

A350 XWB

Achievements & Path Forward

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Safe Harbour Statement

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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.

High Altitude : Cold, Hot & Dry, Hot & Humid +45°C to -40°C in the McKinley chamber



Cabin comfort validated through early tests on MSN2

Positive passenger feedback throughout Early Long Flights and route proving. Wide spacious cabin. Low cabin noise

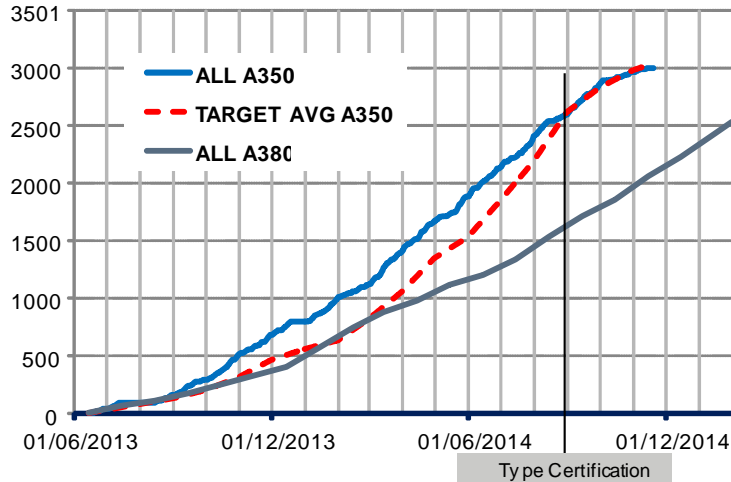


Functional & Reliability tests done with mature systems at certification standard

Route proving On time departure for **20 days**
 26 flights, 14 airports
 >180 FH
 81,700 nm



A350 Flight Hour evolution



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

Demonstrating Reliability at Certification Enabling ETOPS

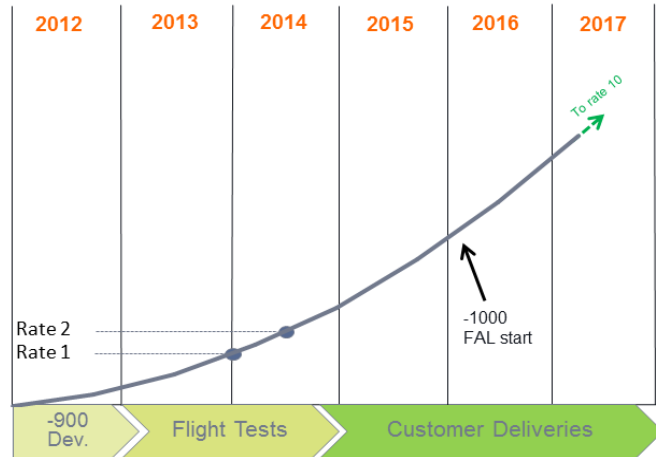
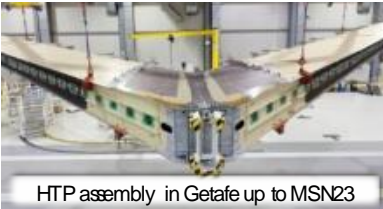
- 1st A/C type certified “Beyond 180 min”
- 180 minutes ETOPS in basic specification
- 300 or 370 minutes ETOPS available as options



A350 XWB offering **370min ETOPS** at **EIS**

Flying the most **efficient** twin-engined routings

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



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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



* TTGF: Time To Get a Fix

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

What Makes the Difference on A350 XWB? Applying Lessons Learned

Customisation & Industrial Requirements Reconciliation

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

Supply Chain, Methods & Rools

- 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

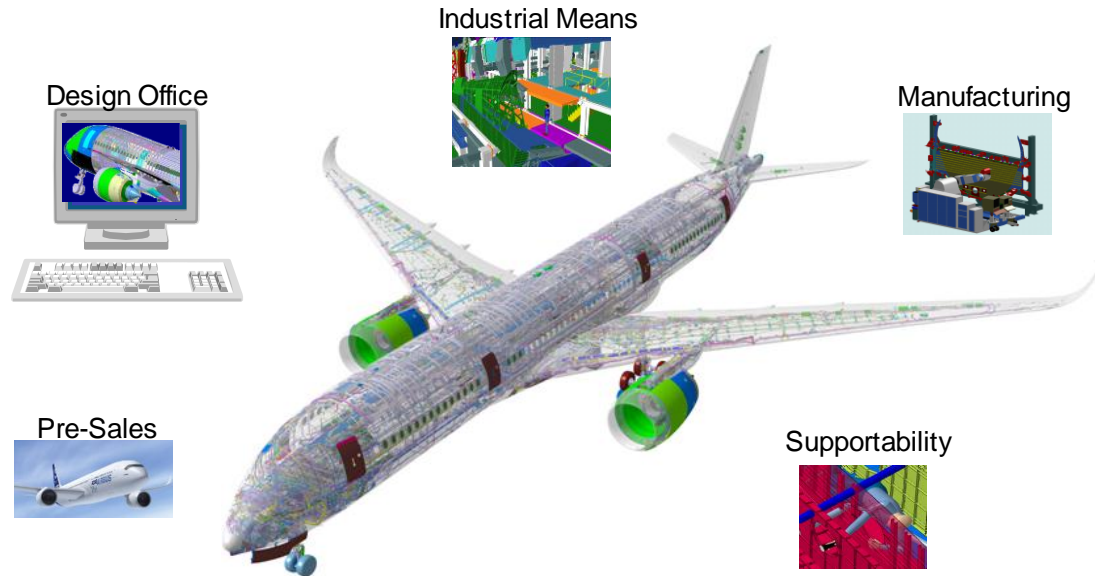
Catalogue with Mix of Pre-developed Modules Fitted for Flex Zones



