AUSTRALIAN DEFENCE FORCE

Force Integration and C4ISR Design

Tactical Data Link Summit – IDL Society – 13 Nov 2017

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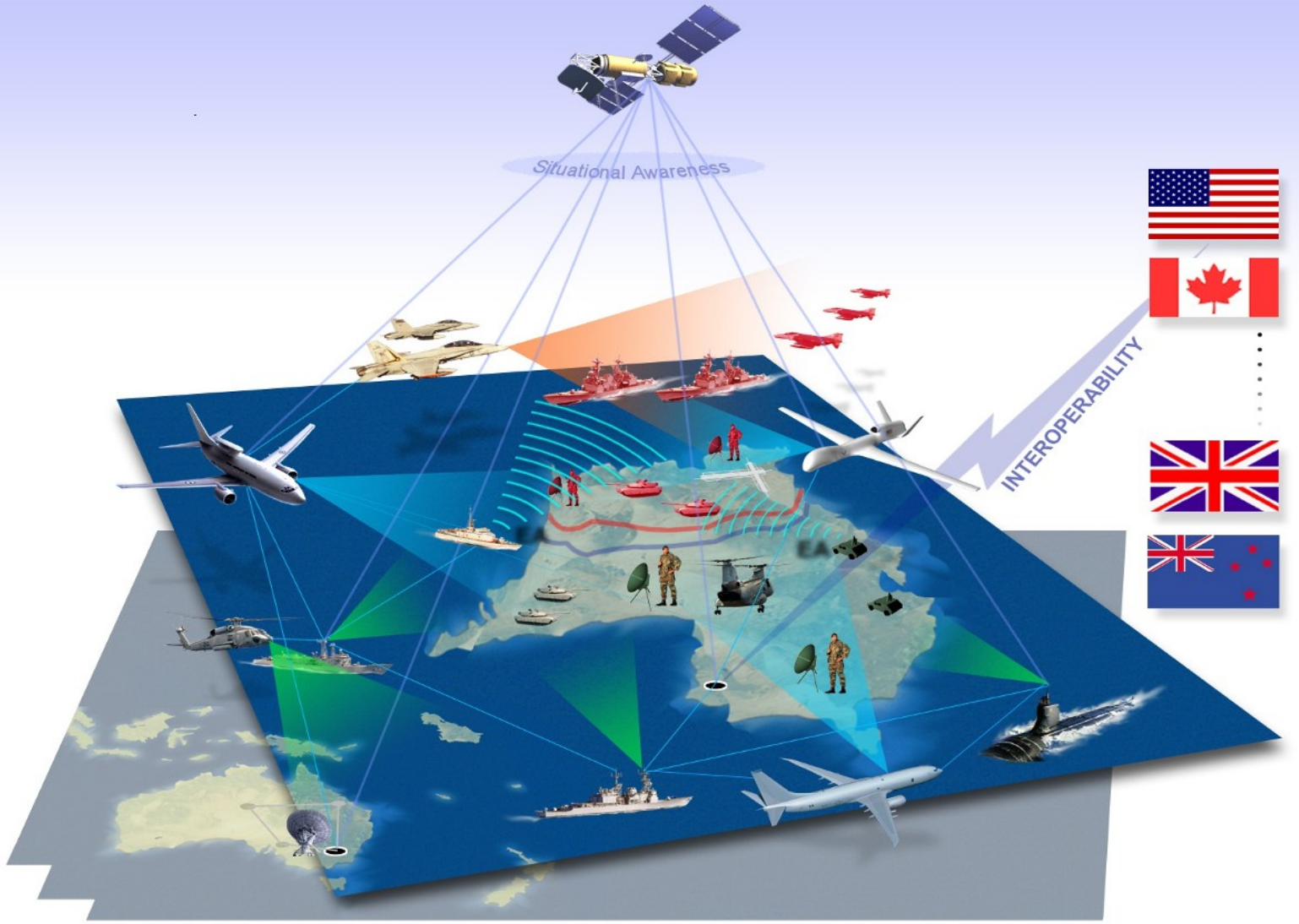
DG Capability Integration, Test and Evaluation

