

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

4 MAJOR AXIS

“READY to OPERATE”



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)**

**Composite Door
Surrounding
Structure**

**Adapted Cabin &
Cargo Layout**



**Aerodynamic
improvements**

**Modified fuel system
to increase
fuel carrying capacity**

**Reinforced
Main Landing Gear**

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

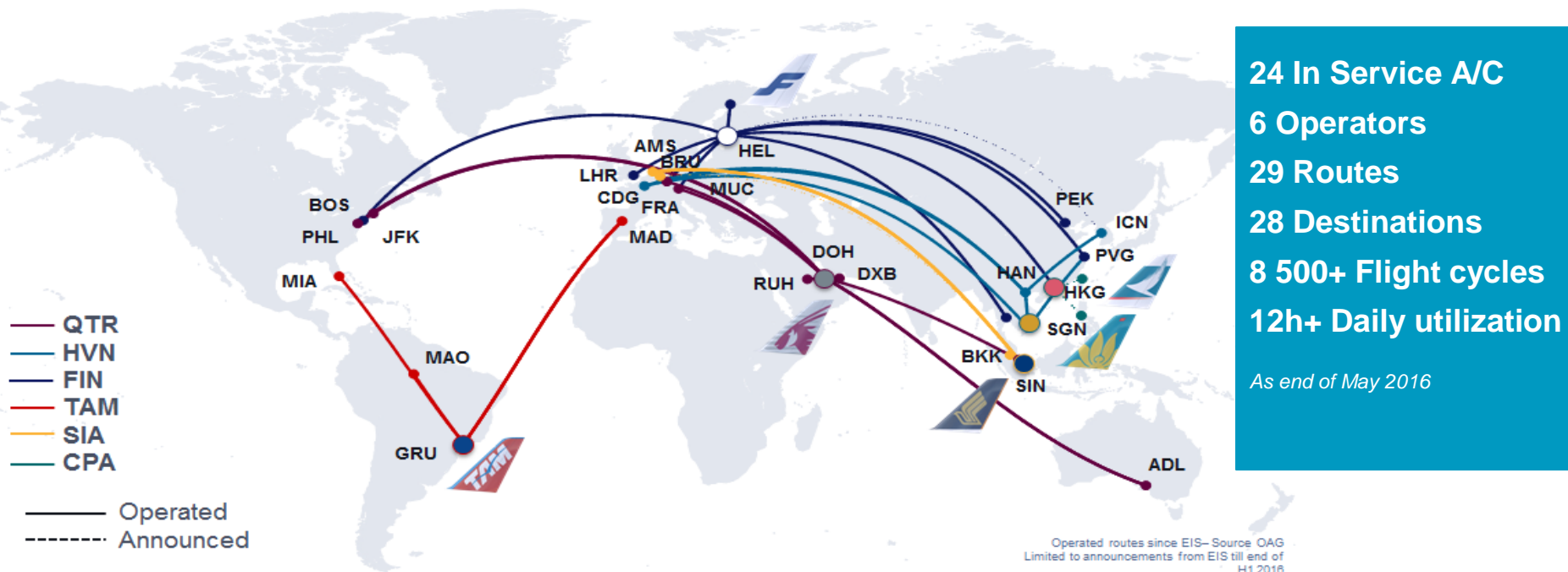


Just delivered!

