



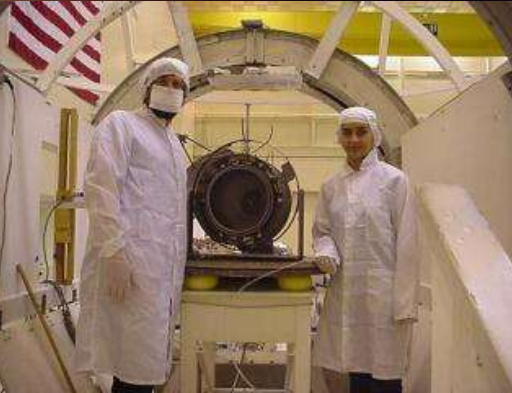
The Future of Transportation

Dr. Anita Sengupta @Doctor_Astro

Co-Founder, Airspace Experience Technologies @AirspaceXP

Professor of Astronautics, University of Southern California

Engineering the Future



Main Asteroid Belt
MISSION: Dawn
Tech: Ion Engines



Mars
MISSION: Curiosity
Tech: EDL



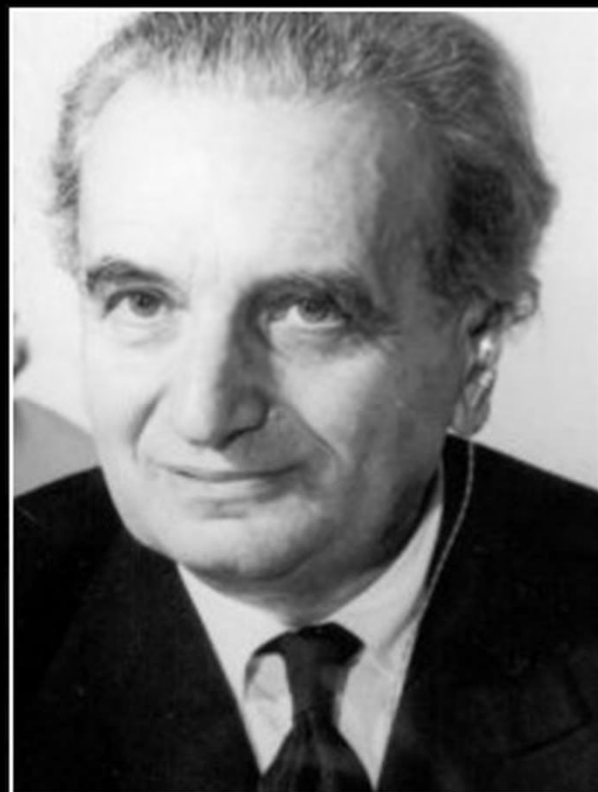
Low Earth Orbit
MISSION: Cold Atom Lab
Tech: Laser Cooling



Earth
*Tech: The Hyperloop, Air Taxis,
Supersonic Flight*

Understanding Your Place in the Universe





Science is the study of what Is,
Engineering builds what Will Be. The
scientist merely explores that which
exists, while the engineer creates
what has never existed before.

— *Theodore von Karman* —

AZ QUOTES

“Heavier-than-air flying
machines are impossible.”

Lord Kelvin, British Mathematician and
Physicist,
President of the British Royal Society, 1895





*So, in the face of
overwhelming odds, I'm
left with only one option:
I'm going to have to
**science the sh*t out of
this.** – Mark Watney*

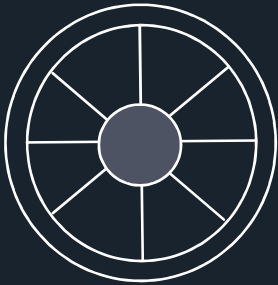
The Engineer Makes Sci Fi a reality

We Can Build the Future We Imagine



MOBILITY TECHNOLOGY CHANGED THE WORLD

3200 BC



Wheel

1804



Industrial
revolution

1886



Personal mobility

1900+



Global Commerce

Transportation networks lead to waste...



Goods in Port



Passenger Cars



Cargo on the Road

...And aren't keeping up with demand

UNSUSTAINABLE

Bigger Airports?

More Rail Lines?

