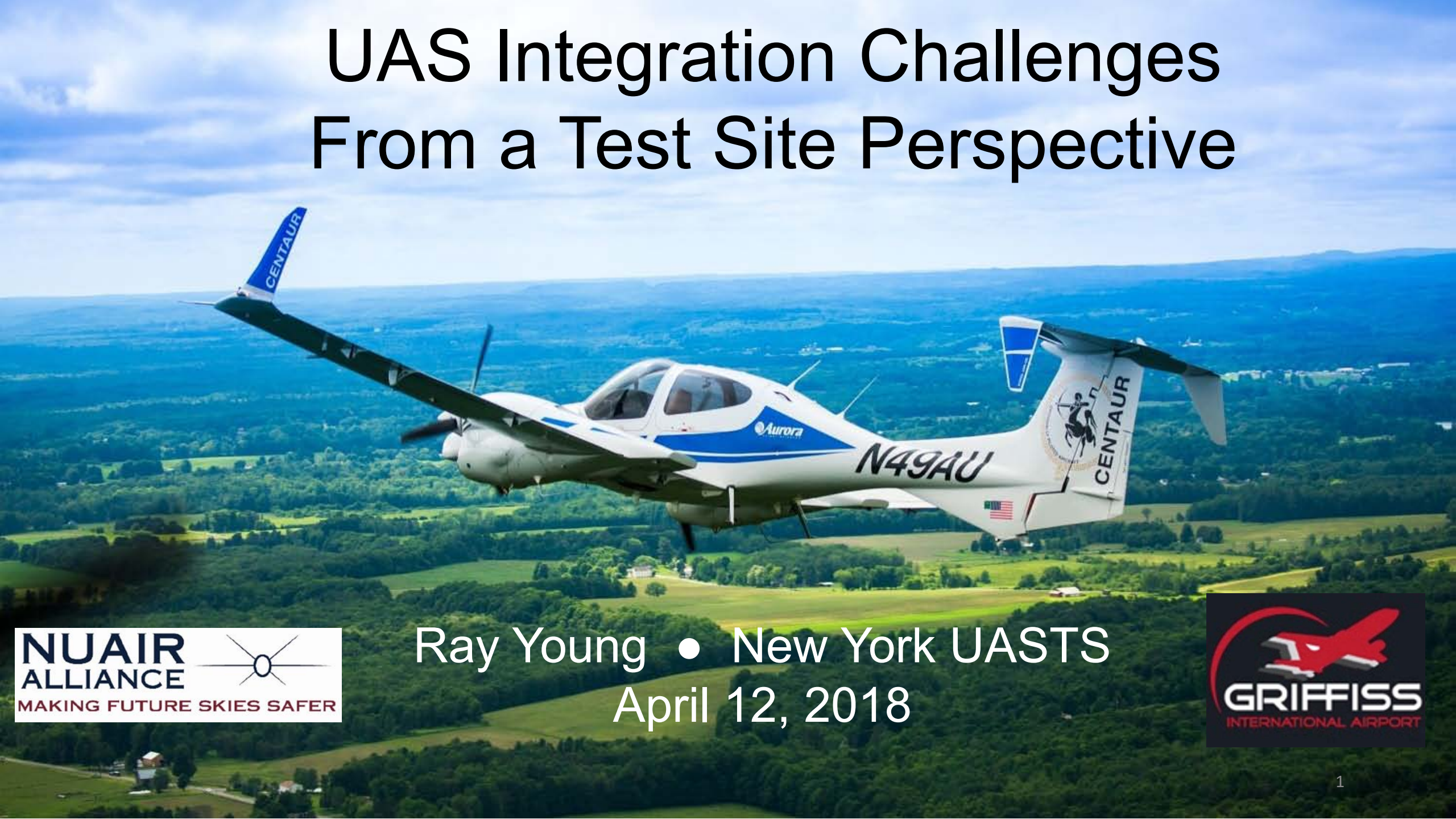
UAS Integration Challenges From a Test Site Perspective



