



AUSTRALIAN  
DEFENCE FORCE

# C4ISR Design: Centre-led Guidance

TDL Interoperability Summit

**C4ISR Design Vision**  
*Enhancing  
Future Joint Force Integration  
by developing a **C4ISR design for Defence**  
to **fight in a complex, congested  
and contested operating  
environment***

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<http://drnet.defence.gov.au/vcdf/FID/CITE/Pages/C4ISR-Design.aspx>

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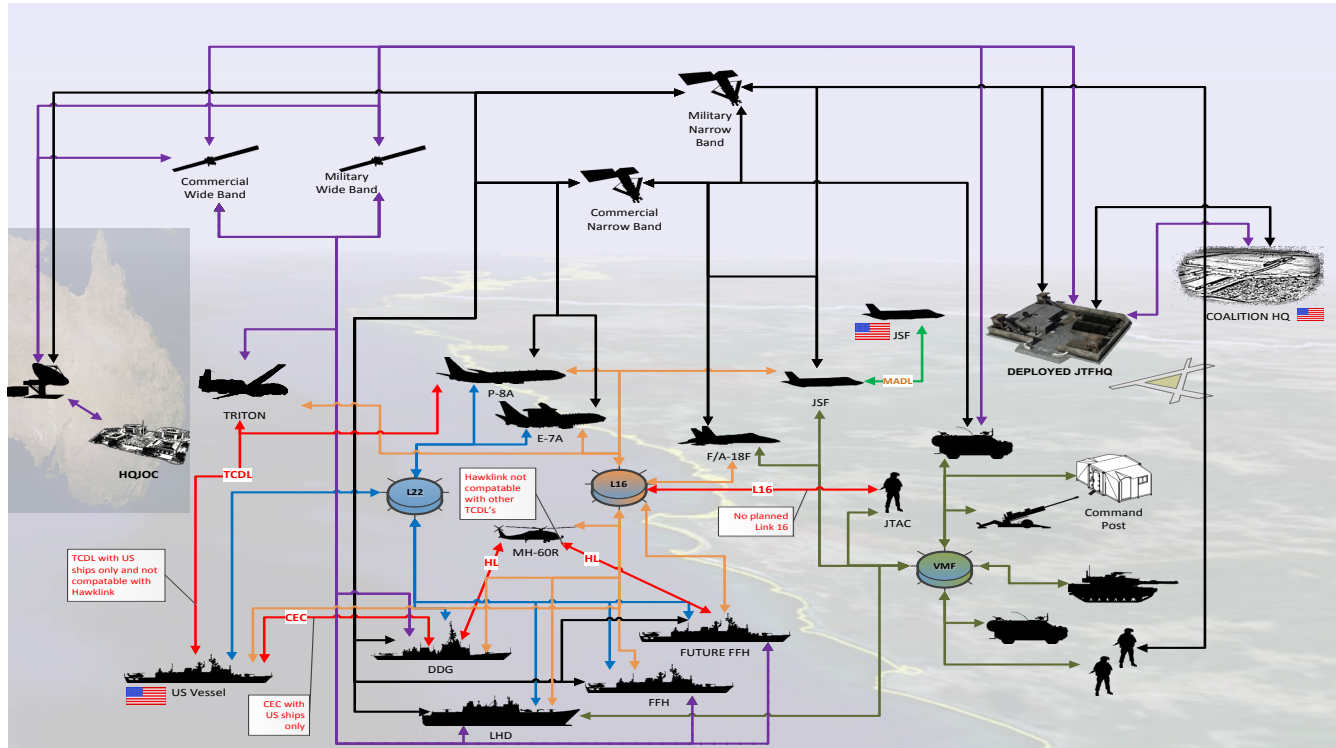
# Outline

- Context
- C4ISR Design Overview
- C4ISR Design Approach
- Centre-led Guidance
- Operational Design Patterns
- Joint Force Authority Directives
- Industry involvement
- Questions



# Context

Contested



Congested

## Complex

*"Integration is a force multiplier. All key systems and platforms of the Objective Joint Force need to be integrated into a network. The networked force facilitates decision superiority and enables the force to generate tempo, be agile and manoeuvre. This is a foundation of how the ADF will remain agile and potent as a relatively small force"*

