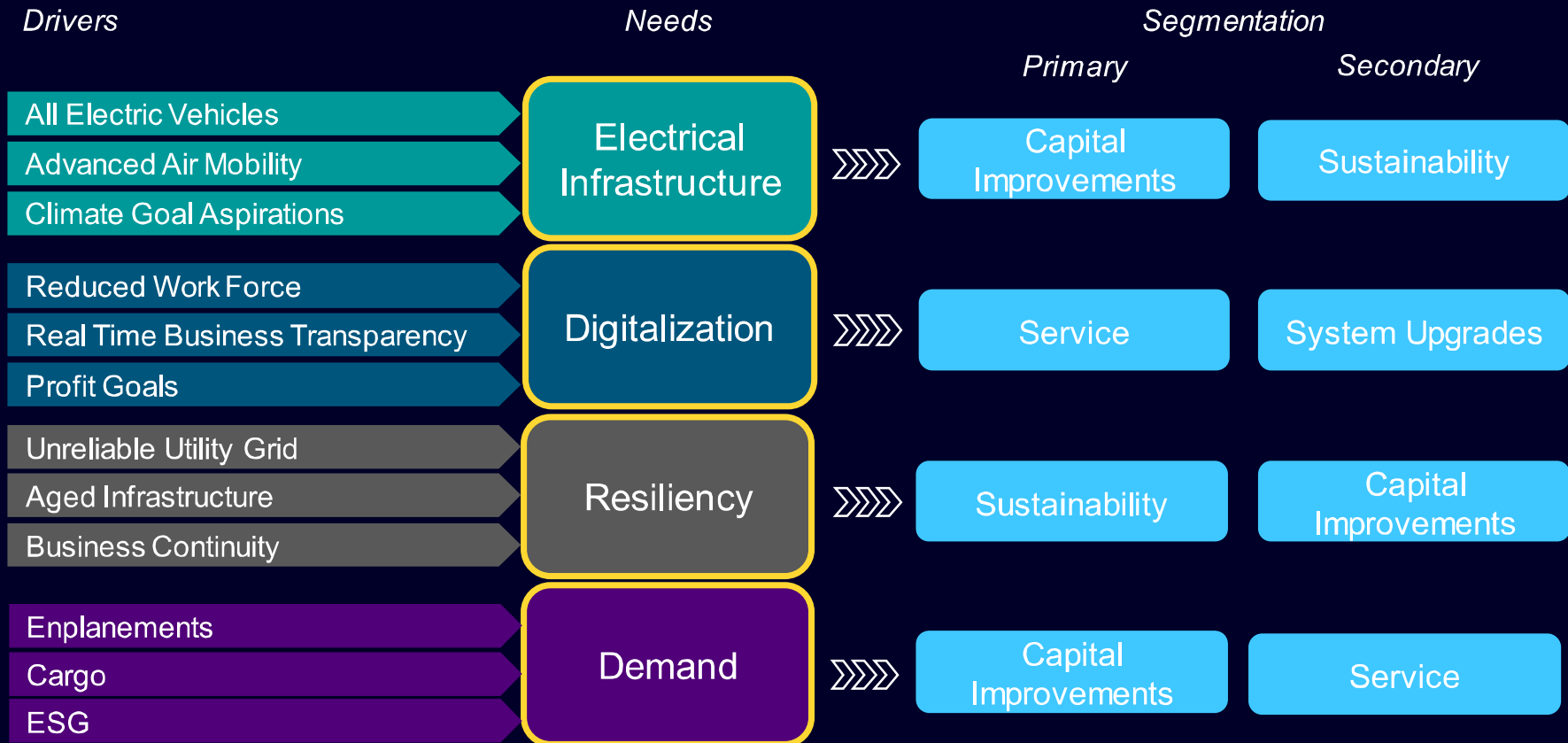




| Airport Market FY2023

Market Unmet Needs



NA SI Airport Market Segmentation

Capital Improvement Projects

Drivers

Meeting Passenger
Growth Demand

51%

Maintenance and Services

Drivers

Keep facility maintained

34%

System Upgrades

Drivers

End of Life for Systems

12%

Sustainability

Drivers

Meeting Climate Goals

3%

General Overview

- Airports talk and learn from other Airports more so than from vendors and consultants.
- For new products and services, discover to award process usually follows a one-year budget cycle.
- Most large Airports have Innovation Centers or Initiatives.
- Most Airports are still operated by State employees. Large Airports in NJ and NY have adopted private operator models.
- Decision makers move from airport to airport and usually have a long, tenured career.
- Risk adverse, want to see technology used in another airport before theirs.

