Aviation R&D Landscapes

Presented to: Environment & Energy Subcommittee

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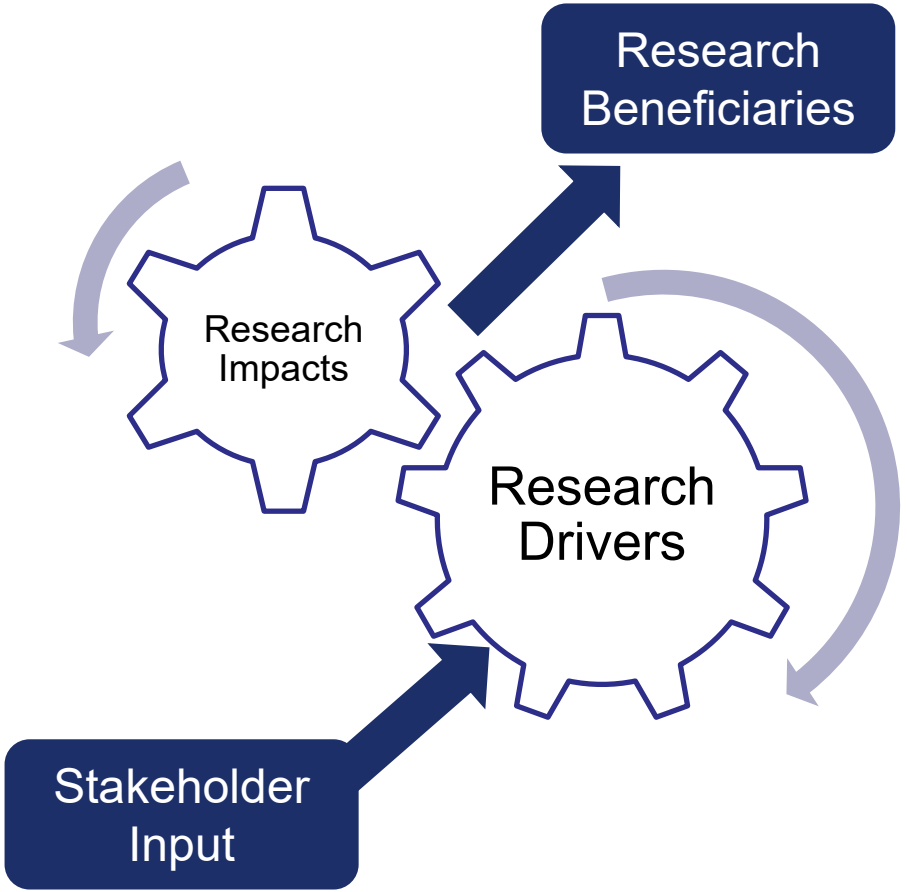
Federal Aviation Administration

What is a Landscape?

- **A Landscape is a collection of research drivers that provides information about their potential impacts to the industry.**
  - Research Drivers
    - A force or motivation that stimulates R&D investment
  - Impacts
    - Industry Objectives
    - Emerging Technologies
    - Envisioned Operations

Objectives

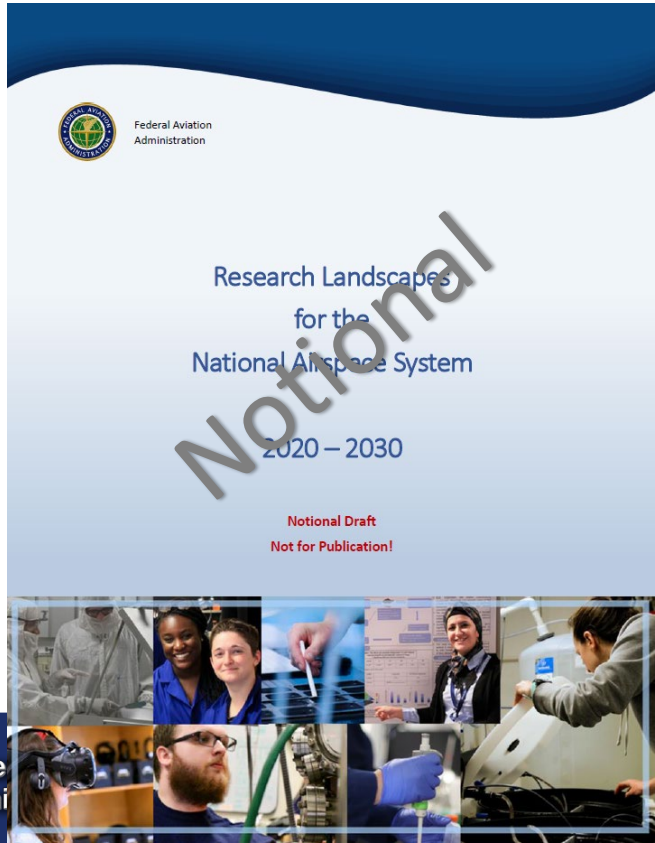
FAA R&D Landscaping is an aviation industry-focused view of research drivers that may result in impacts to industry objectives, emerging technologies and envisioned operations.