Australia's Joint Operating Concept 2016

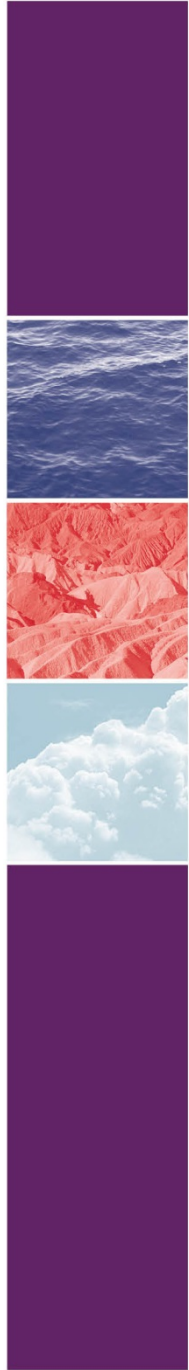
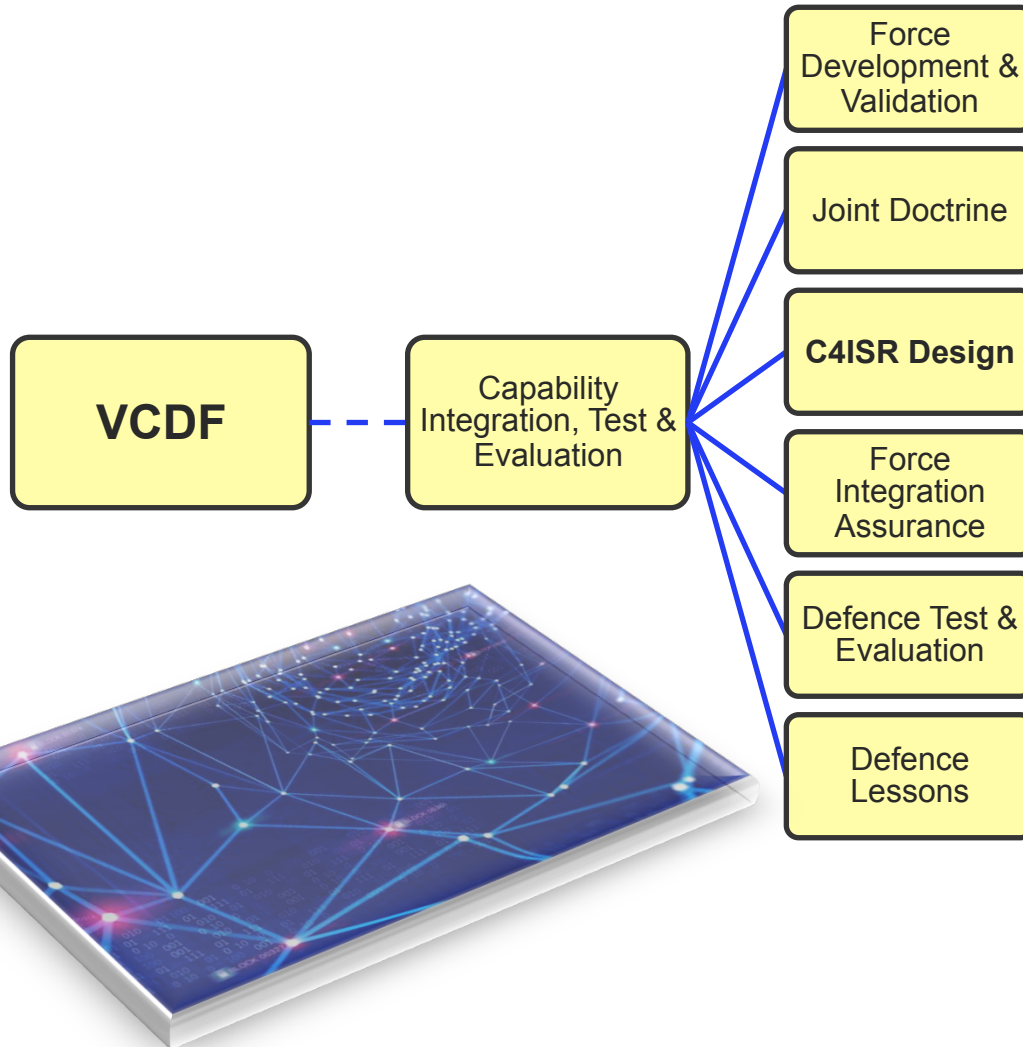
# Providing Guidance from the Centre

