

# Better power for a changing world

ICAO International Aviation and Environment Seminar

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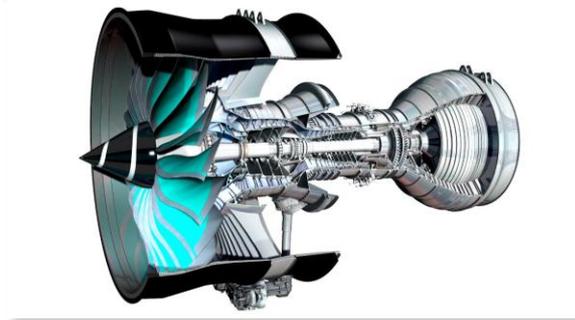
**Rolls-Royce**



# Our Environment Strategy



Supporting customers by further reducing the environmental impact of our products and services



Developing new technology for future low emission products

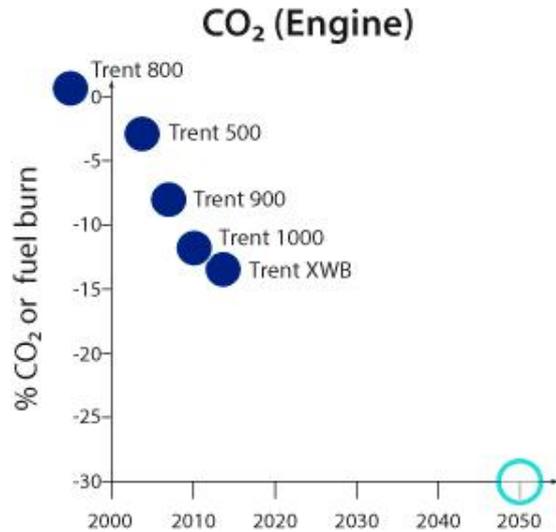


Maintaining our drive to reduce the environmental impact of our business activities



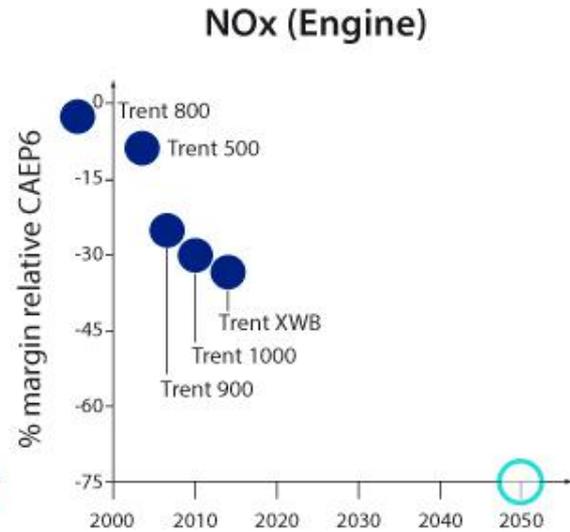
# 2050 environmental goals

TRENT



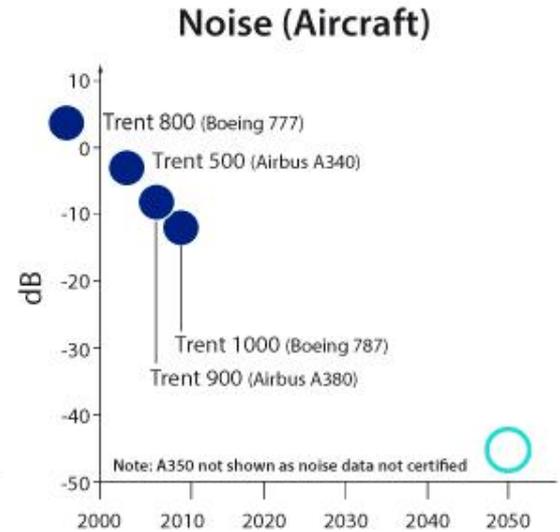
**ACARE goal -75% CO<sub>2</sub> overall reduction:**

