

A futuristic aircraft with four rotors is shown in flight against a sunset sky. The aircraft is white with a rounded nose and four large, dark rotors. It is flying over a landscape with a river and hills. The sun is low on the horizon, creating a warm, orange glow. The sky transitions from orange near the horizon to a clear blue at the top.

Future of Flight: How Advanced Air Mobility is Ushering in the Third Revolution of Flight

Rob Mather
Vice President, Aerospace and Defense, IFS
September, 2023



1st Revolution: Powered Flight

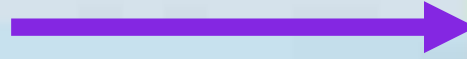


1903

Kittyhawk North Carolina

Wright Brothers Memorial (~113 years later)

Much younger me



Super-cute kid
(biased)



2nd Revolution: The Jet Age



1939

2nd Revolution: The Jet Age



1949



1962

Where's My Gosh Darn Flying Car?



1947



1957

3rd Revolution: Advanced Air Mobility



An aerial view of a city with a satellite in orbit. The satellite is a large, white, cylindrical object with four circular solar panels extending from its sides. It is positioned in the upper left quadrant of the image. The city below is a dense grid of buildings, with a prominent skyscraper in the center. The overall tone is dark and futuristic.

What is Driving the Revolution?

AAM Technology Breakdown

Advanced Air Mobility Technology Breakdown

**New
Energy
Sources**



AAM



**New
Propulsion
Modes**



**Composite
Airframes**



**Autonomous
Flight**

Advanced Air Mobility Technology Breakdown

**New
Energy
Sources**



Advanced Air Mobility Technology Breakdown

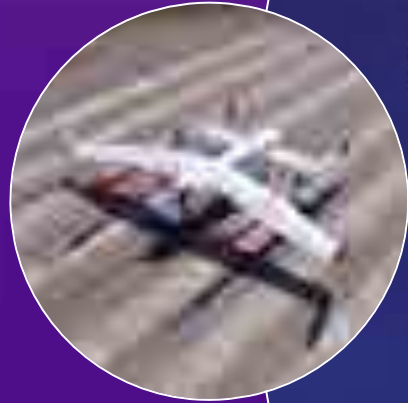
New
Energy
Sources



