



The Power of Flight



# CFM International Media Briefing - MAKS 2019

August 26, 2019 – Moscow

# Today's speakers



**Gaël Méheust**

President and CEO  
CFM International



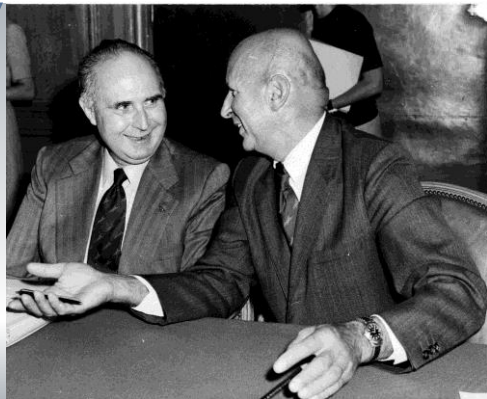
**Philippe Couteaux**

Executive Vice President,  
Sales & Marketing  
CFM International

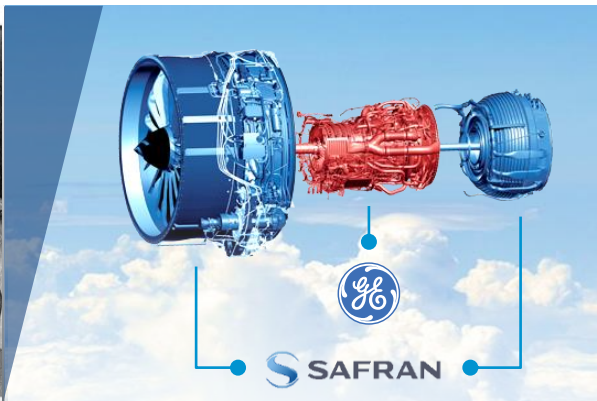


# CFM Legacy

# CFM International, a long-standing joint company



SAFRAN AIRCRAFT ENGINES & GE,  
SUCCESSFUL PARTNERS  
**for 45 years**



## 50/50 joint company

THE WORK SPLIT TAKES  
ADVANTAGE OF THE  
TECHNOLOGICAL EXPERTISE AND  
CAPABILITIES OF BOTH GE AND  
SAFRAN AIRCRAFT ENGINES



**N°1** engine supplier  
worldwide for mainline  
commercial jets  
(over 100 seats)



**600**  
customers worldwide



Partnership extended  
to **2040**

# A real 50/50 joint company



Fan &  
accessory gearbox



Core engine



Low-pressure  
turbine



## All activities shared 50/50

Sales, design, development;  
production, support & service  
– same work share for both CFM56 and LEAP



# CFM56<sup>®</sup> The world best selling commercial engine



 **AIRBUS**

A320ceo



CFM56-5B



 **BOEING**

737 NG



CFM56-7B



**99.98** % Dispatch reliability



**CFM56**

More than  
**33,485**  
**CFM56**  
engines delivered  
worldwide



**1 billion**  
flight hours  
surpassed in April  
2019

**AEROFLOT** 

**1998: Aeroflot becomes  
the first Russian CFM56  
operator**



**28,000**  
**CFM56**

engines in service

Support of the fleet  
beyond 2040



**7 Million**  
travelers use  
CFM-powered  
aircraft daily

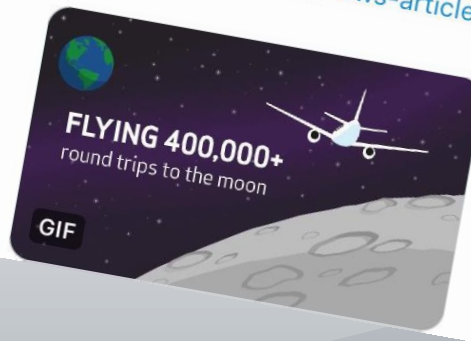


Every **2 sec.**  
a CFM-powered aircraft takes  
off somewhere in the world

# CFM56: 1 Billion Flight hours, an extraordinary achievement !



CFM Internatio... · 05/06/2019 ✓  
The #CFM56 just reached **1 Billion** engine flying hours. If our airline partners were traveling in space, this milestone would mean flying to the moon and back more than 400,000 times! 🌍✈️🌕 Read more facts here ➡ [cfmaeroengines.com/news-articles/](http://cfmaeroengines.com/news-articles/)





# LEAP Engine



# LEAP: the CFM56 successor



Program launched in **2008**  
to power the new generation of single aisle aircraft.



Selected by Airbus to power the A320neo ;  
by Boeing for the B737 MAX; by COMAC for the C919.