- 30% Rolls-Royce contribution\*



**ACARE goal -90% NOx overall reduction:**

- 75% Rolls-Royce contribution\*
- 15% from operational efficiency improvements



**ACARE goal -65% aircraft noise reduction:**

- 45dB cumulative

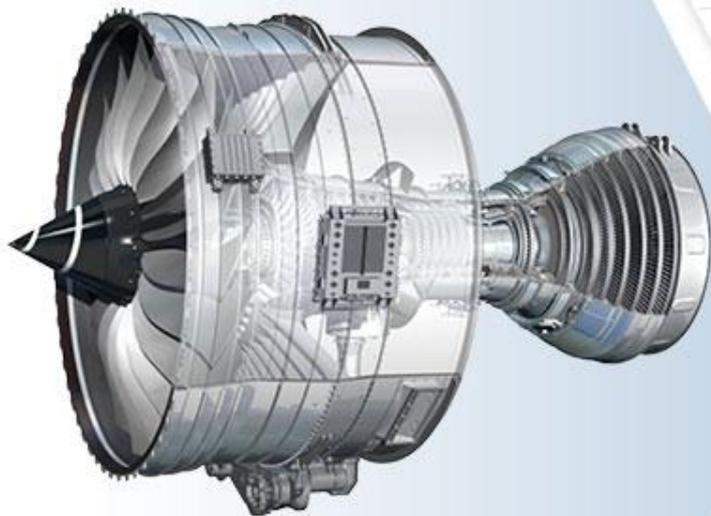
● Trent family      ○ ACARE (Advisory Council for Aviation Research and Innovation in Europe) Flightpath 2050 target

