

eVTOL Insights London 2023:
**Assuring the Human Experience
is Considered Holistically**

First, these aircraft need
to be thought about the
right way...

Not a...



Not a...



Not a...



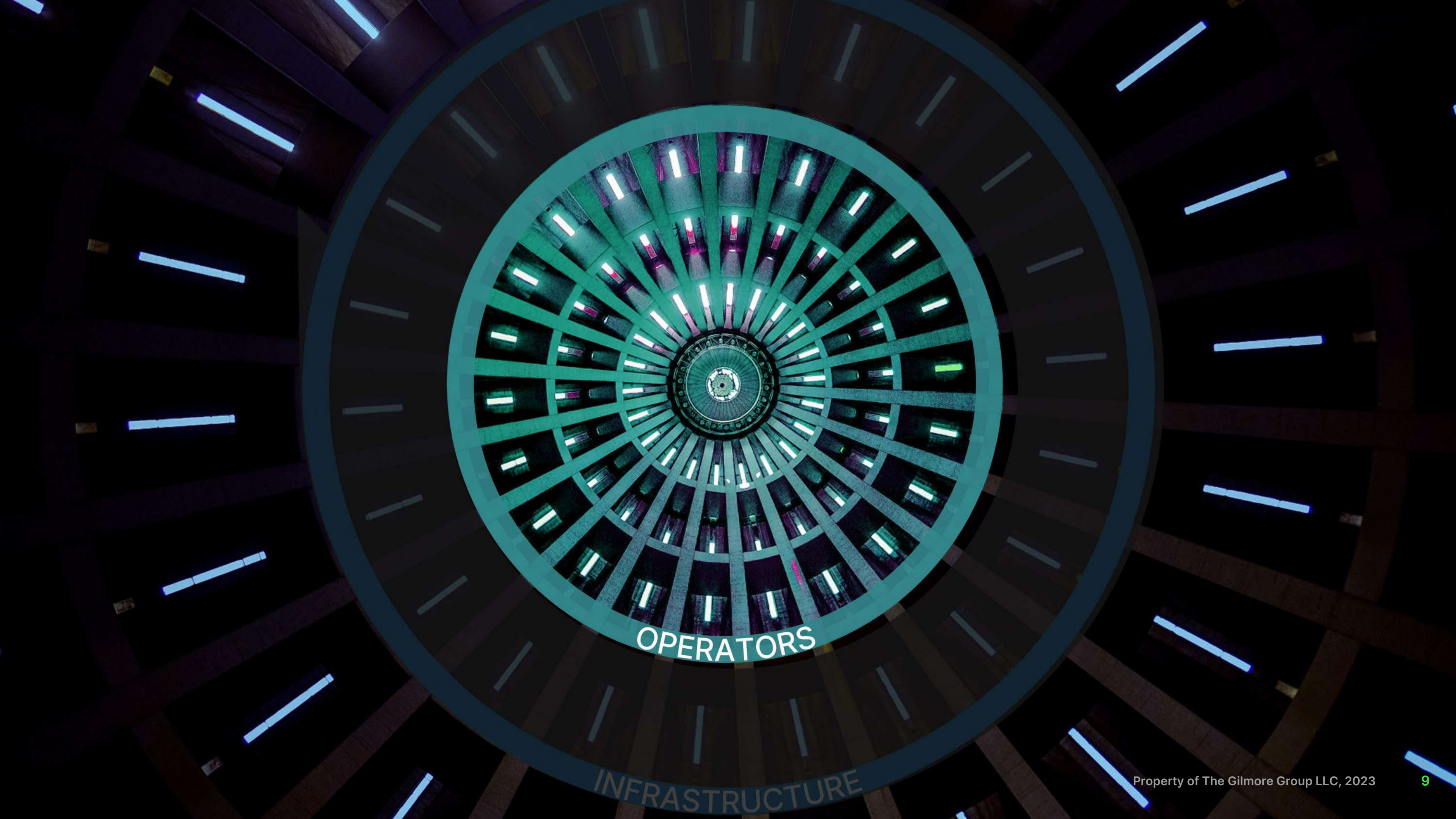
Not even this...



It is an ecosystem...

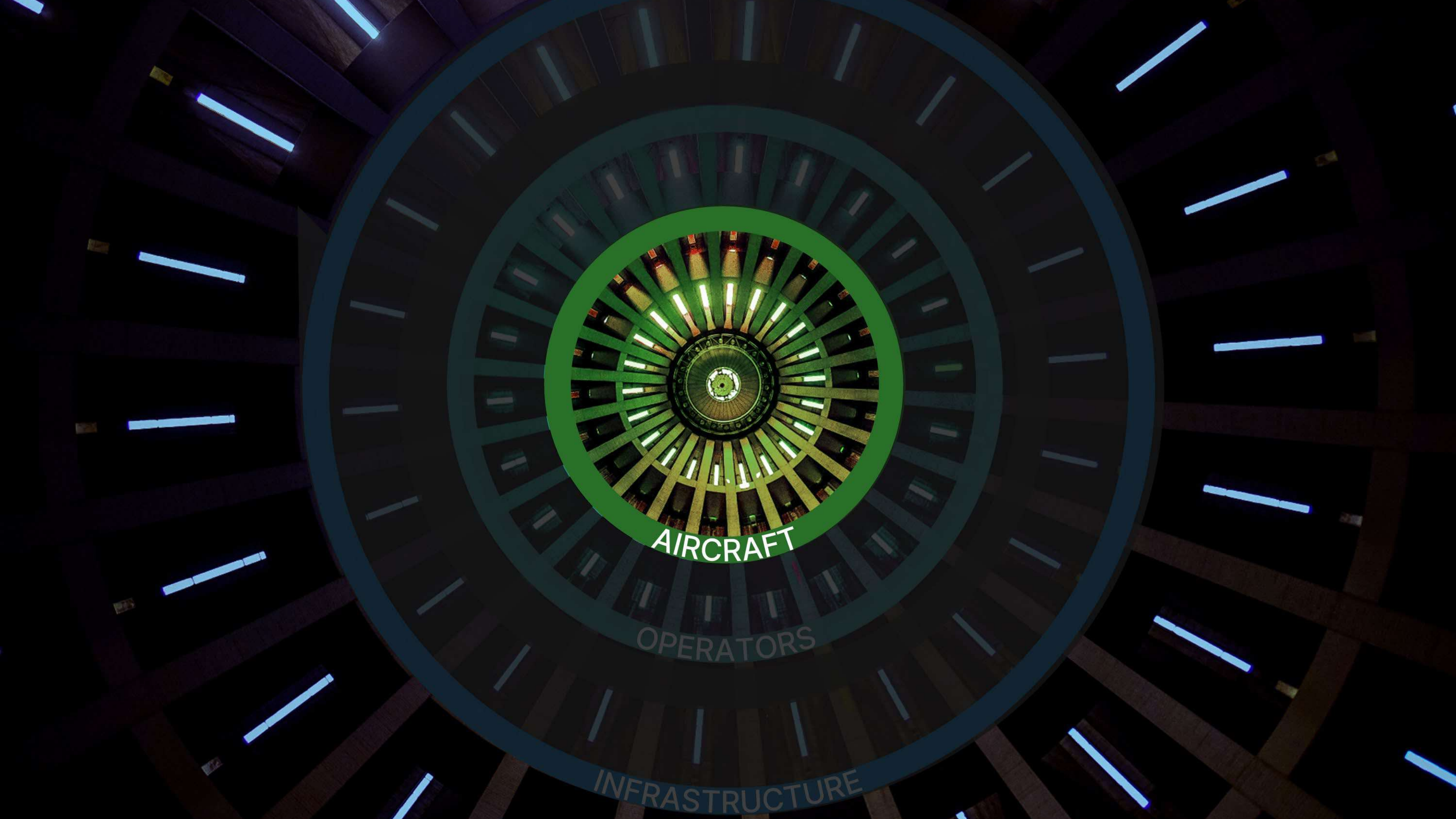


INFRASTRUCTURE



OPERATORS

INFRASTRUCTURE



AIRCRAFT

OPERATORS

INFRASTRUCTURE



ANCILLARY SYSTEMS

AIRCRAFT

OPERATORS

INFRASTRUCTURE



END-USER

ANCILLARY SYSTEMS

AIRCRAFT

OPERATORS

INFRASTRUCTURE

Human-Centered Thinking

An aerial view of a circular library atrium. The central feature is a large, ornate purple light fixture. Surrounding it are several concentric circular walkways or levels, each with a different color scheme: blue, green, and yellow. The walkways are separated by dark, radial structural elements. The overall lighting is dim, with the primary light source being the central fixture and some recessed lighting in the walkways.

