

*What's all the buzz about?*

Operationalizing UAS at LA's major transportation hubs

UAS in Transportation Expo  
Corvallis, Oregon  
August 5, 2018

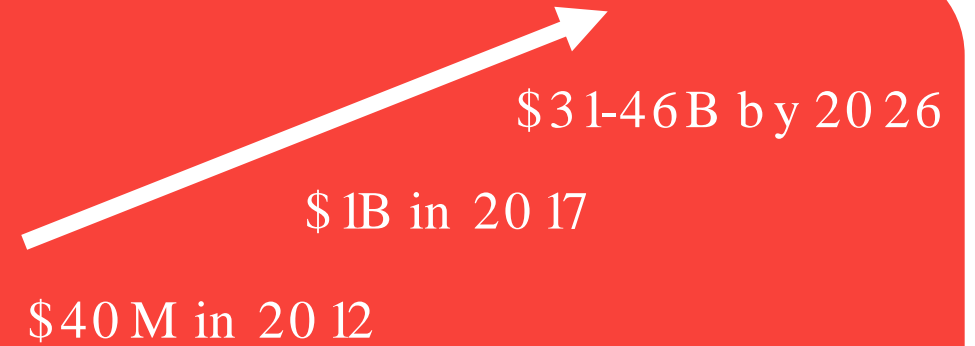
*Adrienne Lindgren, Consultant  
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US Advisory Services*



