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AIRBUS

# Challenges for the Aeronautical Industry

Aviation Forum, Vienna 2015

# Content

- **Business Opportunities**
  - **Challenges and Paradigm Shifts**
  - **Airbus Strategy**
  - **Technologies & Future Configurations**
  - **Development and Industrialization Process**
  - **Boosting Innovation and Technology Development**
- 

# Airbus aircraft are a familiar sight around the world

## Presence

An Airbus takes off or lands every

**2** seconds

**15,979+**

Aircraft sold

**60**

Produced monthly

**9,282**

Delivered

**25,000+**

Daily flights

September 2015

Meet the Airbus family from 100 to 500+ seats

# The Airbus Family

## A320 Family

The market leader

## A330 Family

The right aircraft, right now

## A350 XWB

The Xtra that makes a difference

## A380

Own the sky





# Aviation drives our global economy

## Growth

Air traffic doubles every 15 years

**3 billion**

Passengers

**50 million**

Tonnes of freight

**\$2.4 trillion**

Global GDP annually

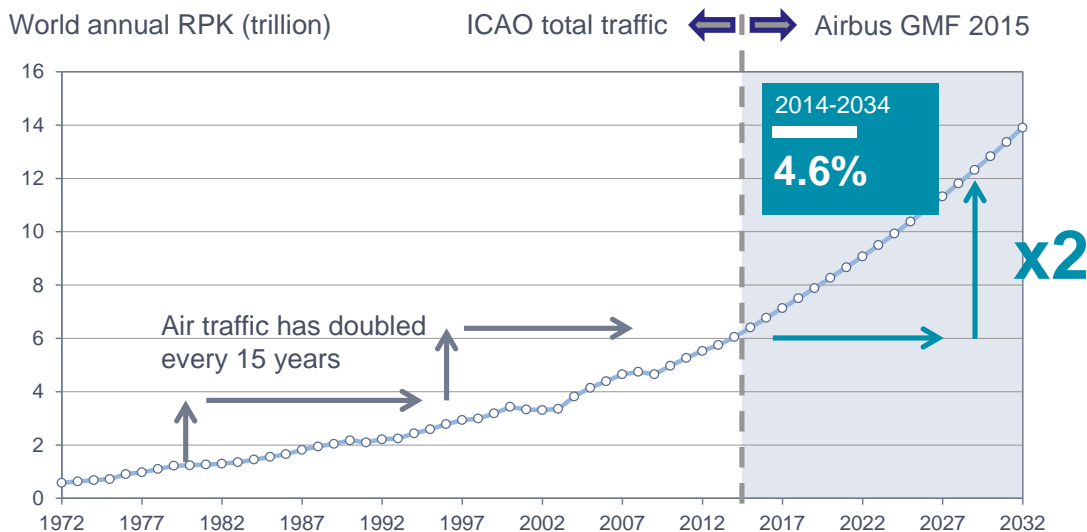
**58 million**

Jobs supported

Source: ATAG 2014

# What are the market opportunities?

> Traffic will double in the next 15 years



Source: ICAO, Airbus

## Passenger Transport Demand evolution

## 20-year General Market Forecast



> Potential for more than **32,600 deliveries** in the next 20 years

# What are the key challenges?

## > Reduce Environmental impact



## > Smart & Efficient mobility



## Strengthen European leadership



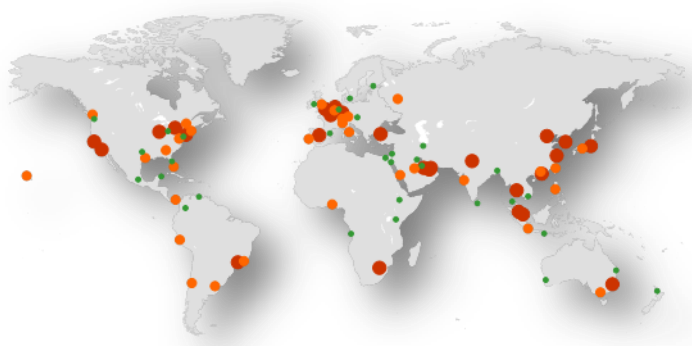
# New challenges or new opportunities?

