

An aerial night view of a complex multi-level highway interchange in a city. The roads are filled with cars, their headlights and taillights creating a flow of light. In the background, a dense skyline of skyscrapers is visible, many with their lights on, suggesting a major metropolitan area like Dubai. The sky is a deep twilight blue.

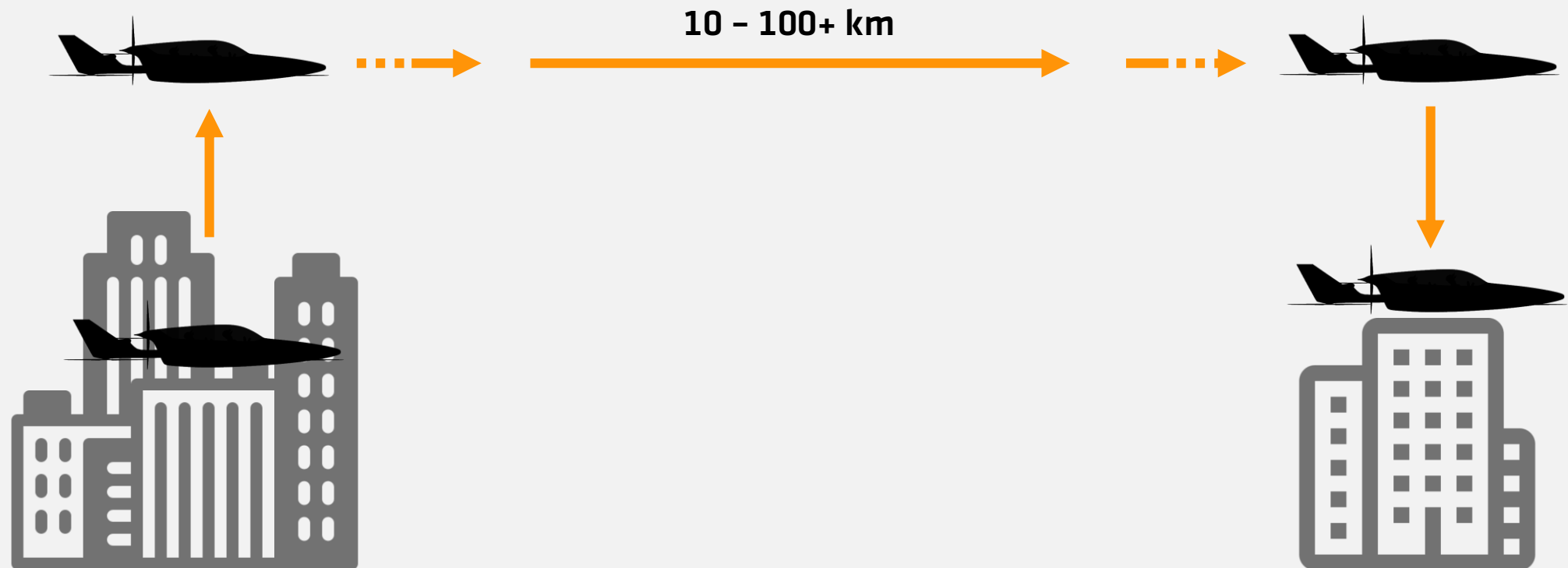
AutoflightX

**Over 150 teams are building aerial taxis –
so what's the problem?**

The Vision - 1962



Urban Aerial Mobility



Vehicle Concepts

Single Phase



Dual Phase



Transition Phase



Challenges



First Challenge: Public Acceptance





Too loud



Too expensive

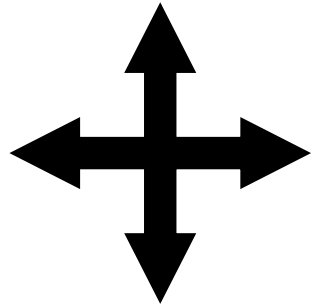
Opportunity: Market Need