WSP

Question today  
*imagine tomorrow*  
create for the future

239% increase in construction



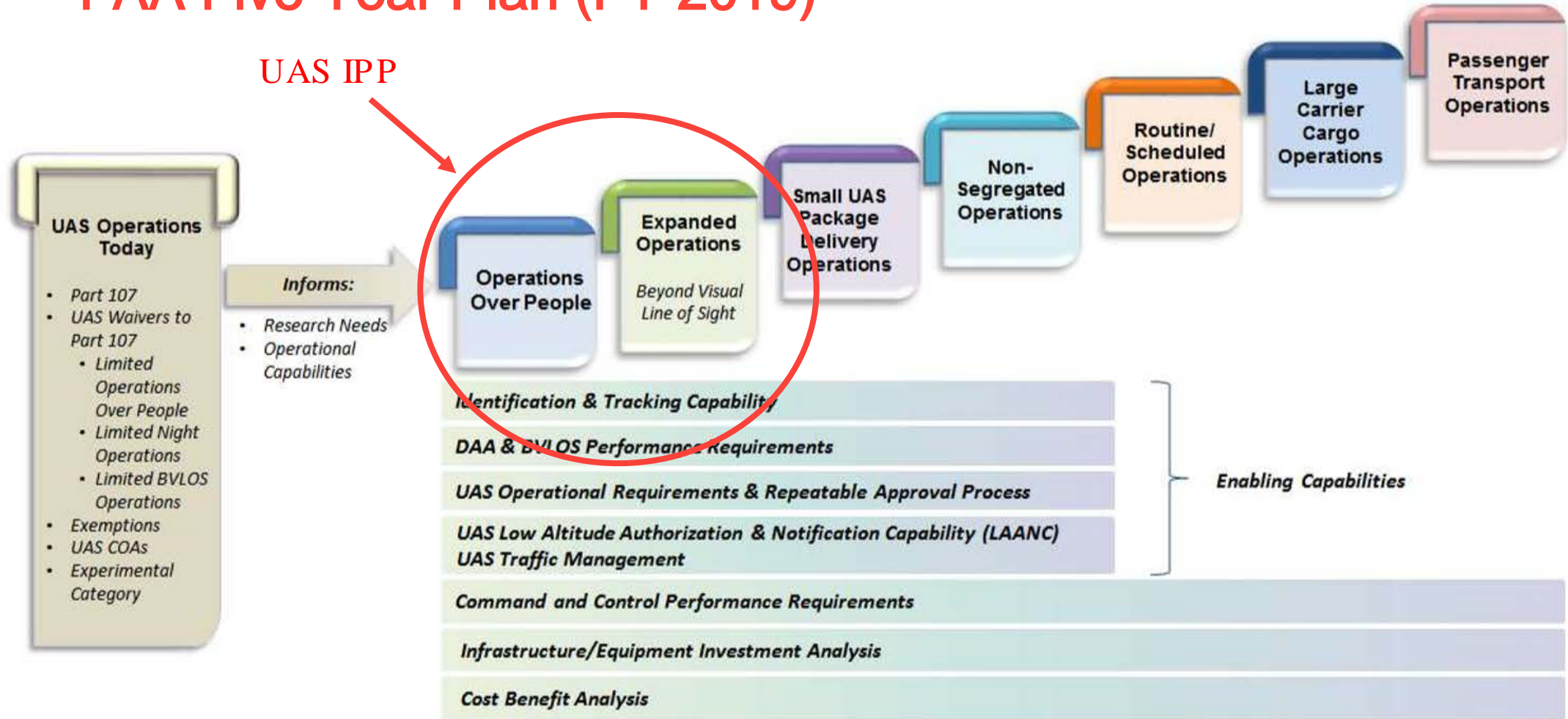
Market Dynamics

Over 250 states and local entities for UAS IPP  
(16 State DOTs, 17 Airports,)

7M small drones by 2020  
10 x number of commercial flights by 2025

UAS in Transportation: who cares?

# Unmanned Aerial Systems Integration FAA Five Year Plan (FY 2019)



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Where are we now?

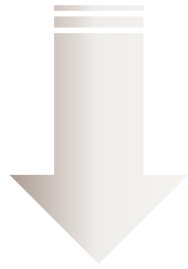
Collaboration between federal, state, local, and industry



# Key Stakeholders & Market Actors: Public and Private

## Key Stakeholders

**Public**



**Private**

Regulators – *Federal, State, Local*

Ground Transportation Operators/Agencies – *Local DOT's, MPO*

Utility/Energy Providers – *Public, Private, Proprietary*

Airspace and Air Traffic – *UTM, ATC (AirMap )*

Vehicle Manufacturers – *Technologists (DJI)*

Capital Providers – *VC, PE (SoftBank )*

Sales – *Services, Software*

Public-private partnerships to advance research goals

# Program Management Overview



Integrating UAS into workflow is an iterative process

# Program Development: Key Considerations

- Strategic assessment
  - *Define the need*
  - *Desired outcome*
  - *Develop metrics*
- CONOPS Development
  - *Regulatory compliance*
  - *Knowing what you can and can't do*
- Resource identification and procurement
- Policy, procedures, guidelines
  - *Privacy*
  - *Data management*
  - *Mission planning and execution*
  - *Approvals and oversight*
  - *Roles and responsibilities*

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Noncompliant UAS ops can result in a \$25K fine from FAA

# Program Implementation: Key Considerations

- Training and development –establishing a baseline
  - *Community colleges and jobs prospects build support*
- Technology selection –constantly evolving
  - *Hardware*
  - *Software*
  - *Data processing/bandwidth*
  - *Physical and digital infrastructure*
- Coordination and communication planning
  - *Interfacing with relevant stakeholders, don't forget about labor*
- Community engagement and notification
  - *Consider working with a group like the ACLU*
- Rigorous documentation