Cathay Pacific

1 A/C delivered
first commercial flight
1 June 2016

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
AOG

Accelerated
spare
deployment
Logistics &
transportation

Reduced
TTGF

Specific
Health
Monitoring

A350-1000: a new chapter of innovation to shape the future



First A350-1000 in FAL #MSN59

All 3 test aircraft in FAL

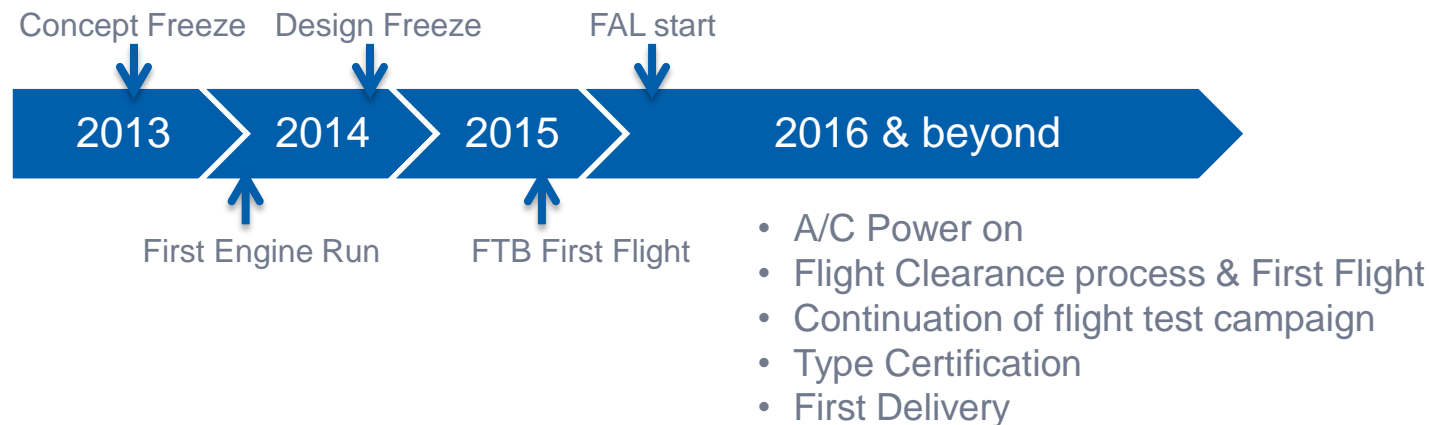
First new 6 wheel bogie
Main Landing Gear
fitted on the MSN59



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



A330 Family

- Rate 6 in 2016
- Rate 7 in 2017
- 1 634 orders including 186 neo & 20 MoU

A330neo suppliers and Airbus sub-assemblies on track for FAL



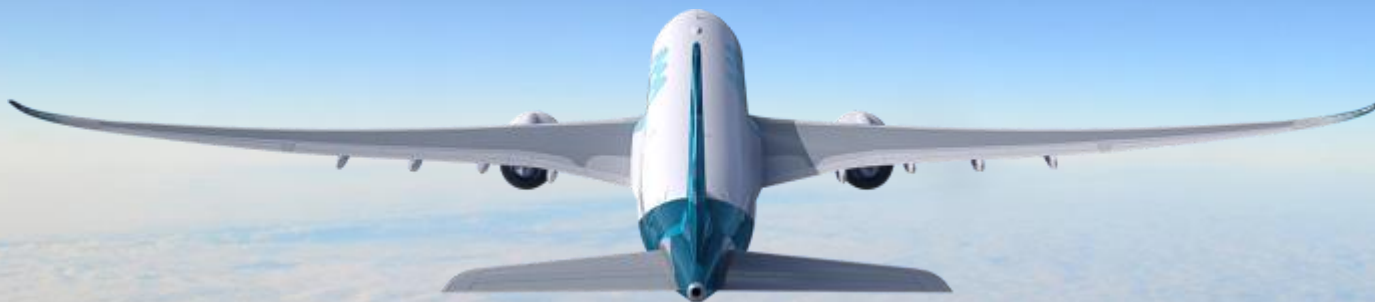
- Pylon (St Eloi)
- Air Inlet (Nantes)
- Central wing box (Nantes)
- Wing (Broughton)
- Nacelle (Aircelle)



