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Air Delivered Weapons Roadmap



DEVELOPING FUTURE AEROSPACE CAPABILITY TO FIGHT AND WIN

Purpose

To provide the background to Roadmaps in Defence, the background for the *Air Delivered Weapons Roadmap* specifically, and to provide a summary of the outcomes at an unclassified level



Scope

Current Capability

Roadmaps in the ADF

The *Air Delivered Weapons
Roadmap (ADWR)*

Key outcomes



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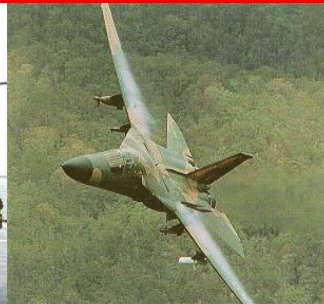
Key outcomes



AUSTRALIAN DEFENCE FORCE

- 55000 Personnel
- Approx A\$15b (US\$11b) per annum (1.8% GDP)
- Approx A\$3-4b new capability investment per annum

'A balanced, networked and deployable force, manned by dedicated and professional people, which excels at joint and coalition operations'



F-111, F/A-18, AP-3C, Helicopters



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CAPABILITY ROADMAPS

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CAPABILITY ROADMAP



SYSTEM ROADMAPS



TECHNOLOGY ROADMAPS



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ADWR Desired Outcomes

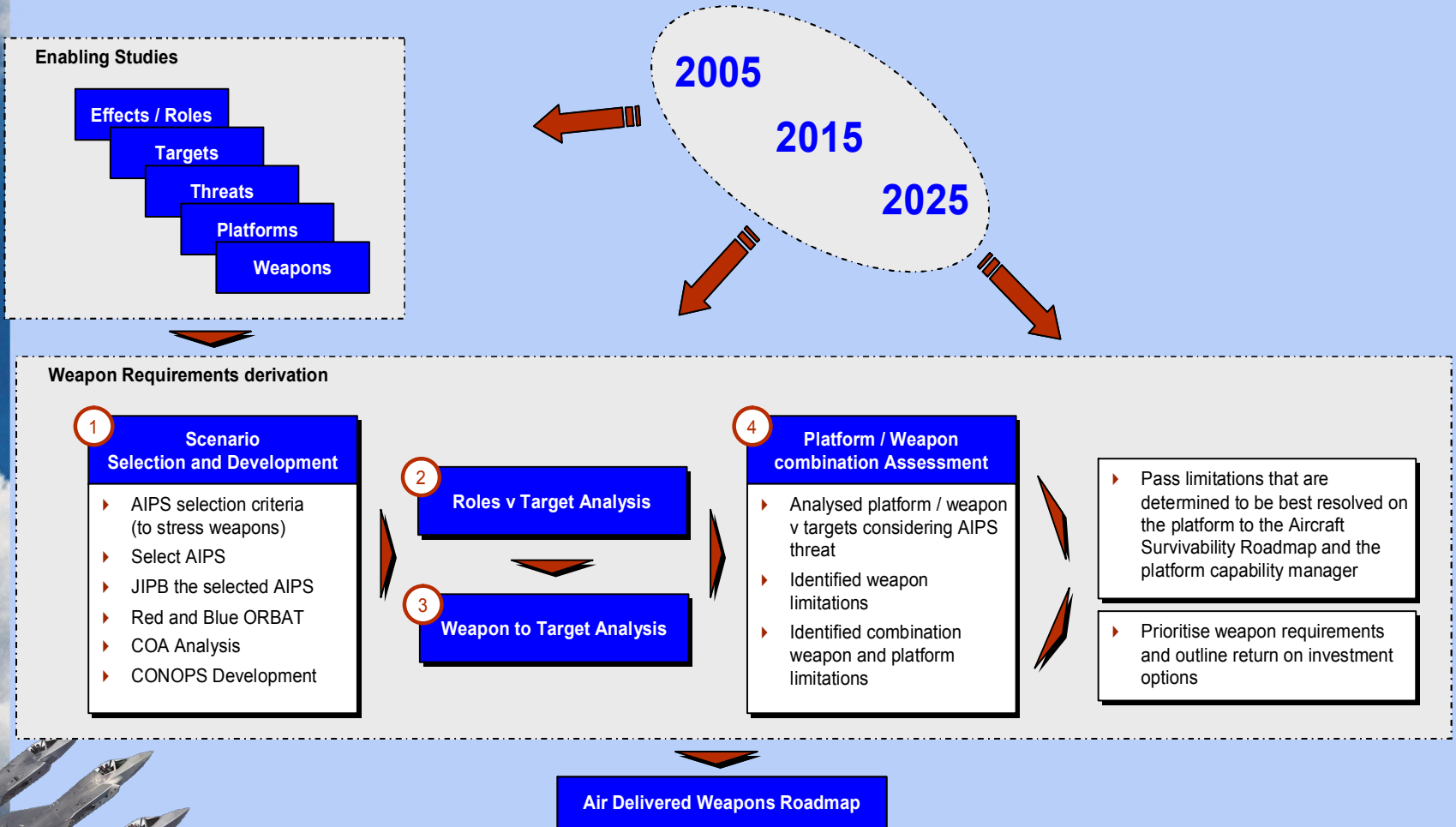
- **set a vision for air delivered weapons to 2025 and beyond**
- **provide strategies that address FIC**
- **identify opportunities and risks**
- **identify key inputs and enablers**