Complex

Congested

Contested

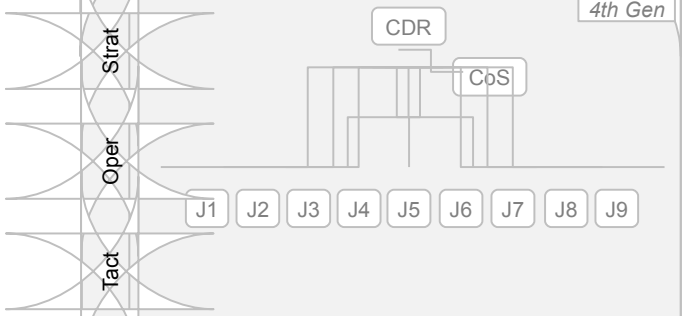


That superficial level of connectivity we aspired to in past decades will be patently inadequate for even the near-term future…

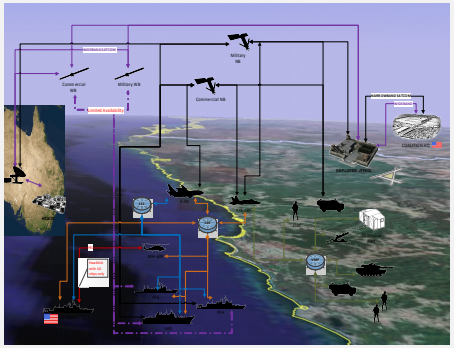
Evolving Battlespace

Force In Being (2017)

4th Gen



- US staff structure with NATO extension
- Recognised functional breakdown between peers and partners



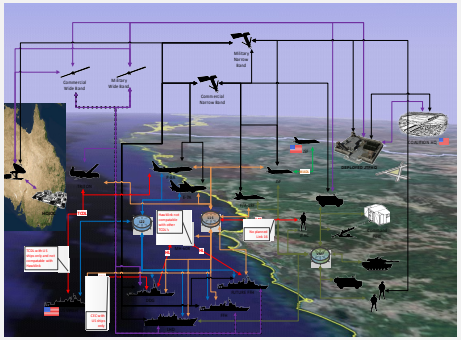
- Traceability between strategic direction and force level information flows in battlespace
- Based on joint warfighting functions / joint operating contexts
- Supported by data repository

Objective Force (2025)

5th Gen

- *Exercise C2 efficiently and effectively over 5th generation capabilities*
- *Apply integrated national power in area of operation*

- Managed cyber visibility
- Organisational agility
- Versatility across full spectrum of mission types



- Advanced C2 / Decision systems
- Networked information fusion across battlespace
- Resilient, robust, redundant (graceful degradation)
- Data / evidence based
- Options supported by info flow modelling

Future Force

Next Gen

To Be Designed

To Be Designed

First Principles Review

"The **Vice Chief of the Defence Force** is the **Chief of the Defence Force's deputy** and is responsible for **joint force integration, interoperability** and **designing the future force**"

"... the **Vice Chief of the Defence Force's** decision rights be greatly strengthened, including **the right to stop projects** proceeding through the approval process **until joint force integration is proven**"

"...C4ISR Design Authority...to define the war fighting environment and architecture, and set military interoperability requirements"

"The **Investment Committee**...chaired by the **Vice Chief of the Defence Force**...responsible for undertaking regular holistic reviews of the investment portfolios for **capability, estate and information and communication technology**, taking into account force requirements, all necessary enabling functions and full-life costs"

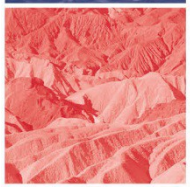
Capability Integration, Test & Evaluation Branch (CIT&E)

