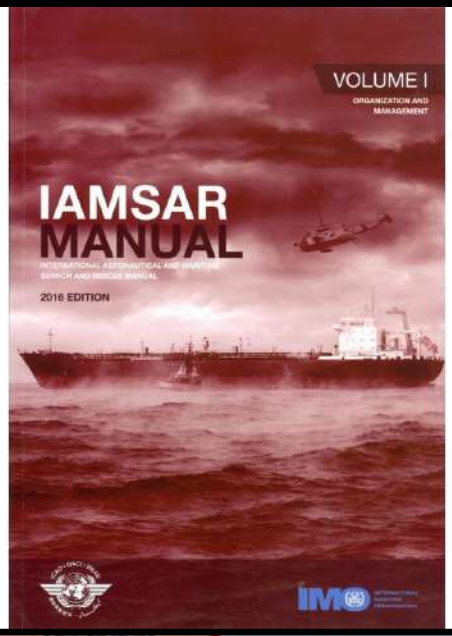


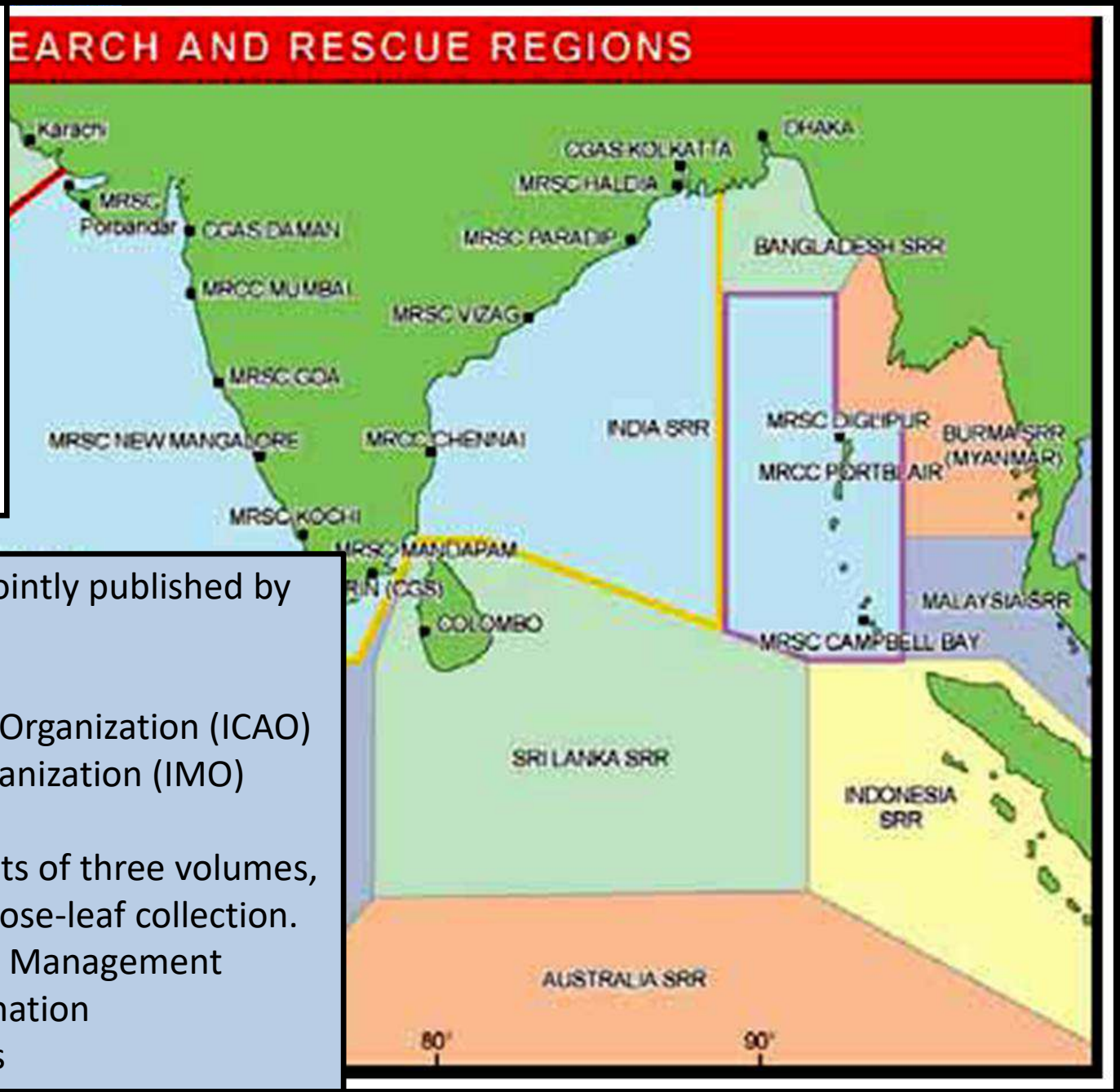
SLOC

EEZ

Search & Rescue Region

Continental Margin :outer limit of the claim





The IAMSAR Handbook is jointly published by two UN agencies:

International Civil Aviation Organization (ICAO)
International Maritime Organization (IMO)

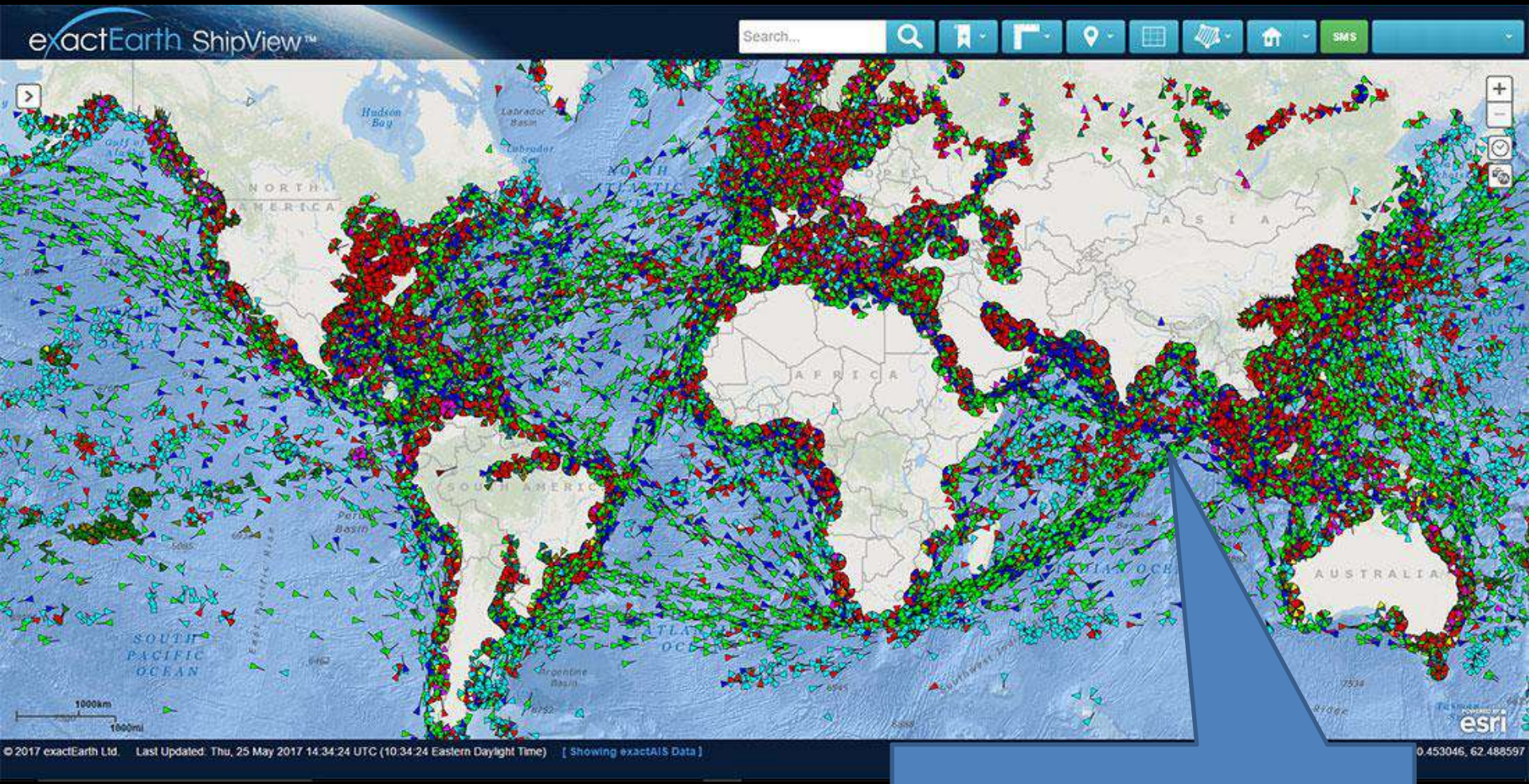
The IAMSAR Manual consists of three volumes, which are published as a loose-leaf collection.
Volume I. Organization and Management
Volume II. Mission Co-ordination
Volume III. Mobile Facilities

Sri Lanka Air Force

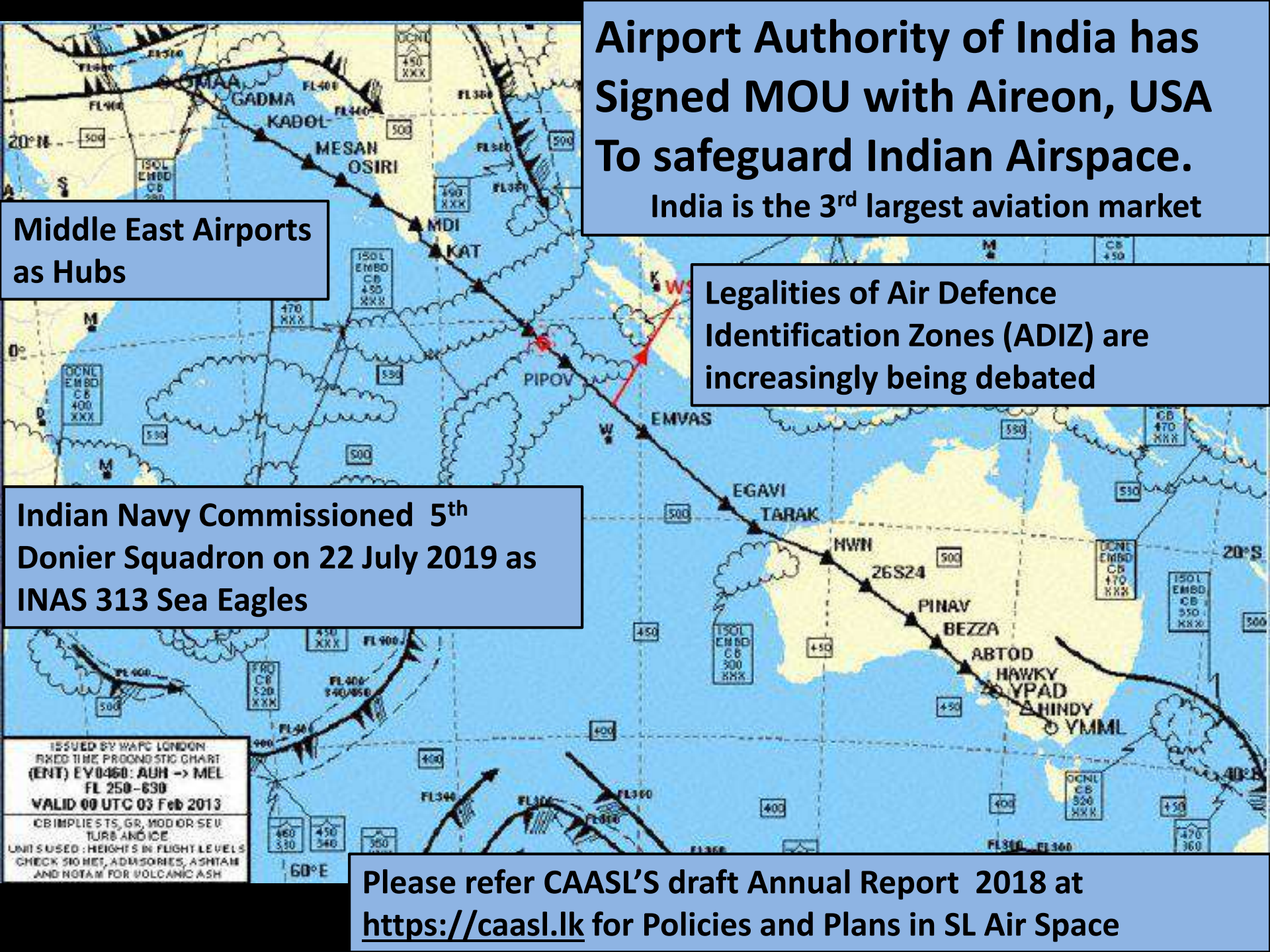
24th & 25th October 2019

COLOMBO AIR SYMPOSIUM-2019

"A Small Air Force: Way Forward in Achieving Future Vision"



Addressing Maritime Blindness In SRR through LRMP


Airport Authority of India has Signed MOU with Aireon, USA To safeguard Indian Airspace.
India is the 3rd largest aviation market
Middle East Airports as Hubs
Legalities of Air Defence Identification Zones (ADIZ) are increasingly being debated
Indian Navy Commissioned 5th Donier Squadron on 22 July 2019 as INAS 313 Sea Eagles
Please refer CAASL'S draft Annual Report 2018 at https://caasl.lk for Policies and Plans in SL Air Space
GADMA
KADOL
MESAN
OSIRI
MDI
KAT
PIPOV
EMVAS
EGAVI
TARAK
HWN
26S24
PINAV
BEZZA
ABTOD
HAWKY
YPAD
HINDY
YMML
20°N
20°S
60°E
ISSUED BY WAFC LONDON
FIXED TIME PROGNOSTIC CHART
(ENT) EY0460: AUH -> MEL
FL 250-630
VALID 00 UTC 03 Feb 2013
CB IMPLIES TS, GR, MOD OR SEV TURB AND ICE
UNITS USED: HEIGHTS IN FLIGHT LEVELS
CHECK SIG WET, ADVISORIES, ASHTAM AND NOTAM FOR VOLCANIC ASH

