

INTRODUCING A FIFTH GENERATION FIGHTER – THE AUSTRALIAN EXPERIENCE

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Aim is to describe how Australia arrived at its decision and give insights that might be relevant to the upcoming Swiss decision

- Decision making for the 'New Air Combat Capability'
- Australian industry involvement
- Some challenges in managing the 'New Air Combat Capability'/F-35 program
- Driving the '5th Generation' cultural change



Australia has been experiencing the challenges in introducing a new air combat capabilityabout 10 years earlier than Switzerland!

Differences:

- Australia has about double the fighter assets
- Has employed a 'maritime strategy' for 40+ years
- Need 'expeditionary' capabilities just to get around a country 188 times the size of Switzerland!

Similarities:

- Air power and protection of sovereign airspace is key
- Both aspire to impartial and comprehensive procurement processes
- Air-to-air capabilities of highest importance, but land strike and maritime strike also important
- Seek high end capabilities – in diminishing and now relatively small numbers, but which be retained for decades



4000 kms



**Decision making for
the ‘New Air Combat
Capability’**

The Australian major capability acquisition process has evolved since the F-35 Program, but the overall process is still similar



The Air 6000 ‘New Air Combat Capability’ Program started in 1999, with the aim of replacing the F-18 and F-111 from about 2010 through an ‘open’ competition

- In the 1990s the PWD our air combat fleet was 21 F-111s (1973-) and 71 F-18s (1985-)
- The Planned Withdrawal Dates (PWD) for the F-18 and F-111 were then 2010
- In 1992-94 – Australia bought 15 additional surplus US F-111s and looked at delaying the F-111 PWD to 2020 (and replace the F-18 first)
- Air 6000 established in 1999 to consider variety of options to replace F-18 and F-111



Process perceived by some to have been ‘cut short’ when Australia joined the F-35 System Design & Demonstration phase from 2002

- 27 Jun 2002 – Australian Defence Minister (Hill) announced Australia would join the System Development and Demonstration Phase of F-35
 - get access to better information about the F-35
 - better position Australian Industry
- Nov 2006 (First Pass)– the F-35 was approved by Government as the preferred aircraft type – Initial Operating capability was pushed back to 2018 (due internal funding considerations)
- In 2007, Government decided to replace the F-111 early with ‘interim’ F-18F aircraft to avoid a ‘capability gap’ pending the arrival of the F-35



Minister Hill and US Secretary of Defence Rumsfeld, 2002



Australian F-18F

The selection process has been long – 1999-2009 (10 years) for initial funding approval, and 1999-2014 (15 years) for approval to replace the entire F-18A/B fleet

- 2009 – Government agreed option for 14 x F-35 at cost of 2.4B CHF
- 2010-11 – 2 year delay in the International JSF program schedule
 - Australian F-35 IOC now within 9-12 months of US IOC (both in 2018 at time)
- 2012 – To assist with Government budget, there was a 2 year delay in Australian F-35 program
 - This also assisted by moving Australian IOC to 2020 – eg much later than USAF F-35 IOC
- In 2014, Defence gained Government approval for 58 F-35s at cost of 11.5B CHF



Australian Defence Headquarters in Canberra, Australia

Despite the 2002 entry to F-35 SDD, Australia conducted a thorough analysis of air combat options against Australian requirements

- Australia has a 'multi-role' requirement:
 - Maritime strike
 - Land strike
 - Air control/air defence
- 5th Generation needed - regional 5th gen capabilities by 2030+
- By 2005, Defence Science Technology Organisation staff had sufficient F-35 data to evaluate the aircraft contenders (plus F-22) against representative scenarios and missions
- Ultimately, the F-35A had best overall performance
- Cost not the driving factor at this stage!



