

— Il motore turboelica catalyst: mercato, vantaggi competitivi

- Webinar “La propulsione aeronautica dal 1908 al 2024 – dal motore automobilistico al Catalyst”
Roma, 24 Ottobre 2024

Overview

- New Centerline engine design
- Power range: 900 to 1500 shp
- Certification expected by YE 2025
- Bringing the latest technologies to this market segment
- Fully developed by Avio Aero in Europe



Markets we are targeting with the Catalyst



Business and general aviation



Commuter (up to 19 seats)



Small cargo



UAV



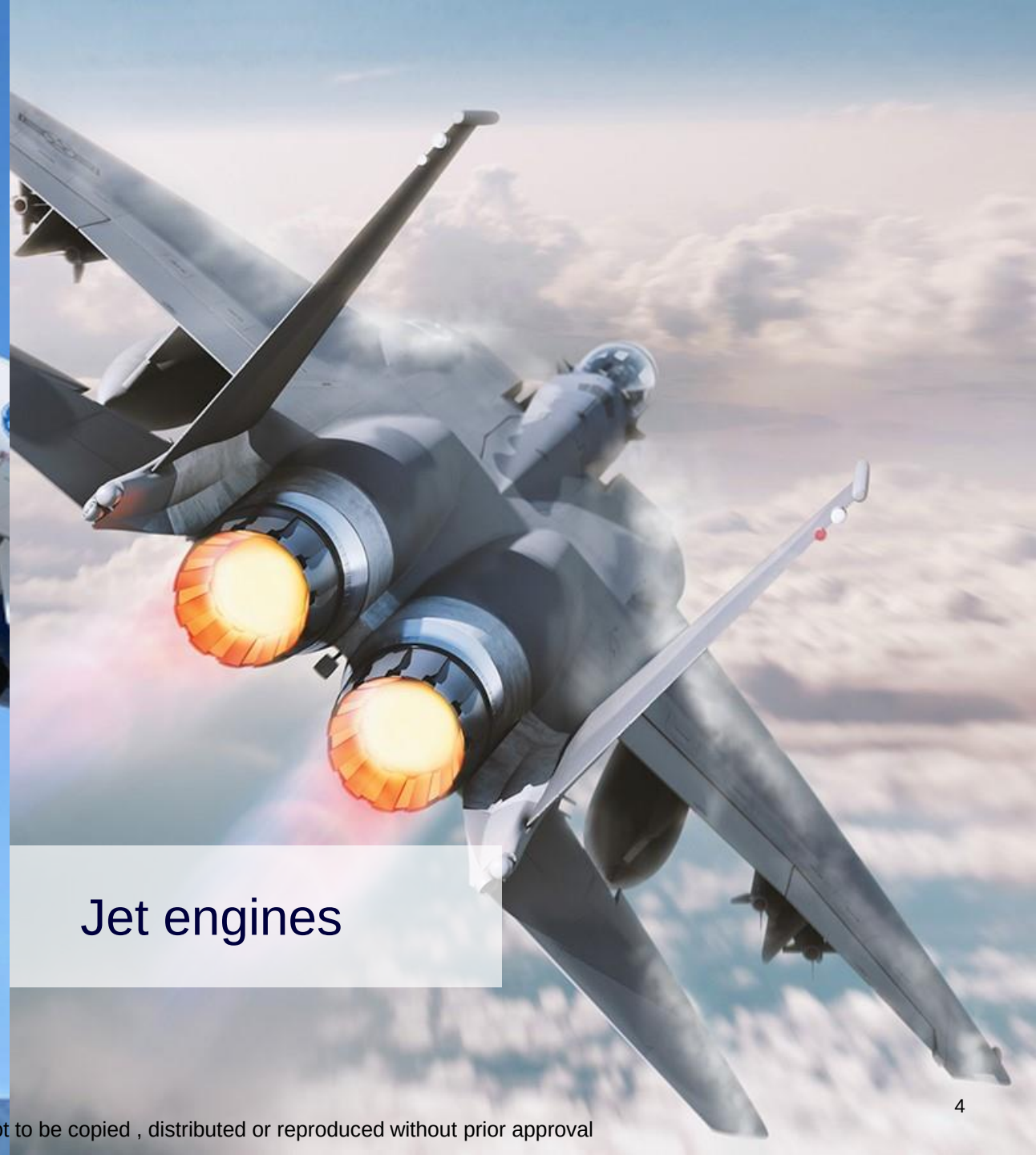
Trainer



Next gen A/C



Turbofan engines



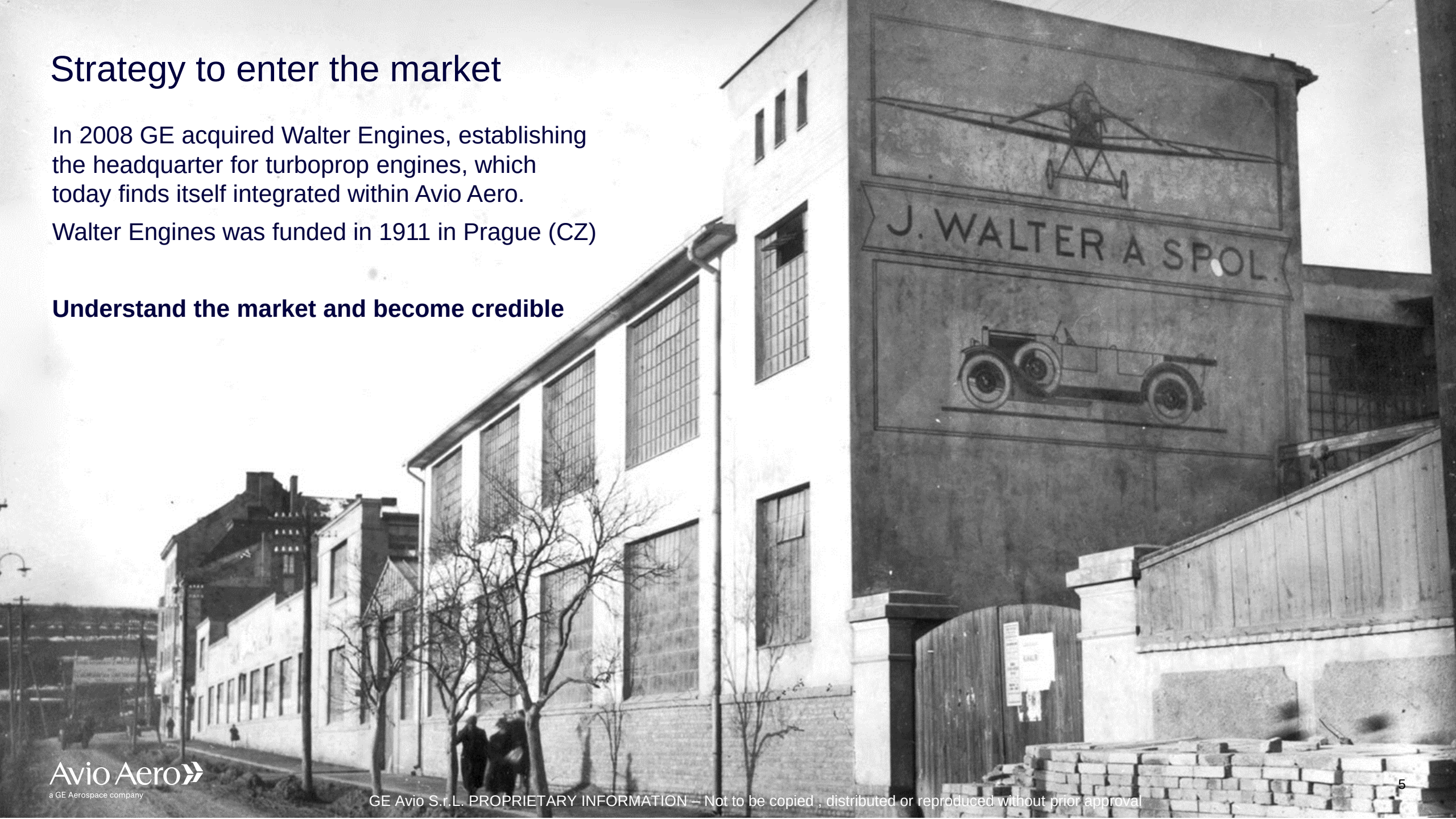
Jet engines

Strategy to enter the market

In 2008 GE acquired Walter Engines, establishing the headquarter for turboprop engines, which today finds itself integrated within Avio Aero.

Walter Engines was founded in 1911 in Prague (CZ)