is essential to commercial success

That's our focus... **people.**



The Core Principles of Human Experience Design:

Principle #1

End-user impacts total ecosystem and all elements of design

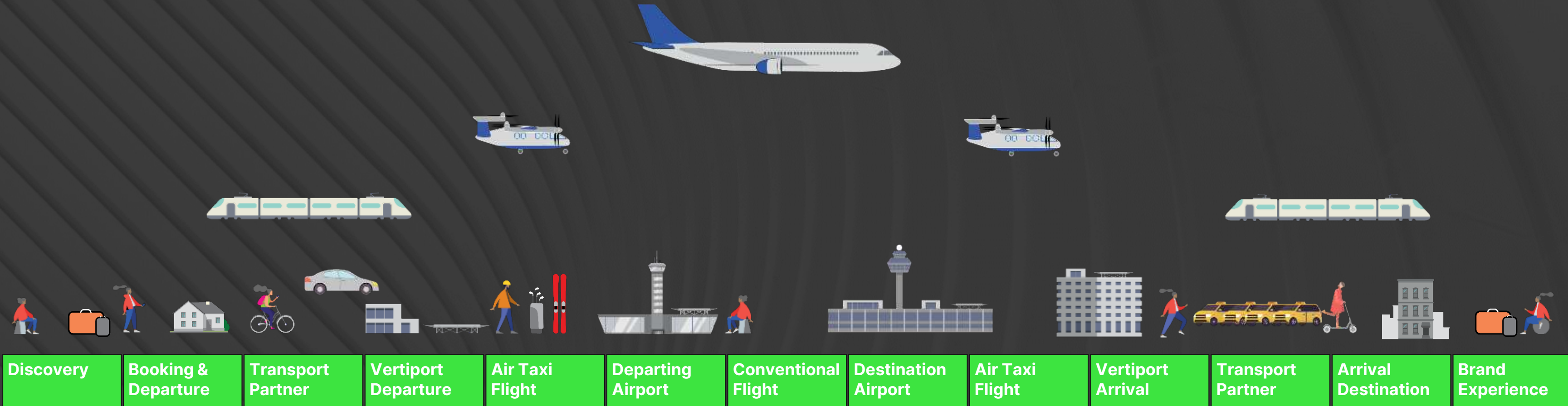
Principle #1

End-user impacts total ecosystem and all elements of design

A) What is the complete user experience & customer journey?

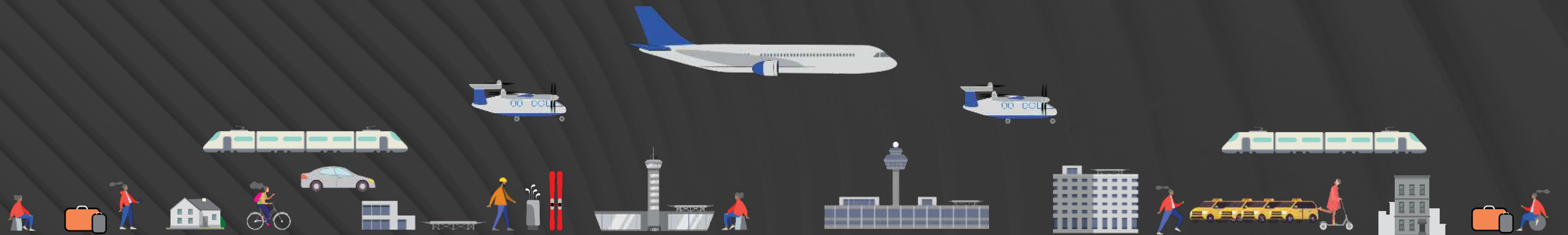
“User-centric” development

A) What is the complete user experience & customer journey? Think Passenger...



A) What is the complete user experience & customer journey?

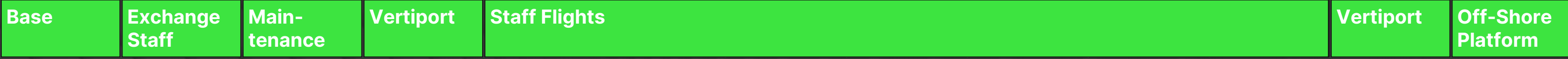
Needs, Wants, Feelings...



FEEL WANT NEED

Discovery	Booking & Departure	Transport Partner	Vertiport Departure	Air Taxi Flight	Departing Airport	Conventional Flight	Destination Airport	Air Taxi Flight	Vertiport Arrival	Transport Partner	Arrival Destination	Brand Experience
Research on options to get from A to B	Smart & simple online booking	Coordinated pick-up by car or alternate easy & quick drop-off	Vertiport with TSA to move from airside to landside	Just-in-time availability; save & easy boarding and egress	Transfer on airside to gate for boarding	Short- or long-haul cabin continues with selected service based on travel class	Direct access to aircraft	Just-in-time availability, save & easy boarding & exiting	Transfeer on landside & access to final transport service	Coordinated pick-up, or easy alternate transport	On time arrival to final desitnation	Credit on account
Connetion as dircet as possible	Make sure everything fits my plan; on-line check-in	Show up where and when I want it	Checked baggage transferred	Exceed comfort; space for carry-on & all luggage	Work or relax; close access to aircraft	Comfort; personal service based on selected service of travel class	Checked baggage transferred	Exeed comfort standard of aircraft cabin; space for carry-on and all luggage	baggage delivered (with ground transportation or by courier)	On time	On time	Give a high rating; become and advocate
I enjoy my trip, worry-free	Confident that my itinerary is perfect	This will be a smooth and relaxing journey	I feel save and comfortable; familiar environment (branded)	Relaxed; taken care of	Everything is on schedule; efficient use of time; nothing to worry about	I am in control	Excited and know where to go	I am expected	I feel save and comfortable; familiar environment (branded)	Relaxed	A great trip	Repeat

A) What is the complete user experience & customer journey? Think Industry & Military



A) What is the complete user experience & customer journey? Think Air Cargo



Principle #1

End-user impacts total ecosystem and all elements of design

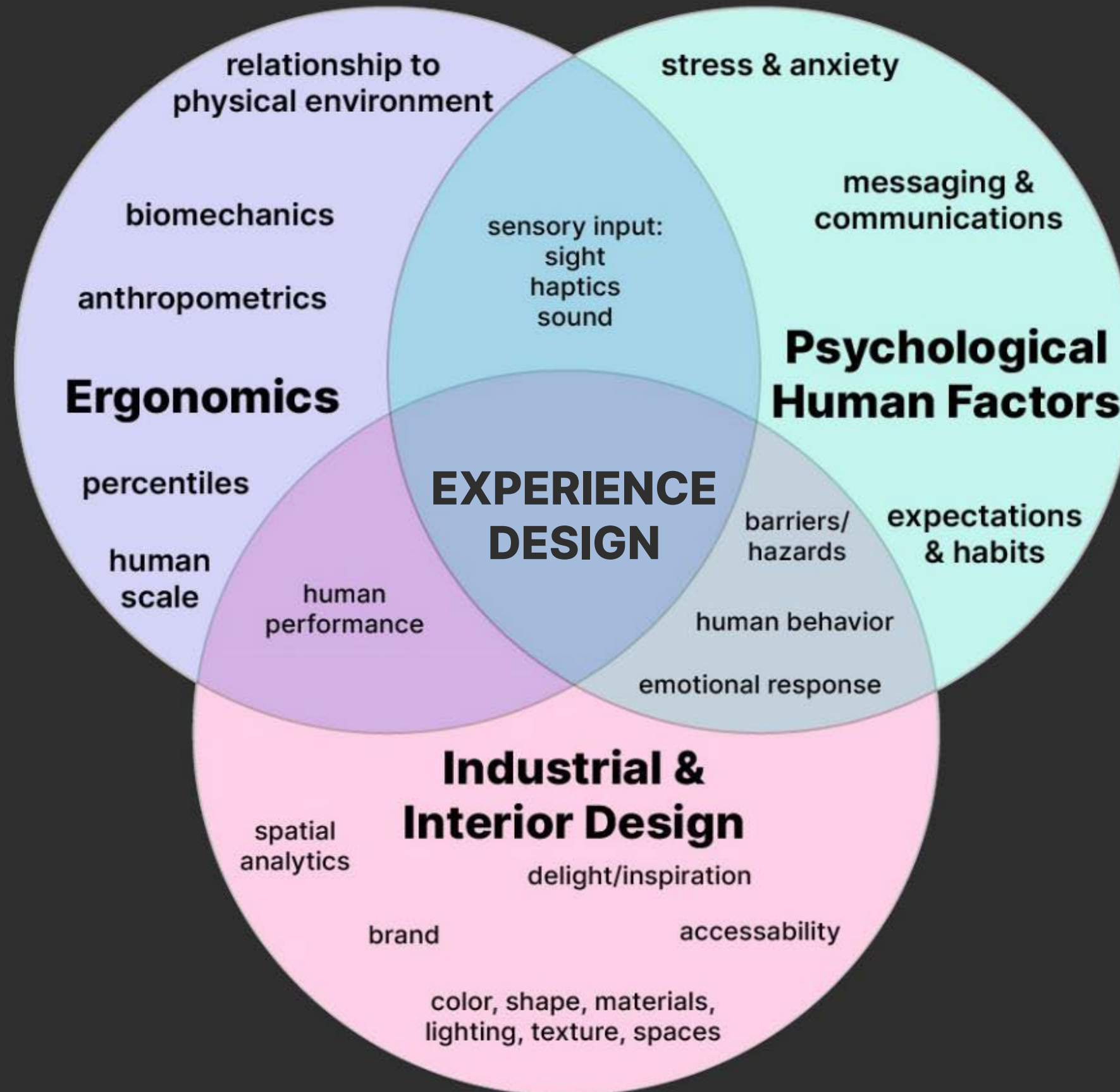
A) What is the complete user experience & customer journey?