Maritime Weather

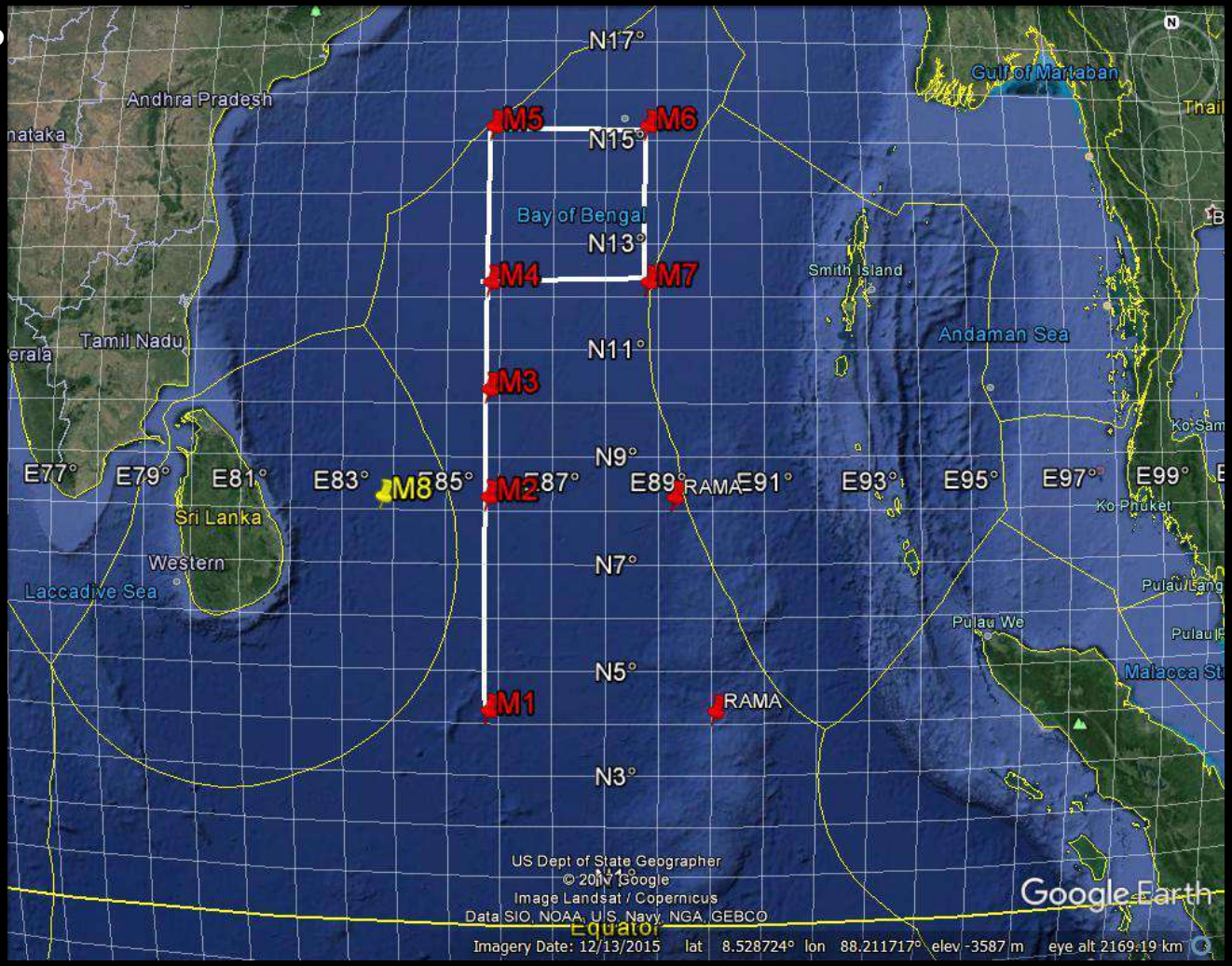
- Changing weather patterns and Monsoonal effect on Global Weather
- Increased scientific studies in maritime weather and air-interface
- Scientific Studies yet with Strategic Interests
- Study involves Oceanographic studies and Air Space, Wind Circulations and Heating

https://www.frontiersin.org/articles/10.3389/fmars.2019.00355/full

U.S. NAVAL RESEARCH LABORATORY

Some of the Scientific Studies on-going in the Oceans around Sri Lanka

P



- **Air-Sea Interactions in the Northern Indian Ocean (ASIRI)**
- **Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA)**
- **Role of the Indian Ocean on Monsoon Intra-Seasonal Oscillations (RIO MISO)**

USAF Hurricane Hunters operating W-C130 to study the atmospheric layers

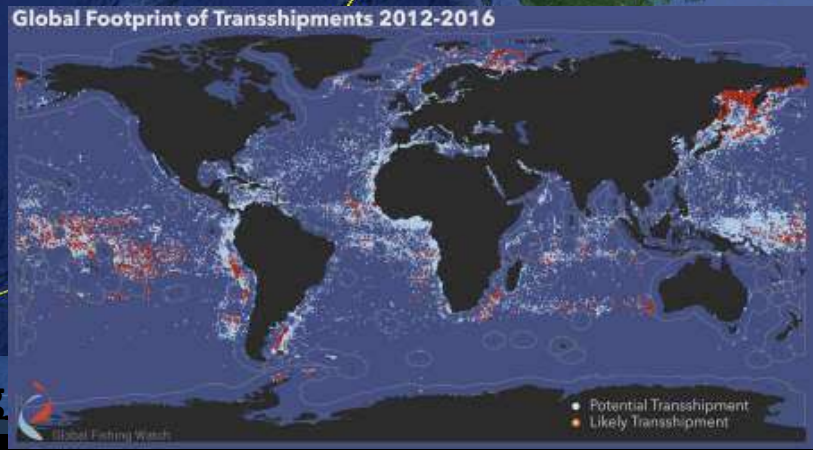
High Ground

Piduruthalagala
Mountain
2524 m

Gongala
Mountain
1358 m

300 M
555.6 Km

1000 M
1852 Km



https://www.wmo.int/pages/prog/sat/globalplanning

SLN's Off shore Patrol Vessel (OPV) Fleet

- Eight (8) OPV fleet capable of carrying Helicopters
- Building human capital on formation of Naval Air Wing through training and exercises
- Navy's strategy to expand its capacity for policing of EEZ, SRR & Maritime Interests
- 'Deterrence' and Force Multiplier
- Necessity to enhance response to far corners of the Maritime Domain

SLN OPVs with Foreign Ships

SLNS Gajabahu in Port of Manila

The ‘Civil’ Advantage

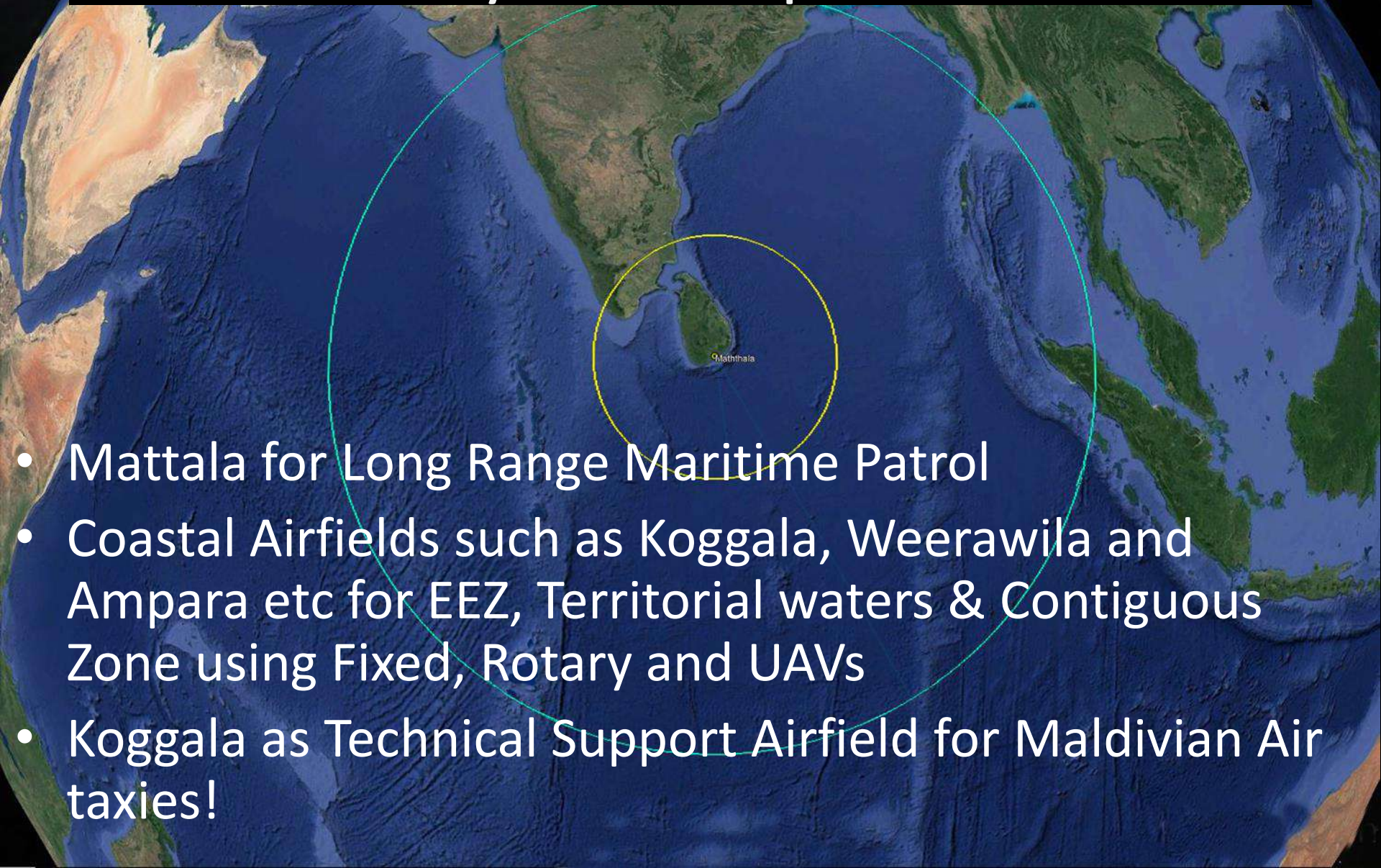
- Skilled Technicians and Facilities for Servicing
- Growing Civil Aircraft registry, 62 privately owned aircrafts (including 5 air balloons) as at 18. 07. 2019
- Maldivian Factor

  Fleet of 48 x De Havilland Twin Otters

  Economy and Cost effectiveness

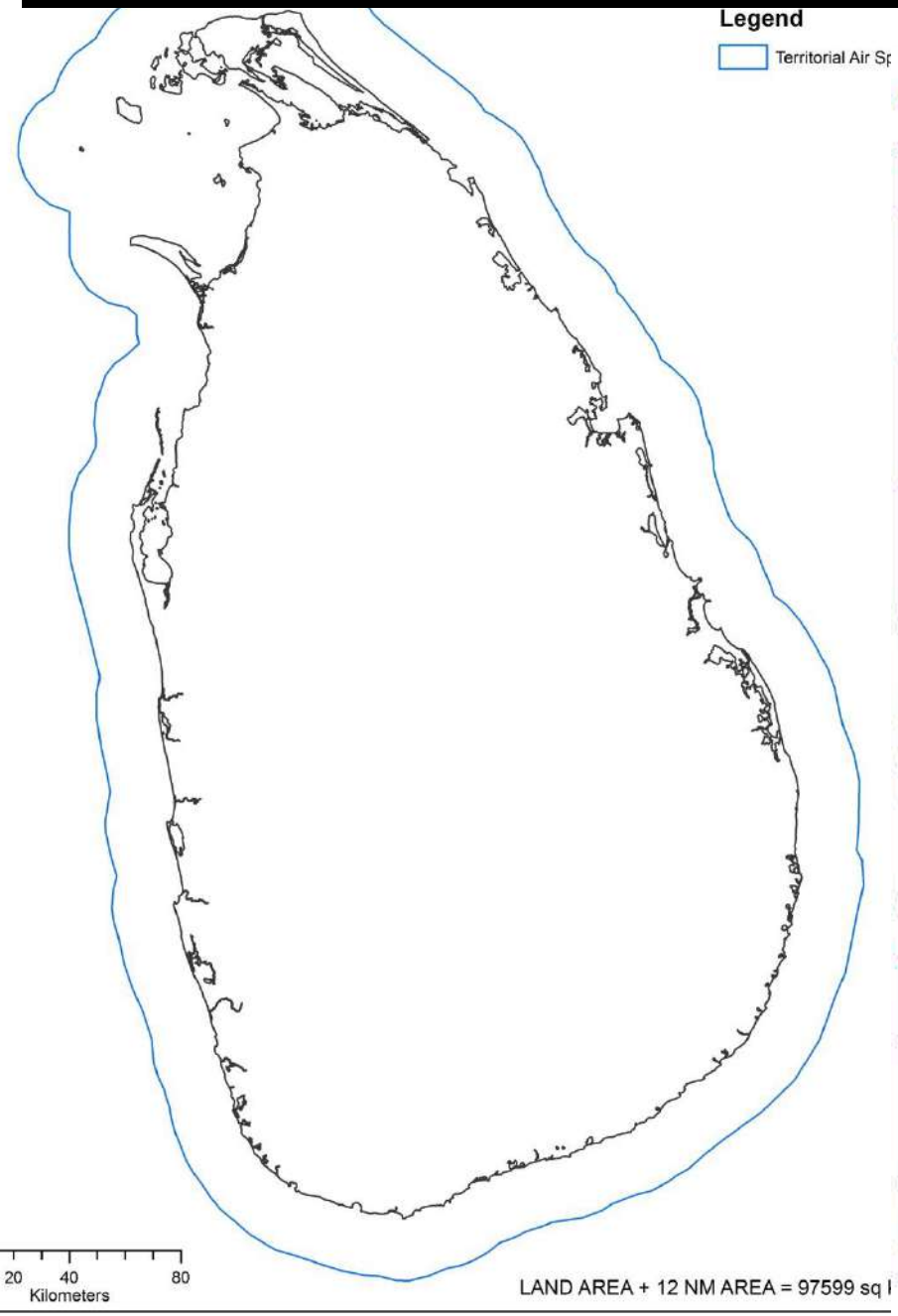
  Distance of Air Miles

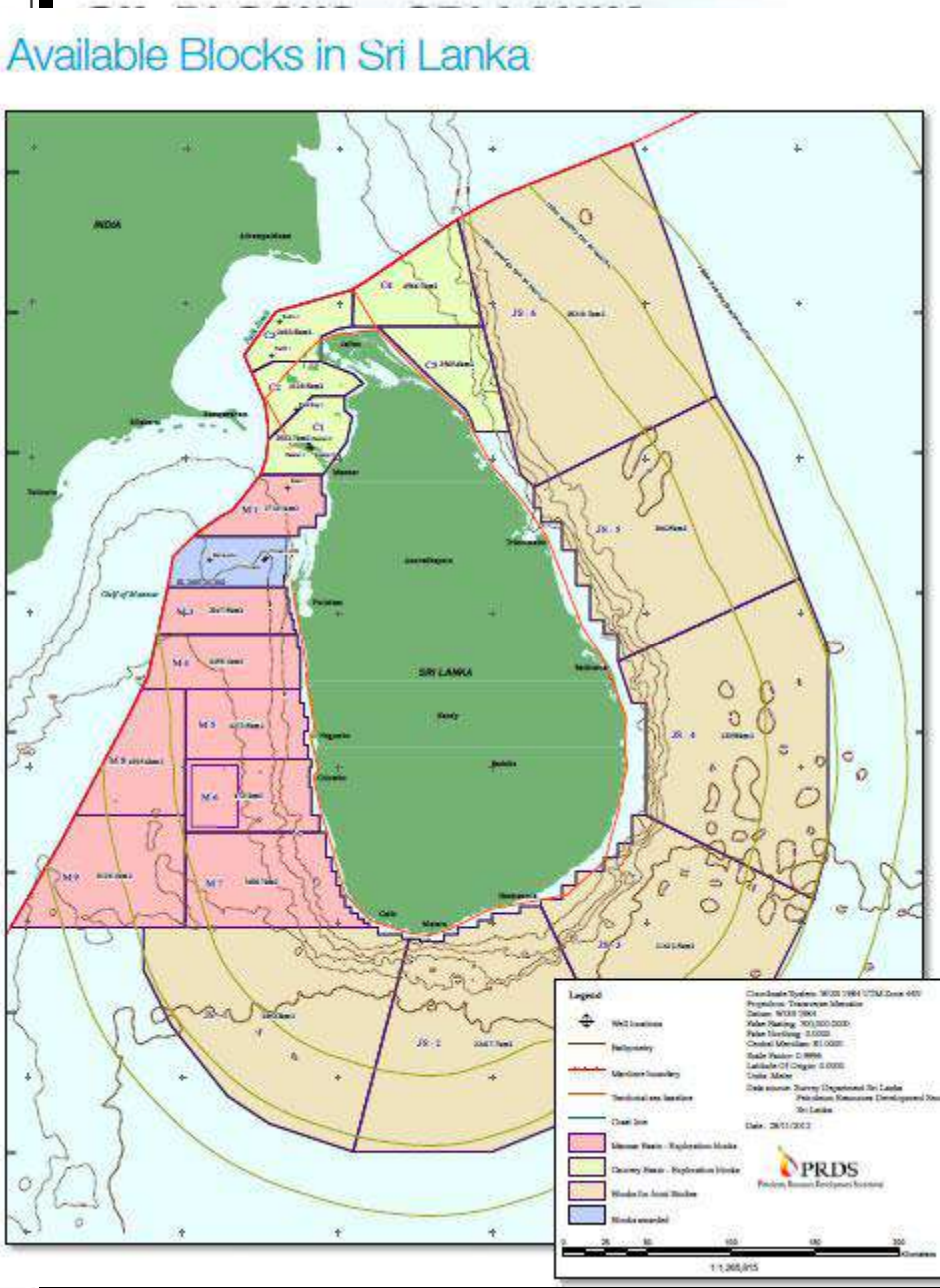
Use of existing local Airfields for Layered Response