Market Segment Characteristics

Capital Improvement

Procurement

- SI bought through contractors
- Design Build/CMAR/DBB

Funding

- Airport Bonds
- Federal Grants

Opportunities

- Technology Package
- MSI Approach

Challenges

- Branch Risk Profile
- Project Manager Experience

Maintenance and Services

Procurement

- Follow Federal and State laws
- Contracts must be bid upon term renewal (3-5 years)

Funding

- Operational budgets

Opportunities

- Digital Services
- Electrical Services
- Energy Services

Challenges

- SI Small Installed Base

System Upgrades

Procurement

- Follow Federal and State laws
- Usually, two step process (RFQ/RFP)
- Primarily for security upgrades

Funding

- Grants
- Capital Improvement Budgets

Opportunities

- Primarily for security upgrades
- Digital Twin (Ecodomus)

Challenges

- Security BU no longer integrator

Sustainability

Procurement

- 50% through utility company using PPA/PC
- 50% through capital improvements

Funding

- PPA
- Grants (VALE)

Opportunities

- Microgrids
- Battery Storage
- Energy as a Service

Challenges

- Regulatory Environment
- Airports silo'ed approach

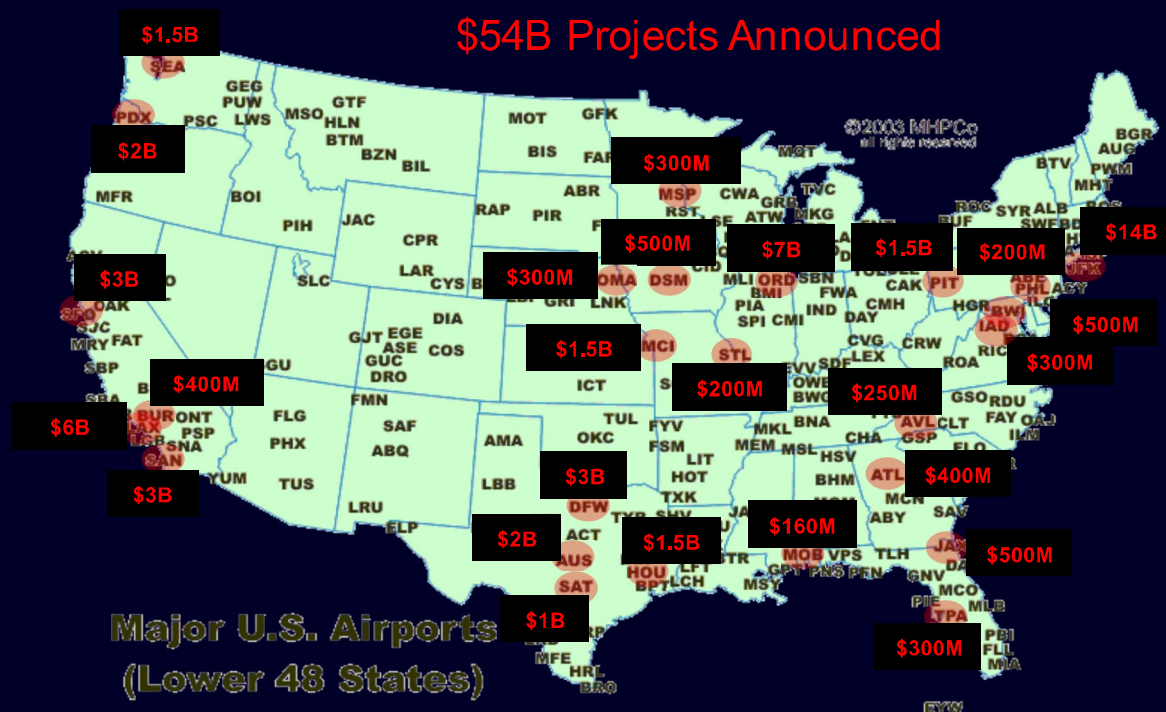


Airport Capital Improvement Market

Airside \$17B	BU Addressability					
Terminal \$67.7B	Expansions	\$15B	RSS Low \$45M	EP High \$228M	GSW Med \$5M	EA Med \$5M
	Renovations	\$16B	Low \$47M	Med \$118M	Low \$1M	Low \$2M
	New Terminals	\$11B	High \$227M	High \$171M	High \$10M	High \$20M
	Other	\$2.2B				
	Regulatory Compliance	\$0.5B				
Landside \$22.4B	\$879M Addressable					
	2023					



Identified Capital Projects



