



NORTH CAROLINA

Department of Transportation



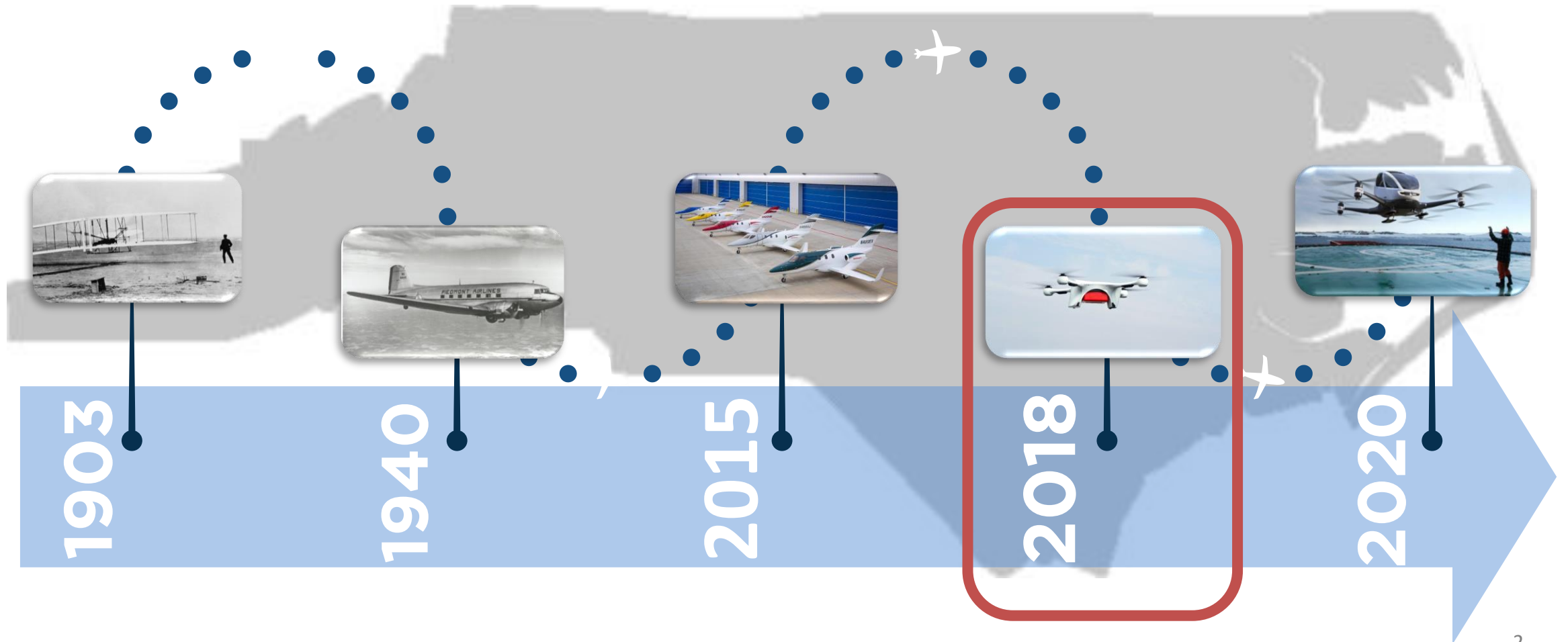
UAS Integration Pilot Program (IPP)

NCDOT Division of Aviation

November 8, 2018



North Carolina Aviation Timeline



UAS Integration Pilot Program

- Established by **PRESIDENTIAL MEMORANDUM**
- **TEST** and **EVALUATE** various models of state, local and tribal government involvement in the development of regulations
- **ENCOURAGE** UAS operators to develop and test new innovative UAS CONOPS
- **INFORM** development of federal guidelines and regulatory decisions on UAS operations nationwide



NCDOT Selected



- 149 proposals
- NC was one of 10 US teams selected
- USDOT Secretary Elaine Chao presented the award to NCDOT

FAA UAS Integration Pilot Program (IPP)



