Scope

- Background- What are cyber operations?
- Developing a ADF Cyber Operator profile and suitability criteria
- Profile validation, work force application, and beyond...

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What are Cyber Operations?

Cyber deterrent: PM talks up Australia's offensive capabilities

Nation has an 'offensive cyber capability' housed in the Australian Signals Directorate, Prime Minister Malcolm Turnbull said

"At the height of the fight against Daesh, ASD – working to the direction of the ADF – helped shaped a critical battle... Daesh communications were degraded within seconds. Terrorist commanders couldn't connect to the internet and were unable to communicate with each other...The terrorists were in disarray and driven from their position."

ASD's Director-General, Mike Burgess

ADF Cyber Operator Psychological Profile

Objective: To improve cyber workforce growth and sustainability by identifying applicants likely to be suitable for Cyber Operator training and service.
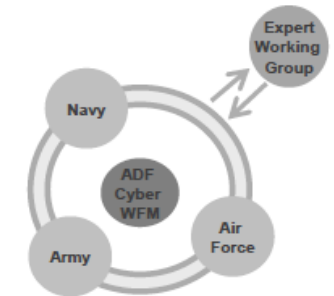
Cyber Operator Trades

Navy Cryptologic Network (CT-N)

Army Cyber Specialist – ECN 664

Air Force Cyber Warfare Officer

Air Force Cyber Warfare Analyst

Why establish a psychological profile?

- No existing standards or established workforce to inform assessment requirements
- Emerging high profile occupation dealing with non-conventional threats
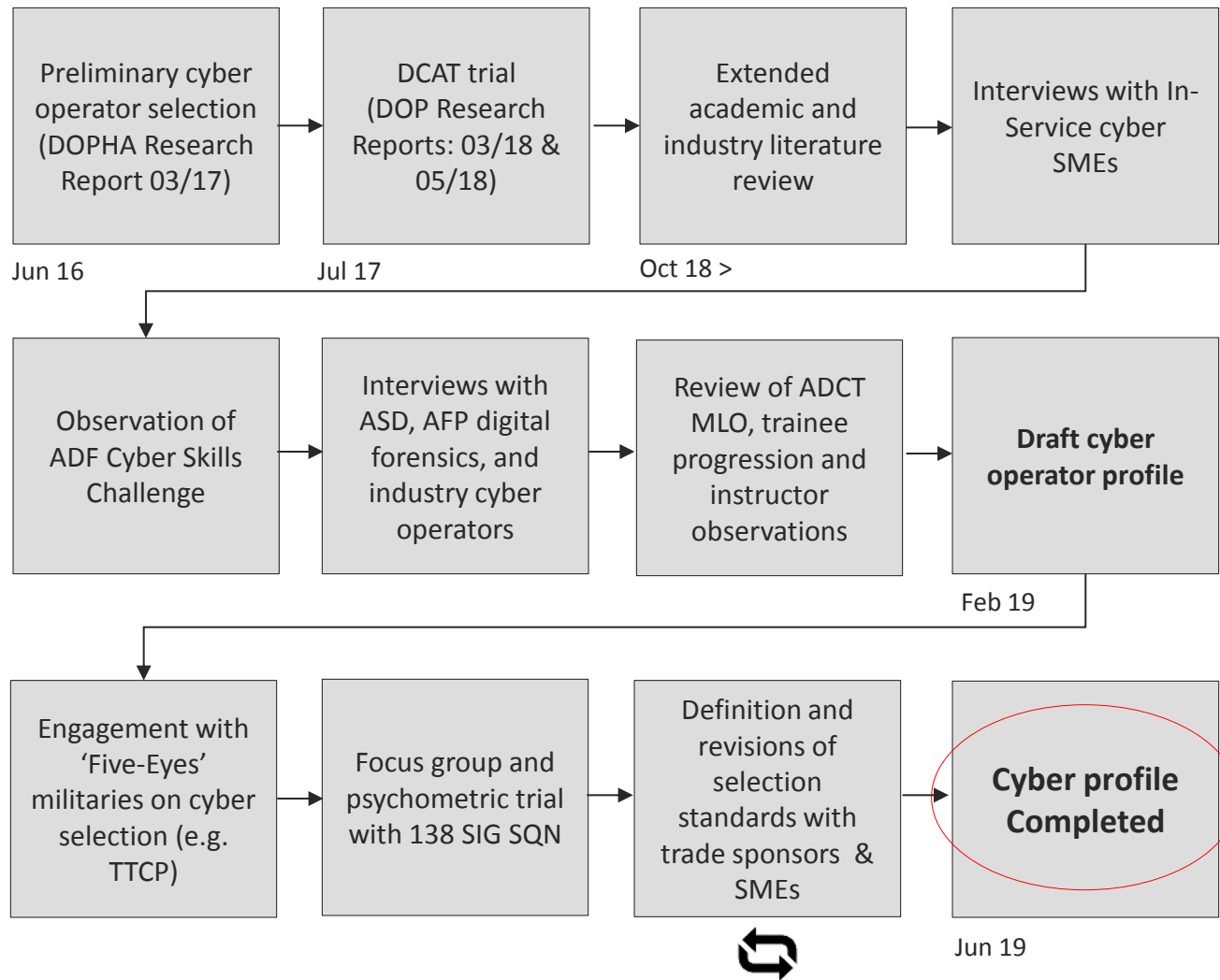- Needed a profile to identify suitable ADF cyber applicants

