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ADIESA

Australian Defence Information and Electronic Systems Association

Joint C2 Focus Group

Inaugural Meeting

9 Mar 2018

R1 Theatrette

0900-1645



Agenda



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- 0900 Introductory brief
- 0915 Defence JC2 Directorate brief
- 1030 **Morning Tea**
- 1100 BRIG Vivian – DG Joint C4 – Strategic overview
- 1115 Questions to Industry
- 1230 **Lunch**
- 1315 Facilitated workshop to analyse feedback from Industry
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- 1530 **Afternoon Tea**
- 1545 Team backbriefs
- 1615 Consolidate outcomes
- 1645 Close



Admin Brief



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- Defence's expectations.
- All discussions UNCLASSIFIED.
- Toilets immediately outside in foyer. Turn right as you exit the room.
- Evacuation protocols.
- Afternoon breakout sessions.
- Food will be served immediately outside. Water only in the Theatrette.
- Visitor passes must not leave R1.



Rules of Engagement



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- Respect Intellectual Property
- Openness and sharing
- Chatham House – use common sense



Purpose



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Develop and promote an overall industry engagement strategy with elements of Defence developing, delivering and supporting Joint C2 capability:

- a. information exchange on emergent technologies, concepts and systems
- b. identify mechanisms to overcome impediments to C2
- c. interaction between companies involved in Joint C2 and other elements of Defence involved in capability development and sustainment
- d. visibility of extant industry involvement with C2 elements, and coordinate collective involvement
- e. provide industry with insight into the capability challenges and Defence planning to meet those challenges.



JC2 Directorate Brief



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- JC2
 - COL Dan Hartigan, Director Joint C2
 - WGCDR Michael Burgess-Orton
 - LCDR Brad Ryan
- CASG perspectives
 - Frank Franceschini, MC2 SPO
 - COL Peter Spencer, JC4I SPO



JC2 Capability



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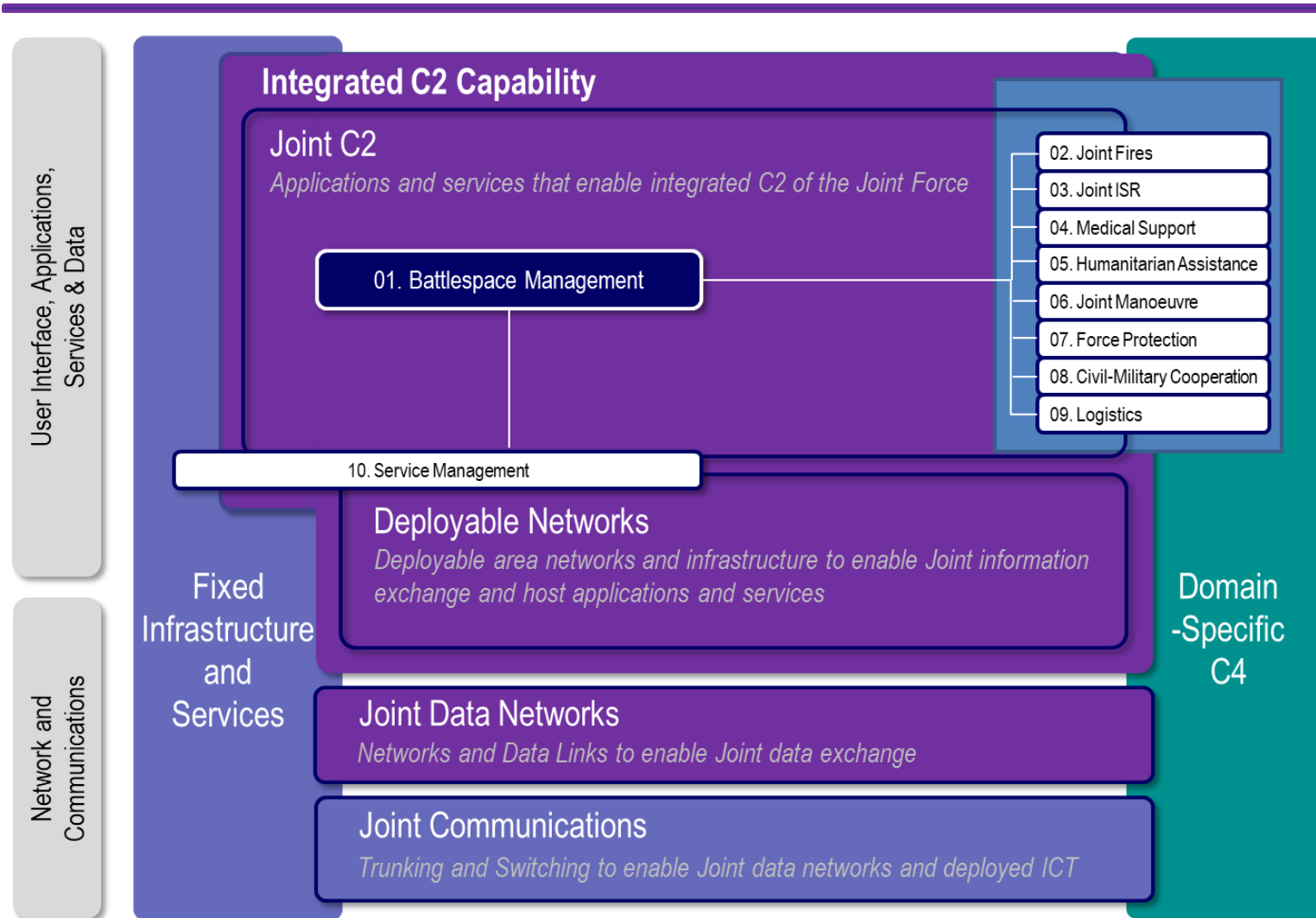
COL Daniel Hartigan
Director Joint C2
Joint C4 Capability Branch
Joint Capabilities Group