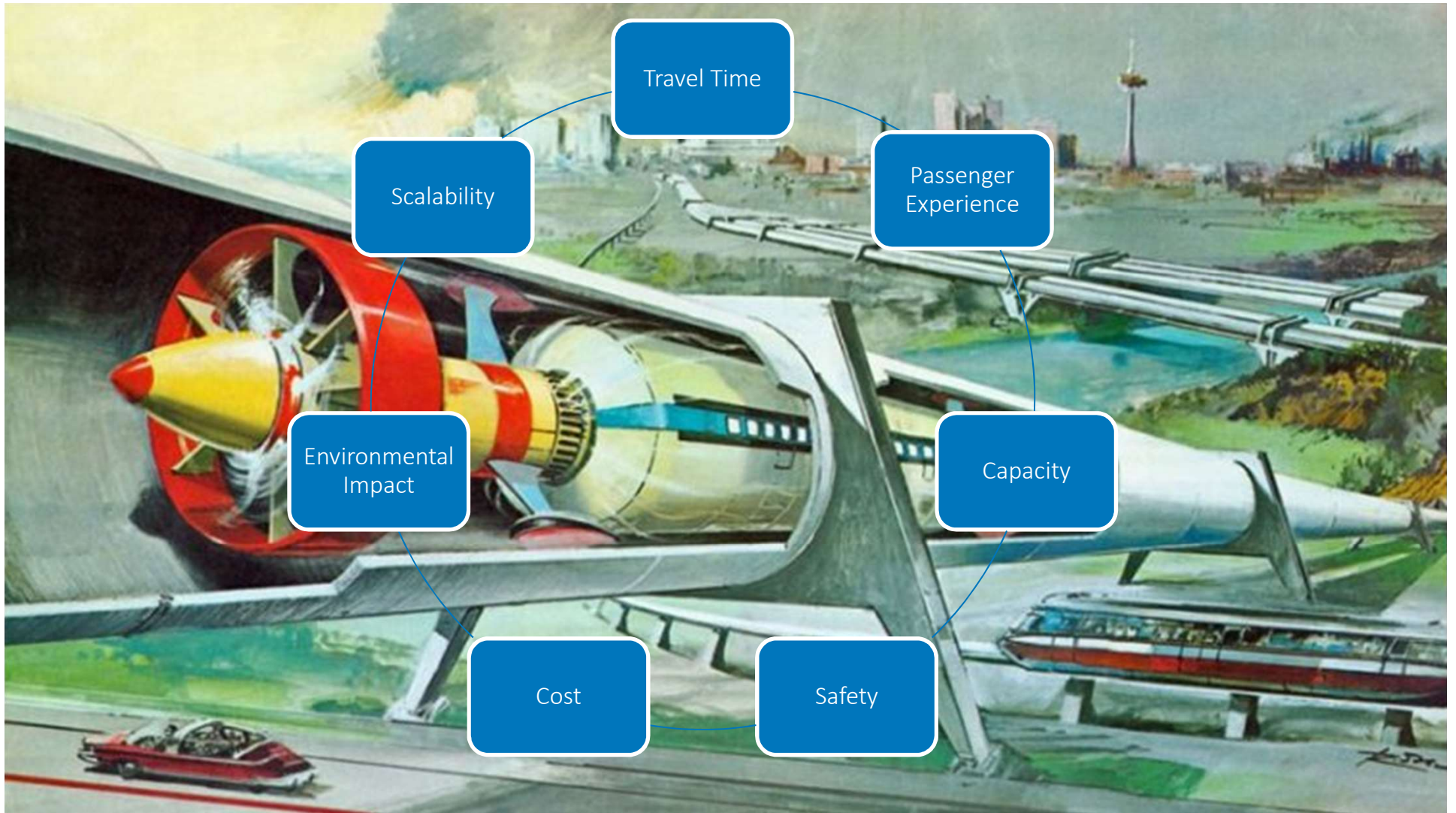
More Cargo Ships?

More Trucks?

Wider Highways?

Bigger Ports?