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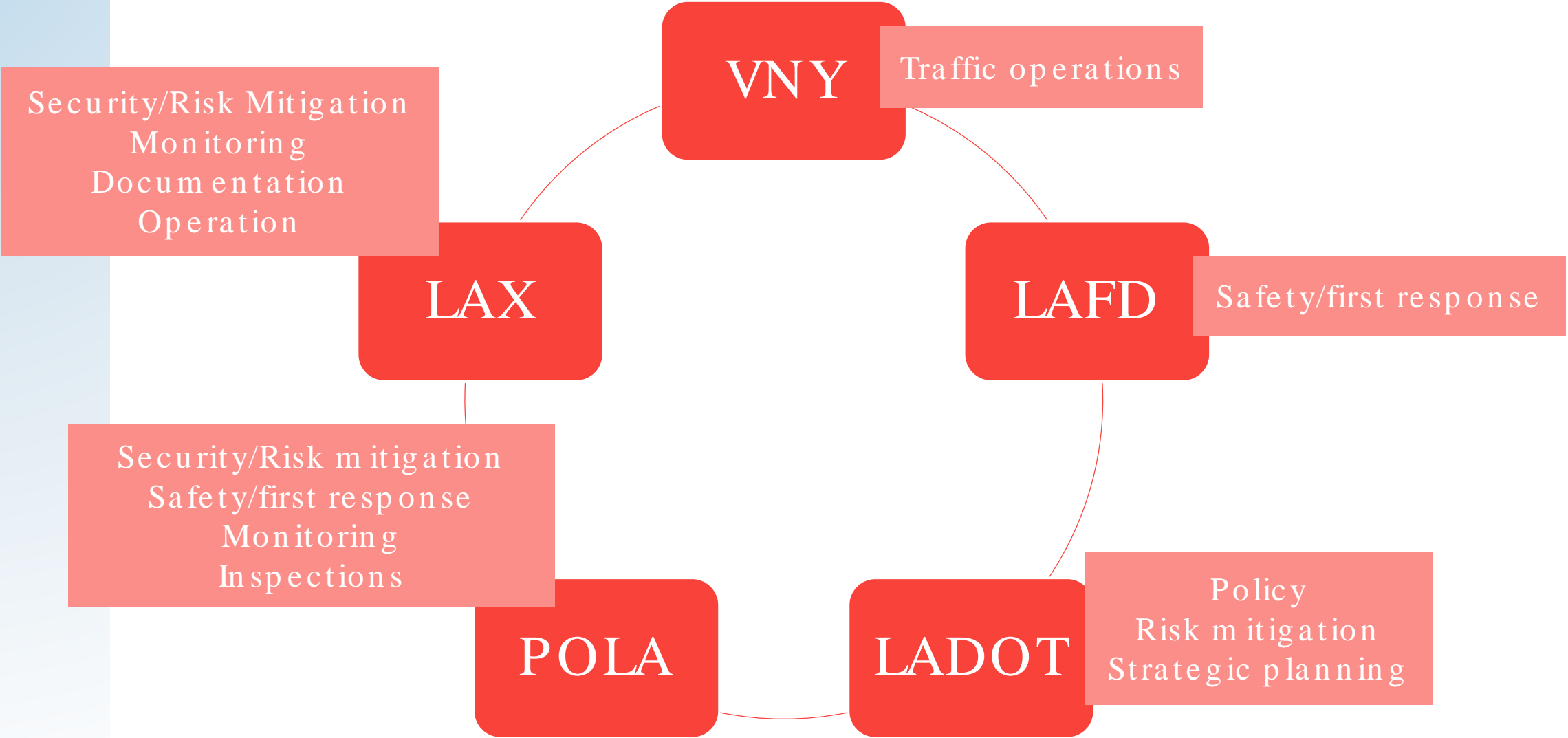
# Program Evaluation: Key Considerations

- User experience
- Additional training
- Technology evaluation
- Continuous improvement
  - *Define the need*
  - *Desired outcome*
  - *Develop metrics*

