

DELIVERING VALUE

New study indicates Europe's ATM system is cheaper and more efficient than US system.

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New research and further analysis of existing performance data suggests that, contrary to previous study conclusions, the US air traffic management (ATM) system is less cost efficient than that of Europe.

Every few years FAA and Eurocontrol, the European Organization for the Safety of Air Navigation, sit down together and compare how well their respective ATM systems are performing. The next report is scheduled for October. The most recent study—2015: Comparison of Air Traffic Management-Related 2015 Operational Performance: US/Europe—published in September 2016, reached a similar conclusion to previous studies.

“Overall, air navigation service provision is more fragmented in Europe with more air navigation service providers (ANSPs) and physical facilities than in the US. Europe is made up of individual sovereign states,” the report concluded. “Although the CONUS (continental US) airspace is 10% smaller than the European airspace, the US controlled approximately 57% more flights operating under Instrument Flight Rules (IFR) with 24% fewer full time air traffic controllers than in Europe in 2015. US airspace density is, on average, higher and airports tend to be notably larger than in Europe.”



European and US airspace management systems differ widely in many ways, including financing, procedures, technologies and demands on the system. This makes close comparison very difficult.

However, a recent study from Functional Airspace Block Europe Central (FABEC)—the body responsible

ATM cost comparisons between the USA and Europe		
	USA	Europe / DFS
Kind of charges	Passenger-oriented charges per flight (ticket tax or overflight tax)	Aircraft-oriented charges per distance flown and aircraft mass
Charges are used for	FAA (ATO budget share approx. 67%)	ANSPs
A passenger pays for a domestic flight over 560 km ... *	1) Air transportation excise tax: 7.5% of ticket price 2) \$3.70 segment fee	EUR 4.59 (EUR 3.15 en-route charge + EUR 1.44 approach fee)***
... if the one-way ticket costs \$130 / EUR 100 **	\$13.45 Ticket Tax + \$5.47 General Tax = \$18.92 → equals \$12.68 or EUR 11.46 for FAA/ATO (67% budget share)	EUR 4.59

Table 1: ATM cost comparisons between the US and Europe

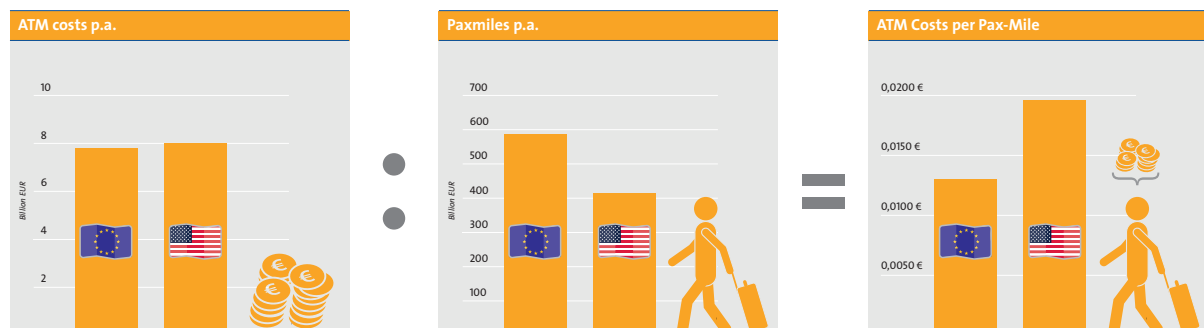


Table 2: Overall performance comparisons, US' and Europe's ATM systems, based on passenger/miles

for integrating upper airspace operations between Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland—of traffic volumes and flows across the two continents has concluded that if the US and European ATM systems were compared on the basis of the number of passengers and how far they are actually flown, then the European Union's fragmented ATM system is approximately one-third cheaper than the US' entirely unified network.

The results of the study showed that Europe's ATM system handles more flights, flying longer distances and with fewer controllers, making it far more efficient. And European controllers work fewer hours and enjoy more benefits than their FAA colleagues.