## Why?

- Fiscal and resource constraints
- Contested and congested environment
- Local optima vs global good
  - Who controls use
  - Who assigns priorities
  - Cohesive joint force
  - Convergence but allow diversity
  - Bring together networks with smart gateways and routers
  - How to utilise AI to allow information processing at the edge and selection of best available networks



# Providing Guidance from the Centre



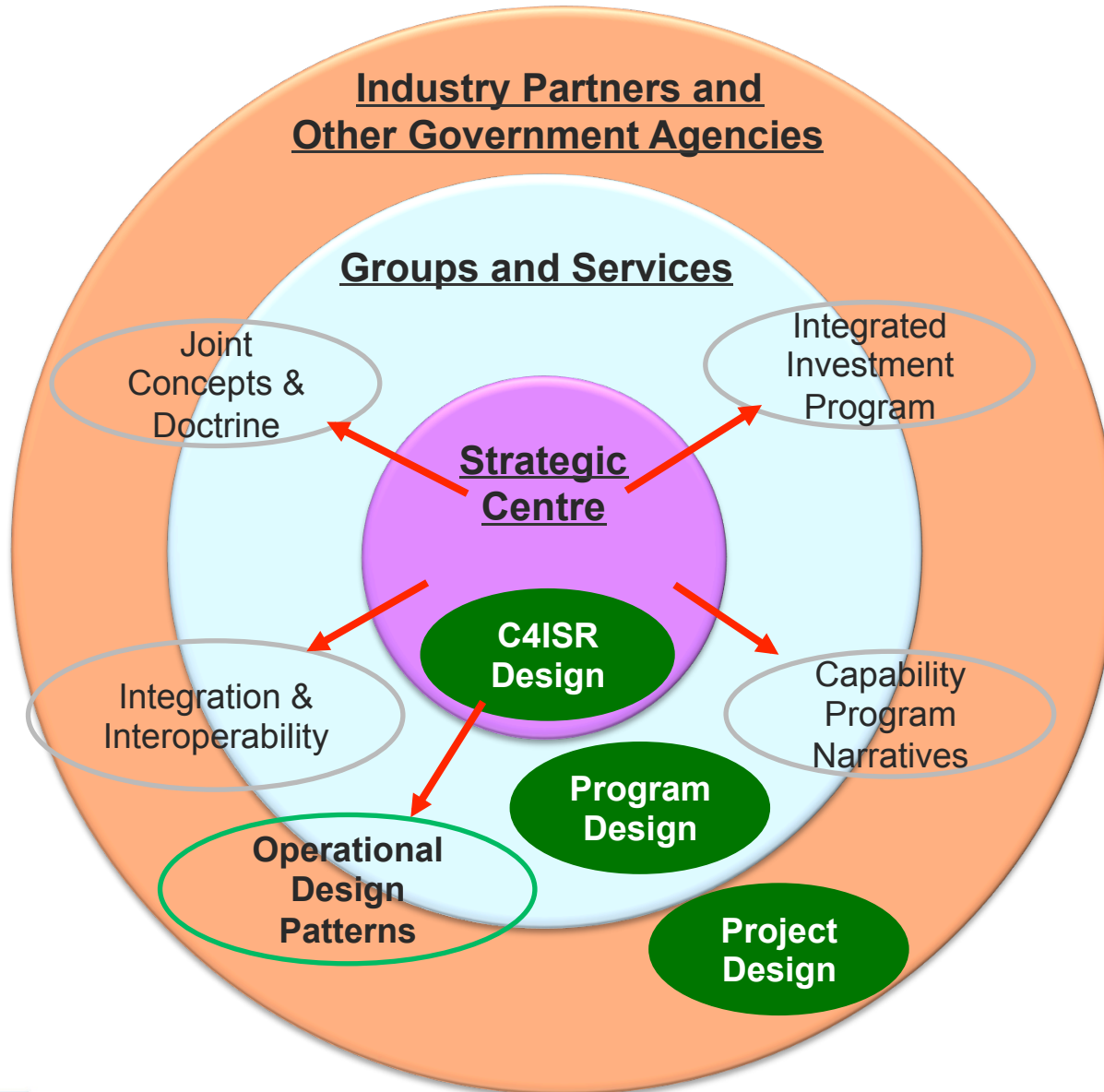