## LEAP

represents the combination of  
CFM's reliability and unrivaled  
technologies:

- 3D Woven composite fan blades
- CMCs materials
- Additive Manufacturing



LEAP started  
commercial operations with A320neo in **2016**



# LEAP® The smoothest and most successful EIS in CFM history



**AIRBUS**

A320neo



ON TIME

**LEAP-1A**  
Entry into service  
August 2016



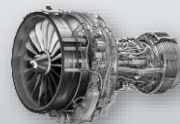
**BOEING**

737 MAX



ON TIME

**LEAP-1B**  
Entry into service  
May 2017



**COMAC**

C919



ON TIME

**LEAP-1C**  
Engine certification  
December 2016



**LEAP**

**16,100+**

Backlog (orders and commitments) to date  
(End of June 2019)

**100+**



operators on  
**5 continents**

# The LEAP engine... delivering what we promised!



## ENVIRONMENTAL PERFORMANCE



Lower noise & emissions



**15+%** better fuel  
efficiency

## BEST-IN-CLASS ASSET UTILIZATION



Product reliability



Predictive  
maintenance



World-class support

## PRODUCTION



On schedule



Robust Supply Chain

# LEAP fleet in service... **5 million +** engine flight hours

## LEAP-1A

EIS AUGUST 2016

**1.7+ million** cycles

**3.5+ million** flight hours

**50** operators

**10+** hours average per day

**481** aircraft in service



**Utilization:  
96%  
Flown Days**

**Already higher  
than CFM56**

Fleet statistics are for engines



## LEAP-1B

EIS MAY 2017

**630,000+** cycles

**1.7** million flight hours

**53** operators

**10+** hours average per day

**389** aircraft in service

# Boeing 737 MAX Return to Service...

## Taking a two-phased approach to supporting customers

### Proactive Maintenance:



- Proper preservation
- Completing time-sensitive tasks
- Pulling forward planned maintenance

### Return to Service:



- Performing de-preservation
- Validate data links
- Complete return to service check list





# Production

# Backlog is solid... 7+ years of production



**16,400+** engines total backlog (CFM56 & LEAP)  
*End of June 2019*



**1,150**  
total orders and commitments at Paris Air Show



**\$50.7**  
billion U.S. value at list price at Paris Air Show,  
setting a new record in CFM history



# LEAP unprecedented production ramp-up is on track



MET PRODUCTION TARGET AGAIN IN 2018...  
... AND FINISHED ANOTHER RECORD YEAR with  
**more than 2,150 engines delivered**



**2,000+** engines: planned rate from 2020



→ Total weekly LEAP production has increased  
by 40 percent from 2018 rates

→ Uninterrupted deliveries since April 2016



## Highlights

- ramp rate increasing ... **dual and multiple source** strategy on critical parts 100% in place
- 8 new facilities built by Safran and GE to support the ramp-up
- 1+ billion USD investments in capacities





# A strong industry

# Industry is still strong...



Consumers will still spend 1% of GDP on air travel...

**\$899 billion**



Revenue Passenger Kilometers forecasted to grow

**5%**



Average load factor is at a record high, above

**80%**



Fuel costs: **~25% on average** of op cost

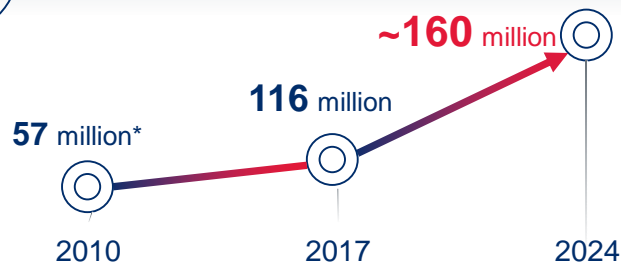
**~\$28\***  
**BILLION**  
**AIRLINE NET**  
**PROFIT**  
**PROJECTED FOR**  
**2019**

*\* Source: IATA June 2019 Economic Forecast*

# Russia is a strategic market



## RUSSIAN AVIATION IS GROWING FAST



## DOMESTIC MARKET: A STRONG DRIVER OF GROWTH

- Rose 10.6% year-over-year and will keep growing up by 40% in the 5 years
- Air network development is one of the corner points of the Russian Federation program

*\* Annual number of passengers*

Sources: IATA forecasts ; GosNII GA forecasts





# CFM in Russia

# CFM: more than 20 years in Russia & CIS



1998

- ✓ Aeroflot starts operation with CFM56-7-powered Boeing 737

2003

- ✓ Belavia takes delivery of first CFM56-powered aircraft
- ✓ Aeroflot selects the CFM56-5B engine to power its new fleet of 18 Airbus A319/A320

2004

- ✓ Volgaero, a joint-company between UEC Saturn (70%) and Safran Aircraft Engines (30%) is created to manufacture CFM56 parts

2008

- ✓ Ural Airlines selects the CFM56-5B/3 engine to power seven new Airbus A320

2012

- ✓ UTair selects CFM56-5B engine to power new Airbus A321 aircraft

2018

- ✓ The first LEAP engine begins commercial operation in Russia with S7

# The CFM56 is the engine of choice of Russian operators



**850+ CFM56 engines** in operation in Russia & CIS with 15+ operators

**90%: CFM56** market share in Russia & CIS



## Highlights

- Aeroflot is the largest CFM Russian operator **with 160 CFM56-powered aircraft**
- S7 is the **CFM56-5B fleet leader** worldwide **with 48,000+** flight hours without removal



# The LEAP engine in Russia

2018: **S7 becomes the first LEAP-1B operator in Russia.** The airlines currently has 2 B737 MAX aircraft and will add 9 additional aircraft in the coming months.



