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NETWORK SYSTEMS

The Aircraft are Coming! Where is the Infrastructure?

New CNS physical infrastructure, as well as digital infrastructure, are critical keys to unlocking the promised potential of the AAM industry

Lisa Peterson
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Aircraft!

Vertiports!

Communications Infrastructure!

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The Jetsons title slate from 1962. *Smithsonian Magazine*

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CNS Infrastructure for UAS: Tackling Challenges Together… NOW

Communication

- **Traditional Aviation**
  - Most capacity utilized by large air carriers
  - Satellite alternatives are emerging but are expensive
- **Emerging Aviation**
  - AURA is only entrant building an aviation-dedicated national network for CNPC or Command and Control (C2) Comms
  - But! There are many needs beyond CNPC
  - Spectrum issues

Navigation

- **GPS is "Gold Standard" but jamming and spoofing are real issues**
- **Other navigation aids rely on WW2-era technology**
- **Urban canyon issues**

Surveillance

- **Lack of available suitable spectrum**
- **Prohibitive cost of building sites**
- **Current FAA RADAR**
  - 2D – No exact positioning
  - Private, no access outside of USG
- **ADS-B**
  - 3D awareness but relies on GPS
  - Not all aircraft are equipped – **bad guys don't use ADS-B!**

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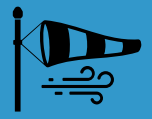
NAS: National Airspace System
CNPC: Control & Non-Payload Communication
ADS-B: Automatic Dependent Surveillance–Broadcast

CNS Enables the UAS and sUAS Markets, BUT…

Regulations

- The NAS needs a major technology/ infrastructure upgrade
- Lack of procedures for certifying third party service providers – DAA, Comms, data, USS-UTM, etc.
- Aircraft OEMs must be certified using existing rule basis or Part 11
- Rules for new infrastructure need to be developed
- The FAA is relying on industry to figure it all out



Operations

- CNS Service Providers are developing their own solutions in silos – and assuming away the hard parts
- Key areas (the hardest parts) are not being focused on holistically

Economics

- AAM OEMs/Operators are hoping the CNS infrastructure will be completed for them before their EIS
- They are also praying that the economics won't blow up their business models

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EIS: Entry Into Service

So, What is the Industry Doing About It?

Federal

- Moderate Investment - $$$
- NASA/FAA UTM CONOPS
- FAA Test & BEYOND Sites
- FAA UAM CONOPS / Innovate 28
- US DOT
- AAM Interagency Working Group
- AFRL/AFWERX

State & Local

- Starting to Invest - $$
- Some state & local govt's leaning in, developing solutions in silos
- Most still unclear about the requirements for operational approval and expected role
- Examples of states funding UAS/AAM initiatives: California, Michigan, North Carolina, North Dakota, Ohio, Oklahoma, Texas, Utah, Virginia

Commercial

- Significant Investment - $$$$
- NASA and FAA are relying on industry to figure it all out
- sUAS delivery operators took it upon themselves to deploy a "key site"
- RAM/AAM OEMs and Operators securing funded programs with DoD
- Reassessing business models and considering Public-Private Partnerships

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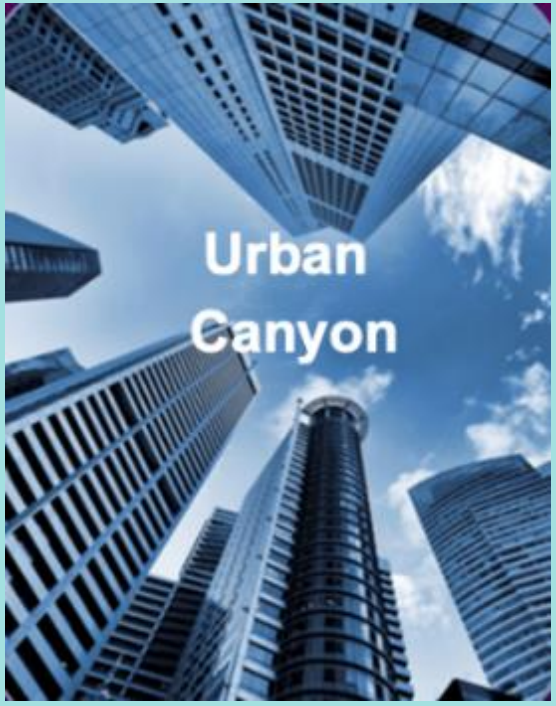
Remember, CNS Infrastructure Planning & Deployment Takes Time!

