Didier Evrard
Executive Vice President Programmes

Airbus Innovation Days
Keeping our product at the leading edge
The most comprehensive range of aircraft: Four product lines, customer support and services

- Ramp up A320
- Ramp up A350
- Transition to A330neo
- Passengers’ choice A380

Committed to continuous development keeping Airbus aircraft ahead of the competition with Airbus **Customer Services** supporting aircraft performance and operations throughout their lifecycle.

**Leveraging synergies** across all programmes and services
Protect final stage of deliveries and improve Customer Confidence

Key Customer Priorities

- Transparency & communication
- Stable delivery planning
- Empowered focal point
- Better product quality
- Improved responsiveness & Right First Time fixes

“READY to OPERATE”

4 MAJOR AXIS

- Aircraft readiness
- Robust Planning
- Customer mindset
- Accelerated Feedback loop
A350 XWB – Driving the ramp up

- **2016 deliveries** target at 50+ A/C
  - “Protect the ramp-up” project in place, including Supply chain
  - Around 40 A/C in FAL process

- First **A350-1000** delivery planned 2nd half 2017
A350-900: ULR enables SIA to resume non-stop flights to the US

- Increase in Maximum Take-Off Weight (280t)
- Adapted Cabin & Cargo Layout
- Composite Door Surrounding Structure
- Modified fuel system to increase fuel carrying capacity
- Reinforced Main Landing Gear
- Aerodynamic improvements

A350-900 ULR

First delivery 2018
The world’s longest commercial passenger route.
A 19-hour flight from Singapore to New York
Delivered to all corners of the globe

Qatar Airways
8 A/C delivered
first commercial flight
15 January 2015

Vietnam Airlines
4 A/C delivered
first commercial flight
3 July 2015

Finnair
5 A/C delivered
first commercial flight
9 October 2015

TAM
3 A/C delivered
first commercial flight
25 January 2016

Singapore Airlines
3 A/C delivered
first commercial flight
8 March 2016

Cathay Pacific
1 A/C delivered
first commercial flight
1 June 2016

Just delivered!
29 routes worldwide, 2 million passengers since EIS

24 In Service A/C
6 Operators
29 Routes
28 Destinations
8 500+ Flight cycles
12h+ Daily utilization

As end of May 2016
A350 XWB operators’ satisfaction worldwide through ad-hoc support

- A350 XWB in service fleet reached an Operational Reliability of 97.8% in last 3 months
- Time To Get Fix (TTGF) improved to average of 9 months
- Service Bulletins implementation accelerated in Production
- One step beyond required “Anticipation Boost” to eradicate In-service issues Inflow

A350 XWB Ad-hoc support

- A350 OPS Center
- Accelerated spare deployment
- Logistics & transportation
- AOG
- Reduced TTGF
- Specific Health Monitoring

Close to 2000000 passengers have enjoyed the Xtra experience
A350-1000: a new chapter of innovation to shape the future

First A350-1000 in FAL #MSN59

All 3 test aircraft in FAL

First new 6 wheel bogie Main Landing Gear fitted on the MSN59

Rolls-Royce Trent XWB 97 engine for MSN59
A350-1000 a new chapter of innovation for the future

FTB campaign and Test means running to support Flight Clearance Engine delivery to FAL Mid 2016

First Flight by Q4 2016

A350-1000

10 customers
181 orders

- Air Caraïbes
- Air Lease Corp.
- Asiana Airlines
- British Airways
- Cathay Pacific
- Etihad Airways
- Japan Airlines
- Qatar Airways
- TAM
- United Airlines
A330 Family Best selling widebody in the past 2 years

- 242t for the -200 delivered on time
- A330ceo secured over 100 new orders in 2015, filling the production line ahead of the introduction of the A330neo in late 2017
- Completion and Delivery Centre in China launched
A330neo suppliers and Airbus sub-assemblies on track for FAL

- Pylon (St Eloi)
- Air Inlet (Nantes)
- Central wing box (Nantes)
- Wing (Broughton)
- Nacelle (Aircelle)
**A330neo Programme on track**

- **2014**
  - Launch
- **2015**
  - Concept Freeze
  - Design Freeze
- **2016 & beyond**
  - Engine 1 Assembly start
  - Engine 1 Test
  - Flight Test Campaign

Airbus Innovation Days - May 2016
A330 Family non-stop innovation to enhance airline profitability

240min ETOPS
More direct routings

RNP AR
Optimised flight paths

FTIS
Flammability reduction

FMS 1A
New FMS release

AP/FD TCAS
Collision avoidance systems

Regional
Lower operating costs and MTOW

Dual HUD
Improved situational awareness

AIRSPACE
More seats, New cabin

2009
Upgraded Engines
Improved SFC/maintenance

2010
235t/238t MTOW
New weight variant

2011
ATSAW
Improved traffic awareness

2012
FLS
FMS landing system

2013
OANS & ROPS
On-ground navigation and runway overrun prevention

2014
GBAS
Ground based Landing

2015
Increased range and new cabin features

2016
242t MTOW
New engines new sharklets

2017
A330neo

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New A330neo
Airspace interior