“User-centric” development

B) What are the human-factor considerations?

Psychological, Ergonomic, Industrial Design

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Principle #1

End-user impacts total ecosystem and all elements of design

A) What is the complete user experience & customer journey?

“Customer-centric” development

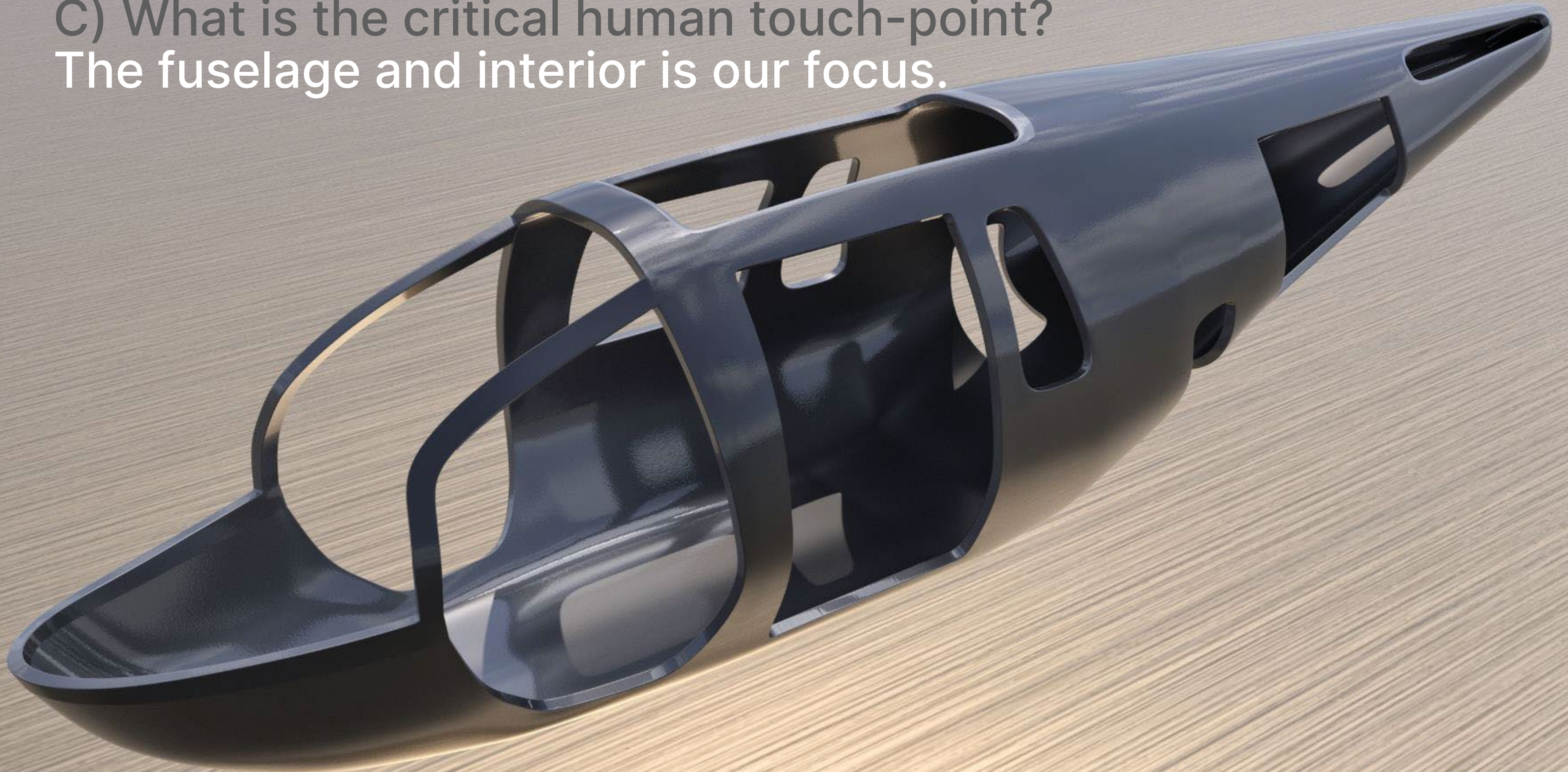
B) What are the human-factor considerations?

Psychological, Ergonomic, Industrial Design

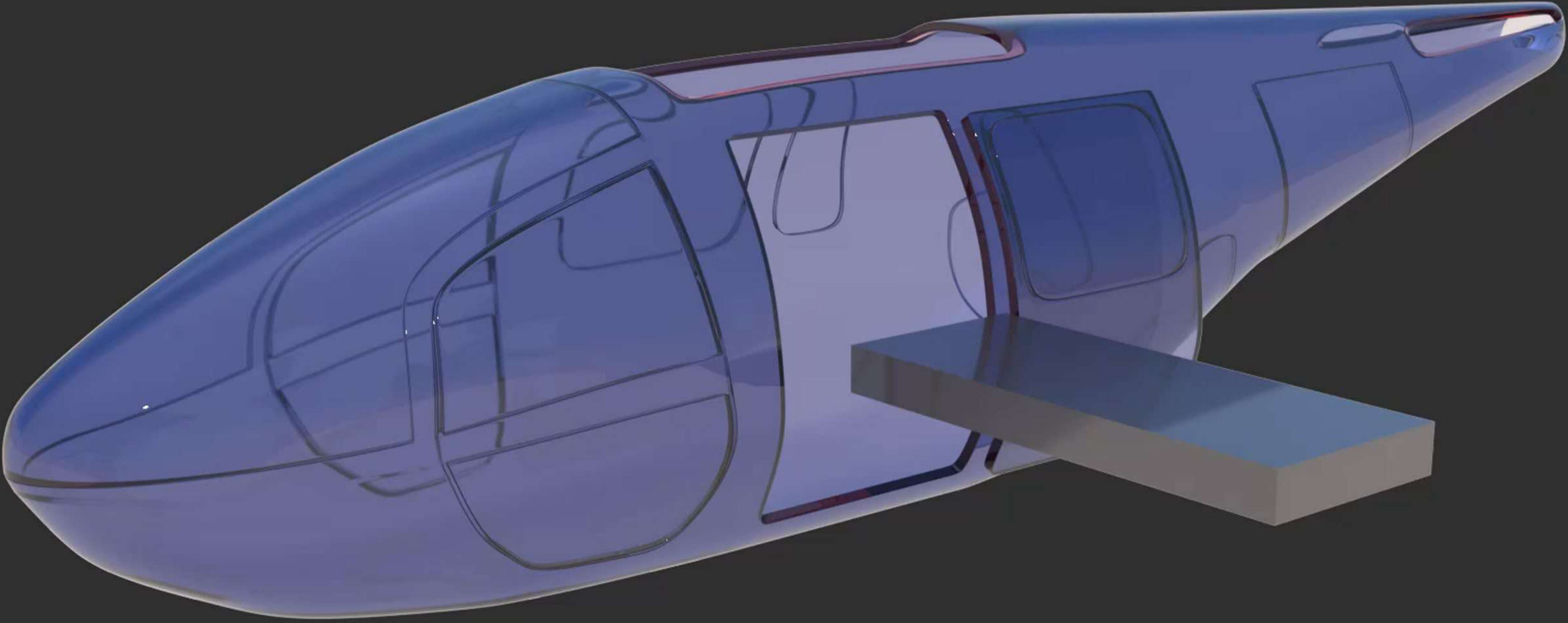
C) What is the critical human touch-point?