A330neo Programme on track



- Engine 1 Assembly start
- Engine 1 Test
- Flight Test Campaign



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

2010

2011

2012

2013

2014

2015

2016

2017



Improved SFC/ maintenance

Upgraded Engines



New weight variant

235t/238t MTOW



Improved traffic awareness

ATSAW



FMS landing system

FLS



On-ground navigation and runway overrun prevention

OANS & ROPS



Ground based Landing

GBAS



Increased range and new cabin features

242t MTOW



New engines new sharklets

A330neo

AIRSPACE

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

Market
development
platform steers
innovative
combined offers




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



2007

EIS

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018



500kg weight reduction



Head Up Display



Forward lower deck crew rest



1,000kg weight reduction



Internet & GSM access



Increased design weights



Improved SFC

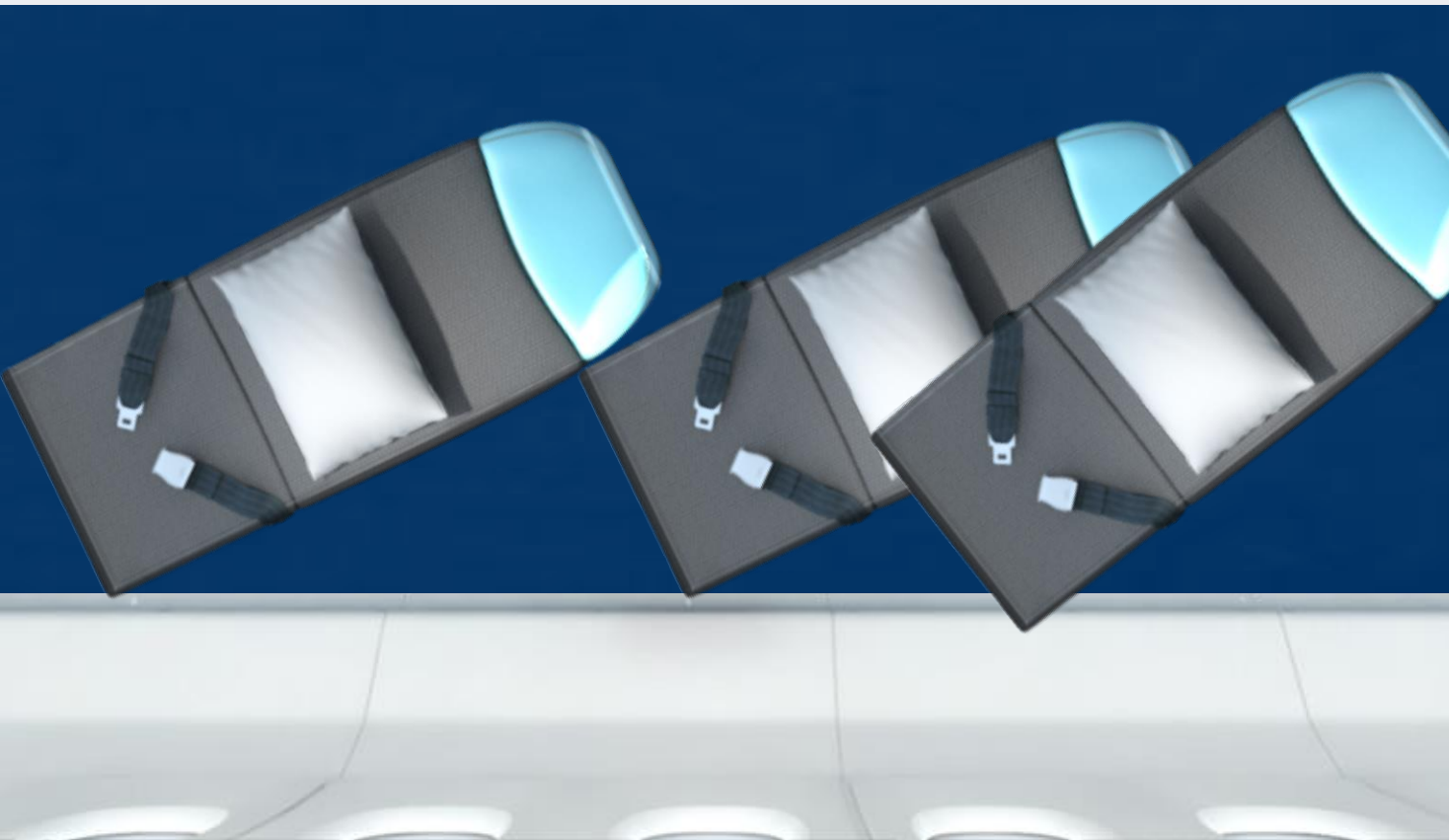


Combined crew rest



Maintenance program escalation

Sidewall stowage removal and business seat positioning



A380
New upper deck
sidewall lining

+10
Business seats

+\$6m
annual revenue



Beluga XL More capacity to meet ramp up challenges

Beluga XL

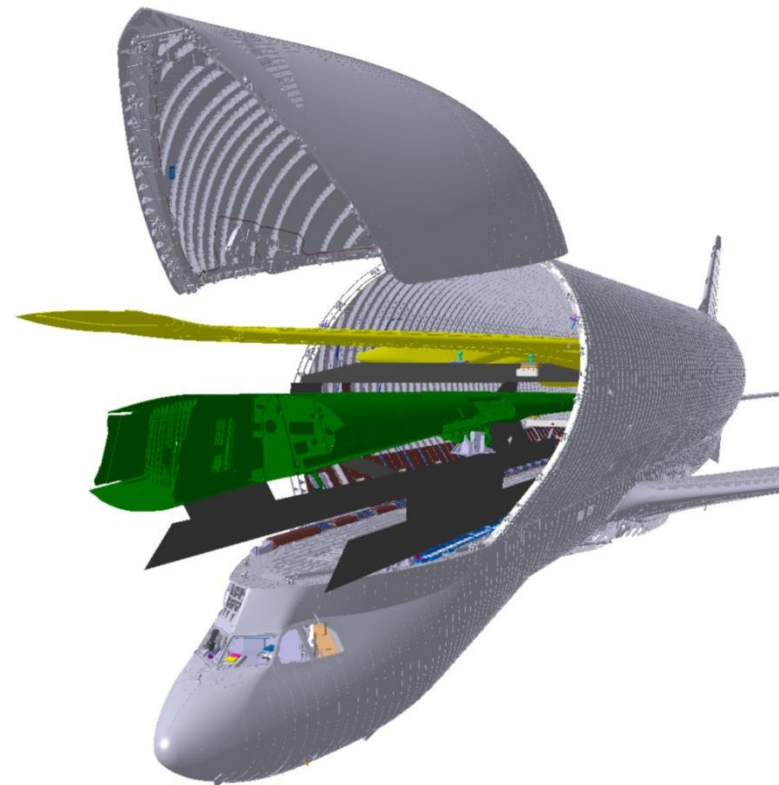
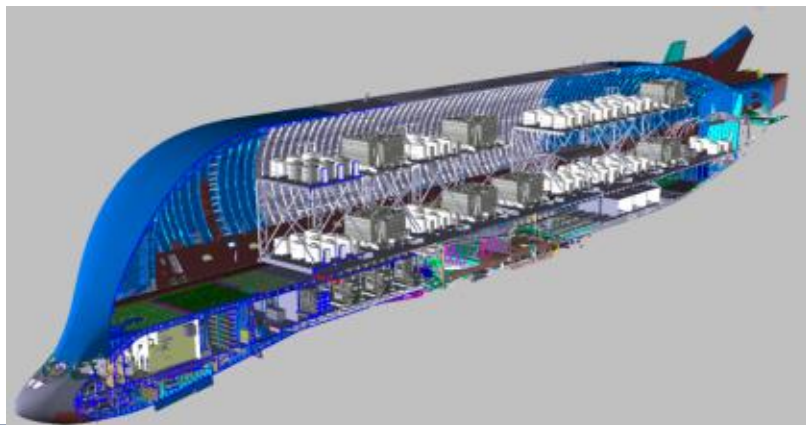
- Based on A330
- Design to cost
- 40% increased efficiency on A350 XWB transport
- Transports 2 A350 wings
- Payload increase by 12%