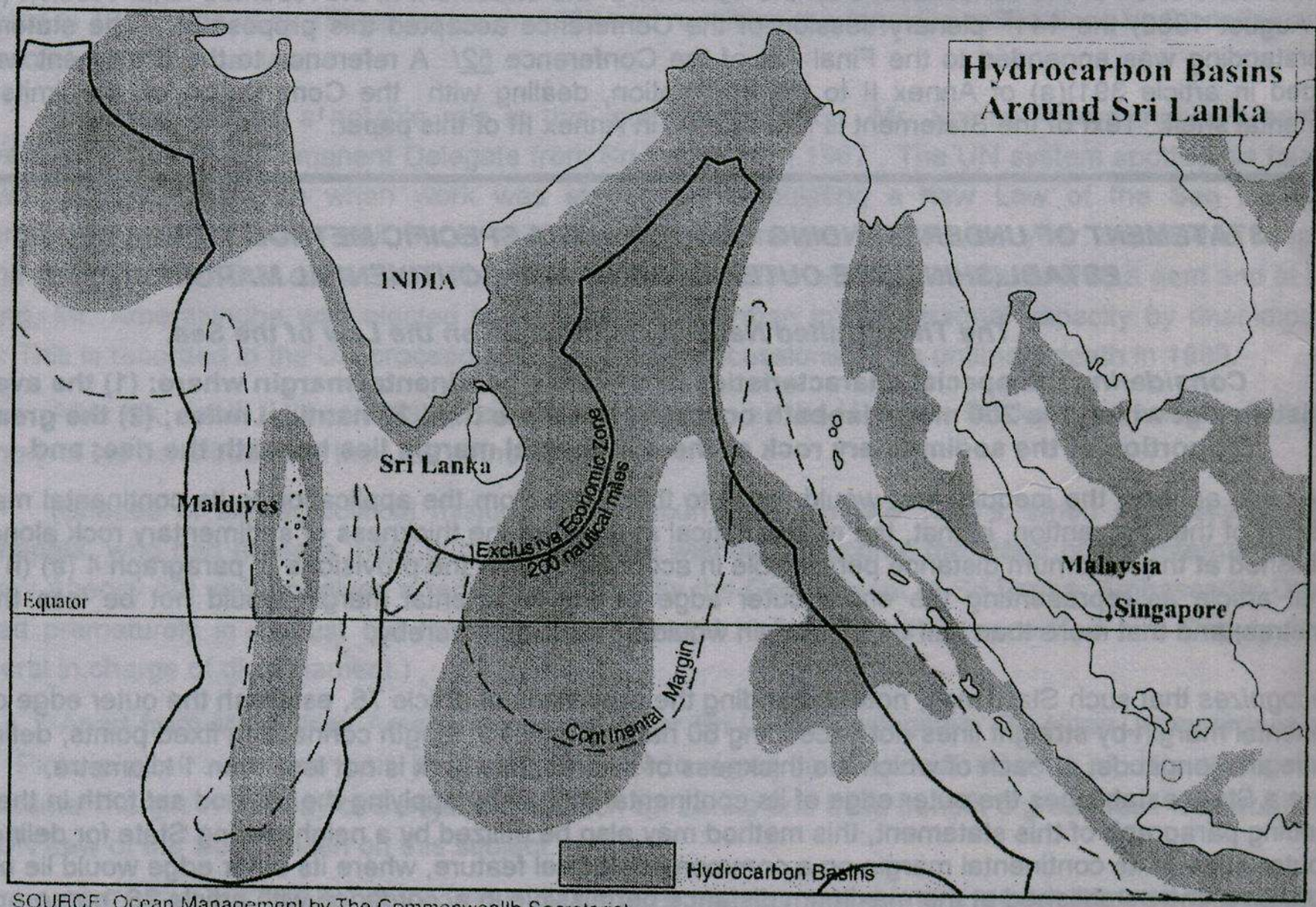


- Mattala for Long Range Maritime Patrol
- Coastal Airfields such as Koggala, Weerawila and Ampara etc for EEZ, Territorial waters & Contiguous Zone using Fixed, Rotary and UAVs
- Koggala as Technical Support Airfield for Maldivian Air taxies!