The fuselage and interior

C) What is the critical human touch-point?
The fuselage and interior is our focus.



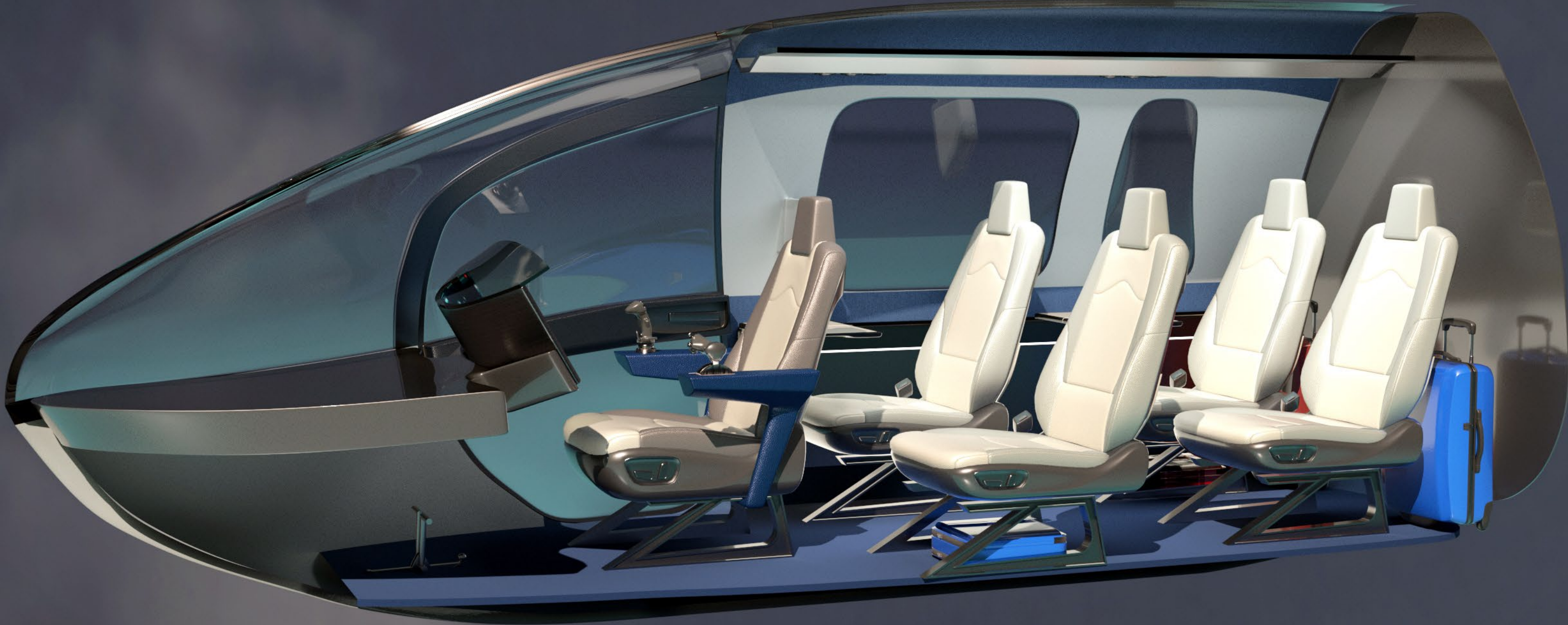
Inclusive of Accessibility, Spatial Maneuverability & Universal Design



Flight Deck Safety & Sightlines



Assuring the Cabin Experience...



...exceeds expectations for everyone



The Core Principles of Human Experience Design:

Principle #1

End-user impacts total ecosystem and all elements of design

Principle #2

Driven by a comprehensive commercial strategy

Principle #2

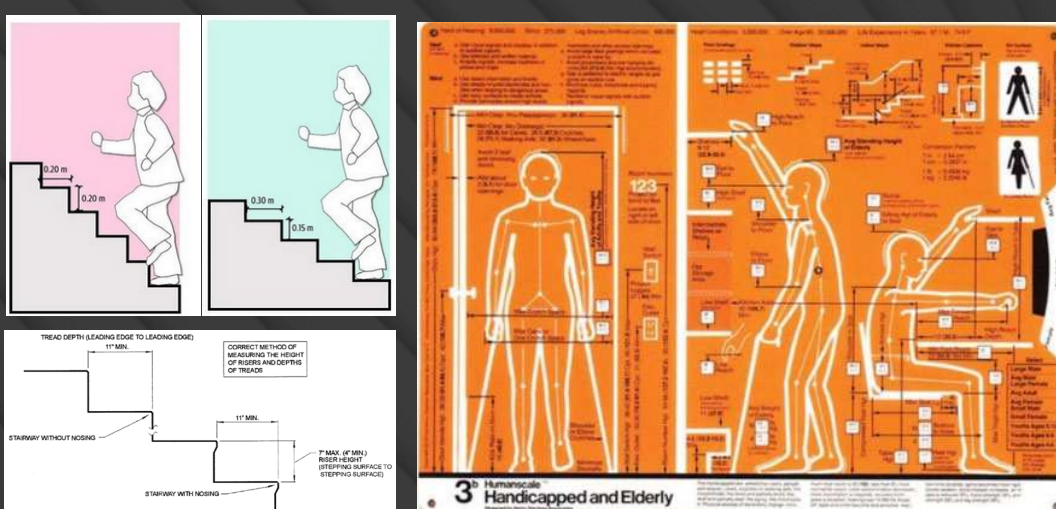
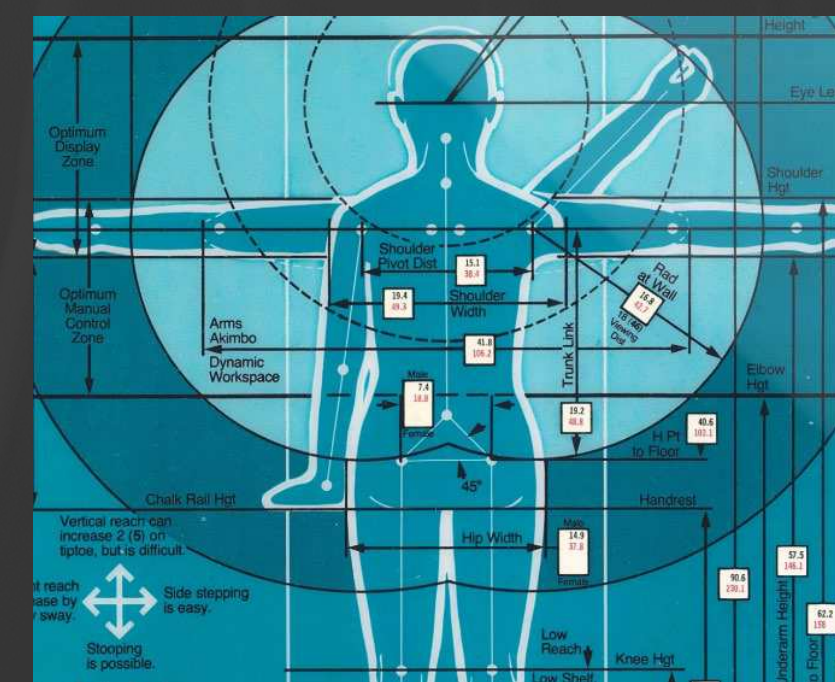
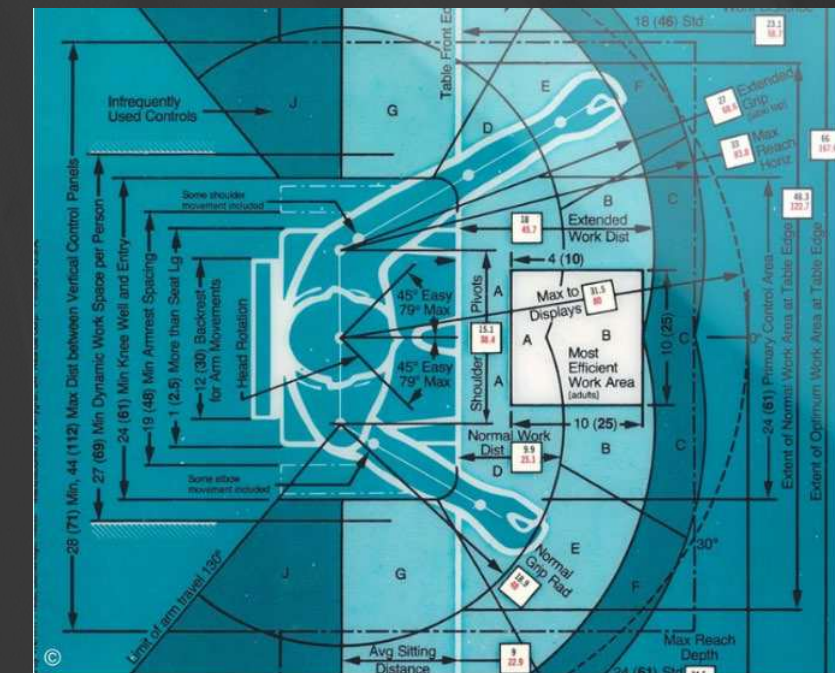
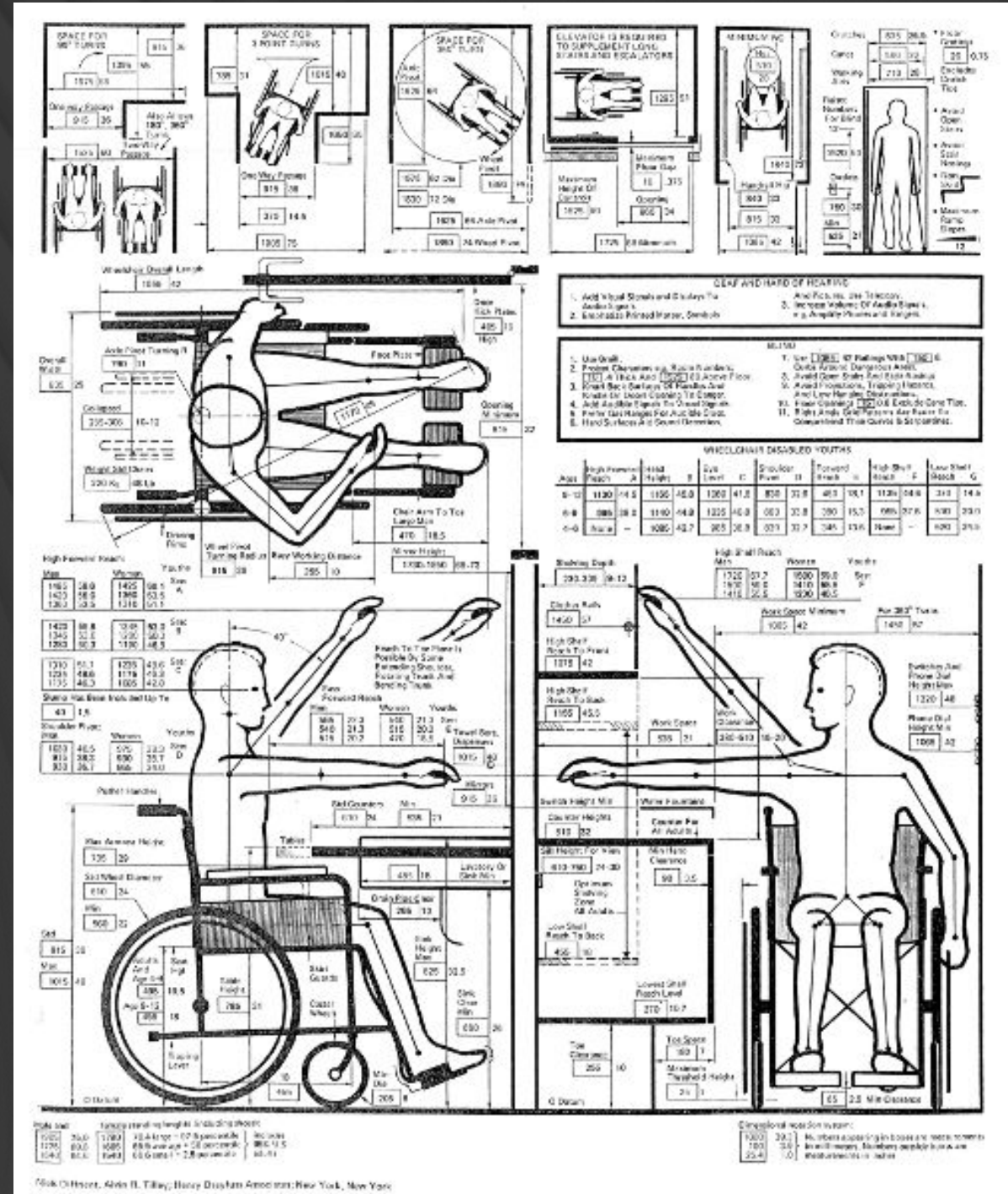
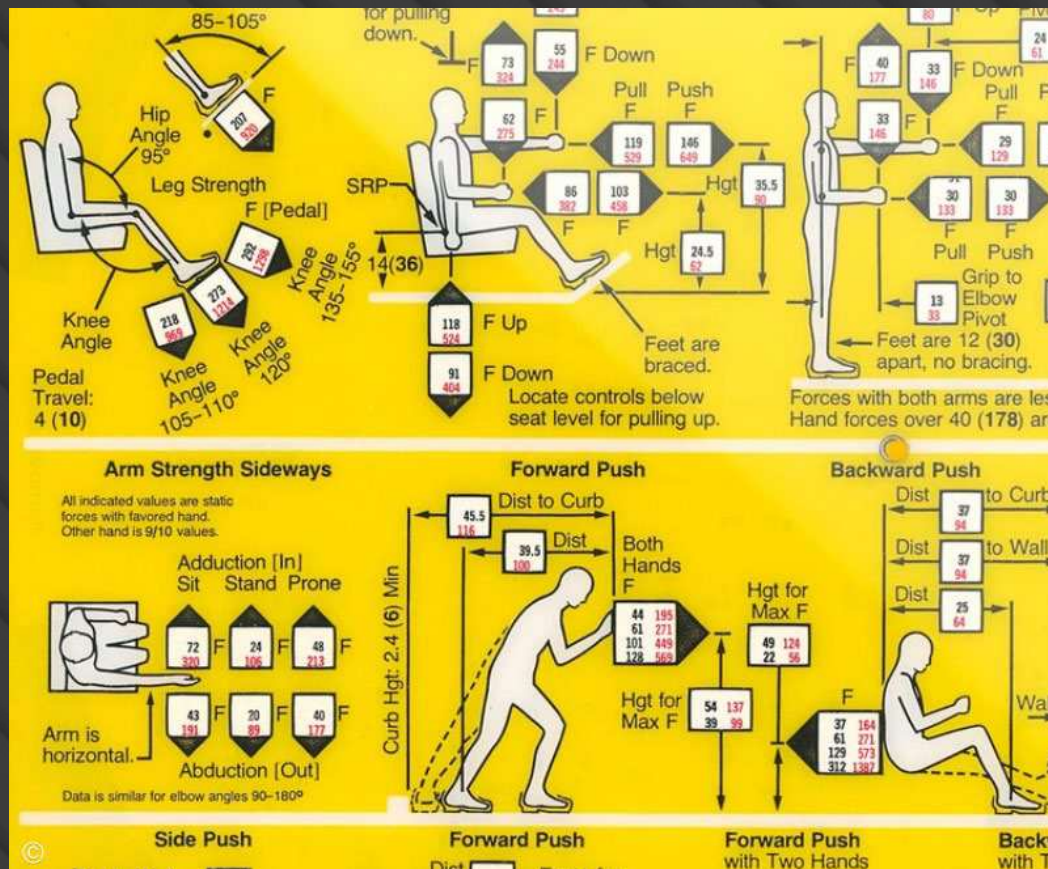
Driven by a comprehensive commercial strategy

A) Purpose-Driven

Develop aircraft use-cases to serve real-world needs.
Capabilities mainly dependent on size, volume, payload.

