AAM Integrated RDT&E Environment

"Evolving to support the future NAS"

Presented to: REDAC
By: ANG-E: Marty Suech, Chuck Romano, Tom Rubino & John Bradley
Date: Thursday, April 14, 2022

Agenda

- Advanced Air Mobility (AAM) Integration
  - William J. Hughes Technical Center (WJHTC) Research, Development, Test and Evaluation (RDT&E) Ecosystem
  - AAM NASA/FAA Lab Integrated Test Environment (NFLITE)
  - KACY AAM Use Cases

WJHTC RDT&E Ecosystem

Accelerate operational integration through Research, Development, Test and Evaluation (RDT&E) leveraging public/private partnerships

Upper Class E Air Traffic Management (ETM)

60,000 ft. MSL

Air Traffic Management (ATM)

400 ft. AGL

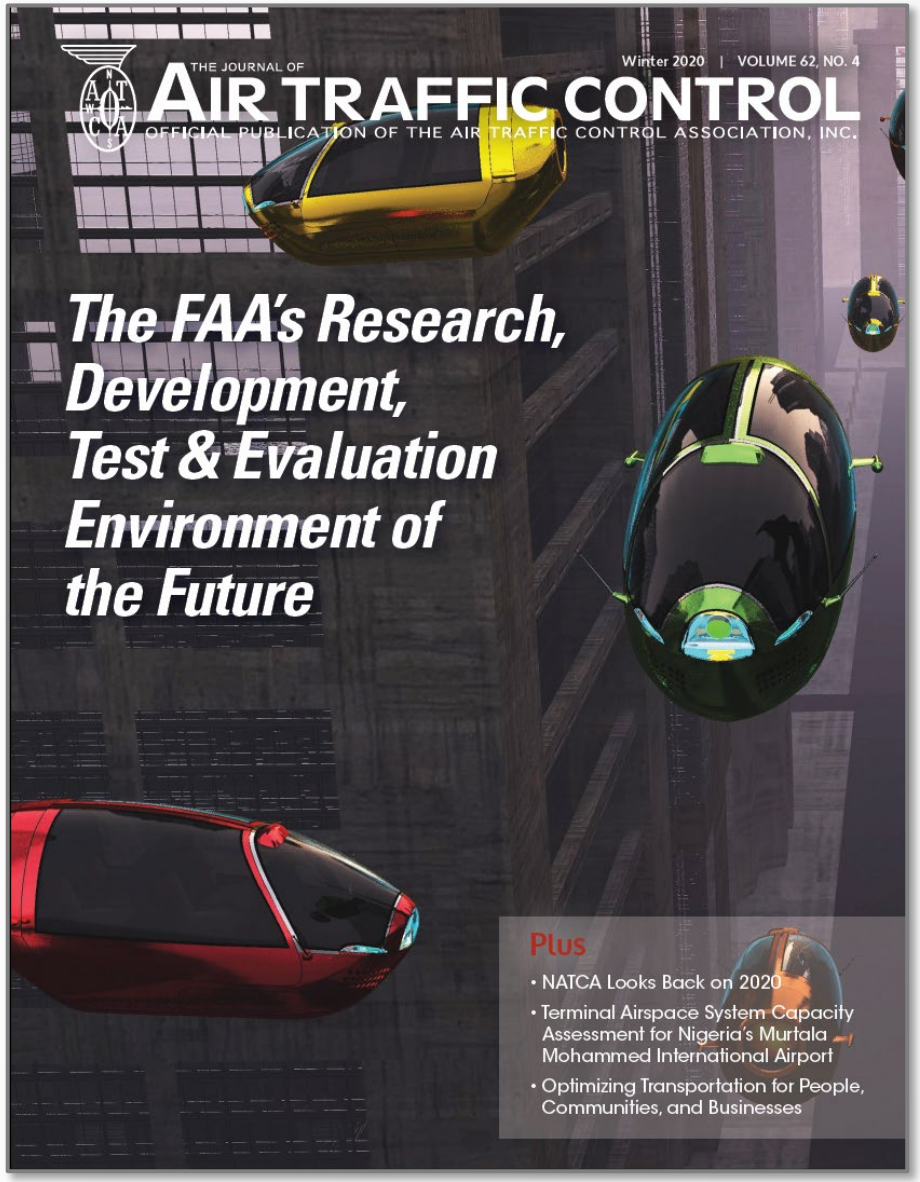
UAS Traffic Management (UTM)

