1. Opening Title: ‘‘Airspace Technology Demonstration 2 (ATD-2) Project: Integrated Arrival/Departure/Surface Metroplex Traffic Management’’

2. **ATD-2 subproject logo**

3. Collage or **preview of ATD2 techs to follow**



NARRATOR: Airspace Technology Demonstration 2, or ATD-2, is the integration of existing and emerging NASA, FAA, and industry technologies to significantly benefit arrival, departure, and surface operations.

It provides solutions to several problems in the complicated, multi-airport metroplex environment.

4. **Several AC pushback from gates, taxi to spot,** comm w/Tower, ~~congested dep~~ **(animate something like this)**



At most airports today, departures are managed in a largely reactive manner, with flights being handled in the order they push back from the gate which can overload runways and cause excessive taxi and hold times.

5. TBFM EDC timeline w/many dep flights at same time (from PDRC training video or screen capture from V&V live data)
Shawn: Airport flight info display for passengers

Additionally, significant uncertainty in the duration of the departure taxi-out and climb phases of flight leads to

OR: Pan from ramp in #4 to show congested taxiways & depQ (flights join depQ at faster rate than flights taking off; longer lines at spots)



inaccurate demand predictions and decreased situational awareness.

6. **Pan along congested depQ in #5, then pan up to see larger overhead stream slots**

To manage the system in these conditions, traffic managers may apply overly conservative airspace restrictions, which lead to associated



delays and increased fuel consumption and emissions.

7. **Information flow to all facilities (moving dots),** TBFM EDC timeline w/many dep flights evenly spaced out

ATD2 addresses these problems by improving predictability through a coordinated schedule between the ramp, tower, Terminal, and Center control



facilities, giving traffic managers the tools to reduce congestion.

8. **Controllers working, coordinating, while surface traffic moves smoothly (flights join depQ at same rate as flights taking off; shorter lines at spots)**

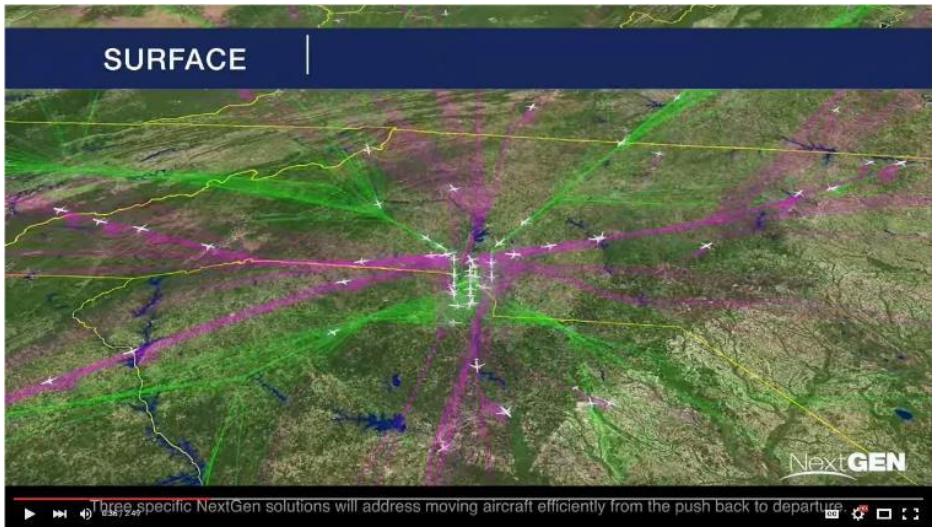
This improved predictability helps controllers increase aircraft movement efficiency on the ground and during

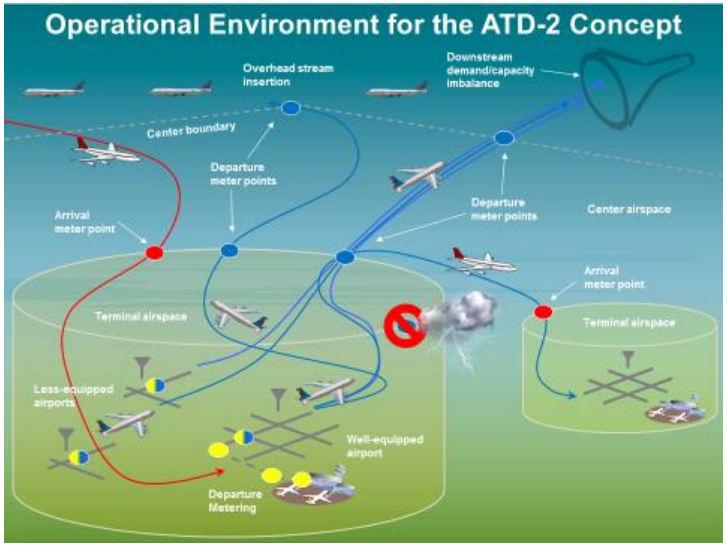




take-off to reduce delays and fuel usage.