A) Purpose-Driven

Apply anthropometrics to assure best human-factors design



Volume Matters: Business Trip

Passenger 1

LUGGAGE

Carry-on & personal item
2.29 ft³



ADDITIONAL ITEMS

Coat, umbrella



Passenger 2

LUGGAGE

Carry-on & personal item
1.30 ft³



ADDITIONAL ITEMS

Coat



Passenger 3

LUGGAGE

Carry-on & personal item
2.23 ft³



ADDITIONAL ITEMS

Coat, umbrella



Passenger 4

LUGGAGE

Carry-on & personal item
2.23 ft³




ADDITIONAL ITEMS


Coat, umbrella



Volume Matters: **Ski Trip**




Passenger 1
LUGGAGE
 Checked items
 4.80 ft³
 Carry-on & personal item
 1.76 ft³
ADDITIONAL ITEMS
 Ski jacket

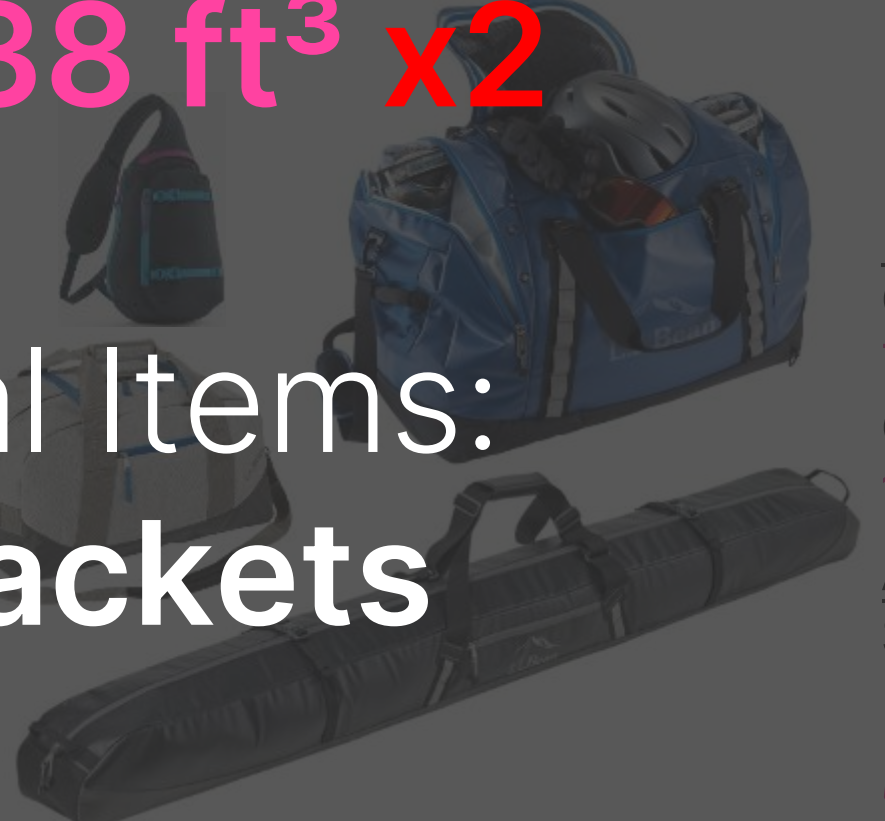


Passenger 2
LUGGAGE
 Checked items
 1.60 ft³
 Carry-on & personal item
 1.56 ft³
ADDITIONAL ITEMS
 Ski jacket

Total Passenger Luggage Volume:
checked: 19.56 ft³
carry-on: 5.82 ft³
total: 25.38 ft³ x2



Passenger 3
LUGGAGE
 Checked items
 4.98 ft³
 Carry-on
 1.44 ft³
ADDITIONAL ITEMS
 Ski jacket



Passenger 4
LUGGAGE
 Checked items
 7.88 ft³
 Carry-on & personal item
 1.06 ft³
ADDITIONAL ITEMS
 Ski jacket

Additional Items:
(4) ski jackets

Volume Matters: Family Overseas Trip

Passenger 1

LUGGAGE

Checked items

5.50 ft³

Carry-on & personal item

2.61 ft³

ADDITIONAL ITEMS

Coat



Passenger 2

LUGGAGE

Checked items

5.50 ft³

Carry-on & personal item

2.56 ft³

ADDITIONAL ITEMS

Coat



Total Passenger Luggage Volume:

checked: 18.44 ft³

carry-on: 9.27 ft³

total: 27.71 ft³ x2

Passenger 3

LUGGAGE

Checked items

4.25 ft³

Carry-on & personal item

2.53 ft³

ADDITIONAL ITEMS

Coat



Passenger 4

LUGGAGE

Checked items

3.19 ft³

Carry-on & personal item

1.57 ft³

ADDITIONAL ITEMS

Coat



Additional Items:

(4) coats

Volume Matters: **Golf Trip**

Passenger 1

LUGGAGE

Checked items

5.79 ft³

Carry-on & personal item

1.57 ft³

ADDITIONAL ITEMS

Jacket



Passenger 2

LUGGAGE

Checked items

8.98 m³

Carry-on & personal item

1.41 ft³

ADDITIONAL ITEMS

Jacket



Passenger 3

LUGGAGE

Checked items

5.90 ft³

Carry-on

1.41 ft³

ADDITIONAL ITEMS

Jacket



Passenger 4

LUGGAGE

Checked items

5.90 ft³

Carry-on & personal item

2.30 ft³

ADDITIONAL ITEMS

Jacket



Total Passenger Luggage Volume:

checked: 26.54 ft³

carry-on: 6.69 ft³

total: 33.23 ft³ x2

Additional Items:

(4) jackets

Size Matters

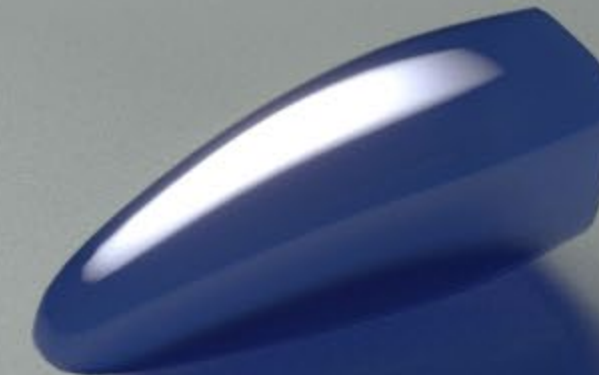
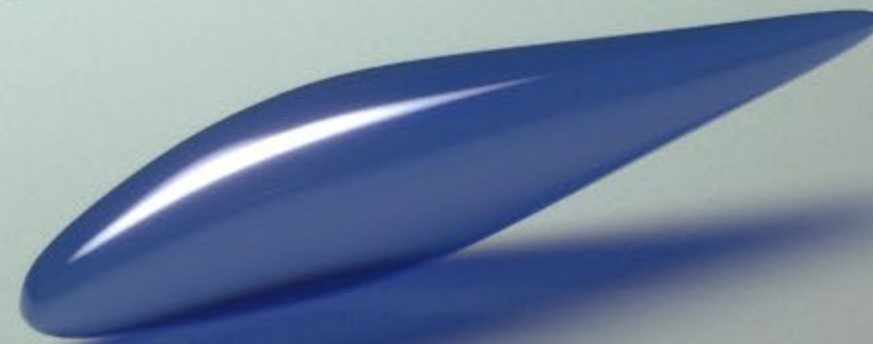
CUBIC FOOTAGE
281

FUSELAGE

BAGGAGE

176.04

CABIN



Size Matters

CUBIC FOOTAGE

530.94

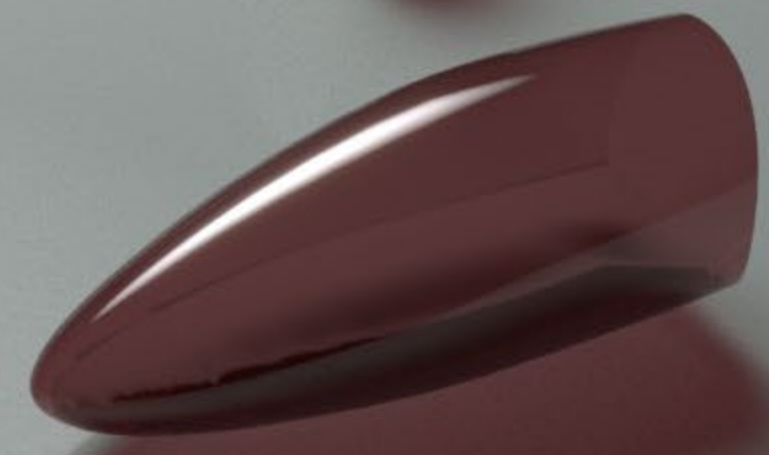
FUSELAGE

72.82

BAGGAGE

336.9

CABIN



Principle #2

Driven by a comprehensive commercial strategy

A) Purpose-Driven

Develop aircraft use-cases to serve real-world needs

B) Mission-Driven

Design different configurations now, certified for interior swaps

Anticipate the integration challenges with infrastructure

Strategize network of partnerships needed to achieve optimized mission goals

Air Taxi



Touring



Medivac



Industry (Offshore)