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

Landing Gear and Fuel Pumps

Lower Maintenance costs



2014



Lower Maintenance costs

Full LED

Universal IFE platform

Integration of IFE and connectivity



2015



15% fuel burn reduction

neo

Smart-Lav

Up to +6 seats



2016



A320 189 seats
A321 230 seats

Increased Exit Limit

Space-Flex V2

Up to +6 seats



2017



Improved pilot operations

Wifi in Cockpit

A321 High & Hot

35k Thrust



2018



Improved low speed performance

SHARP**

Cabin-Flex

Increasing seat count on A321 to 240



2019



4000nm

A321LR

Brake-to-Vacate*

Improve runway occupancy



2020



2% further fuel reduction

P&W Advantage



*Subject to launch ** Short Airfield Performance

Klaus Roewe
Head of A320 Programme

Airbus Innovation Days

A320 Programme Update





A320neo Worldwide success

4,515
Firm orders

82
Customers

60%
market share

end April 2016
Source: Airbus

Innovation where it matters

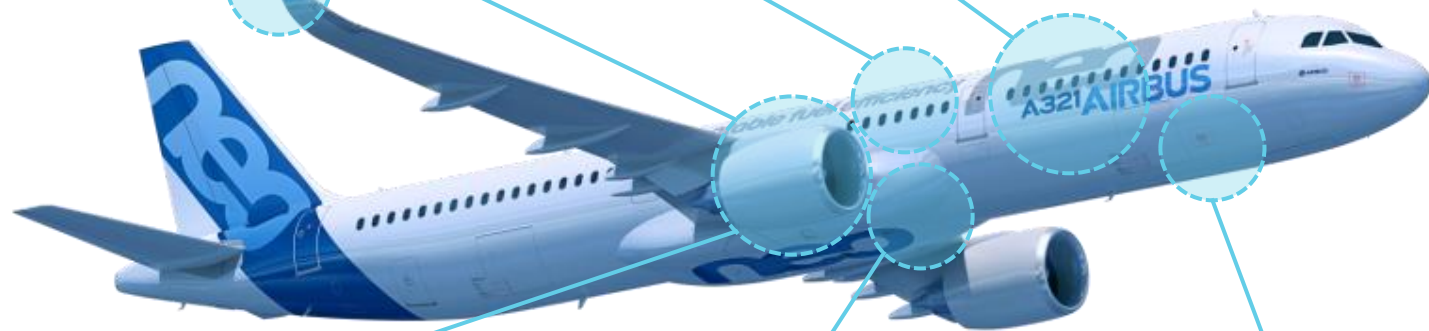
Sharklets & New Engines

-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

