UAS Traffic Management (UTM)

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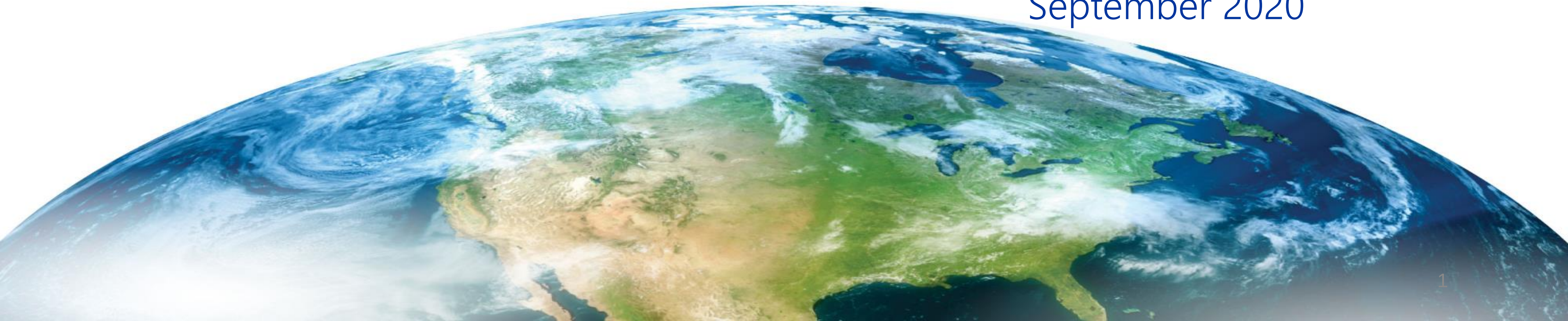
September 2020



What is UTM?

- How FAA will support operations for UAS operating in low altitude airspace
- Uses industry's ability to supply services under FAA's regulatory authority where these services do not currently exist
- Community-based, cooperative traffic management ecosystem
  - Operators and entities provide operation support services and coordinate execution
  - FAA establishes rules of the road
- Uses layers of information sharing and data exchange for safe operations
  - Operator to Operator, vehicle to vehicle, and Operator to the FAA
- Operators share their flight intent with each other and coordinate to de-conflict and safely separate trajectories

What is UTM? (cont'd)

- Operator-Operator and Operator-FAA communication is primarily through a distributed information network
  - Not between pilots and air traffic controllers via voice
- FAA makes real-time airspace constraints available to UAS Operators
- FAA has on-demand access to UTM operational information when needed
- UAS Service Suppliers provide services to:
  - Support the UAS community
  - Connect Operators and other entities to enable information flow across the USS network
  - Promote shared situational awareness among UTM participants
- UTM Operators are responsible for:
  - Meeting the requirements established for the type of operation and associated airspace volume/route where they operate, and
  - Complying with all FAA regulations.