Urban Air Mobility (UAM)

FAA WJHTC and NASA Laboratory Integration

FAA High Fidelity NAS Labs and NASA UAM assets

- NASA LaRC Air Traffic Operations Lab (ATOL) Mission Planner can simulate limited functionality expected from fleet operators and possibly a PSU
- FAA WJHTC Target Generation Facility (TGF) and NASA simulation drivers and scenarios
- NASA Tech Transfer of UTM capabilities to enable ability to simulate sUAS in FAA WJHTC UAS Laboratory
- ATOL Vertiport Scheduler to assist with the simulation of Vertiport operators
- UAM Simulator "FLYER"



AAM NASA/FAA Lab Integrated Test Environment (NFLITE)

- **FAAConnect:** NASA Air Traffic Operation Simulation (ATOS) Infrastructure connection to FAA NextGen Prototype Network
- **UAM prototype capabilities:** Mission Planner, Vertiport Scheduler, UAM Flyers
- **WJHTC TITE capabilities:** High Fidelity NAS Simulation Systems
- **NFLITE Baseline:** Established April 2022

NASA Flyer Arrival View to
KACY Parking Garage Vertiport

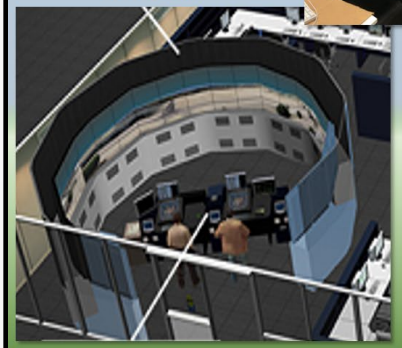
NFLITE Key Laboratory Positions

STARS System Capability/TSAS Lab

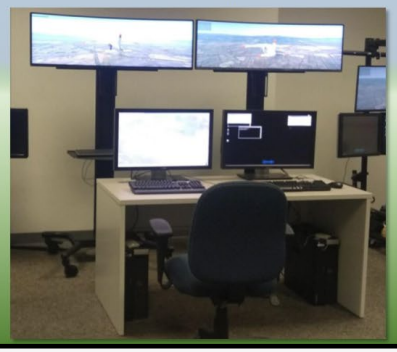
UAS Lab

Cockpit Simulator Facility (CSF)

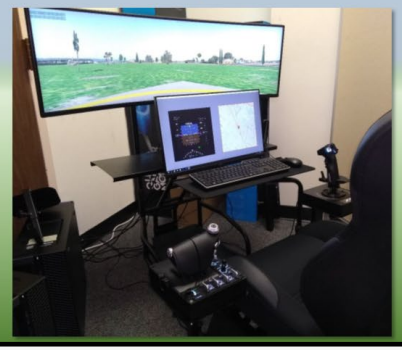
Out-The-Window (OTW) Tower Lab



Mission Planner/ATOL Lab



UAM Flyer/ATOL Lab



NFLITE Baseline Accreditation Details

Accreditation Checklist:

- ☑ **HLA framework/Aviation SimNet complete**
  - ☑ NASA/FAA Initial HLA Connectivity Testing Test Plan
- ☑ **UAS simulators integrated and fly designated routes**
  - ☑ Scan Eagle (Pitch and Catch Loop Route)
  - ☑ Simlat (Waterway Inspection Loop Route)
- ☑ **Tower view lab**
  - ☑ UAM Flyer Arr/Dep from KACY Parking Garage Vertiport
  - ☑ UAM Flyer Arr/Dep from KACY Experimental Vertiport
- ☑ **UAM scenarios run from the Flyer and Mission Planner**
- ☑ **STARS is running and can see all tracks from all scenarios**
- ☑ **All scenarios run simultaneously and observed from appropriate positions**
- ☑ **Recordings and data collection is identified and collected**
- ☑ **Cockpit Simulator Facility (CSF) simulators integrated and fly designated routes**
  - ☑ Helicopter Sim S76-D (Air Ambulance)
  - ☑ GA Sim Cessna 172 (KACY – Ocean City – Woodbine)