August 2019 : **Ural Airlines takes delivery of its first LEAP-1A powered A320neo.** 4 additional aircraft to be delivered in the coming months.



## Next LEAP-powered aircraft deliveries:



# What's next ?



Market opportunities: **250+ potential new narrowbody aircraft** would be delivered in Russia by 2024

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**Addressing Russian Aviation industry growth** by providing the best-in-class technologies while maintaining the CFM highest reliability rate

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**Support the CFM56 fleet** through our worldwide MRO network

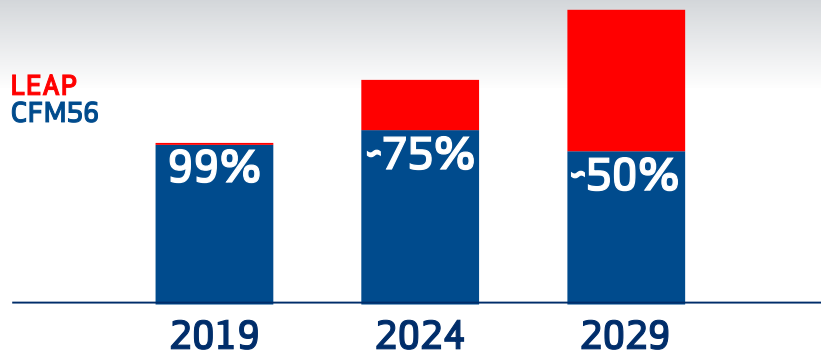
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# ...now we're focused on CFM Services & Support

## # WORLDWIDE SHOP VISITS FORECASTS



**+38,000** CFM engines in service in 2025

**60%** of CFM56 w/ **no SV**; **30%** one SV only

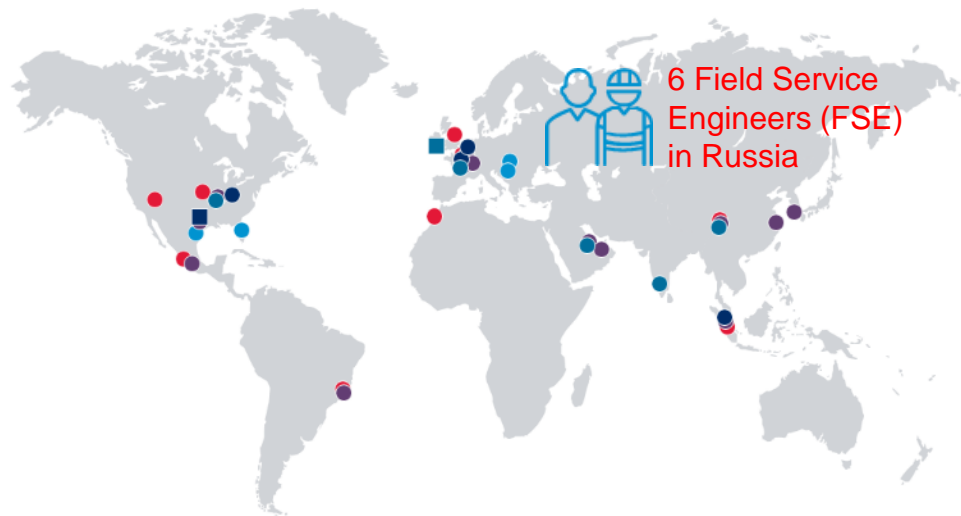
Peak CFM56 shop visits at **3,000+**

**1,000** LEAP SV projected around 2025

Open MRO model ... based on CFM56

18 CFM MRO sites by year-end

More third-party shops being added



# CFM's industrial footprint in Russia

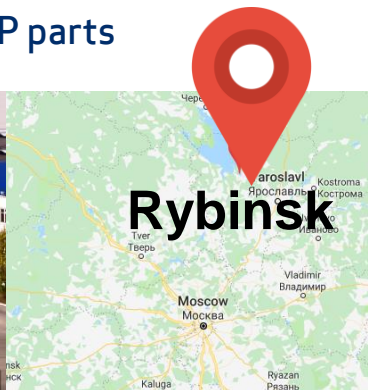


**Russia** has always been a key partner of the CFM supply-chain

→ UEC Saturn began manufacturing CFM56 parts in the '90s

→ Volgaero was created in 2004 to produce CFM56 parts; **now on board for the LEAP**

→ VSMPPO: CFM56 and LEAP parts



# Access to photos, releases, and this presentation



<https://www.cfmaeroengines.com/maksairshow-2019-downloads/>





Thank you!

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