"This doesn't sound right, does it?" Matthias Whit-

tome, who oversaw the FABEC study, notes. "And at first we couldn't believe it either. But it's true. Part of the problem is in the difficulty of comparing two quite different systems. If you measure both systems on the basis of how many aircraft are controlled, then you have to take into account the relatively large number of general and business aviation aircraft in the US, flying one or two passengers, compared to Europe. But if you measure the system by how many passengers you carry and how far you fly them—the metric that airlines themselves use to measure business operational efficiency—then almost all the results are reversed. Europe is more efficient than the US."

It is also considerably cheaper (table 1).

As soon as you start measuring the two ATM sys-

Drivers of on-time performance reported by airlines 2015 - (Flights to or from the main 34 airports)

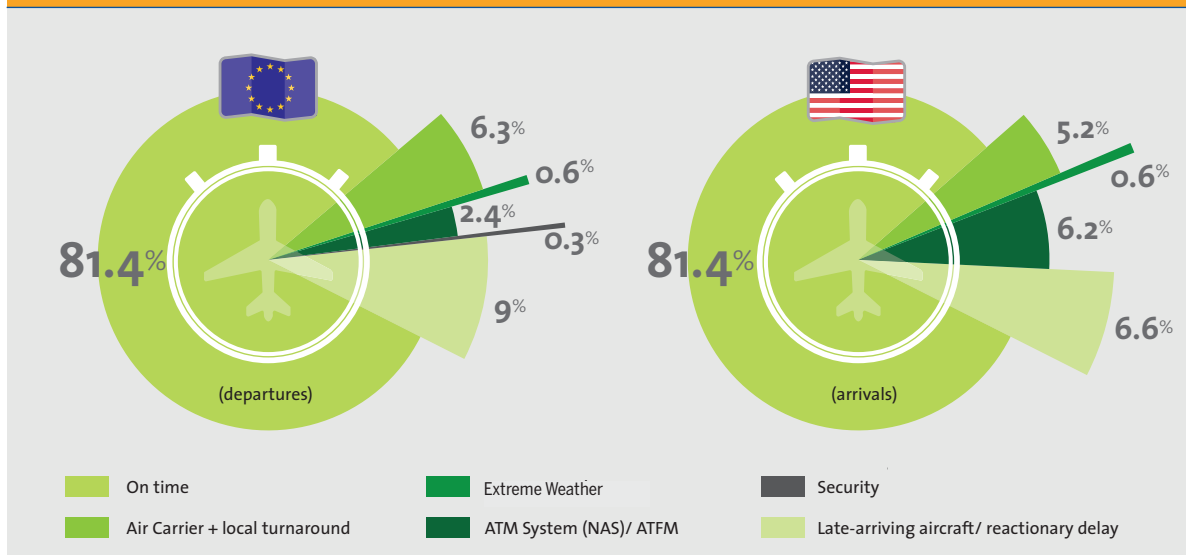


TABLE 3: Drivers of on-time performance

tems on a like-for-like basis, using the passenger/mile metric—which is also a standard measurement for any transport system efficiency rating—then all the positive benchmarking indicators start pointing towards Europe (table 2).

According to Whittome, “Europe’s ATM system was already more efficient in terms of passenger/miles back in 2010. But since then, European ANSPs have reduced charges by 29% whereas in the US, cost reductions only improved 14% between 2010 and 2015.”

The findings of the FABEC study appear to be, on the face of it, controversial. Eurocontrol performance review specialists argue that it does not take into full account currency-exchange fluctuations or the consequences of differing load factors among European and US airlines. It is also to some extent incomplete. For example, the FABEC study has not looked at the cost to airlines of ATM-related delays in its comparisons of ATM systems across the Atlantic—an issue of particular concern to European airlines.

According to the latest draft Performance Review Report published by the Eurocontrol Performance Review Commission into European ATM performance in 2017, “The continued notable traffic growth contributed to a further decrease in overall service quality. The share of



“European ANSPs have reduced charges by 29% whereas in the US, cost reductions only improved 14% between 2010 and 2015.”