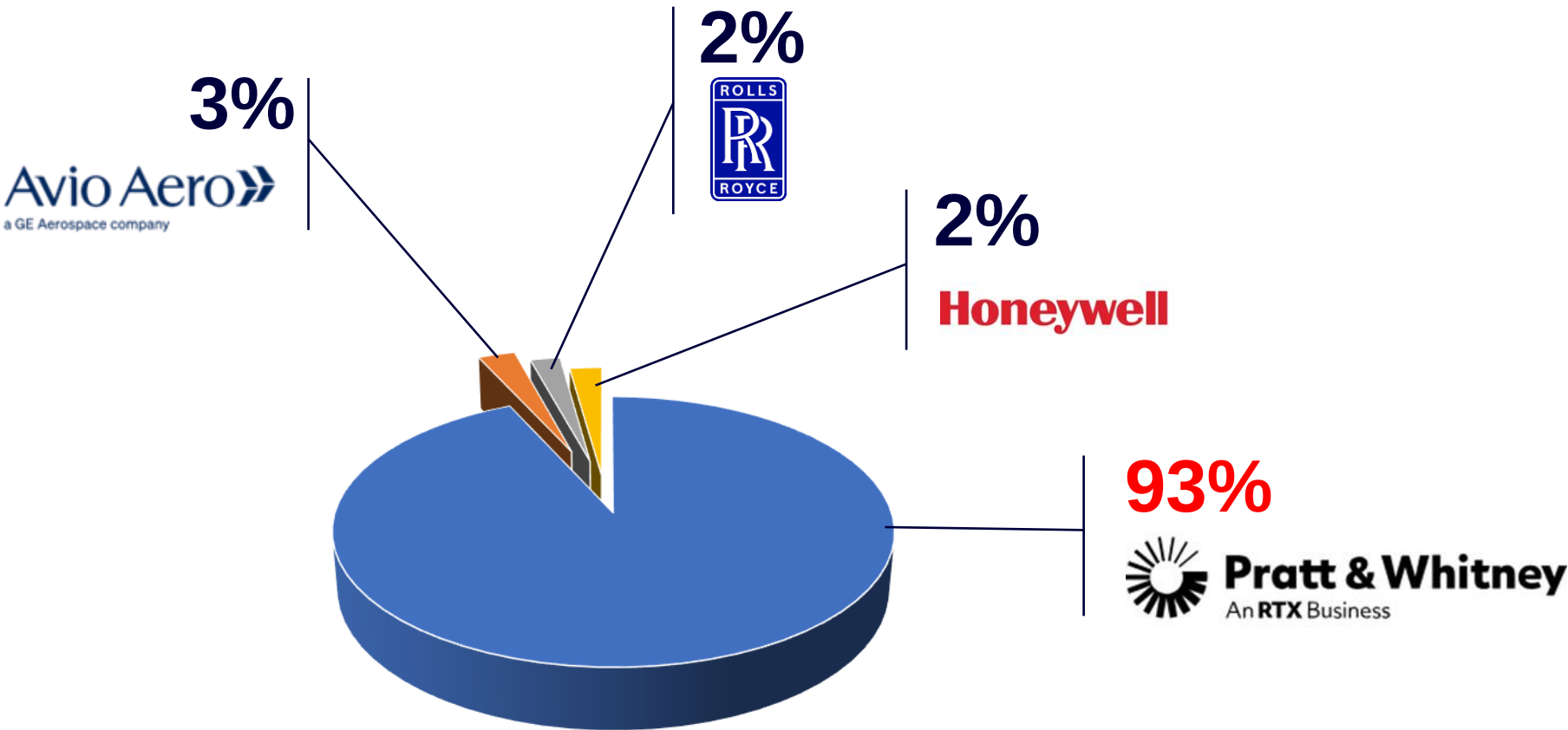
Understand the market and become credible



The market we are playing in ...



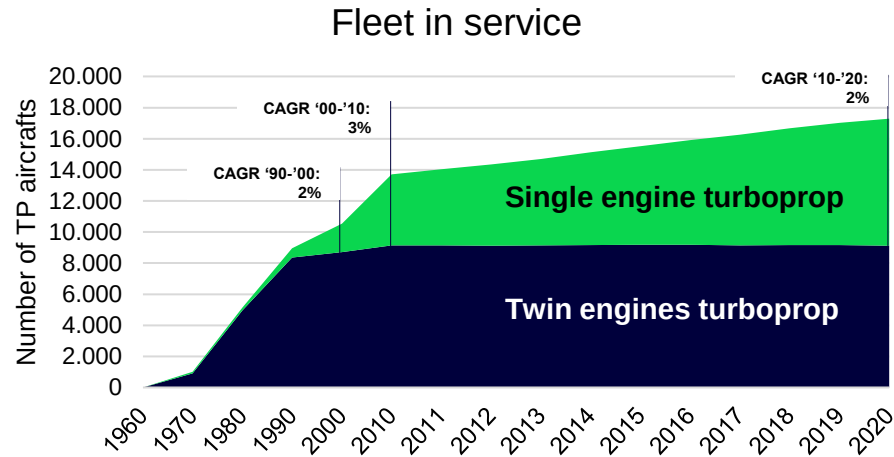
Small turboprop market segment (600 to 1600 shp)