Use of existing local Airfields for Layered Response



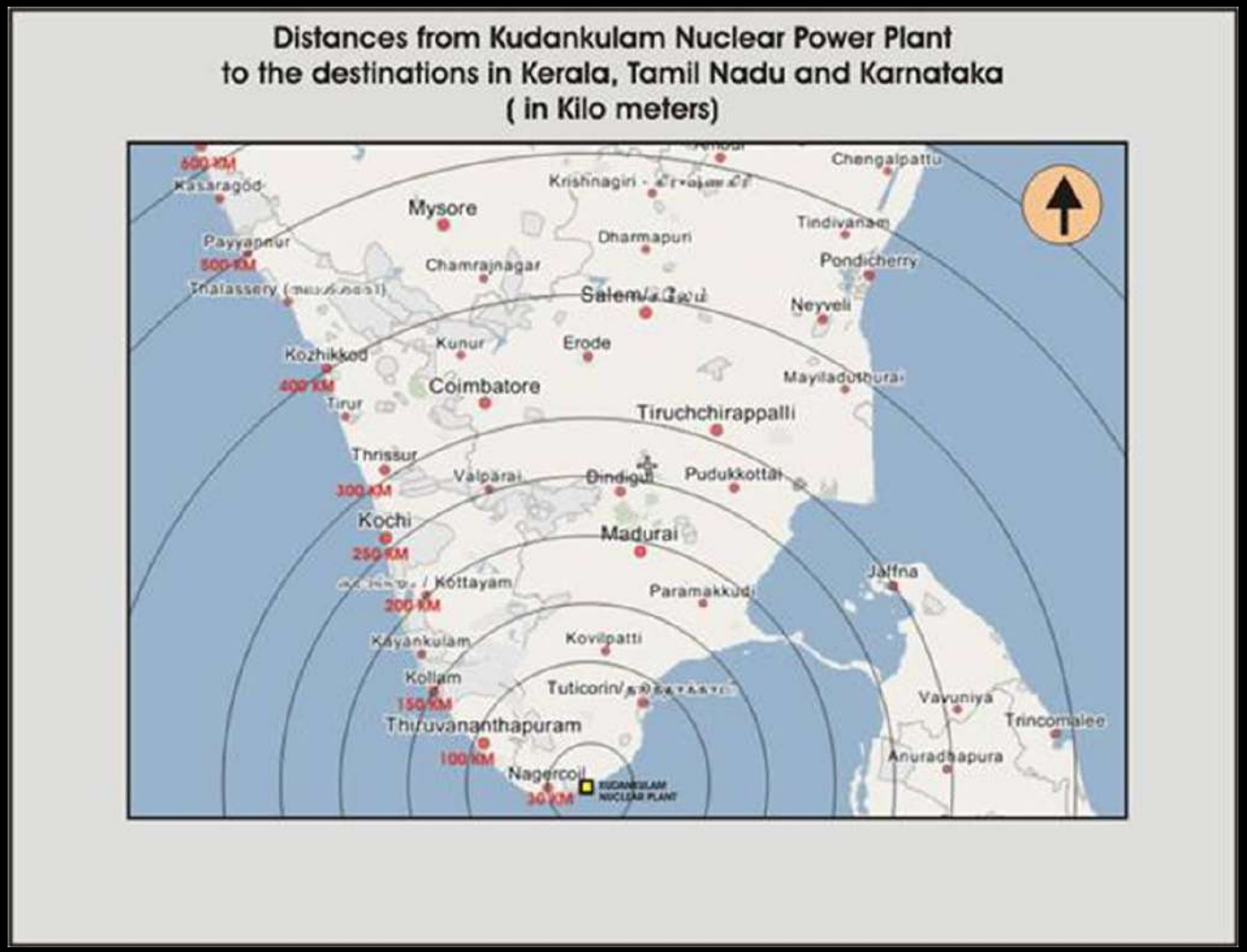


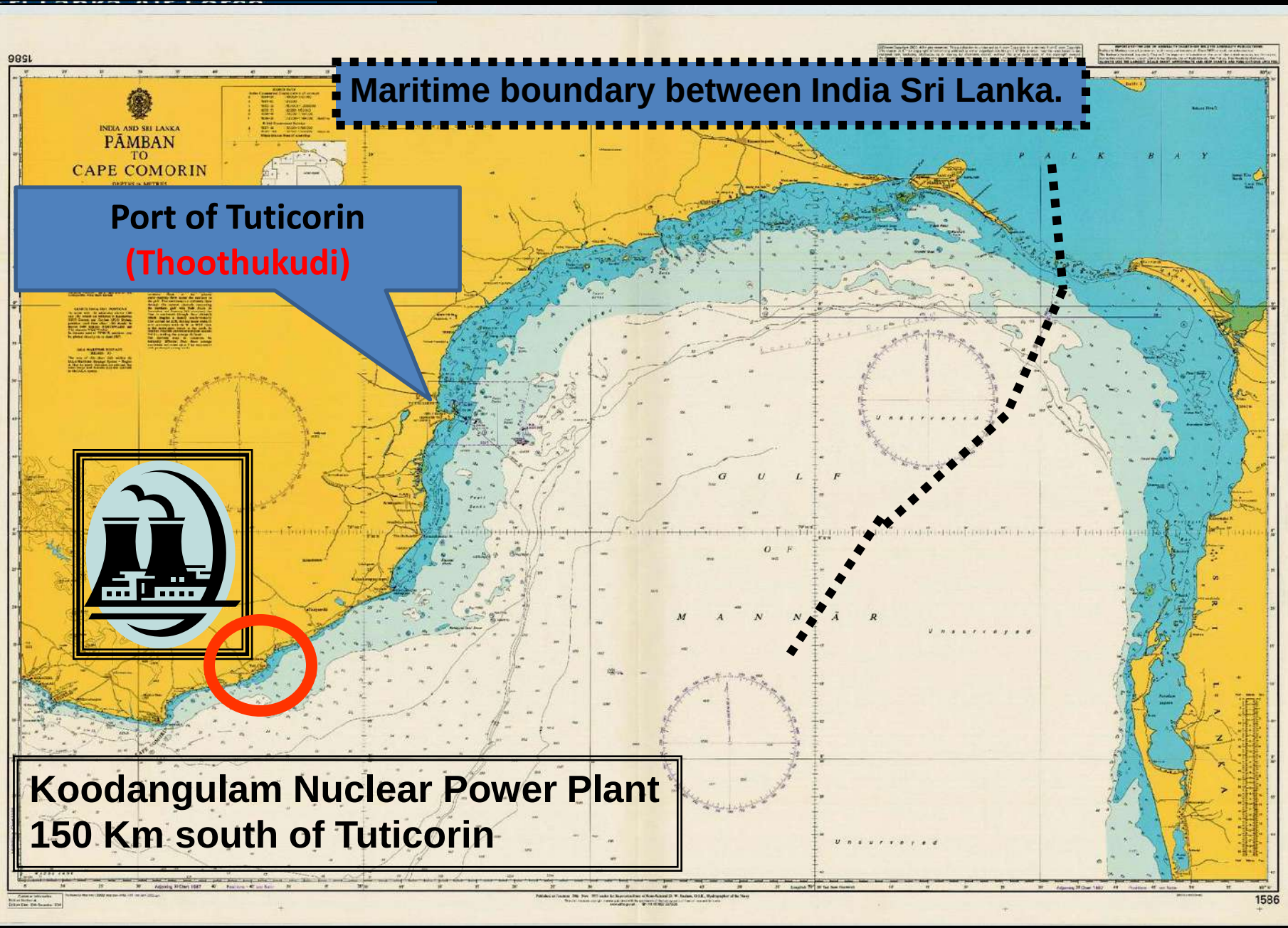


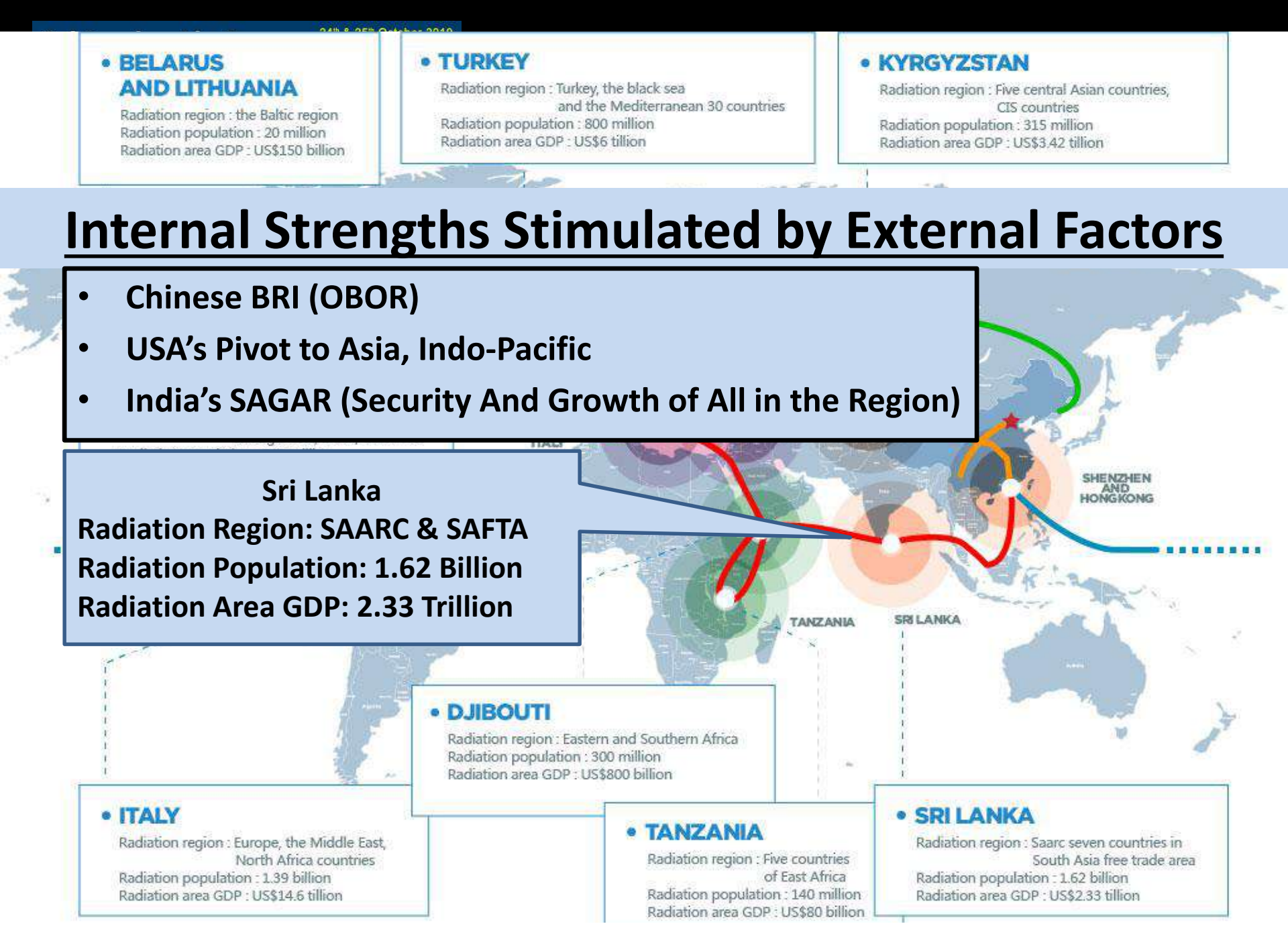
SOURCE: Ocean Management by The Commonwealth Secretariat

Nuclear Radiation

- Close proximity of India's largest nuclear facility
- Wind driven effect to island nation




Maritime boundary between India Sri Lanka.
INDIA AND SRI LANKA
PĀMBAN
TO
CAPE COMORIN
Port of Tuticorin
(Thoothukudi)
Koodangulam Nuclear Power Plant
150 Km south of Tuticorin
PALK BAY
GULF
OF
MANNĀR
Unsurveyed
1586



https://economynext.com/China_s_IZP_may_get_Sri_Lanka_s_Mattala_Airport_for_Silk_Road_Station-3-5619-.html

Internal Factors

External Factors

That Compels to invest on Air Force

- Surveys
- Aerial Mapping for
  - Deforestation
  - River Valley
  - Coastal Line
  - Population
- Medical Services
- Air Lift Capability
  - Emergency response
  - Commercial response
- Legal aspects

- Air Space Mgmt
  - Surveillance
  - Policing
  - Monitoring
- MDA
  - MPA
  - SAR
  - Services
  - Weather Patrol
  - Pollution
- Interceptor role
- Training
- Collaboration & Cooperation

Sources: caa.lk

National Civil Aviation Policy

Draft Annual Report 2018

Thank You

Credits to:
Commander (N) PSIP Jayathilake
Commander (C) ERPK Udakumbura
Lt Commander (G) JSD De Silva


Colombo
Air Symposium
2019

RE-DEFINING THE AIR STRATEGY

FOR A SMALL AIR FORCE

SLAF PERSPECTIVE

INTRODUCTION

" Not to have an adequate Air Force in the present state of the world is to compromise the foundation of national freedom and independence "

Sir Winston Churchill
14 March 1933

INTRODUCTION

- National Security Environment
- Multiple Air Power Options
- Air Forces with Limited Resources

Cont...

…cont **INTRODUCTION**

STRATEGIC OBLIVION!!

Cont…

…cont **INTRODUCTION**

- **SLAF - Post Humanitarian Operations**
  - **Transition from War to Peace**
  - **New National Security Challenges**
  - **Challenges to Maintain a Potent Air Capability**

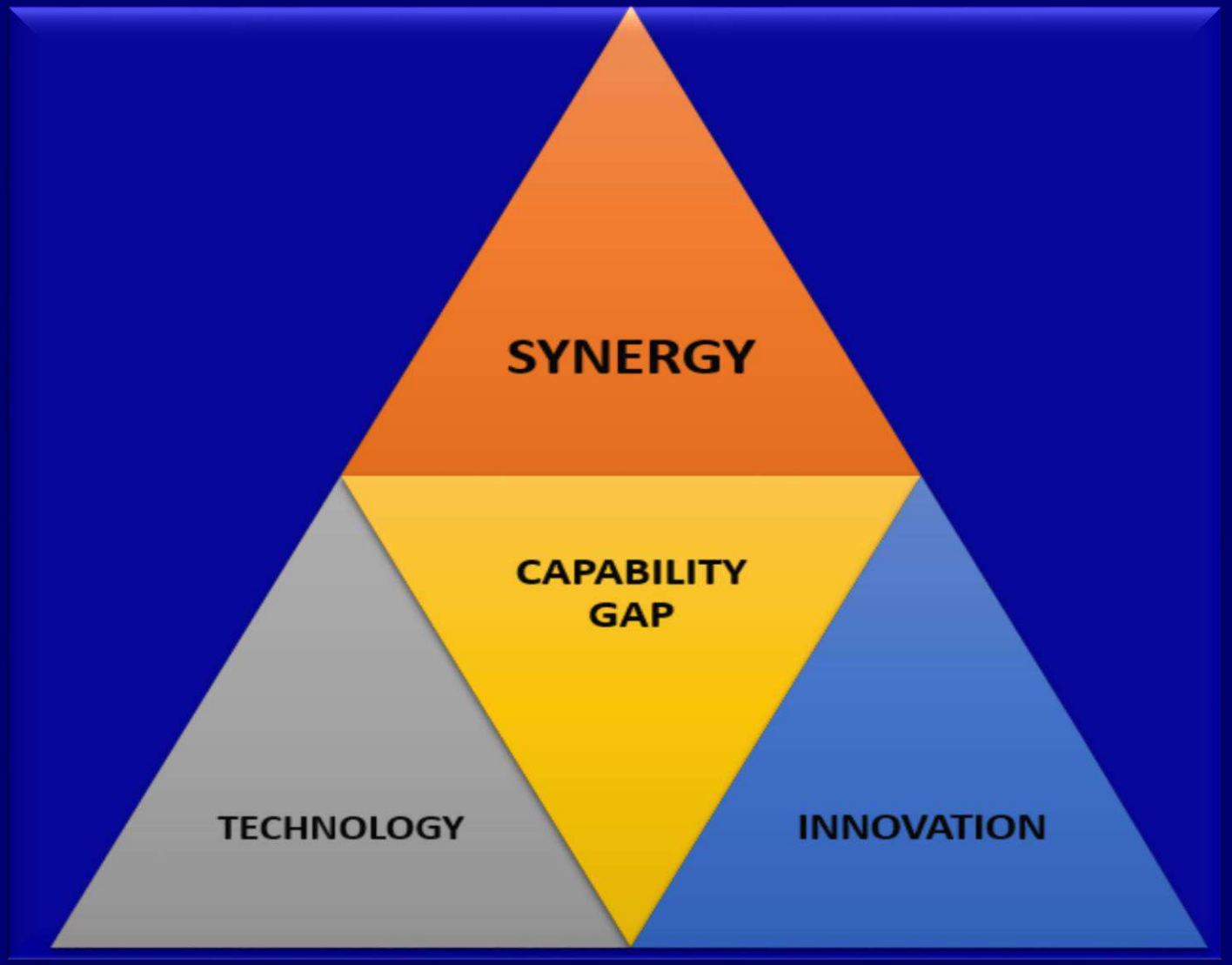
Cont…

…cont **INTRODUCTION**

CAPABILITY GAP !!!

Cont…

…cont **INTRODUCTION**



OVERVIEW

- Small Air Force - Defined
- National Security Challenges of Sri Lanka
- SLAF - Re-Defining Air Strategy
- Way Forward - Reduce Capability Gap
- Conclusion

AIM

To re-define the Air Strategy to bridge the Capability Gap in a Small Air Force; in the Context of SLAF

SMALL AIR FORCE

- Defining a “Small Air Force” !!!

Is it a Numerical Inferiority?

or

Capability Gap between Air Power & National Interest!

Cont…

…cont

SMALL AIR FORCE

"This war has gone on for seven years. The Afghans don't understand anymore how come a little force like Taliban can continue to exist, can continue to flourish, can continue to launch attacks. With forty countries in Afghanistan, with entire NATO force in Afghanistan, with entire international community behind them, still we are not able to defeat the Taliban."

HE Hameed Karzai
President Afghanistan 2004 - 2014

…cont

SMALL AIR FORCE

- **Strategic Facts**
  - Full Spectrum of Air Power Operations in pursuit of National Interest
  - Achieve desired level of effect
  - Conduct air campaigning to an extended time

SRI LANKA

STRATEGIC CONTEXT

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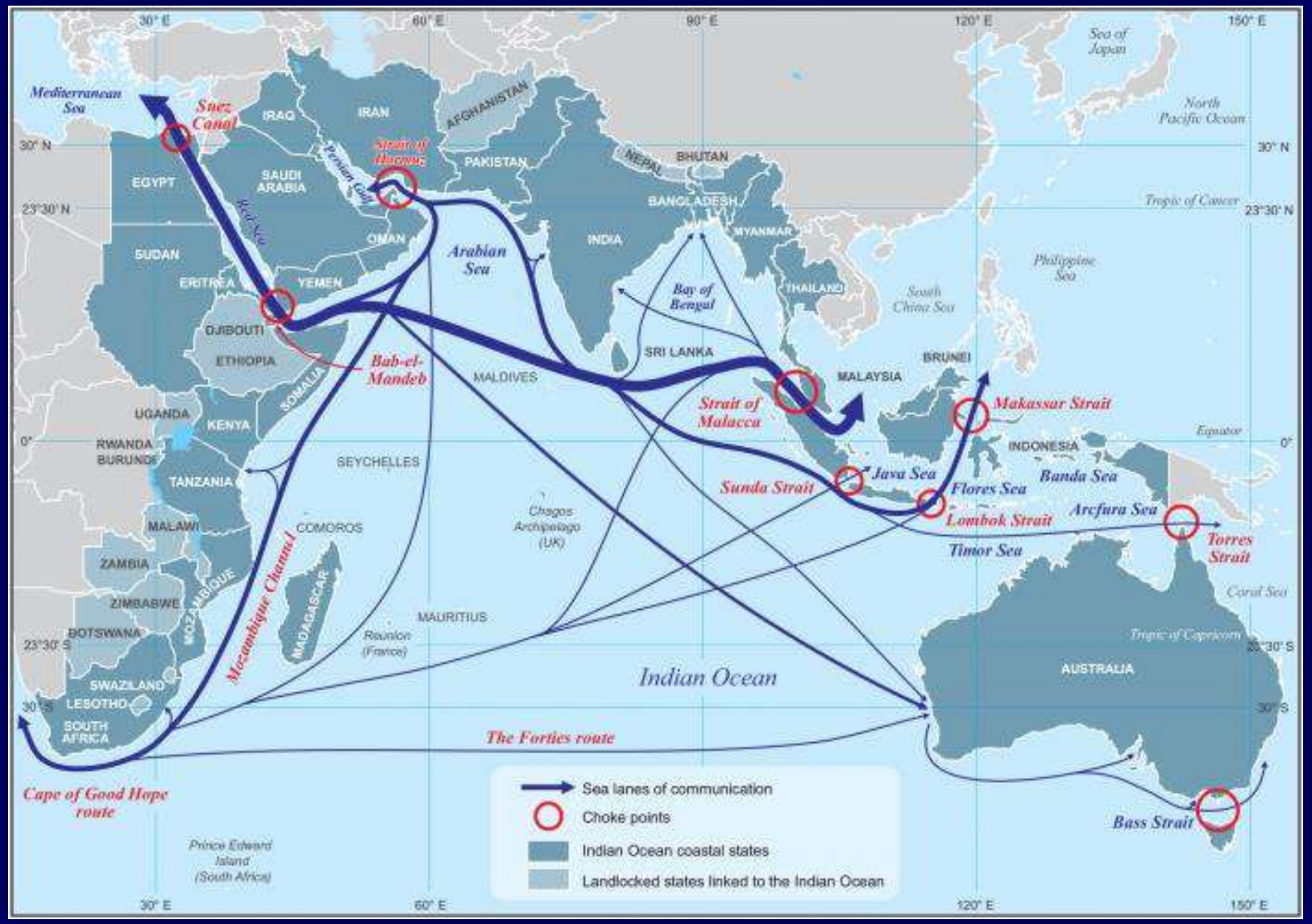
SRI LANKA STRATEGIC CONTEXT



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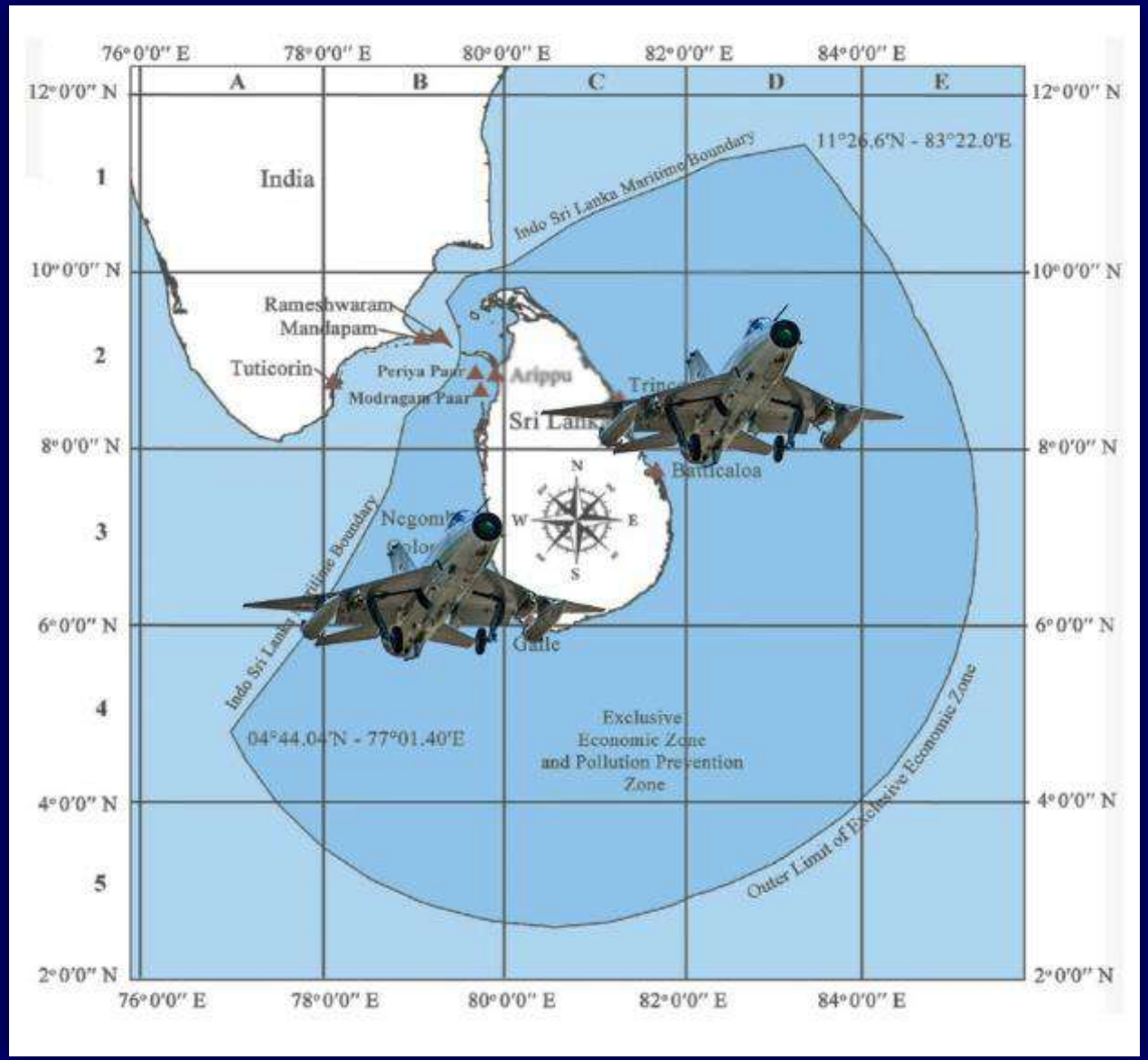
SRI LANKA STRATEGIC CONTEXT