* 97t MTOW and up to 3 ACTs



-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



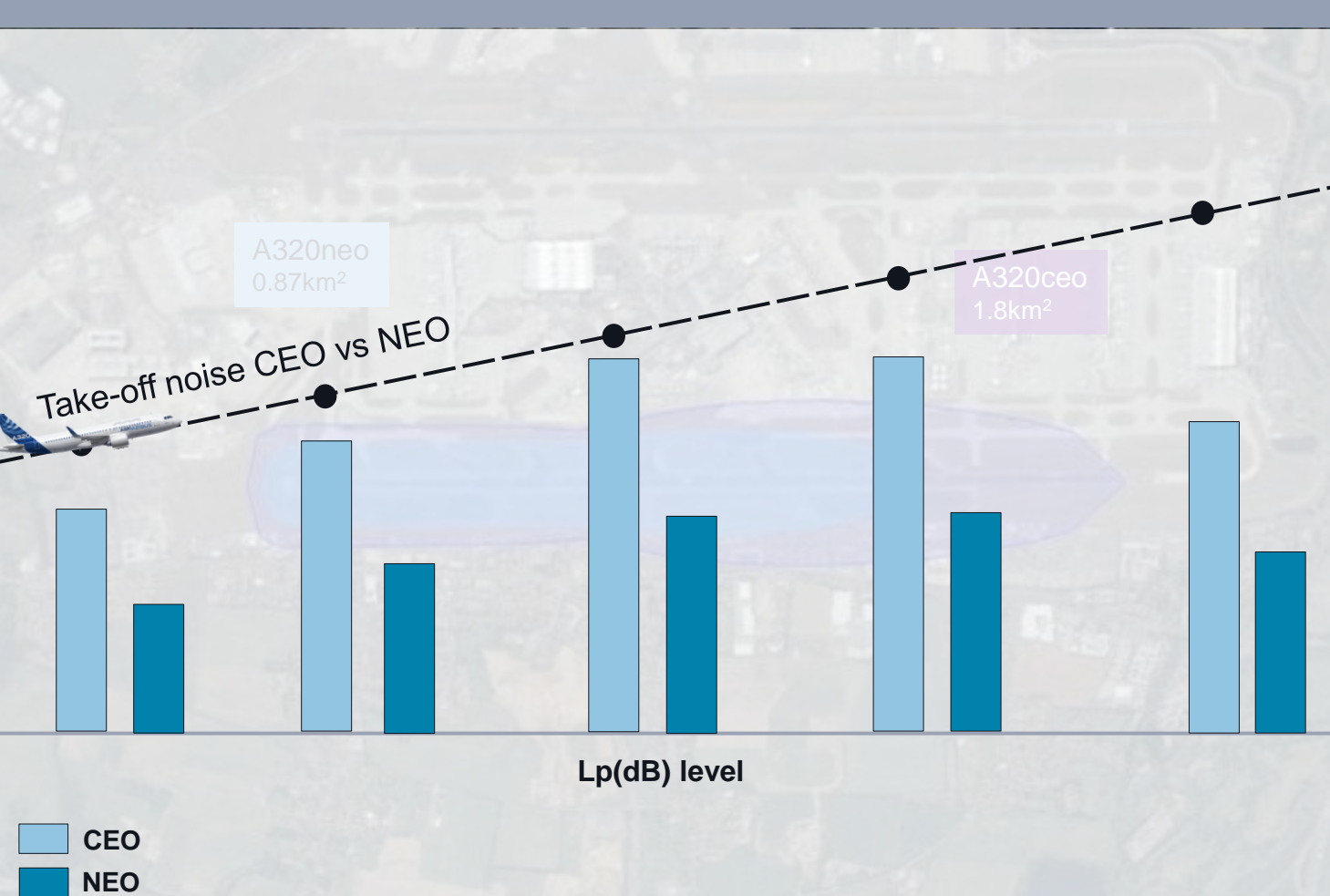
-50% **NOx emissions***
below current regulation standard



-15% **CO2 emissions***
-5.000 t per year per aircraft

Promises proven in service

Less fuel Less noise Less CO₂



**Best
environmental
performance**

**50%
reduction
in noise
footprint**

A320neo and A320ceo noise contours at London Heathrow



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



High Altitude
La Paz - September 2015



Cold Weather
Iqaluit – January 2016



First Flight A321neo CFM
February 2016



Function & Reliability
April 2016



**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



	STATUS/RESOLUTION	WHEN
Engine start time (not at CEO level) 	<ul style="list-style-type: none"> • Deliveries with P&W engines with improved start time • Engines start up to achieve similar time as current aircraft 	Summer 2016 Autumn 2016
FADEC nuisance faults 	Software update applied to all fleet	
Hydraulic temperature	Lift ambient temperature limit from 50 →55°C	Summer 2016