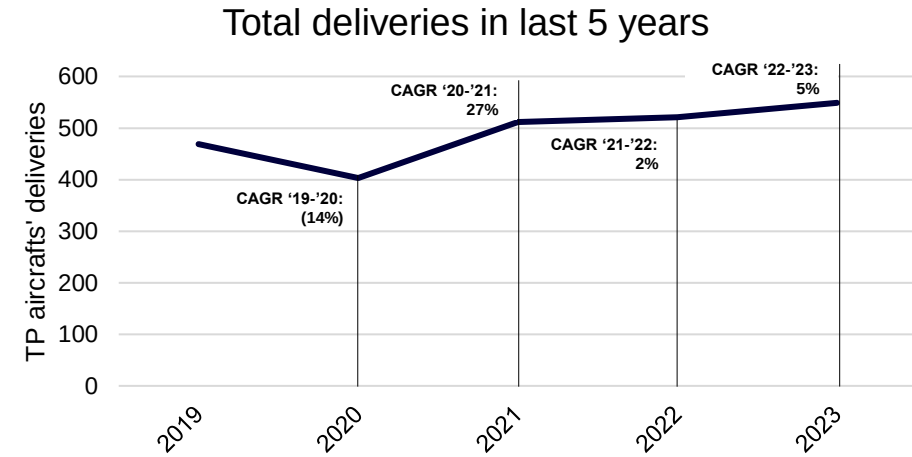
Source: Aircraft Production Forecast 2023

... one dominant player, setting the benchmark

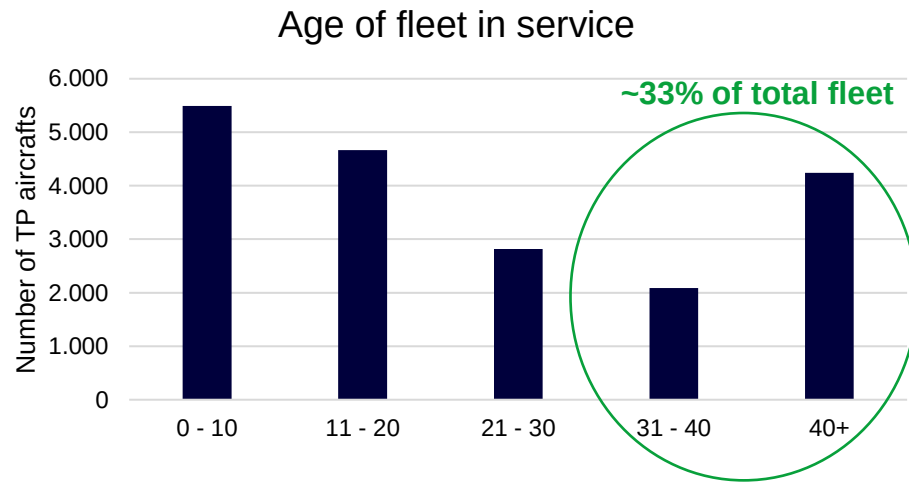
Market dynamics



Stable growth in the last 20 years ... single engine gaining market share



Strong return in deliveries after covid



An old fleet and new needs in terms of performance and exportability

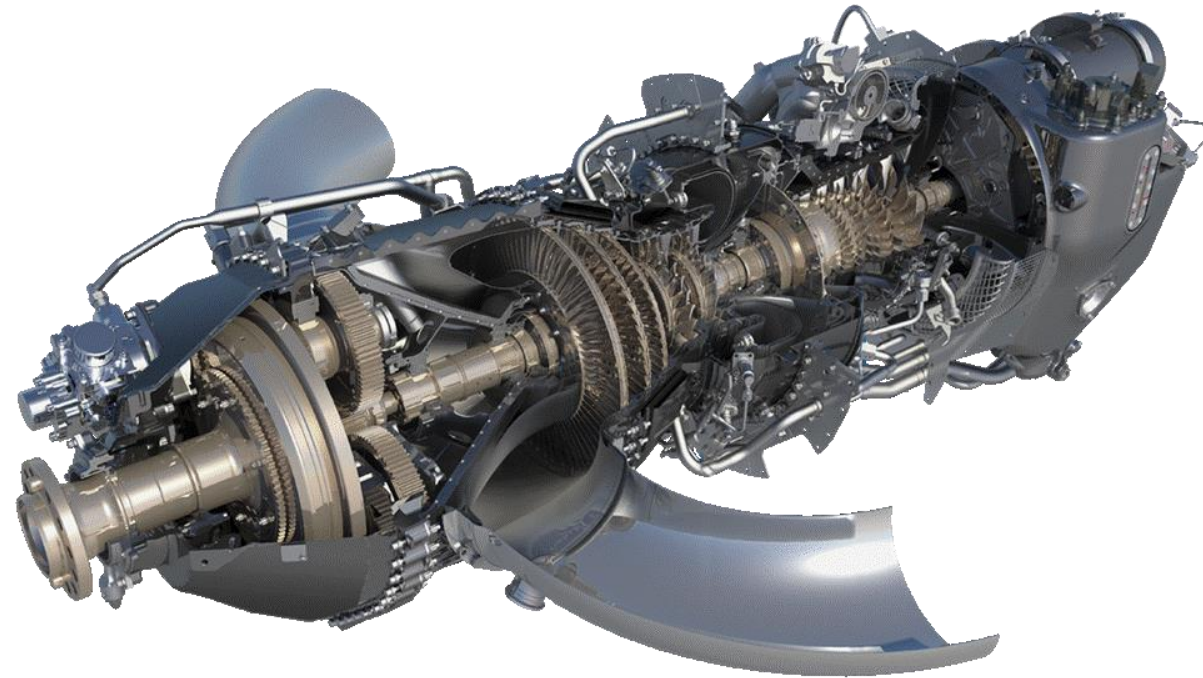
10 years outlook:

- Solid market ... 3% CAGR expected for deliveries
- Deliveries driven by fleet renewal & new market needs
- Launch of new platforms expected both for military (UAV, Trainer) and civil (Business, Utility) applications

Stable growth in next 10 years with new platform facing in the market

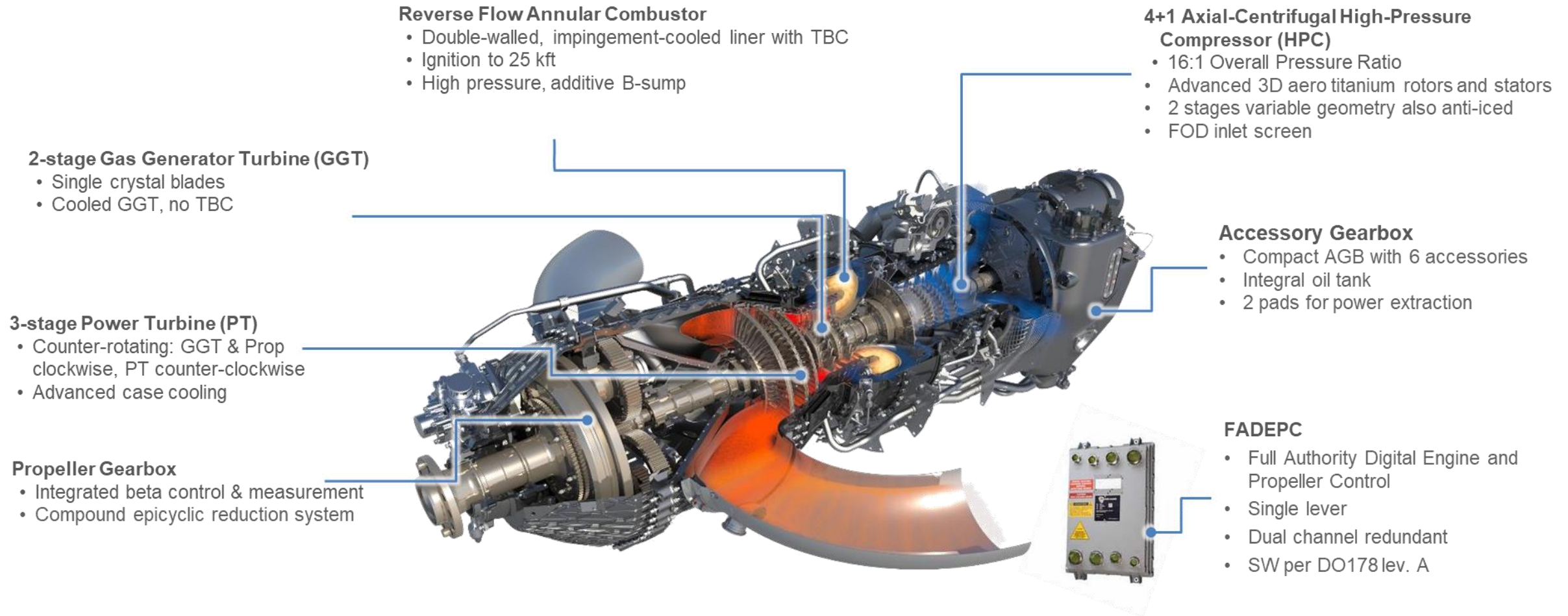
Strategy to enter the market

- **First clean sheet engine design in more than 50 years**, developed and built by Avio Aero
- Double digits **better fuel efficiency** compared to competing turboprops, enabling lower CO₂ emissions
- Up to 10% **higher cruise** power compared to competitor in the same class
- High **power extraction** capability
- Reducing pilot workload with **FADEC integrated** propeller and engine control for a jet-like, single-lever experience
- **Lower maintenance cost:** diagnostic & prognostic capability through the FADEC, high TBO interval.