SMALL AIR FORCE

- SLAF Context - Limitations
  - Budgetary Constraints
  - Geo-Political Sensitivities
  - Capability Gap

SRI LANKA

NATIONAL SECURITY CHALLENGES

…cont

NATIONAL SECURITY CHALLENGES

- Pre – 2009 – A Hybrid War

Cont…

…cont

NATIONAL SECURITY CHALLENGES

- Post – 2009 – Shift to Maritime Domain

Cont…

…cont

NATIONAL SECURITY CHALLENGES

- Post 2009
  - Maritime Threats
  - Cyber Security
  - Non – Traditional Threats
    - Transnational Terrorism
    - Asymmetric Air Threats

Cont…

…cont

NATIONAL SECURITY CHALLENGES

- Post 2009 - Maritime Threats

Cont…

…cont

NATIONAL SECURITY CHALLENGES

- Post 2009 – Maritime Threat - Piracy

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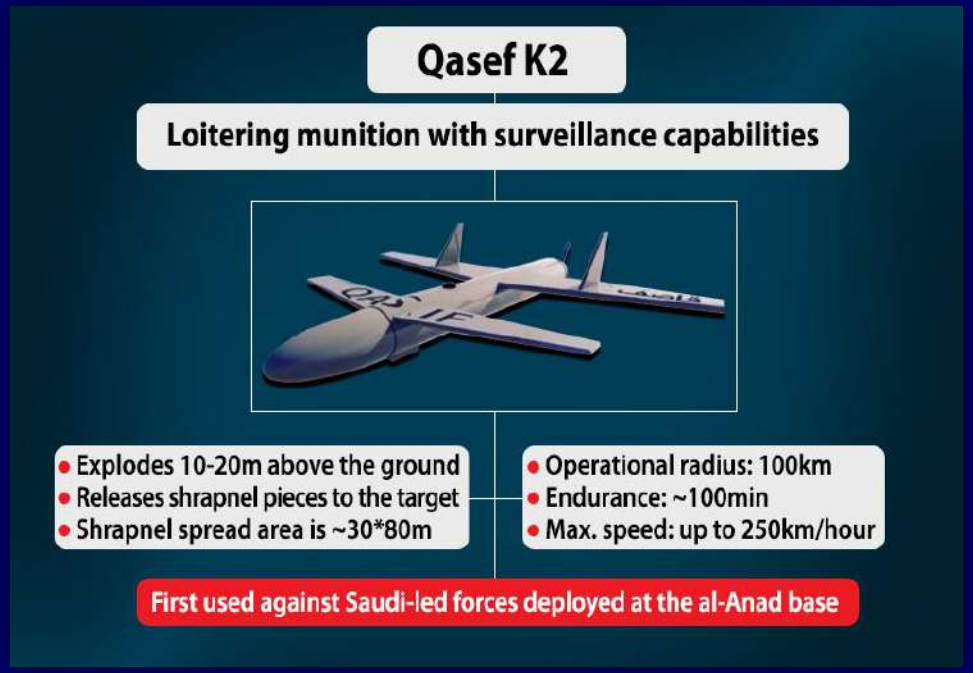
NATIONAL SECURITY CHALLENGES

- Post 2009 – Trans-national Terrorism

Cont…

NEW PARADIGM - DRONES

- An Asymmetric Air Threat



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NEW PARADIGM-DRONES

- An Asymmetric Air Threat

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NEW PARADIGM-DRONES

- An Asymmetric Air Threat

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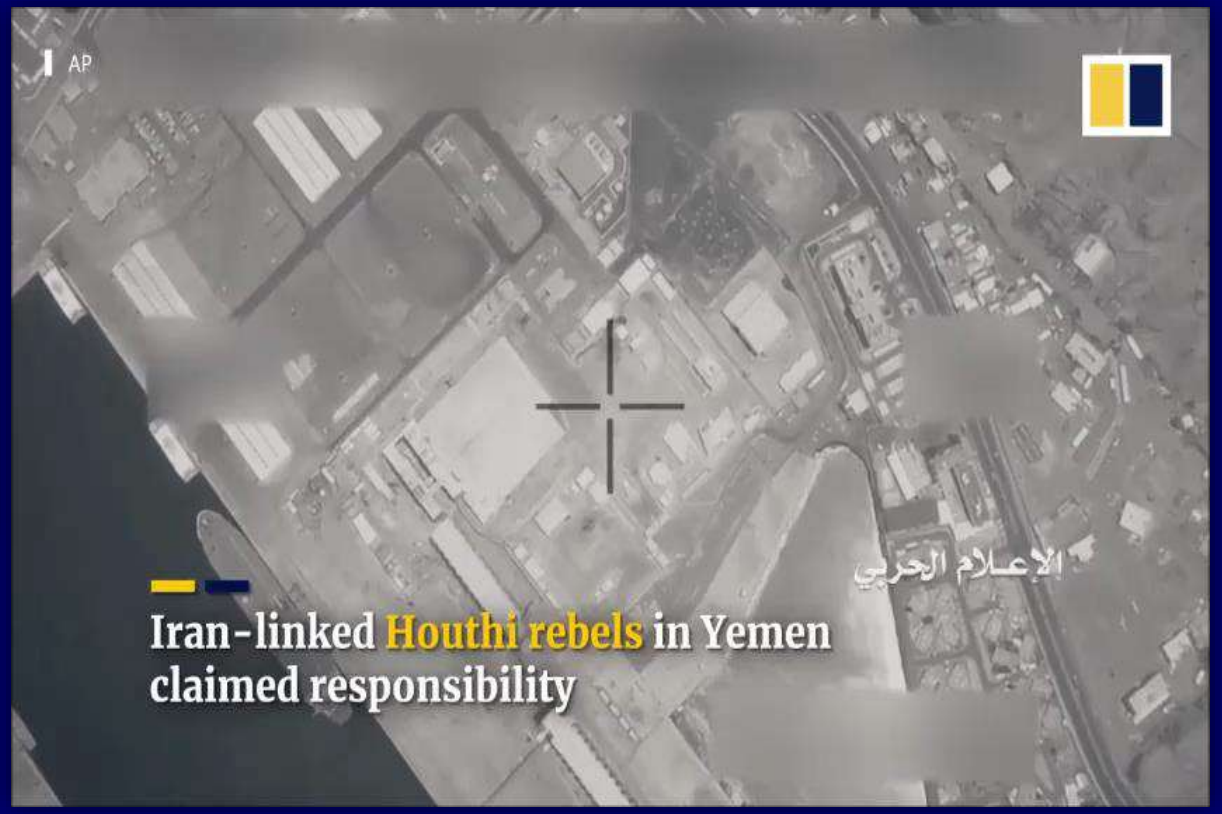
NEW PARADIGM-DRONES

- An Asymmetric Air Threat



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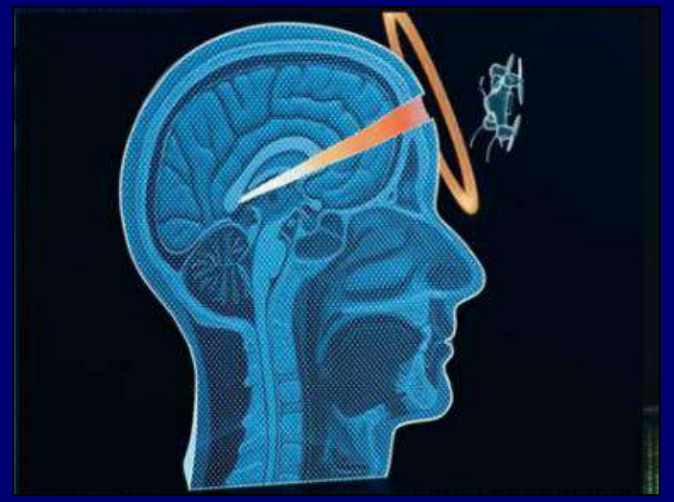
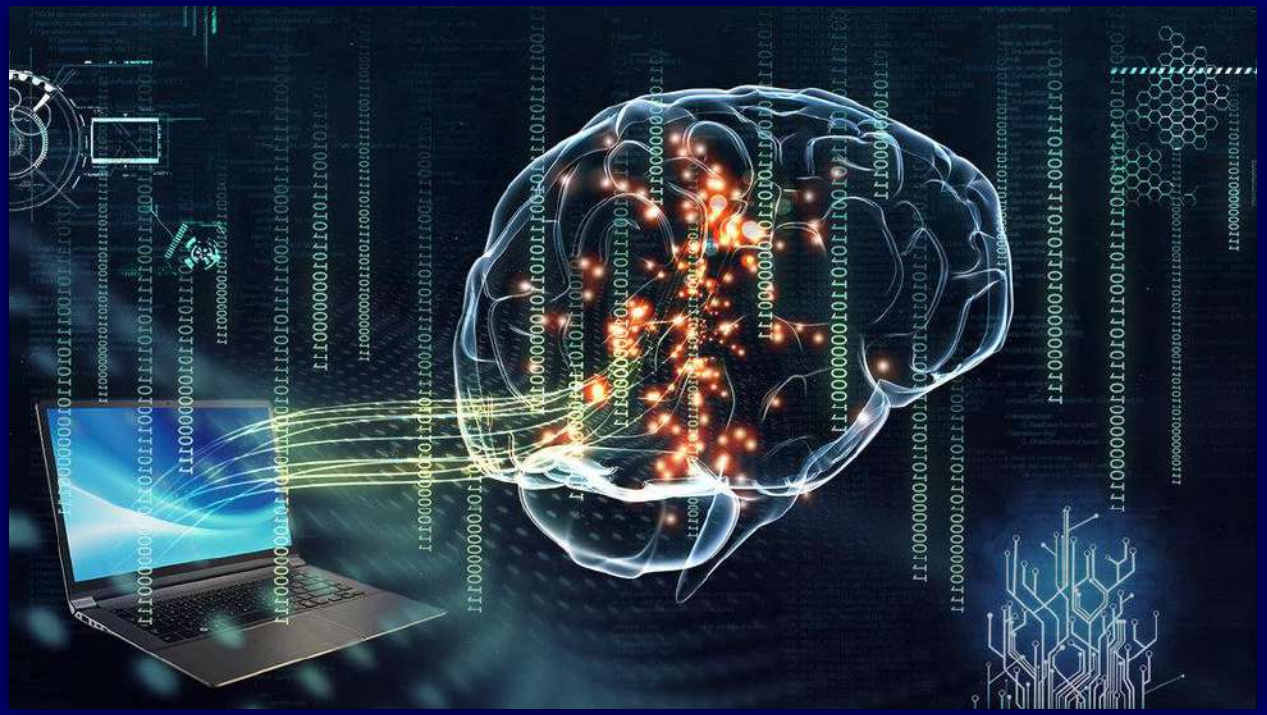
NEW PARADIGM-DRONES

- Augmentation of open source innovations
  - Facial recognition
  - Linking with smart devices
  - Autonomous navigation



CYBER, INFO & PSYCHOLOGICAL WARFARE



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CYBER, INFO & PSYCHOLOGICAL WARFARE

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HADR OPERATIONS

NATIONAL SECURITY INTERESTS

- Territorial Integrity
- Air & Maritime Domain Security
- Eliminate Extremism
- Defence Diplomacy
- Response to Disaster Situations

DEVISING AIR STRATEGY

Cont...

