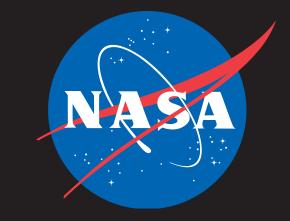
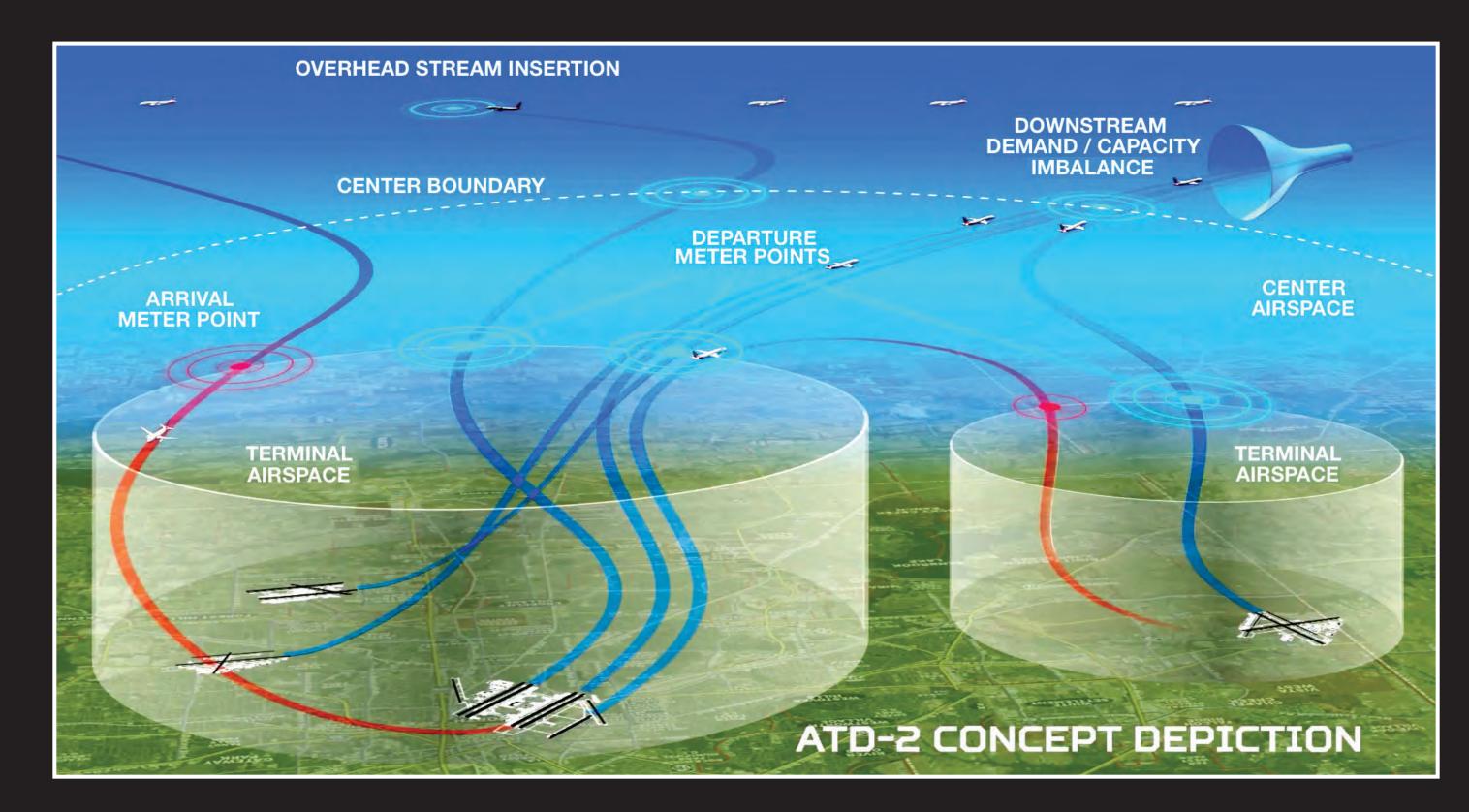
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ATD-2 Integrated Arrival, Departure, and Surface (IADS) Operations