## > More and more Aviation Mega Cities ....



2034 forecast  
**91** Mega cities

**Typical Mega City demography:**  
More than 10 Million people; Up to 400 Nm wide



Source: WWW

## > Potential new market for regional transport

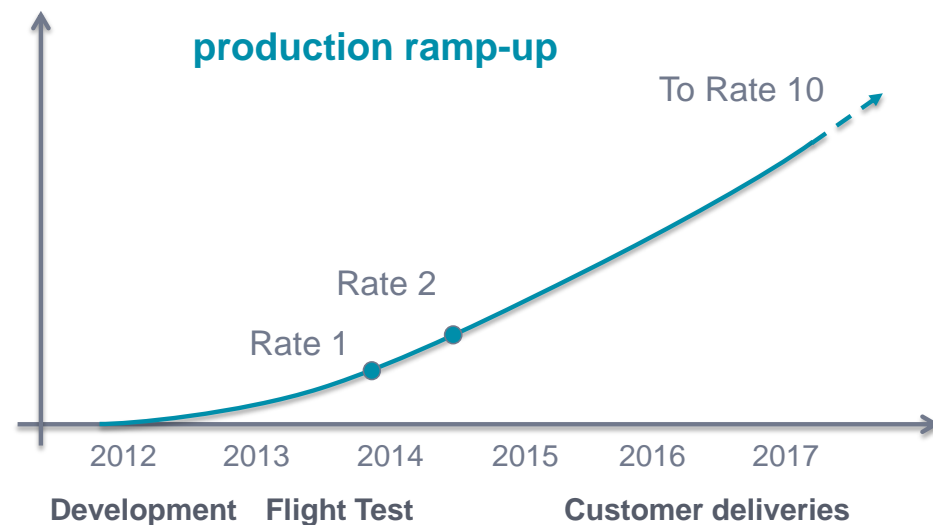


# New challenges or new opportunities?

## > Customer needs are changing

### A320 customers.... (total orders)

INDIGO	530
AIRASIA	475
LUFTHANSA	469
EASYJET	415
US AIRWAYS	261



## > Industrial ramp-up and maturity



# What do we need to **stay competitive**?

## > Increase **Customer Value**

- Improve **performances**  
(aerodynamic, weight, propulsion)
- Increase **cabin productivity**



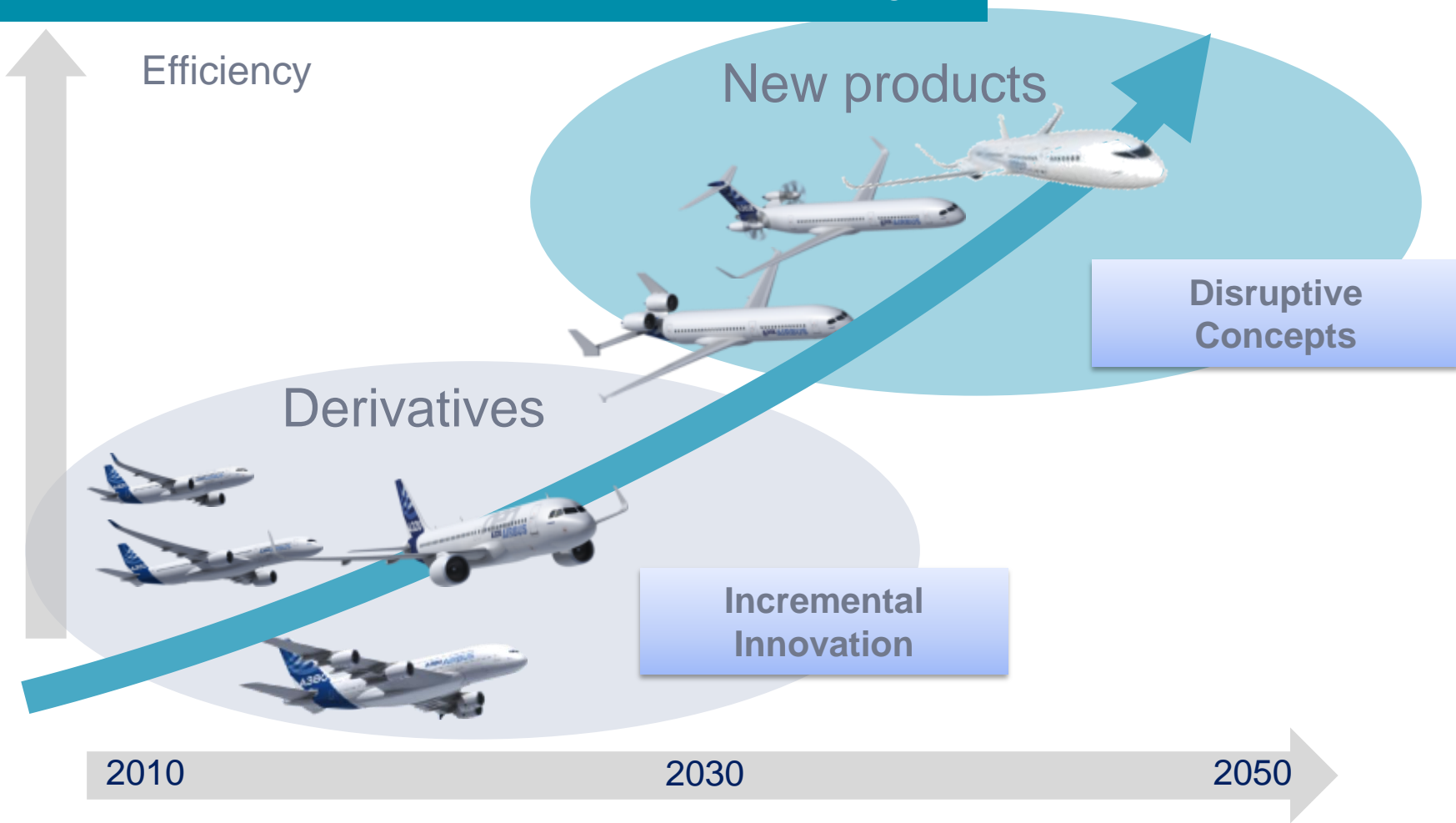
## > Reduce cost (RC and NRC) & Leadtime