9. **Metroplex view, traffic flowing** (maybe something like the CNN video view but with traffic flows from 2 airports similar to the ATD2 poster; notional OK)

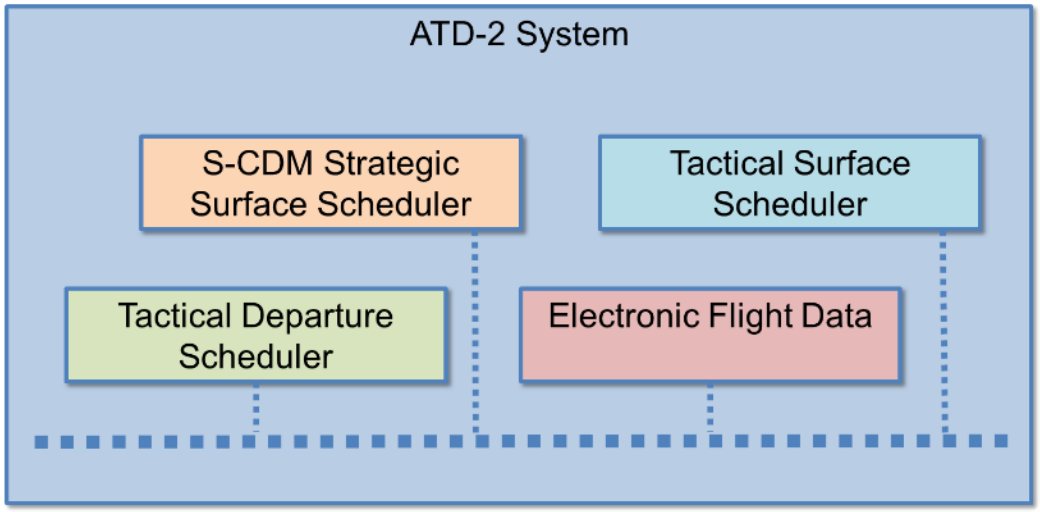




10. **Building blocks for each ATD2 tech area, moving dots to show network connections between blocks**

Finally, ATD-2 technologies sustain or enhance throughput in the busy metroplex.

ATD-2 achieves its advanced capabilities by building on a solid



foundation of existing and emerging technologies from the FAA, NASA, and industry.

11. S-CDM, Strategic Surface Sched

Animation: Pre-dep planning, future scheduled flights, airline priorities. Shawn: SCDM logo? Trading post?

Airline ops center providing input for pre-departure scheduling

On the airport surface, the ATD-2 Strategic surface scheduler applies principles from the FAA's Surface Collaborative Decision Making concept to balance the expected demand and



capacity, while accommodating airline priorities.

12. **RTC showing ACs at gates, pushing back, holding (SARDA video has scheduled hold times; circle times)**

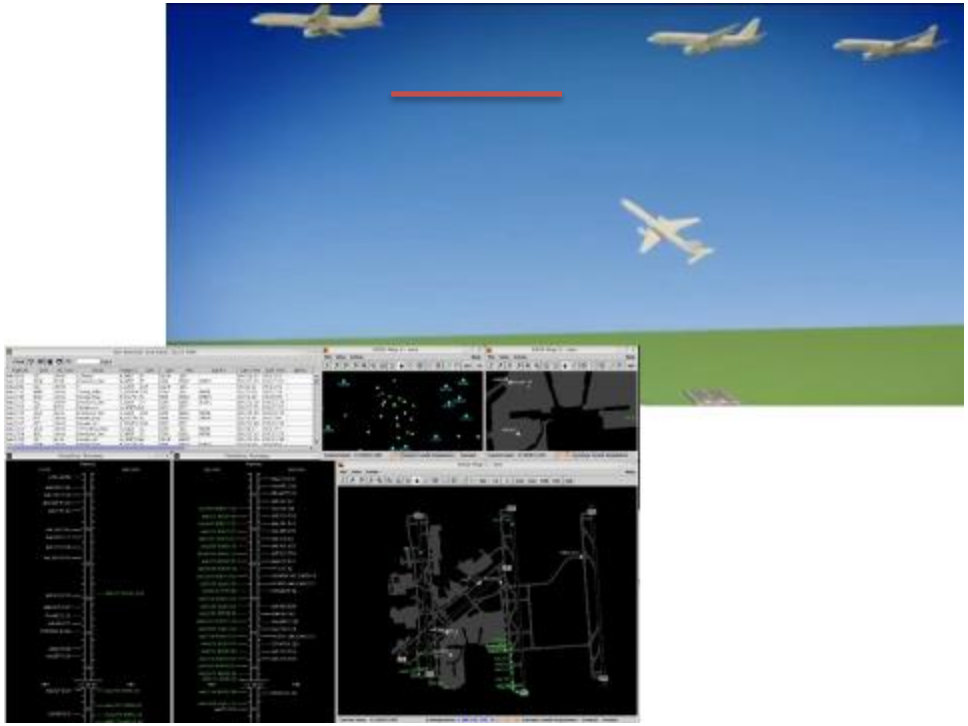
For aircraft about to depart, ATD-2's near-term Tactical surface scheduler uses the strategic schedule, surface traffic constraints, and arrival metering information to compute gate pushback schedules that minimize taxi delay and ramp congestion.



