



Next**GEN**

NextGen 5 Research Priorities

October 2019



NextGen Overview

- NextGen research focuses on the adaptation of known technologies to Air Traffic Management to bring its applications more fully into the modern “Internet of Things” environment.
- Overtime NextGen has become a fairly mature set of applications and integrations with the implementation being the majority of annual investments
- The rise of the new entrants such as small Unmanned Aircraft Systems, Urban Air Mobility, High Altitude Long Endurance aircraft has emphasized the need to more rapidly move towards the information based
- NextGen’s current research priorities included:
 - Network and Information
 - Unmanned Aircraft Systems
 - Cloud
 - Advanced Applications for Air Traffic Management
 - Integrated Communications, Navigation and Surveillance



Network and Information

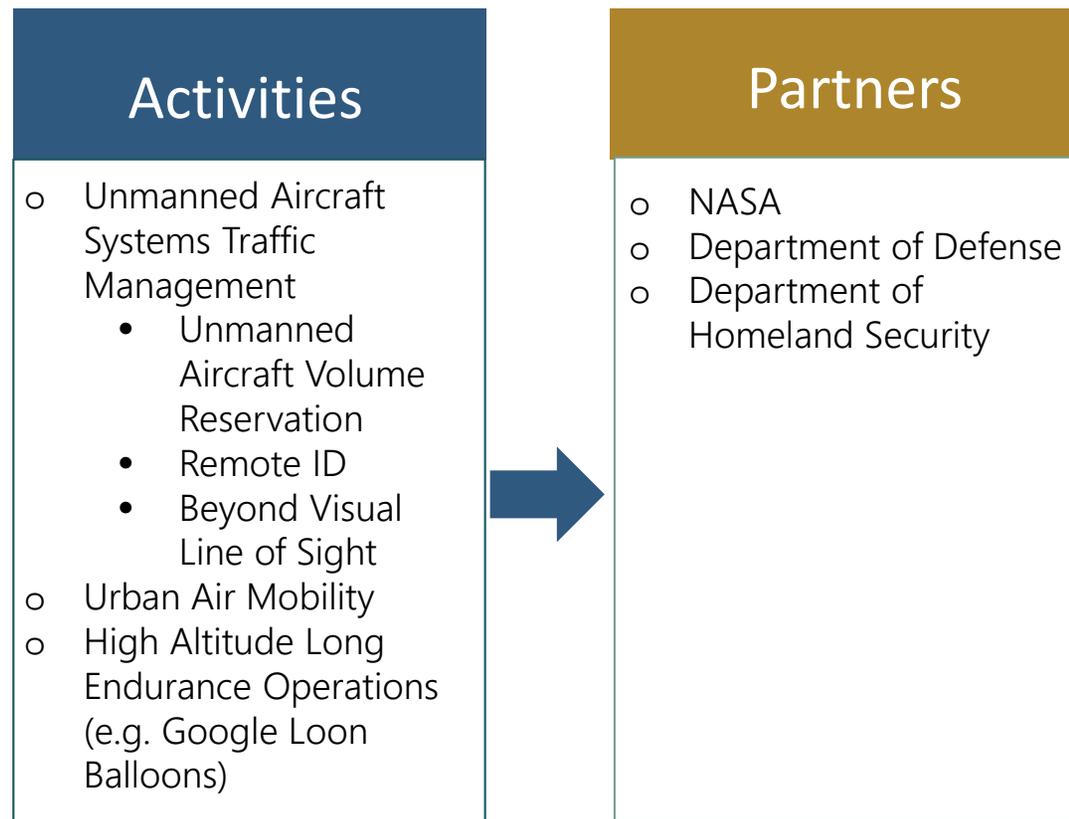
- Providing expanded, flexible service to underserved locations and users by enabling the use of internet based applications on mobile devices. This entails moving the aviation community into modern internet protocols, improving the exchange of information across the community and providing end-to-end information security.

Activities	Partners
<ul style="list-style-type: none">○ Supporting data dissemination to the public and to provide the front-door 2-way interaction with aviation partners using a Cloud presence (National Weather Service, Airlines, other Air Navigation Service Providers, Law Enforcement) Connected Aircraft Datacomm IPS Information Integrity Mobile Devices	<ul style="list-style-type: none">○ NASA,○ Industry○ International Civil Aviation Organization (ICAO)○ Single European Sky ATM Research (SESAR)