UTM Services

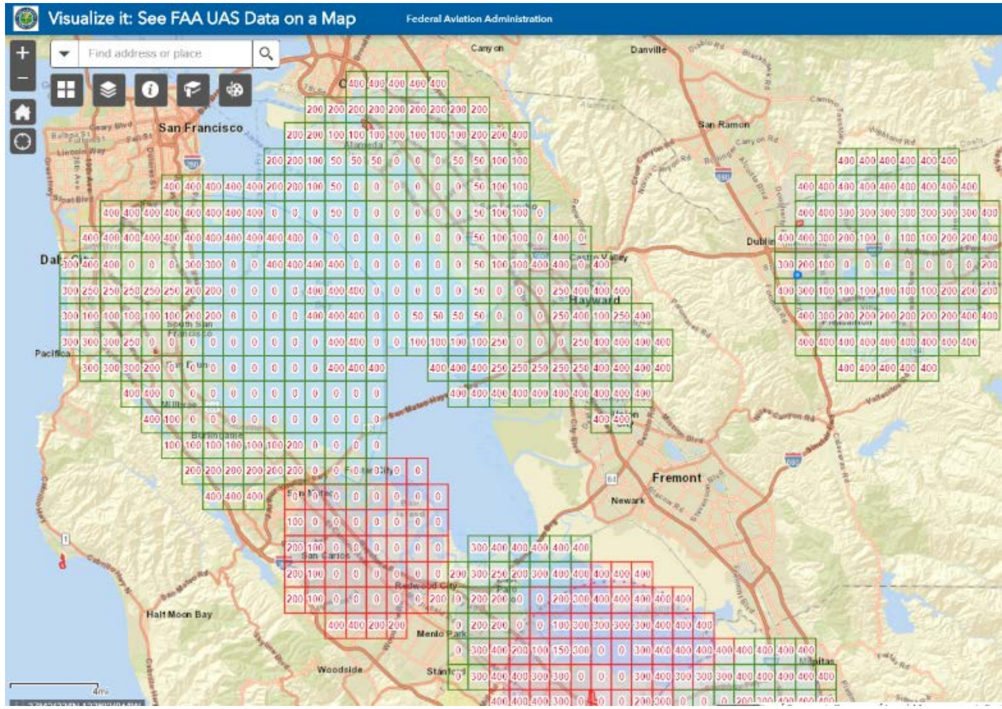
- UAS Service Suppliers (USSs) provide services to:
  - Connect Operators and other entities to enable information flow across the USS network
  - Promote shared situational awareness among UTM participants
- UTM services are modular and discrete, allowing flexibility for implementation
- FAA strikes a balance, providing needed oversight and allowing industry innovation
- UTM services may be
  - Required due to FAA regulation and/or a direct connection to FAA systems
  - Used to meet all or part of a FAA regulation
  - Used for value-added assistance, but not for regulatory compliance

UTM Service *Examples*

Service Name	Purpose
USS Network Discovery	Enables authorized UTM stakeholders to discover relevant active USS providers and operations within a specified geographical area.
Operator Registration	Provides the ability for vehicle owners to register data related to their UAS and a query function to allow appropriate stakeholders to request registration data.
Operation Planning	Supports flight planning - accounts for operational impacts, including other known operations, aircraft performance, ground constraints, airspace constraints.
Constraint Management	Supports provision of operational constraint information related to public safety activities, as well as applicable constraint information from the Airspace Authority/ANSP and other non-FAA authorized sources, to UAS Operators.
Airspace Authorization	Provides Airspace Authorization from the Airspace Authority/Air Navigation Service Provider to a UAS Operator.
Strategic De-Confliction	Arranges, negotiates, and prioritizes Operation Volumes/trajectories of UAS operations with the objective of minimizing the likelihood of airborne conflicts between operations.
Conformance Monitoring	Provides real-time alerting of non-conformance to Operation Volume/trajectory to an Operator or another airspace user.
Operator Messaging	Provides on-demand, periodic, or event-driven message exchange capabilities in support of UAS Operator activities. Examples of exchanged information include position reports, intent information, and status information.
FAA Messaging	Provides on-demand, periodic, or event-driven message exchange capabilities with FAA systems to satisfy applicable regulatory/policy requirements.
Remote ID	Identifies UAS in the NAS.
Conflict Advisory and Alert	Provides real-time monitoring and alerting of UA proximity for other airspace users.
Weather	Provides forecast and/or real-time weather information to support individual Operator and/or service decision-making.
Surveillance	Supports air risk assessment for safety case development, flight planning with airspace heat maps based on common traffic patterns, and flight operations by providing real-time tracking information of air traffic for a given geographic area.
Navigation	Provides historical quality of service performance for airspace surveying during development phase, coverage maps during flight planning phase, and integrity, availability, quality of service, and security monitoring during operation phase.