NUAIR ALLIANCE
MAKING FUTURE SKIES SAFER

Ray Young ● New York UASTS

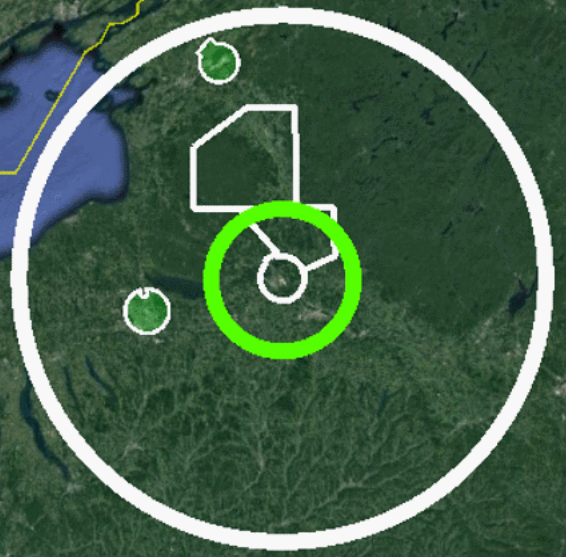
April 12, 2018

GRIFFISS INTERNATIONAL AIRPORT

NEW YORK UAS TEST SITE OPERATING AREA

60 NM Service Volume for BVLOS testing

