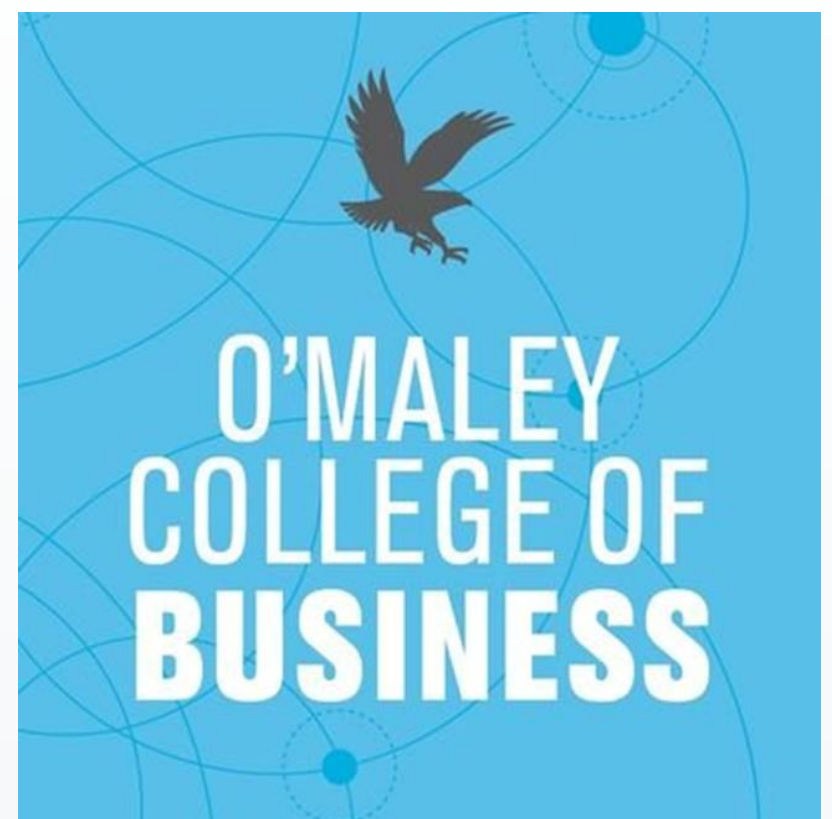# Understanding the Impact of NextGen on the Airline Industry

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Abstract

NextGen is the Federal Aviation Administration's (FAA) current infrastructure program created with the purpose of modernizing the United States National Airspace System (NAS). It aims to make U.S. aviation more secure, effective, capable, predictable, and resilient by transforming its communications, navigation, and surveillance (FAA, 2022). This paper should be beneficial for those unaware of the capabilities of Nextgen and what it means for the future of pilots, airlines, and the general public. Demonstrating the use cases of Nextgen, this paper should also be valuable for airlines to better understand future needs and investment requirements and prepare accordingly.

Research Purposes

1. Educate both the aviation community and general public on what NextGen is, how it affects air travel in future, and explain importance of NextGen Budget.

2. Showcase the early results of NextGen on aviation industry as to navigation, communication, surveillance, and resilience.

3. Provide insight on how these changes affect the people involved and provide recommendations for industry leaders to improve upon Nextgen and the National Airspace System (NAS).

NextGen's Impacts on the Airline Industry

PAST PRACTICES	ENABLING PROGRAMS	NEXTGEN IMPROVEMENTS
Voice-only communications	Data Communications (Data Comm)	Digital communications
Ground-based routes and procedures	Performance Based Navigation (PBN)	Satellite-enabled routes and procedures
Radar-only surveillance	Automatic Dependent Surveillance – Broadcast (ADS-B)	Satellite-enabled near real-time surveillance
Tactical and reactive air traffic control	Decision Support System (DSS) Automation	Strategic integrated air traffic management
Point-to-point, segmented information sharing*	System Wide Information Management (SWIM)	Enterprise-level information sharing*

(FAA, *NextGen Annual Report* 2020)

