Over 150 teams are building aerial taxis - so what’s the problem?
The Vision - 1962

Urban Aerial Mobility

10 - 100+ km
Vehicle Concepts

<table>
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<tr>
<th>Single Phase</th>
<th>Dual Phase</th>
<th>Transition Phase</th>
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<td>![Single Phase Icon]</td>
<td>![Dual Phase Icon]</td>
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</table>

- **Range**: 
  - Single Phase: 
  - Dual Phase: 
  - Transition Phase: 

- **Speed**: 
  - Single Phase: 
  - Dual Phase: 
  - Transition Phase: 

- **Simplicity**: 
  - Single Phase: 
  - Dual Phase: 
  - Transition Phase: 

Reference: “The Future of Vertical Mobility”, Porsche Consulting Group
Challenges
First Challenge: Public Acceptance
Too loud

Too expensive
Opportunity: Market Need
Second Challenge: Operating Complexity
Highly Complex Systems

Limited **Space**

Limited **Weight**

Limited **Cost**
Opportunity: Automated Driving

Source: https://www.tesla.com/de_DE/autopilot
Source: https://electrek.co/2018/10/15/tesla-new-autopilot-neural-net-v9/
Third Challenge: Electric Propulsion
Batteries

Power Electronics
Opportunity: Electric Mobility

- Modern High Power Semiconductors
- Battery Capacities
- Electric Motors
Electric Motor vs. Combustion Engine

**Electric Motor with 42 kW**
- ~95 % Efficiency
- 20 kg
- ~ 250 Parts
- Low Costs

**42 kW Combustion Engine**
- ~30 % Efficiency
- 85 kg
- ~ 2500 Parts
- High Costs
Fourth Challenge: Flight Control System
Safety and Reliability

- Size
- Weight
- Cost
Opportunity: Development Methods

Model-based Development

Certified Toolchain
Opportunity: Computing Power

- Apollo 11 Guidance Computer (1966): 5.6k transistors
- Atmega 328 (Arduino): 42k transistors
- Apple A12 Bionic: 6.9bn transistors

Number of Transistors
AutoFlightX V600
02/2018 Founding of AutoFlightX
05/2018 Project start of the V600
04/2019 Unveiling of V600
Summer 2019 First fixed-wing flight
Later First manned transition
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<tr>
<td>Electric Propulsion</td>
<td>Semiconductors / Batteries / Motors</td>
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