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***



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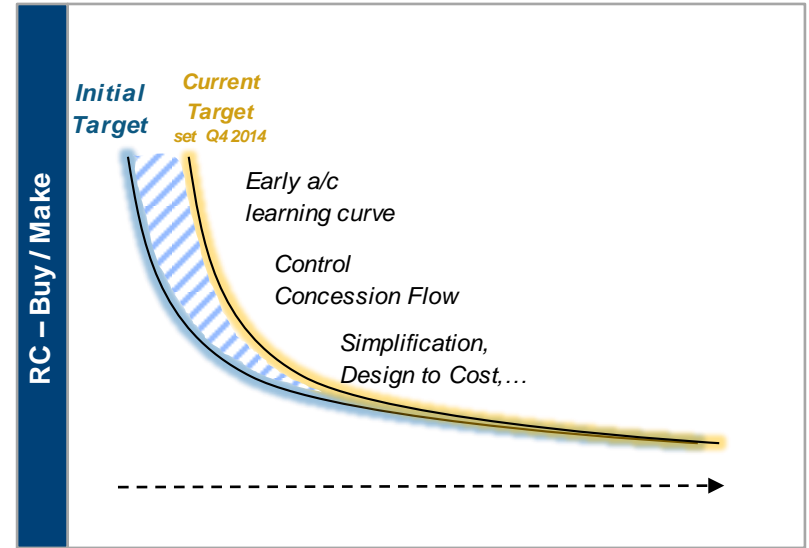
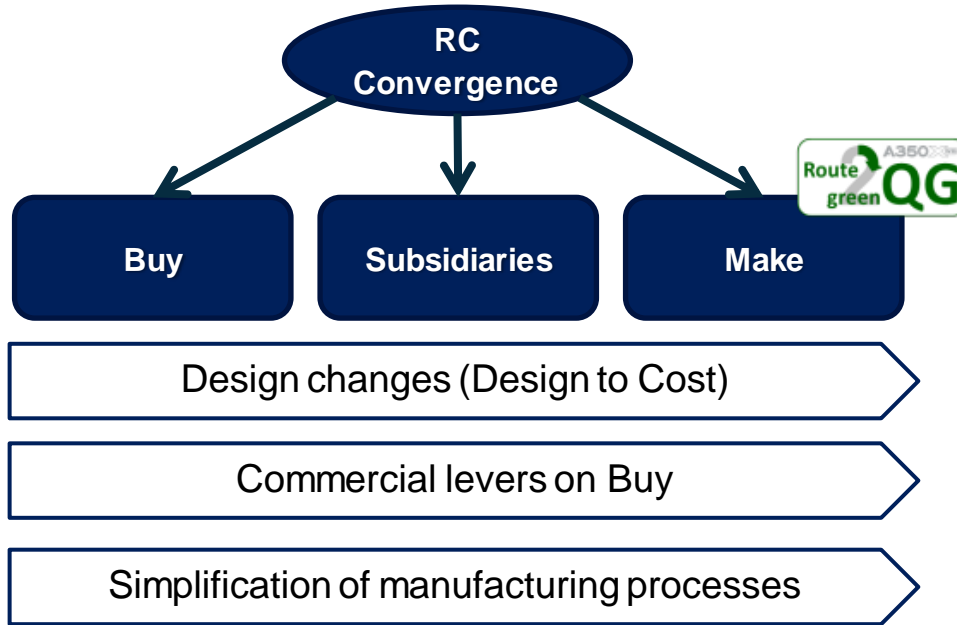


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Profitability Protection through Production Costs Convergence



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



TrentXWB-97 engine ran for 1st time



CFRP Doors Surrounding structure - Barrel 1B



UTAS MLG manufacturing started and Scale 1 Mockup



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

A350X^{WB}

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