The decision to acquire up to 100 aircraft was driven by desired performance in operational scenarios

- Australia's requirement for fighters is based on 'defence of Australia and Australian interests'
- Need to be able to operate in two areas and maintain a training capability.
- Two squadrons were required for each area of operations – one to operate and one to replace it
- Thus 4 operational squadrons and a training squadron were required
- The result was actually just over 100
- 'Up to 100 aircraft' agreed by Government in 2000 (White paper 2000)

Function	Aircraft
4 x op squadrons	48
4 x op squadron maintenance	16
Training squadron	16
Training squadron maintenance	6
Attrition and fatigue	14
Total:	100



Once the F-35A was selected, the decision was made to join the Program as a Partner for both operational and industry reasons

- In 2005, Australia joined the F-35 Production Sustainment and Follow-On Development (PSFD) Program as a Partner to:
 - Gain more 'inside' knowledge of 'cost-schedule-capability'
 - No commitment to buy at that stage (it was not until late 2006 that Government approved F-35A as preferred type)
 - **To position for Australian industry benefits**



Deputy Secretary England and Minister Nelson, Minister for Defence sign the F-35 PSFD agreement in 2005



**Managing Australian
industry involvement**

Achieving good Australian industry outcomes was and is a central tenet of the JSF Division - and the key Government expectation

Capability Outcome

Deliver a JSF air combat capability that is effectively integrated into Air Force, ADF and coalition environments, providing a catalyst for change in the way we fight and win. The JSF capability will be underpinned by four pillars:

Lethality

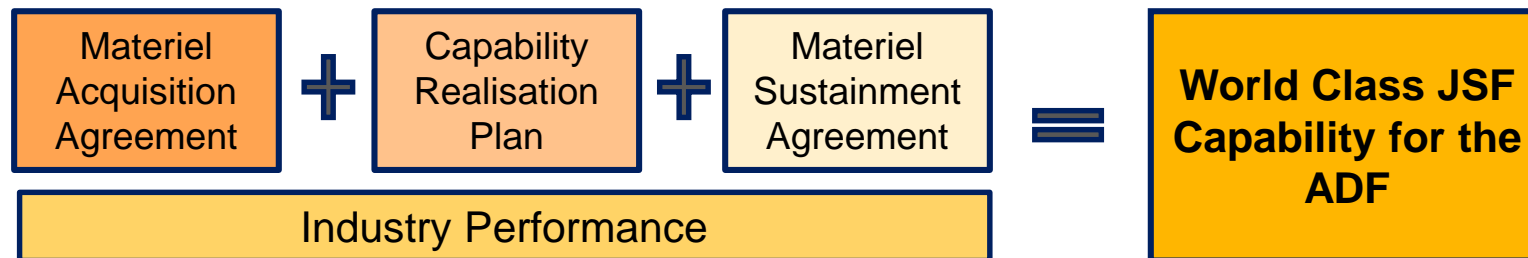
Survivability

Sustainability

Affordability

Industry Outcome

Deliver a strong Industry base that supports the JSF capability and provides Australia with long term economic benefit.



Industry is a fundamental input to Defence capability! Without it Australia can not deliver the full 5th gen capability