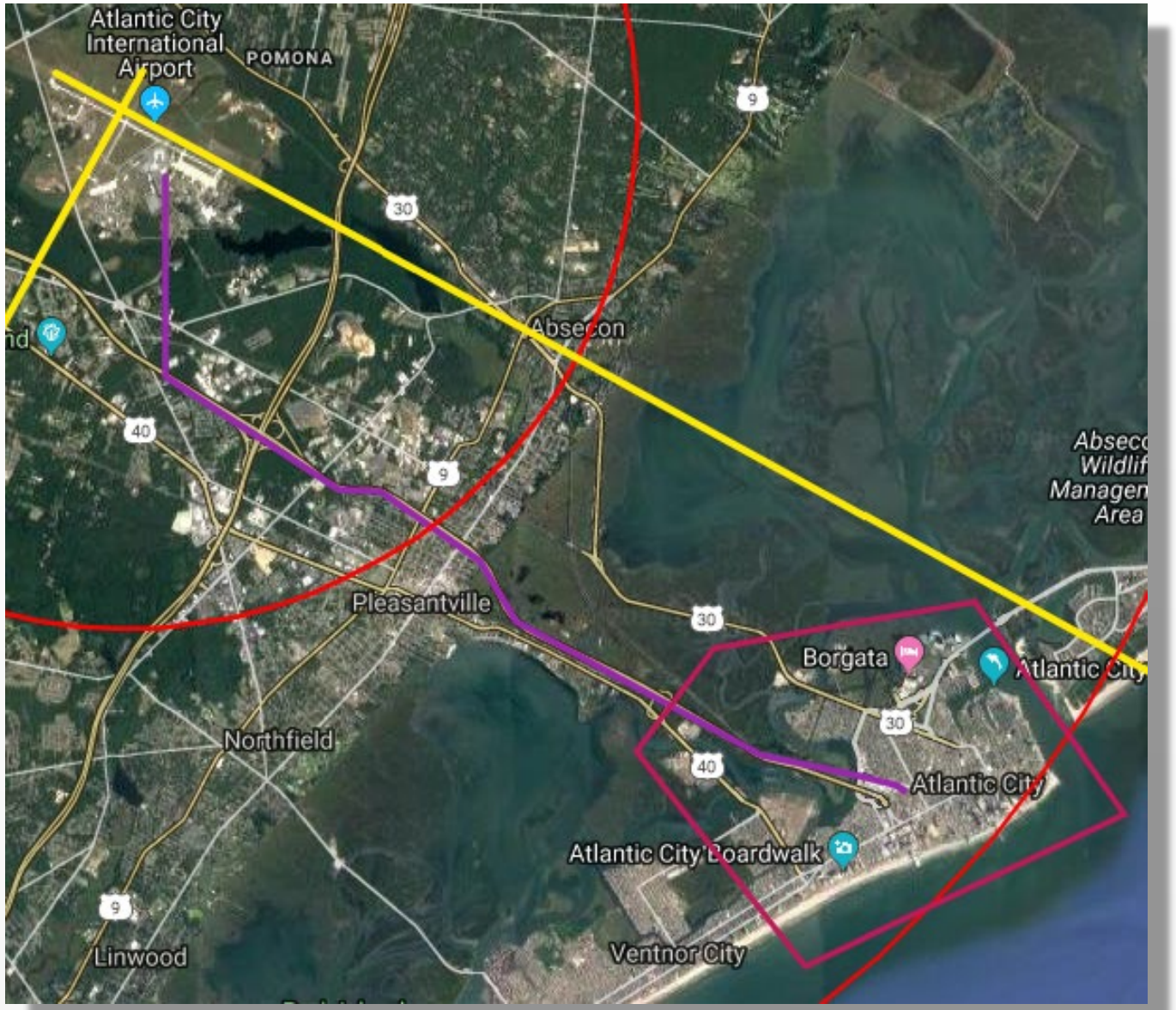
Atlantic City AAM Ecosystem – Airport Transfer

