How Airbus designs the future

Charles CHAMPION
Executive Vice President Engineering
We leverage **incremental & breakthrough innovations** to design our future aircraft.

**State of the art**

Airbus aircraft family

**Incremental Developments**

**New Concepts**

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Airbus R&D

Over **2 bn€** each year to enhance aircraft efficiency, new technologies & architectures.
Our **key drivers** to design the aviation of tomorrow

**Enhance Aircraft Performance**

**Boost our Customer Competitiveness**

**New Ways of Working by Leveraging new Technologies**

**Improving overall Air Traffic Management**

**Contribute to Sustainable Aviation**

**Inspiring & Connecting People**
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Airbus Innovation Days - May 2016
Enhance Aircraft Performance
With application of riblets to reduce turbulent drag in cruise

Technology development of riblet application

Implementation & Testing in near-industrial environment

“Full Scale System” demonstrator in industrial environment

Expected Benefits

-1.5% fuel burn dependent on aircraft type, mission, area applied and riblet efficiency

2013 ▶ 2015 ▶ 2017
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New **Ways of Working** by Leveraging new **Technologies**
Inspiring & Connecting **People**
Boost our Customer Competitiveness
With enhanced passenger outside view

Interactive displays
virtual outside view, in special areas

Big interactive surfaces
virtual outside view, in cabin segments

Entire cabin equipped with interactive surfaces & virtual outside view

Expected Benefits

- New customer experience & ancillary revenue generation
- Extra comfort
- Higher flexibility & reduced customization efforts

Short term ➤ Mid term ➤ Long term
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  - Inspiring & Connecting **People**
- **Improve overall Air Traffic Management**
- **Contribute to Sustainable Aviation**
Improve overall Air Traffic Management
With maximized air transportation safety, efficiency, and growth

Expected Benefits

- Reduce aircraft delays
- Reduce fuel burn, CO$_2$/NOx emissions & noise
- Enable increased capacity while maintaining safety

Data Collection on real flights

Very Large Demonstrations on revenue flights e.g. more than 100 equipped aircraft flying over core Europe

Closure of SESAR 1 R&D phase e.g. initial 4D

SESAR 2020 R&D phase e.g. mature use of aircraft trajectories in ATM

2016

2016-2019

2017-2020
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New *Ways of Working* by Leveraging new *Technologies* Inspiring & Connecting *People*
Demonstrate environmental benefits at aircraft level
Breakthrough Laminar Aircraft Demonstrator in Europe - BLADE

2014 – 2015
Wind tunnel tests. Laminar wing & Krueger flap demonstrator

2016
First aircraft parts

2017
Flight tests on Airbus A340

Expected Benefits

Minimise drag with laminar flow

-5% fuel burn saving compared to current aircraft generation
Our **key drivers** to design the aviation of tomorrow

Enhance **Aircraft Performance**

Boost our **Customer Competitiveness**

Improve overall **Air Traffic Management**

Contribute to **Sustainable Aviation**

New **Ways of Working** by Leveraging new **Technologies**
Inspiring & Connecting **People**
Leverage new Technologies
Using low-cost smart sensors in our tests

Until 2014
Classical sensors used on Airbus flight test aircraft

2015
First “off the shelf” sensors on A350 XWB flight tests

A350-1000
Fully equipped with smart sensors

Proven Benefits

- Simplifying flight test system architecture & installation
- Cost efficient
- Delivering new kinds of data
Inspire & Connect People
To innovate faster

“Test fast, fail fast, adjust fast”

- IdeaSpace
  1,000+ ideas posted (2015)
- Agile methods, Design thinking
- Fast prototyping
  6 ProtoSpace open
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