# Providing Guidance from the Centre

## Why us?

- Joint from a Service/capability manager perspective vs joint across all
- Standards to address agility, resilience, cyber worthiness, technical evolution
- Recognising mission specific integration & interoperability requirements
- Shaping and influencing international standards – need one message



# Providing Guidance from the Centre



# C4ISR Design Overview

- What is the role of a C4ISR Design Authority?
  - Define the warfighting C4ISR environment
  - Set military interoperability requirements
  - Ensure the Joint Force has the requisite integration, interoperability and resilience to operate in a contested, congested and complex environment
- ADF C4ISR Design approach
  - Try to understand what we *should* be getting
  - Use repeatable patterns, rules and guidance rather than rigid architectures
- The ‘What’ - Operational Design Patterns
- The ‘How’ - Technical standards (collaboration)
- The ‘When’ - Through JFA Directives

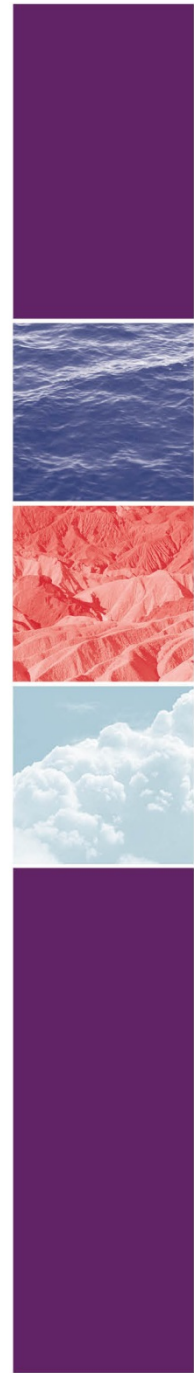
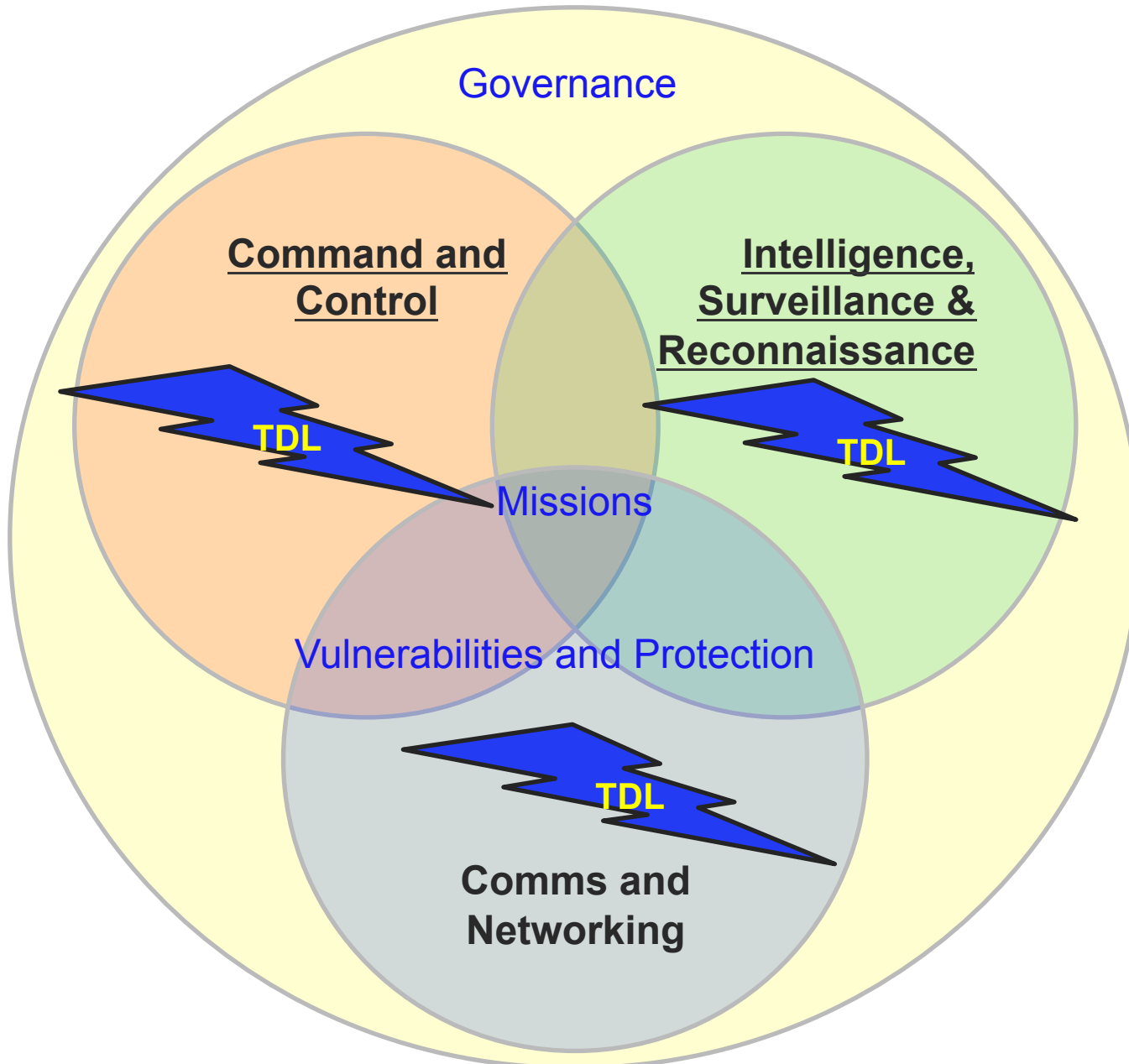