JC2 – Boundaries and Context



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Themes



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- We are seeking solutions applicable across the program and capabilities
- We will develop Australian industry capacity
- Harnessing innovation is key
 - Define the problem and let industry deliver the solution
- The timelines are / will be aggressive (for Defence)
 - agile development and deployment
- There will be open systems and architectures wherever possible



Joint Command and Control



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WGCDR Mike 'BO' Burgess-Orton
Deputy Director Joint C2
Joint C4 Capability Branch
Joint Capabilities Group



Joint Command and Control



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Scope:

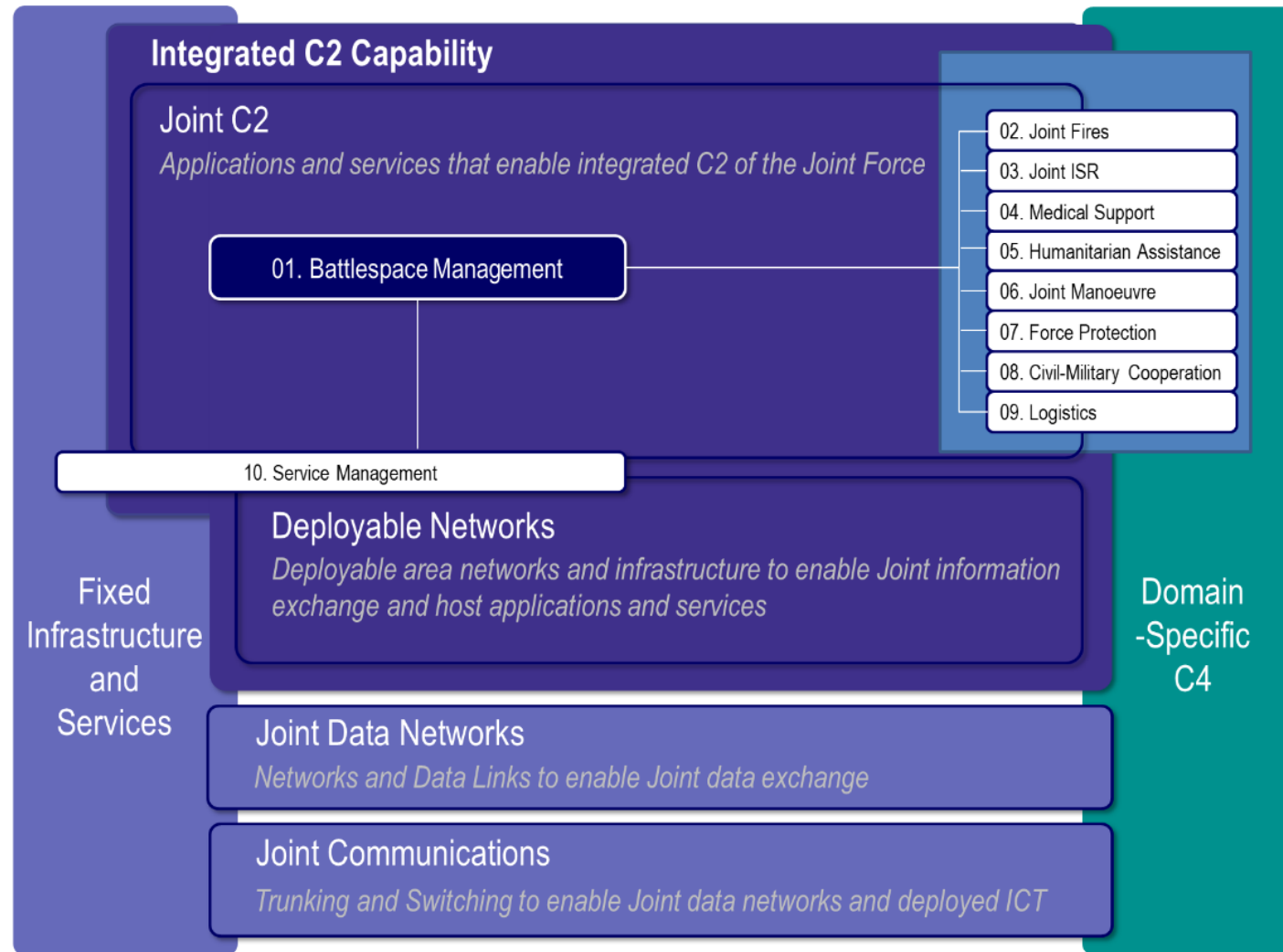
- Overview of the Joint C2 Capability
- Integrated C2
- Deployed ICT