Reinvent transportation



How Do You Innovate



Startup Life

The Hyperloop



CONCORD
62°

CA HIGH-SPEED TRAIN PROJECT DELAYED

THE BAY AREA'S LOCAL NEWS STATION

KRON 4

6:27 PM

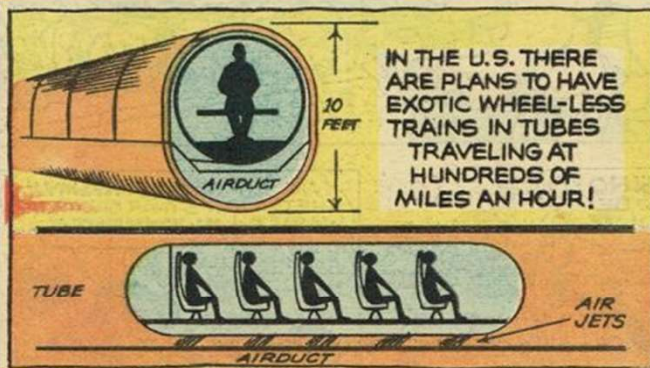
KRON4.COM

Y THREAT'

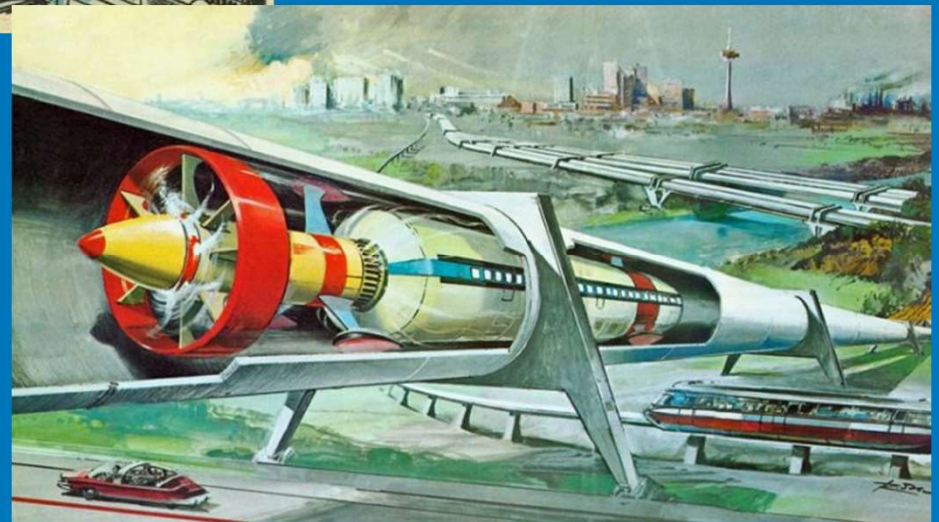
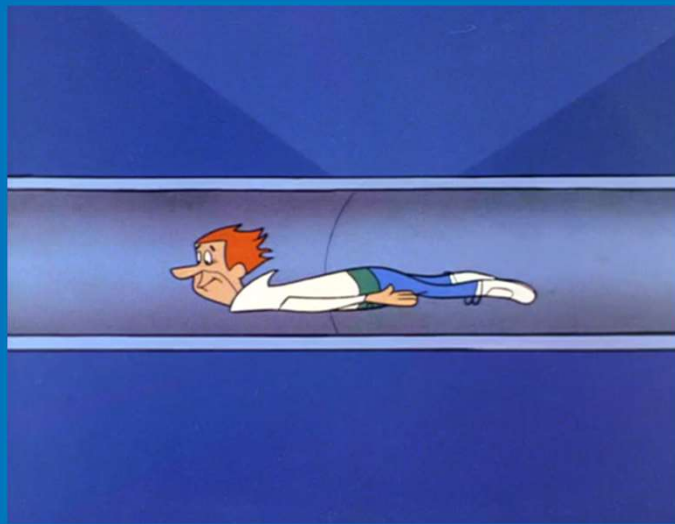
4

BRITISH OFFICIALS SAY 21 PEOPLE BEING TREATED AS RESUI

The Hyperloop



TO SOLVE AUTO TRAFFIC JAMS, CITY TRANSPORT MAY MOVE 5 OR 6 PASSENGERS LIKE PEAS IN A POD, SUPPORTED AND BLOWN ALONG BY JETS OF AIR THROUGH TUBES SMALL ENOUGH TO PASS RIGHT THROUGH BUILDINGS OR STOP IN THEM.