A350 XWB style
New larger overhead bins
New entrance area

Efficiency
Space Flex/Smart Lav
10 more seats

Comfort
18in wide Airbus comfort economy seat

Quietness
An Airbus trademark
A380: leverage market development platform

- Stable level of deliveries planned in 2016 towards past years.
- Product now mature with improved dispatch reliability at 98.7%
- Industrial breakeven achieved and stabilized
- Innovations enablers through **incremental developments**, Cabin improvements, Reconfiguration capability and Maintenance Programme optimization
A380 non-stop innovation since entry into service

- Brake to Vacate & Runway Overrun Protection System
- Improved instrument landing system, Auto pilot TCAS
- FAL cycle reduction
- Improved SFC
- Wing aero improvements
- System aero improvements
- More seats Revamped cabin


- 500kg weight reduction
- Head Up Display
- Forward lower deck crew rest
- 1,000kg weight reduction
- Internet & GSM access
- Increased design weights
- Improved SFC
- Combined crew rest
- Maintenance program escalation
Sidewall stowage removal and business seat positioning

New upper deck sidewall lining

+10
Business seats

+$6m
annual revenue
Beluga XL  More capacity to meet ramp up challenges

- Based on A330
- Design to cost
- 40% increased efficiency on A350 XWB transport
- Transports 2 A350 wings
- Payload increase by 12%

Development 2015-2016
Conversion start Q1 2017
First flight 2018
Flight test 2018-2019
First aircraft Certification & EIS mid 2019
Innovative project management – Beluga is the Airbus lab

A 5-year development cycle at minimum cost

• One team one office

• Open book approach, more transparency

• Enhanced DMU portal – 3D Juump viewer
A320 Family non-stop innovation to enhance airline profitability

**Watermark**: Airbus Innovation Days - May 2016

**Legend**:
- Lower Maintenance costs
- Integration of IFE and connectivity
- Up to +6 seats
- Up to +6 seats
- 35k Thrust
- Increasing seat count on A321 to 240
- Improve runway occupancy
- Improve runway occupancy
- 15% fuel burn reduction
- A320 189 seats
- A321 230 seats
- Improved pilot operations
- Improved low speed performance
- 4000nm
- 2% further fuel reduction
- Full LED
- A321LR
- P&W Advantage

**Timeline**:
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020

**Key Features**:
- Space-Flex V2
- A321 High & Hot
- Cabin-Flex
- Brake-to-Vacate*
- Full LED

**Subject to launch**

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*Confidential and proprietary document*
A320neo Worldwide success

4,515 Firm orders
82 Customers
60% market share

end April 2016
Source: Airbus
Sharklets & New Engines
- 15% lower fuel burn

Increased Cabin Efficiency
more seats

A321LR*
Up to 4,000nm range

New bleed system
Higher reliability
Lower maintenance cost

Updated MPD**
- 5% lower aircraft maintenance cost

Landing gear
+ 20% more time between overhauls

95% airframe spares commonality with the A320

Lower operating costs with more revenue potential

**Maintenance Programme Directives
Promises proven in service

-15% **Fuel Burn**\* confirmed

**Range** +500nm confirmed

Better **Low Speed** performance

Shorter **Time to Climb** than A320ceo

**Aircraft weight** on spec
150kg lighter than launch targets

Better **Noise margin**
-19db noise level compared to Ch.4

-50% **NOx emissions**\* below current regulation standard

-15% **CO2 emissions**\* 
-5,000 t per year per aircraft

Less fuel
Less noise
Less CO₂

\* Compared to previous generation aircraft
A320neo and A320ceo noise contours at London Heathrow

Take-off noise CEO vs NEO

Best environmental performance

50% reduction in noise footprint

A320neo 0.87km²

A320ceo 1.8km²

Lp(dB) level

CEO

NEO

Airbus Innovation Days - May 2016
A320neo Programme highlights

A320neo P&W aircraft Type Certificate
24th of November 2015

1st A320neo delivery
20th January 2016

First Flight A321neo
CFM
9th of February 2016

First Flight A321neo
P&W 9th of March 2016
A320neo in service

More than 2200 revenue flight hours with 6 aircraft in service
On track for A320neo CFM certification

Overall NEO Test fleet status

+2 800 Flight Hours
+940 Flights

A321neo flight test campaign on going
### A320neo Teething Issues Status

**Fixes identified**

**Plan in place with customers’ endorsement**

<table>
<thead>
<tr>
<th>Status/Resolution</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engine start time</strong> (not at CEO level)</td>
<td></td>
</tr>
<tr>
<td>• Deliveries with P&amp;W engines with improved start time</td>
<td>Summer 2016</td>
</tr>
<tr>
<td>• Engines start up to achieve similar time as current aircraft</td>
<td>Autumn 2016</td>
</tr>
<tr>
<td><strong>FADEC nuisance faults</strong></td>
<td></td>
</tr>
<tr>
<td>Software update applied to all fleet</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Hydraulic temperature</strong></td>
<td></td>
</tr>
<tr>
<td>Lift ambient temperature limit from 50 → 55°C</td>
<td>Summer 2016</td>
</tr>
</tbody>
</table>
On track for ramp up to rate 60
Non-Stop Innovation
Customer Services
Airbus Innovation Days