\*Rolls-Royce provisional estimate - definitive ACARE level TBD

# State of the art –Trent 1000-TEN

TRENT1000

Up to 78,000lbs Thrust



**Thrust** | **Efficiency**  
**New technology**

Boeing 787 Dreamliner family



787-8



787-9



787-10

**Ten** | **Eight** | **Nine**



**Rolls-Royce**

# State of the art – Trent XWB family

TRENT XWB



Common wing size, optimised around common cruise thrust

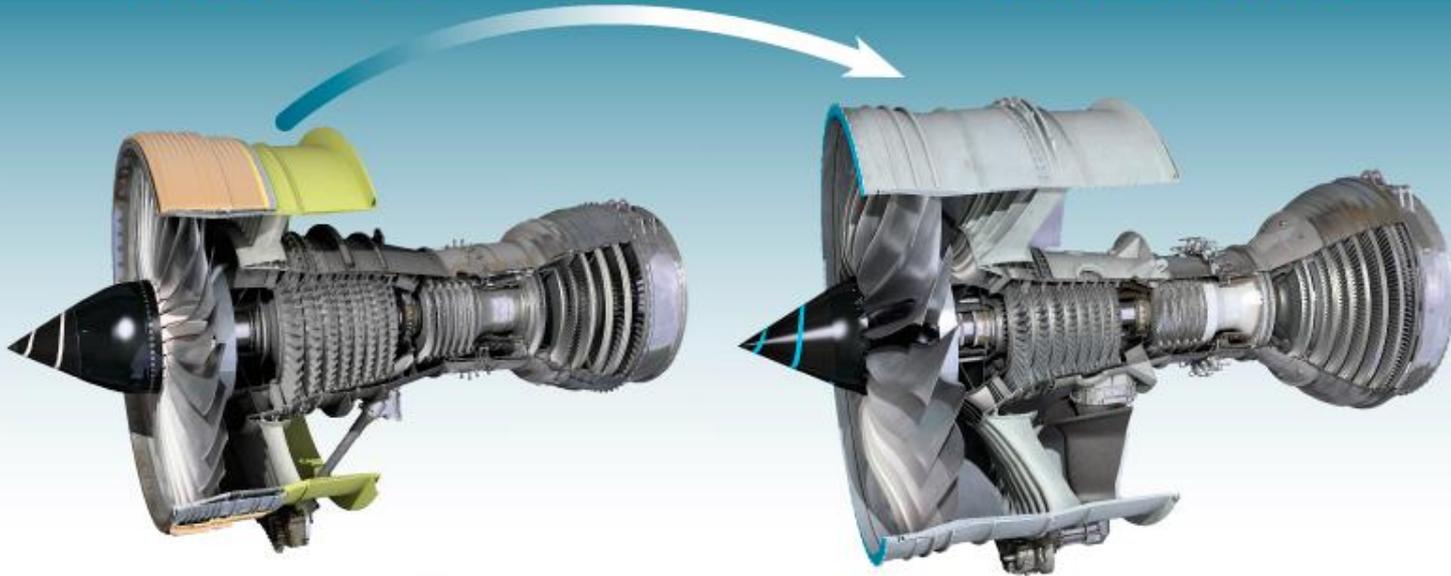


# Evolving to the Trent 7000

TRENT7000

Trent 700

Trent 7000



Double  