The Hyperloop

ELECTRO-MAGNETIC
LEVITATION and PROPULSION

VACUUM TUBE

VEHICLE



Prototype New Technology - Startups



How do you lower the Cost: AI and ML

RIDERSHIP

On DEMAND



AI Enabling Tech for Mass Transit

RIDERSHIP

On DEMAND

AUTONOMY



Urban transport Re-envisioned



THE PROBLEM TRAFFIC IS TAKING OVER OUR LIVES

Annually, US drivers waste
\$300 billion in fuel and
productivity due to
gridlock traffic

ASX - Confidential



\$1400

Productivity in dollars lost
per driver per year due to
traffic



\$1.9 billion

Gallons of fuel wasted
per year due to traffic



97 hours

Time urban commuters sit in
traffic per year

Source: INRIX, 2018, 2019



"Total global addressable market growing to \$1.5 trillion by 2040, or 1.2% of projected global gross domestic product." – *Adam Jonas (Morgan Stanley)*

"The Drone Logistics and Transportation Market is Projected to Grow from USD 11.20 Billion in 2022 to USD 29.06 Billion by 2027, at a CAGR of 21.01% " – *Research and Markets 2018 Report*

OUR VISION

Electric Vertical Takeoff & Landing aircraft | 3-dimensional urban air taxi



Highways in The Sky
LOW CAPEX

Air travel
5x faster than driving

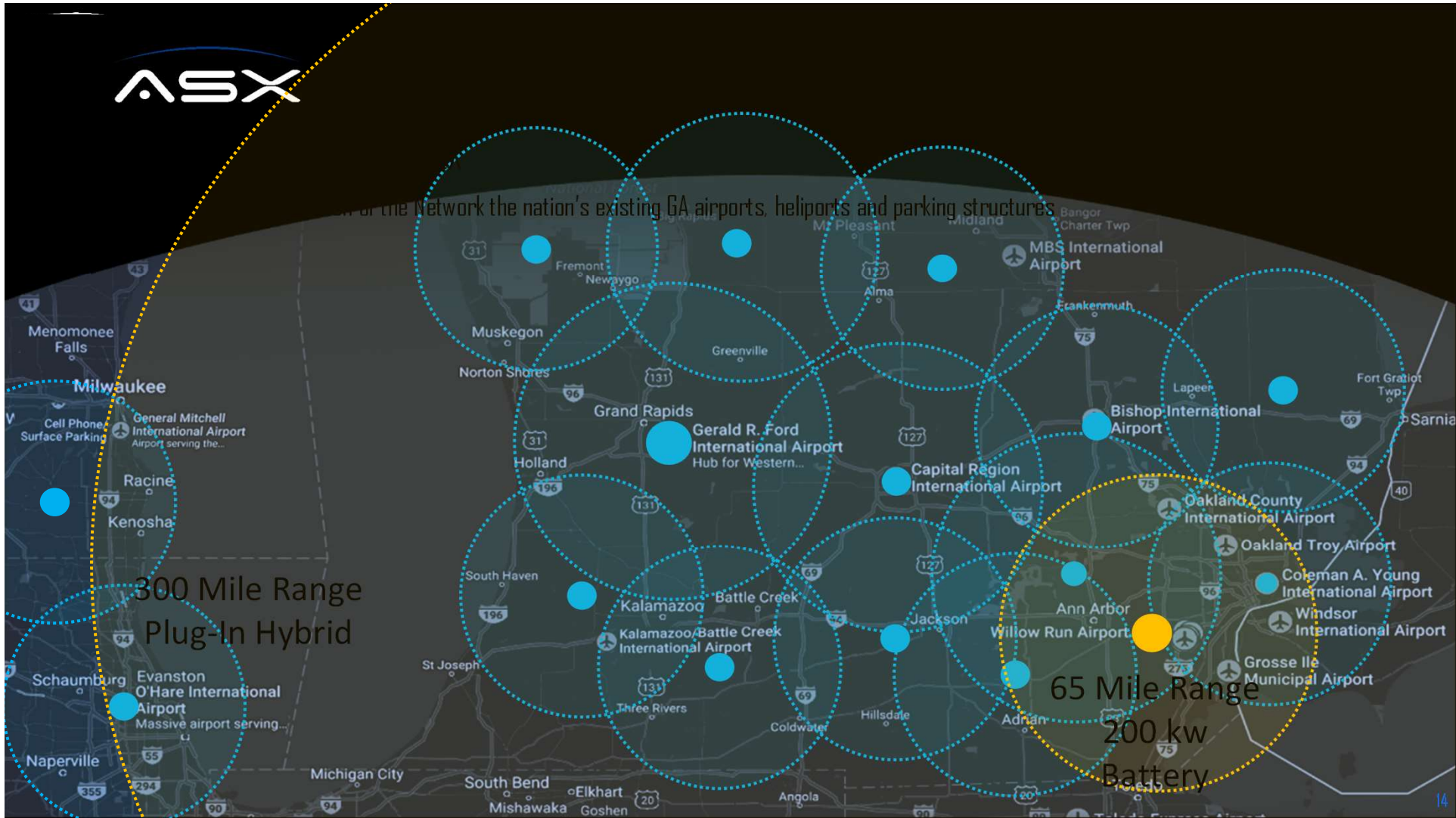
Electric Power
Reduced Carbon Footprint and OPEX