Sighting, Zoning, Permitting



Planning & Design Tailored to CONOPS

Testing, Operational Approvals

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The Take-Aways: AAM Industry Cannot Achieve Safe, Scalable Commercial Operations Without the Infrastructure

- Plan now so the infrastructure is available
- Support a solution that scales
- Reduce deployment costs
- Present the path to unit economics that work for all members of the ecosystem
- Empower compliance
- Demonstrate to regulators that the rules work
- Positively impact performance
- Consider Public-Private Partnership models
- Accelerate time-to-market for each and every one of us

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Collaboration is Crucial to Achieving the Industry's Full Potential

NOT

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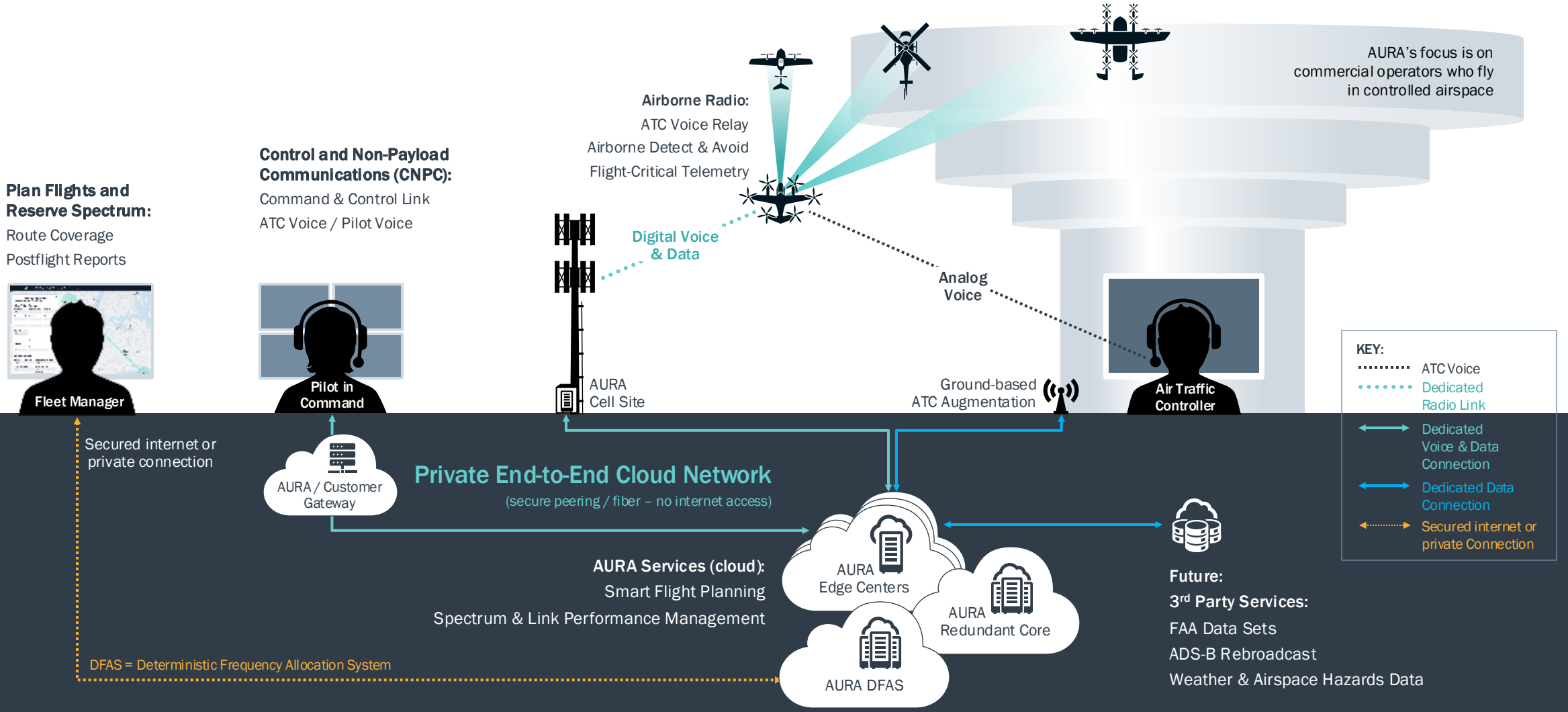
AURA's Terrestrial Aviation Network, Purpose Built for UAS



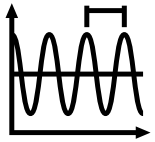
AURA's Dedicated Aviation-Grade Wireless Network – Advantages

450 MHz FCC Aviation-Licensed Spectrum

AURA's spectrum has the ideal propagation characteristics for aviation and has no altitude restrictions.

Ultra-Reliable Radio Link

Network radio link and spectrum management system enables continuous monitoring and control of UAV for flight operations.



Extremely Low Latency

Network architecture optimized for low latency communication.

