A350 XWB
Achievements & Path Forward

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London
11 December 2014
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This presentation includes forward-looking statements. Words such as “anticipates”, “believes”, “estimates”, “expects”, “intends”, “plans”, “projects”, “may” and similar expressions are used to identify these forward-looking statements. Examples of forward-looking statements include statements made about strategy, ramp-up and delivery schedules, introduction of new products and services and market expectations, as well as statements regarding future performance and outlook. By their nature, forward-looking statements involve risk and uncertainty because they relate to future events and circumstances and there are many factors that could cause actual results and developments to differ materially from those expressed or implied by these forward-looking statements.

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A350-900 certified & ready for EIS

Learn lessons to meet delivery commitments

Preparing the future by boosting competitiveness
A350 XWB is Certified on Time (as Committed in 2012) and Ready for EIS

EASA Type Certification
Awarded on 30th September 2014

FAA approval on the 12th Nov
On track for first customer delivery end-2014
A350-900 Certification in a Record Time: 14.5 months after First Flight

Flight test hours for certification as planned
Consistently ahead of plan
Aircraft availability very good from day 1
2,600 FH flown in 680 flights for Type Certificate

Certification tests passed first time thanks to airframe & engine maturity
Flight envelope fully opened (Stalls, Flutter testing, VMU, …)
External noise, HIRF testing MERTO test.

Cabin comfort validated through early tests on MSN2
Positive passenger feedback throughout Early Long Flights and route proving. Wide spacious cabin. Low cabin noise

Functional & Reliability tests done with mature systems at certification standard
Route proving On time departure for 20 days
26 flights, 14 airports >180 FH 81,700 nm

VMU : Minimum unstick speed - MERTO: Maximum Energy Rejected Take-Off test

A350 Flight Hour evolution

ALL A350
TARGET AVG A350
ALL A380

01/06/2013 01/12/2013 01/06/2014 01/12/2014

High Altitude : Cold, Hot & Dry, Hot & Humid +45°C to -40°C in the McKinley chamber
Demonstrating Reliability at Certification Enabling ETOPS

- 1st A/C type certified “Beyond 180 min”
- 180 minutes ETOPS in basic specification
- 300 or 370 minutes ETOPS available as options
Steep Ramp Up in FAL & pre-FAL with High Focus on Quality

Moving from development to deliveries

- 12 customer aircraft progressing in FAL (up to MSN 18)
- A350-1000 FAL start early 2016
A350-900 certified & ready for EIS

Learn lessons to meet delivery commitments

Preparing the future by boosting competitiveness
Lessons Learned from Airbus Programmes and Industry

Airbus Programmes

- Flexible customisation appreciated by customers but can have negative industrial impact (e.g. A380)
- Travelled work volume can be difficult to reduce
- Complex Supply chain with bottlenecks and performance issue

Industry

- Plan a quick but achievable ramp-up
- Ensure highest possible level of maturity at certification (e.g. techno issue)
- Use best practices from outside aerospace (e.g. automotive)
What Makes the Difference on A350 XWB? Applying Lessons Learned

Program management
- Alignment programme / functions with trust of Top Management => **Speed**
- Risks & opportunities led at head of Programme level => **Anticipation**
- Continuous de-risking of contracts with customers => **Customer confidence**

Communication
- Planning transparency to enable alignment => **Efficiency**
- Very regular communication with customers, markets and suppliers with explanations => **Trust**

Technology & Maturity
- New technology risks (stringers, root joints) identified and mitigated
- Quality Gates and Stop & Fix approach to gain speed in FAL
- Airline-like environment during flight test campaign to accelerate operability
Airline like Environment: AIRLINE1 & Airline Office – Key Enabler for Maturity

Focus on delivering an A/C with the highest dispatch reliability:
Prepare **rapid solving** of in-service issues (TTGF*)

**AIRLINE Office** – Voice of Customer
- Providing the airlines’ experience
- Participating in flight test a/c operations
- Ensuring direct feedback to Airbus
- Contribute to validation of customer support system
- Contribute to on-aircraft verification activities

**AIRLINE1** – Mirror airline operations

**Aircraft Maturity**
- Product Maturity Items (PMI)
- Operational Test Campaign (OTC)
- Tech Pub & Ground Support Equipment (GSE)

**Aircraft Operability**
- Dispatch Operations
- Built In Test (BITE)
- Maintenance Efficiency
- Component removal

* TTGF: Time To Get a Fix
What Makes the Difference on A350 XWB? Applying Lessons Learned

- Catalogue policy with Enabling platform: => **High Reuse / Leadtime reduction**
- Qualified BFE suppliers
- Customer Definition Center for definition freeze

- Reliable Extended Enterprise using common development tools & process
- Industrial harmonisation across Extended Enterprise
- Steep ramp-up but limited aircraft in FAL at certification => **Limits Retrofits**
- Pro-active development of critical suppliers
Customisation & Industrial Requirements Reconciliation

Catalogue with Mix of Pre-developed Modules Fitted for Flex Zones

Modular Offering with almost limitless combinations
Common Design Environment: New way of Working

DMU (Digital Mock Up) as Master throughout the Value Chain

Same Process, Methods, Tools and Organisation
Unique DMU shared by all contributors
A350-900 certified & ready for EIS

Learn lessons to meet delivery commitments

Preparing the future by boosting competitiveness
Profitability Protection through Production Costs Convergence

RC Convergence

- Buy
- Subsidiaries
- Make

Design changes (Design to Cost)
Commercial levers on Buy
Simplification of manufacturing processes

Initial Target
Current Target set Q4 2014

- Early a/c learning curve
- Control
- Concession Flow
- Simplification, Design to Cost,…
A350-1000 Design Benefits from A350-900 Experience

- A350-900 Flight Test data continuously analyzed for A350-1000 design optimization
- A350-900 static tests results used to optimize A350-1000 structure
- A350-1000 incorporates latest innovations
  - CFRP Doors surrounds
  - Pylon composite spar
- Building on A350-900 experience and successful platform
- Extensive use of simulation on A350-1000 to reduce tests
Preparing A350-1000 Industrialisation On Time

Wing Covers - 1st Ply

Centre Wing Box – 1st Metal cut // 1st Ply

UTAS MLG manufacturing started and Scale 1 Mockup

TrentXWB-97 engine ran for 1st time

CFRP Doors Surrounding structure - Barrel 1B
Next Steps

- Successful start of operations with Qatar
- Deliver ramp up within cost targets
- Continue to apply lessons learnt to keep A350-1000 on track

**A350 XWB: boosting Airbus competitiveness**
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