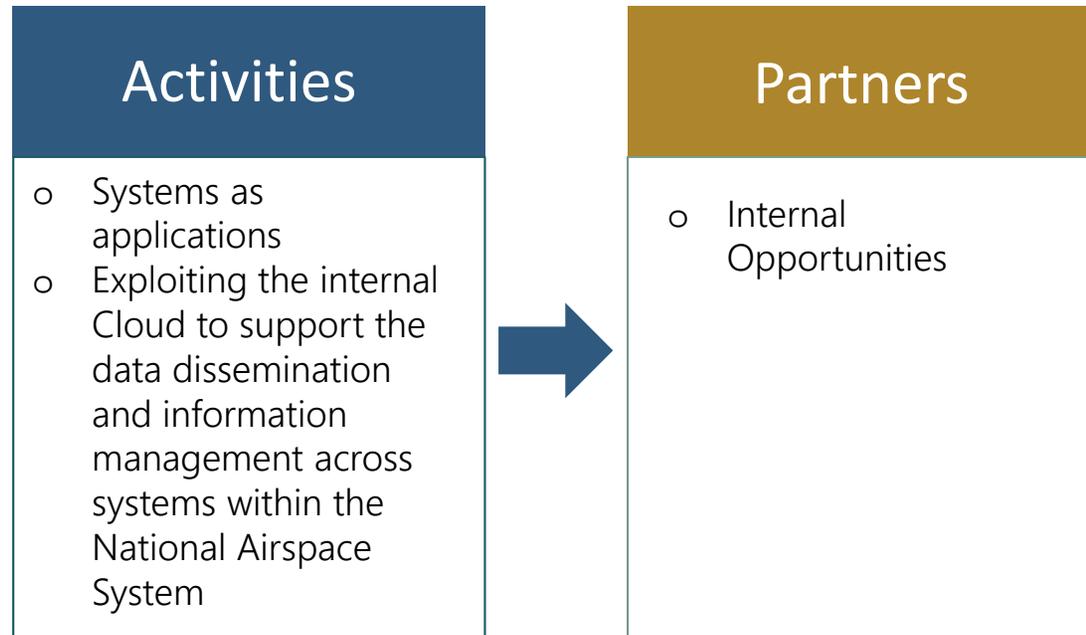
Unmanned Aircraft Systems (UAS)

- Unmanned Airborne Systems, with various levels of autonomy, are increasingly being proposed by industry and the community at large. These efforts focus on cost-effectively and quickly incorporating these varied vehicles and associated operations into the airspace.



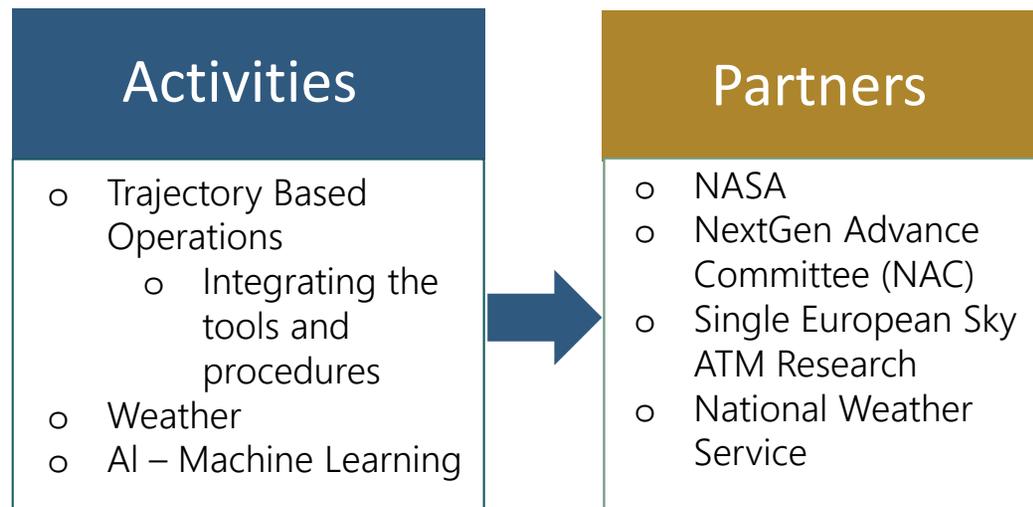
Leveraging Cloud

- Exploiting the opportunities that cloud and individual functional applications bring for both cost and flexibility. The FAA infrastructure is founded on integrating capabilities into standalone processors to assure availability, reliability and performance. At this time, the FAA this activity relooks at that architectural paradigm as the agency is looking forward to the replacement of that infrastructure in the mid 2020's due to obsolesce.



Advanced Applications for ATM

- By 2022 the FAA will have delivered the individual major components of NextGen and this research will work towards integrating the advice of the individual tools. This includes automating the integrating of weather constraints into that advice and investigating how AI and machine learning can support that integration. These integrated products will require additional consideration of how this advice is displayed to the user and how the human actor interacts/relies on this information. The effort also includes methods for certification of AI and machine learning software for use in the NAS.



Integrated Communication, Navigation and Surveillance

- The rapid expansion of communication opportunities may offer opportunities to leverage that expansion to provide cost effective alternatives to FAA legacy infrastructure and capabilities.