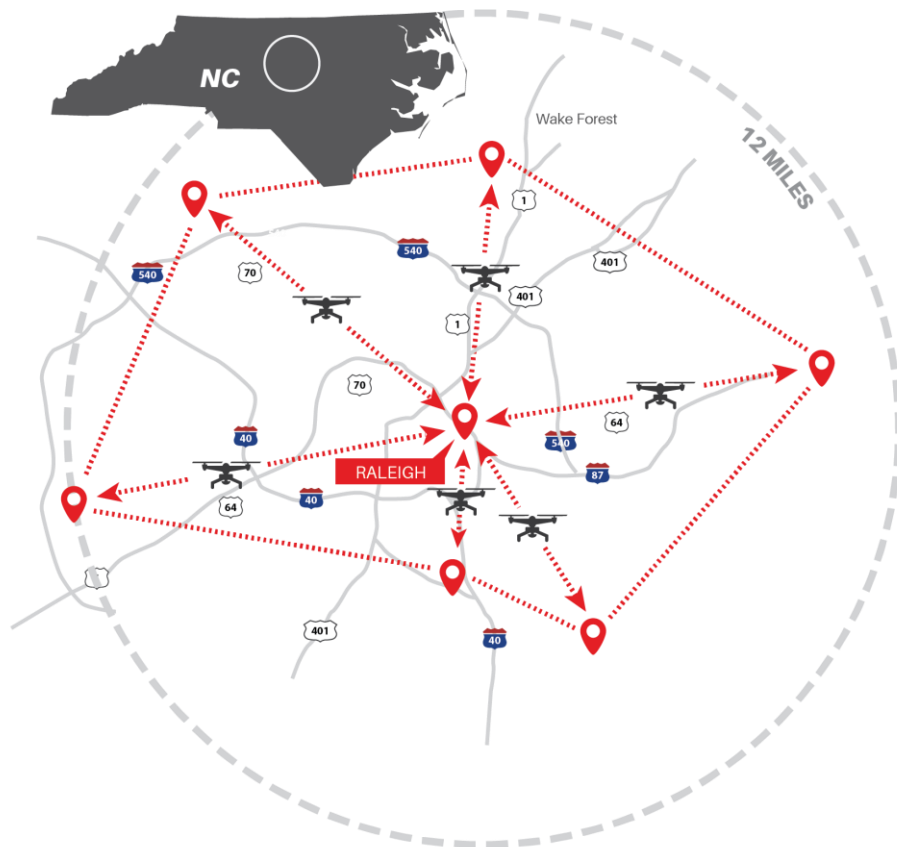
NCDOT's Winning Proposal

- Tests local UAS package delivery within rural, suburban and urban areas in North Carolina
- Focus:
 - Medical package delivery
 - Food delivery
 - Infrastructure inspection