On track for ramp up to rate 60





Head of Customer Services
Didier Lux

Non-Stop Innovation Customer Services

Airbus Innovation Days

Serving over 400 airlines operating Airbus aircraft

Product sophistication
and outsourcing of expertise



Optimisation



Outsourcing

The fleet size effect (From 2015 to 2017)



100

140

180



310

410

440



175

200

225

2015

2017

2019

Meeting >99% reliability industry expectations

A320

99.7%

B737

99.5%

A330

99.4%

B787






99.1%

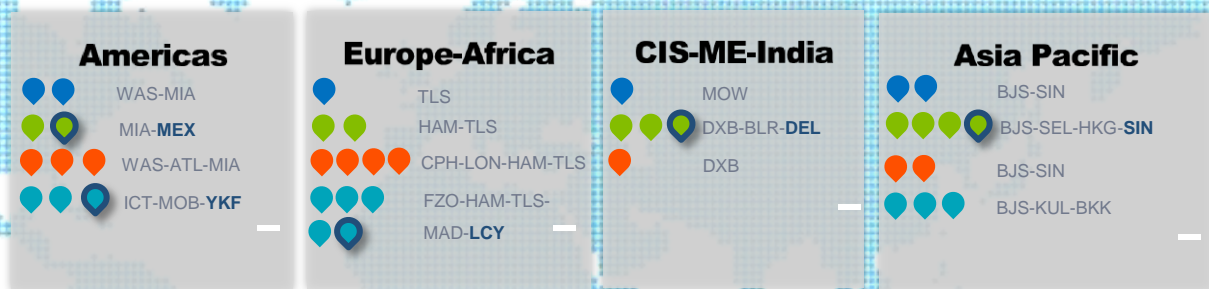
Last 2 year deliveries

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

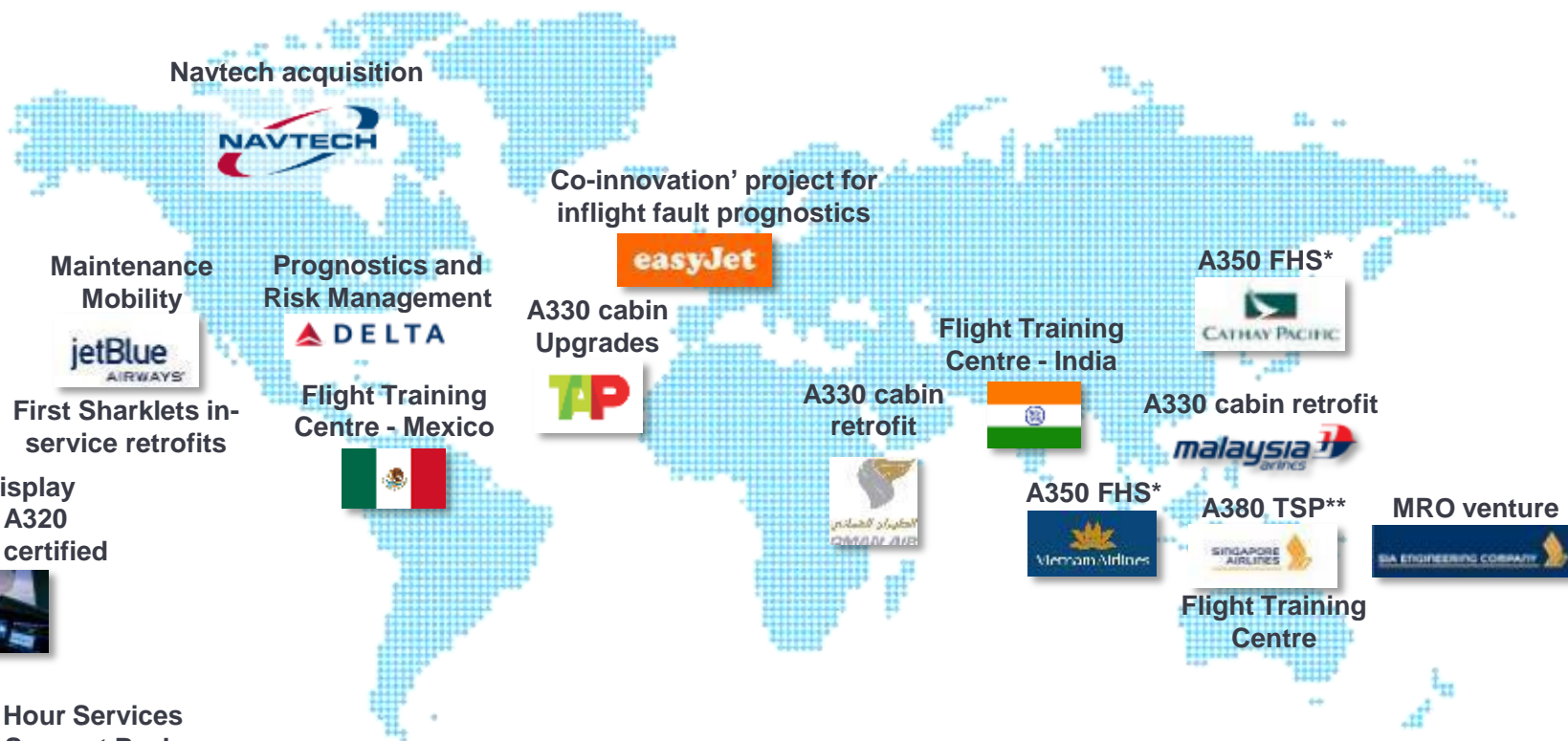
global