- **Non Recurrent Cost** (development process)
- **Recurrent cost** (manufacturing)



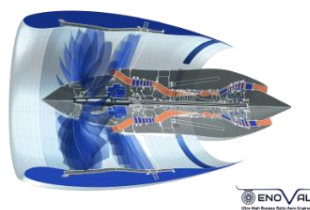
# The AIRBUS strategy

> Balance between incremental and breakthrough



# Strategic roadmaps: Ultra efficient engines

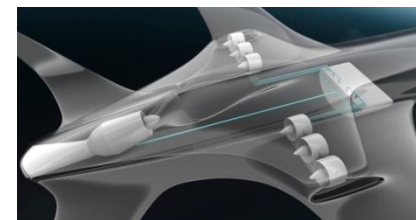
## > Ultra efficient engines



Advanced turbofan



CROR



Hybrid propulsion

Short-term

Mid-term

Long-term





# Strategic roadmaps: Aerodynamic efficiency

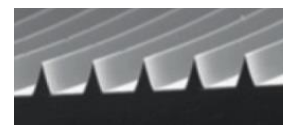
## > Aerodynamic efficiency



Laminar flow



Sharklet



Riblets



Future concepts

Short-term

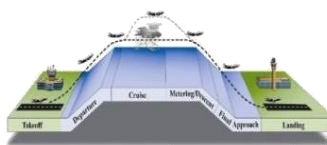
Mid-term

Long-term



# Strategic roadmaps: More efficient operations

## > More Efficient operations



Future ATM  
Green trajectories



Innovative  
cockpit



Formation flight

Short-term

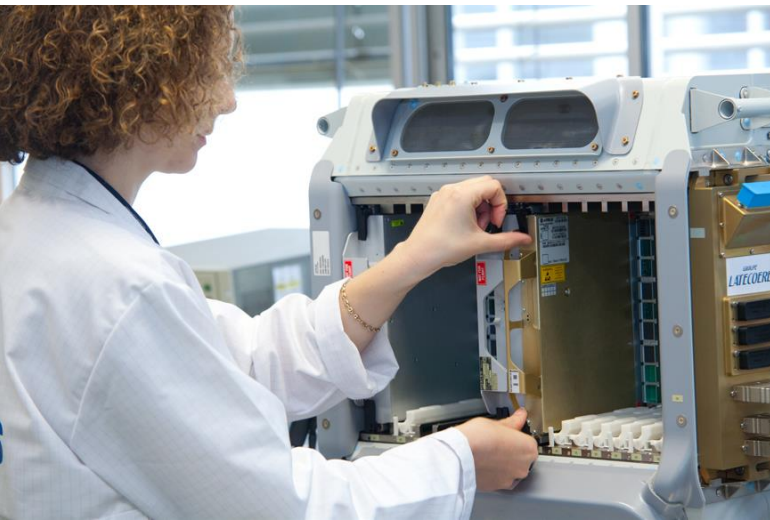
Mid-term

Long-term



# Strategic roadmaps: Systems and avionics

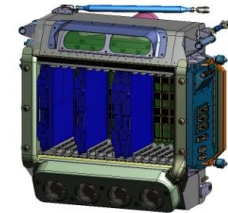