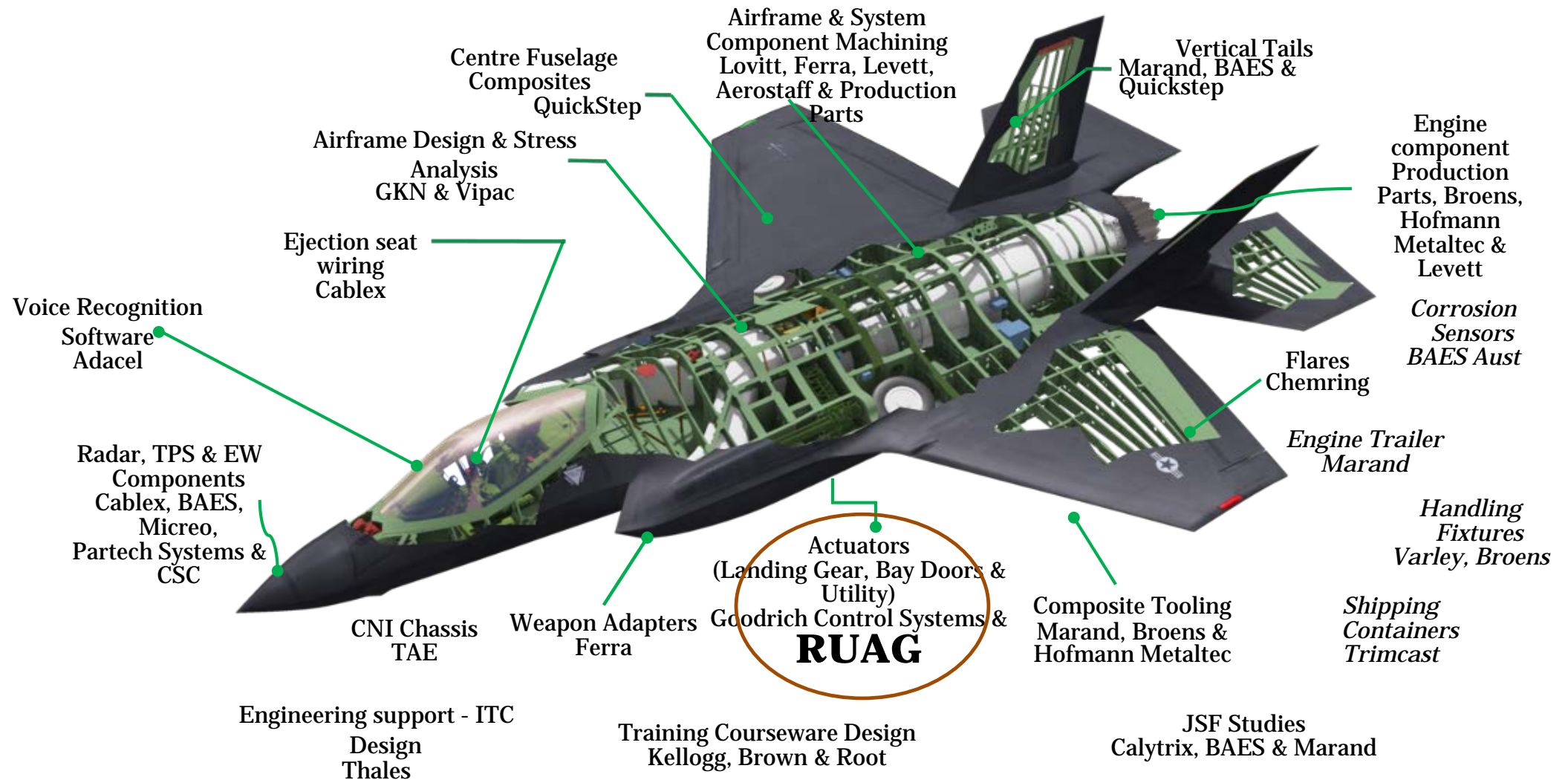
Defence and Department of Industry established a large industry team with the aim of driving good Australian industry outcomes

- Agreed an industry plan with Lockheed-Martin and Pratt & Whitney as the OEMs
- ‘Strategic’ (ours to lose) and competitive work
- Worked to build up Australian industry capabilities to be ready to bid
 - Assisted with training programs and regular program ‘opportunity’ updates
 - Provided support to Australian companies engaging in the US
- State Governments also very supportive of their locally-based companies
- Established a JSF Industry Support Program
 - 50% Government grant and 50% by company
 - Used to make industry more competitive
- Focus now is on sustainment
- Australia hosts a regional support centre
 - BAE – airframe and TAE - engines



Minister for Defence Materiel (far right) and First Australian part (Lovett Engineering) for an Australian F-35 (AU-1), 2012


Industry has contracts to date in the production phase (A\$.8B) with several \$B expected - now looking to the sustainment phase



RUAG has a large presence in Australia and has gained production work as well as starting to win sustainment responsibilities