15,000 square miles—mostly sparsely populated



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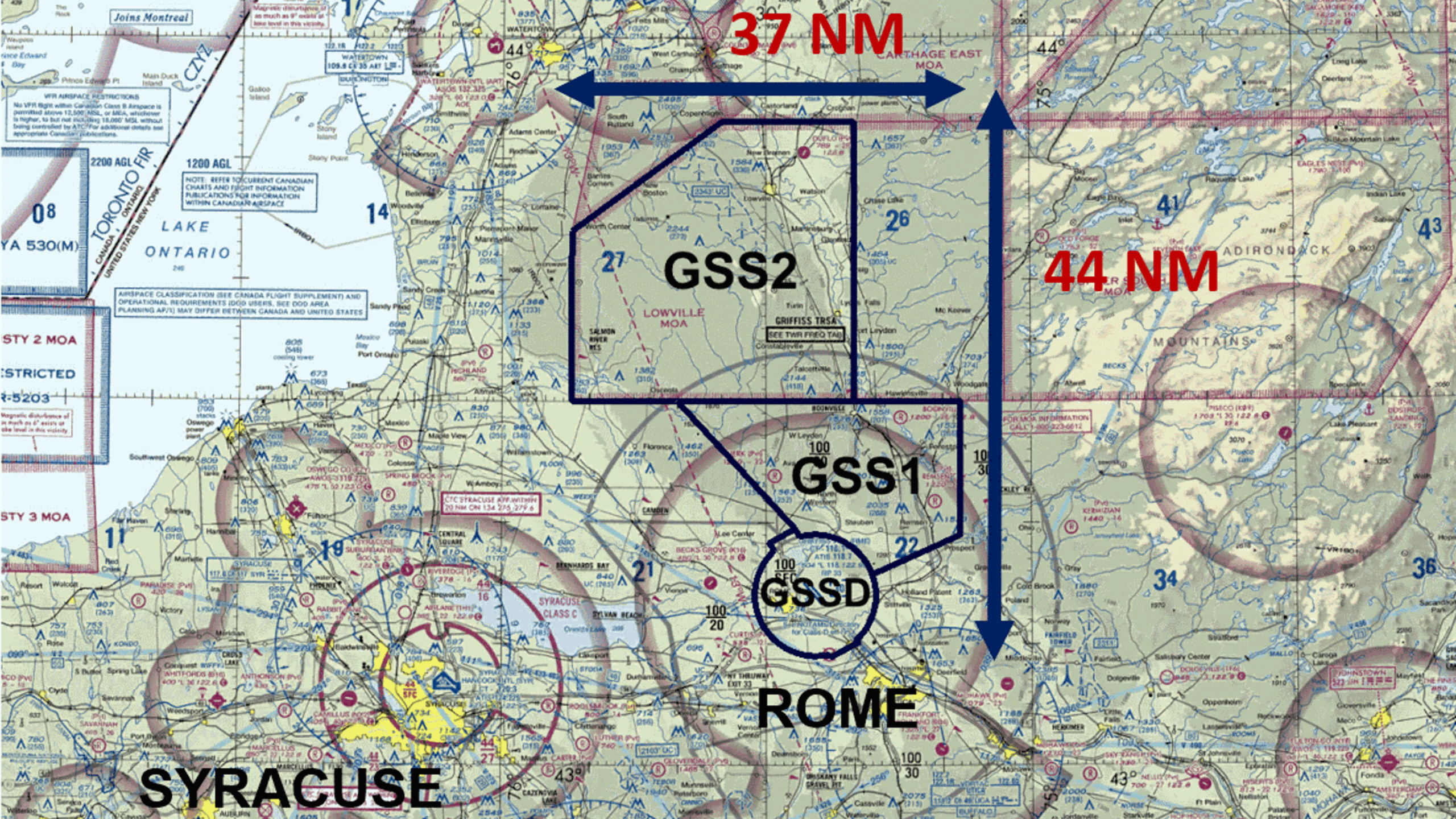
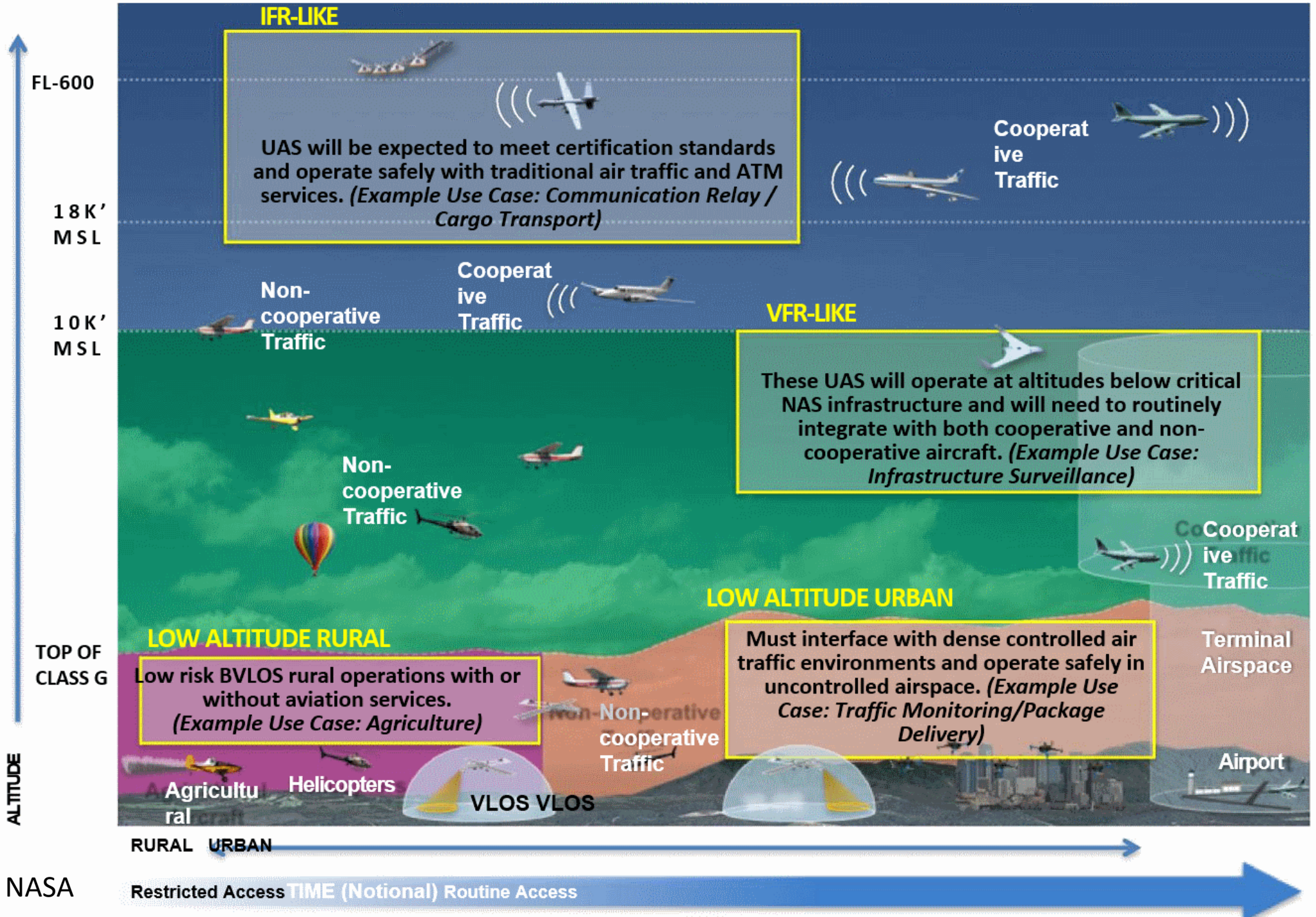
GRIFFISS INTERNATIONAL AIRPORT