Military (Troop Transport)



Cargo



Principle #2

Driven by a comprehensive commercial strategy

A) Purpose-Driven

Develop aircraft use-cases to serve real-world needs

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Design different configurations now, certified for interior swaps

C) Data-Driven

Forecast demand and understand your audience

C) Data-Driven

Forecast demand with open-source & private market data



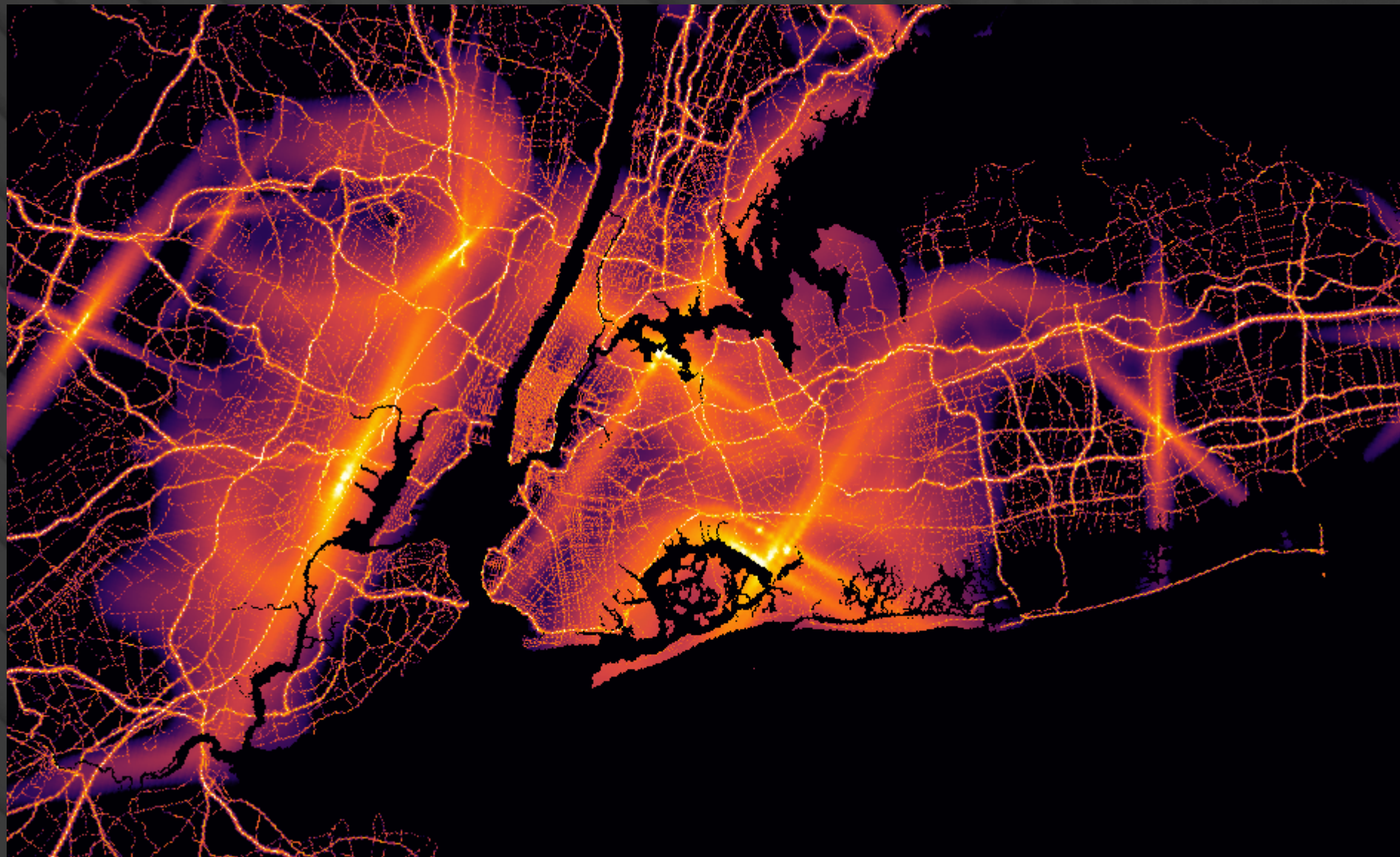
Market Intelligence Process:

- Establishing Available Infrastructure
- Plan for best possible missions & routes for all market / mission-profile opportunities

Esri, HERE | Federal Aviation Administration (FAA), National Transportation Atlas; Esri | Oak Ridge National Laboratory (ORNL); National Geospatial-Intelligence Agency (NGA) Homeland Security Infrastructure Program (HSIP) Team. | Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

C) Data-Driven

Forecast demand with open-source & private market data



Market Intelligence Process:

- **Establishing Available Infrastructure**
- **Plan for best possible missions & routes for all market / mission-profile opportunities**
- **Data Collection, Processing, Cleaning, & Visualization**
- **Data Analysis & Forecasting**
- **Insights: Identify & Address Most Promising Targets**

Esri, HERE | Federal Aviation Administration (FAA), National Transportation Atlas; Esri | Oak Ridge National Laboratory (ORNL); National Geospatial-Intelligence Agency (NGA) Homeland Security Infrastructure Program (HSIP) Team. | NYC OpenData, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

C) Data-Driven

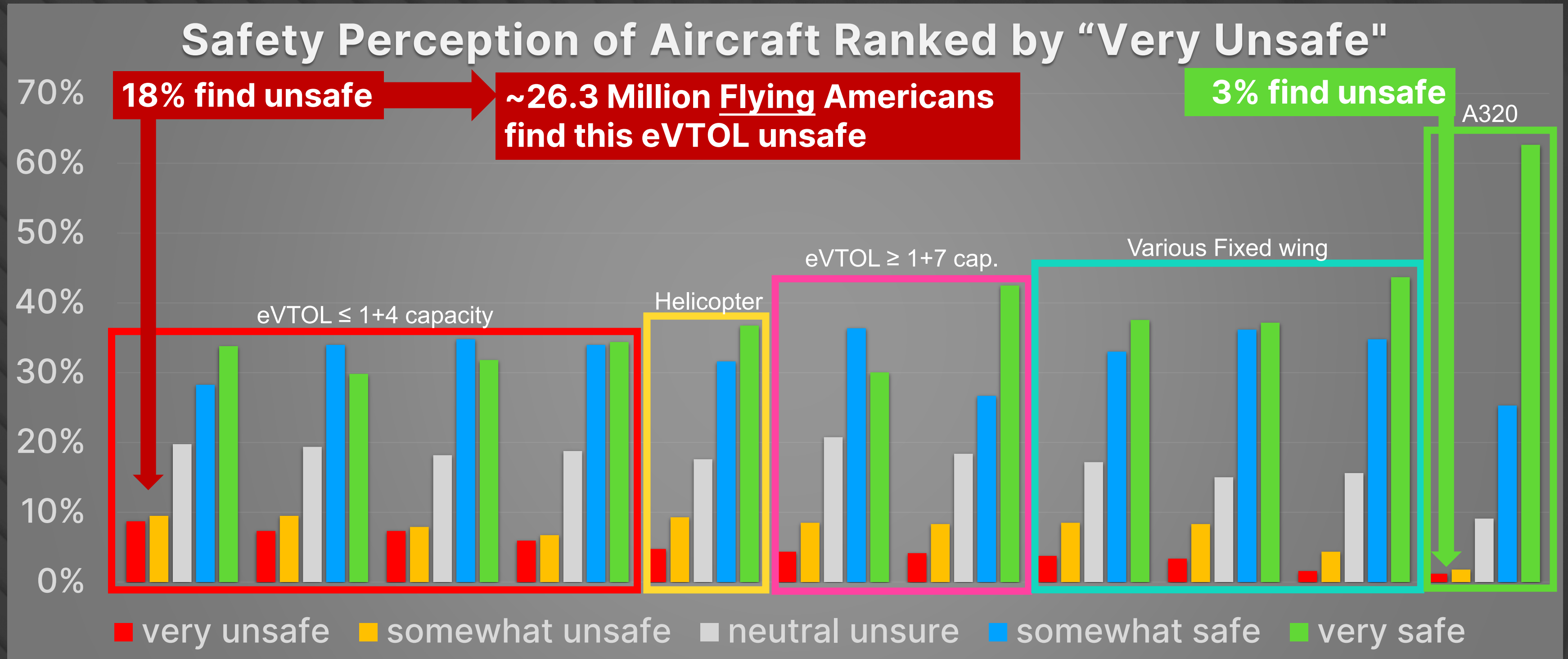
Understand your audience via quantifiable surveys