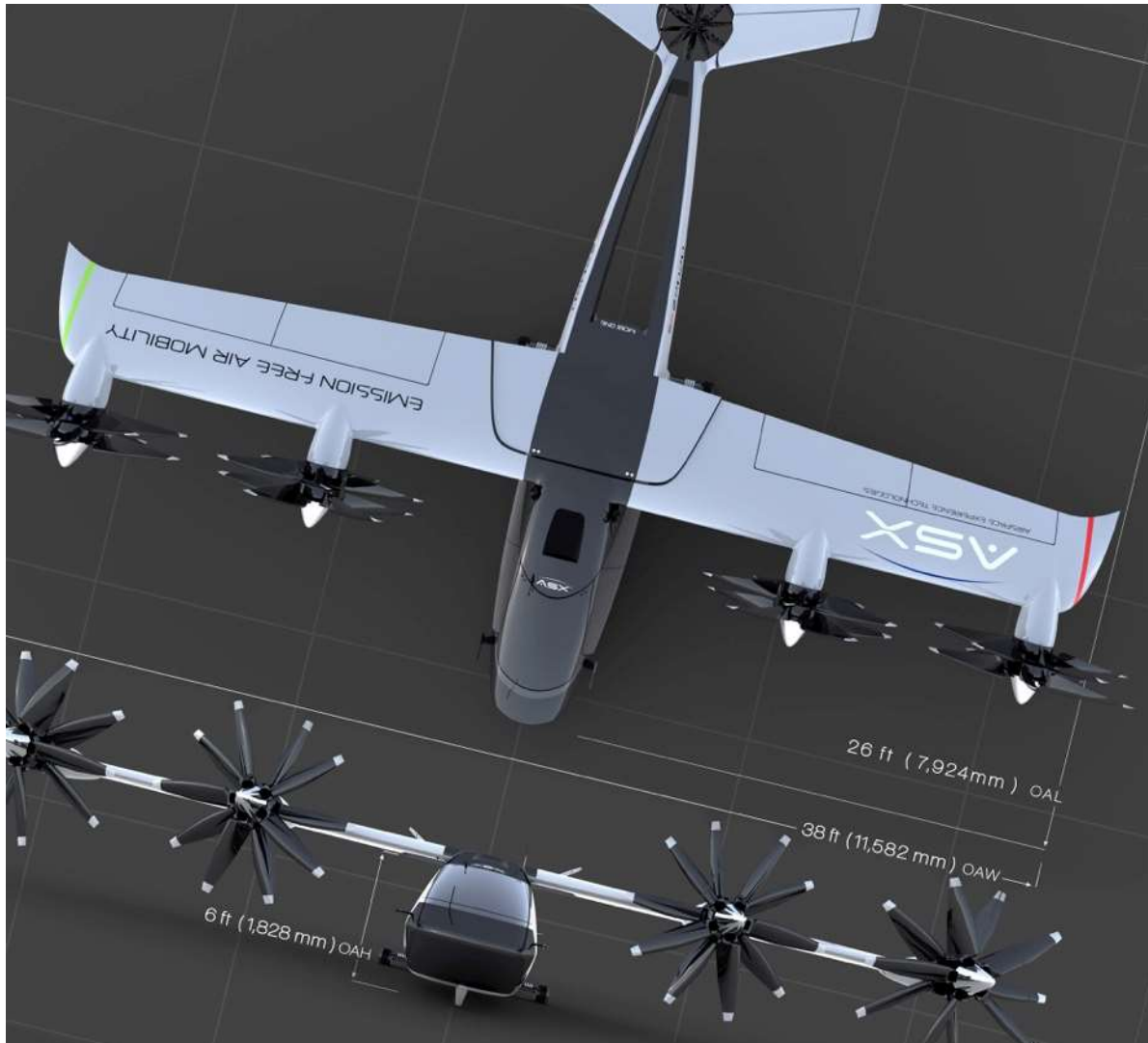
ASX

SOLUTION: MOBi-ONE e-VTOL

e-VTOL: noun | \ 'ē-(,)vē-tōl\
1. Electric vertical takeoff and landing aircraft
2. 3-dimensional urban air taxi