the bypass ratio

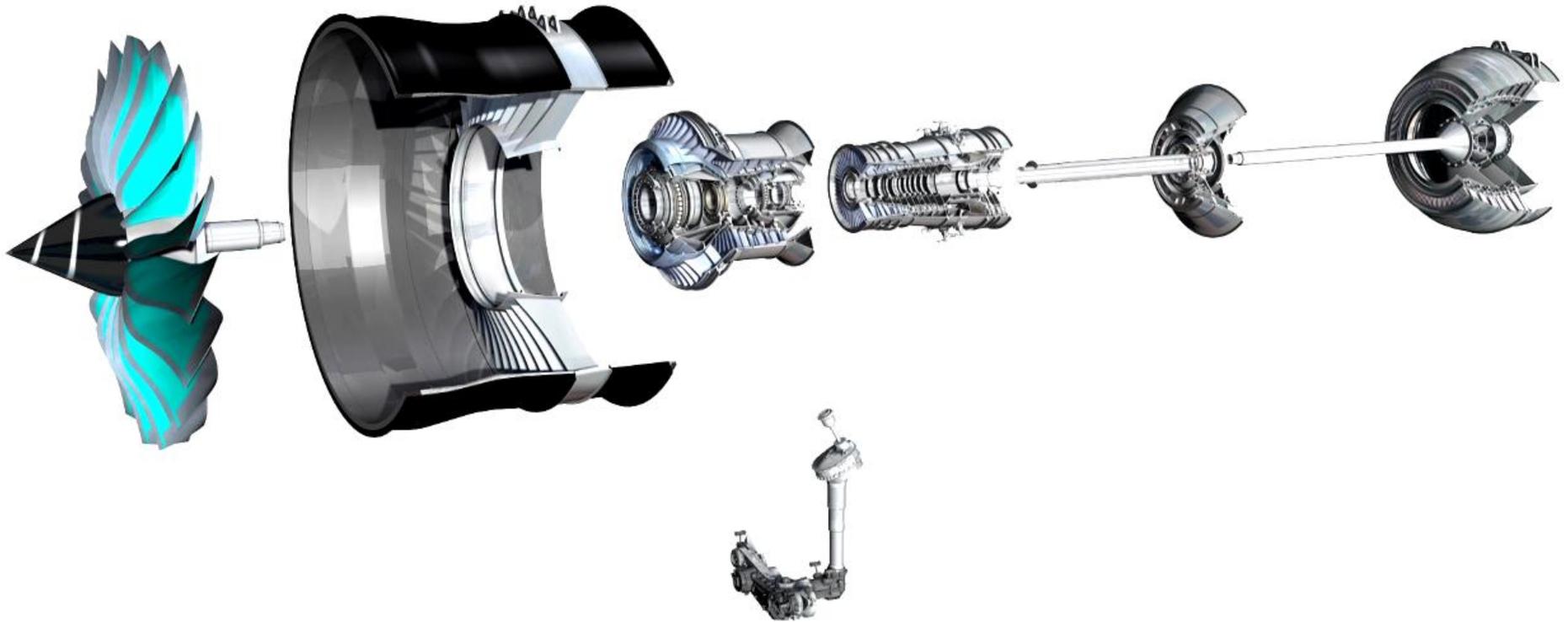
10%  
better SFC

10db less  
half the noise

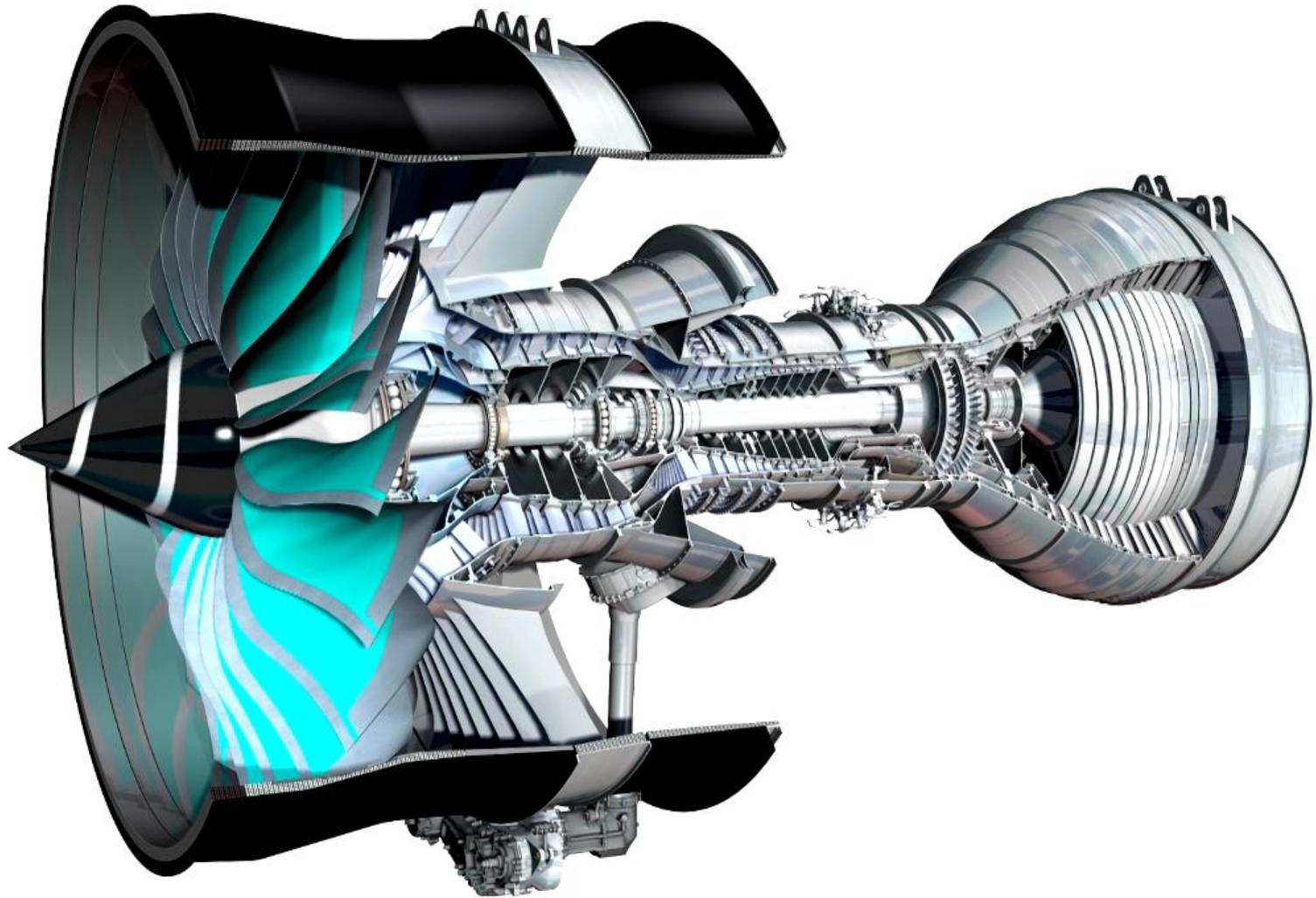
# Innovators don't stand still



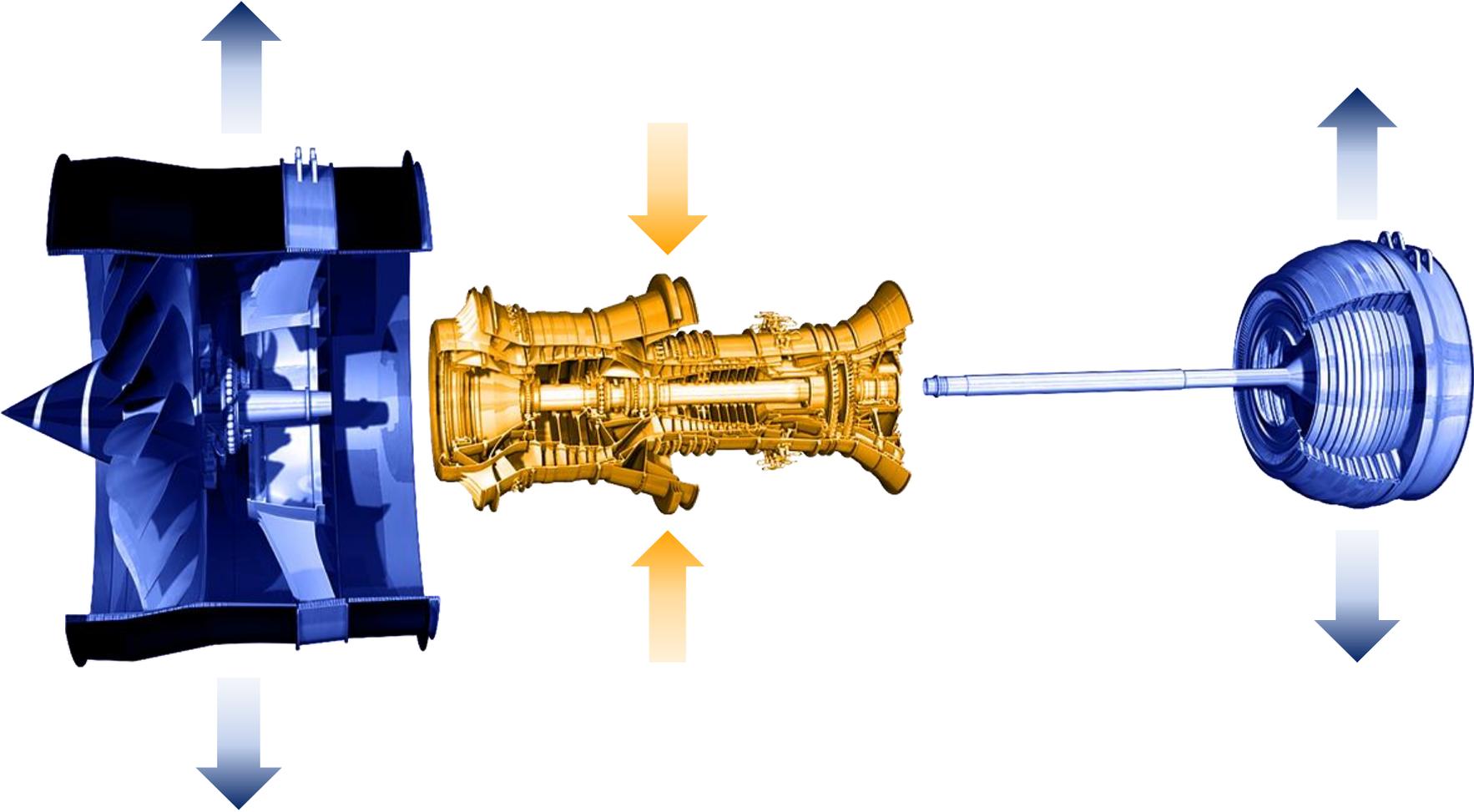
# Advance – our response for higher efficiency