37 NM
44 NM
GSS2
GSS1
GSSD
ROME
SYRACUSE
CARTHAGE EAST MOA
LOWVILLE MOA
GRIFFISS TRSA
SALMON RIVER RES
LAKE ONTARIO
TORONTO FIR
CANADA ONTARIO
UNITED STATES NEW YORK
1200 AGL
2200 AGL
SYRACUSE CLASS C
ADIRONDACK MOUNTAINS

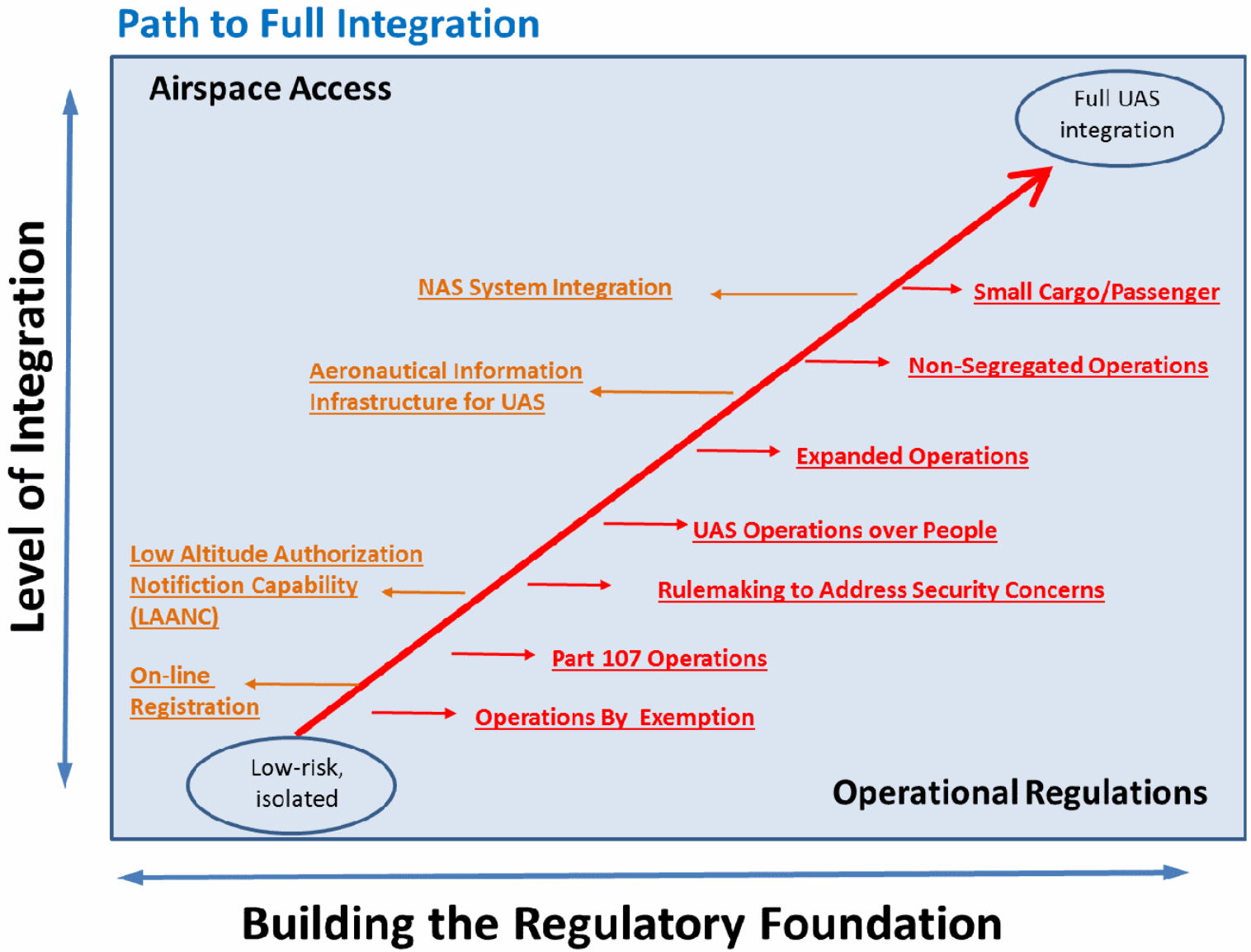

IFR-LIKE
UAS will be expected to meet certification standards and operate safely with traditional air traffic and ATM services. (Example Use Case: Communication Relay / Cargo Transport)
FL-600
18K' MSL
10K' MSL
Cooperative Traffic
Non-cooperative Traffic
Cooperative Traffic
VFR-LIKE
These UAS will operate at altitudes below critical NAS infrastructure and will need to routinely integrate with both cooperative and non-cooperative aircraft. (Example Use Case: Infrastructure Surveillance)
Non-cooperative Traffic
Cooperative Traffic
LOW ALTITUDE URBAN
Must interface with dense controlled air traffic environments and operate safely in uncontrolled airspace. (Example Use Case: Traffic Monitoring/Package Delivery)
Terminal Airspace
LOW ALTITUDE RURAL
Low risk BVLOS rural operations with or without aviation services. (Example Use Case: Agriculture)
TOP OF CLASS G
Non-cooperative Traffic
Agricultural
Helicopters
VLOS VLOS
Airport
ALTITUDE
RURAL URBAN
Restricted Access TIME (Notional) Routine Access

Source: NASA

New York Test Site Focus Area

IFR-equipped UAS operating between airport terminal areas, in VFR-like airspace, and in IFR-like airspace (Support for RTCA SC-228 MOPS)