Results

Early Benefit Results (2010-2019)
- Reduced accidents: 5 percent
- Fuel Savings: 17 percent
- Other aircraft operating cost savings: 21 percent
- Passenger travel time savings: 57 percent
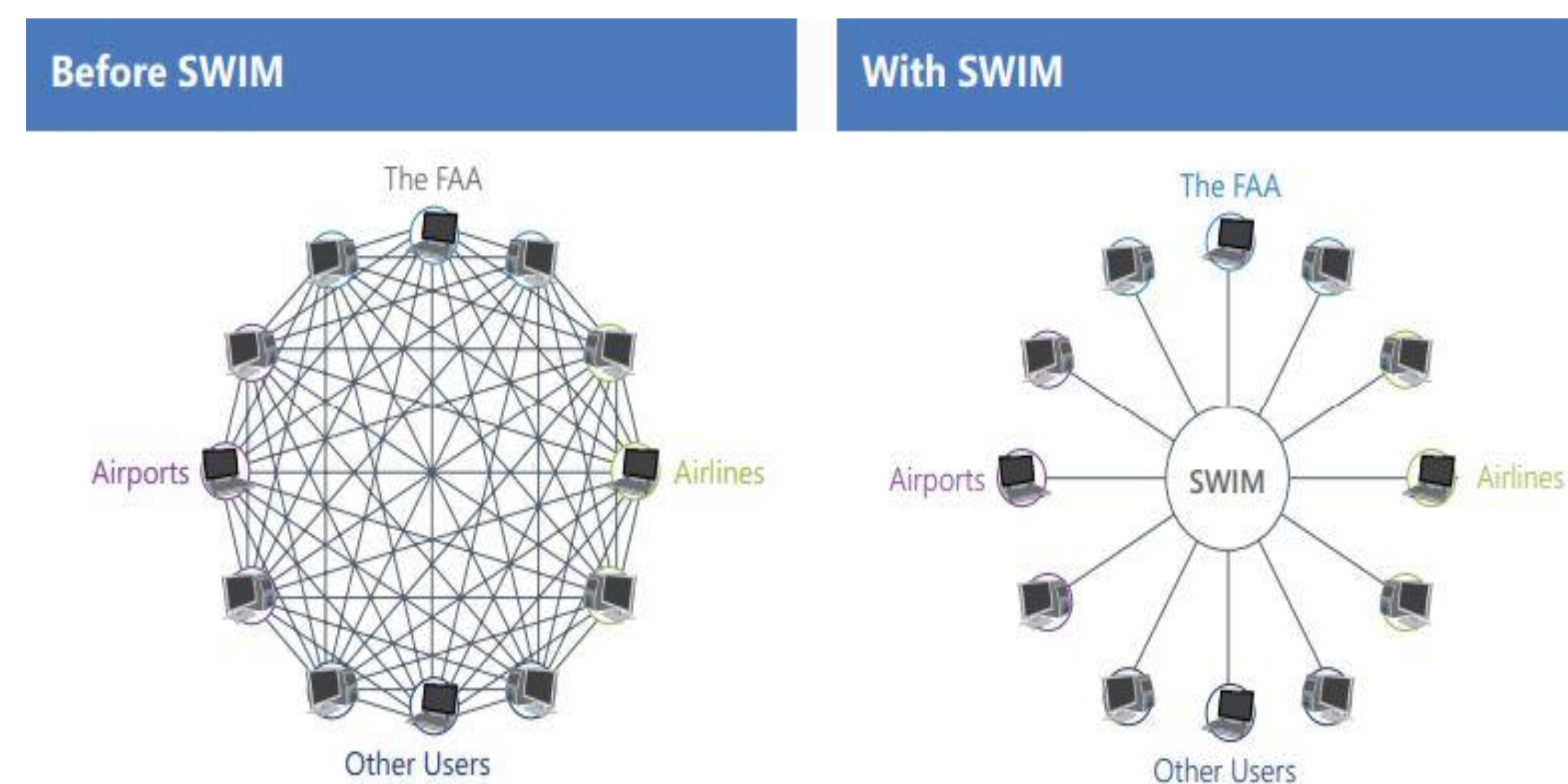
(FAA, *NextGen Annual Report* 2020)

Future Benefits

With Full TBO integration:
- Increased throughput; more precise trajectories
- Improved flight efficiency; reduced departure delay times
- Increased predictability; advanced planning, time-based management
- Increased operator flexibility through SWIM/enhanced collaboration

(FAA, *NextGen Annual Report* 2020)

