The Capability Life Cycle and Systems Engineering
– What’s Under the Hood?

Colonel Brett Mousley
Director Joint Integration Concepts and Assurance
Vice Chief of the Defence Force Group
First Principles Review

Key Recommendation

• Establish a single end-to-end capability development function to maximise the efficient, effective and professional delivery of military capability

• Key Issues
  – Complexity of process and organisation (inefficiencies and handover points)
  – No clear accountabilities, behaviour
  – Stovepiped (not a joint force by design)
Integrated Investment Program (IIP)

- is a **ten year expenditure plan** covering all capital and related investments

- **combines** the previously separate plans into a single, integrated program construct
Capability Life Cycle (CLC)

Key Reforms

- Strong Strategic Centre
- Strengthened Portfolio and Program levels
- CLC Gates and Phases
- Force Design and Enhanced Joint Capability Integration Functions
The Systems Engineering Challenge

Perceptions

- Systems Engineering = Process = Documentation
- Loss of speed and agility
- High overhead and technical skill

- Preference for increased commercial and military off-the-shelf options
  - bleeding edge by exception
Finding Defence’s Sweet Spot

Anne O’Neill and Richard Beasley (INCOSE IS 2016 paper) *Selling SE by Searching for the Sweet Spot*

- Advocates a *more flexible approach to the introduction of Systems Engineering*

- Problems:
  - Overhead of process vs. value

- Not about doing the SE - it’s about the results!
Journey to Embed or Improve Systems Engineering (O’Neill and Beasley, 2016)
1. Creating a Desire to Apply or Improve SE within Defence

Benefits Realisation

- **Portfolio and Program levels**
  - joint integration (up front / early tradeoffs)
  - mixture of top down (Portfolio) and middle-out (Program)

- **Project level**
  - “sufficiency” in developing contractible requirements (tailoring based on risk and complexity)
  - Smart Buyer (earlier and consistent understanding of risk)
2. Organising to do Systems Engineering

Benefits Realisation

• Force Design and Joint Capability Integration organisations
  – Consistency with an authority to set and enforce design rules (joint force architecture and IOCD)

• Delivery Groups
  – quality control, policy and practice (consistency)
  – application of tailoring (proximity to industry) supporting project and asset management
3. Getting the Appropriate SE Capability

Benefits Realisation

• Frameworks and Models
  – models that support tailoring, speed and agility rather than process
  – dependency analysis

• People
  – competency (military systems engineers vs. reliance/over-reliance on industry)
  – systems thinking
4. Applying SE in the CLC

Approach

• Force Design
  – Mission Engineering approach

• Joint Capability Integration
  – Program-level Integration approach
    • Program Integrating Op Concept Model
      – model **not document** based
      – assess the applicability and resource implication for use across other programs
5. Reflect and Refine

Approach
- Top Down vs. Middle Out vs. Bottom Up
  - where do you start?
- Zealots fail

Value
- Measurement

Defence’s Sweet Spot?
Questions?