Path to Full UAS Integration

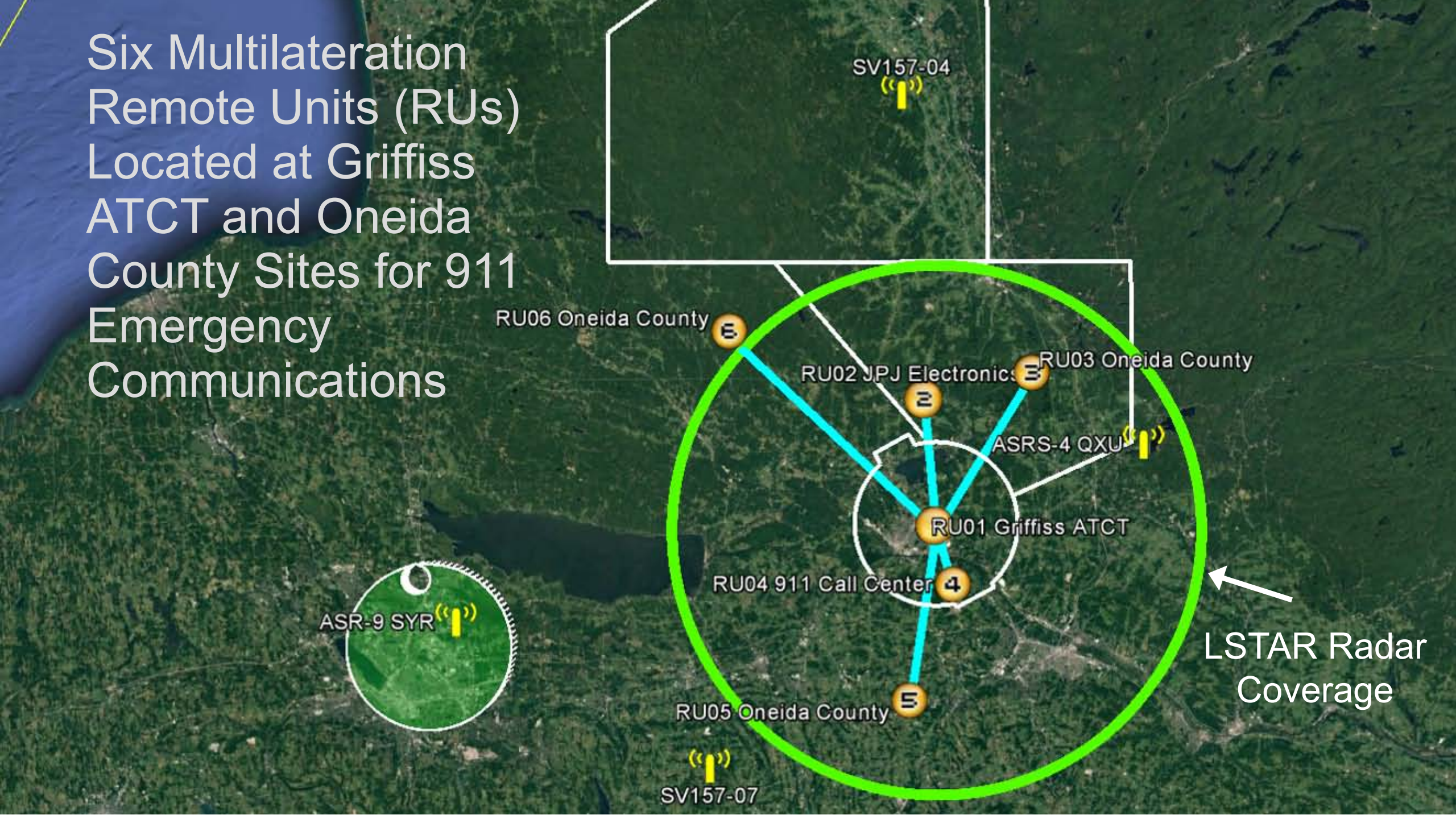


Source: FAA

New York's Approach to GBDAA

As an FAA-designated national UAS test site, the New York UAS Test Site operates in the NAS as a public entity

Our approach uses ground-based air traffic surveillance to gather data independent of ANSP surveillance and data distribution


Six Multilateration Remote Units (RUs) Located at Griffiss ATCT and Oneida County Sites for 911 Emergency Communications
SV157-04
RU06 Oneida County
6
RU02 JPJ Electronics
2
RU03 Oneida County
3
ASRS-4 QXU
RU01 Griffiss ATCT
RU04 911 Call Center
4
ASR-9 SYR
RU05 Oneida County
5
SV157-07
LSTAR Radar Coverage

The Integration Challenge in Three Steps

- Dedicated precision surveillance for data collection and analysis
- Live Virtual Constructive–Distributed Environment (LVC-DE) and data delivery for collaboration with other test facilities
- Use ground-based detect and avoid (DAA) for routine UAS terminal area operations