Currently Engaged		
Airport	OI Potential	FY
JFK T6/7	\$15M	2023
SAN T1	\$6M	2023
MOB	\$2M	2023
AVL	\$2M	2023
DSM	\$3M	2023
ATL	\$6M	2023
ORD T1	\$20M	2024
BUR	\$15	2023
CMH	\$30M	2024
SAT	\$25M	2024
OMA	\$8M	2024
DFW	\$15M	2025
IAD	\$4M	2025



Airports Service Market

Airports with 10M+ Passengers Annually* (21)

■ ATL	DFW	DEN	■ ORD
■ LAX	CLT	MCO	LAS
PHX	MIA	■ SEA	IAH
■ JFK	EWR	FLL	MSP
SFO	■ DTW	BOS	■ SLC
YYZ			

ORD BMS/Fire avg \$3M/yr
ATL Electrical avg \$3M/yr
DFW Sec avg \$1.3M/yr
SLC BMS avg \$500K/yr

SI \$7M/Airport = \$147M/yr

Airports with 5M to 10M Passengers Annually* (18)

■ PHL	BWI	TPA	■ SAN
■ LGA	MDW	BNA	■ IAD
■ DCA	AUS	DAL	HNL
PDX	HOU	RSW	STL
■ YYC	YUL		

SAN BMS/Fire avg \$500K/yr
PHL Sec avg \$300K/yr

SI \$5M/Airport = \$90M/yr

Medium Airports with 1M to 5M Passengers Annually* (54)

SMF	SJU	■ RDU	■ MSY
OAK	■ SNA	MCI	■ SAT
SJC	■ CLE	IND	■ PIT
CVG	OGG	CMH	PBI
JAX	BDL	MKE	ONT
■ ANC	CHS	BUR	OMA
BOI	MEM	RNO	ABQ
ORF	OKC	RIC	GEG
MYR	SRQ	SDF	GRR
ELP	BUF	KOA	SAV
TUS	SFB	PNS	PVD
TUL	BHM	DSM	PSP
LIH	LGB	PIE	YVR

RDU BMS/Fire avg \$200K/yr
JAX Elect avg \$300K/yr
PIT Sec avg \$300K/yr

SI \$3M/Airport = \$162M/yr

Small Airports with 1M to 5M Passengers (59)

SI \$1.5M/Airport = \$89M/yr

Airports with > 1M Passengers (305)

SI \$350K/Airport = \$107M/yr

■ Current Service Contract

* FY2021 Enplanements

\$595M/yr



Airport System Upgrade Market

Known Projects

Airport	System	Value	Year
SEA	PIDS	\$4M	2021
OAK	Sec	\$3M	2022
Daytona	Sec	\$10M	2022
DFW	Sec	\$7M	2022
PHL	Sec	\$2M	2023
SFO	PIDS	\$2M	2023
ONT	PIDS	\$2M	2023
ORD	Sec	\$7M	2023