Role

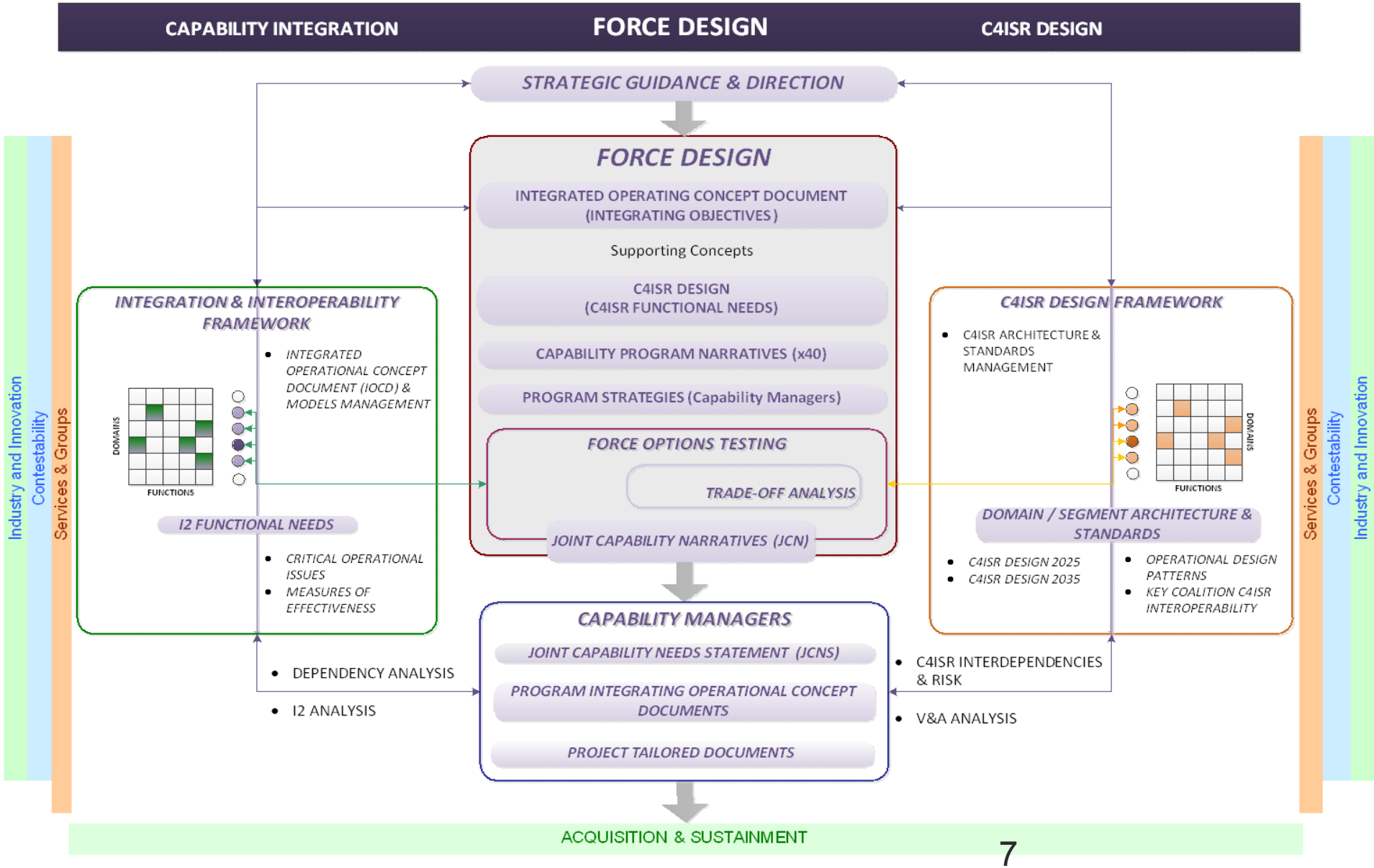
- Direct, Prioritise and Validate integration of the joint force

Directorates

- Joint Integration Concepts and Assurance
- C4ISR Design
- Joint Test & Evaluation
- Test & Evaluation Plans, Policy & Governance

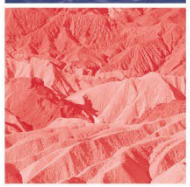




Force Integration and Design



Integrated Capability Realisation Plan

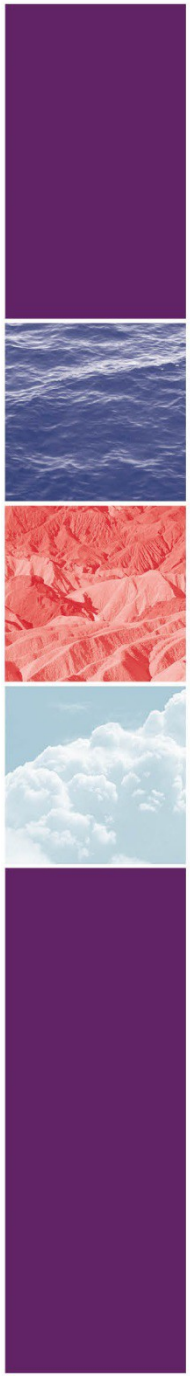
- JFA directed integration targets
  - Centre-led ‘forcing function’
- Alignment of CM plans Jericho, Pelorus, Beersheba
- Supported by:
  - JICA’s integration and interoperability framework (I2F)
  - C4ISR Design
  - Holistic validation framework
    - Experimentation
    - Test & Evaluation
    - Collective Exercise and Collective Training program