…cont

DEVISING AIR STRATEGY

- Air Power Fundamental Roles
  - Protecting National Airspace
  - Maritime Domain Security
  - Anti Surface Force Operations
  - Air Mobility Operations

Cont…

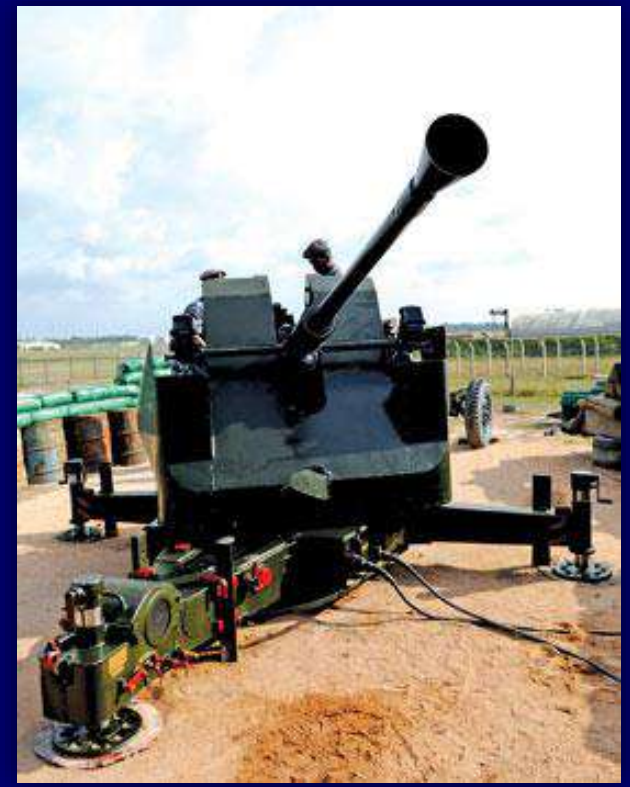
…cont

DEVISING AIR STRATEGY

- Air Power Fundamental Roles
  - HADR Operations
  - Cyber Warfare
  - Counter Terrorism
  - International Peace Keeping Operations

FUNDAMENTAL AIR POWER ROLES

- Protecting National Airspace



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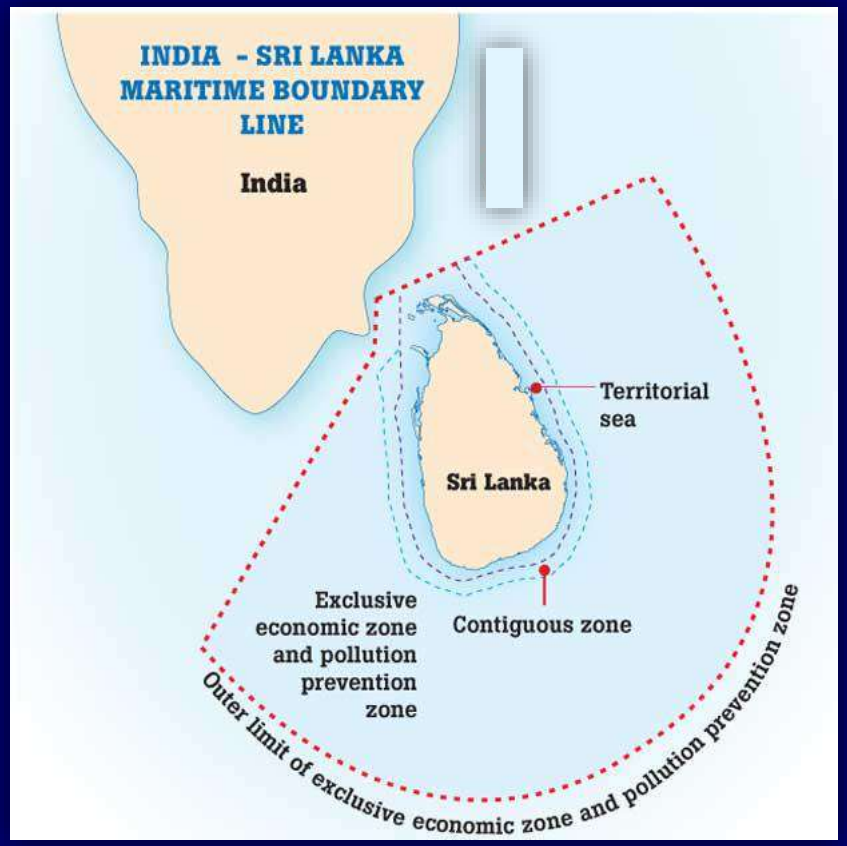
FUNDAMENTAL AIR POWER ROLES

➢ Maritime Domain Security



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FUNDAMENTAL AIR POWER ROLES

- Anti Surface Force Operations

Cont…

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FUNDAMENTAL AIR POWER ROLES

- Air Mobility Operations

Cont…

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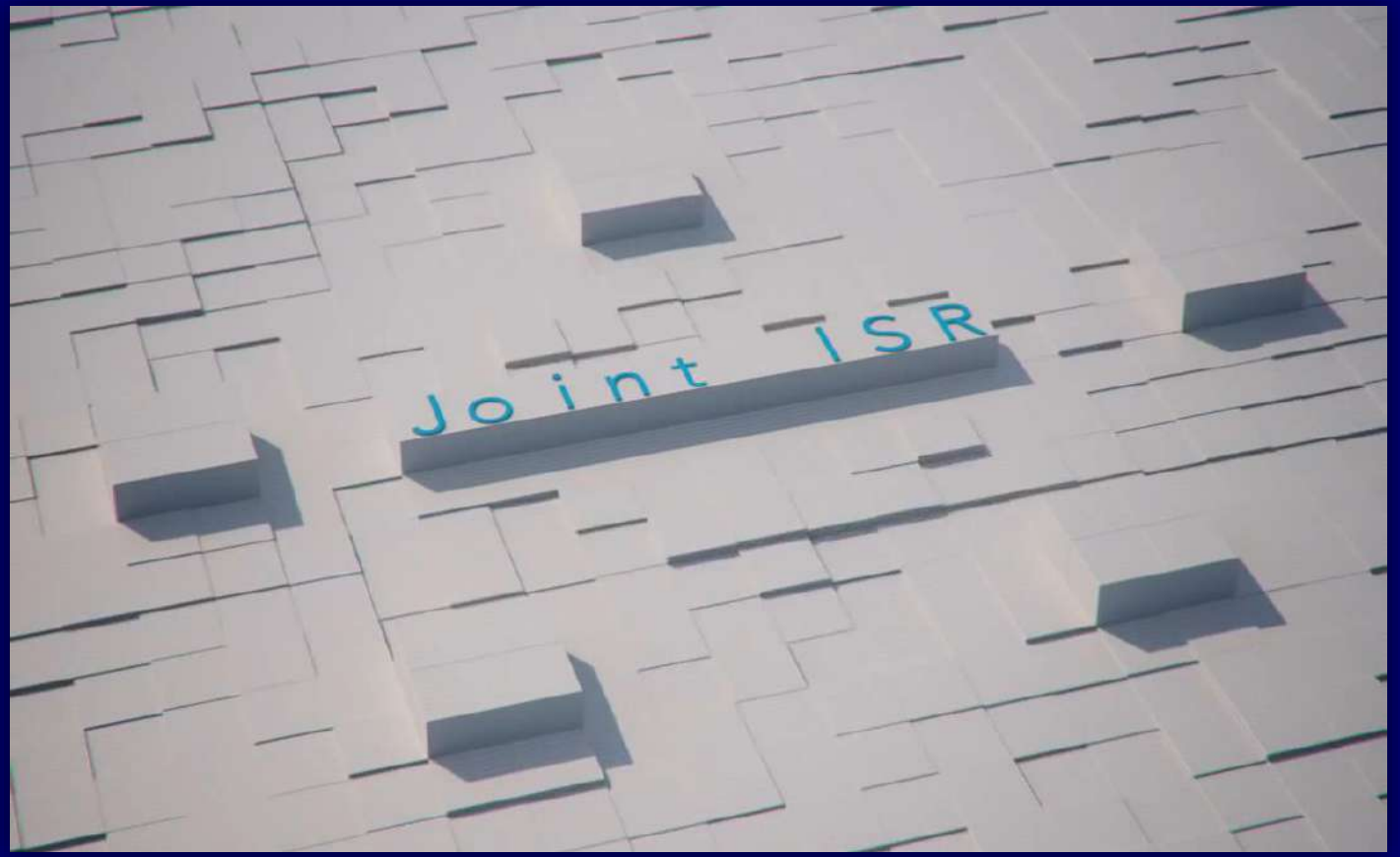
FUNDAMENTAL AIR POWER ROLES

- Intelligence and Situational Awareness



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FUNDAMENTAL AIR POWER ROLES

➢ HADR Operations

CYBER WARFARE

- Cyber, Information and Psychological Warfare

INTERNATIONAL PEACE KEEPING OPERATIONS

WAY FORWARD

SYNERGY TECHNOLOGY AND INNOVATIONS

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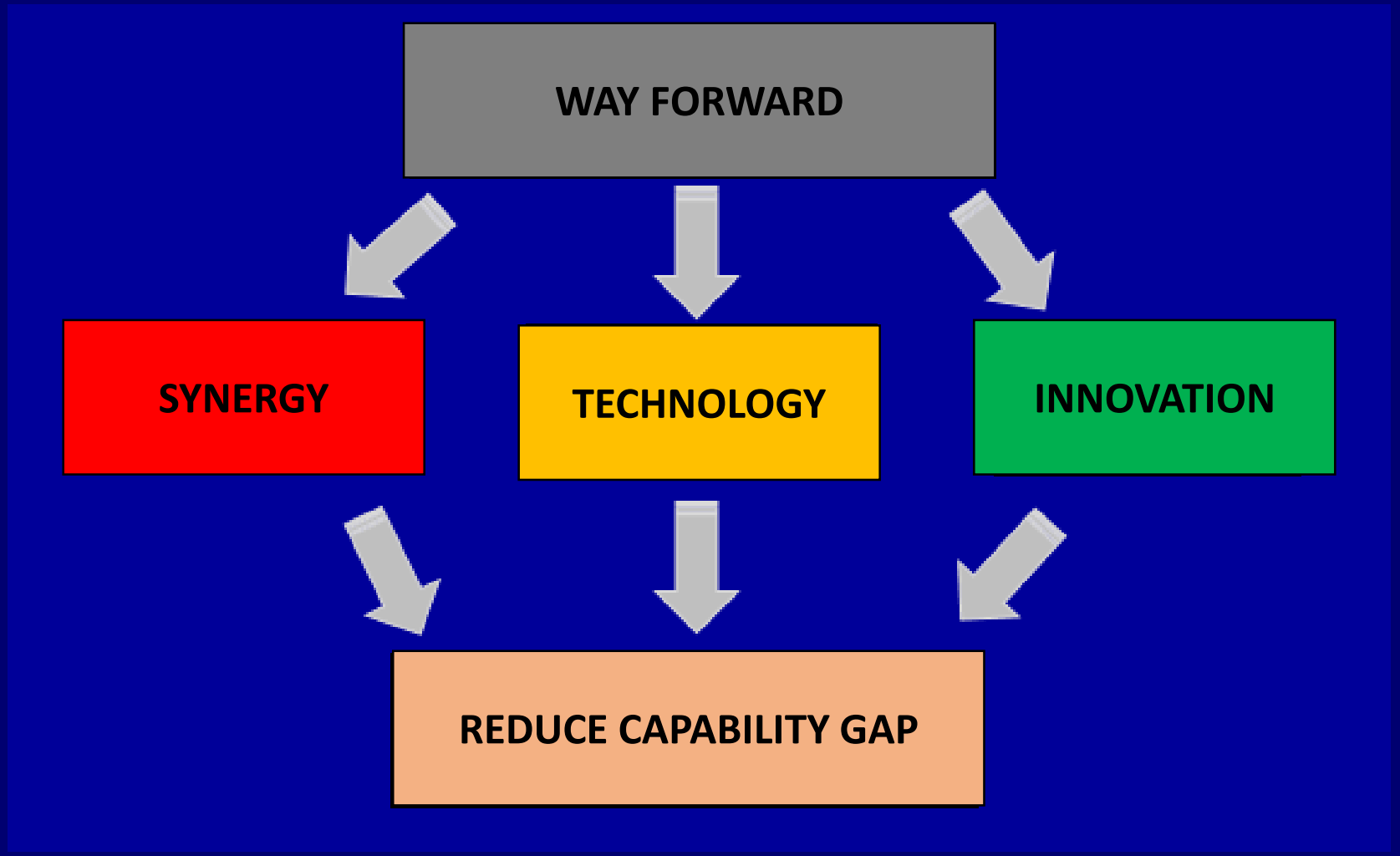
WAY FORWARD



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WAY FORWARD

- **Institutionalization of Air Strategy**
  - **Strategic Guidance**
    - Vision, Mission, Role
    - Doctrine
    - Policy Documents

Cont…

…cont

WAY FORWARD

- **Institutionalization of Air Strategy**
  - **Re-structure**
    - Human Resource
    - Force Structure

Cont…

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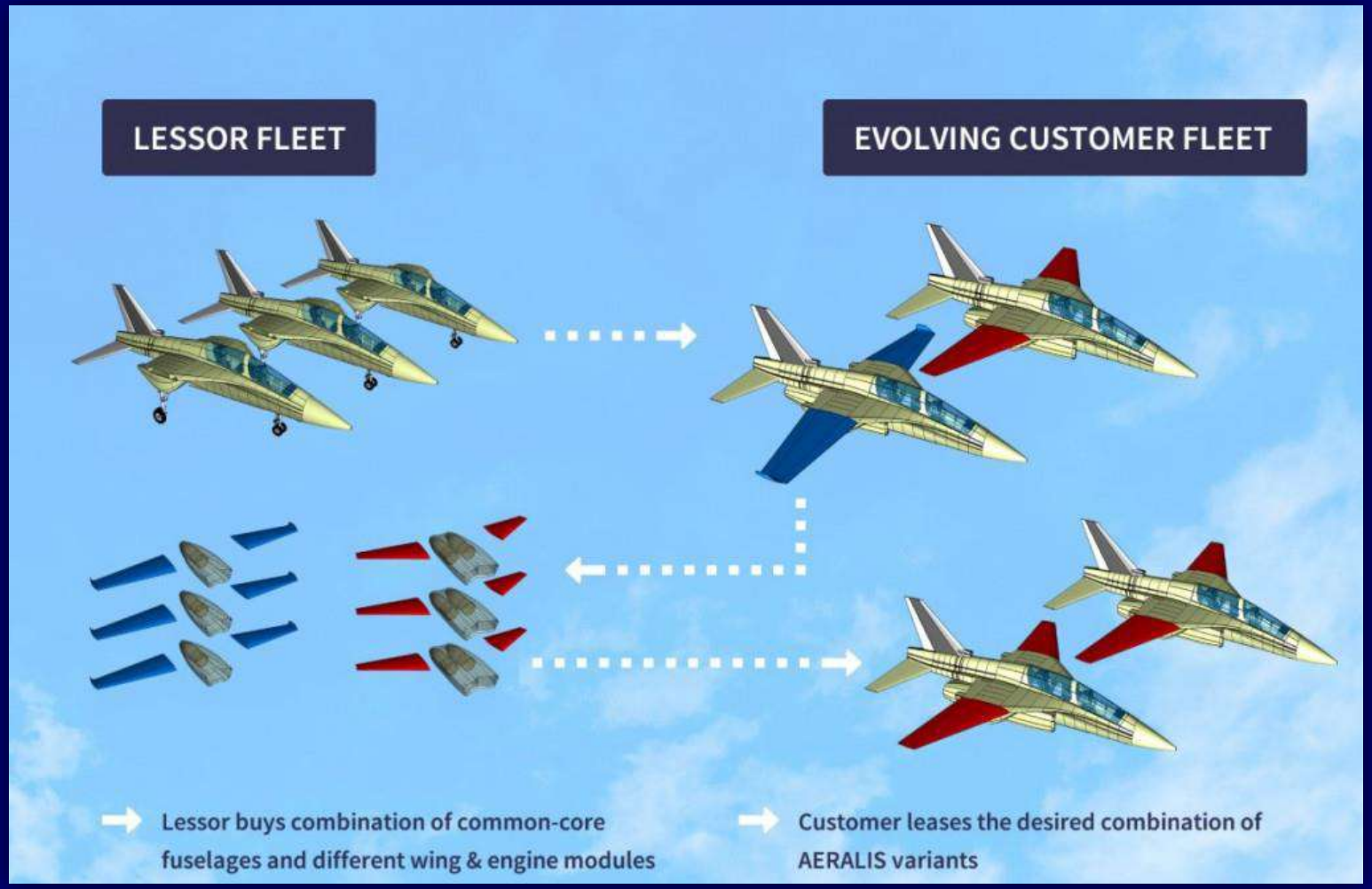
WAY FORWARD

- Planned, Smart & Stretched Re-fleeting



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WAY FORWARD

- Planned, Smart & Stretched Re-fleeting

  - Most Suitable Platform
  - Multi Role Capability
  - Multi Mission Capability

Cont…

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WAY FORWARD

- Technology
  - Proven Capability Gap Filler
  - Simulators
  - CBTs

Cont…

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WAY FORWARD

- Joint Force Employment

  - Air Power – All three domains
  - Demands Omni presence
  - Integration with Land & Naval Capabilities - Synergy