Airspace Authorization Service

- All UAS Operators conducting UTM operations must obtain FAA authorization when operating within the bounds of controlled airspace, including Class B/C/D/E[surface]
- UTM Operators can apply for Airspace Authorizations directly through FAA systems or they can use a government-qualified USS to provide automated authorization service
- USSs qualified to provide Airspace Authorization services:
    - Identify operations that require Airspace Authorization,
    - Notify Operators of the need for ATC authorization, and
    - Support development and submittal of ATC authorization information
- To obtain Airspace Authorization on the Operator's behalf, USSs check the Operator-submitted Operation Volumes against the ceilings of UAS Facility Map (UASFM) grids
- Government-qualified USSs can access UASFMs to determine when an operation is available (or not) for automated approval by ATC



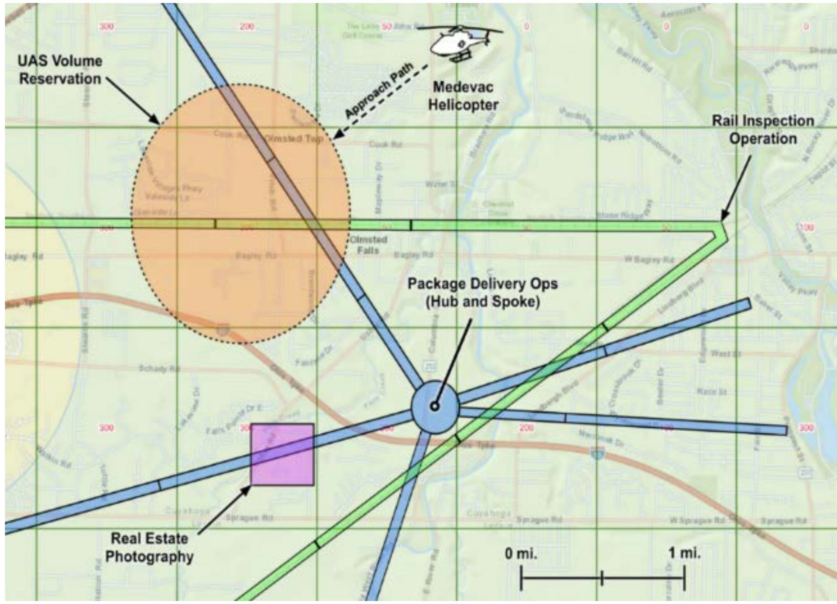
Remote Identification (ID) Service

- Remote ID is the ability of an unmanned aircraft in flight to provide certain identification and location information that people on the ground and other airspace users can receive
- Provides a method for authorized public entities to take an ID associated with an Operator or operation and submit a request to the FAA to receive all the correlated information