Step change compared to existing engines in the market

Strategy to enter the market



Differentiating through technologies

Denali



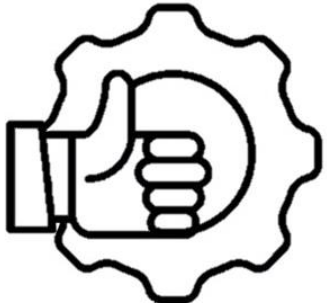
Beechcraft Denali ... our launching Customer

Eurodrone



Catalyst selected by Airbus Defence and Space as the propulsion system for the Eurodrone UAV

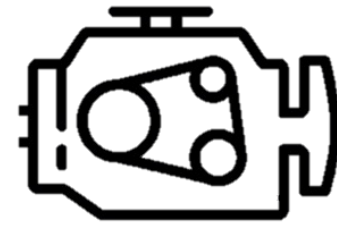
What is relevant for the market ... main CTQs



Reliability



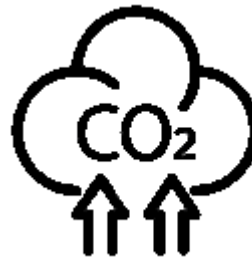
Fuel Consumption



Power



Maintenance costs



Emissions



Weight

What is relevant for the market ... main engine CTQs



Reliability	✓	✓	✓
Cabin comfort	✓		
Cruise speed	✓		✓
Fuel burn	✓	✓	✓
Operational costs	✓	✓	
Simplified cockpit (FADEC)	✓	✓	✓
Power		✓	✓
Exportability		✓	✓

Value for our Customers ... simplified cockpit



- Catalyst FADEC enables simplified cockpit
- **Single lever power control** reduces pilot demand... fly the airplane, NOT the engine
- Streamlined integration to aircraft systems: engine prop control, avionics, icing, flight management system



Single lever



Current technology



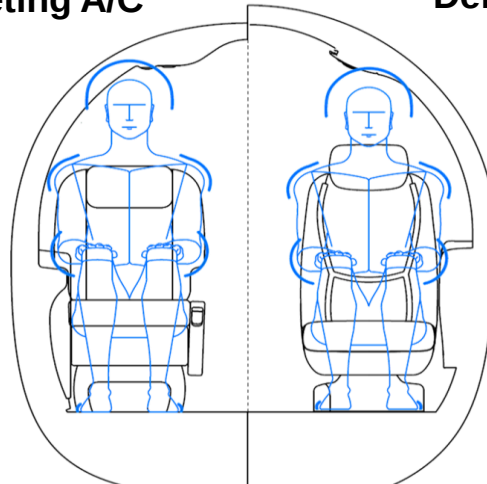
VS

Value for our Customers ... improving cabin comfort

- Market is demanding **better Cabin Ergonomics**
- Cabin volume and optimized for comfort
- Cabin pressurization reduced from 9K to 6K feet altitude
- Cruise prop speed reduced to 1500/1600 rpm for lower cabin noise