Advanced Air Mobility Technology Breakdown



Electrification



Hybrid



**Hydrogen
+Fuel Cell**

**New
Energy
Sources**

Advanced Air Mobility Technology Breakdown

**New
Energy
Sources**



AAM



**New
Propulsion
Modes**



**Composite
Airframes**



**Autonomous
Flight**

Advanced Air Mobility Technology Breakdown



**New
Propulsion
Modes**

Advanced Air Mobility Technology Breakdown

New
Propulsion
Modes

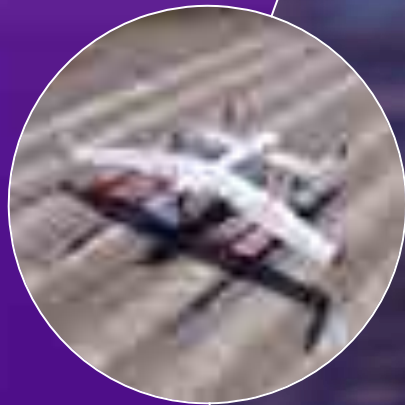


Advanced Air Mobility Technology Breakdown

New
Propulsion
Modes



Multicopter



**Lift &
Cruise**



Hybrid



**Vectored
Thrust**



**Conventional
(Substitution)**

Range

Spectrum

Advanced Air Mobility Technology Breakdown

**New
Energy
Sources**



AAM



**New
Propulsion
Modes**



**Composite
Airframes**



**Autonomous
Flight**

Advanced Air Mobility Technology Breakdown



**Composite
Airframes**

Advanced Air Mobility Technology Breakdown



Composite
Airframes

Advanced Air Mobility Technology Breakdown

**New
Energy
Sources**



AAM



**New
Propulsion
Modes**



**Composite
Airframes**



**Autonomous
Flight**



Advanced Air Mobility Technology Breakdown



**Autonomous
Flight**

Advanced Air Mobility Technology Breakdown



**Autonomous
Flight**

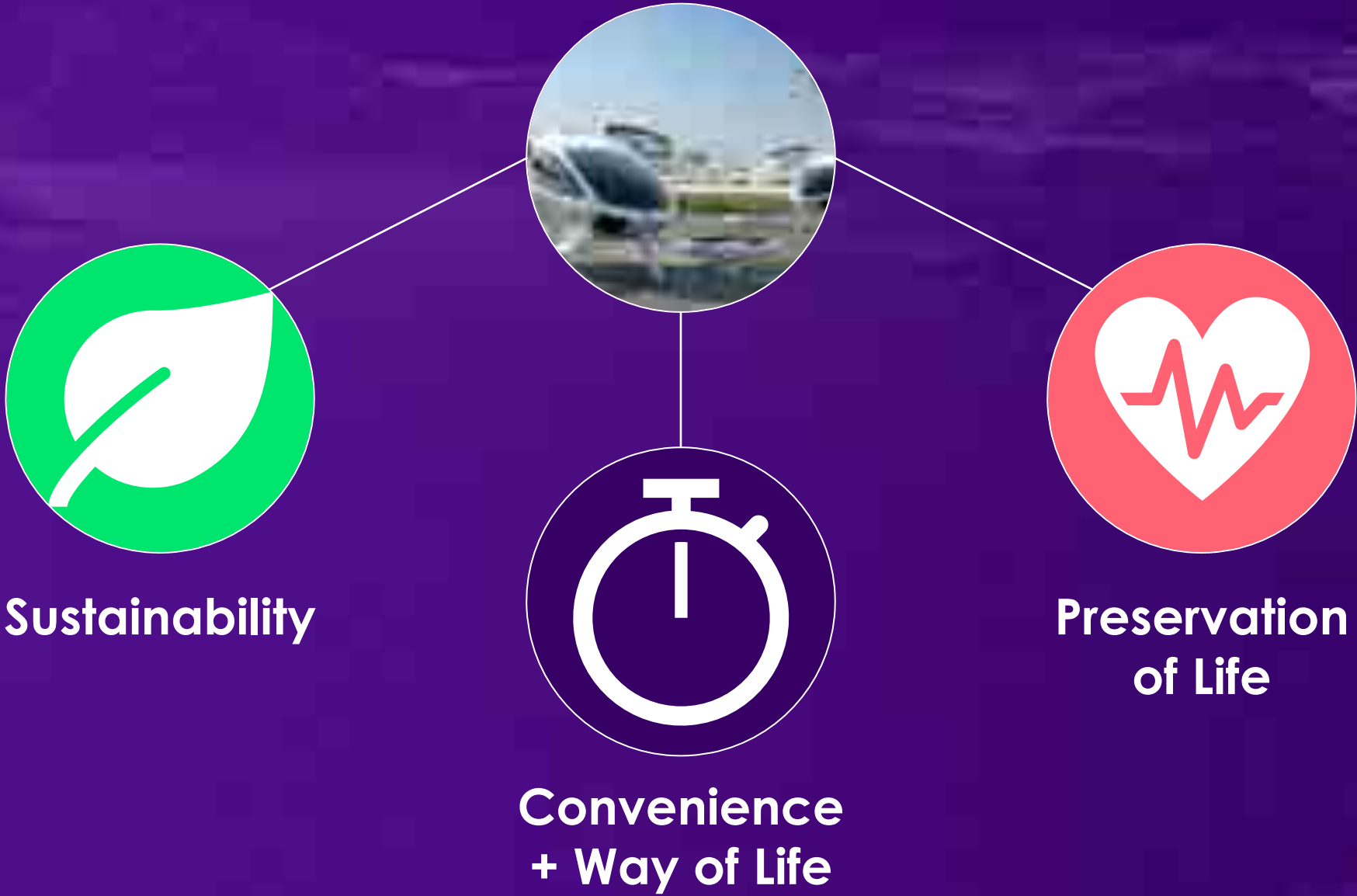
Why AAM is Revolutionary

The background image shows a futuristic aircraft carrier deck. Several white, four-rotor aircraft are on the ground, some with their rotors spinning. One aircraft is flying in the sky. A person is visible in the distance near one of the aircraft on the ground. The scene is set against a clear blue sky and a cityscape in the background.