457 Airports w/ passenger traffic > 1M

15% per year perform upgrades
@ \$3M per airport

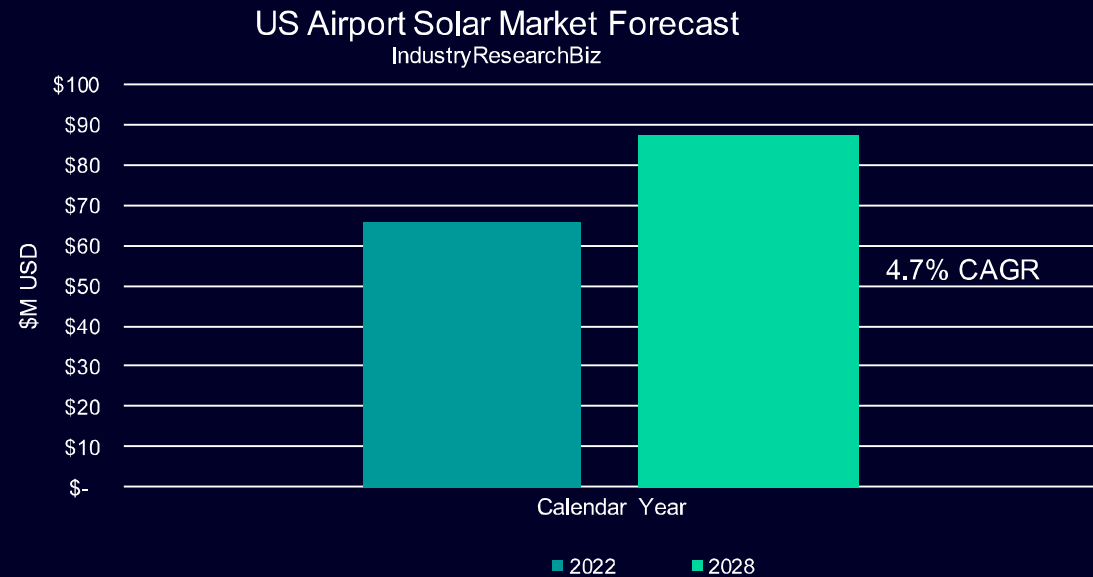
\$205M/yr Market



Airport Sustainability Market



Earliest Airport PV Project was 2005
20% of airports have already complete PV Projects