Overview



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Critical nodes



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- Land centric deployed Joint Task Force HQ
- Air centric Deployed Task HQ
- Amphibious Task Force HQ
- E-7A
- AWD



Capability approach



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- Engage with Industry early and often
- Prototype
- Be prepared to fail, but fail early
- Two year horizon to a 10 year aiming point
- Evolutionary Capability Development
 - Agile + evolutionary acquisition + evolutionary sustainment



Program Approach



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- Gate 0: Approval 08 Jun 17
 - Addressing lessons from previous phases
 - Amalgamate three phases into a JCSE Sub-Program
 - Will deliver tranches with iterative approvals sought in two to three year blocks
 - Each tranche will have high fidelity executable plans
 - Sustainment is centralised with CM
- Gate 1: 18 Jul 18
 - Analysis and definition period
 - Consolidation opportunities of other Joint C2 projects
 - Establish sustainment regime
 - Prioritisation of first tranche of capability
- Gate 2(s):
 - First Tranche of capability Gate 2 in FY19/20
 - Rolling approaches to Government every two to three years



Focal Areas



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- Joint C2 Evolutionary Architecture
 - C4ISR Design compliance/review; Joint C2 Operational Design Pattern development
 - DST Group prototyping and development opportunities (Industry DevOps)
 - EIM-D
- Joint C2 Applications suite
 - Environmental Scan; C2 Roadmap
 - Coalition Mission Threads: Battlespace Management as the core dimension, using the other dimensions an area of integration or interoperability.
 - Mission Systems; Mission Planning Applications; Domain Specific SA tools/apps
- COP / CTP
 - ADF Guidance and Direction
 - Integration of Battle Management Systems for all domains
 - Evolution (to 2025) vs Revolution (beyond 2025)
- C2 Chat
 - Synchronise delivery of chat to the ADF with CIOG
- Cross Domain Solutions
 - Development of viable solutions across multiple Projects/Programs
- Other priorities identified in the JCNS



JP2221 – Deployed ICT



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- Multi National Information Sharing
- Tranche 1:
 - Deployable FVEY MPE solution connected to the strategic DSN to enable high level information exchange;
 - AUS MPE
- Tranche 2 (MNIS Sub-Program):
 - Establishment and transition to an enduring MNIS system/capability



JP2221 Tranche 2



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- **Gate 0: Approval 08 Jun 17**
 - Amalgamate three phases into one
 - Tranche 1 NSC – Nov 17, funding for development of Tranche 2
 - Establishing User Requirements
 - Scoping Support Concept
- **IC - Gate 1: 21 Nov 18** (NSC - May 19)
 - Analysis and definition period
 - Governance System / Support System / Mission Systems
 - RFP Support Concept
 - Mission Systems
 - Legacy / FVEY (SECRET) / N-EYE (SECRET) / N-EYE (UNCLAS/PROT) / OGA
 - Planning for the transition from Tranche 1
- **IC- Gate 2: Feb 20** (NSC – Jun 20)
 - Tranche 2 transition of capability FY20/21