Why should I care?

Why AAM is Revolutionary Impacts

AAM



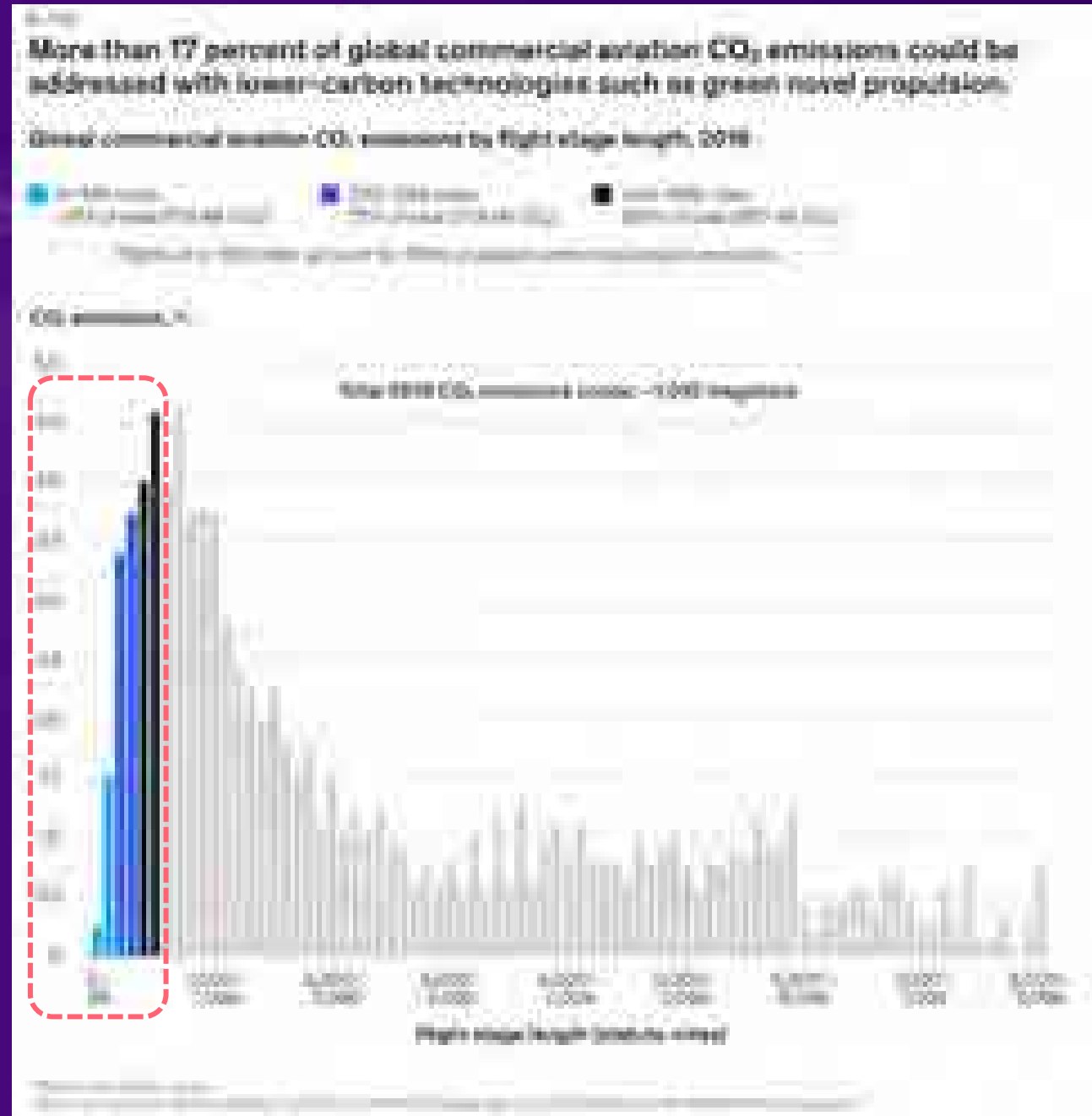
Why is AAM Revolutionary Impacts

600 miles