Developing the R&D Landscapes

- **A document will be produced to effectively communicate the Aviation Industry Landscape.**

- **Research drivers and their impacts must be understood and will be described within the context of each of the 6 research domain areas.**

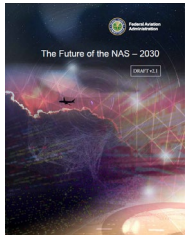


Derivation of Drivers

FAA's Strategic Initiatives

a) Make aviation safer and smarter
b) Deliver benefits through technology and infrastructure
c) Enhance global leadership
d) Empower and innovate with the FAA's people

Future of the NAS - 2030



Goals

a) NextGen Evolution
b) Benefits of the Future NAS
c) Delivering Improved Services
d) Seamless Integration
e) Meeting New Challenges

Strategic Interest

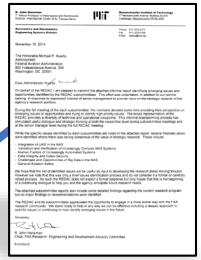
a) NAS Infrastructure
b) Smart Systems
c) Certification & Regulation
d) NAS Operational Information Exchange
e) Cybersecurity
f) Space Operations
g) Workforce

FAA NAS Horizons

Example Research Drivers

- Supersonic Flight
- Urban Air Mobility
- Non-Traditional NAS Access Points
- Space Operations
- Electric Propulsion
- Future Fuel Technologies
- Artificial Intelligence
- Remote/Virtual Technologies

REDAC Emerging Issues



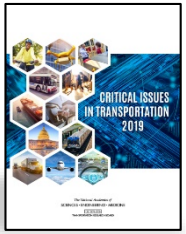
DoT Strategic Plan

a) Safety
b) Infrastructure
c) Innovation
d) Accountability

TRB Critical Issues in Transportation

Issues

a) Transformational Technologies and Services
b) Serving a Growing and Shifting Population
c) Energy and Sustainability
d) Resilience and Security
e) Safety and Public Health
f) etc.



ACARE – Strategic Research & Innovation Agenda

Challenges

a) Meeting societal and market needs
b) Industrial leadership
c) Environment and energy supply
d) Ensuring safety and security
e) Prioritizing research, testing, and education