Atlantic City KACY

- Familiarity with airspace
- Proximity of airport to Atlantic City
- William J. Hughes Technical Center capabilities
- National Aviation Research and Technology Park

Airport Transfer

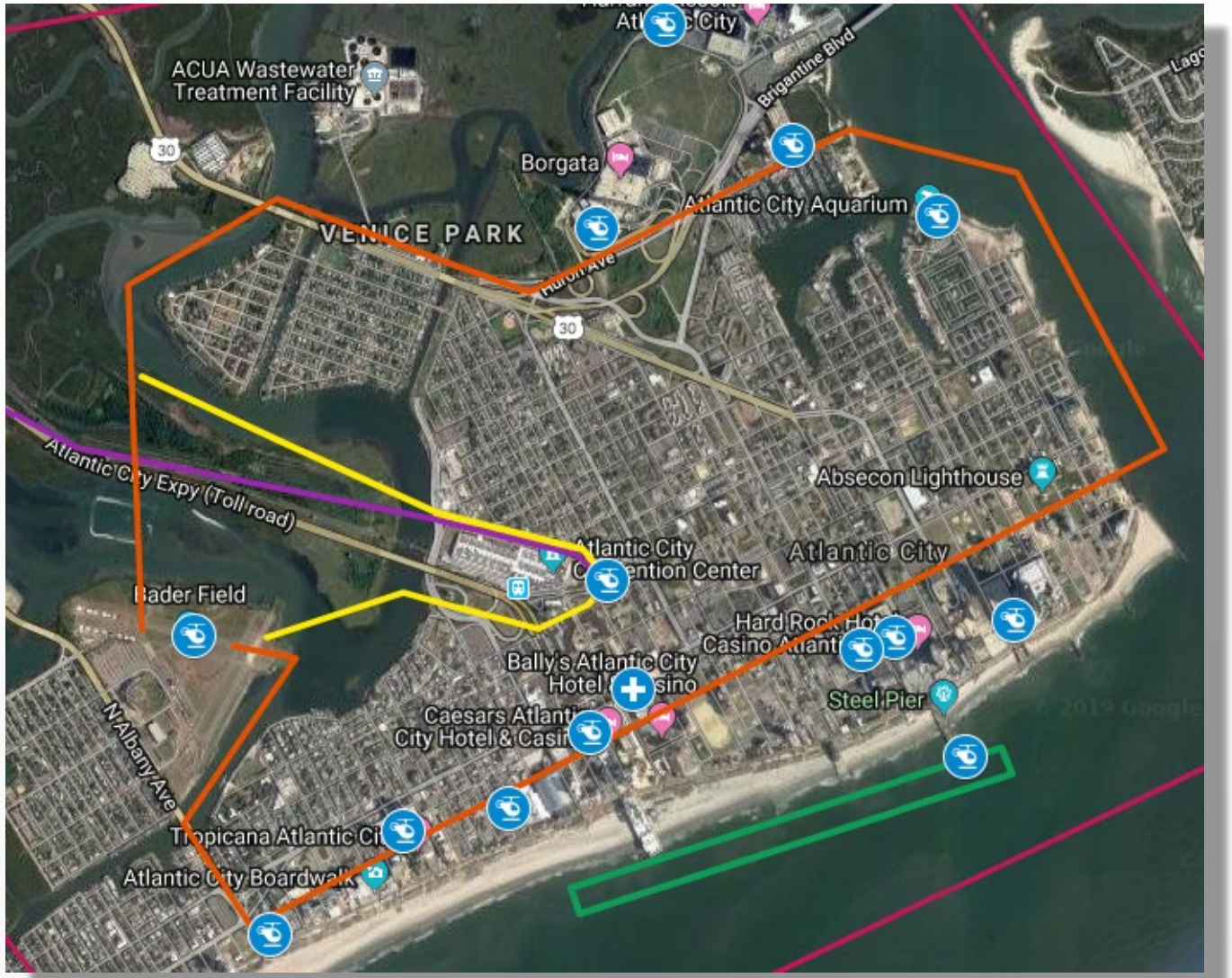
- Capable of simulating corridor between KACY & Atlantic City
- Promotes procedural separation
- Capable of simulating performance-based airspace over the city of Atlantic City
- Ability to evaluate communication, coordination, and information exchanges needed for the operation.