Max anticipation electrification range

>17% CO₂

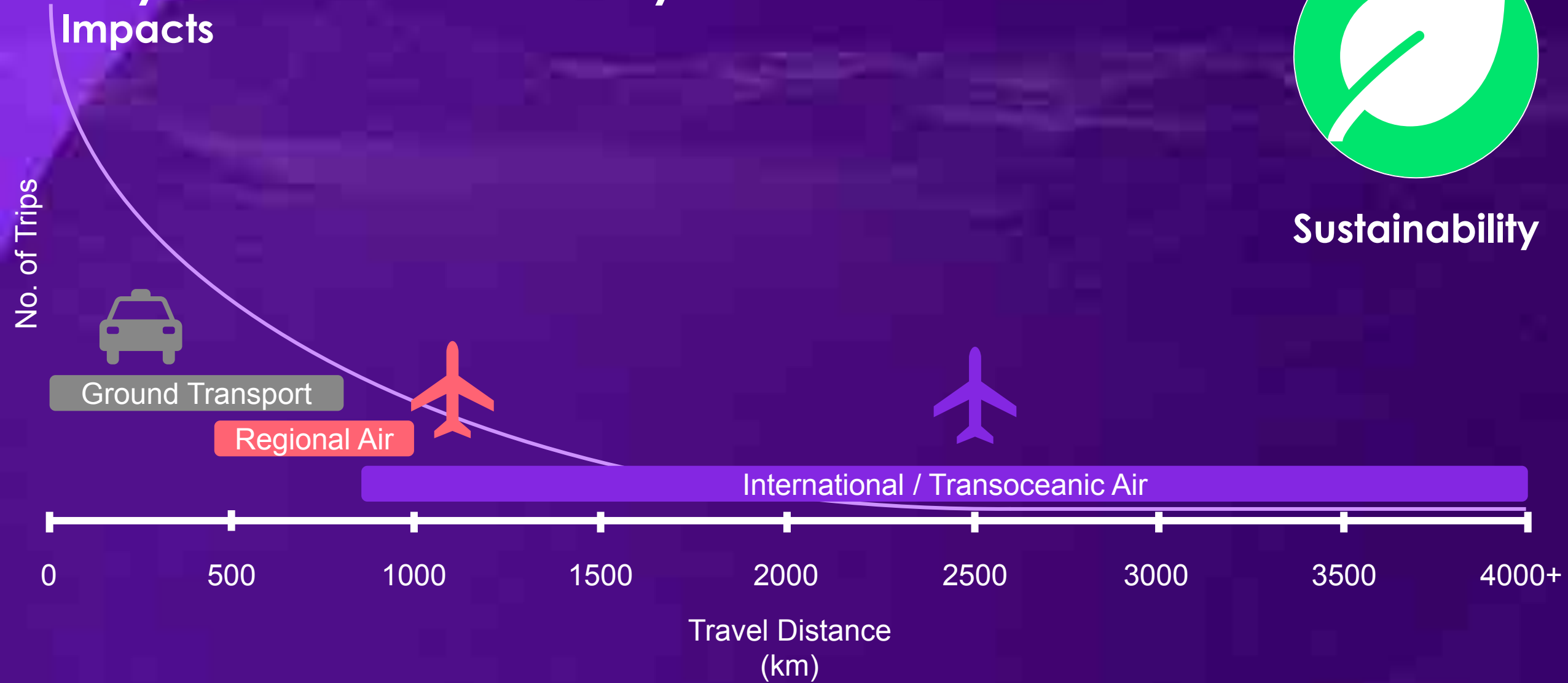
Emissions Reduction
For Commercial Aviation
(not including ground transportation effects)