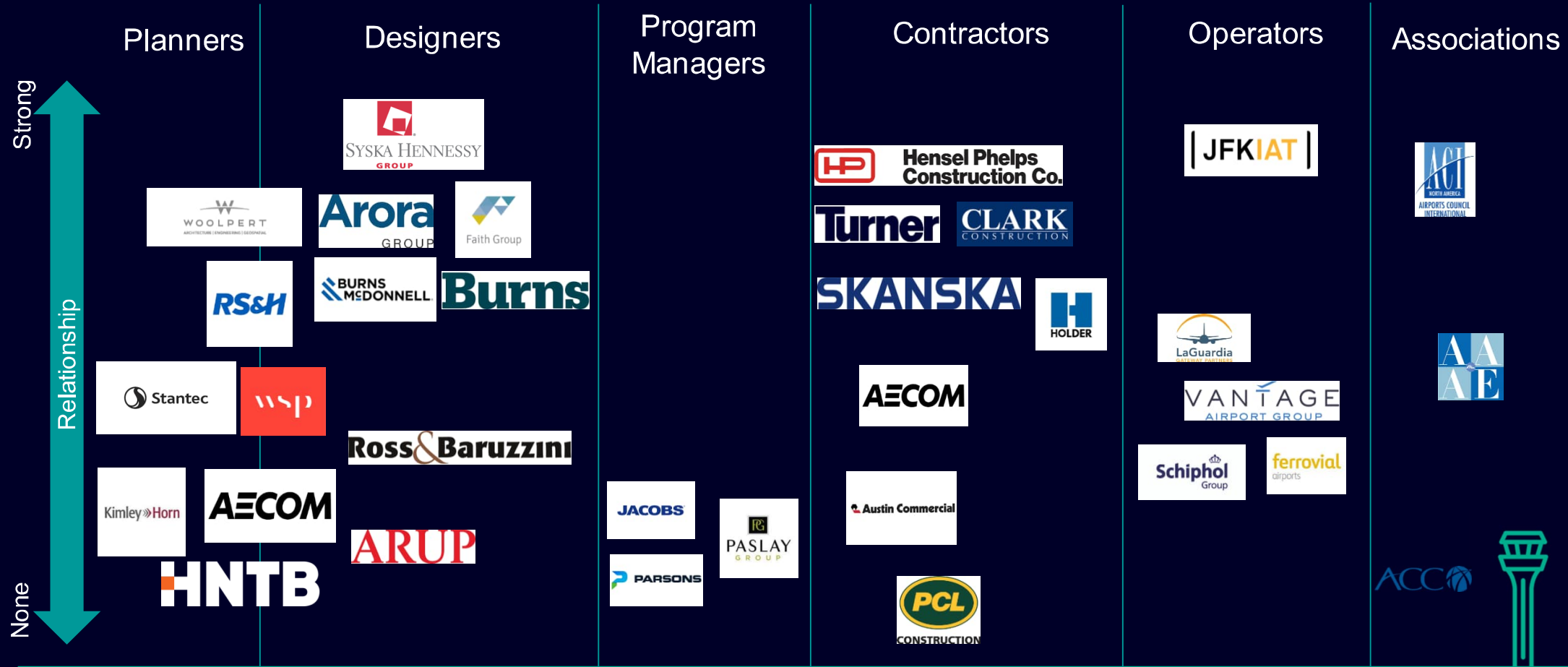


Ecosystem

Planners	– Set 5-year plan for airports that feeds into capital improvement projects. Will have insight on airports needs and trends. They are receptive to learning about emerging technologies
Designers	– Specify requirements for projects. Open to learn about new technologies. Still lean on vendors for specification details.
Program Managers	– Over see projects and make suggestions to Airports on schedules, procurement strategies, and contractor selections. Want to remain “contractor agnostic”.
Contractors	– Construct projects per plans and specification. Make subcontractor selections. Drive towards lowest price for most qualified subcontractor.
Operators	– Private firms contracted by Port Authorities to operate terminals. Typically involved in contractor selection for terminal construction. May also be involved in funding packages.
Associations	– Lobbying and advocacy for airports. Will assemble working committees, webinar, and conferences. Interested in educating airports in solutions for pain points.



Ecosystem



Advanced Air Mobility (AAM) Urban Air Mobility (UAM)



AAM

Transport of passengers and cargo short to medium-range distances using a range of innovative aviation technologies (small drones, electric aircraft, automated air traffic management, etc.) that are transforming aviation's role in everyday life, including the movement of goods and people.

UAM

A subset of AAM encompassing use of AAM technology to carry passengers and cargo over populated urban and suburban areas.

Types of Vehicles

Electric Vertical Take-Off and Landing (eVTOL)



Designs focus in the areas of on-demand air taxis, airport passenger transfers, patient transfers, rooftop-to-rooftop cross-town trips, and more. Some eVTOL have onboard or remote pilots; others have “self-driving” automated navigation.

Electric Conventional Take-Off and Landing (eCTOL)



Used for short-range trips, small cargo deliveries, and passenger transfers from regional and rural airstrips.

Small Unmanned Aircraft Systems (sUAS)

Known as drones or Unmanned Aerial Vehicles (UAVs), for videography, small package delivery and pick-up, transfer of medical supplies, etc.



