Smart and sustainable solutions for greener ATM Florian Guillermet, Executive Director, SESAR JU

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SESAR: ADDRESSING INEFFICIENCIES AT EVERY STAGE OF FLIGHT



Excess CO₂ emissions due to network flight inefficiency



SOURCE: European Aviation Environmental Report

MASTER PLAN PERFORMANCE AMBITIONS FOR 2035



Key Performance Area	SES high-level goals vs. 2005	Key Performance Indicator	Baseline value (2012)	Pe Ambition value (2035)	erformance ambition vs. baselin	
					Absolute improvement	Relative improveme
Capacity	Enable 3-fold increase in ATM capacity	Departure delay ⁴ , min/dep	9.5 min	6.5-8.5 min	1-3 min	10-30%
		IFR flights at congested airports ⁵	4 million	4.2-4.4 million	0.2-0.4 million	5-10%
		Network throughput IFR flights ⁵	9.7 million	~15.7 million	~6.0 million	~60%
		Network throughput IFR flight hours ⁵	15.2 million	~26.7 million	~11.5 million	~75%
Cost efficiency	Reduce ATM services unit cost by 50% or more	Gate-to-gate direct ANS cost per flight ¹ , EUR(2012)	EUR 960	EUR 580-670	EUR 290-380	30-40%
Operational efficiency		Gate-to-gate fuel burn per flight, kg/flight	5280 kg	4780-5030 kg	250-500 kg	5-10%
		Additional gate-to-gate flight time per flight ² , min/flight	8.2 min	3.7-4.1 min	4.1-4.5 min	50-55%
		(Within the: Gate-to-gate flight time per flight ³ , min/flight)	(111 min)	(116 min)		
Environment	Enable 10% reduction in the effects flights have on the environment	Gate-to-gate CO ₂ emissions, tonnes/flight	16.6 tonnes	15-15.8 tonnes	0.8-1.6 tonnes	5-10%
Safety	Improve safety by factor 10	Accidents with direct ATM contribution ⁶ , #/year Includes in-flight accidents as well as accidents during surface movement (during taxi and on the runway)	0.7 long-term average)	no ATM related accidents	0.7	100%
Security	- larger because the average number of	ATM related security incidents resulting in traffic disruptio	ons unknown	no significant disruption due to cyber-security	unknown	-

3 Average flight time increases because the number of long-distance flights is forecast to grow faster than the number of short-distance flights

4 All primary and secondary (reactionary) delay, including ATM and non-ATM causes

5 Includes all non-segregated unmanned traffic flying IFR, but not the drone traffic flying in airspace below 500 feet or the new entrants flying above FL 600

6 In accordance with the PRR definition: where at least one ATM event or item was judged to be DIRECTLY in the causal chain of events leading to the accident. Without that ATM event, it is considered that the accident would not have happened

EXAMPLES OF SESAR SOLUTIONS SUPPORTING MORE EFFICIENT ATM

Improved ground/surface operations



Continuous climb operations



- Improved airport operations (advanced collaborative decision making -TAM) & optimised taxi and runway usage in order to avoid unnecessary fuel burn
- 13 of the 17 A-CDM airports = tangible taxi-time performance improvements of **108,072 tonnes of CO2 emissions**

- Implemented in Austria, Germany, France, Hungary and Ireland and planned in Italy, Lithuania, Latvia and Portugal.
- Potential savings of 340,000 tonnes fuel/year, equivalent to 1.1 million tonnes of carbon dioxide (source: ECAC study)

Extended arrival management



- Implemented in Madrid, Paris Charles de Gaulle, Frankfurt and Copenhagen (PCP)
- Heathrow: annual savings of 15,000 tonnes of carbon dioxide,
 4,700 tonnes of fuel

SOURCES: European ATM Master Plan – 4th edition/European Aviation Environmental Report

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Thank you very much for your attention!