Competing A/C

Denali

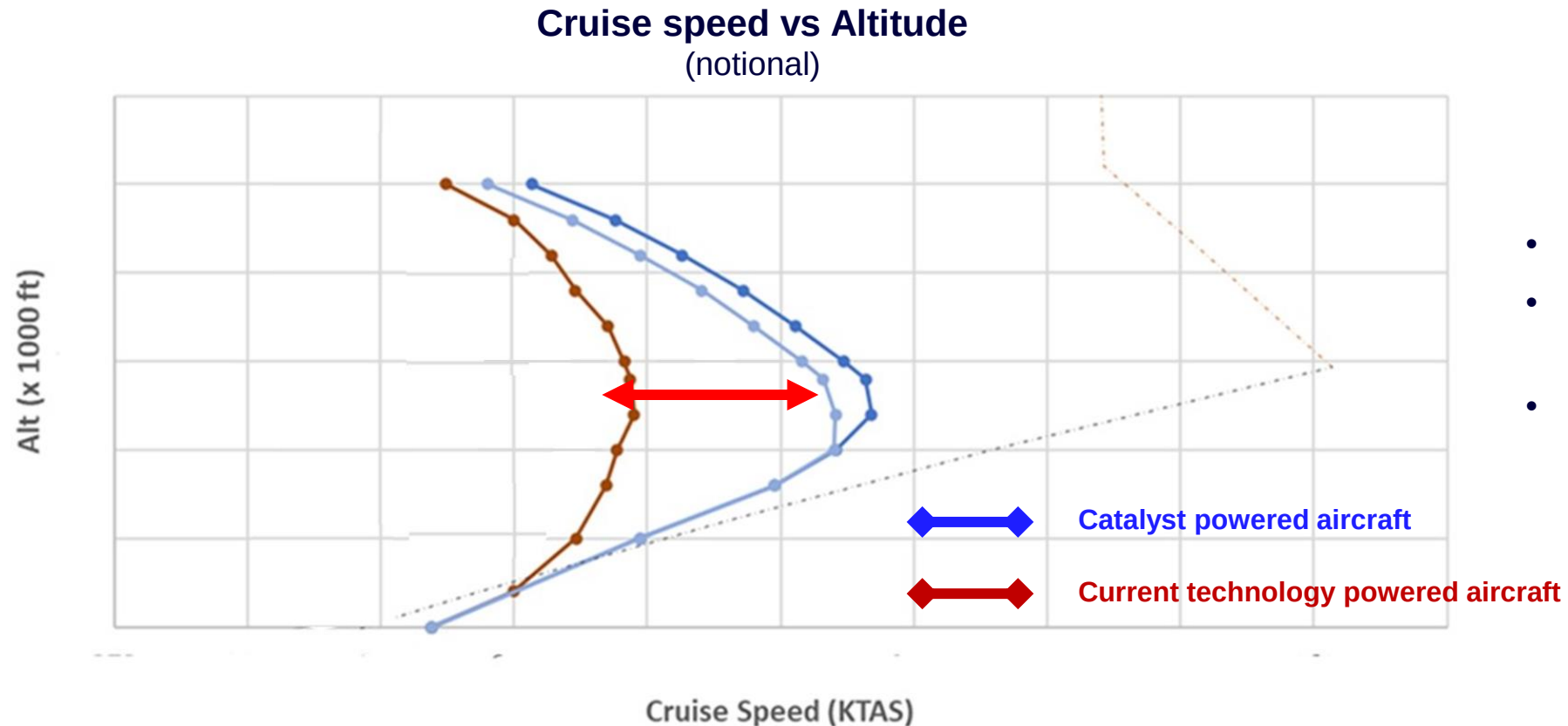


Denali cabin is 5" wider & 2.5" taller vs. competing a/c



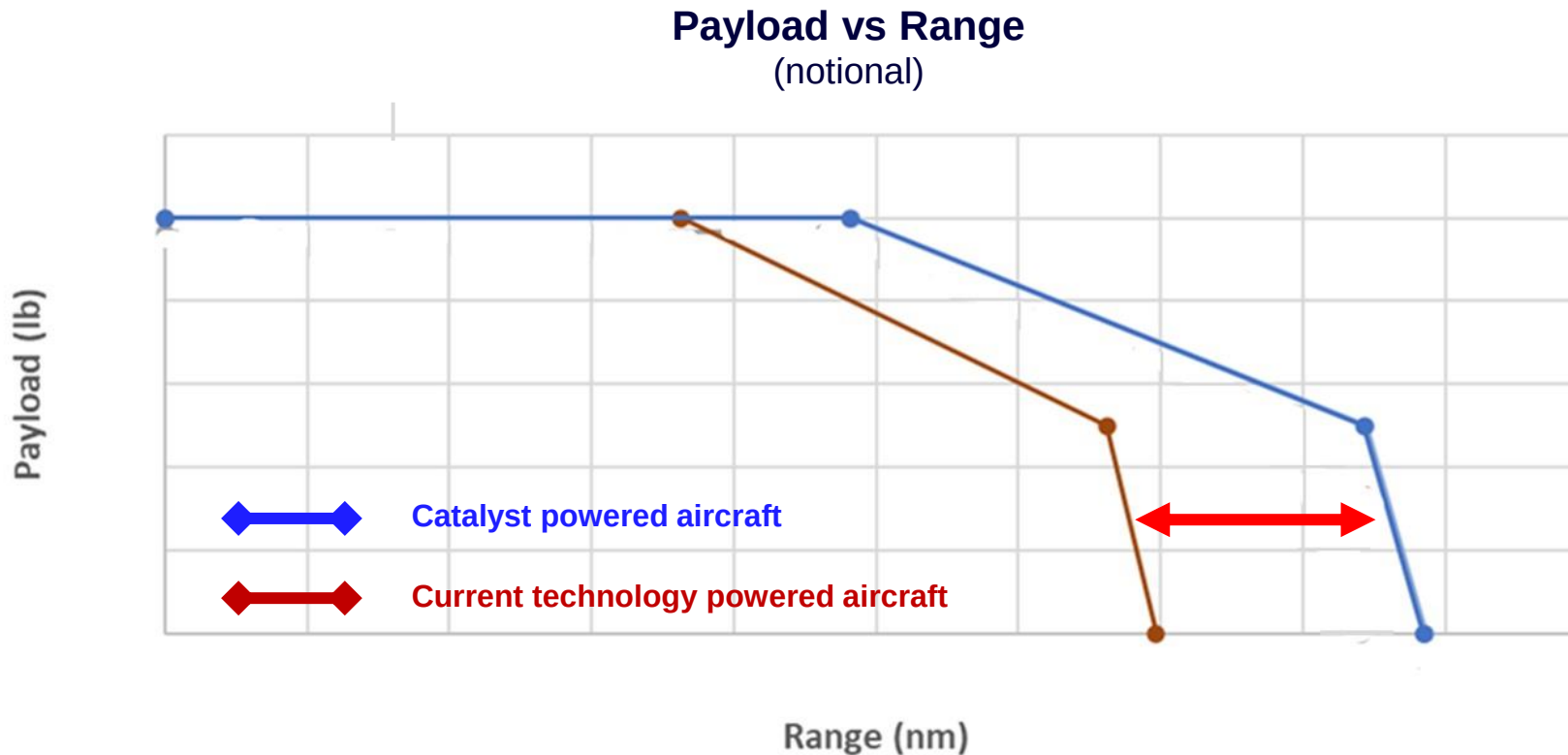
Catalyst provides more power vs competing engines, allowing better cabin ergonomics