Facilities



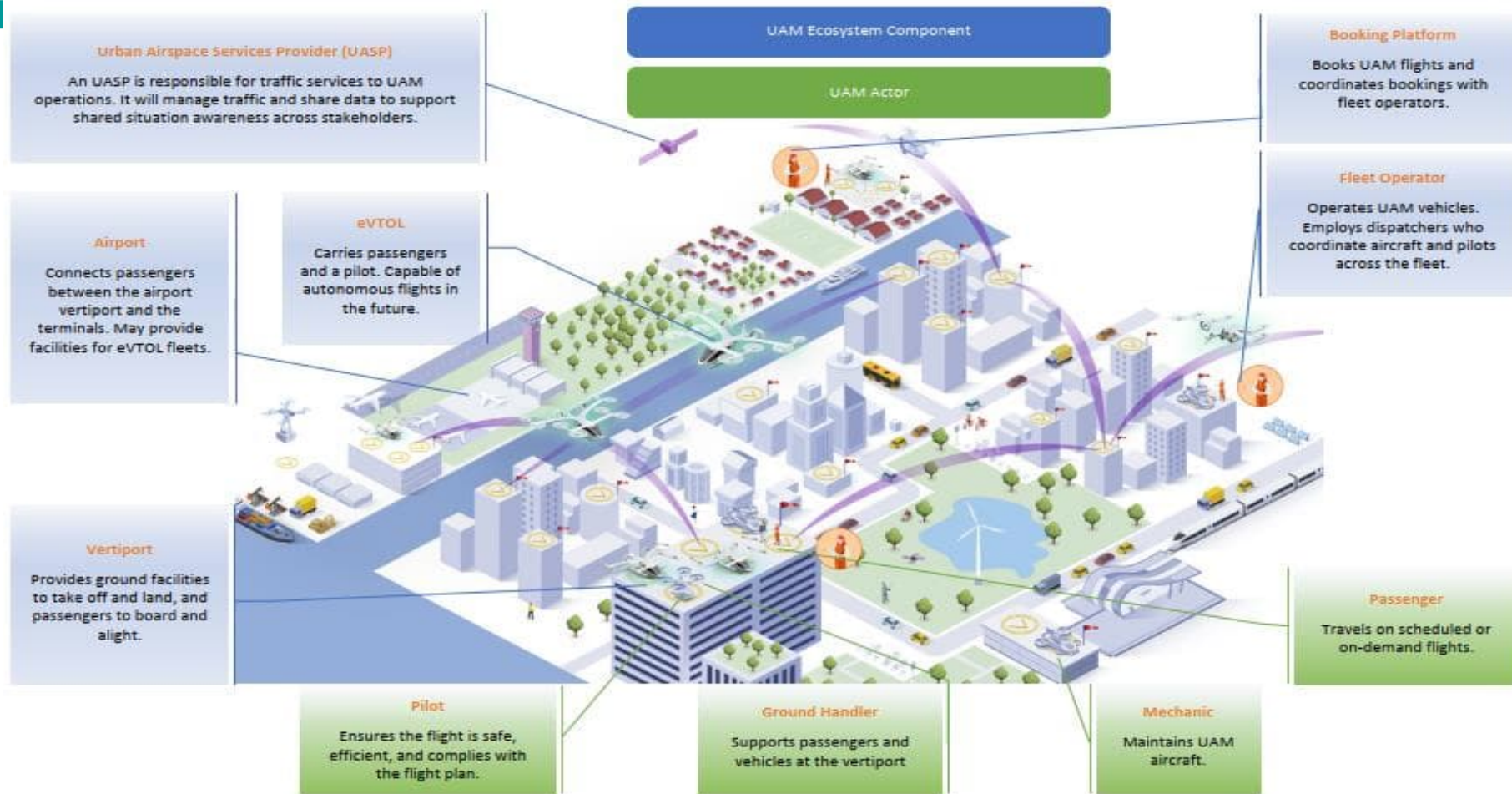


Figure 7: Key components and Actors in the UAM Ecosystem (Adapted from Miami CONOPS)

The Passenger Journey

HYUNDAI
MOTOR GROUP

A Book trip in integrated mobility app



B App matches passengers on shared routes



C First-mile trip to get to the vertiport/hub



F Speedy boarding – walk directly onto pad/hub



E Streamlined security & health screening



D Digital identity verification



G Smooth takeoff and transition to cruise



H Onboard Wi-Fi & digital entertainment



I Arrive and board last-mile mobility, e.g., PBV



Advanced Air Mobility (AAM) is Accelerating: More than \$5 billion committed to OEMs/operators in the last 12 months

	Capital raised (\$M)	Key institutional investors / partners	
 Joby	\$1,100	BlackRock	Uber
 ARCHER	\$860	MUBADALA	UNITED AIRLINES
 LILIUM	\$580	BlackRock	
 BLADE	\$365	AIRBUS	LionTree
 VERTICAL	\$300	American Airlines	virgin atlantic
 EVE ¹	\$542	EMBRAER	
 wisk	\$450	BOEING	
 VOLOCOPTER	\$400	BlackRock	Continental
 BETA	\$368	United Therapeutics	amazon

