# Federal Aviation Administration
# Research & Development Landscapes
# 2020 - 2030

## Research, Engineering and Development Advisory Committee (REDAC)

## Sub-Committee Workbook for:
## Airports

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General Instructions

List of Research Drivers

Research Drivers Worksheets

Blank Worksheets for Any Additional Research Drivers

# General Instructions

In the context of your REDAC subcommittee:

- Review the list of research drivers on the following page and identify any missing items that you feel are relevant. Blank pages are provided in the back of the workbook for the Subcommittee to include these additional drivers.
- Using the list of research drivers on the following page, identify the ones that are relevant to your Subcommittee.
- Then, using the attached sheets (one for each research driver that you've identified), please provide feedback on the following:

    a. Identify the characteristics or individual components of each driver and the timeframe to maturity.

    b. Identify if the driver presents challenges that the FAA should pay attention to.

    c. Identify entities (academia, government or industry) that are currently conducting work related to this driver.

    Provide any additional context that you believe is relevant.

# Research Drivers

1. Supersonic Flight
2. Urban Air Mobility
3. Growth of Mixed Operations (Piloted, Autonomous, Unmanned)
4. New Mission Types
5. Non-Traditional NAS Access Points
6. Space Operations
7. Enable Routine Small UAS Operations Beyond Visual Line of Sight (BVLOS)
8. Autonomous ground service equipment at airports
9. Aircraft Command and Control Using Automation and Remote Sensing Technology
10. New Vehicles or their Components Which Make Use of New Technologies, Software, or Materials
11. Certification using New Technologies, Standards, or Processes
12. Remote/Virtual Technologies
13. Advances in Electric or Hybrid Electric Propulsion
14. Future Fuel Technologies
15. New Technologies to Airport Pavement Infrastructure and Design
16. Information Assurance and Security for All Operations (cyber-security)
17. Big Data Analytics and Techniques
18. Human-Machine Teaming and New Technology Interfaces
19. Artificial Intelligence
20. Increased Connectivity by Cyber-Physical Systems (Internet of Things Technologies)
21. Crowd Sourcing Weather Data
22. Advancement in Position, Navigation, & Timing Technology
23. Risk-Based Decision-Making techniques and analytics
24. Infrastructure Resiliency and Continuity of Operations
25. New Medical Technologies and New Substances (Medications, Drugs, Etc.)

Research Driver

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| 1 | Supersonic Flight |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 2 | Urban Air Mobility |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 3 | Growth of Mixed Operations (Piloted, Autonomous, Unmanned) |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 4 | New Mission Types |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 5 | Non-Traditional NAS Access Points |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 6 | Space Operations |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 7 | Enable Routine Small UAS Operations Beyond Visual Line of Sight (BVLOS) |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 8 | Autonomous ground service equipment at airports |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 9 | Aircraft Command and Control Using Automation and Remote Sensing Technology |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 10 | New Vehicles or their Components Which Make Use of New Technologies, Software, or Materials |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 11 | Certification using New Technologies, Standards, or Processes |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 12 | Remote/Virtual Technologies |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 13 | Advances in Electric or Hybrid Electric Propulsion |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 14 | Future Fuel Technologies |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 15 | New Technologies to Airport Pavement Infrastructure and Design |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 16 | Information Assurance and Security for All Operations (cyber-security) |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 17 | Big Data Analytics and Techniques |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 18 | Human-Machine Teaming and New Technology Interfaces |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 19 | Artificial Intelligence |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 20 | Increased Connectivity by Cyber-Physical Systems (Internet of Things Technologies) |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 21 | Crowd Sourcing Weather Data |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 22 | Advancement in Position, Navigation, & Timing Technology |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 23 | Risk-Based Decision-Making techniques and analytics |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 24 | Infrastructure Resiliency and Continuity of Operations |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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| 25 | New Medical Technologies and New Substances (Medications, Drugs, Etc.) |

Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Identify entities (academia, government or industry) that are currently conducting work related to this driver.

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Research Driver

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Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Research Driver

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Identify the characteristics or individual components of each driver and the timeframe to maturity.

| Characteristics or Individual Components | Time Period |
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Research Driver

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| Characteristics or Individual Components | Time Period |
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Identify if the driver presents challenges that the FAA should pay attention to.

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Research Driver

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Identify the characteristics or individual components of each driver and the timeframe to maturity.

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Identify if the driver presents challenges that the FAA should pay attention to.

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