NOTE: the IRCP is not yet endorsed

C4ISR Design

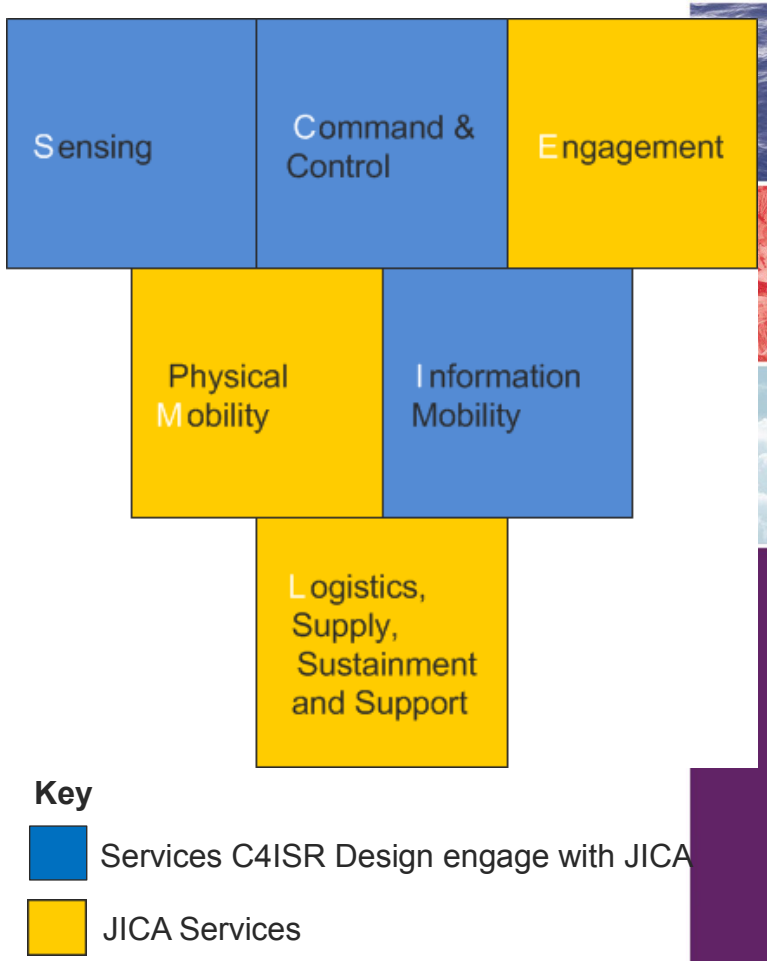
- C4ISR Design V0.6 maps C4ISR aspects of the force-in-being
- Working on C4ISR Design V1.0 to map the objective force as agreed by Government in the Integrated Investment Plan
  - Several Operational Design Patterns eg Theatre ASW approaching completion
- Developing Objective and Future Force C2 Concepts
- C4ISR Design V1.0 and the C2 Concept work will
  - Will drive future C4ISR Design principles and requirements
  - Identify C4ISR gaps and opportunities
  - Support CMs and delivery agencies to develop and promulgate joint designs
  - Support VCDF as the **Joint Force Authority** (JFA) to make informed decisions on priorities
- Future work will
  - align with the ADF Capability Realisation Plan integration targets
  - allow more detailed understanding and war-gaming of C4ISR resilience
  - assure alignment of Programs and Projects with C4ISR Design