Why AAM is Revolutionary Impacts



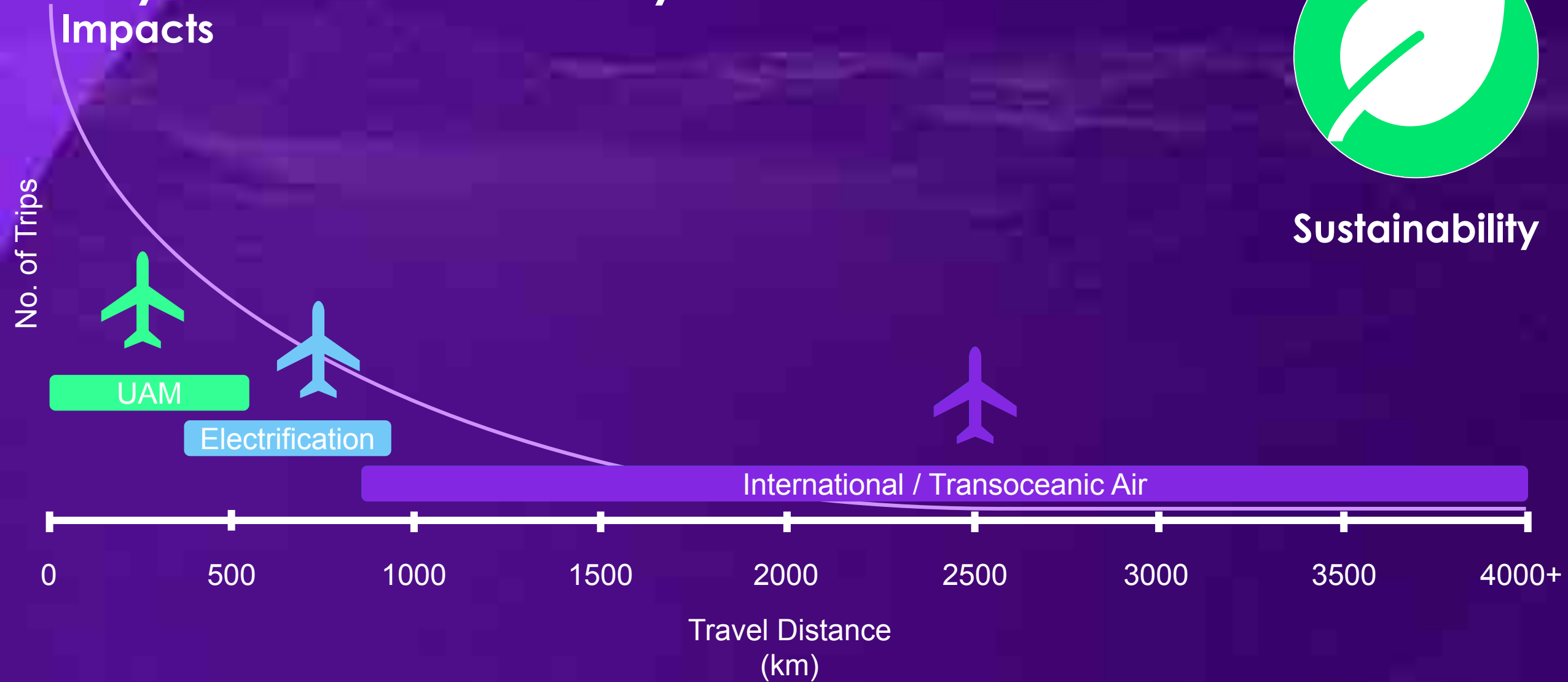
Sustainability



Why AAM is Revolutionary Impacts

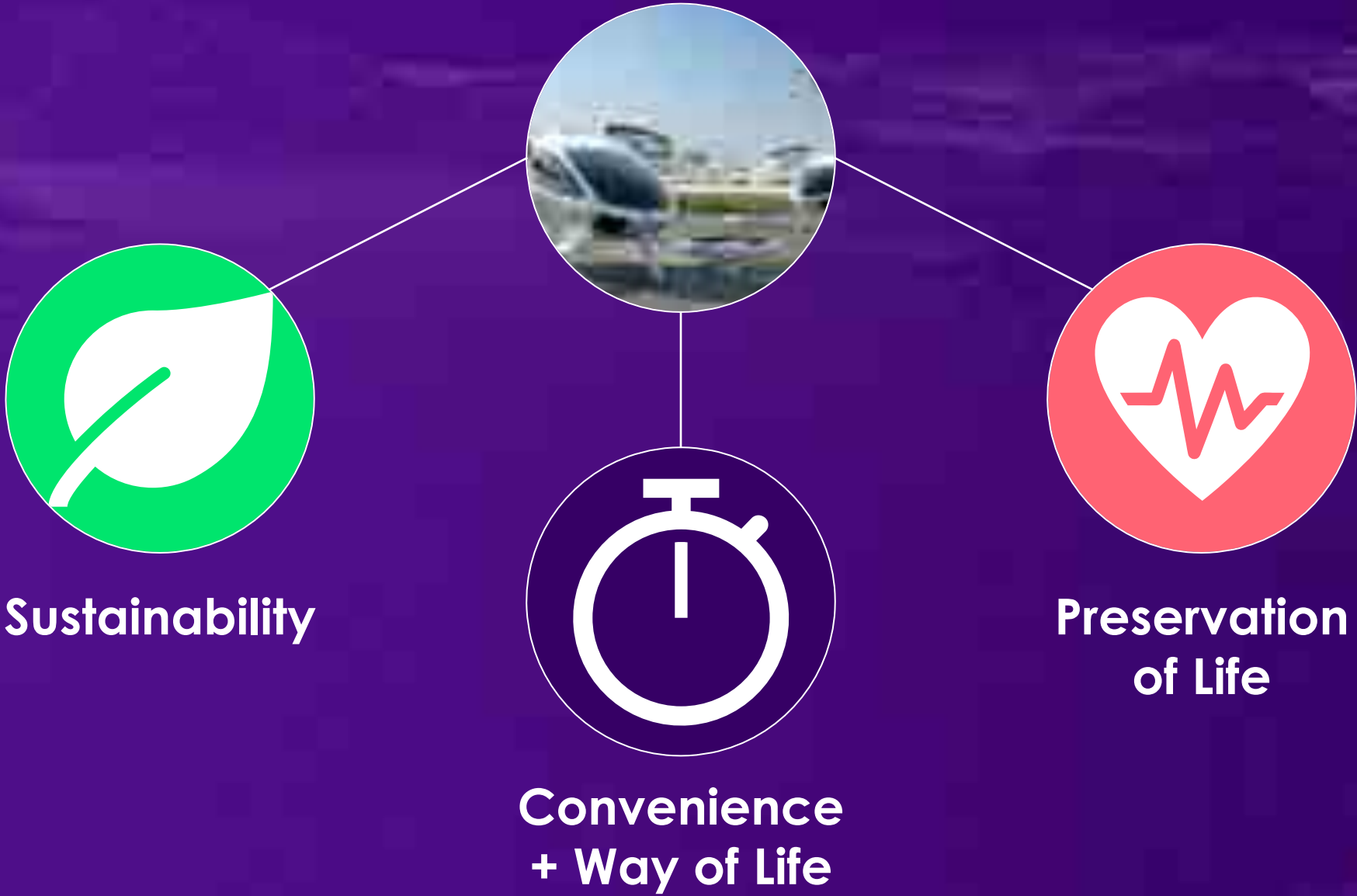


Sustainability



Why AAM is Revolutionary Impacts

AAM



Why AAM is Revolutionary Impacts



**Convenience
+ Way of Life**