New opportunities, increased efficiencies, overall effectiveness, and additional cost savings.



# UAS in Los Angeles: a multi-agency perspective



Focusing on leverage and vertical integration

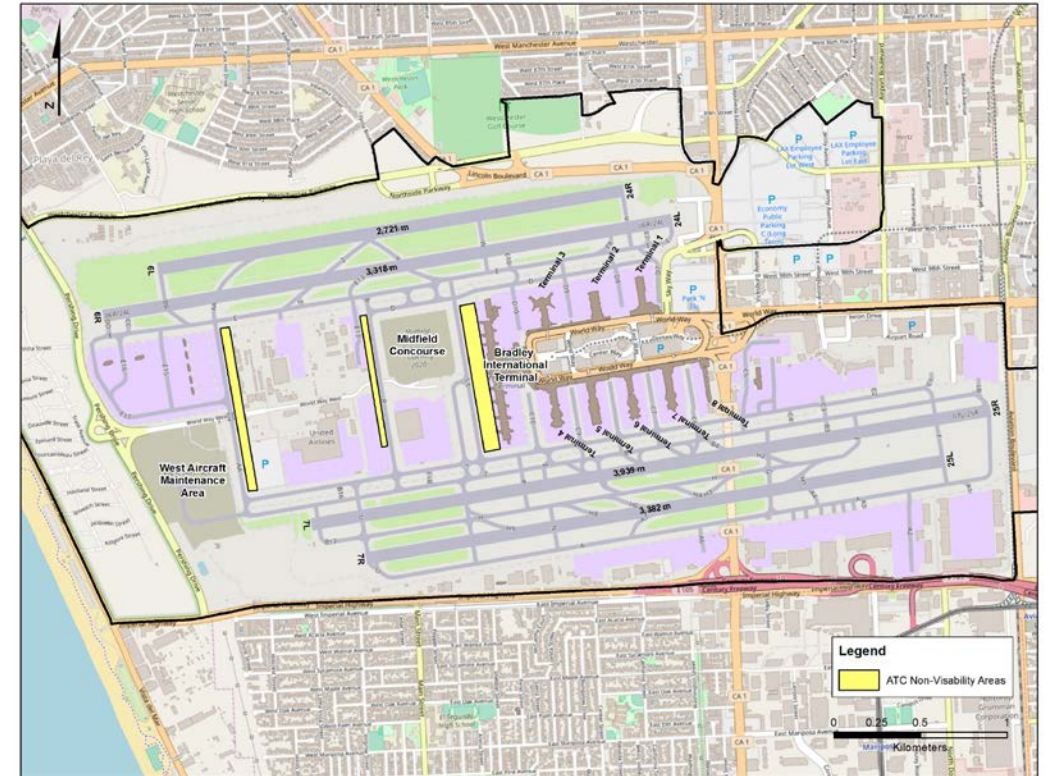
## Context: Los Angeles T&I Agencies and Operations