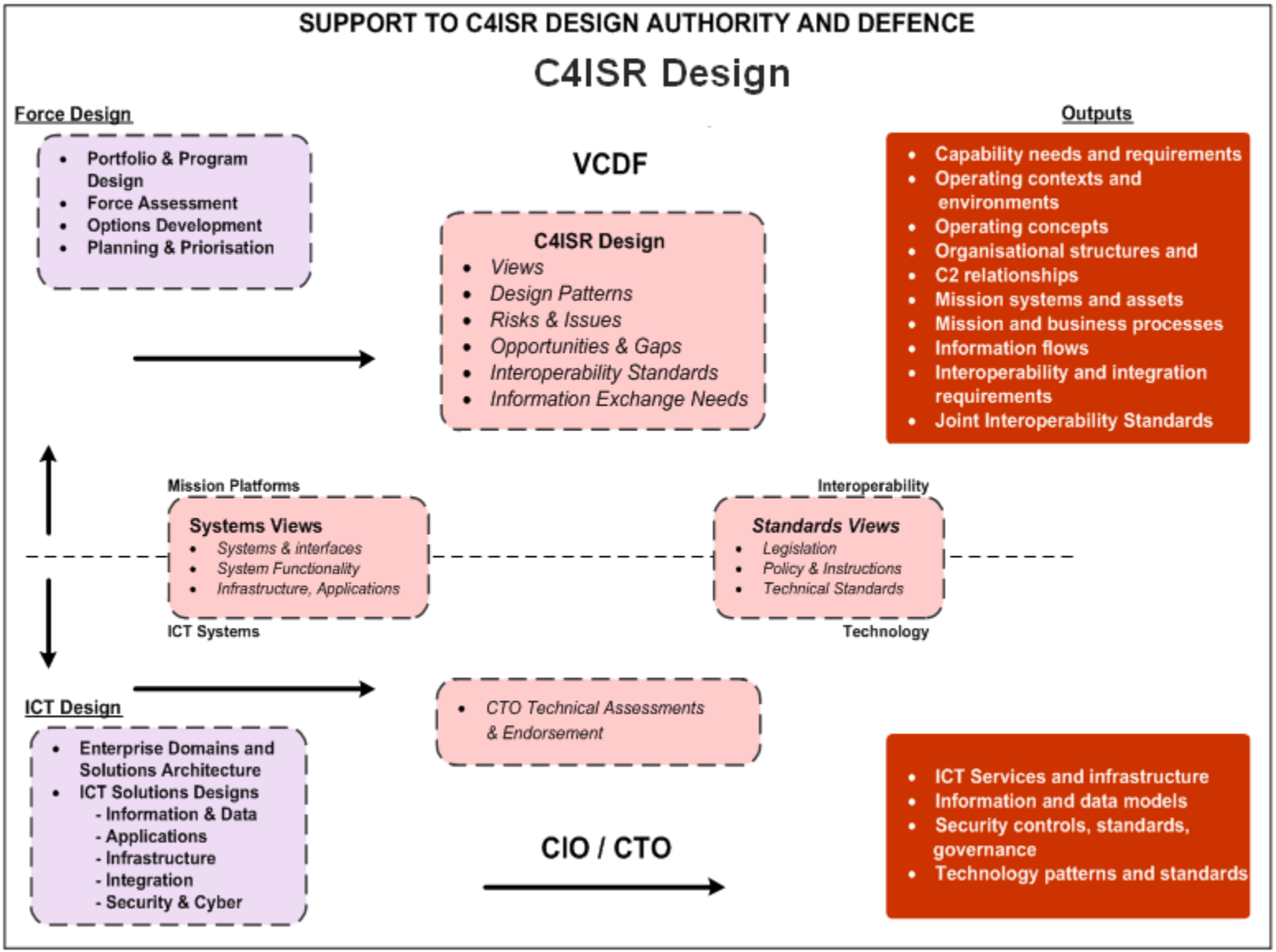
SCMILE services … simple, familiar and “complete”

Six basic services. Together, they are **one of the simplest representations** of the functioning of an entity, be it a person, tank, ship, team or organisation.