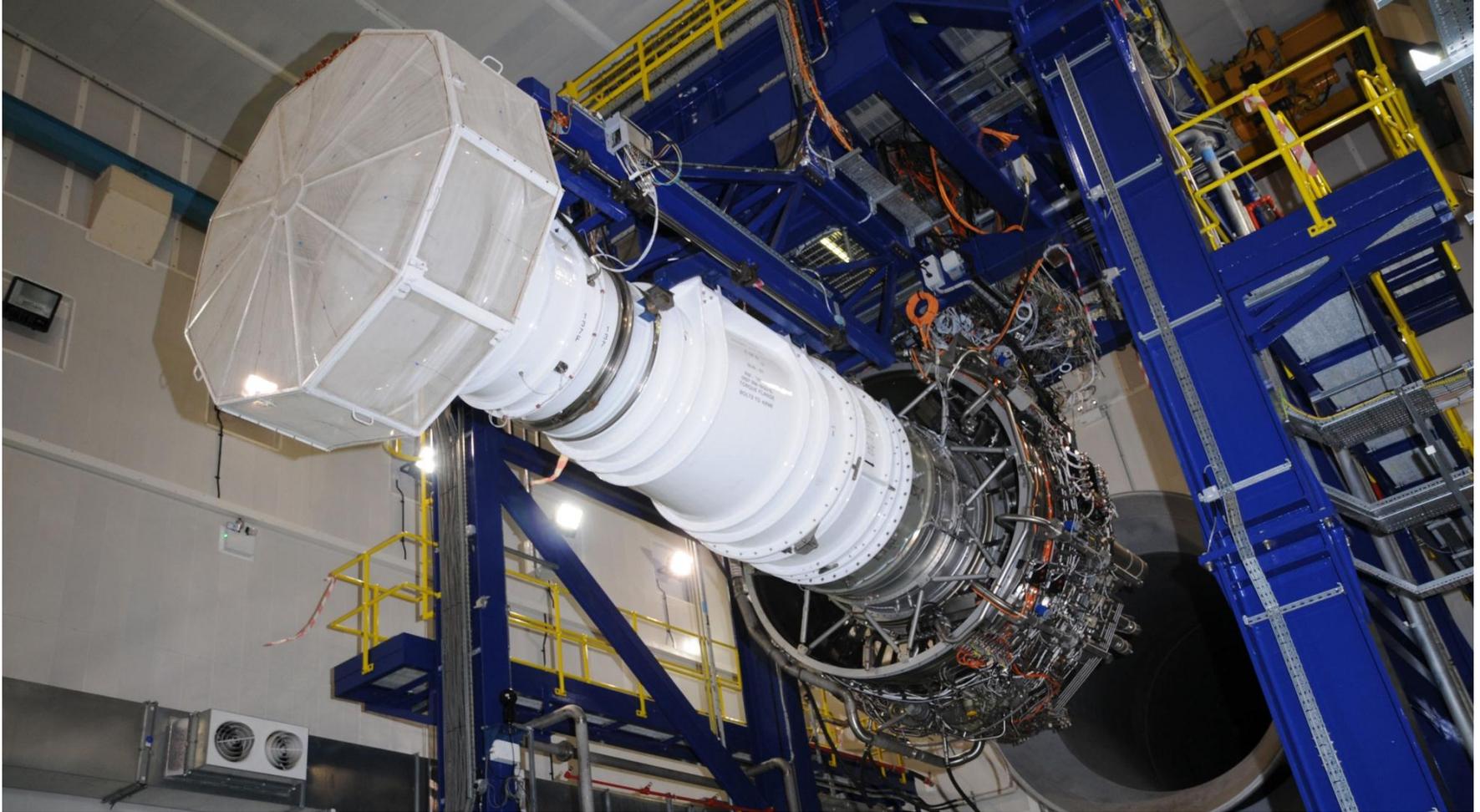
# Driving for higher efficiency



# Driving for higher efficiency



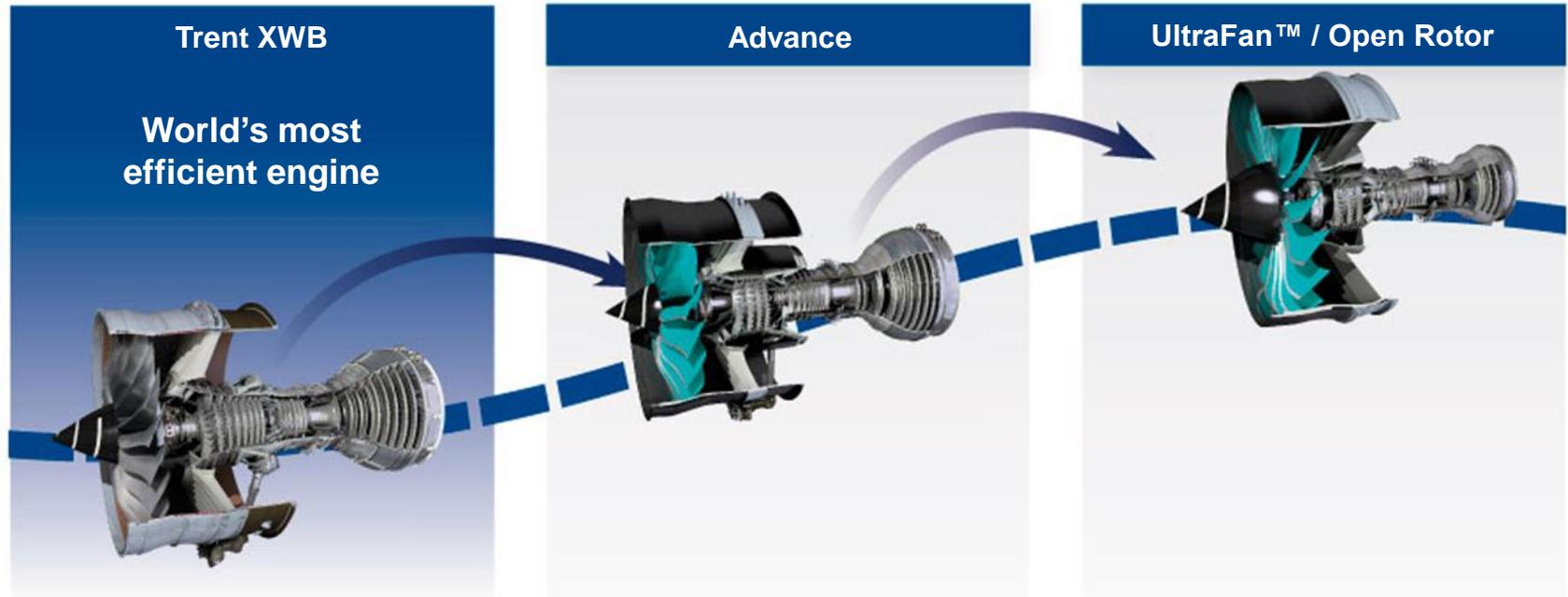
# High efficiency core



# Lightweight LP system

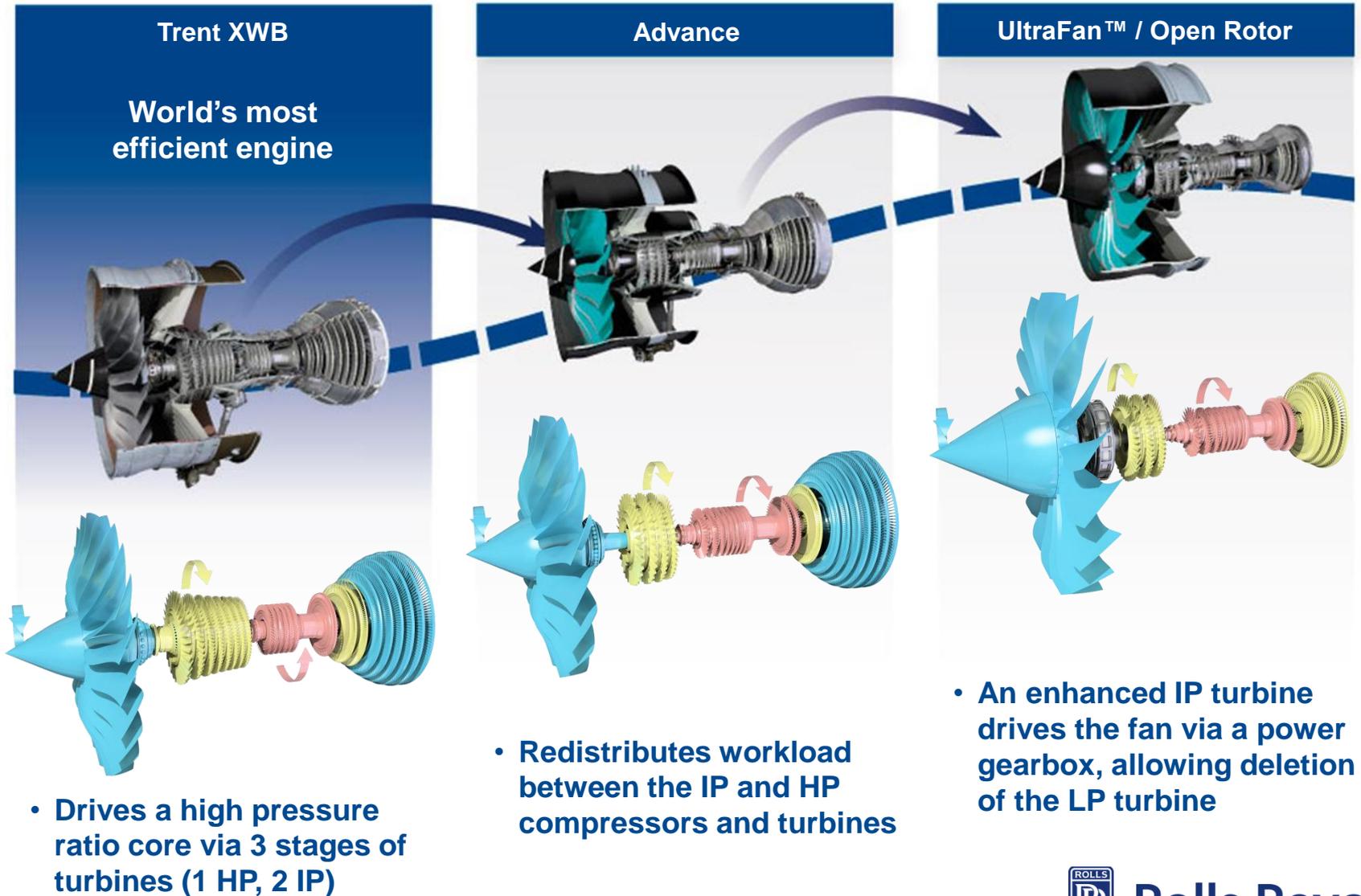