Why AAM is Revolutionary Impacts



Convenience
+ Way of Life

The promise of Urban Air Mobility

- Speed
- Noise reduction
- Infrastructural Change

Why AAM is Revolutionary Impacts

Door-to-Door Delivery
Lower Delivery Costs



Convenience
+ Way of Life



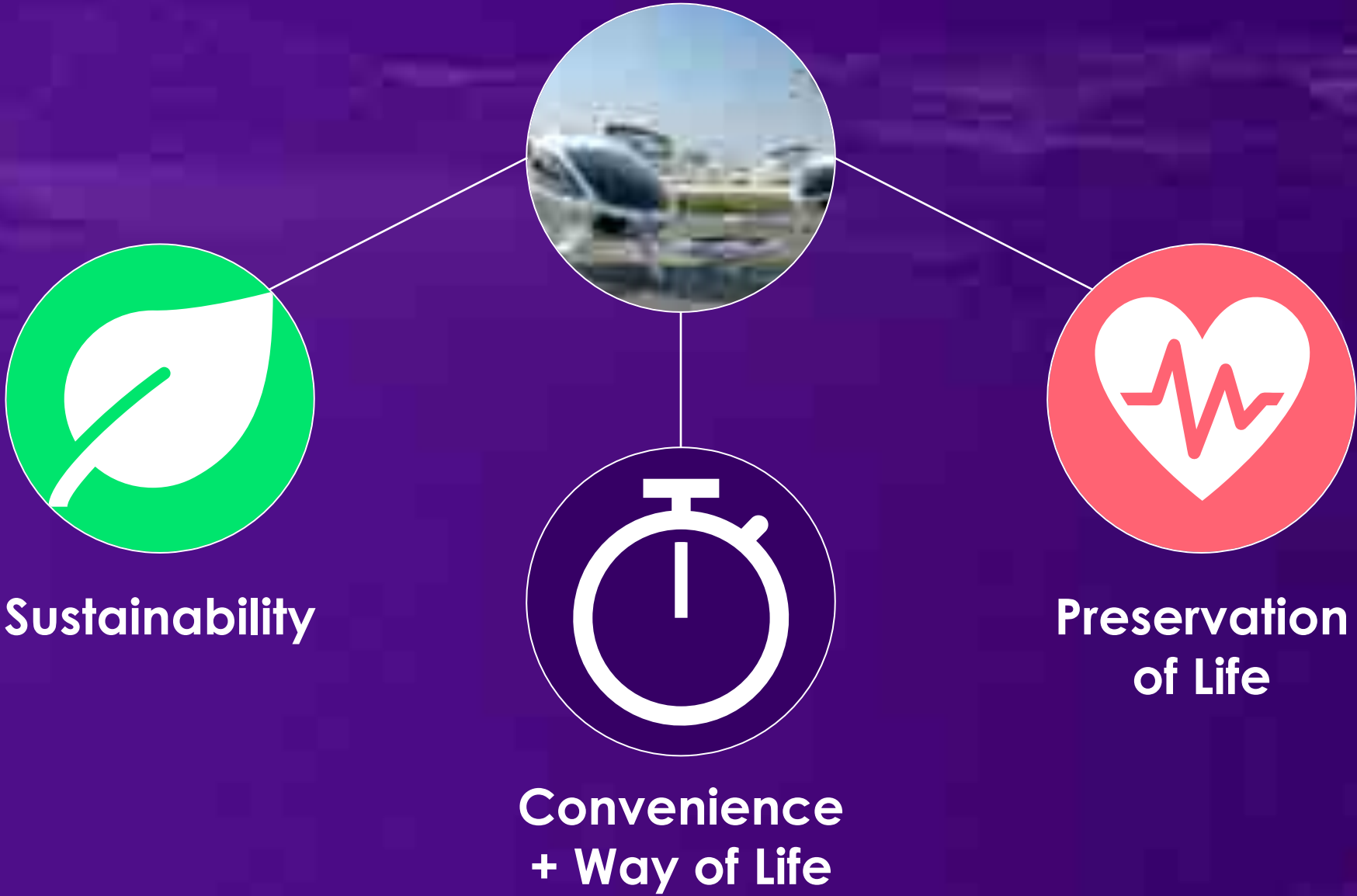
Why AAM is Revolutionary Impacts



**Convenience
+ Way of Life**

Why is AAM Revolutionary Impacts

AAM



Why AAM is Revolutionary Impacts



**Preservation
of Life**

Why AAM is Revolutionary Impacts



Preservation
of Life

Combat Advantage

- Removal of warfighters from frontline danger
- Improved support to frontline combat personnel