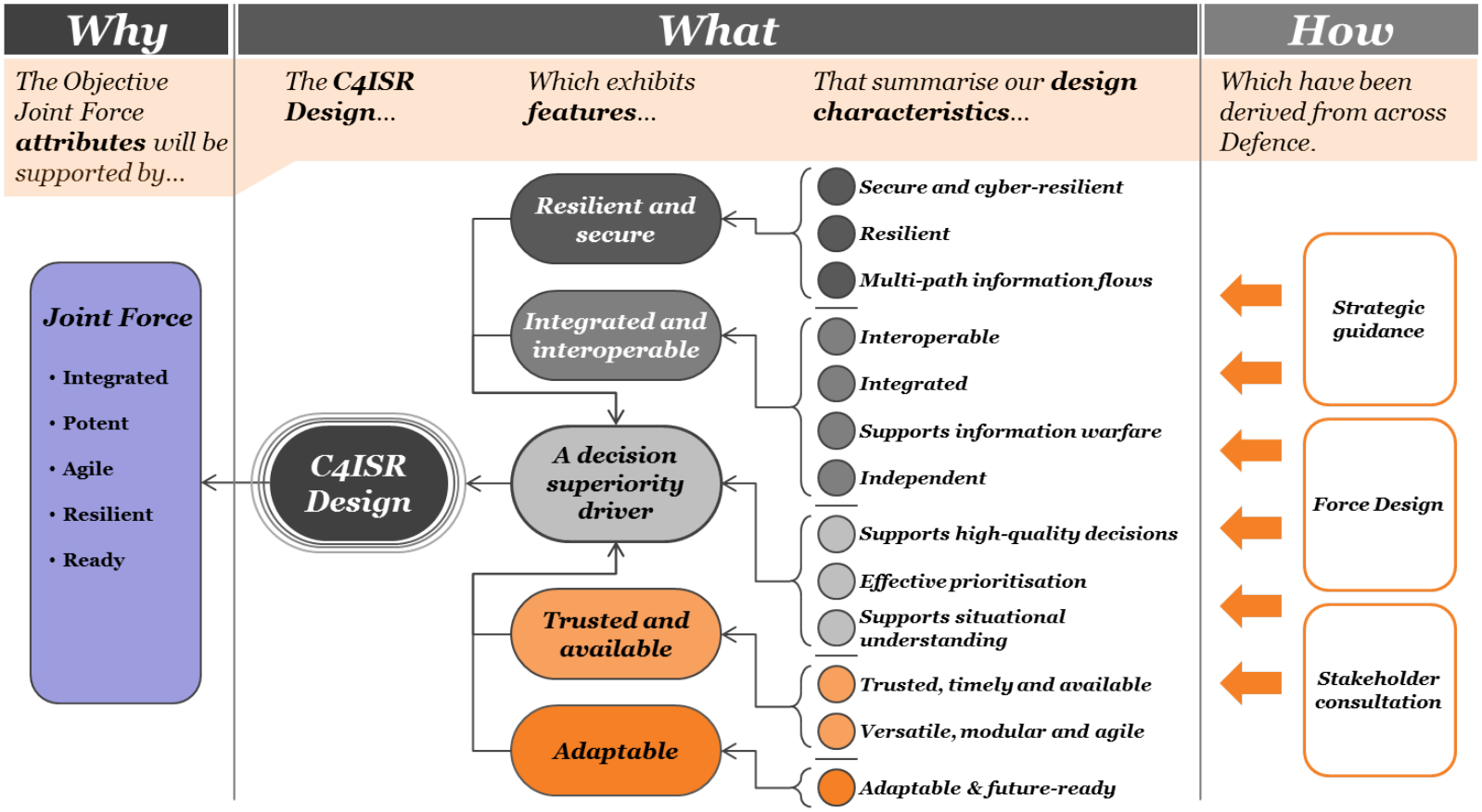
	The provision of …	Person
S	battlespace and environmental information	See
C	analysis, sense-making and decision-making	Think
E	effects	Act
I	information storage and dissemination.	Talk
M	housing and locomotive ability	Walk
L	enabling materiel, activities and information	Live