# C4ISR Design Approach

- Coordinate C4ISR design across Defence
- Joint view
  - Positioned in VCDF Group / Joint Force Authority
  - Across all services
  - Across all capability managers (CJC or single service)
- Working across Defence
  - O6 Working group
- Guidance to
  - Defence
  - Defence industry
  - Defence partners
  - Other government agencies



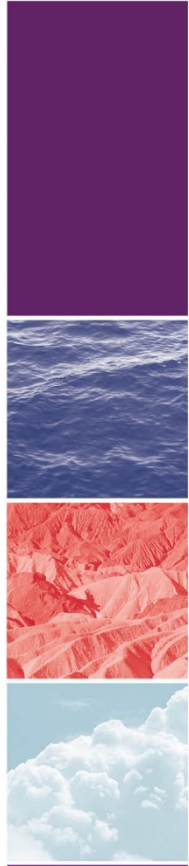
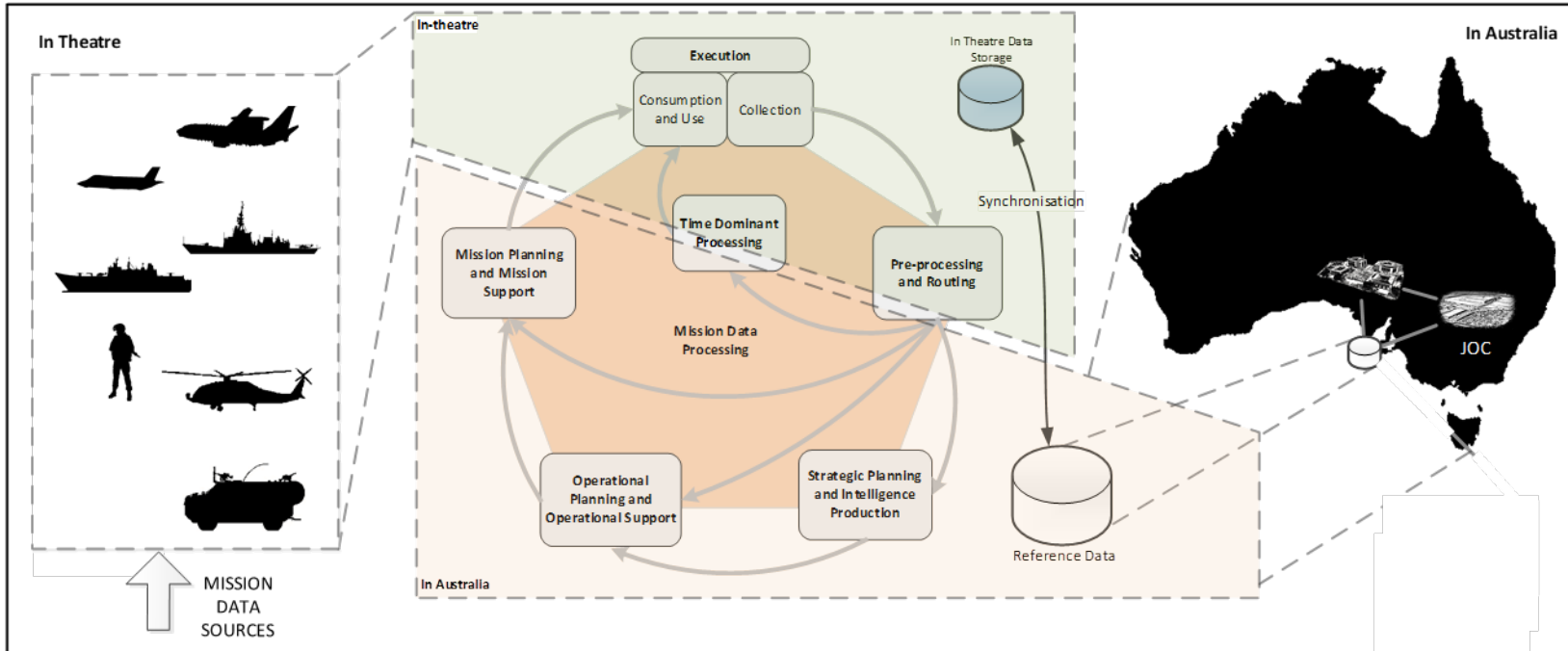