- Measure M: \$120 B to County Transit Agency (over 40 years)
- \$3B investments into airport, including CAAP
- LADOT Technology Bench – asserting jurisdiction and control, harmonization of policy for autonomous ground and low altitude aerial technologies
- 100 K monthly drone ops in LA, 10% month-over-month increase

Major upgrades require long-term planning for downstream technologies

# Specific Challenges: LAX and VNY

- LAX: Highly complex operations, Class B airspace
  - *Pre-flight planning and processes*
  - *Rogue vs compliant*
- Legal Compliance
  - *DJI unlock*
  - *Airspace authorization and waiver processes (night waivers, operations over people)*
- Rogue operators
  - *Meet up groups at VNY*
- Equipment
  - *Size, complexity of space*
  - *Accuracy vs flight time*



Goal: Construction monitoring, pavement/runway inspections, security

## Specific Challenges: Port of LA

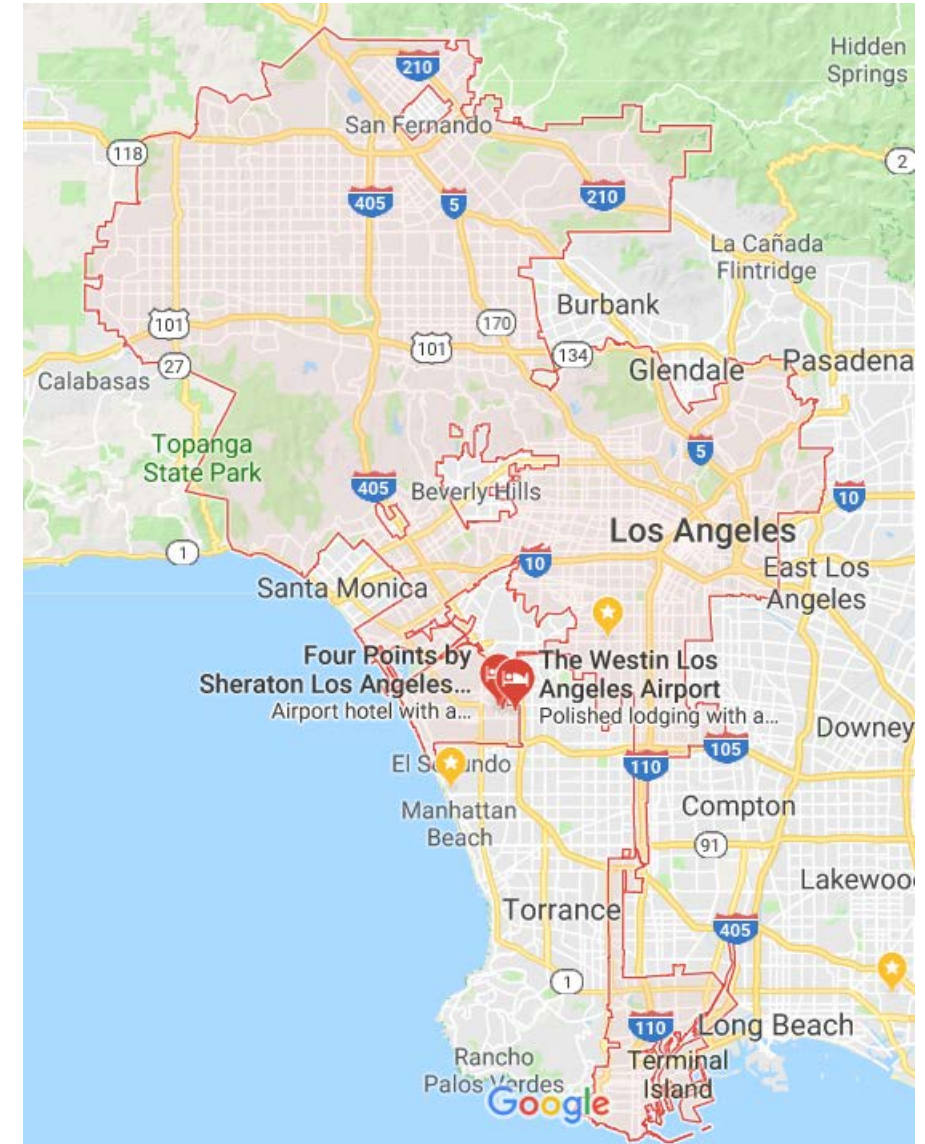
- Geography of Port
  - *Amphibious?*
  - *Terminal interference*
  - *Equipment battery life*
    - Look at continuous deployment
- Communication
  - *Port divisions*
- Public relations
  - *Privacy/security*
    - Involve ACLU early
    - Focus on jobs training and education
- Rogue drone identification
  - *Enforcement*