Cont…

…cont

WAY FORWARD

- Joint Force Employment

  - SLAF's increasing presence in Maritime Domain

Cont…

...cont

WAY FORWARD

- Air Diplomacy
  - Modern Technological Proficiency
  - Exchange Programmes
  - Joint Exercises

CONCLUSION

- **Small Air Force**
  - **Capability Gap**
  - **Mitigate through**
    - Synergy
    - Technology
    - Innovation


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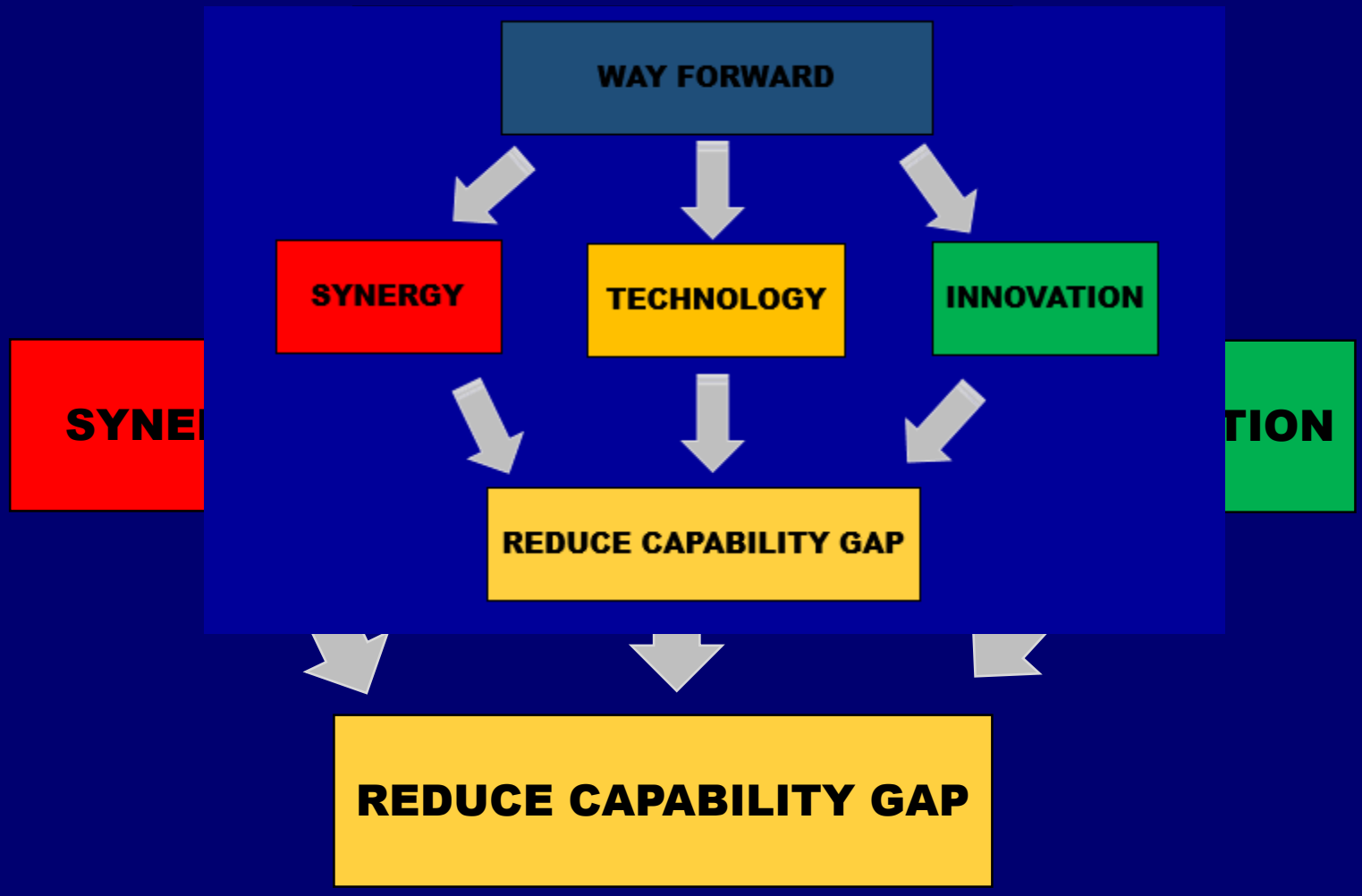
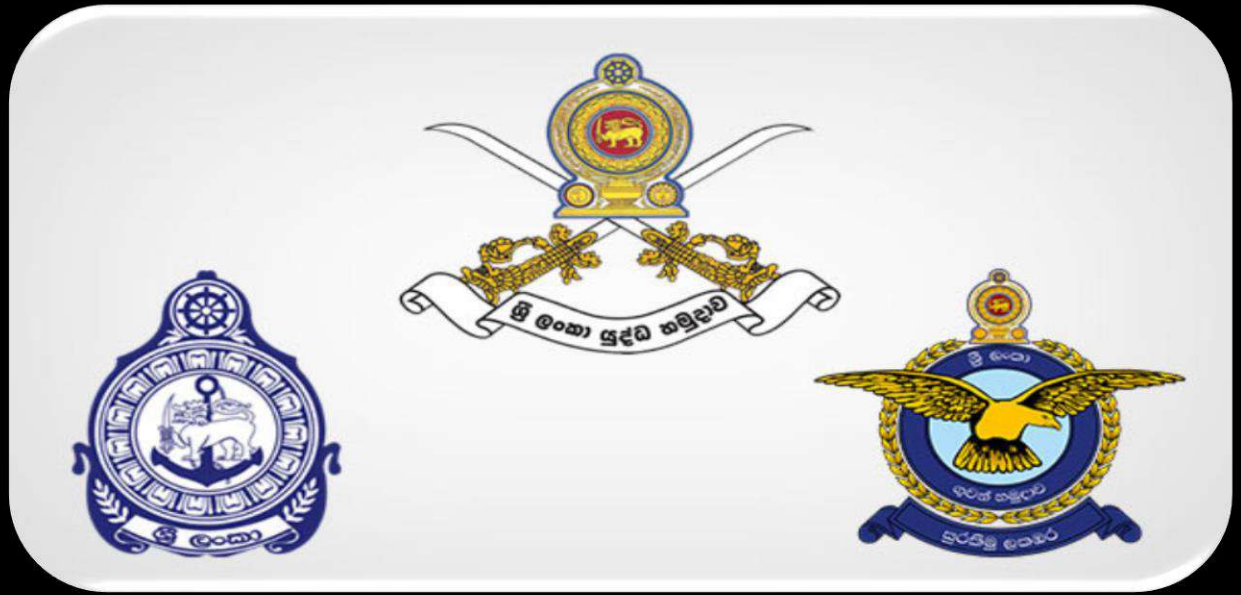
Colombo
Air Symposium
2019

WAY FORWARD


WAY FORWARD
SYNERGY
TECHNOLOGY
INNOVATION
REDUCE CAPABILITY GAP
REDUCE CAPABILITY GAP


Colombo Air Symposium 2019

EVOLVING DYNAMICS OF THE AIR SUPPORT NEEDED BY THE LAND AND NAVAL FORCES OF SRI LANKA TO DELIVER NATIONAL MILITARY OBJECTIVES

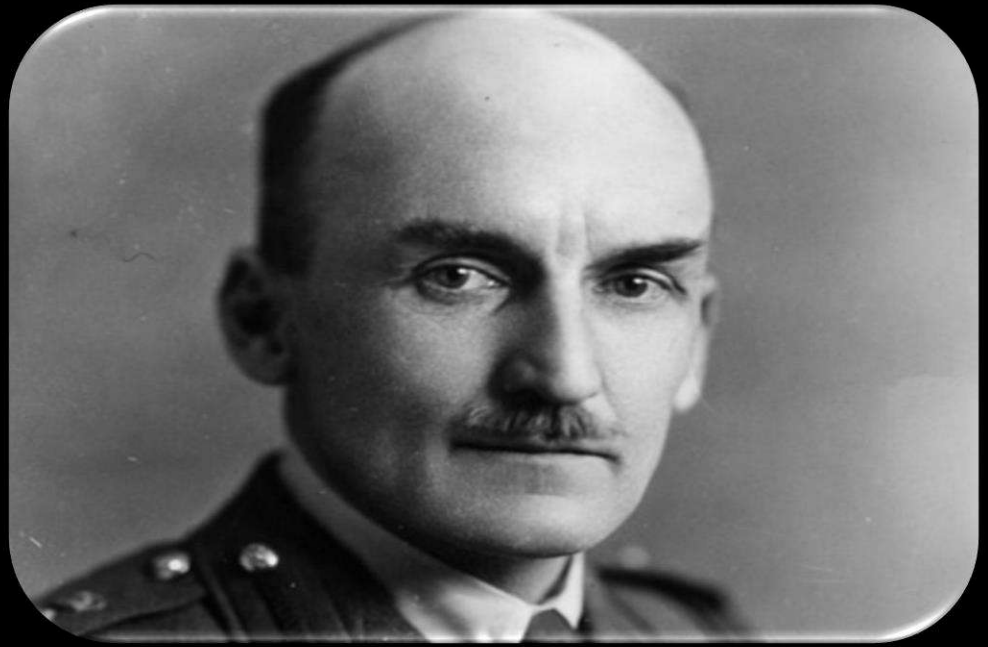


Major General P R Wanigasooriya VSV, USP, ndu, USACGSC, MSc (mgt), MMAS (USA)

INTRODUCTION

“ If a battle can be won without suffering loss, surely this is the most economical, if not the most traditional, way of gaining the strategical object”

- J F C Fuller



AIR POWER: AN ARMY POINT OF VIEW

- Furthering a nation's strategic aims and objectives
- Deterrence
- Exerting nation's will without committing surface forces
- Support for ground and naval forces to deliver national military objectives

AIM

To present land perspectives on the strategic, operational and tactical air support needed by the Land and Naval forces in the joint effort of tri services towards achieving national military objectives and ensure national security of Sri Lanka

OBJECTIVES

- ☞ Shed some light on application of air power towards achieving military objectives

- ☞ Identify Sri Lanka's national military objectives in light of the evolving security environment

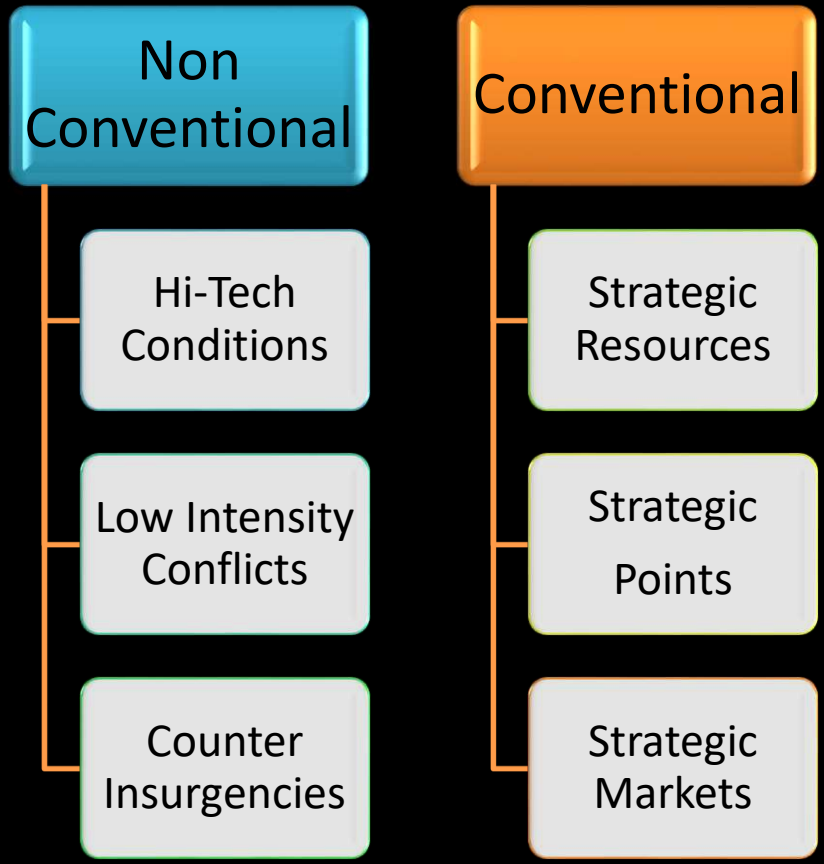
- ☞ Consider key capabilities that the Sri Lanka Air Force has to possess

CONTENT

- Air power application under evolving security environment
- National military objectives of Sri Lanka
- Possible future roles of sri lanka air force

AIR POWER APPLICATION UNDER EVOLVING SECURITY ENVIRONMENT

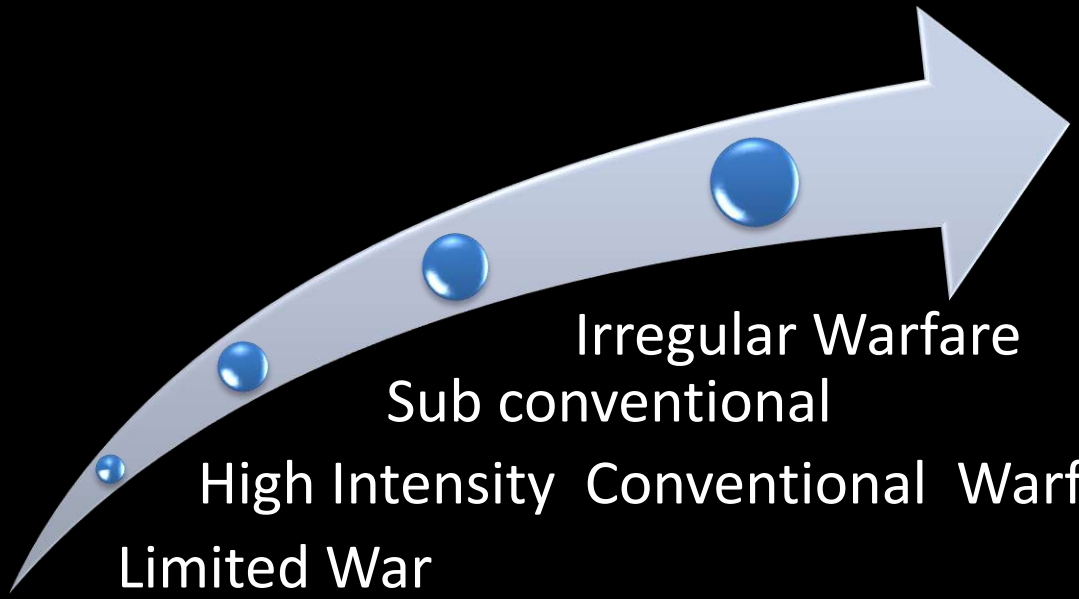
ARGUMENTS



All out war is impossible

All out war is possible

SPECTRUM OF CONFLICTS



OBJECTIVES OF MILITARY CAMPAIGN

WHAT CAN AIRFORCE DO?