Atlantic City AAM Ecosystem – Cross Metro Transfer

Jitney Route

- Internal to the city of Atlantic City
- Designed to provide efficient access to visitor destinations while avoiding residential neighborhoods
- Makes note of AtlantiCare Regional Trauma Center

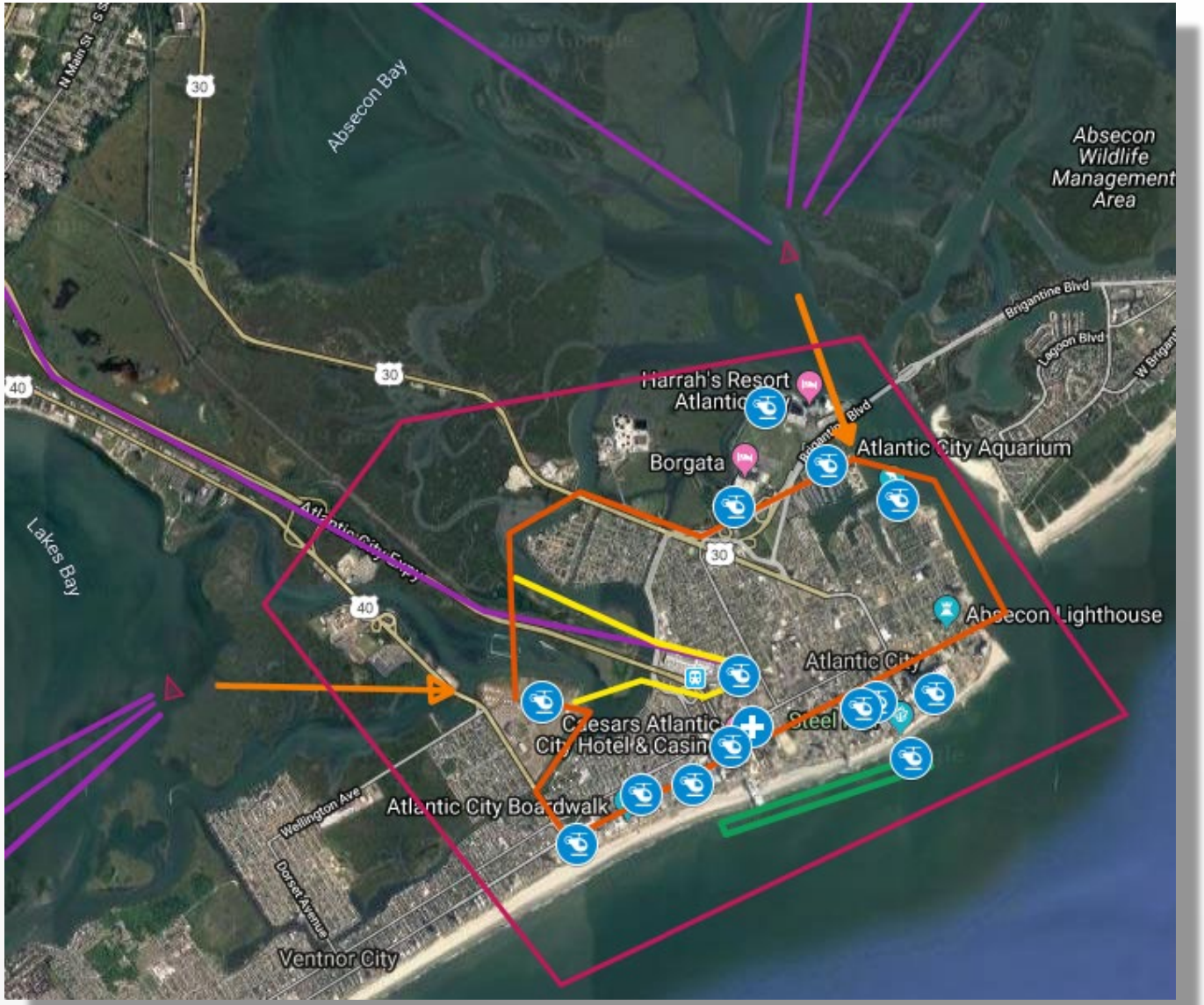


Atlantic City AAM Ecosystem – Regional Network

Regional Aerodrome (Vertiport) Access