Take-off and landing:
Vertical/Short-Take Off

Range:
65 miles Electric / >300 miles Hybrid

Cruising speed:
150 mph

Type:
Tilt wing with VTOL capability

Payload Type
Passenger/ Cargo/ Medical/ EVAC

Optimal Payload:
5 passengers or 1100 pounds of cargo

Flight Control:
Pilot assisted and fully autonomous

Communication:
DSRC (V2X)

Power train:
Hybrid electric or full electric



Prototype and Test New Technology



SUB-SCALE

MOBI ONE FLIGHT TEST 10/27/18

CONCEPT VEHICLE





ASX PASSENGER EXPERIENCE



SUSTAINABLE AVIATION

Enabled by a Smart Supply Chain



ELECTRIC VEHICLE TECH
ECOSYSTEM



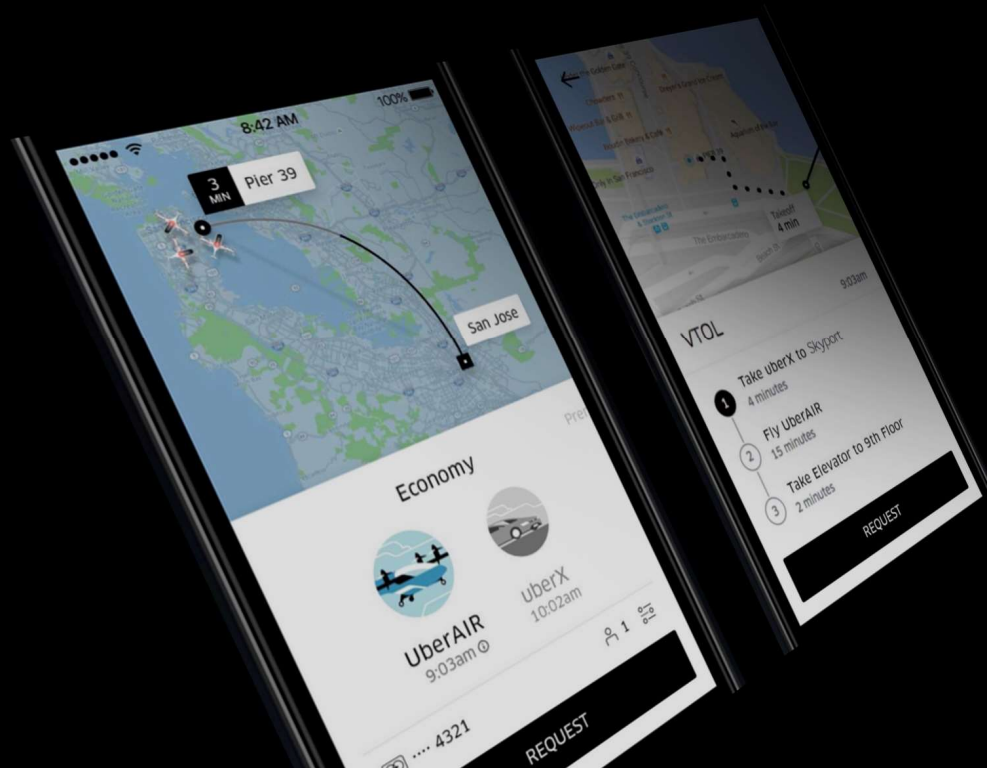
SMART GRID GREEN ENERGY



V2X Synergy



MOBILITY AS A SERVICE

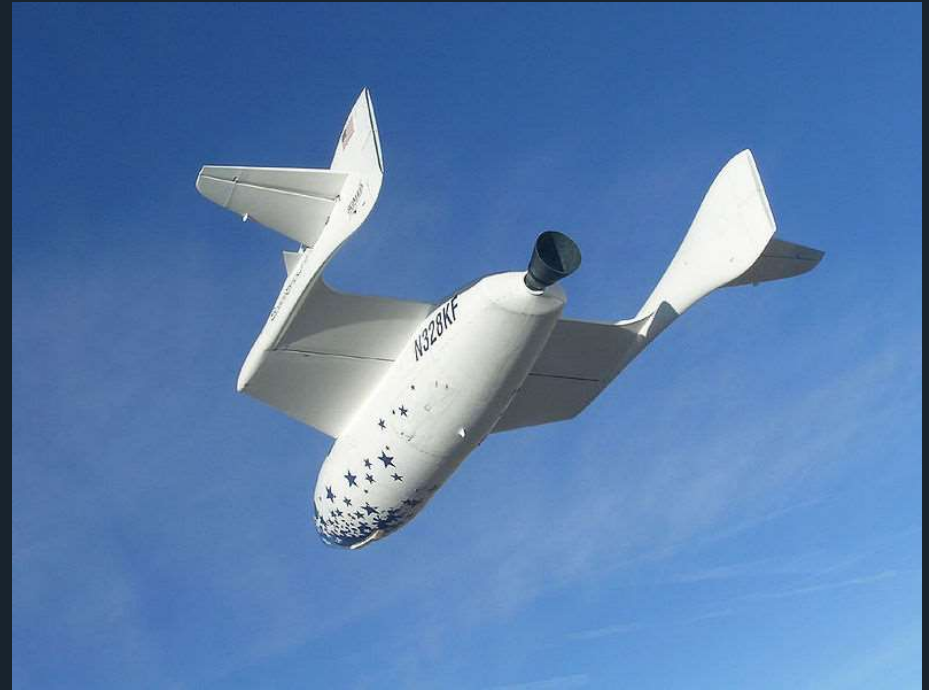


Sustainable Mobility Is a Global Solution



What Comes Next

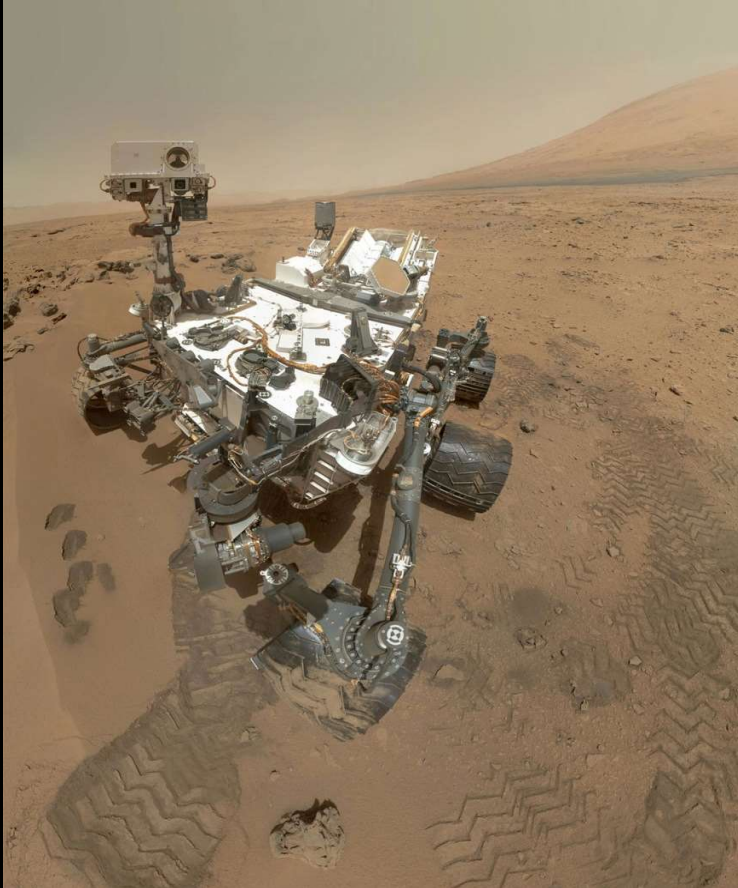