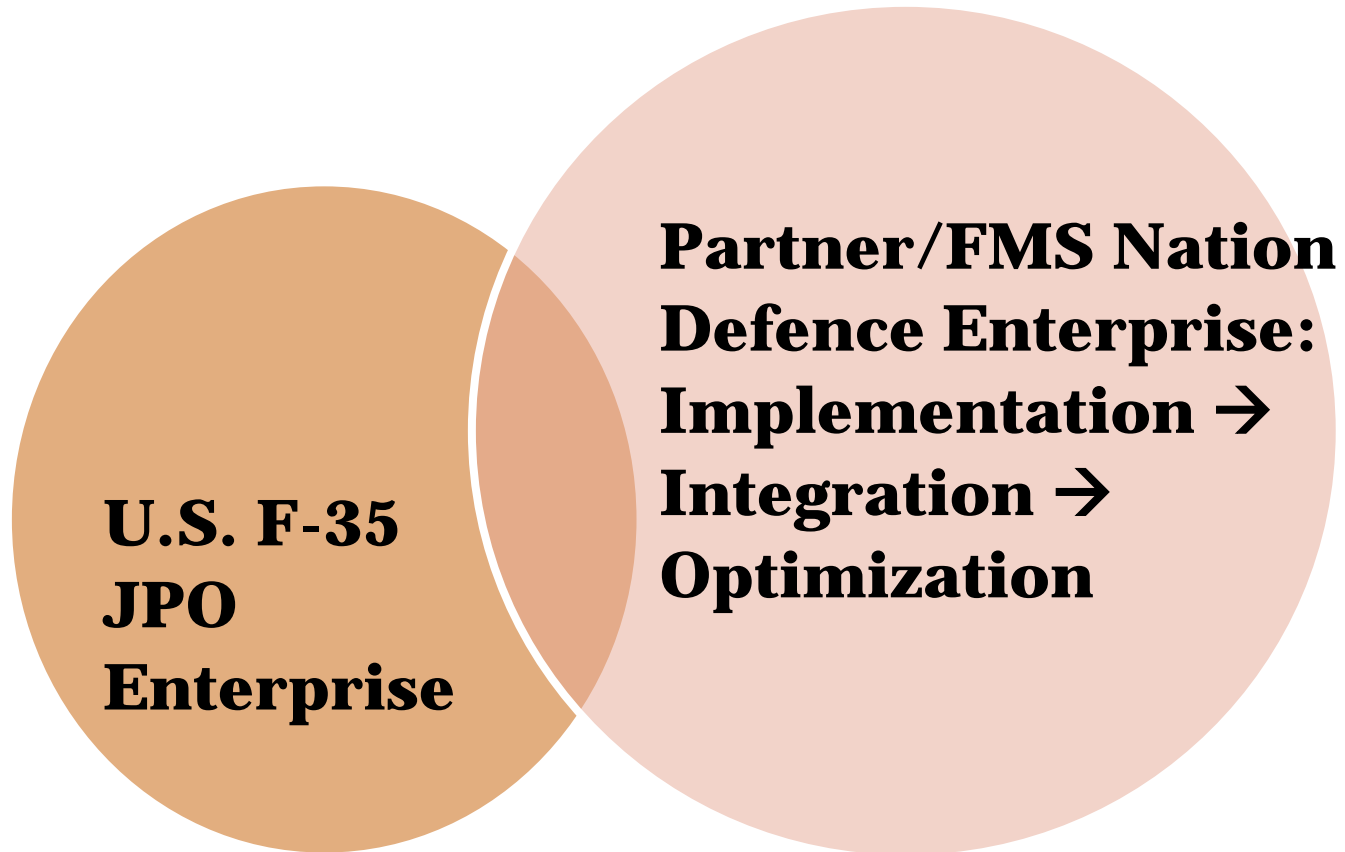
- **Subsidiary of RUAG, Switzerland**
- **Has secured contracts to 2021**
 - Manufactures actuators for F-35 landing gear (global sole source on carrier variant; dual source on other variants) and F-35 weapons bay doors (100% global source)
 - Provides metal processing and finishes for Australian F-35 metal components
 - Has 'Preferred Business Partner' agreements with UTAS (UK), UTAS (US), and National Machine Group
- **In November 2016, Assigned F-35 Component MRO&U responsibility for components in the following categories:**
 - Valves
 - Auxiliary Power System
 - Hydraulic, Pneumatic, Pneudraulic, Hydro-Mechanical
 - Landing Gear, Wheels & Brakes



A man in a green flight suit is working on the underside of an F-35 fighter jet. The jet is on a tarmac, supported by yellow chocks. The man is standing next to the aircraft, reaching into an open panel. The background shows a clear sky and a building.