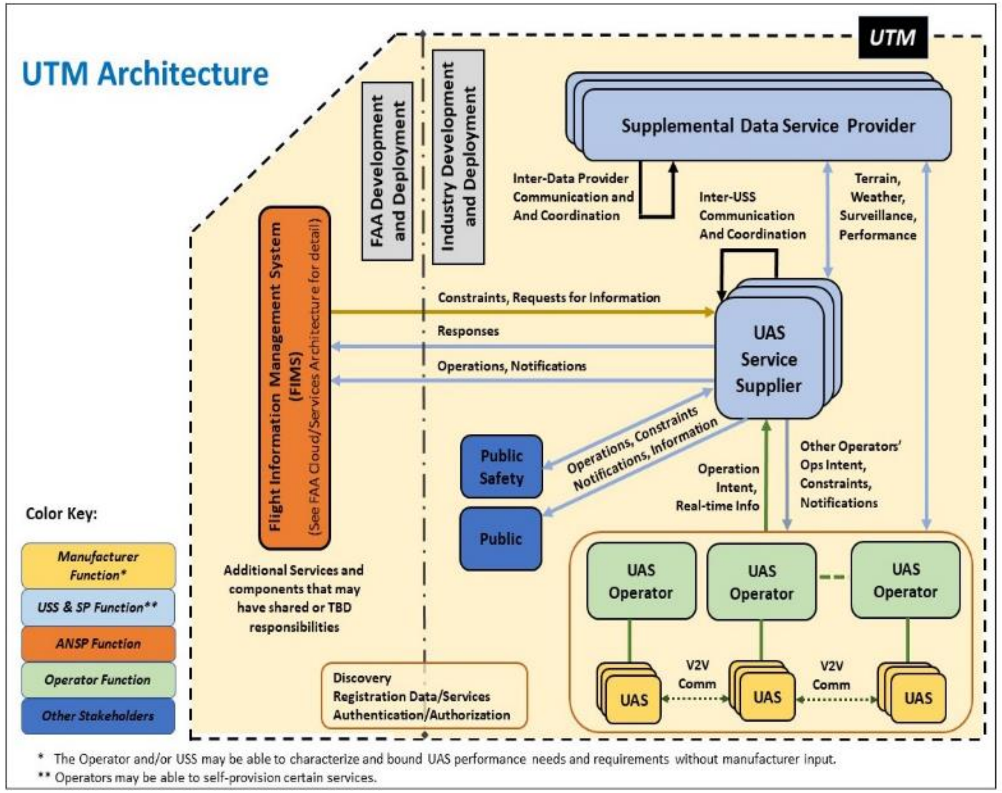
Constraint Management Service

UAS Volume Reservations (UVR)

- Designed to support operational safety of transient flights (e.g., police activity, emergency response, public safety)
- Create and route UVR data through the USS Network to notify affected Operators and FAA stakeholders of the blocks of airspace where these flights occur
- Generally short in duration (hours), have specified airspace boundaries, and have an established start and end times
- USS are qualified by the government to provide UVR services



Notional UTM Architecture



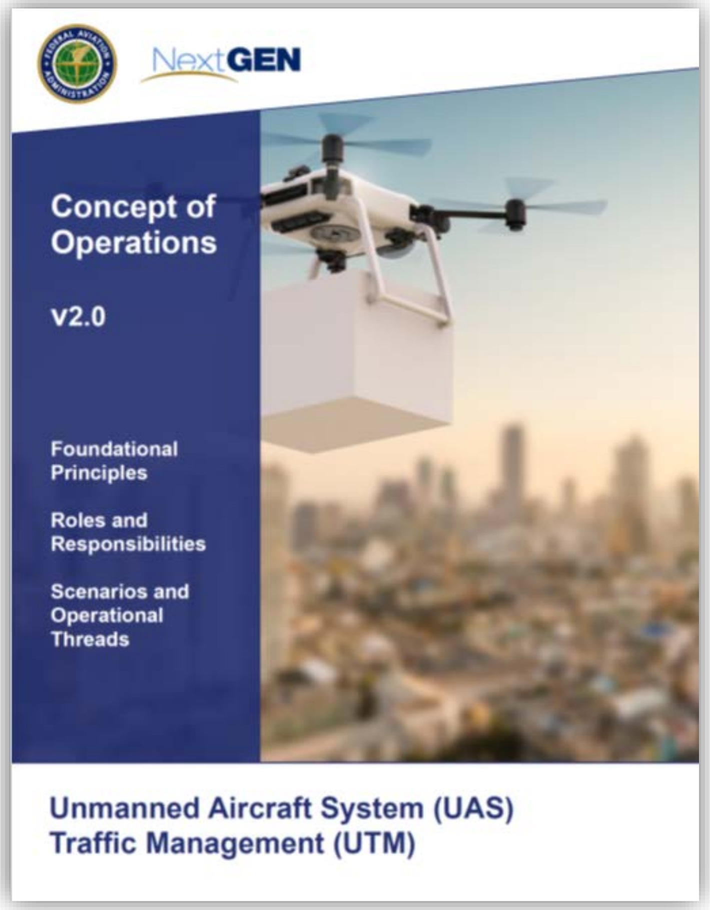
- An ecosystem that encompasses all infrastructure, policies, procedures, services, and personnel required to support low altitude UAS operations.
- Requires new regulatory frameworks, operating rules and performance requirements commensurate with demands of the operation
- Includes a data exchange and information architecture that provides shared situational awareness among participants.

Security

- Security is a priority of UTM, and an expectation of the public
- Security refers to the protection against threats that stem from intentional acts (e.g., terrorism) or unintentional acts (e.g., human error)
- Security risk management balances the needs of the members of the UTM community with the need to protect stakeholder interests and assets
- Security needs of FAA, Public Stakeholders, Data Management & Access, Networked Systems, and Aircraft Systems are being addressed and solutions explored in collaboration with the larger aviation community

FAA UTM ConOps V2.0

- Finalized March 2020
- Documents the UTM vision to date and describes the associated operational and technical requirements for developing and operating within the UTM ecosystem



Questions?

More Information:
https://www.faa.gov/uas/research_development/traffic_management/