Weapons contextual issues



ADWR Methodology



Capable threat environment

- Proliferation of 4th Generation fighters (4.5th and introduction of 5th?)
- Advanced Air to Air missile systems
- Advanced Surface to Air missile systems
- Improved IADS and NCW environments
- White Paper 2000 “air combat forces that are at least comparable qualitatively to any in the region”



ADWR Weapons Technology Study

- Operational focus, rather than lab
- Seekers and sensors
- Guidance and control
- Propulsion
- Warheads and kill mechanisms
- Radiated energy weapons
- Countermeasures
- Enabling technologies
- Life cycle and logistics support



ADWR key target trends were:

- Hardened targets
- Underground targets
- Improved camouflage
- Low signature air targets
- Mobile or relocatable targets
- Non-lethal and very low collateral damage effects



Weapon requirements criteria

- Primary
 - Target type
 - Threat level
 - Targeting
 - Collateral / ROE / Political
 - Environment
 - Roles
- Secondary
 - Distance / time from base
 - Air power dynamics
 - Intensity
 - Support
 - Interoperability



Target types vs roles vs platforms mapping

Role	Sub-role	Mission	Buildings	Bunkers and hardened targets	Underground	Bridges	Mobile radars	Fixed Radar	Armoured Vehicles	Non-armoured vehicles	Field Equipment, machinery and support material	Personnel	Electrical/Communications Infrastructure	Railway lines	Paved surfaces	POL Tanks	Missile on launcher	Surface vessels with AD	Surface vessels without AD	Submarines	Fighters	Transports	UAVs	Missiles in flight	Small, slow/fixed wing	Helicopters	
Counter Air	Offensive	OCA Attack	✓	✓	✓		✓	✓	✓	✓	✓		✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	
		Sweep																				✓					
		Force Protection																				✓					
	Defensive	SEAD	✓	✓	✓		✓	✓	✓	✓	✓		✓				✓	✓									
		Active																			✓	✓	✓	✓	✓	✓	
Strike	Land	Land	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓										
		Maritime	Independent Surface Warfare																✓	✓							
			Independent Under Sea Warfare																			✓					
Aerial Mining	Offensive																	✓	✓	✓							
	Defensive																		✓	✓	✓						
Offensive Air Support	Land	CAS	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓	✓										
		BAI	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓	✓										
	Maritime	Surface Warfare																	✓	✓							
		Under Sea Warfare																			✓						
Information Operations	Information Warfare	PSYWAR										✓	✓														



Analysis criteria

- Weapon
 - range
 - accuracy
 - speed/manoeuvrability
 - signature
 - counter-countermeasures
 - interoperability
 - selectable effects
 - specialised weapons
 - directed energy
 - non-lethal
- Enabling system
 - Targets
 - Threat
 - Platform
- Notes:
 - selectable effects included multi-payload, variable fusing
 - specialised weapons included multi-targeting, to contain wmd, loitering, deep/hard, EM disruption



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Desirable weapon characteristics

- Precision
- Selectable
- Size
- Selectable Fusing
- Penetration capability
- Jam resistant
- Third Party Targeting capability
- Range
- Commonality in planning processes
- Affordable
- Network enabled
- Informs BDA process
- Non-lethal options
- Directed Energy



Critical support requirements

- Intelligence
- Targeting requirements
- Logistics
- Infrastructure
- Training
- Interoperability
- NCW considerations



Issues to resolve

- F-18 → JSF
- Harpoon follow-on
- GPS guided munitions
- SDB
- Hellfire
- ASRAAM



ADWR Conclusion

- System Roadmap
- Focuses research
- Entry to Defence Capability Plan

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Questions?



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