- Capable of simulating regional corridors with 2 metering fixes
- Potential to evaluate 4D trajectory authorization with RTA
- Establishes transitions between metering fixes and jitney route

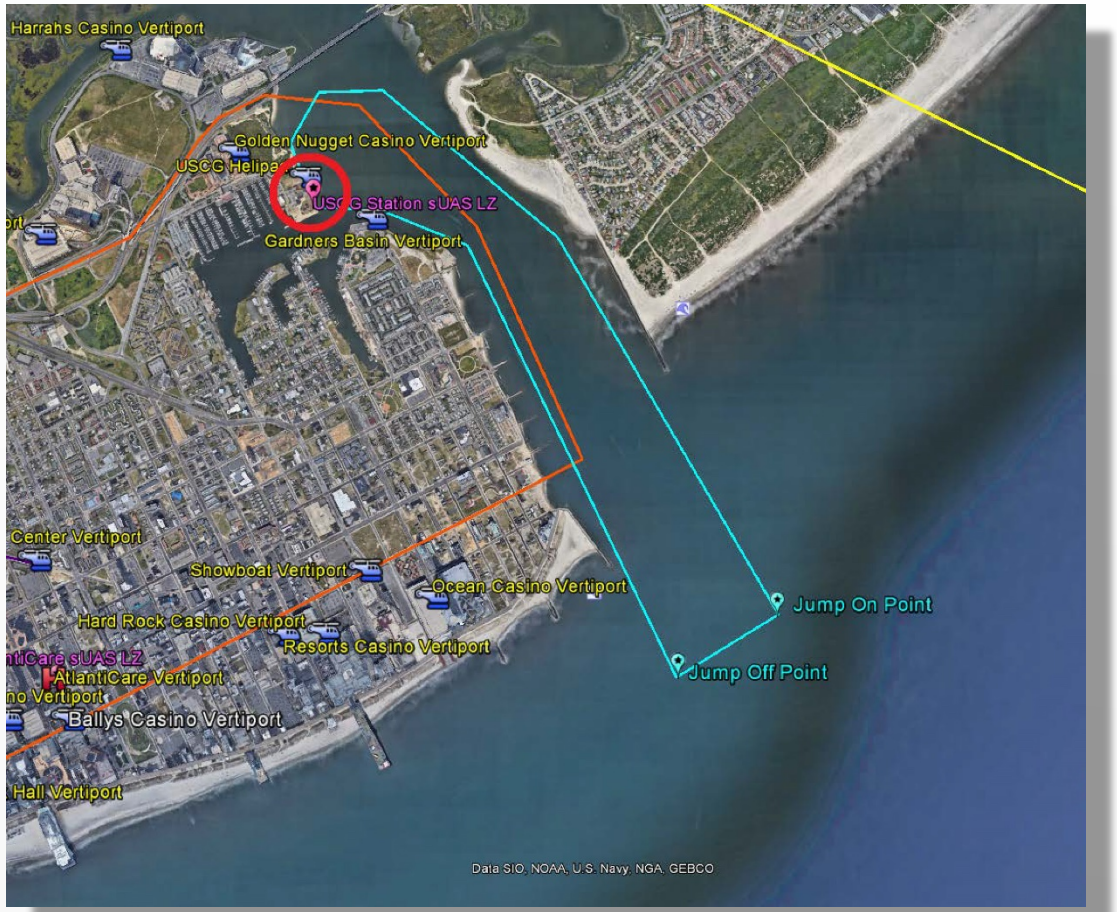
NASA



Atlantic City AAM Ecosystem – UTM

sUAS Operations

- Establishes Waterway Inspection Loop (bottom left)
- Establishes USCG Pitch and Catch Loop (top right)
- Potential to evaluate information exchanges