Some challenges in managing the New Air Combat Program

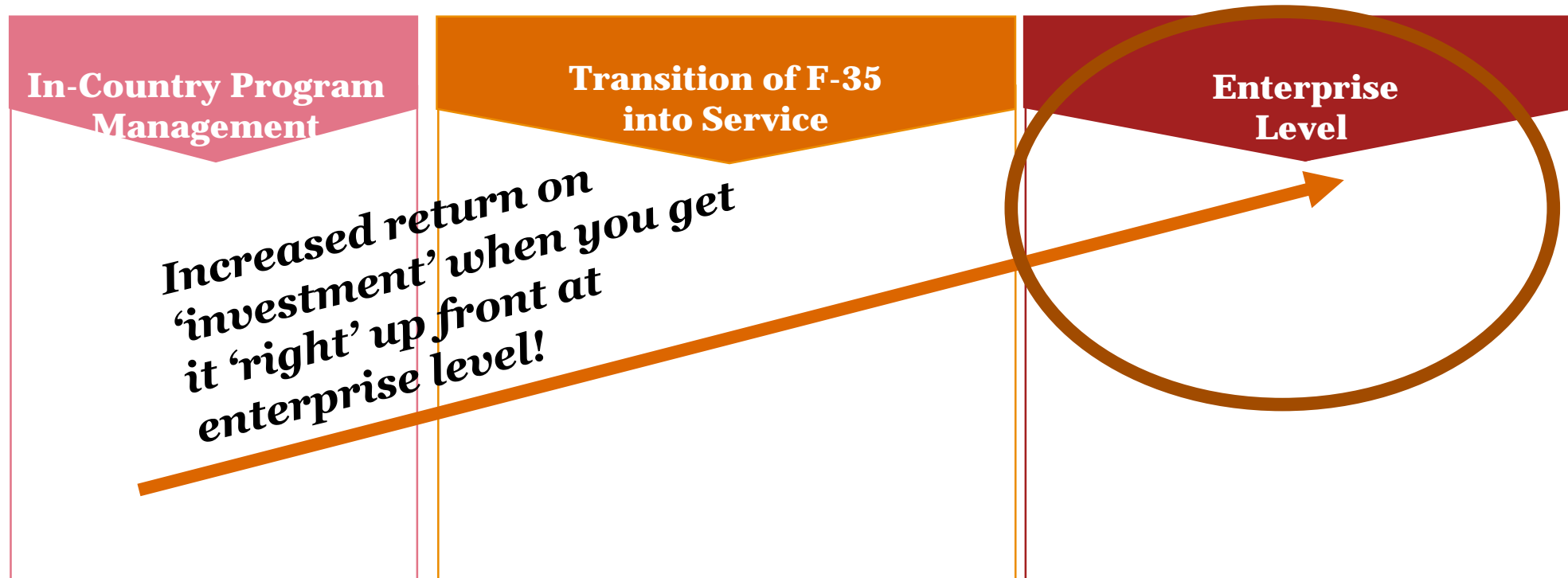
Australia is focussing on the parts of the program that the JSF Program Office is not delivering, rather than on the aircraft itself!



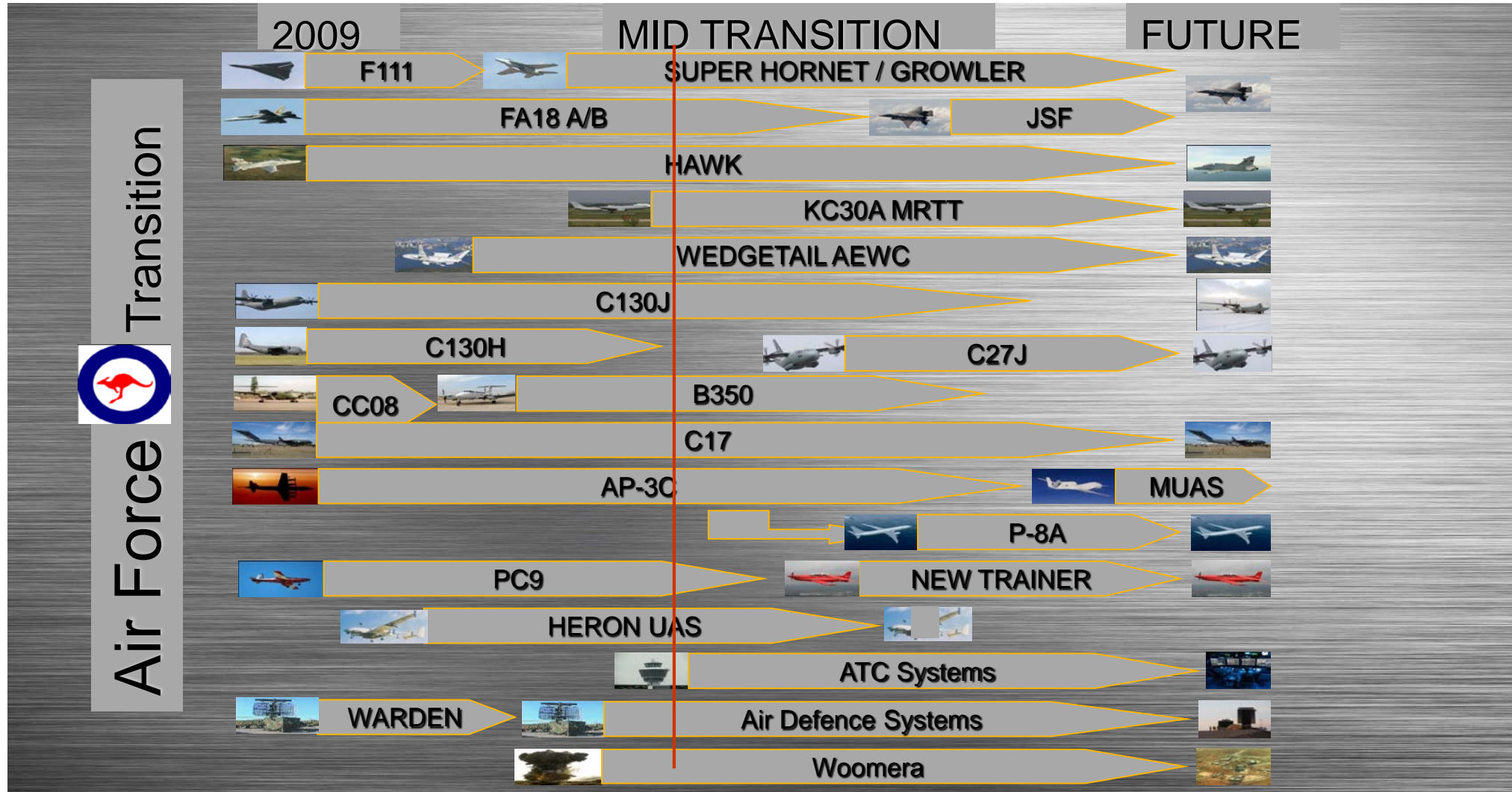
And even within that focus - the greatest challenges (and reward) in transitioning to a new aircraft will be the enterprise-level ones