# World-leading product evolution

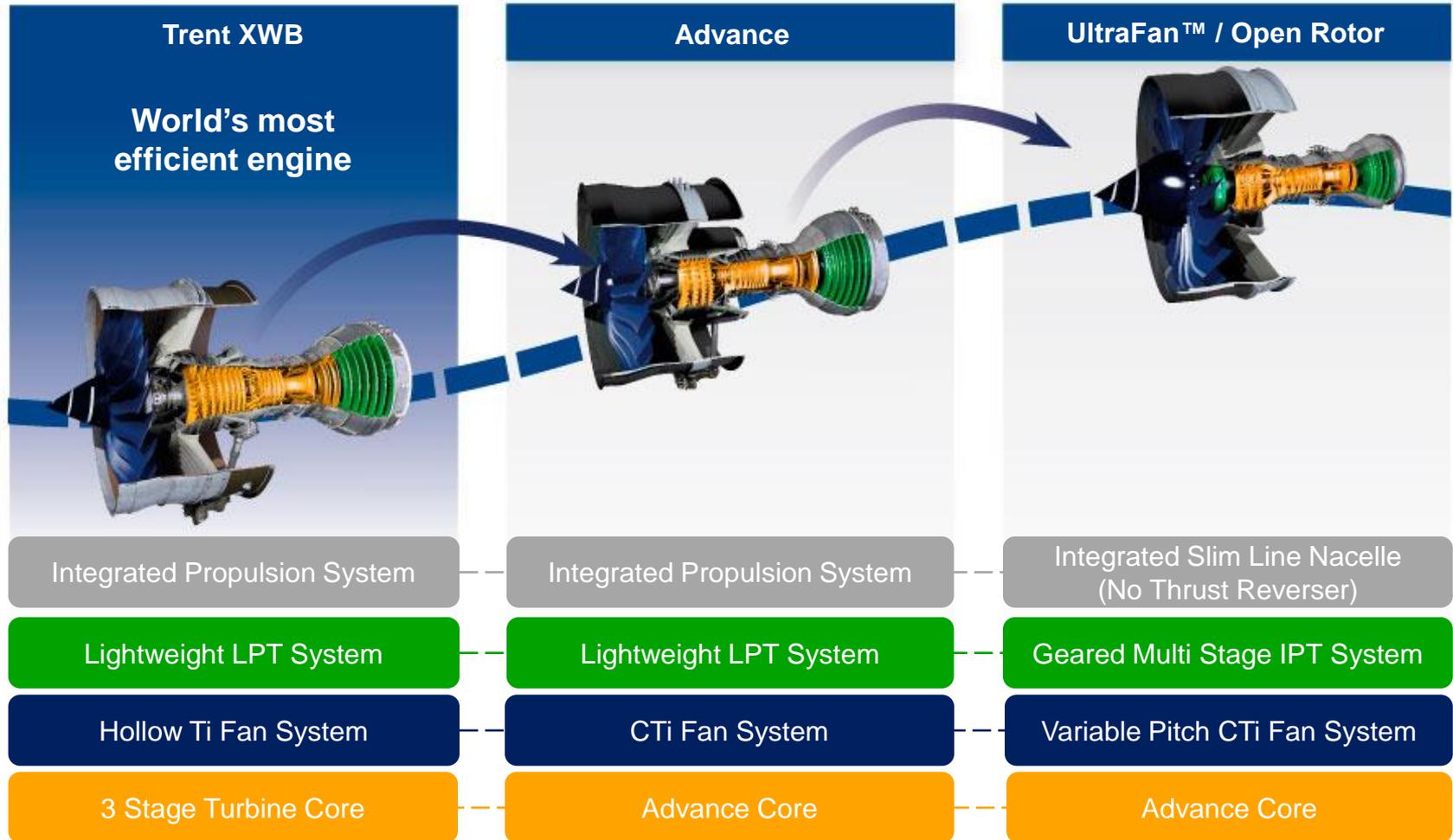


Technology EIS Readiness	2020+	2025+
Bypass Ratio	11+	15+
Overall Pressure Ratio	60+	70+
Efficiency relative to Trent 700	20%+	25%+

# World-leading product evolution



# World-leading product evolution



# World-leading technologies and capabilities



# Comprehensive demonstration



Proven maturity through multilevel demonstration



# Better Power for a Changing World