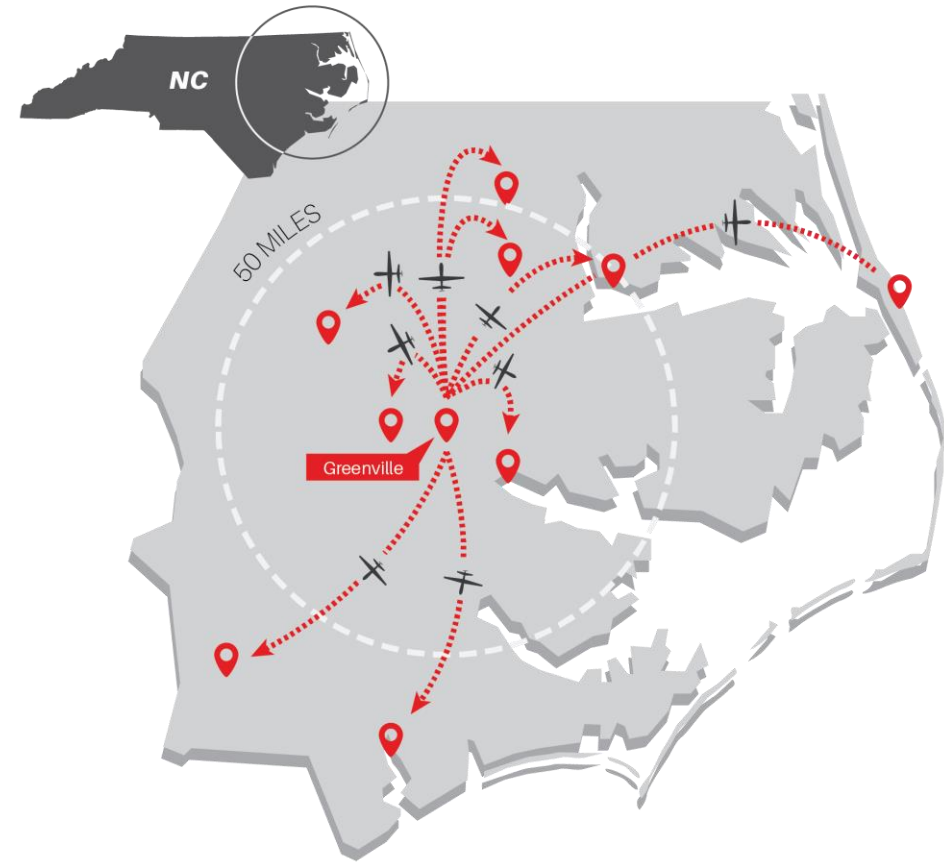


Planned NC Operations

Urban Example



Rural Example



* Example routes. Actual routes and locations TBD

North Carolina IPP Team

Industry



AIRMAP

FLYTREX



FORTEM
TECHNOLOGIES



MATTERNET



PRECISIONHAWK

T-Mobile

WakeMed 

WakeMed Health & Hospitals

zipline

Local Government



Universities

NC STATE
UNIVERSITY

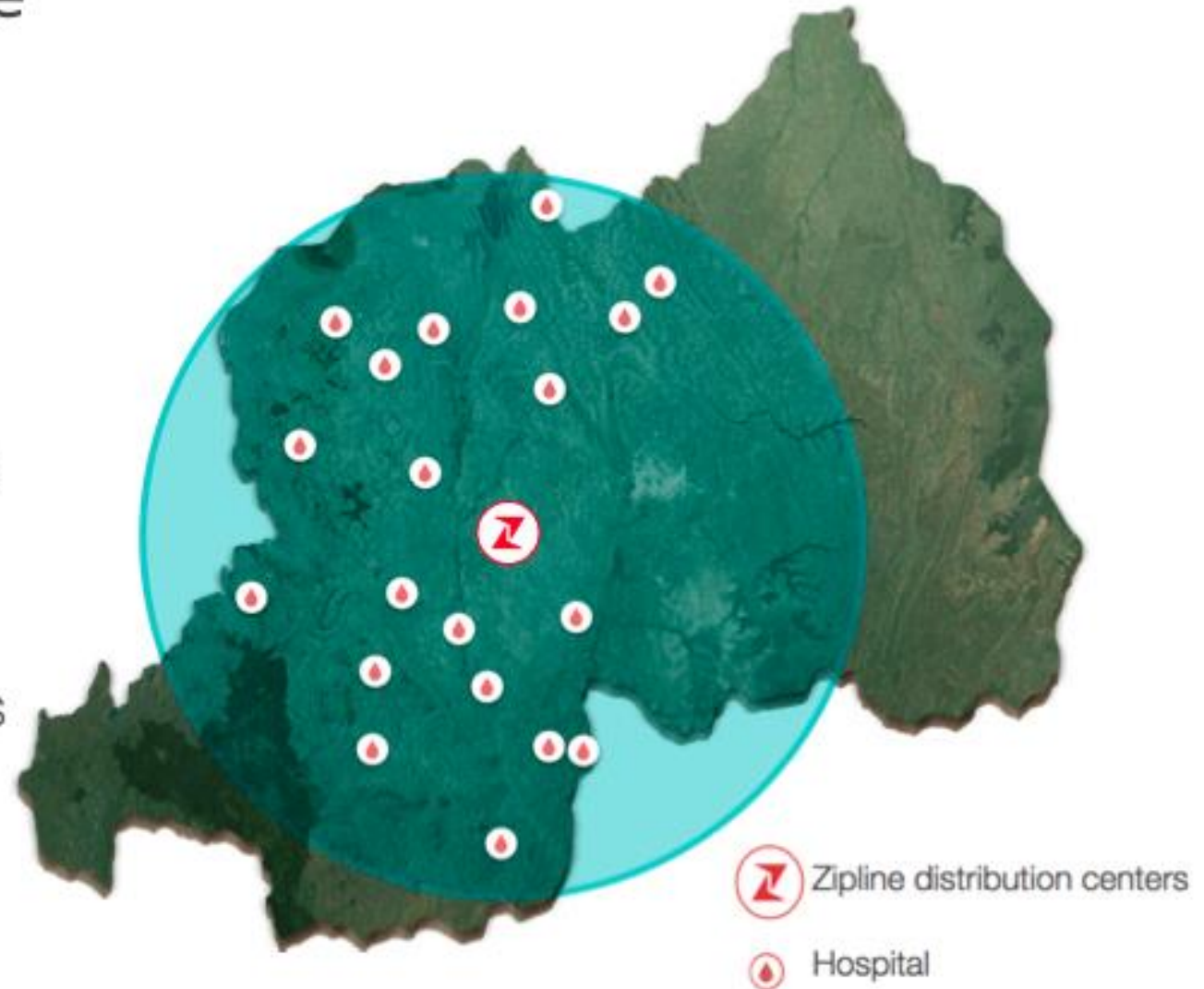
Zipline is a Silicon Valley-based logistics company that designs, manufactures, and operates drones to **deliver lifesaving medical products** on demand.