Eg

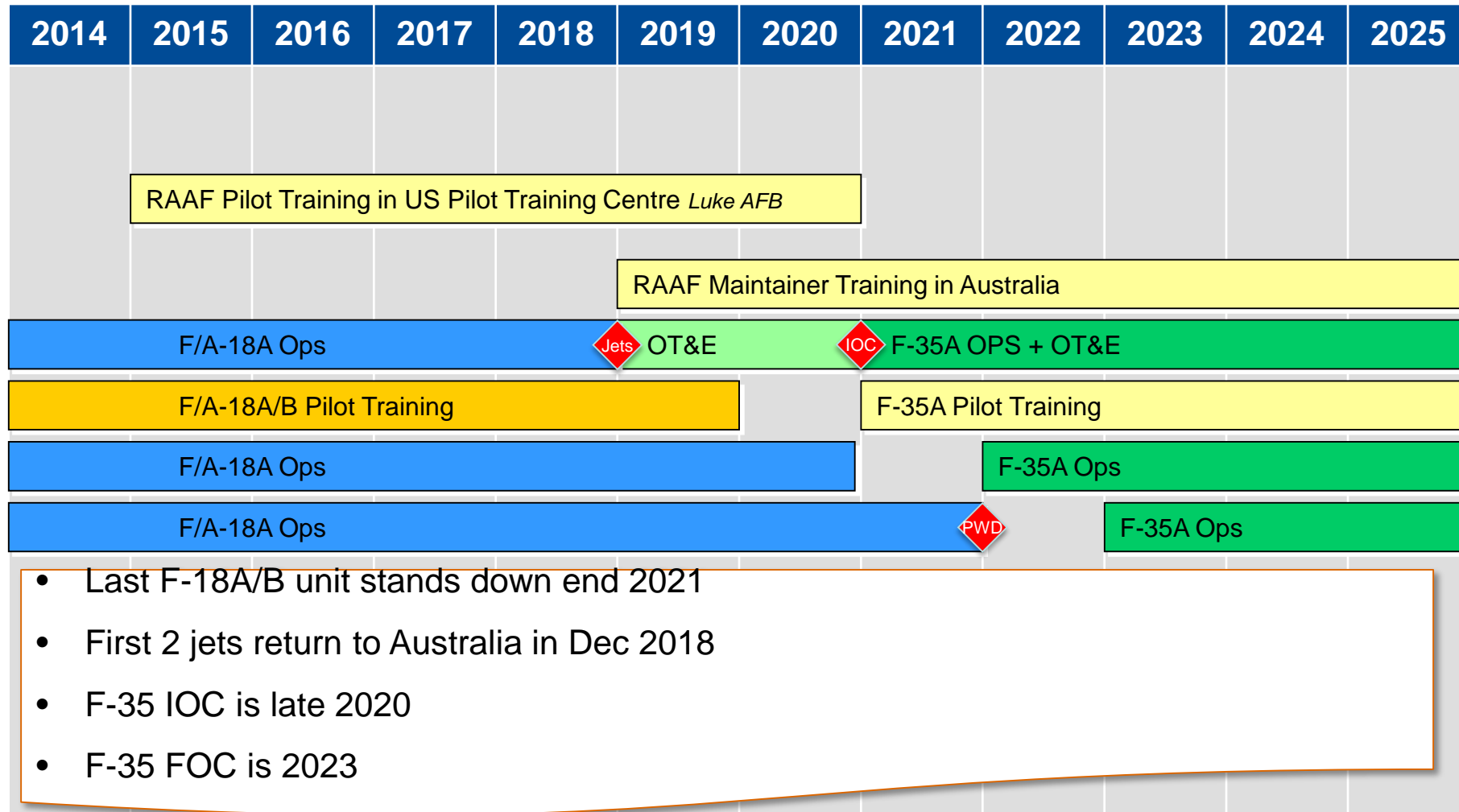
- *Integration with existing logistics systems and Defence information systems*
- *Demands on intelligence mission data and the intelligence system*