## > Systems and avionics



E-taxi



More  
Electrical Aircraft



Integrated Modular  
Avionic 2<sup>nd</sup> Generation

Short-term

Mid-term

Long-term



# Strategic roadmaps: Advanced materials & manufacturing

## > Advanced material



Composite & metallic technologies

Short-term



Thermoplastic  
Dry fiber  
Out of autoclave C

Mid-term



Electrical Network  
Printing

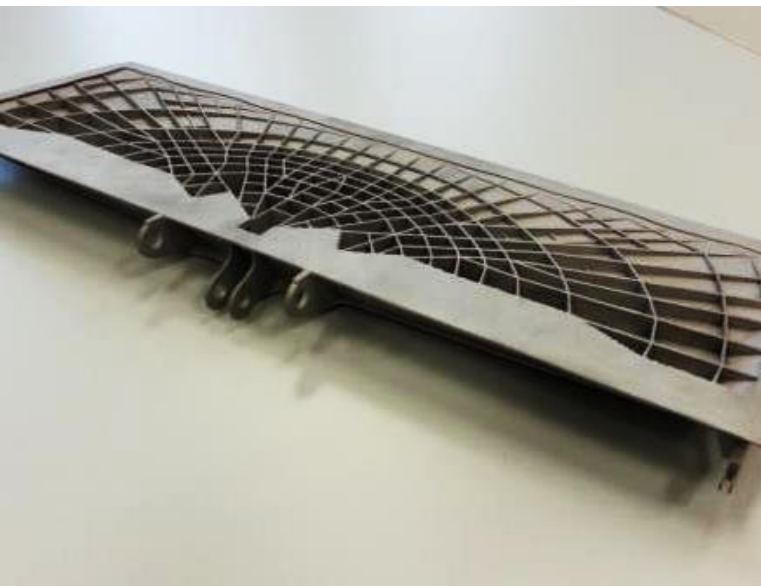
Long-term



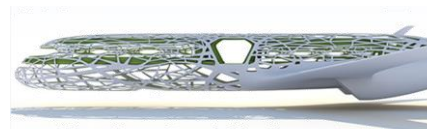


# Strategic roadmaps: Innovative structures

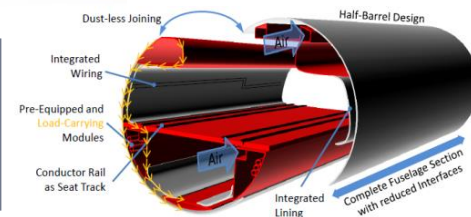
## > Innovative structures



ALM



Bionic structure



Fully integrated fuselage

Short-term

Mid-term

Long-term

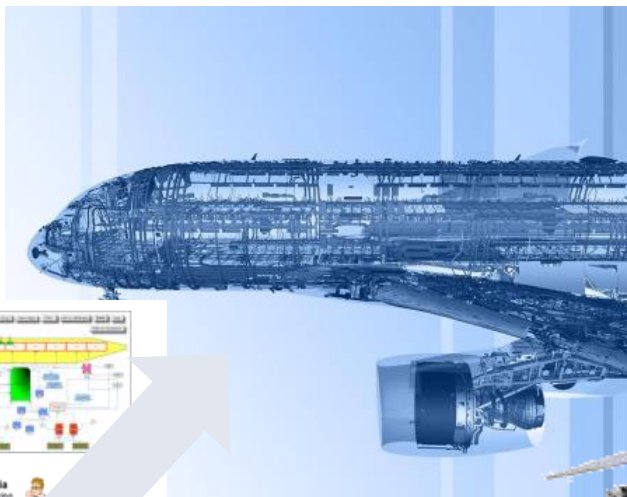


# New Paradigm for Development and Industrialization

Virtual Product Development

Detailed Digital A/C

Digital Factory

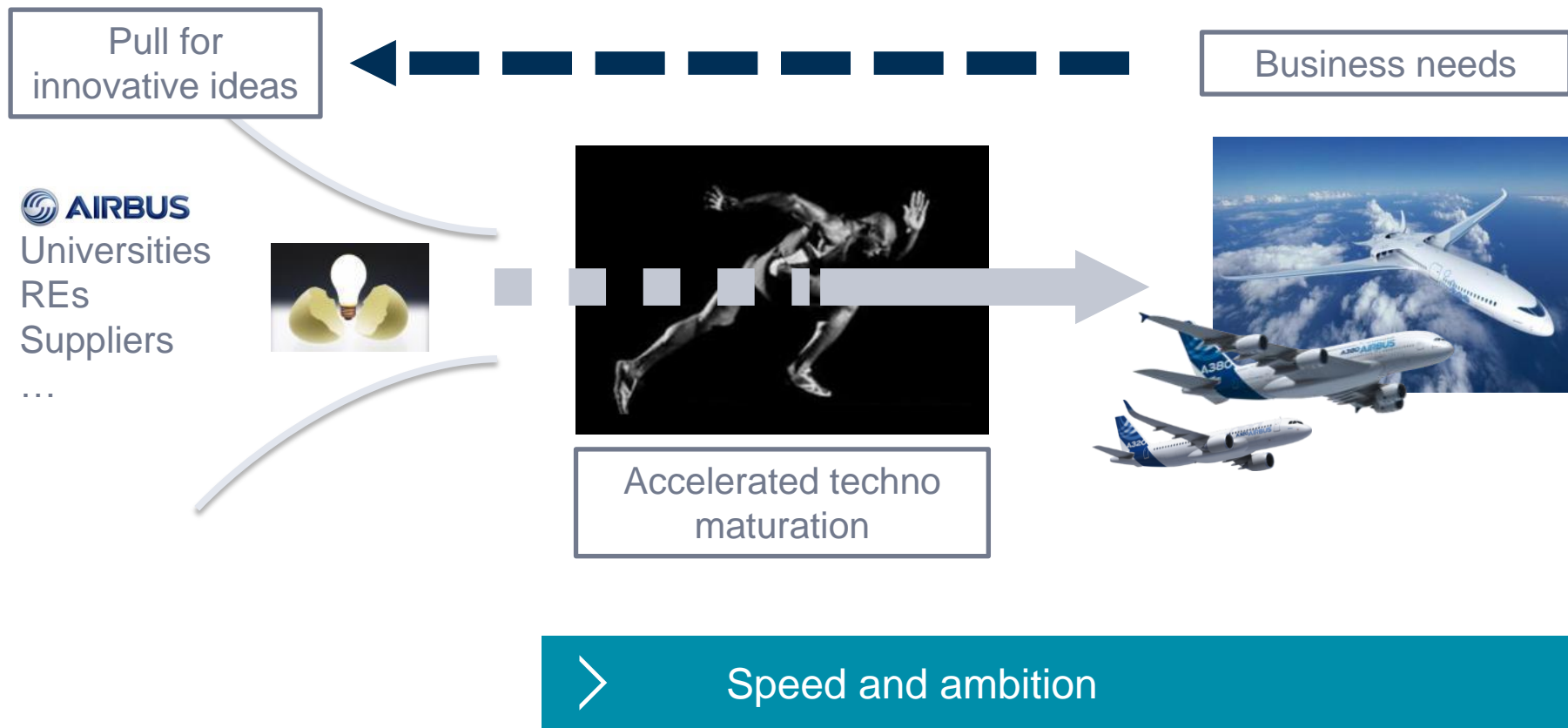


Model based  
Multi-disciplinary Optimization  
& Component Design

Virtual Testing

> Seamless Digital Development and Industrialization process

# Boosting Innovation



# Summary

- Growing global business potentials for the European Aeronautical Industry.
- Minimizing environmental impact and overcoming congestion on ground and air are key for sustaining the growth.
- Production rates beyond 50 A/C per month are changing the entire industrial system incl. supply chain.
- Airbus follows a 2 fold strategy for maximizing customer value and competitiveness of existing products while preparing the next “Game-changer”.
- New propulsion systems will open the design space for novel configurations.
- Significant increase in effort & resources are required for wider exploration and maturation of break-through technologies & novel configurations.
- A seamlessly integrated “Virtual Development and Industrialization Process” shortens development time and secures steep ramp-up of production.





> **Make Technology Fly**

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