

GreenLandings® Flow Optimization versus

ATC Centric Strategic Management of Airspace, Routes, and Trajectories Program (SMART)

GreenLandings® Flow Optimization

1. Airline/user has business control over their aircraft movement and arrival flow (schedule, gates, crew, etc.)
2. Easily scalable for every flight, every day, at every airport, 24/7-365, worldwide.
3. Airline Centric Flow Manger is deterministic based on the airline's business needs without the need to worry about ATC, sector and sovereign boundaries
4. Airline Centric Flow Manger works to prevent delays from happening in the first place (Defect Prevention)
5. Easily manages every flight at every airport 24/7-365, starting within months, all day, every day, starting "*day of*", hours prior to landing
6. Immediately reduces random point overloads, which is the root cause of delays, congestion and excess CO2
7. Low risk, fully developed, operational, tested and validated software (FAA Task J and Embry-Riddle University, 2010-2012, GE Aviation 2013, Georgia Tech, 2006, etc.), COTS solution available starting within months
8. ATH Group has always delivered GreenLandings® implementations on time and on budget
9. Transparently crosses FIR and ATC sector boundaries
10. Capable of reducing ATC structure
11. Reduces controller workload with pilot managed Required Time of Arrival (RTA) flow time for each aircraft, leaving separation to the controller
12. One pilot manages one aircraft to destination
13. Utilizes onboard navigation and communication capability bought and paid for, and already currently installed on the aircraft
14. GreenLandings® Flow Manger is a fully coordinated, real time, "*day of*" automatic data arrival flow process between users (airlines/operators), ATC and aircraft
15. Highly flexible, airline/user managed aircraft movement environment, easy to scale up worldwide
16. Provides all ATC/airlines/operators aircraft specific information (e.g., RTA) on what every IFR aircraft wants to do in the future (airline, GA, etc.)
17. Low cost for users/ATC(\$10s of millions), with immediate, independently validated cash benefits
18. [Reduces airspace complexity](#)
19. Shovel ready, \$150 million, 3-year, US wide project
20. An Airline Centric Flow Manger process has been [fully operationally tested and validated by FAA, Embry-Riddle, GE Aviation and others](#)
21. RTA capable Flight Management System (FMS) already installed in the aircraft, allowing pilots to enter a time over a navigational fix, and the airplane automatically adjusts speed to meet that time

ATC Centric SMART Program

1. ATC maintains control over the movement of the user's aircraft, with zero business/user input into arrival flow
2. Limited scalability to just a few larger airports when congested given controller workload requirement
3. SMART delay is subjective/random first come, first served program as each ATC center assigns sector delay to meet the assigned TBFM boundary times
4. SMART doesn't eliminate or prevent delay, but targets more efficient, enroute delay (Defect Correction)
5. Only manages limited flights, at 20 airports during part of the day based on traffic (e.g., ATL 6 AM-10PM) with limited reach from arrival airport
6. Low impact on random point overloads, TBFM reportedly creates adjacent sector overloads/delays
7. High risk, yet to be fully developed, computationally complex software, after ANSPs already have spent \$100s Billions and decades with little impact on delays/congestion (MLS, AAS, CPDLC, GPS, FANS, RNP, ADS-B/C, NextGen, Sesar, etc.)
8. FAA has yet to deliver any ATC upgrade on time and on budget
9. Difficult/impossible to cross FIR/sovereign boundaries
10. Perpetuates or possibly increases ATC structure
11. Increases controller workload, as controller must separate aircraft, receive time communication for each aircraft, manage flow time/speed for many aircraft
12. 10s of controllers manage one aircraft to destination
13. Full implementation requires yet to be developed new processes and equipage (navigation, communication, etc.) at unknown added cost
14. SMART has limited, if any, real time automatic coordination between users, ATC and aircraft with, again, zero user business preference inputs
15. ATC controlled aircraft movement environment, difficult to scale up, notably across national boundaries
16. Limited information available to other ATC/users on what other IFR aircraft are doing, or, more importantly, want to do
17. Very high cost for ATC (\$875 million), with limited benefits (none proven)
18. Adds to airspace complexity
19. \$875 Billion, possible decades long project, maybe
20. FAA will institutionalize SMART such that any hope of airlines/operators recapturing control over the movement of their aircraft or reduction of the structure around the airports will be lost for decades.