Conducted 3 studies with population $n > 500$ expanding existing body of eVTOL research:

- Aircraft Safety Perception
- Physical Safety & Psychological Comfort
- Points of Friction Tolerance

Next steps include development of Experience Acceptability Index & global study

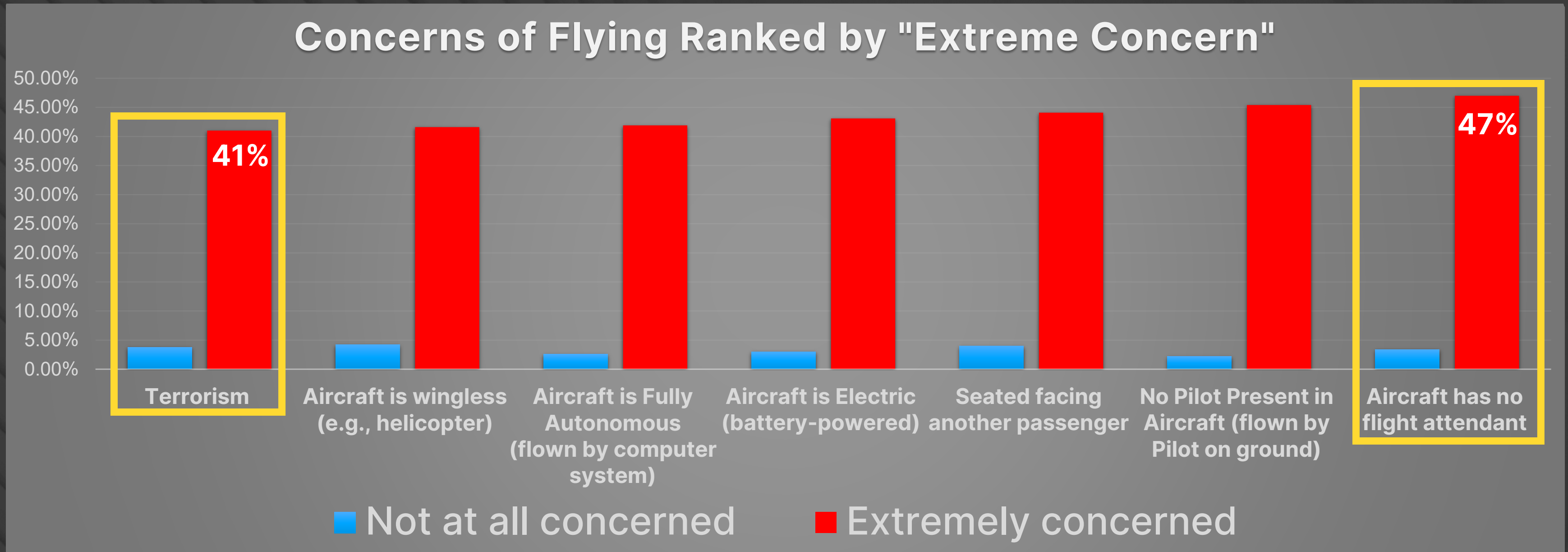
C) Data-Driven – On Perception of Safety



source: The Gilmore Group, "Public Perception & Acceptance of eVTOL" n=506, Confidence Level>90%, Margin of Error +/- 10%
 source: <https://www.airlines.org/dataset/air-travelers-in-america-annual-survey/>
 44% of Americans flew in 2022 is 146 million (pop. is approx. 332 million).

C) Data-Driven – On Physical Safety & Psychological Comfort

Flying Americans more concerned about “Aircraft Having No Flight Attendant” than “Terrorism”

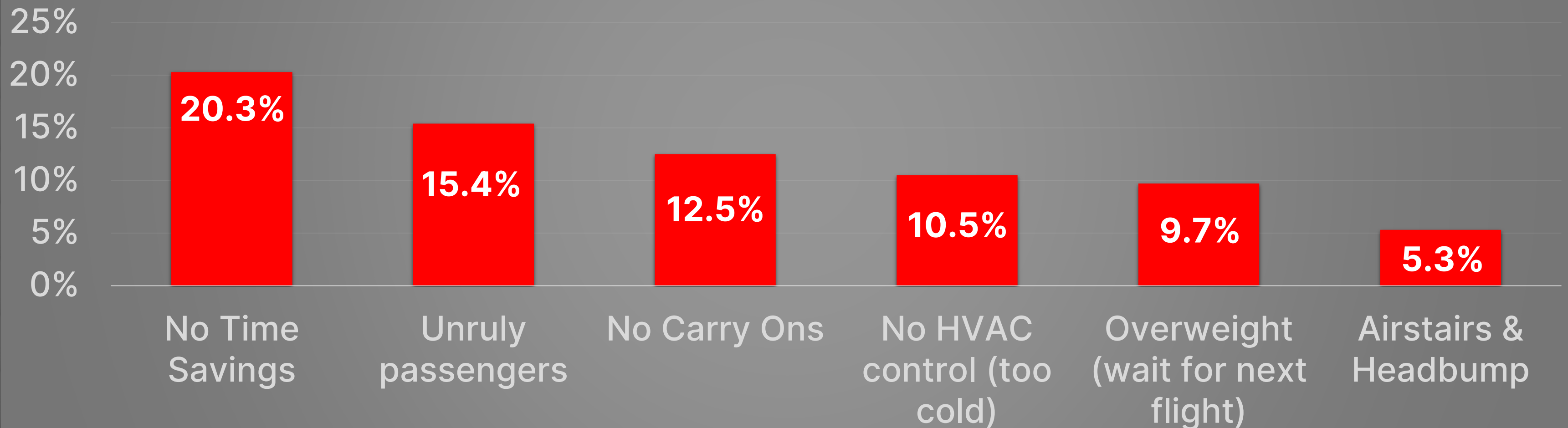


source: The Gilmore Group, “Public Acceptance of Flight Standards & Aviation Customer Experience” n=504, Confidence Level 90%, Margin of Error +/- 10%

C) Data-Driven – On Tolerance of Points of Friction

Overtime these numbers will increase exponentially if PoF not addressed

% U.S. Flyers Unlikely to Travel with Evtol Again after Point of Friction Experience



source: The Gilmore Group, "Tolerance of Points of Friction & Expectations in eVTOL" n=508, Confidence Level 90%, Margin of Error +/- 10%
source: <https://www.airlines.org/dataset/air-travelers-in-america-annual-survey/>
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Principle #2

Driven by a comprehensive commercial strategy

A) Purpose-Driven

B) Mission-Driven

C) Data-Driven

D) Experience- & Success-Driven

“Designing a flying machine is nothing; Building is something; Testing it is everything.”

- *Otto Lilientahl*

Know the pitfalls and successes, develop a commercially viable holistic offering

Principle #2

Driven by a comprehensive commercial strategy

“The success of any aircraft doesn't end with the delivery to the customer. It only just begins then – because if it doesn't succeed operationally, economically and reliably in the mission it was designed for, there won't be many more orders. So, the success of any aircraft is not decided by the aircraft manufacturer, but by the *customers who buy it.*” – Mike Hirschberg, VFS Executive Director

Or we would say, not just those who buy it but those who are the end-users!

“and if they can't compete and make money with this revenue generating asset, their business will fail.”

You might be thinking...

**Why focus on this when I still
need to certify my aircraft...**

**In our decades of aviation experience,
We would say use these principles now.**

Results will be right product for right mission, saving time & money:

- Not recertifying with every design change
- Not having to guess what will be a success
- Not leaving out consideration of all human wants and needs
- Being able to pivot when challenges affect your timelines

In closing...

What we don't do...

Aerodynamics, Propulsion...

In closing...

And what we do...

Human Experience Design

**Data-Driven Strategic Business
& Brand Development**

**Target Segment Integrated
Marketing**

Build Shareholder Value



**THANK
YOU!**



Reach out to us at
www.gilmoregroup.com/evtol-contact