- Pounding an enemy into submission
- Driving enemy leadership underground
- Destroying enemy's reserves
- Creating an asymmetry vis-à-vis adversary
- Act as force multiplier
- Support the surface campaign at tactical, operational and strategic levels

CRITICAL CHARACTERISTICS

- Flexibility
- Reach
- Precision fire power
- Interoperability
- Surprise and shock effect
- Ability to switch between tactical and strategic roles

CONSIDERATIONS FOR RIGHT SIZING OR RESTRUCTURING

- ☞ What are the types of campaigns the SLAF will likely be involved in?
- ☞ Does SLAF have the resources to prosecute such campaigns?
- ☞ Is Sri Lanka willing to prosecute an all out war?
- ☞ Is Sri Lanka likely to face an all out war?
- ☞ What are other immediate threats Sri Lanka may encounter for an extended period?

NATIONAL MILITARY OBJECTIVES OF SRI LANKA


NATIONAL POWER
Political
Diplomatic
Techno Scientific
Socio-Cultural
Geostrategic Location and Environment
Population
Information
Economic
Military and Law Enforcement

NATIONAL MILITARY OBJECTIVES

- Protect the state, its people and territory from any form of aggression
- Identify and address maritime issues and overcome maritime security challenges in terms of conventional, non-conventional threats
- Create a secure and peaceful environment free of terrorism and extremism
- Assist the Government in time of crisis including natural and manmade disasters, epidemic and breakdown of essential services.

Cont…

Cont…

NATIONAL MILITARY OBJECTIVES

- Contribute towards international peace and security by sharing information on common threats, joint military exercises and training, disaster response in regional countries and participating UN peacekeeping missions
- Contribute towards the Government efforts of sustainable development in upholding a secure and peaceful environment for the development activities of the state
- Enhance intelligence and surveillance capabilities to assist national security in order to counter emerging threats and to provide vital information for strategic decision making

POSSIBLE FUTURE ROLES OF SRI LANKA AIR FORCE

POSSIBLE FUTURE ROLES OF SLAF

- Limited Air Superiority Over Power Projection
  - Air superiority over at least a limited period of time
- Strategic Intervention Over Limited Distances and Duration
  - Intelligence, situational awareness, air mobility, attack and control of air
  - Diminish hazards at the outer perimeter of the country's territory
- Humanitarian Intervention
  - Protect, defend, rescue people from extreme situations
- Peacekeeping/Enforcement Missions
  - Demonstrate nation's contribution in establishing global peace
- Protection of Energy and Economic Resources
  - Protect national treasures with regular vigilance, routine surveillance and reconnaissance
  - Military action when necessary

Cont…

Cont…

POSSIBLE FUTURE ROLES OF SLAF

- Disaster Management and Search and Rescue Activities
  - Joint effort during Pre-disaster, Disaster, and Post-disaster phases
  - Pollution control, search and rescue, etc. with speed, agility and maneuver
- Assist SLN during Blue Water Operations
  - Provide support at long ranges with high speed and lethality during deep sea contingencies exploiting synergy between naval and air forces
- Assist SLA during Land Operations
  - Long range reconnaissance, spoil enemy advance, channel advancing forces where necessary, cause delays
  - Provide time and space for reinforcements, spoiling attacks, and complicate enemy's withdrawal or retreat
- Maintain a Strong Air Defence
  - Diverting and eliminating potential asymmetric threats from the territorial air space
  - Deterrence

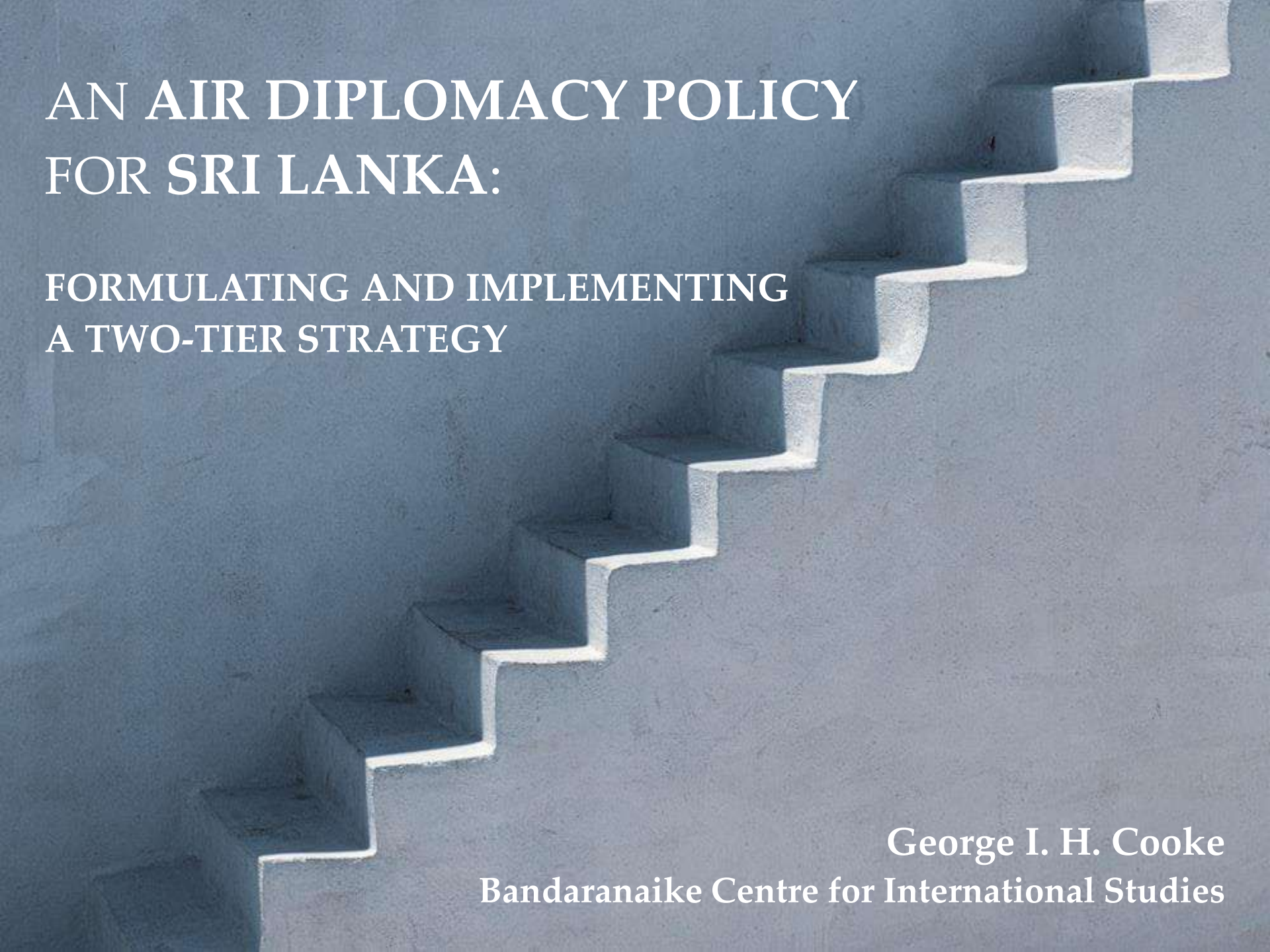
CONCLUSION

Thank you


Colombo Air Symposium 2019

AN **AIR DIPLOMACY POLICY** FOR **SRI LANKA**:

FORMULATING AND IMPLEMENTING A TWO-TIER STRATEGY



George I. H. Cooke
Bandaranaike Centre for International Studies

Amidst vast strides in diplomacy and transportation, the **Air Power** of states has grown significantly allowing for its use in times of emergency and need, as well as during conflict

Air Diplomacy and its usage

Paramount relevance for Sri Lanka

Air Diplomacy policy needs to be rationalized on **two levels**, at the **bilateral and multilateral levels**, with **two categories of interaction** identified **at each level**

FIRST TIER
BILATERAL ENGAGEMENT

Reaching out to all States with which Sri Lanka enjoys diplomatic relations

Identifying key partners

Joint Sessions

RESEARCH AND TRAINING

Exchanges

Enhanced military cooperation

Wider and deeper connectivity

SECOND TIER
MULTILATERAL ENGAGEMENT

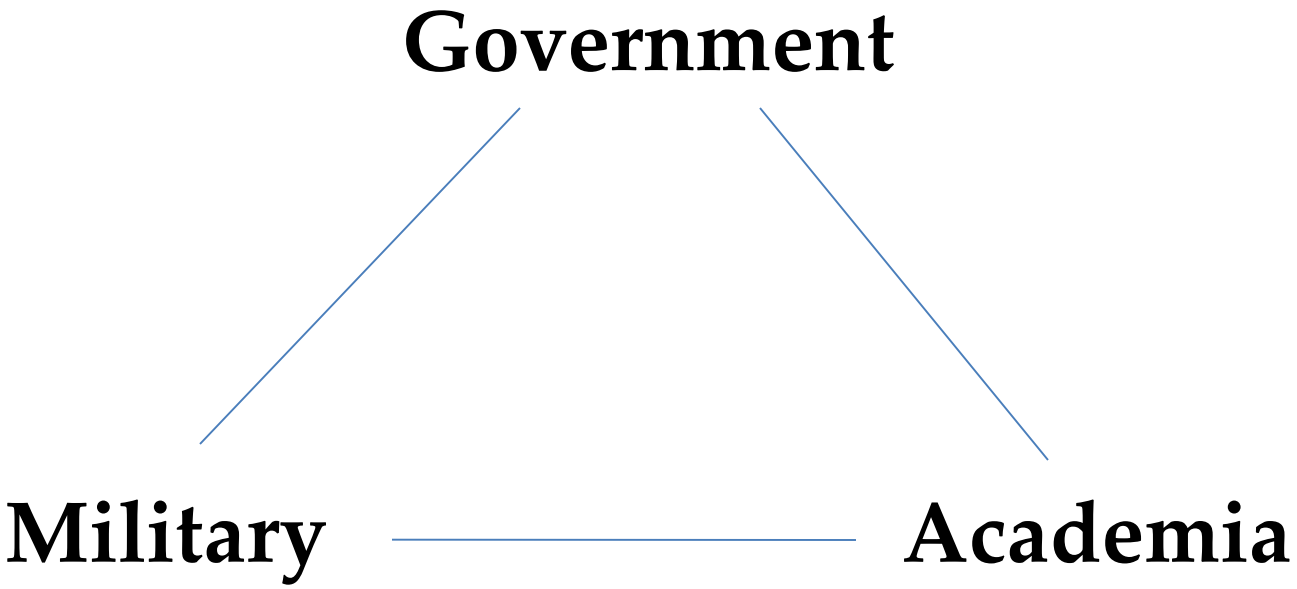
BIMSTEC

IORA

SAARC

SCO

AIR DIPLOMACY DIALOGUE



AIR CHIEFS CONCLAVE

System of Cooperation among
the American Air Forces (SICOFAA)

ASEAN Air Chiefs Conference (AACC)

African Air Chiefs Symposium (AACS)

CONCLUSION

The rationale for Air Diplomacy to be formulated and implemented through a two tier strategy remains paramount as the implementation of an Air Diplomacy Policy would generate new opportunities for Sri Lanka in general, while increasing the potential of the Sri Lanka Air Force and boosting the foreign policy of the country in particular

Air Force as a tool of ensuring regional security

Chief of the Central Research and Development Institute of the Russian Federation Air Force of the Ministry of Defense
colonel Zatcepilin Alexander Valentinovich

Factors influencing international security in the region

- GLOBALISATION
- INTERNATIONAL TERRORISM
- AVAILABILITY OF MILITARY TECHNOLOGIES
- HISTORICALLY ESTABLISHED POLITICAL PECULIARITIES AND CONTRADICTIONS OF COUNTRIES WITH DIFFERENT RELIGIOUS AND CULTURAL VALUES

Political principles of interaction of South Eastern Asian region countries

- Non-alignment position
- Air traffic diplomacy
- Freedom of navigation
- Friendship without hostility to any country

Maritime transport communications as an important political role of Sri Lanka

Threats to national security in the region of the Indian ocean

International terrorism

Piracy

Drug trafficking

Human trafficking

Illegal fishery

Natural disasters

Ecological and manmade disasters

Aviation as a tool for maintaining stability

Air support of governmental forces

Fight against drug trafficking and illegal looting of natural recourses

Transportation of troops and equipment

Fight against maritime piracy, safe ship navigation

Participation in activities of international humanitarian organisations

Monitoring and patrolling of maritime areas

Employment of aviation of regional states for solving versatile missions

Multirole combat airplanes

Combat assault transport helicopters

Transport airplanes

- ***Governmental forces operations***

- ***Engagement of ground (sea) facilities and air targets***

- ***Monitoring land and surrounding maritime areas***

- ***Airborne operations***

- ***Coastal Guard and Special Forces operations***

Equipping with aircraft systems adapted for accomplishing particular tasks in various conditions

Air-to-air refueling capability

Expansion of combat capabilities using various armament

Capability of equipping with multifunctional optics electronic system

All weather employment using airborne radar

Equipping with adaptive control system

Geography of Russian armament export














The Russian Federation

ASIA	
China	India
Iran	Malaysia
Indonesia	Sri Lanka
Syria	Maynma
Azerbaijan	Republic of Korea
Vietnam	Kuwait
Jordan	Thailand
Armenia	Turkey
Iraq	Uzbekistan
Kazakhstan	UAE
Kirgizia	Pakistan
Bangladesh	

Russian aircraft capable of accomplishing main tasks of the regional states

Multirole fighters Su-30 and MiG-35

Transport combat helicopter Mi-35M

Combat training fighter Yak-130

Multipurpose helicopter of middle class Mi-171

Light military transport aircraft Il-112

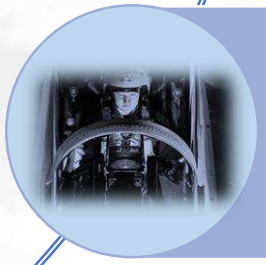
Middle class multipurpose amphibious jet plane Be-200

Training of flight and technical personnel, technical training means

Theoretical and initial practical training
- Theoretical and initial practical training of technical personnel for aircraft operation
- Operational selection of training programs and objects for study
- Automated monitoring of training level
- Mastering of test and navigation aircraft equipment

TRAINING MEANS
- Technical means for group and individual training
-library of training programs and information system providing not only training but aircraft support operation
- Unique technologies of training software

FIGHT AND TACTICAL SIMULATORS
- Include full scale (complex) aircraft simulator, aircraft formations control posts
- Provide mission drilling connected with flying techniques and combat employment in the scope of more than 90% of combat preparation exercises.



Aircraft training flights
- Specially developed programs for instructors and pilots
- Unique experience of pilot instructors

☑ Safety of flights

☑ Effectiveness of using airplanes and helicopters

☑ Flight life

☑ SPTA set expenditure

☑ Fuel expenditure

☑ Training cost

☑Accident risk

Complex approach in issues dealing with equipping regional states Air Forces

Equipping aviation formations of the Air Forces of the regional states with multifunctional aircraft systems, effectively accomplishing tasks at minimum expenses and modernization of existing aircraft

Acquisition of aircraft developed for accomplishing particular tasks peculiar to a certain country taking into account specific conditions of combat employment and operation

Training system of aviation personnel for operation and employment of aircraft