13. TBFM timeline showing ordered schedule; example in PDRC training video

OR: SDSS Tower display (below) with smaller overhead stream slots. (Swap #13 & #14 so that SDSS display is shown first, then flies in over ATC Tower photo).

For departures, the ATD-2 Tactical departure scheduler connects Center scheduling systems with the surface schedulers and demand predictions from multiple metroplex airports to improve



scheduling into constrained en route flows.

14. AEFS strip movement on display
OR Shawn: CNN video, ***SDSS timeline flies in and overlays on top of Tower cab photo;*** *Meaning that SDSS sched is delivered to AEFS*

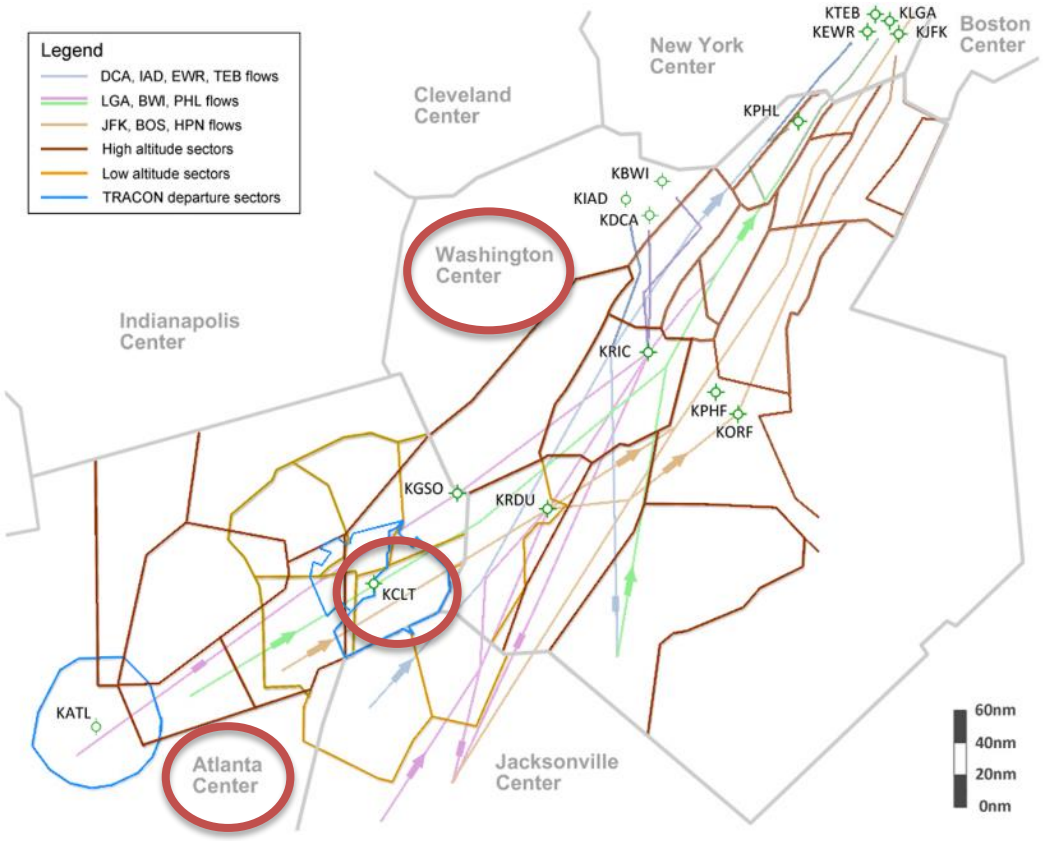
In the Air Traffic Control Tower, ATD-2 integrates with Electronic Flight Data, creating a new capability for situational awareness and management of flow restrictions.





15. **ATD2 airspace (CLT, ZTL, ZDC)** per Eric's map

NASA plans to demonstrate the ATD-2 system at Charlotte-Douglas International Airport, Washington Center, and Atlanta Center in three



16. **ATD2 partner logos:** NASA, FAA, NATCA, AAL, CLT (Tier 0)

    See images sent separately from Shawn

17. **Closing title graphic** (NASA Aero's ''NASA is with you when you fly'' graphic)

phases, each with increasing system capabilities, starting in late 2017.

ATD-2 has built strong partnerships with the FAA, airports, and airlines to ensure the smooth conduct of the field demonstrations and successful technology transfer.

ATD-2 is the next major step in NASA's efforts to make Gate-to-Gate trajectory based operations a reality,



enabling the air transportation system of the future.

18. Fade to black