# C4ISR Design Approach

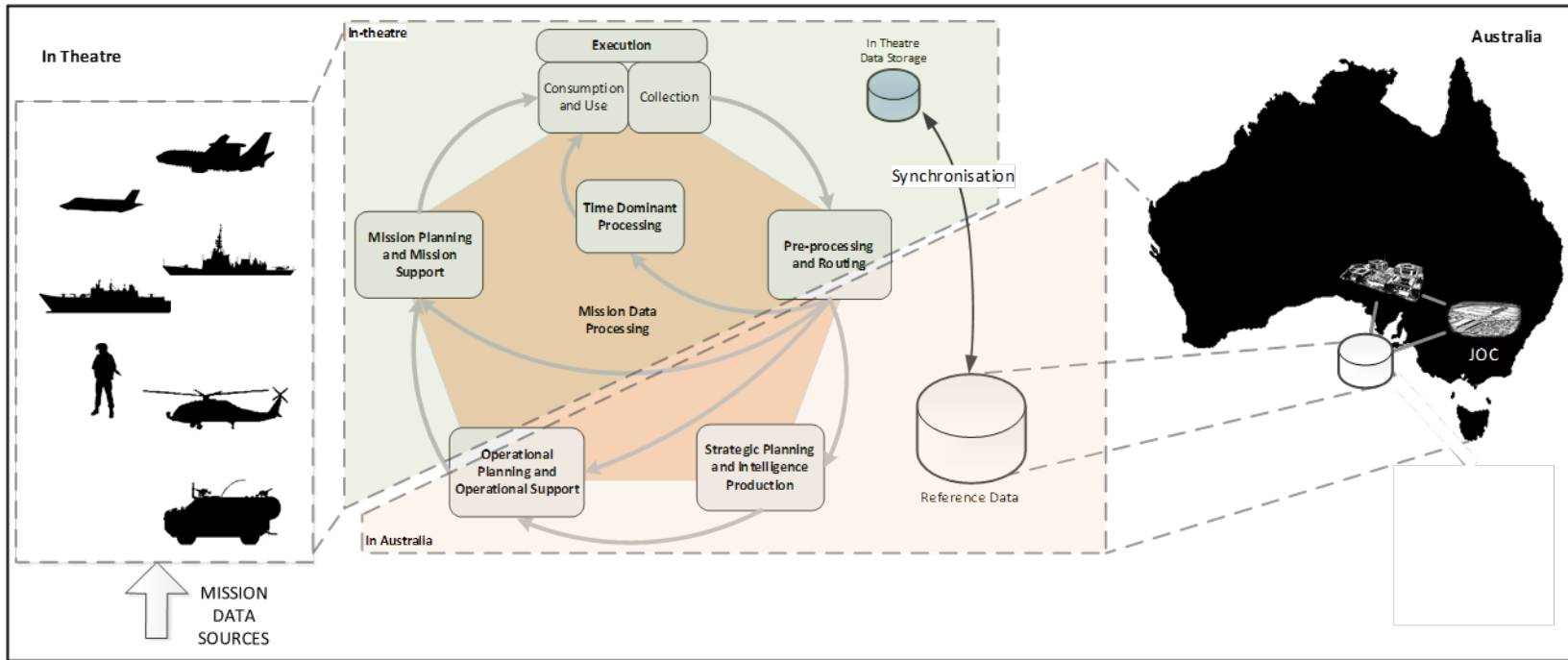
- Focus on how we should do C4ISR
  - for small focused areas
  - to answer specific questions
  - or address known gaps or lessons learned
  - focus may develop/change as future warfighting approaches are proposed
- Operational Design Patterns
  - What we need to do
  - Not rigid architectures
  - Sets of rules that can be applied as new capability or operational requirements are identified
  - Criteria to be considered when acquiring new capabilities
  - Enduring and independent of the current and planned force



# Mission Data Processing



# Mission Data Processing



# ODPs completed to date

- **Mission**
  - Theatre Anti-Submarine Warfare
- **Vulnerabilities**
  - Collaborative Precision Geo-location
- **C2**
  - Joint Command and Control (Interim)
  - Command and Control of Remotely Operated Systems
- **ISR**
  - Mission Data Processing
  - Maritime Operations ISR



# ODPs under development

- **Mission**
  - Maritime strike
- **Vulnerabilities**
  - Electromagnetic Battlespace Management
- **C2**
  - Joint Command and Control (Version 2)
- **ISR**
  - Operations ISR
- **Comms & Networking**
  - IP-Based Deployed Networks
  - Telecommunications Networks
  - Strategic Networks



# Joint Force Authority Directives

1. 02/2018 – ADF Tactical Data Links (FOUO)
2. 02/2019 – C4ISR Design Directive (FOUO)
3. 03/2019 – Network Convergence: ADF Deployable Networks (FOUO)
4. 05/2019 – Electronic Support: Collaborative Precision Geolocation (SECRET)

## ODPs & Directives located at:

DPN - <http://drnet.defence.gov.au/vcdf/FID/CITE/Pages/C4ISR-Documents.aspx>

DSN – [http://collab.defence.gov.au/vcdf/org/FDD-FID-MSCD/CITEB/C4ISR design/SitePages/C4ISR-Resources.aspx](http://collab.defence.gov.au/vcdf/org/FDD-FID-MSCD/CITEB/C4ISR%20design/SitePages/C4ISR-Resources.aspx)



# Industry Involvement

- No more spectrum
- No more bandwidth
- Need to be smarter
- Still a role for TDLs but will require changes for the new environment
- Innovative ideas for new technology
  - Standards
  - Fit for Purpose
  - Robust against future threats
- C4ISR Design Industry Day
  - March 2020 (TBC)



# Questions ?



*"I had no idea we had this kind of technology."*

**Presenter: Dr. Gina Kingston**