zipline

Zipline's service is the world's only autonomous system operating at national scale

- Serves **12 million people**
- Operates **12 hours/day, 7 days/week**
- Delivers ~**25%** of national blood supply outside the capital
- Depended on by hospitals for **routine and emergency** needs



How Zipline's autonomous, on-demand deliveries work



Health facility places order for products via mobile

- + Processes both routine and emergency orders



Distribution center prepares package and dispatches a Zip

- + Orders are packaged in no more than 10 minutes



Zip flies to health facility via pre-calculated flight path

- + Reaches delivery site in 15-45 minutes
- + Real-time data provided to health and aviation authorities



Zip notifies recipient and drops off package

- + Package delivery is gentle and precise
- + Zip returns to the distribution center

Defense Innovation Unit (DIU) Exercise 1

“I’m honored to know you and the Zipline team, and I hope we can parlay this into great collaboration in the future!”

Keep up the incredible work!”

Colonel Howie Marotto
**Deputy Director, US Marine Corp (USMC)
Next Generation Logistics (NexLog)**



Program Benefits



NC Benefits

- Continues our leadership in UAS innovation
- Promotes UAS industry and job growth
- Offers hands-on STEM educational outreach



Consumer Benefits

- On-demand service and faster results
- Reduced time to treatment, potential to save lives
- Potential for lower patient costs



Industry Benefits

- Opens new markets for on-demand delivery
- Informs and assists product development
- Accelerates the adoption of regulations