Goal: Safety, security, facilities monitoring, first response, time sensitive events

## Specific Challenges: LADOT

- Procurement
  - *General Fund*
- Culture challenge
  - *Low level capacity of principles of aviation*
- Jurisdiction
  - *Multiple cities exist inside City of Los Angeles*

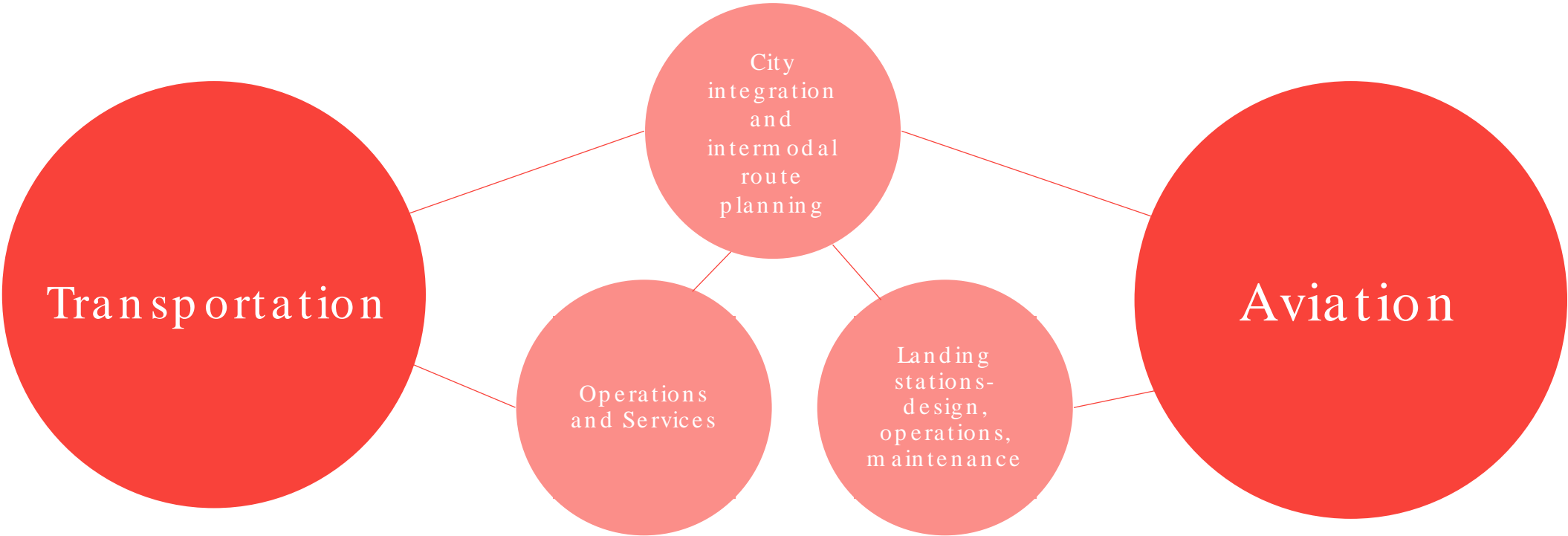


## Common Challenges

- Identifying funds can be challenging depending on the type of agency
  - *General Fund vs Proprietary*
- Data processing, downloading, and image sharing
- Duplication of services
  - *Airspace authorizations*
- Purchasing power
  - *Economies of scale*
- Achieving a unified vision and approach
  - *Building political will (field to upper management/ electeds )*
  - *Ensure compliance with a patchwork of regulations*
  - *Impact/Integration into other city services/departments*
    - Ex: operations in public right of way
    - Ex: Creative economic opportunities (Film LA takeoff and landing fee)

# Future Considerations: Urban Air Mobility

Merging a culture of **aviation** with *local transportation systems*



Avoiding a culture clash when integrating complex systems

## In Conclusion....

**Combining** the competencies of **traditional**  
**infrastructure** planning with planning for the  
**smarter city**

Focus on systems thinking, coordination, relationships, and  
partnerships.



## WSP Advisory Services

- Guide clients to better compete in today's economy by providing a unique combination of infrastructure expertise and management consulting leadership.
- We create value for clients by providing deep industry understanding and local knowledge, access to senior advisors with operations and executive management experience, and a fully integrated package of professional services.



### TRUST

We have developed long-lasting relationships built on our excellent service delivery and results-oriented solutions when it matters most.



### EXPERIENCE

Former executives and senior officials headline our team of consultants, all known for their extensive strategic, financial, operational and management experience.

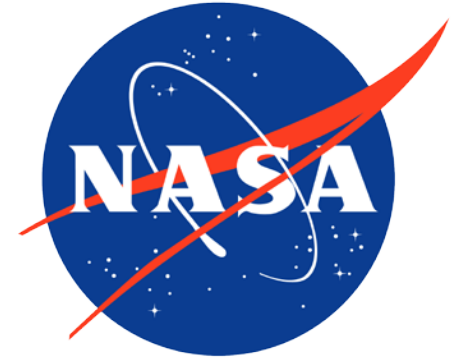


### LIFECYCLE APPROACH

Clients turn to us at all stages of the development lifecycle: strategic planning, design, procurement, construction, operations and maintenance.

# WSP UAS -related Activities

- USDOT/FAA
  - *Drone Advisory Committee Subcommittee Membership*
    - TG1 (harmonization of local and federal)
    - TG3 (funding and financing)
  - *UAS Integration Pilot Program coordination*
- NASA
  - *UAM Strategic Advisory Group*
- FHWA



U.S. Department of Transportation  
**Federal Highway Administration**

## Where can WSP help DOT's take meaningful steps forward with UAS integration efforts?

- Assess current program culture, technology, processes, and policy to identify gaps/fill strategies
- Develop benchmarking and success metrics
- Facilitate strategic planning to define roadmap for UAS program expansion and broader UAM considerations
- Develop guidance materials/best practices for UAS users around the state
- Develop procurement specifications for specific use cases
- P3 advisory services
- Develop education and outreach strategies
- Facilitate inter-agency engagement and vertical integration of services, purchasing, and program implementation
- Develop training
- Program management support



## FHWA Effective Use of Geospatial Tools for Highway Construction

WSP investigated the current use geospatial technologies such as UAV, LIDAR and photogrammetry in the highway construction context, from both contractor and owner perspectives. In order to determine the level of effectiveness in different uses of geospatial technologies, WSP documented the return on investment in using this technology with respect to the type of data collected and used for highway construction.

## FHWA Construction Inspection for Digital Project Delivery

WSP was selected to provide guidance for effective use of digital construction inspection tools in verifying the contractor's work in accordance to contract requirements. UAS technology was studied from a remote inspection perspective as well as the implementation and management of state DOT programs from inception to current state including evaluating training, scalability plans, workflows, and best practices.

# Thank you!

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