Publicly listed companies as of February 2022

Infrastructure



OEM's and Operators

AAM Reality Index - August 2022

OEM (stock ticker)		ARI	Funding (\$M)	Use Case	Vehicle Type	Propulsion	Operation	Vehicle	First Flight	EIS	Country
Joby Aviation (NYSE: JOBY)	↔	8.7	\$1,844.6	Air Taxi	Vectored Thrust	Electric	Piloted	-	2018	2024	USA
Volocopter	↔	8.4	\$579.0	Air Taxi	Multicopter / Lift + Cruise	Electric	Piloted	VoloCity / VoloConnect	2021 / 2022	2024 / 2026	Germany
Beta Technologies	↔	8.0	\$796.0*	Cargo, Air Taxi	Lift + Cruise	Electric	Piloted	Alia S250c / S250	2020	2024	USA
Eve Holding (NYSE: EVEX)	↑	7.7	\$362.4	Air Taxi	Lift + Cruise	Electric	Piloted	Eve	2022	2026	Brazil
Lilium (NASDAQ: LILM)	↔	7.7	\$938.0	Regional, Cargo, Biz Av	Vectored Thrust	Electric	Piloted	Jet	-	2025	Germany
Wisk	↔	7.5	\$775.0	Air Taxi	Lift + Cruise	Electric	Autonomous	Cora	2018	-	USA
Archer (NYSE: ACHR)	↔	7.4	\$856.3	Air Taxi	Vectored Thrust	Electric	Piloted	Maker	2021	2025	USA
Ehang (NASDAQ: EH)	↔	7.4	\$132.0	Air Taxi, Tourism	Multicopter / Lift + Cruise	Electric	Autonomous	EH-216S / VT-30	2018 / 2021	2022 / -	China
Elroy Air	↔	7.4	\$50.0	Cargo	Lift + Cruise	Hybrid	Autonomous	Chaparral C1	2022	2023	USA

Joby Aviation (NYSE: JOBY)	↔	8.7	\$1,844.6	Air Taxi	Vectored Thrust	Electric	Piloted	-	2018	2024	USA
Volocopter	↔	8.4	\$579.0	Air Taxi	Multicopter / Lift + Cruise	Electric	Piloted	VoloCity / VoloConnect	2021 / 2022	2024 / 2026	Germany
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Archer (NYSE: ACHR)	↔	7.4	\$856.3	Air Taxi	Vectored Thrust	Electric	Piloted	Maker	2021	2025	USA

Jaunt Air Mobility	↔	4.4	\$3.1	Air Taxi	Lift + Cruise	Electric	Piloted	Journey	2023	2026	USA
Volkswagen	new	3.4	Corporate backed	Air Taxi	Lift + Cruise	Electric	Autonomous	V.MO	2022	-	Germany

Advanced Air Mobility Infrastructure Readiness Index – August 2022

Company		AIR	Funding (\$M)	Use Case	OEM Partners	EIS Cities	Vertiport Prototype	Vertiport EIS	Country
Groupe ADP	new	6.7	Corporate backed	Air Taxi	Volocopter	Paris (4 locations)	2022	2024	France
Beta Technologies	new	6.3	\$796.0	Regional, Cargo	Beta Technologies	South Burlington, Plattsburgh	2019	2022	USA
Ferrovial	↑	6.3	Corporate backed	Regional, Air Taxi	Lilium, Vertical Aerospace	West Palm Beach, Orlando	-	2024	Spain
Urban-Air Port	↑	6.3	\$12.0	Air Taxi, Cargo	Supernal	Los Angeles, Stephenville (NL)	2022	2024	UK
Skyports	↑	5.6	\$34.0	Air Taxi, Cargo	Volocopter, Eve Holding, Wisk	Singapore, Paris	2019	2024	UK
UrbanV	↑	4.6	Corporate backed	Air Taxi, Tourism, Cargo	Volocopter	Rome, Cote Azur, Venice	-	2024	Italy
Skyway	new	4.5	\$1.1	Air Taxi, Regional, Cargo	-	-	-	2024	USA
Volatus Infrastructure	new	2.6	Privately funded	Air Taxi, Cargo	-	Oshkosh	2023	-	USA
Skyportz	↑	1.9	\$0.6	Regional, Air Taxi	Electra, Dufour Aerospace	Sydney, Melbourne, Brisbane	-	2024	Australia

Vertiport Solutions



Safety & Security



Intelligent & Efficient



Sustainable & Resilient



Connected



Autonomous