First Flight: Medical Package Delivery

August 29, 2018



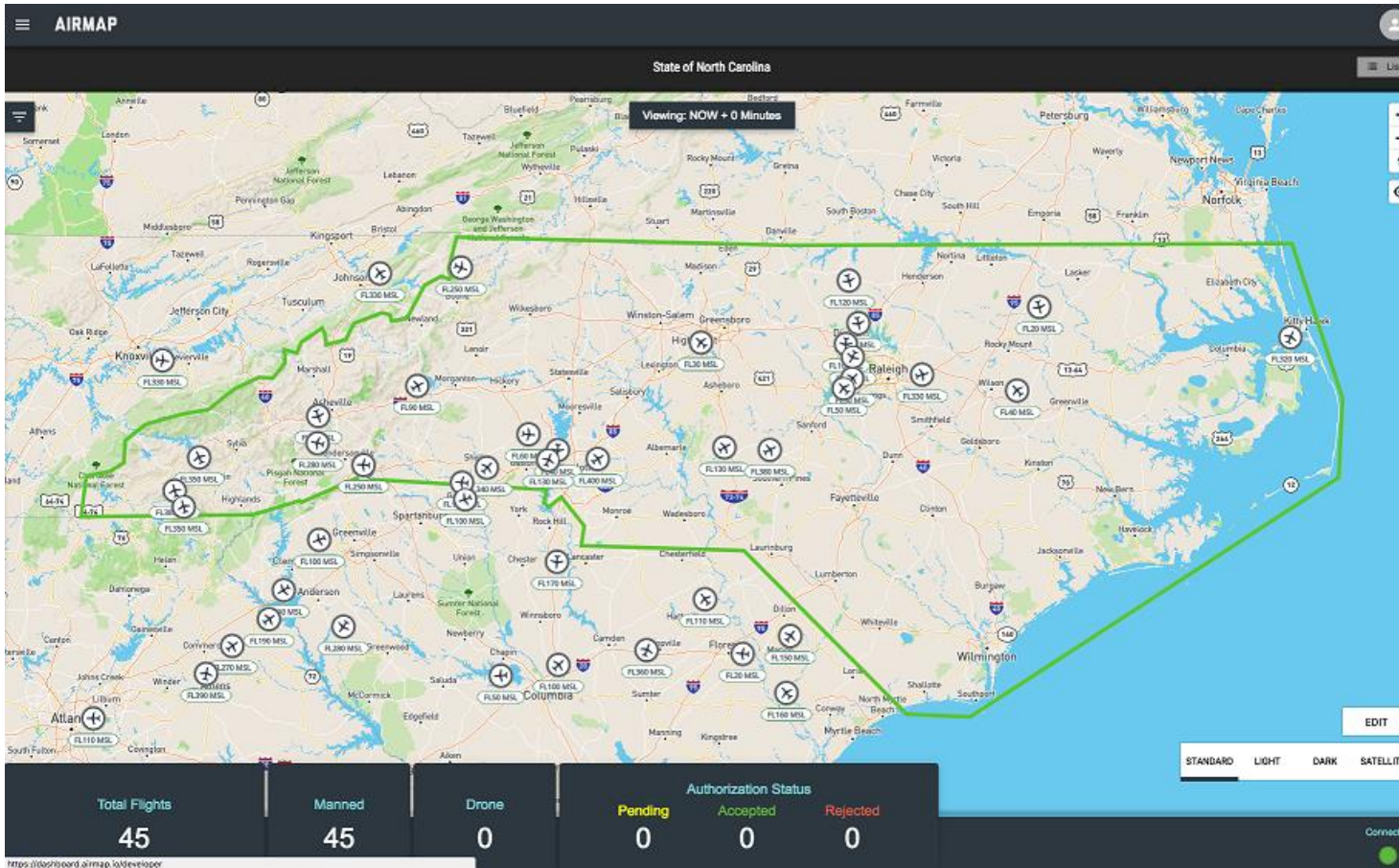
Mission:

Fly a lab sample from a medical surgical center to main WakeMed campus

Test:

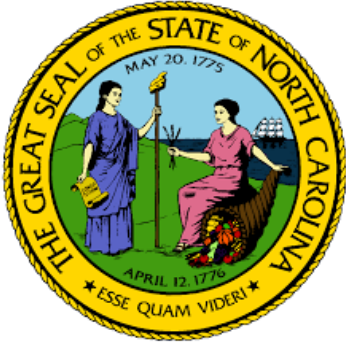
- Package delivery
- Flight over people
- Remote ID
- Air space management tool

Unmanned Traffic Management (UTM)



- AIRMAP tool developed to track UAS
- Operators use app to ID UAS and location
- Customized to manage NCDOT UAS traffic during Hurricane Florence response
- Working with NASA in developing statewide UTM system

State and Local Government



The IPP will inform FAA about:

- State and local UAS laws
- Community and local engagement
- Infrastructure investment



NC Continued Path Forward

Urban Air Mobility (UAM)

- **Infrastructure Inspection**
- **Routine Medical Package Delivery**
- **Routine Food/Parcel Package Delivery**
- Autonomous Ambulatory Services
- Single Pilot Cargo Aircraft
- Unmanned Cargo Aircraft
- **Unmanned Traffic Management**



Questions?



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UAS Program Manager



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