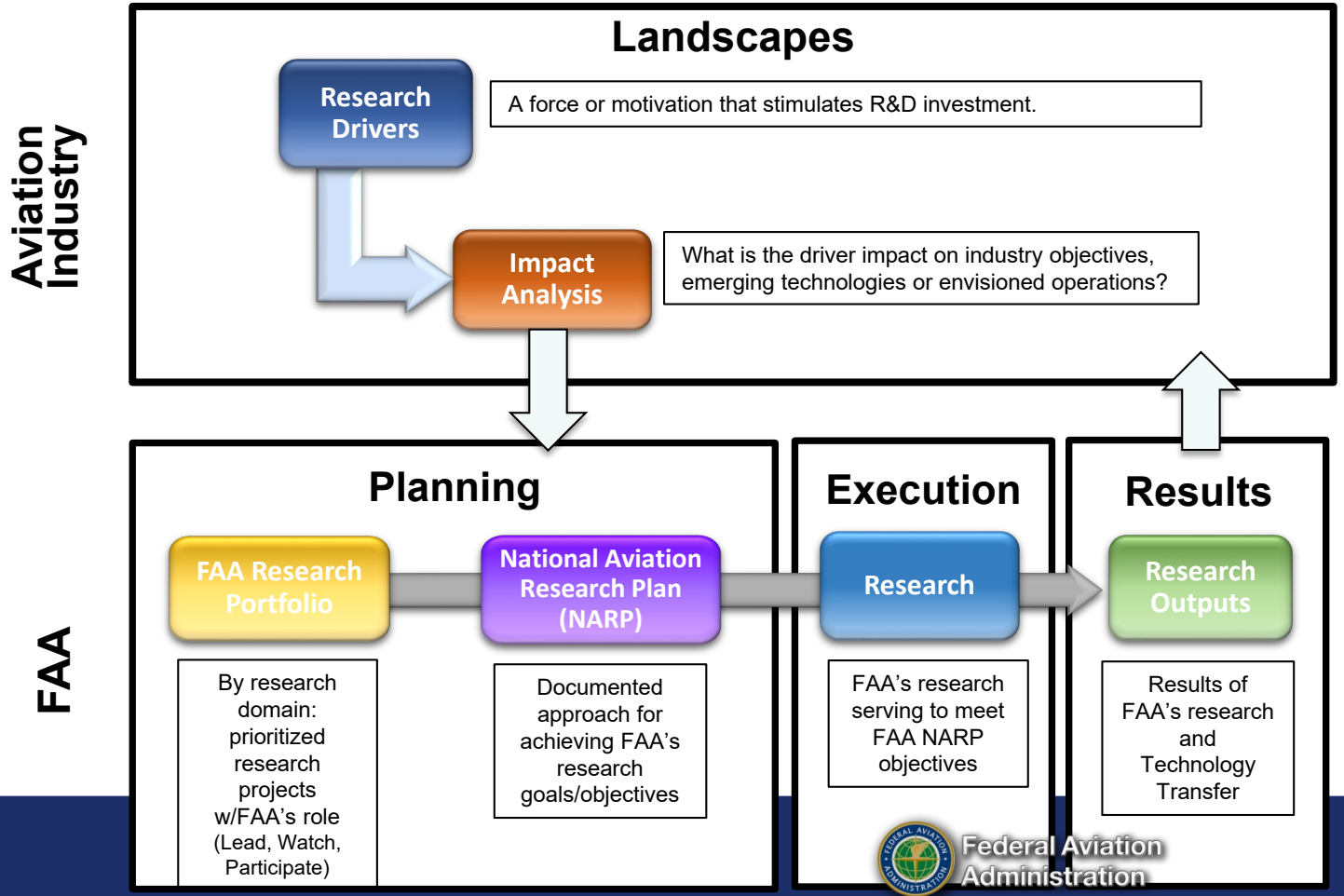
R&D Landscape Process

- **Team composed of FAA research domain leads, MITRE, ANG-E4 and senior management**
  - R&D Landscape team formed and initiated on October 31, 2018.
  - Bi-weekly team meetings, with additional research domain specific meetings as needed.
- **Tasks involved:**
  - Develop structure for data collection
  - Ensure traceability of research drivers to source documentation