Joint Data Networks



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LCDR Bradley Ryan
Deputy Director Joint Data Networks
Joint C4 Capability Branch
Joint Capabilities Group



Joint Data Networks



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- MTN Sub Program
- Industry Involvement
- Challenges
- Timeline and Funding



MTN Sub-Program



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- Multi-TDL Network Management System
 - Fixed MTN Nodes - Unmanned
 - Mobile / Deployable MTN Nodes
 - Management Nodes
 - Joint Interface Control Workforce
- Link 22 Capability Introduction
 - Replaces Link 11 for ADF
- Link 16 Modernisation
 - Crypto
 - Enhanced Functionality
 - JTRS Integration



MTN Sub-Program



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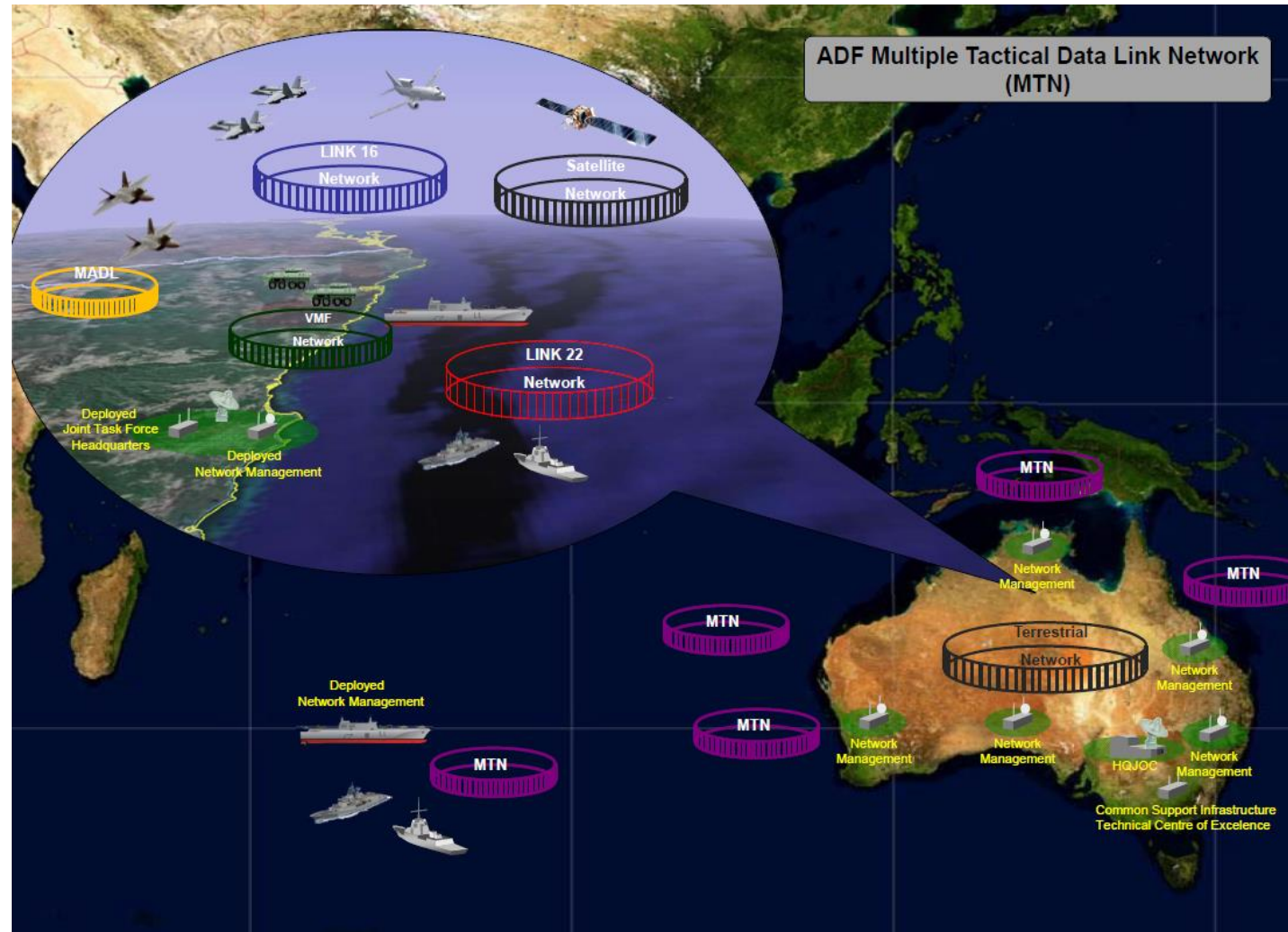
- Integrated Broadcast Service (IBS)
 - Platform Satellite and Network Capability
 - Theatre Interface Node
 - Management Facility / Workforce
- Network Integration Centre (Joint)
 - Concept Development
 - Capability Support
 - Sustainment - Update / Upgrade