Selection outcomes

- A standardised criteria to assess applicant suitably for Service within the ADF cyber operator trades
- Target potential, as opposed to 'Job Ready'
- Reduce risk of training failure, performance, retention, or mental health issues due to poor person/job fit

ADF Cyber Operator Psychological Profile

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Cyber Profile Development

| Preliminary cyber operator selection (DOPHA Research Report 03/17) | → | DCAT trial (DOP Research Reports: 03/18 & 05/18) | → | Extended academic and industry literature review | → | Interviews with In-Service cyber SMEs |

Jun 16   Jul 17   Oct 18 >

| Observation of ADF Cyber Skills Challenge | → | Interviews with ASD, AFP digital forensics, and industry cyber operators | → | Review of ADCT MLO, trainee progression and instructor observations | → | **Draft cyber operator profile** |

Feb 19

| Engagement with 'Five-Eyes' militaries on cyber selection (e.g. TTCP) | → | Focus group and psychometric trial with 138 SIG SQN | → | Definition and revisions of selection standards with trade sponsors & SMEs | → | **Cyber profile Completed** |

Jun 19

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ADF Cyber Operator Psychological Profile

Selecting the future cyber workforce with the right mix of cognitive and behavioural characteristics will ensure effective operations to counter cyber warfare threats.

Psychometric - criteria

Essential assessment factors – Interview criteria

Cyber operator test battery

- **ADFGC –** General Cognitive Ability.
- **Test M –** Mathematical Reasoning.
- **Written Skills Exercise –** Motivation and written communication style.
- **ASA –** Speed and Accuracy of pattern recognition and deviation (research only).

Psychometric cognitive test standards

- **General ability cut-off**: rules out the bottom 26% of applicants.
- **Mathematical ability cut off:** Stanine 4, rules out the bottom 23% of applicants.

Cognitive Ability

*Attention
Information Processing
Learning
Systems Thinking*

Motivation

*Epistemic Curiosity
Mastery Orientation*

Maturity

*Resilience
Emotional Stability
Moral Integrity*

Interpersonal Ability

*Team Player
Social Understanding*

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| **Assumptions**	**Validation plan**	**Outcome variables of interest**
• The current suitability criteria was based on generalised academic literature, SME engagement, and workplace assessment. • The ADF cyber workforce and training design is still evolving; changes to roles, training, and job functions may necessitate changes to the profile.	• Reliability and utility of general aptitude and mathematics test cut-offs. • Motivational orientation- qualified by thematic analysis from Writing Skills Exercise (investigating epistemic curiosity, mastery orientation).	• Initial Employment Training rate of learning and competence. • Workplace performance, team integration, and motivation. • Retention and reasons for separation from the ADF cyber workforce.