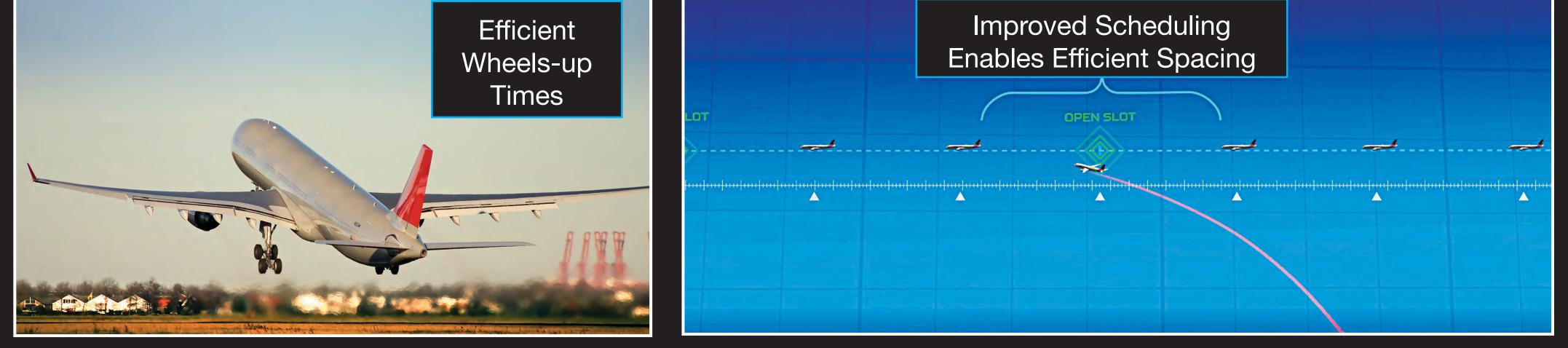


The ATD-2 Integrated Arrival, Departure, and Surface (IADS) traffic management system extends integrated traffic sequencing all the way from the gate to the overhead stream and back again for multi-airport, metroplex environments. NASA and the

FAA are developing the IADS system in close coordination with industry partners.



Ramp controller displays and scheduling tools enable surface metering for reduced ramp and taxiway congestion



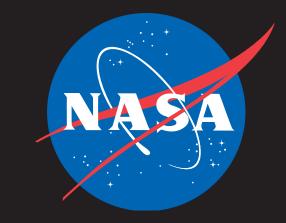
Improved scheduling for wheels-up time and merge into overhead stream

Expected Benefits: The ATD-2 IADS system will improve the predictability and efficiency of the air traffic system, while reducing fuel usage and emissions. This will be accomplished by sharing data among pilots, controllers, flight operators, and airport operators to produce a fully coordinated schedule.

View the Airspace Technology Demonstration 2 (ATD-2)/IADS video at: https://tinyurl.com/atd2-animation-v2

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ATD-2 Integrated Arrival, Departure, and Surface (IADS) Operations – Flight Deck Coordination

Typical Pushback Procedures

Call Ramp **only when ready** to pushback



No Surface Metering

Ramp: "Cleared to push. Expect Runway 18C."

Pushback without delay

Surface Metering at Gate

Ramp: "Surface Metering in effect. Expect pushback in "x" minutes. Expect Runway 18C."

Wait "x" minutes; Communicate pushback time to pushback crew Ramp: "Cleared to push. Expect Runway 18C."

Pushback without delay

Wheels-up Time Procedures

EDCT					
Receive Departure Clearance. Note any wheels-up time constraints.		Pre-Departure Clearance provides EDCT time	Before Closing Doors: Call Ramp to request Pushback Time advisory	Ramp: "Expect to push at <time>. Expect Runway 18C."</time>	At specified pushback time: Ramp: "Cleared to push, Expect Runway 18C."
		Wheels-up Time	9		



Pre-Departure
Clearance:
"Contact
Clearance
Delivery for
wheels-up
time."5 minutes before
Pushback:
Call Clearance
Delivery for
wheels-up timeCont
Ram
require
pusheals-up time

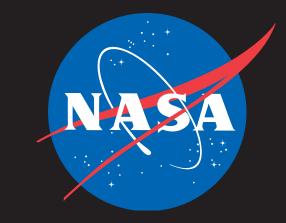
Contact
Ramptog
request
bushback
advisoryRamp:
"Expect
to push at
<time>.ATC-advised
runway is
18C."