MTN Sub-Program



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Industry Involvement



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- Requirements
 - Capability Support Workforce
 - Integrated Capability Development Workforce
 - Concept Development (RMA/Design and Development)
 - System / Product Solutions
- Challenges
 - Limited Talent Pool – Niche Technology Area (Tactical Data Links)
 - Security Clearance Requirements
 - ITAR / FMS Access Limitations



Schedule / Budget



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- Schedule
 - MTN Sub Program Approved 04 July 2017
 - Investment Committee Q3 2018
 - Government Submission March 2019
 - Cyclic Approach to Government every 2 years
- Funding
 - Acquisition >\$750m over 15 years
 - Sustainment >\$900m over 25 years



Mr Frank Franceschini
Director Maritime Command and Control Systems Program Office
Joint Systems Division
Capability Acquisition and Sustainment Group



COL Peter Spencer
Director Joint C4I Systems Program Office
Joint Systems Division
Capability Acquisition and Sustainment Group



Questions



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JCG

- COL Daniel Hartigan
- WGCDR Michael Burgess-Orton
- LCDR Bradley Ryan

CASG

- COL Peter Spencer
- Mr Frank Franceschini



Workshops



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Sign up at morning tea

Focus questions on table

- | | | |
|---------------|------------------|-----------------------------|
| • Workgroup 1 | R1-2-D048 | WGCDR Michael Burgess-Orton |
| • Workgroup 2 | R1-1-D035 | LCDR Brad Ryan |
| • Workgroup 3 | R1-2-B064 | LCDR Andrew Montgomery |
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Joint C2 Strategic Vision



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BRIG Rose Vivian
Director-General Joint C4 Capability Branch
Information Warfare Division
Joint Capabilities Group





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Questions to Industry



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1. How do you see Joint C2 evolving over the next 5-10 years?
2. How can Defence support a rapidly changing (DevOps, CD/CI) heterogeneous C2 environment?
3. What is Industry looking for with respect to this capability?



Evolution of C2



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- How do we present/aggregate information?
- Speed of information uptake/system competency.
- Utilising outside knowledge to inform Defence's C2 knowledge/understanding.
- How do we validate our processes and structures?
- Proof of concept: AI/Defence Innovation Hub
- Collaboration as core
- Utilise doctrinal base, but evolve as best we can
- Defence to brief C4ISR Design JC2 concepts in UNCLASS form



Evolution of C2



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- Understand the data/understand timeliness requirements
- Be mindful of the latest trends
- Empathy/understanding of intergenerational differences
- Backwards compatibility
- How do we integrate legacy systems?



Rapidly changing C2



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- Certification/accreditation must be fit-for-purpose and not cumbersome
- Accreditation bottlenecks – engage early and often
- Crypto issues
- MILDEVOPS?
- SECDEVOPS/SECDEV
- DevOps approach to OT&E – how would it work?
- Automated testing
- How can we work together to progress through immovable policies?



Rapidly changing C2



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- Systems-of-Systems complexity – industry must collaborate
- JNIC – Joint Network Integration Centre
- How can we collaborate within a dev environment?
- We understand the key milestones for Defence; can we align our platforms?
- Transition from voice to data-based C2 communication
- How can we integrate with other Government agencies?
- Involving OGAs



What is industry looking for?



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- Contribution to Defence
- Trust
- Opportunity to innovate
- Opportunity to engage
- Better communication
- Cash-flow certainty (reduced flash to bang time)
- Synchronised priorities
- Changing attitudes toward failure
- Fail often/fail fast/learn from failure



What is industry looking for?