Why AAM is Revolutionary Impacts



Preservation
of Life

Emergency Management

- Supply drops in danger zones & remote areas
- Combatting disasters directly

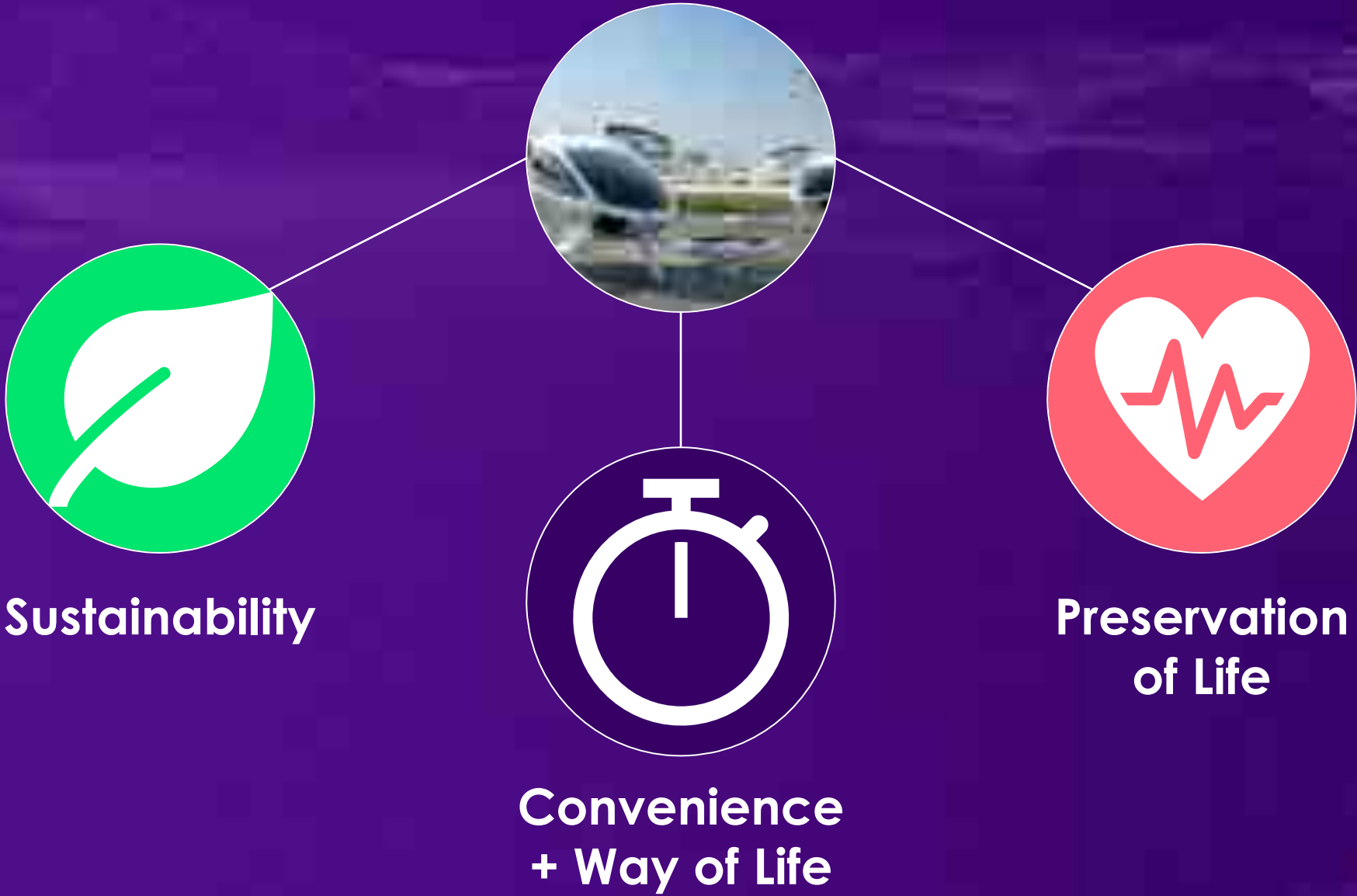
Why AAM is Revolutionary Impacts



**Preservation
of Life**

Why AAM is Revolutionary Impacts

AAM



Sustainability

Convenience
+ Way of Life

Preservation
of Life



2062

Where's My Gosh Darn Jetpack?





Evolve your Maintenance

Thank you!

AGILE • COLLABORATIVE • TRUSTWORTHY

ifs.com