Matthias Whittome, FABEC study

flights arriving within 15 minutes of their scheduled time decreased by 0.9 percent points to 79.6% in 2017. At the same time, the average departure delay increased by 1 minute from 11.2 minutes per departure in 2016 to 12.2 minutes in 2017.”

Given that US carriers fly within an integrated ATM system—with tower, approach and enroute controllers all working for the same organization, with the same standards, procedures and equipment, with airspace sectors designed around traffic loads and not national boundaries—it would be highly unusual if US airlines were not 10 points ahead of Europe in terms of punctuality.

Yet the US/European ATM performance comparison study reports that on-time performance (measuring delays longer than 15 minutes compared to schedule) is almost identical across the two markets, the only differ-

Overall performance comparisons, USA's and Europe's ATM systems, based on passenger/miles		
		
(Continental) airspace	10.4 million km ²	11.5 million km ²
Sectors (max)	955 ^a	679 ^a
Controlled flights per day	23,911 ^b	24,475 ^b
Pax per day	2.2 million ^c	2.7 million ^c
Pax miles per day	1.18 billion ^d	1.58 billion ^d
ATCOs	16,793 ^e	16,700 ^e
Cost of ATM per year	\$ 10.95 billion ^f	EUR 7.6 billion ^f
... in EUR used by PRU	EUR 8.1 billion ^g	EUR 7.6 billion ^g
... in EUR 2016	EUR 9.9 billion ^h	EUR 7.6 billion ^h

a 2008 U.S./Europe Comparison of ATM-related Operational Performance
 b only scheduled IFR Flights; Source: FAA
 c Amount of IFR Passenger Flights x average amount of PAX per movement
 d Pax x average distance (from 2015 U.S./Europe Comparison of ATM-Related Operational Performance)
 e FAA Air Traffic Controller Workforce Plan 2012 – 2021, 2010 U.S./Europe Comparison of ATM-Related Operational Performance (EUROCONTROL)
 f 2014 U.S./Europe Continental Comparison of ANS Cost Efficiency Trends
 g 2014 U.S./Europe Continental Comparison of ANS Cost Efficiency Trends
 h Average exchange rate USD/EUR in 2016 = 0.90372

TABLE 4: the 2017 OAG report on airline punctuality

ence being that US airlines identify the ATM system as being responsible for a much larger percentage of delays than their European airlines (table 3). As the report says, “Clearly, US airlines attribute a larger fraction of causal delay to US ATM than what is seen in Europe.”

Of the world’s top 20 most punctual airlines in 2017, measured by transport data group OAG, seven are based in Europe (table 4) and only one, Delta Air Lines, is based in the continental US. The world’s most punctual airline in 2017 was Europe’s airBaltic, flying short- and medium-haul routes throughout the European continent.

“There are several reasons for why Europe’s airlines should be as least as punctual as US carriers,” said Ian Lowden of aviation consultants Lowdextx Aviation. “One is the way that major US carriers fly their hub-and-spoke operations, with waves of connecting flights concentrating on the hub airport. This means that even a small delay can quickly ripple out throughout the airline network. Another reason could be the age of aircraft; the average age of Europe’s short-haul carriers and their aircraft is lower than those in the US, which means fewer reliability problems.”

In other words it is the nature of different airline operational models which is by far and away the most important cause of delays and the ATM system plays a relatively small part in this. Europe’s airlines themselves identify the ATM system as being a much smaller cause of delay than their US counterparts.

FABEC ANSP strategic board chairman and Belgocontrol CEO Johan Decuyper said, “Comparing the performance of air traffic management between Europe and the United States is both valuable and delicate. It is valuable as it gives room to the ANSPs concerned to learn from each other, identify best practices and hence improve the overall efficiency of air traffic management. At the same time, however, it is a delicate exercise, as one easily overlooks underlying causes for differences in performance measures. In that respect, the benchmarking activities should be seen as a stepwise process towards a better mutual understanding of all factors influencing the metrics.”

However, as Whitome points out, “what it does show is that if we use the same metrics that airlines themselves use, then Europe’s ATM system is performing at a much higher level of efficiency than it is given credit for—and certainly rather better than that of the US.” *ATW*