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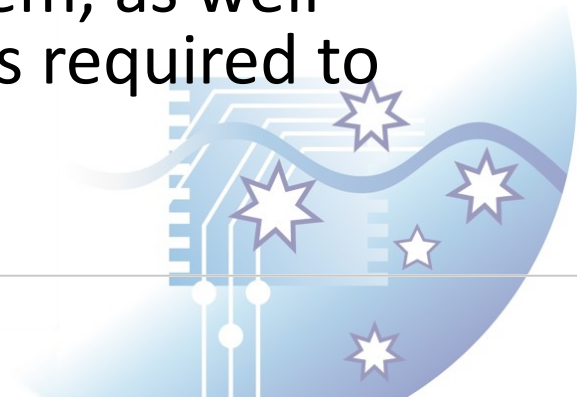


- Think outside the box
- Timeframe certainty
- Industry-based collaboration
- Application of commercial technology to a military context
- Think about training



Evolution of C2: Military commanders will expect greater timeliness, relevance and accuracy from the systems that provide them with situational awareness and decision support. This translates into a requirement that joint C2 systems will:

- Be increasingly integrated and interoperable, tactical to strategic, without operating in Service siloes
- Align information flows with C2 structure, specifically with an understanding of decision responsibilities across the force
- Provide resilience and defensive measures to reduce vulnerability and prevent attacks from moving across an integrated C2 system, as well as being able to dynamically change the joint C2 system as required to recover/adjust for lost/impacted capabilities.



Defence Support in a Changing Environment: Defence needs to:

- clarify who is the authority for architectures and who is developing/acquiring C2 systems
- prescribe architectures and standards, and do not allow capabilities to be developed that fall outside the architecture
- implement a cyber security architecture for the joint C2 environment
- commission work to develop the evolutions described above
- consider how much Defence wants AI in its joint C2 systems and what security capabilities need to be designed in from the outset;
- consider whether from a security perspective we can afford to adopt CI/CD
- establish and resource a dev environment that can support rapid integration and delivery, if not continuous



What industry is looking for:

- an explanation of elements of the DIIP that will facilitate the above development so that academia and industry can develop associated capability, including whether/when this system will expand to tactical assets, as well as a clear understanding of who will deliver the future joint C2 system (JCG, Services, CASG, CIOG?)
- academia and industry are looking for special notice for innovation proposals around how to achieve the future joint C2 system



Systematic



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Evolution of C2:

- Human Machine Interface:
 - Virtual Reality
 - Augmented Reality
 - Mixed Reality
 - Gestures, eye control
 - Bots (Chat, voice)
 - Voice recognition
 - Situation Tables
 - Wearables:
 - Smartwatch integration
 - Health status monitoring