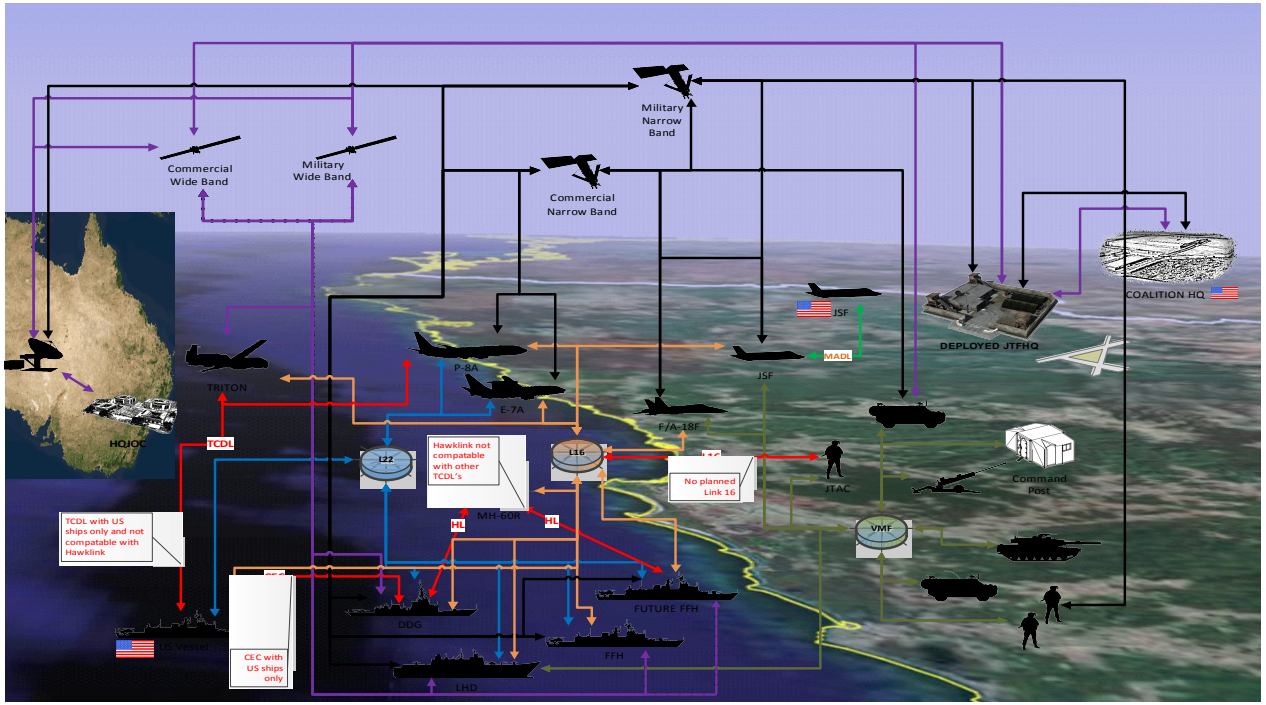
Support to Joint Force Authority and Defence



C4ISR Design



Integrated ADF Vision



Complex

Congested

Contested

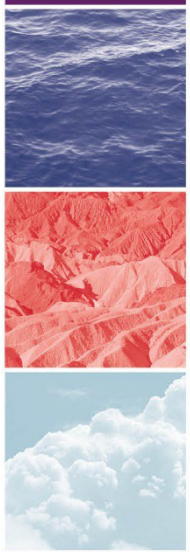
"Integration is a force multiplier. All key systems and platforms of the Objective Joint Force need to be integrated into a network. The networked force facilitates decision superiority and enables the force to generate tempo, be agile and manoeuvre. This is a foundation of how the ADF will remain agile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

Australia's Joint Operating Concept 2016

Assured dissemination, integration and processing of all available information

C4ISR Design

Features	Description
The C4ISR must be…	
Resilient and secure	We must be able to exchange information in all environments from the benign to the extremely hostile, confident that information cannot be compromised or stolen.
Integrated and interoperable	We must be able to exchange information to support the seamless operation of the integrated ADF in a single war fighting domain, and to enable the appropriate degree of interoperation with allies and partners.
A decision superiority driver	We must be able to exploit information to drive decision superiority for the integrated ADF, in turn driving mission success.
Trusted and available	Our information must be of the quality we need, and provided to the decision-maker when needed.
Adaptable	We must be able to capture innovation and leverage the developments in technology, best practice, and understand the evolving threat-set to maintain the information-edge of the ADF against potential adversaries.



Tactical Data Link & C4ISR Design

Issues.

- The proprietary nature of some datalinks cause integration issues
- Hardware centric nature of some datalink systems make resolution of integration issues difficult
- Systems reliant on a single bearer type will fail in a complex, contested and congested communications environment.

Needs.

- ADF Platforms need to be able to pass data of different types and sizes across different bearers depending on the environment and situation.
  - **Example**.
    - The modern smart phone has many bearers that it can use to send and receive information i.e. – Bluetooth, Wi-Fi, 3G, 2G, GPS. Infrared, USB etc.
    - The phone knows what bearer to use and when. This is based on the location, reception quality, the type of data and other rules allowed to be set by the user.
    - This happens seamlessly with any input from the user.