At specified pushback time: Ramp: "Cleared to push. Expect Runway 18C."

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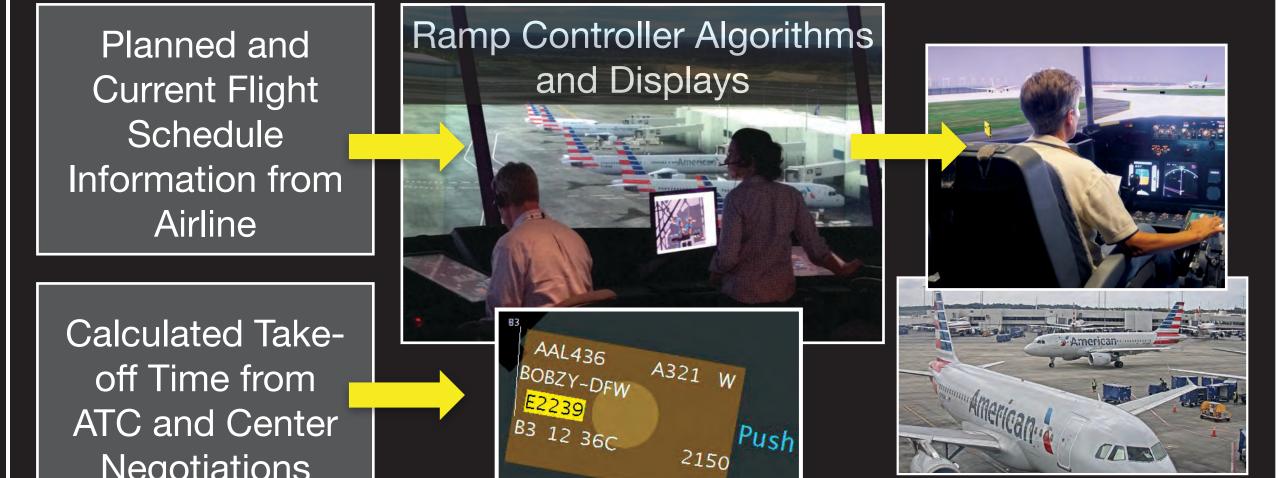
National Aeronautics and Space Administration



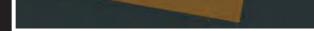
ATD-2 Integrated Arrival, Departure, and Surface (IADS) Operations – Flight Deck Coordination

ATD-2/IADS Information Flow

The ATD-2 Integrated Arrival, Departure, and Surface (IADS) traffic management system integrates schedule and current flight information from flight operators, ATC and Center to allow Ramp and Air Traffic Controllers to efficiently manage



regenatione



Pilot Procedures

Call for Pushback (All Departing Flights)	Surface Metering	Wheels-Up Time	Departure Fix Closures	Gate Conflict
The IADS system relies on early and accurate information sharing between pilots and ramp control.	When in effect, about 50% of flights will experience gate holds with durations similar to current ops. This does not add flight delay, but allows aircraft to remain at gate longer to reduce fuel/emissions.	Ramp will be aware of wheels-up times and will schedule pushback to meet that time. Meeting wheels- up times is important for overall system efficiency.	When Departure Fixes are closed, Ramp will inform you of the closure.	If there is a gate conflict, and you are moved to a hardstand or holding area, Ramp will coordinate hardstand release to meet the schedule.
 Call Ramp when ready to push. Do NOT call before you are ready; this will increase delay. Ramp will provide ATC-advised runway assignment. 	 Call Ramp when ready to pushback as per current ops. Ramp may clear you to push immediately OR provide an expected pushback time. 	 1. Check PDC to see if EDCT or Flow Control Wheels- Up Time applies to flight. EDCT: 1. Contact Ramp 	 If instructed by Ramp control, contact Clearance Delivery for new departure route. After receiving new departure route, contact Ramp for pushback 	 Move to hardstand as directed. When available, Ramp will provide a 'Ready time' which is the time when you can expect to be released.

What to do?

What's new?

Special cases:

1. If a specific runway is required for operational necessity, contact Ramp as soon as known.

2. If pushback delay is anticipated, contact Ramp as soon as known.

3. If APU INOP, coordinate with ramp and ground crew for timely air start to meet pushback time. 3.Communicate expected pushback time to pushback crew.