Suborbital Travel



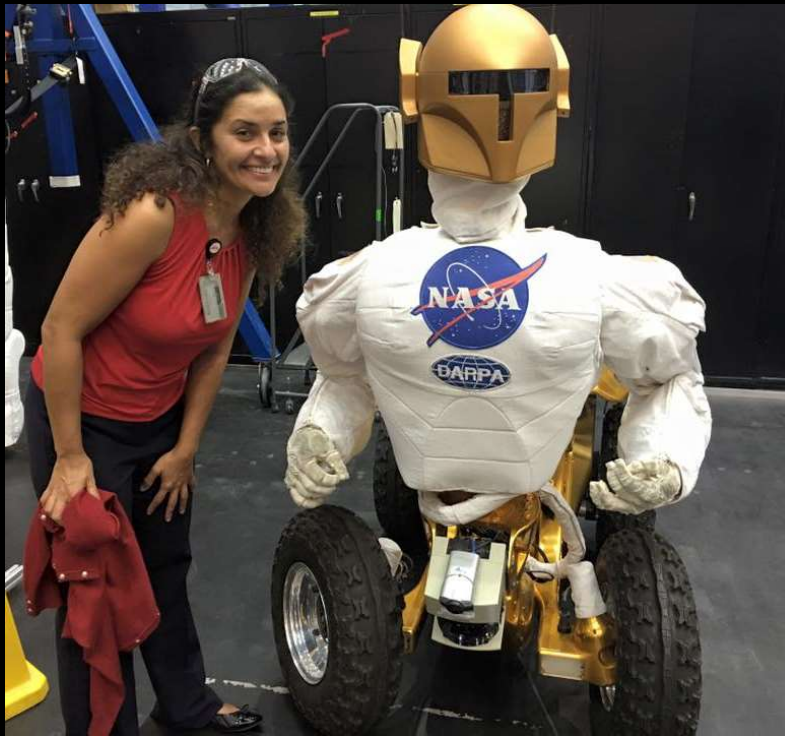
Space Travel



Next Step Mars



Artificial Intelligence



Sustainable Mars?

Power

Radiation Protection

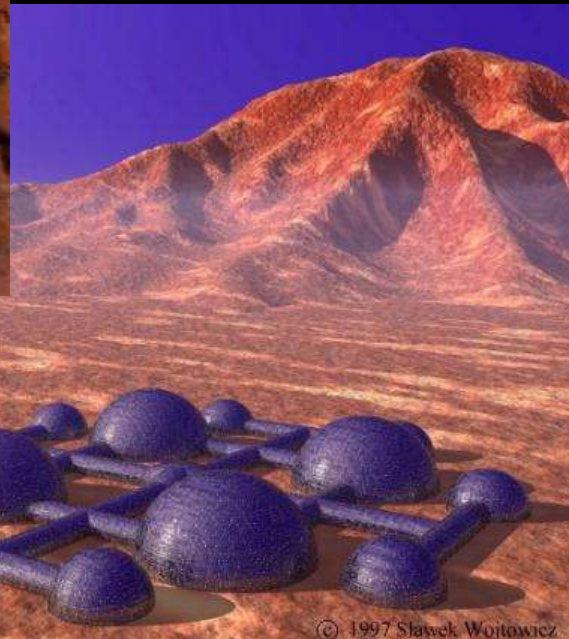
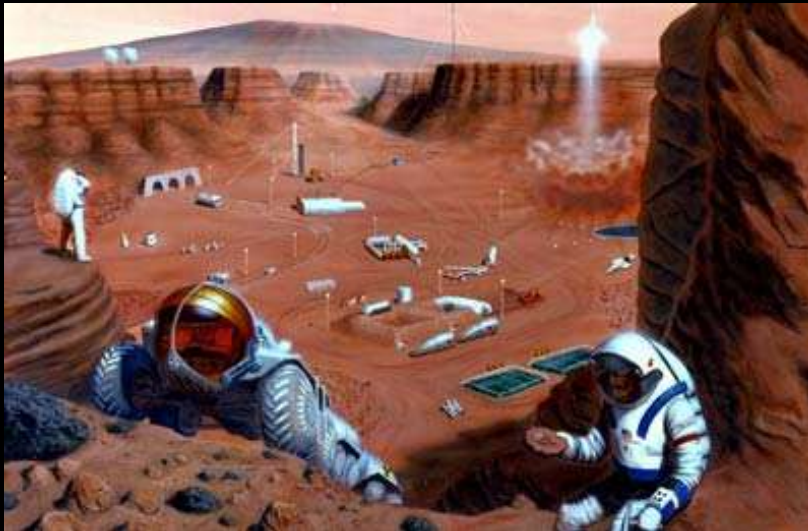
Water

Methane

Extremophiles



Would You Want to Live on Mars?



THANK YOU



Anita Sengupta
Co-Founder & Chief Product
Officer ASX
@Doctor_Astro as@asx.us