Value for our Customers ... increasing cruise speed



- Higher engine power enables:
- **+8% max cruise speed**, reducing travel time
- **faster climb** to cruise altitude

Value for our Customers ... reducing fuel burn



18% better fuel efficiency vs. competing engines

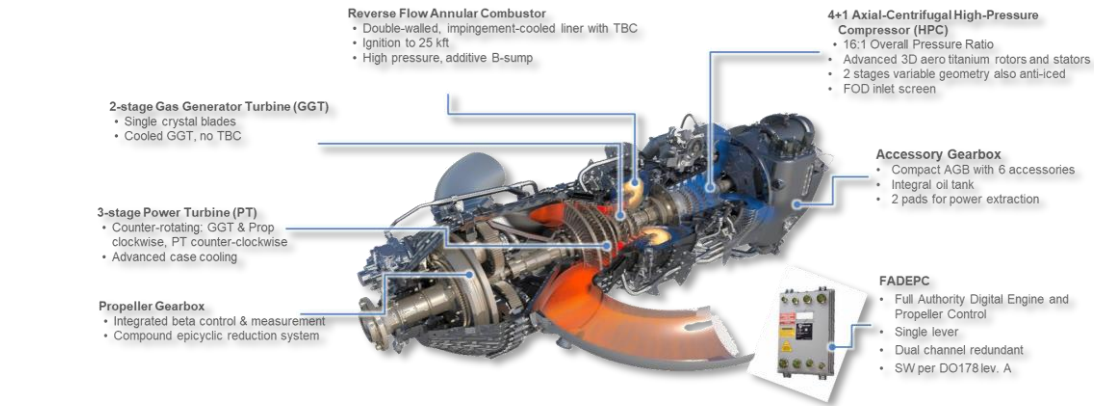
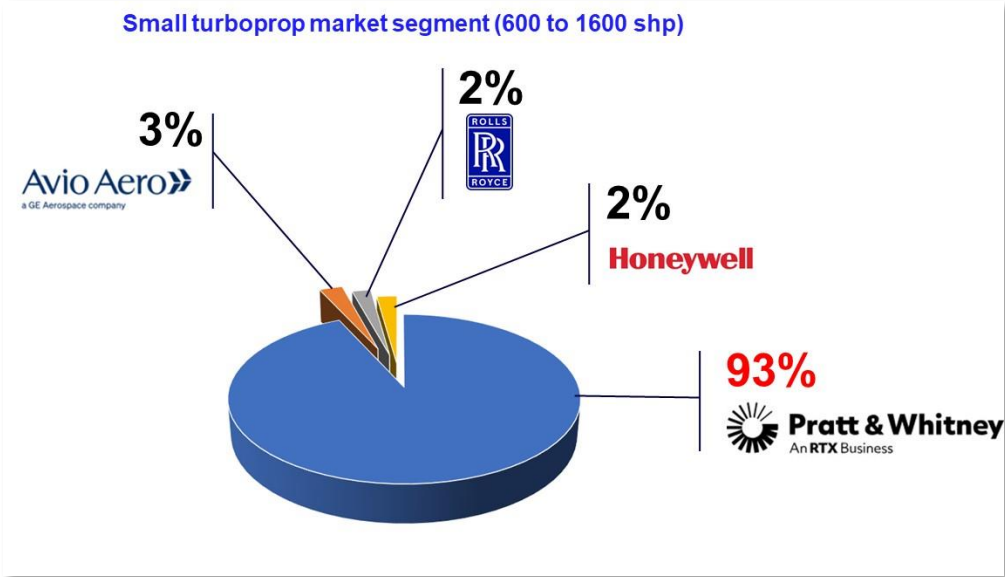
- Up to +25% more range / payload

and

- lower costs of operations
- lower carbon emissions

Enhancing mission capability ... at lower costs and carbon emissions

Catalyst ... technology differentiator disrupting the market



Latest technologies

Highly competitive market, ‘dominant’ player



... creating value for our Customers