The Air Combat Transition has many moving parts...and there are many competing priorities! And lots of interdependencies that must be proactively managed!



Careful transition planning is needed to ensure no 'capability gap' while transitioning – especially with a fixed size workforce!





**Driving the '5th
Generation' cultural
change!**

Why is the F-35 a catalyst for a 5th Generation cultural change?



4th generation F-18

=



5th generation F-35

=



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The RAAF's competitive advantage in the future will be based in part on technology – but also on leveraging 5th Generation across the ADF!

Spiral development of software and hardware will help

But 5th Gen culture/innovation is likely to be the key competitive advantage that is enduring!

So what for the RAAF?

We need to instil a '5th Gen innovative' culture for the future!

Plan Jericho is 'how' the RAAF will do that!

It is intended to turn theory into reality

The 5th Generation-driven change does not need to wait until aircraft are delivered....much initial thinking and innovation can be started ahead of the arrival of new platforms!



1. Enhance the Air-Land Integration Capability
2. Enhance Air Force's Maritime Operations Capability
3. Establish an Air Warfare Centre
4. Enhance Air Force's C4 Capability
5. Optimise Air Force Contribution and Access to the Common Operating Picture
6. Grow the Air Force Cyber Capability
7. Develop an Integrated Fire Control Capability
8. Enhance Air Force's Air Base War Fighting Capability
9. Implement an Air Force Collective Training Plan
10. Enhance Air Force's Live, Virtual and Constructive and Ranges Capability
11. Integrate Logistics into the Battlespace
12. Develop Capacity to Manage Air Force Security
13. Develop Air Force's Strategy Driven Operating Model
14. Establish an Air Force Integrated Capability Management Process
15. Develop a Workforce Management Strategy

Summary: The Australian lessons learned in the delivery of a New Air Combat Capability are universal – but are still a work in progress!

- Buying a fighter aircraft is a ***complex activity*** and it will take many years – beware short cuts!
- You are not buying for the present – you need a capability that will be ***relevant in the future!***
- Establish an ***integrated program*** management approach focused on ***Program outcomes***
- Identify and map ***interdependencies between all elements of the Program (including enterprise level)*** to best manage the ***critical path*** for the Program
- The aircraft have already been designed....and so focus on what counts – ***transition to service and integration into the broader Defence eco-system.***
- Determine what the National Program Office can ***control*** and what it can ***influence***; and provide staff with a toolkit of approaches to operate effectively in both contexts
- You are not just replacing a fighter – you are changing the way you will fight in the future if you allow a ***seamless, integrated and networked 5th Generation force*** to be realised
- You have many stakeholders at all levels – ***Communication is critical***
- ***Industry is a fundamental input to Defence capability***

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