Psych profile implications for cyber workforce

Effective psychological profiles have implications for the whole of workforce lifecycle; informing: selection, trainability, workplace performance, retention and transition considerations.
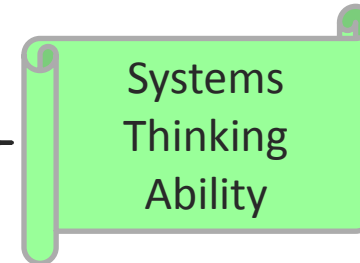
Selection

Training

Transition

Retention

Workplace performance
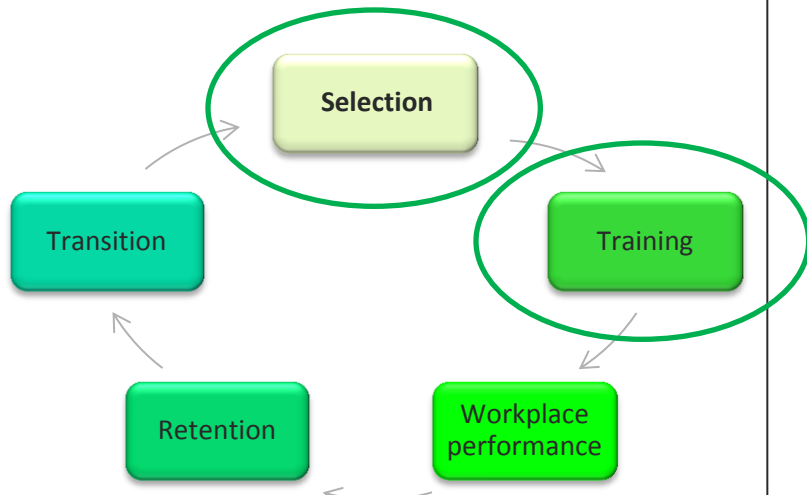
Antecedents

Cognitive Ability

Pattern Recognition

Curiosity

Openness to Information

Information Processing

Systems Thinking Ability

Knowledge

Identify sub-Elements

Recognise Interconnections

Develop Dynamic System Models

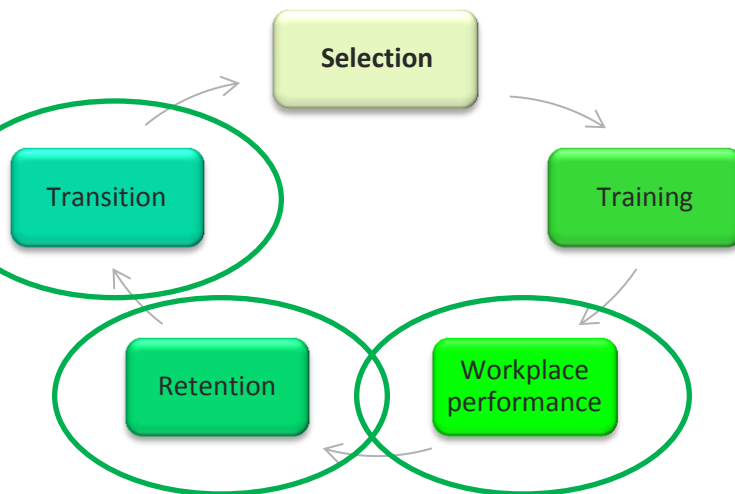Make Predictions and seek Feedback
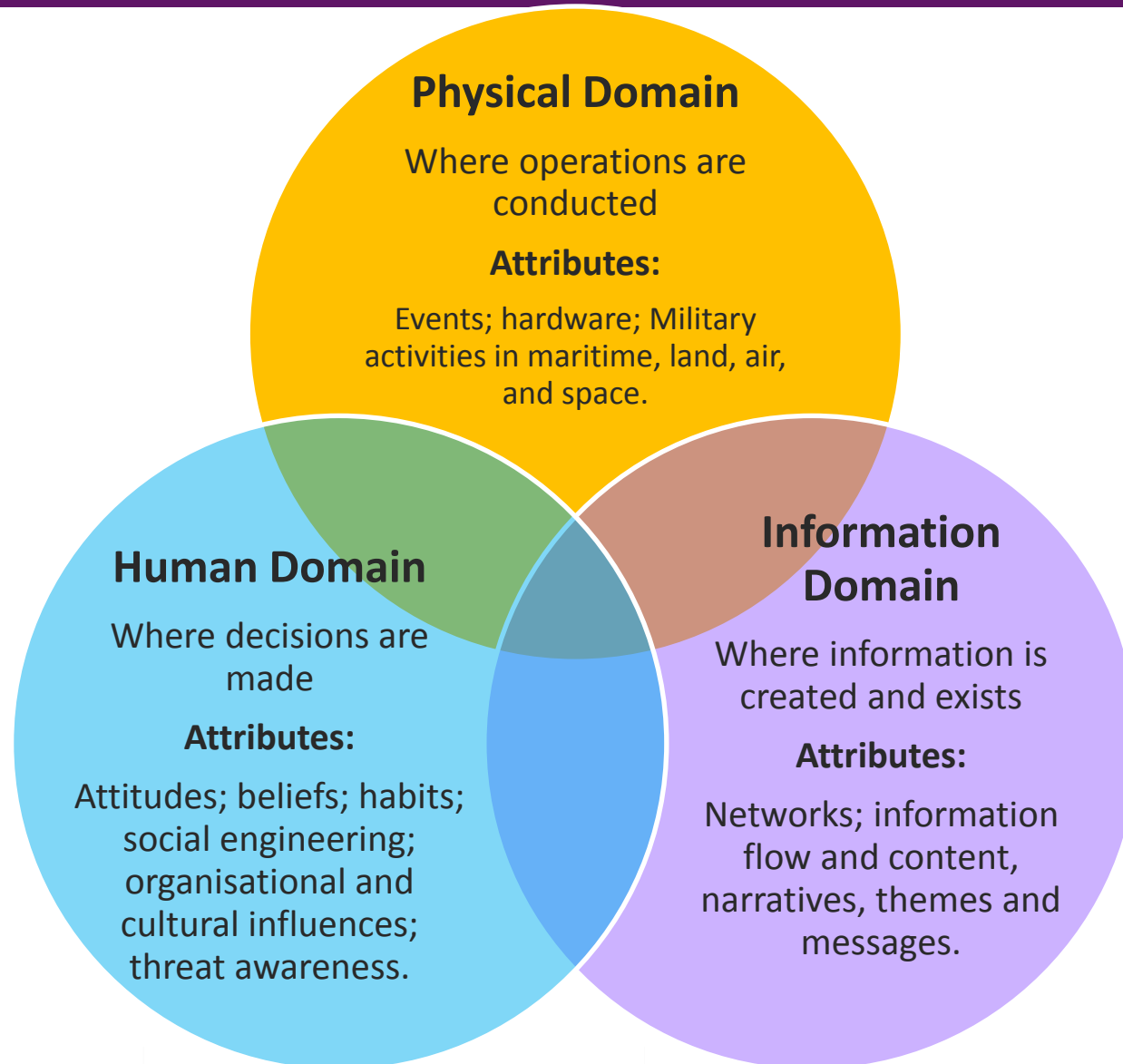
Evaluate and Revise Model

Psych profile implications for cyber workforce

Effective psychological profiles have implications for the whole of workforce lifecycle; informing: selection, trainability, workplace performance, retention and transition considerations.

Physical Domain

Where operations are conducted

Attributes:

Events; hardware; Military activities in maritime, land, air, and space.

Human Domain

Where decisions are made

Attributes:

Attitudes; beliefs; habits; social engineering; organisational and cultural influences; threat awareness.

Information Domain

Where information is created and exists

Attributes:

Networks; information flow and content, narratives, themes and messages.

Questions?