- 4. Monitor Ramp. Expect Ramp to contact you at the specified time with pushback clearance.
- 5.Be prepared to push without delay at specified time.

prior to pushback to receive updated pushback time.

Wheels-Up Time for Tactical Flow Control:

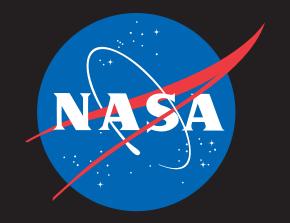
1. Contact Clearance Delivery 5 min before pushback to request wheels-up time.

2. After receiving wheels-up time, contact Ramp for new pushback time. pushback.

- 3. Monitor Ramp Control frequency.
- 4.Be prepared to taxi at assigned 'ready time'.

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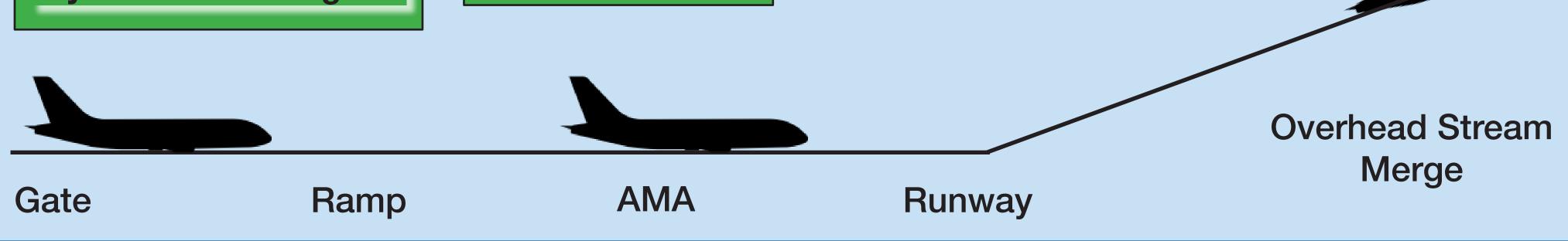
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ATD-2 Integrated Arrival, Departure, and Surface (IADS) Operations – Initial Benefits and Flight Deck Reminders

IADS at KCLT is Working!

	Average Monthly Benefits				
			21,412 lbs. of		
30,490 lbs. of	1.7 Minute	11.2 Hours of	Fuel Saved		
Fuel Saved		Delay Saved	by scheduling release		
& 47 Tons of	Reduction	by efficient overhead	times at the gate		
CO ₂ Eliminated	in northflow AMA	stream merges			
by small holds at gate	taxi out times				



Pilot Procedures Reminder: Wheels-Up Time

In order to see system benefits from Surface Metering at KCLT, pilots are reminded to call Clearance Delivery (CD) for their Wheels-Up Time PRIOR to calling for pushback. Please check the PDC for instructions to contact Clearance Delivery (CD). When a flight is assigned a Wheels-Up Time, the PDC will state:

"CTC CD 127.15 JUST B4 PUSHBACK"

Prior to pushback, pilots should contact Clearance Delivery (CD), and then contact Ramp to request pushback advisory.

Wheels-Up Time Procedures

EDCT				
Receive	PDC: Provides EDCT time.	Before Closing Doors: Call Ramp to request Pushback	Ramp: "Expect to push at <time>. Expect Runway 18C."</time>	At specified pushback time: Ramp: "Cleared to push, Expect
Pre-Departure	PRE-DEPARTURE CLR			
Clearance (PDC). Note any	EDCT 14:30Z	Time advisory.		Runway 18C."
Wheels-Up Time				
constraints.	Wheels-Up Time			
	PDC: Contact Clearance Delivery (CD) just before pushback.	5 minutes before Pushback: Call Clearance Delivery for Wheels-Up time.	Contact Ramp to pushback pushback advisory.Ramp: "Expect to push at <time>. ATC-advised runway is 18C."</time>	time: Ramp:
	PRE-DEPARTURE CLR CTC CD 127.15 JUST B4 PUSHBACK	Clearance Delivery (CD) provides wheels-up time.		

View the Airspace Technology Demonstration 2 (ATD-2)/IADS video at: https://tinyurl.com/atd2-animation-v2