Secure, Deterministic Signal

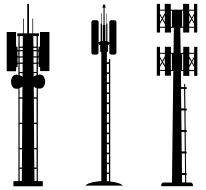
Unlike other service offerings, AURA's network provides point-to-point connectivity for air-to-ground C2 communications.

ATC Voice Relay

AURA's network will provide ATC voice solutions essential for UAVs and BVLOS flights in the NAS.

Privacy & Security

The private network avoids connections to the internet, preserving data privacy while securing UAV from hostile actors.



Customer-Led Buildout

Locations of our macro and small sites are driven by customer requirements. Micro sites ("AURA Go Kits") can provide supplemental coverage.

Regulatory Compliance

AURA's regulatory-compliant network will enable certification of next-generation aviation.

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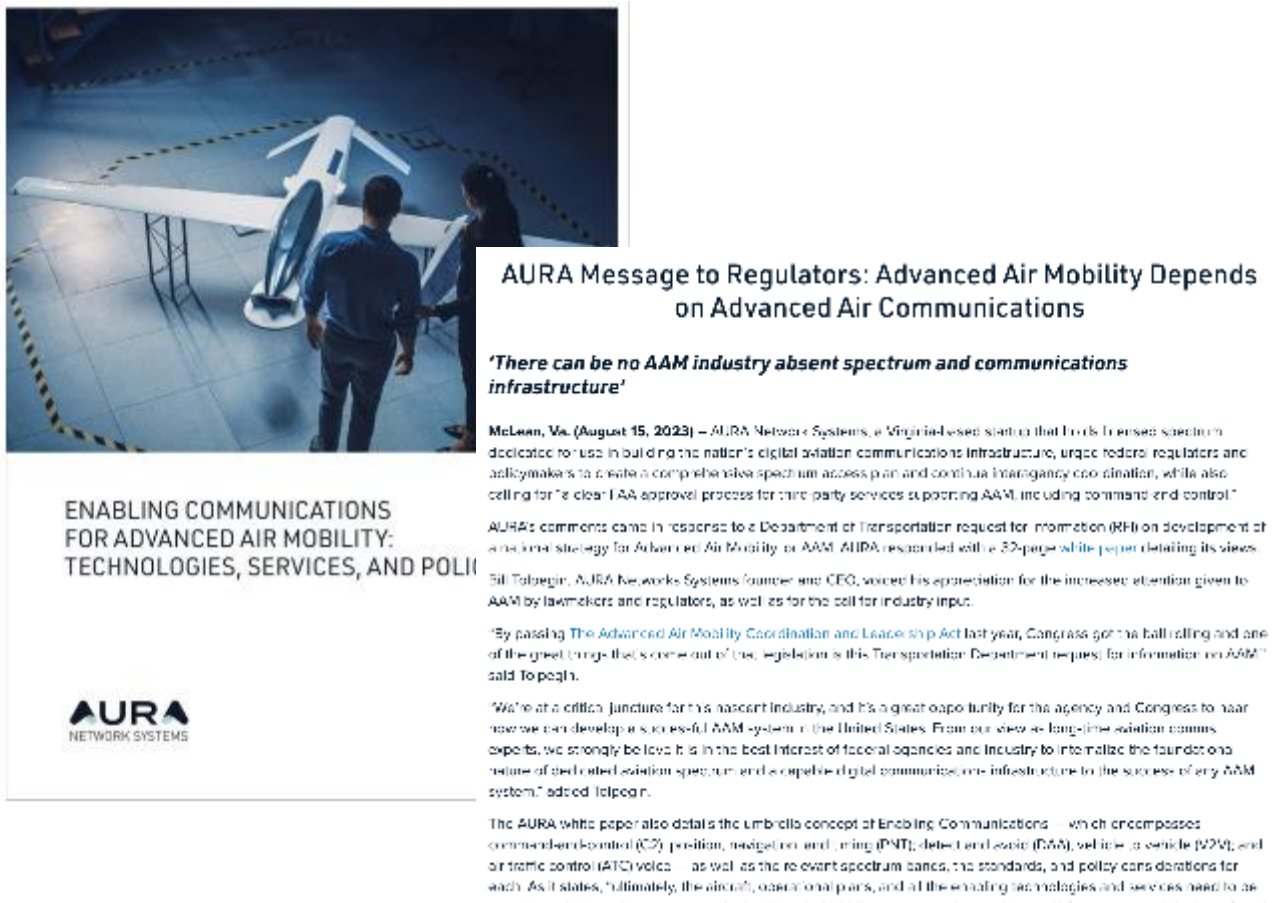
INCYMI...

AURA's Response to the DOT AAM RFI



AURA Announces Open for Business in Ohio

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Thank you.

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