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



5 500+ dedicated people worldwide from 50 different nationalities.

12 months of continuous business expansion globally



* FHS: Flight by Hour Services

** TSP: Tailored Support Package

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

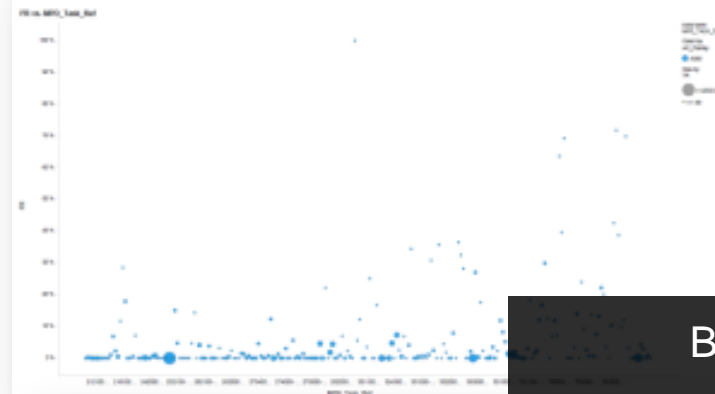


Non-Stop innovation... OPTIMA – Schedule maintenance

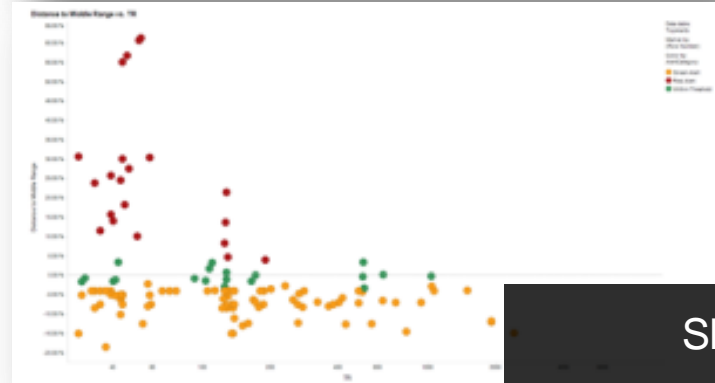
Optimize and escalate maintenance tasks to minimize aircraft downtime during scheduled visits

- + 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.

1. BIG DATA



Blurry



Sharp

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