Systematic

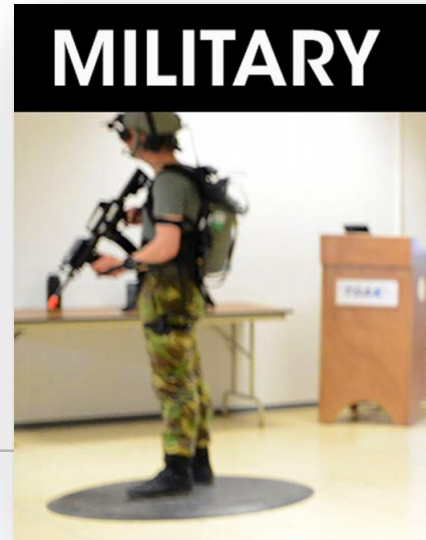
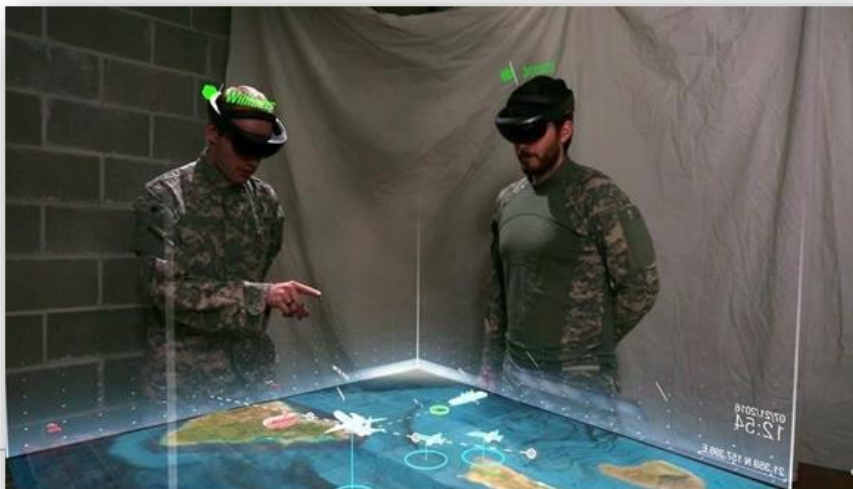
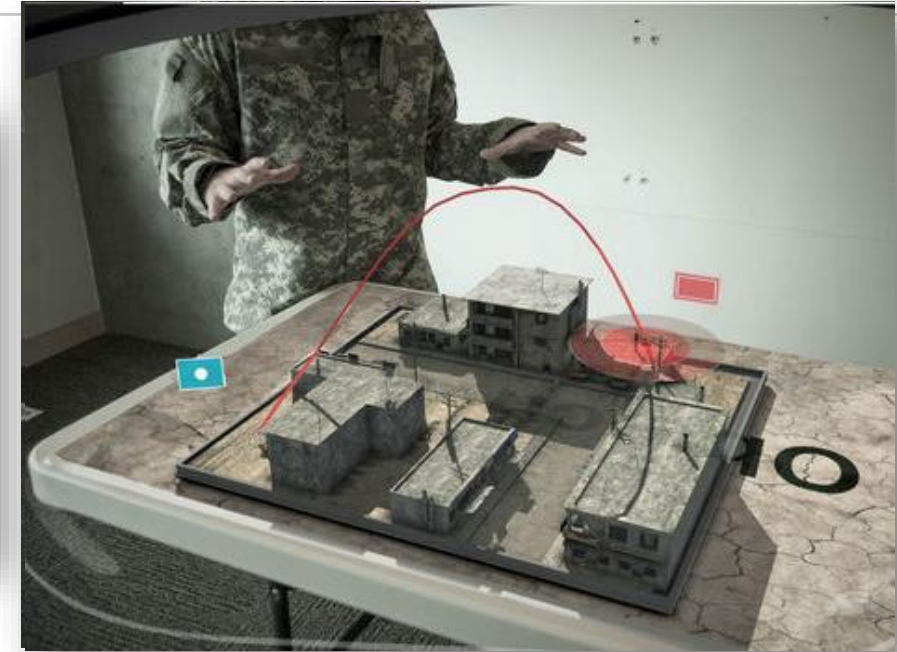
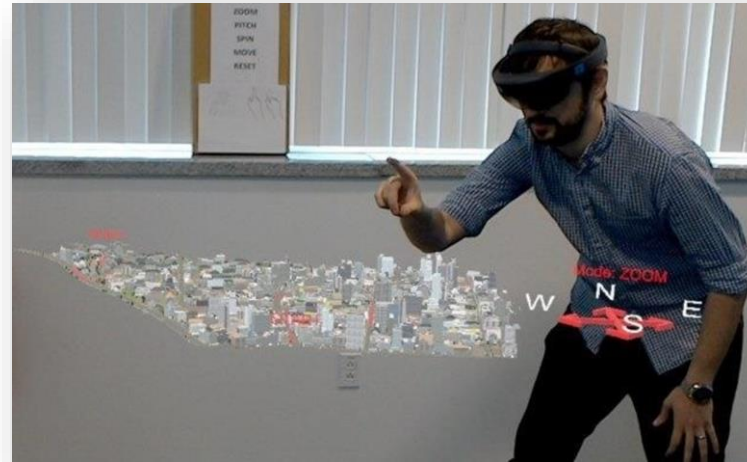


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Evolution of C2:

- Impact:
 - Info Assimilation
 - Training
 - Rehearsal
 - Battlefield Viz



Systematic



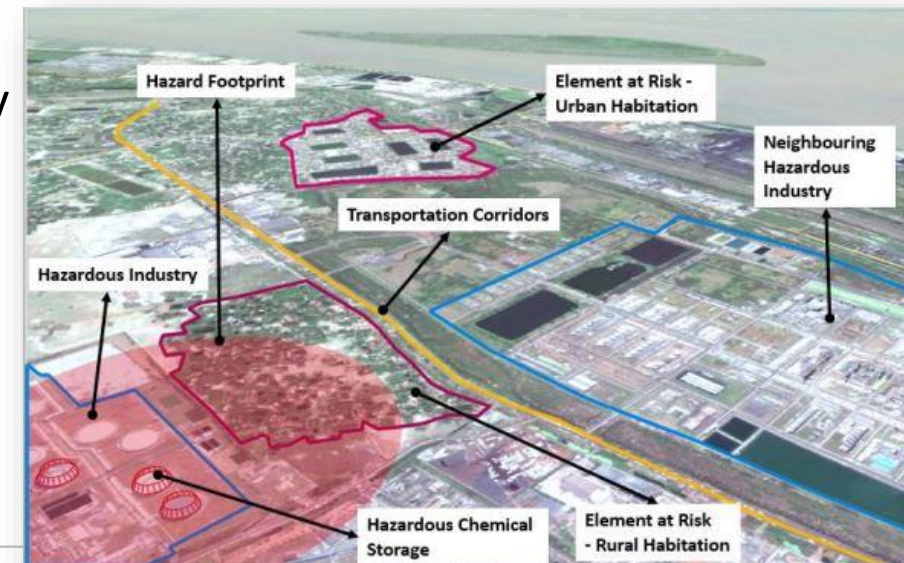
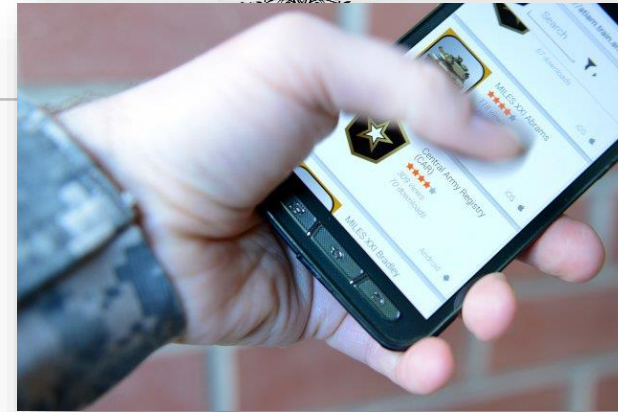
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Evolution of C2:

- ICT: 5G and 6G, SDR, Mesh, App store
- Machine Learning
 - Eg Google Tensorflow
 - Lip reading, automated data analysis, anomaly detection, track correlation
 - Decision aids, semi-automated planning, automated pattern-of-life analysis, prediction models
- Integration with sensors (eg UAVs, personal weapon) and targeting systems
- Power
 - Wearable, integrated with existing kit eg Graphene battery
 - Longer life
 - New power sources eg solar
- Security: Multi-Level, Cyber Ops (Offence & Defence)
- Blockchain
- Big Data



Defence Support in a Changing Environment:

- COTS, really!
 - First test what's on the market, not just a wish-list of unrealistic or outdated requirements
 - Military projects increasingly overrun cost and schedule, and outdated delivery
 - Civilian market moves fast
 - Borrow from gamer community
- Use open systems
- Browser based for ease of deployment
- Federated systems – allow connectivity but local control



What industry is looking for:

- Rapid acquisition
 - years = expensive solutions and obsolete technology
 - buy COTS
- Solid industry engagement (such as is happening through this FG)



Evolution of C2:

- Change to Data Driven Intelligence-led decision making
- Move away from voice, messaging, formal C2 to HUMS, ISR, Capability Data decisions



Defence Support in a Changing Environment:

- Continue to develop and allow new systems, old systems and processes to be integrated
- An agile environment not a lengthy project approach that takes years to deploy that can't adjust with changes in needs and technology.



What industry is looking for:

- clarity of thinking from leadership
- clear design principals giving a consistent view of C2 direction





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Workshop



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1. How do you see Joint C2 evolving over the next 5-10 years?
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Priority JC2 evolving



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1. More timely
2. HDMI
3. ICT (5G, SDR, Mesh, App store)
4. Machine Learning
5. Integration with sensors & targeting systems
6. Power
7. Security
8. Blockchain
9. Big Data



Priority: Supporting JC2 System



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1. COTS
2. clarify authority for arch & acquisition
3. prescribe arch & standards (open systems)
4. cyber security architecture
5. develop the above evolutions
6. AI
7. adopt CI/CD
8. Agile integration, delivery, deployment
9. Federated systems
10. Training
11. HMI
12. IoT
13. Autonomous systems
14. Operational tech/informational tech (FOG)
15. Human process improvements
16. Workforce development/training
17. Knowledge management/cognitive load management
18. Understanding of critical information requirements



Priority: Industry is looking for



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1. Timely advice of capabilities required
2. Areas for innovation
3. Rapid acquisition
4. Leadership
5. Design principles





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Close

Safe travels

Happy Canberra Day!