Impacts of NextGen

- Pilots: Training, SOP's, certificates, recurrent training.
- Public: Cost of airport upgrades, saving flight time, local airport population effects, procedures contribute to reducing harmful emissions, and most importantly new technologies.
- Airlines: Improve the safety of flight paths, Implementing tech, pilot duty times, fuel consumption, and cost analysis.
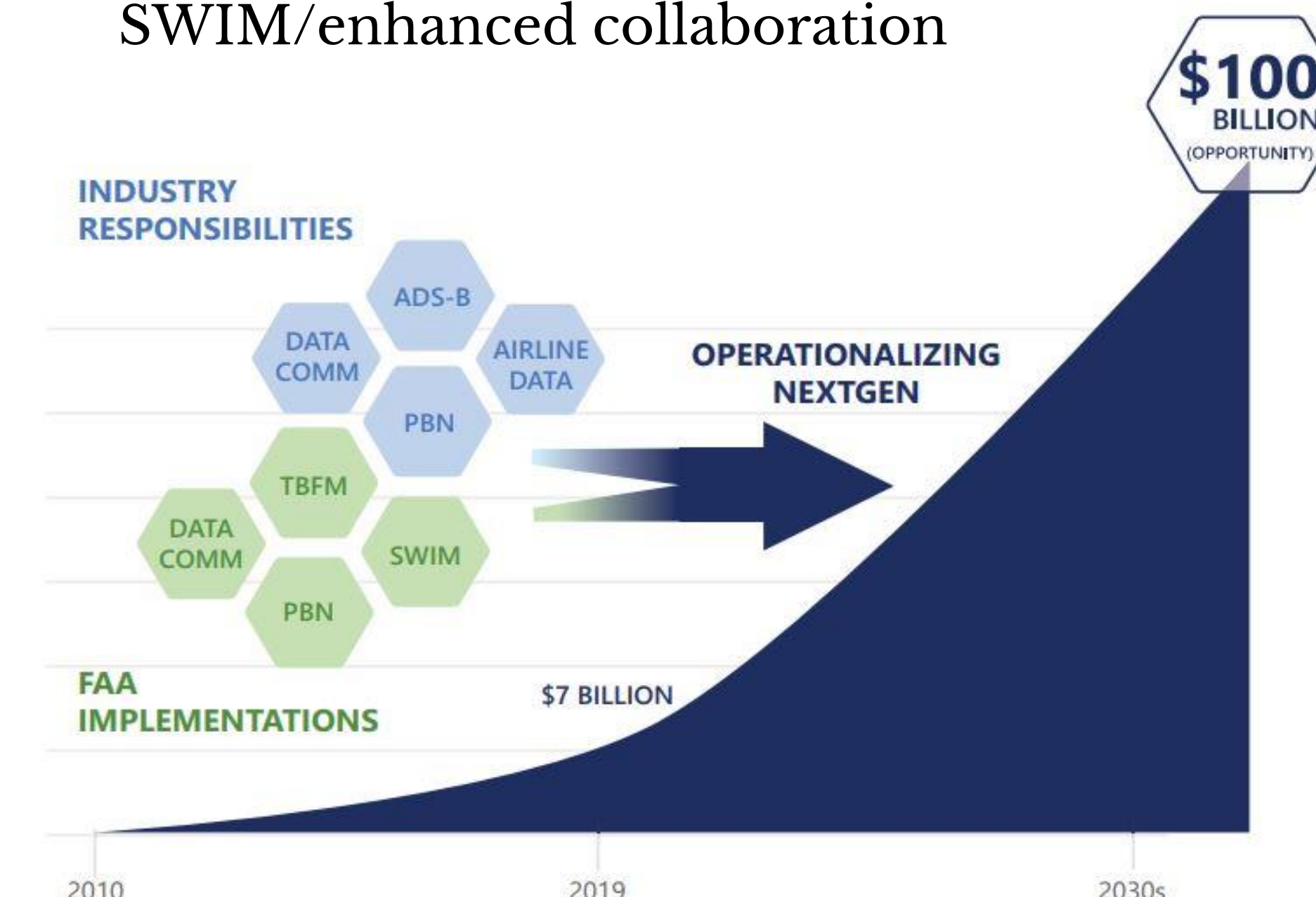
Recommendations

- Airlines: Join NextGen Advisory Committees (NAC)
- FAA: Provide real-time updates to include educational videos displaying new tech and procedures
- Aircraft Manufactures: Coordinate with NAC & FAA to implement/test NextGen tech
- Pilots: Become familiar with NextGen to ensure future certifications, ratings, and training is complied with

References

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