Head of Customer Services
Didier Lux
Serving over 400 airlines operating Airbus aircraft

Product sophistication and outsourcing of expertise

The fleet size effect (From 2015 to 2017)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2017</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>A320</td>
<td>100</td>
<td>140</td>
<td>180</td>
</tr>
<tr>
<td>A330</td>
<td>310</td>
<td>410</td>
<td>440</td>
</tr>
<tr>
<td>B787</td>
<td>175</td>
<td>200</td>
<td>225</td>
</tr>
<tr>
<td>B737</td>
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</tbody>
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Meeting >99% reliability industry expectations

- A320: 99.7%
- B737: 99.5%
- A330: 99.4%
- B787: 99.1%

Supporting 9,000 in-service Airbus aircraft safely by end of 2016, while delivering services commitments
Expanding our global footprint: More proximity to support our customers 24/7

Customer support centres
Training centres
Material and Logistics centres
M&E centres
+150 Field service stations worldwide
New over the past 12 months

Americas
- WAS-MIA
- MIA-MEX
- WAS-ATL-MIA
- ICT-MOB-YKF

Europe-Africa
- TLS
- HAM-TLS
- CPH-LON-HAM-TLS
- FZO-HAM-TLS-MAD-LCY

CIS-ME-India
- MOW
- DXB-BLR-DEL
- DXB

Asia Pacific
- BJS-SIN
- BJS-SEL-HKG-SIN
- BJS-SIN
- BJS-KUL-BKK

5500+ dedicated people worldwide from 50 different nationalities.
12 months of continuous business expansion globally

- Navtech acquisition
- Co-innovation’ project for inflight fault prognostics
- Maintenance Mobility
- Prognostics and Risk Management
- Head-Up Display retrofit on A320 Family EASA certified
- First Sharklets in-service retrofits
- Flight Training Centre - Mexico
- A330 cabin Upgrades
- A330 cabin retrofit
- Flight Training Centre - India
- A350 FHS*
- A350 FHS*
- A330 cabin retrofit
- A380 TSP**
- MRO venture
- Flight Training Centre

* FHS: Flight by Hour Services
** TSP: Tailored Support Package
Meeting Customer expectations through non-stop innovation

- AiRTHM
  Real Time Monitoring

- OPTIMA
  Scheduled Maintenance Optimisation

- Training ACE / ACT
  Virtual devices for Flight & maintenance Training

- SWITS
  Smart Wiring troubleshooting

- Predictive Maintenance
  Big Data and Data Analytics

- 3D Scan
  Damage Repair Assessment

- Maintenance Procedures
  3D animations on A350

- 2012
- 2016
- 2020
Non-Stop innovation… Training ACE / ACT

**Airbus Cockpit Experience trainer**
- Incorporates **Evidence based training** concept
- A350 familiarization through **virtual cockpit**
- Knowledge acquisition on **systems and procedures**
- **Functional learning** for theory and practice
- **Free play simulation** for system practice
- **Self-paced** learning to proficiency

**Airbus Competence Trainer (Maintenance)**
- Balance of theory & practice on dynamic virtual media
- Learning by doing concept
- Focuses on need-to-know
- Optimized simulation scenarios
- Reduce practice on aircraft by 50% minimum for certifying courses
- Based on product design
Non-Stop innovation… OPTIMA – Schedule maintenance

Optimize and escalate maintenance tasks to minimize aircraft downtime during scheduled visits

+ Quantified view on task efficiency based on scheduled maintenance data
+ Simple identification of potential tasks for interval increase or decrease
+ Confirmation of good performance
+ Means to provide more specific optimized maintenance program deliverables.
Non-Stop innovation… Predictive Maintenance

- Crunching data from the aircraft as well from the ground to anticipate failures
  - Avoid unplanned events by detecting system failures before they occur
  - Predict a system failure to prevent unscheduled events
  - Optimize Maintenance planning and MCC operations
  - Identify the most effective maintenance procedures
Non-Stop innovation… 3D Scan

Use 3D scanners for improving damage assessment and consequently shorten the repair lead-time

- Provide speedier solution
- Improve A/C dispatch in case of impact
- Traceability, impact damage recording
- No specific qualification to use the tool
Thank you
Glossary

- OR: Operational Reliability
- FHS: Flight by Hour Services
- TSP: Tailored Support Package
- ACE: Airbus Cockpit Experience trainer
- ACT: Airbus Competence Trainer
- OPTIMA: Optimization of Performance by Task Interval Maintenance Assessment
- SWITS: Smart Wiring Trouble Shooting
- AiRTHM: Airbus Real Time Health Monitoring
- MRO: Maintenance, Repair, and Overhaul