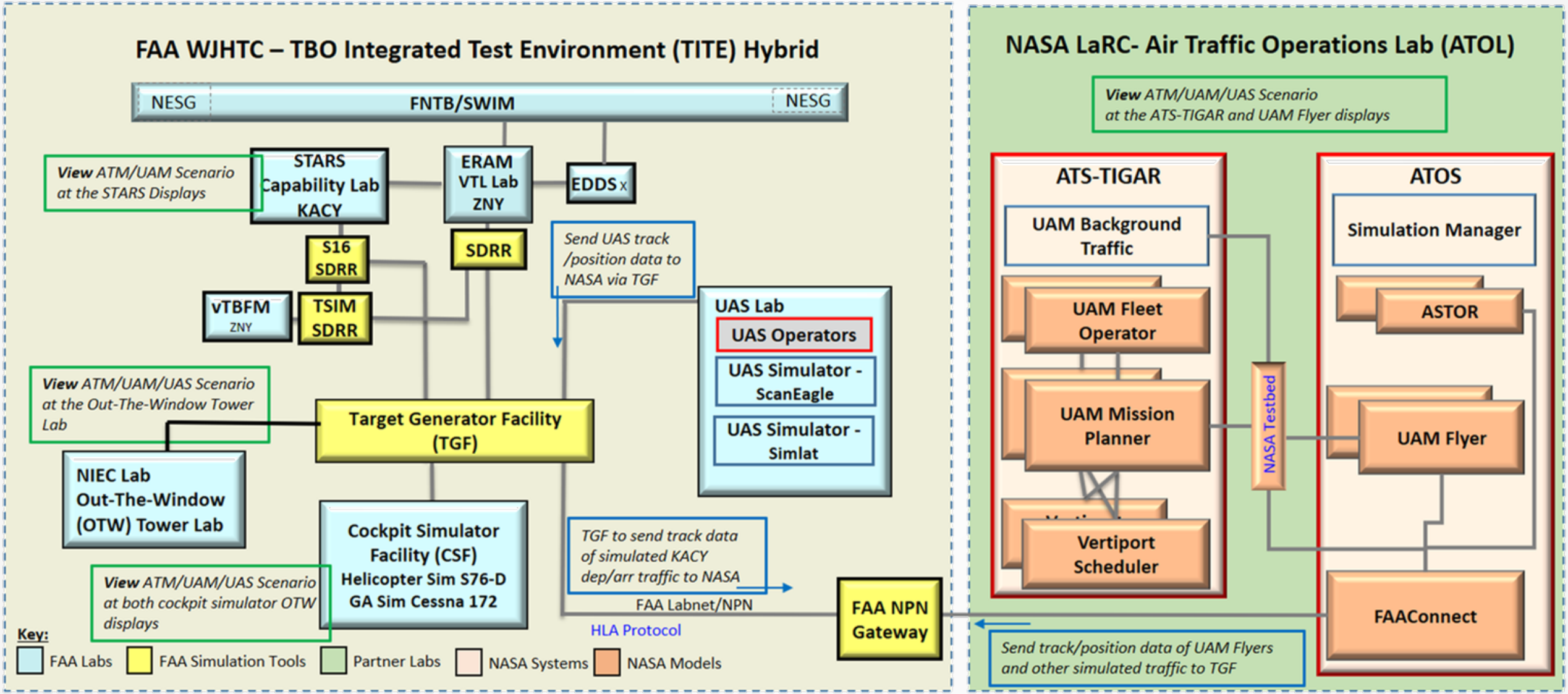


AAM

ADVANCED AIR MOBILITY OVERVIEW

Backup

NFLITE Accredited Baseline



Back