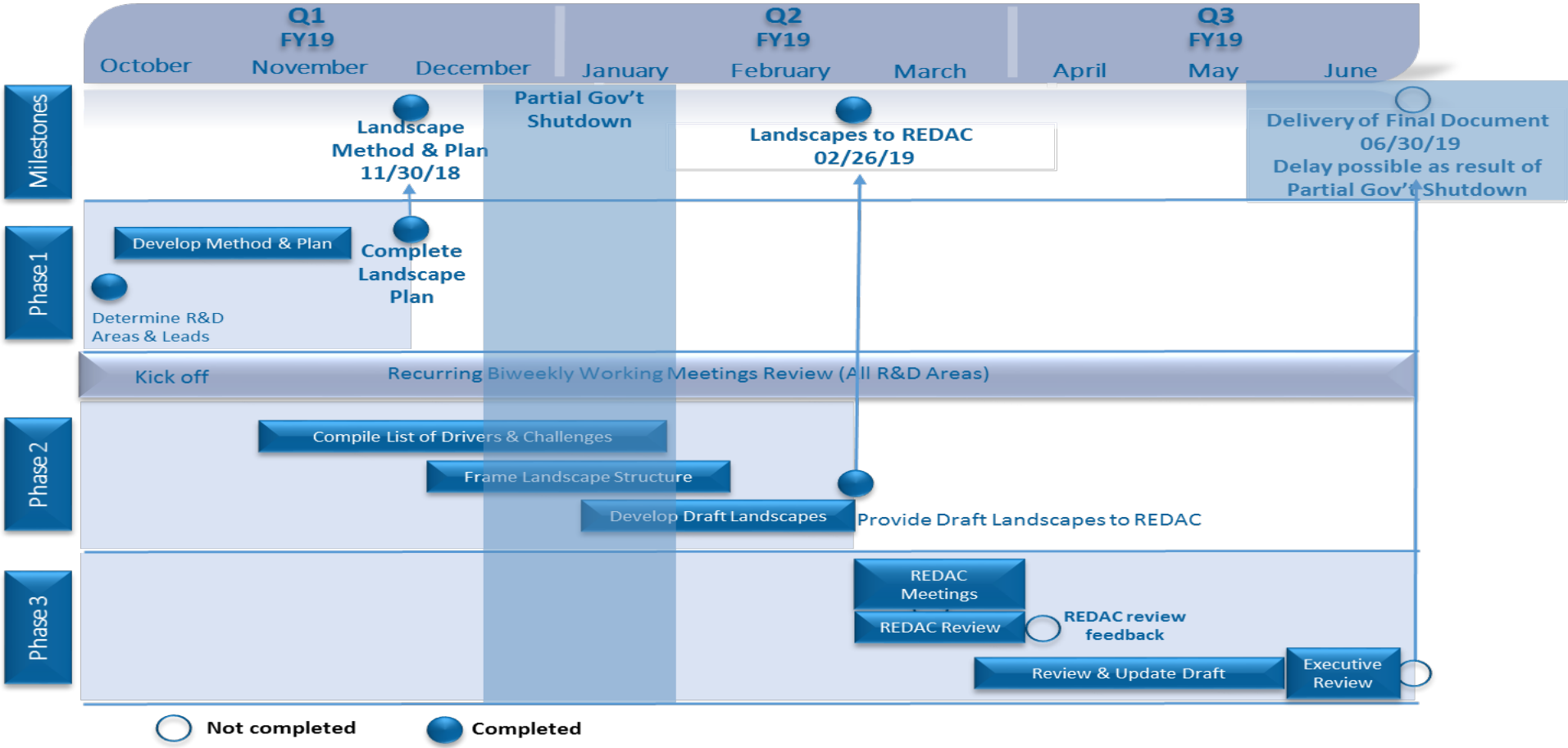
Research Domain Leads

R&D Research Domain Areas	Research Domain Leads
Airport Technology	Michel Hovan, ANG-E2 Ryan King, ANG-E2
Aircraft Safety Assurance	Eric Neiderman, ANG-E2 Ken Knopp, ANG-E2
Digital Systems & Technologies	Eric Neiderman, ANG-E2 Hossein Eghbali, ANG-E2
Human and Aeromedical Factors	Kenneth Allendoerfer, ANG-E2 Stacey Zinke, AAM (CAMI) Carla Hackworth, AAM (CAMI) Dan Herschler, ANG-C1
Environment & Weather Impact Mitigation	Jim Hileman, AEE Randy Bass, ANG-C6 Warren Fellner, ANG-C6
Aviation Performance & Planning	Francisco Bermudez, ANG-C5

Research Landscapes and Planning



Landscape Schedule



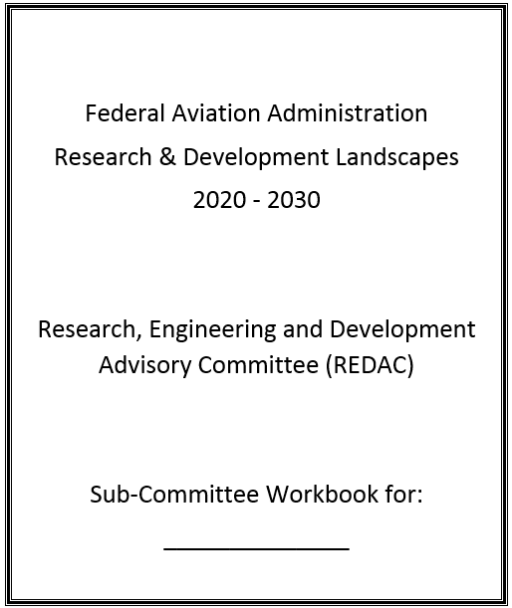
Subcommittee Scope

Objective/Purpose

- Help FAA understand the aviation industry's strategic focus (drivers).

Aviation Industry Landscape

- The R&D Landscapes Workbook (provided under separate cover) contains:
  - A list of 25 research drivers related to industry-based emerging technologies
  - Worksheets related to each driver containing a set of questions



Subcommittee Task

- **Review the driver list and identify any missing items.**
- **For drivers pertaining to your subcommittee provide the following within the workbook:**
  - Identify the characteristics or individual components of each driver and the timeframe to maturity.
  - Identify if the driver presents challenges that the FAA should pay attention to.
  - Identify entities (academia, government, or industry) that are currently conducting work related to this driver.
- **Separate from F&Rs, provide subcommittee Workbook input to the DFO's prior to the full REDAC meeting on 4/11.**
- **Be prepared to summarize during the full REDAC meeting on 4/11.**