Second Challenge: Operating Complexity



Highly Complex Systems



Limited Space

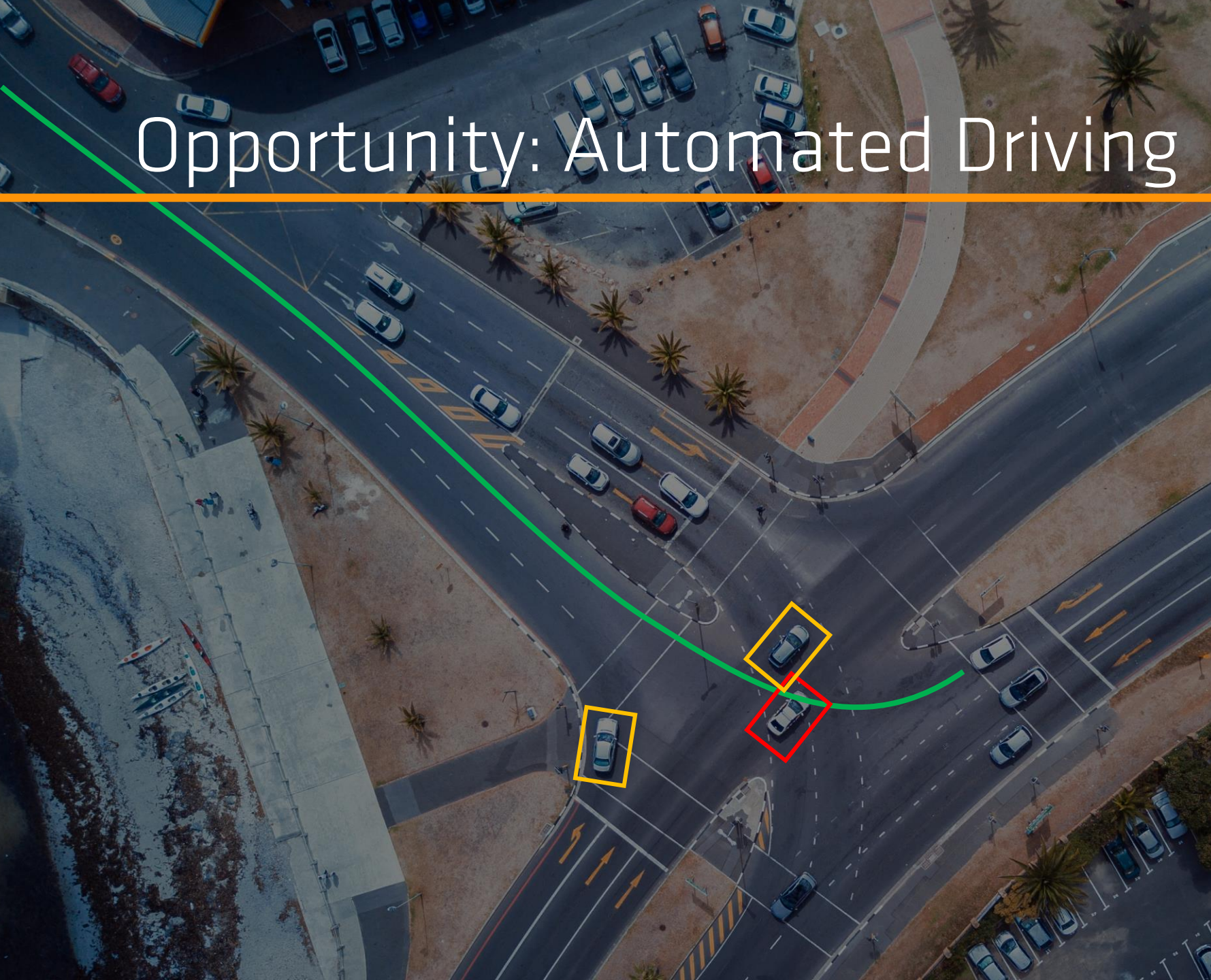


Limited Weight

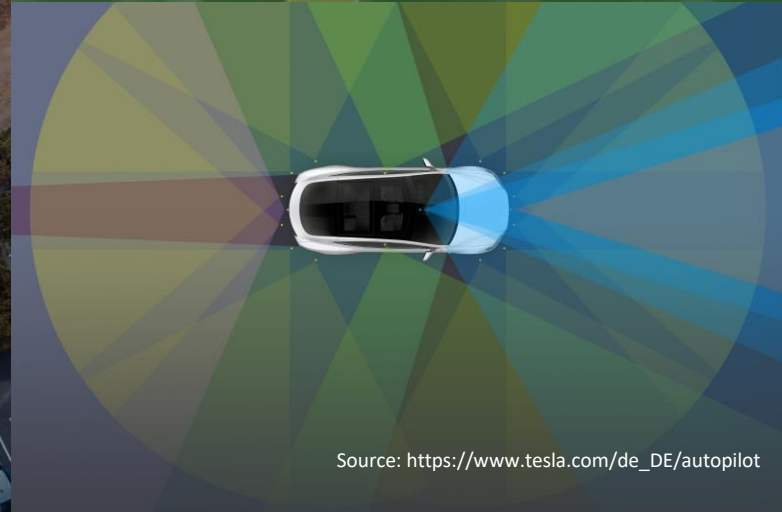


Limited Cost

Opportunity: Automated Driving



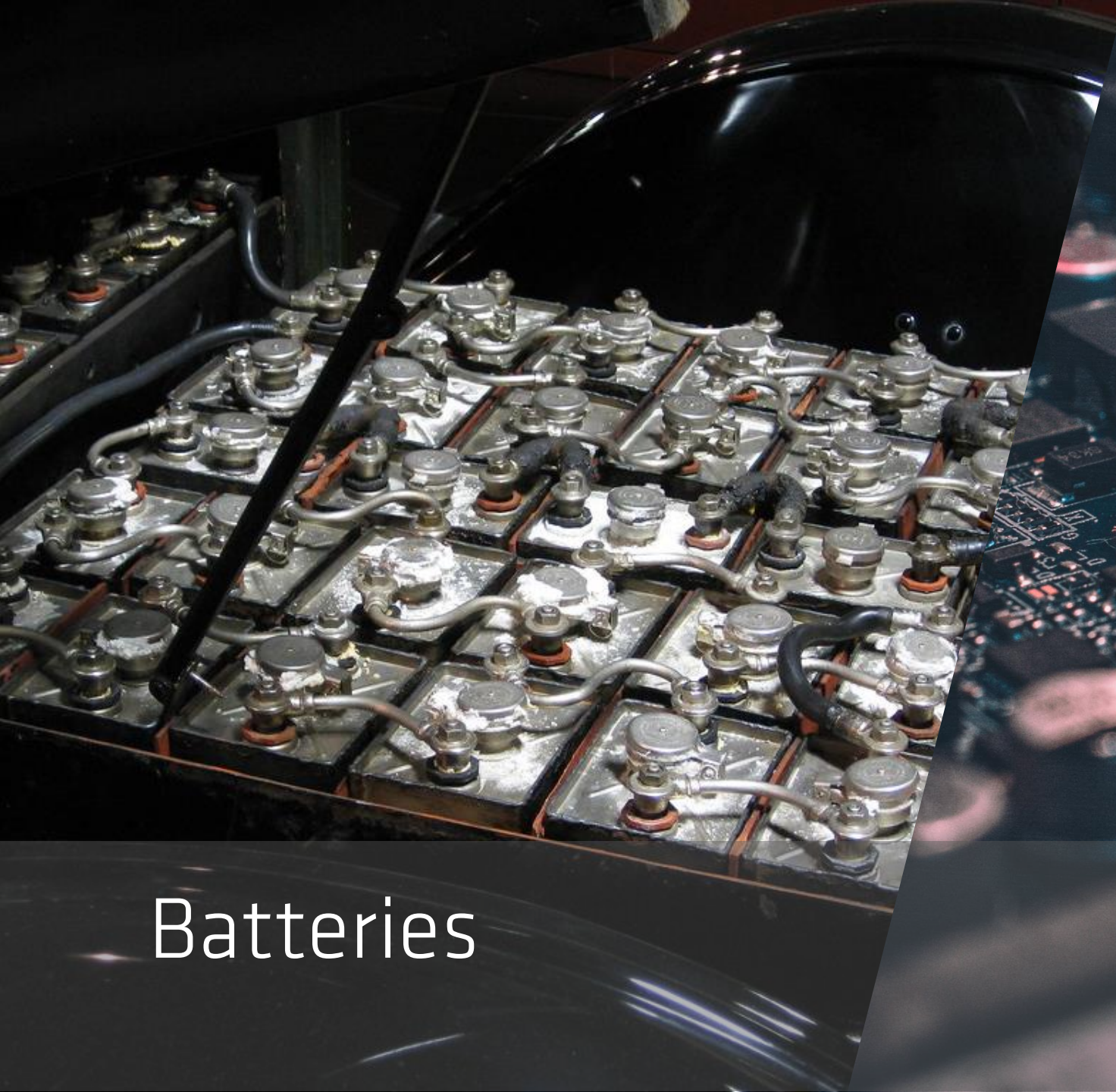
Source: <https://electrek.co/2018/10/15/tesla-new-autopilot-neural-net-v9/>



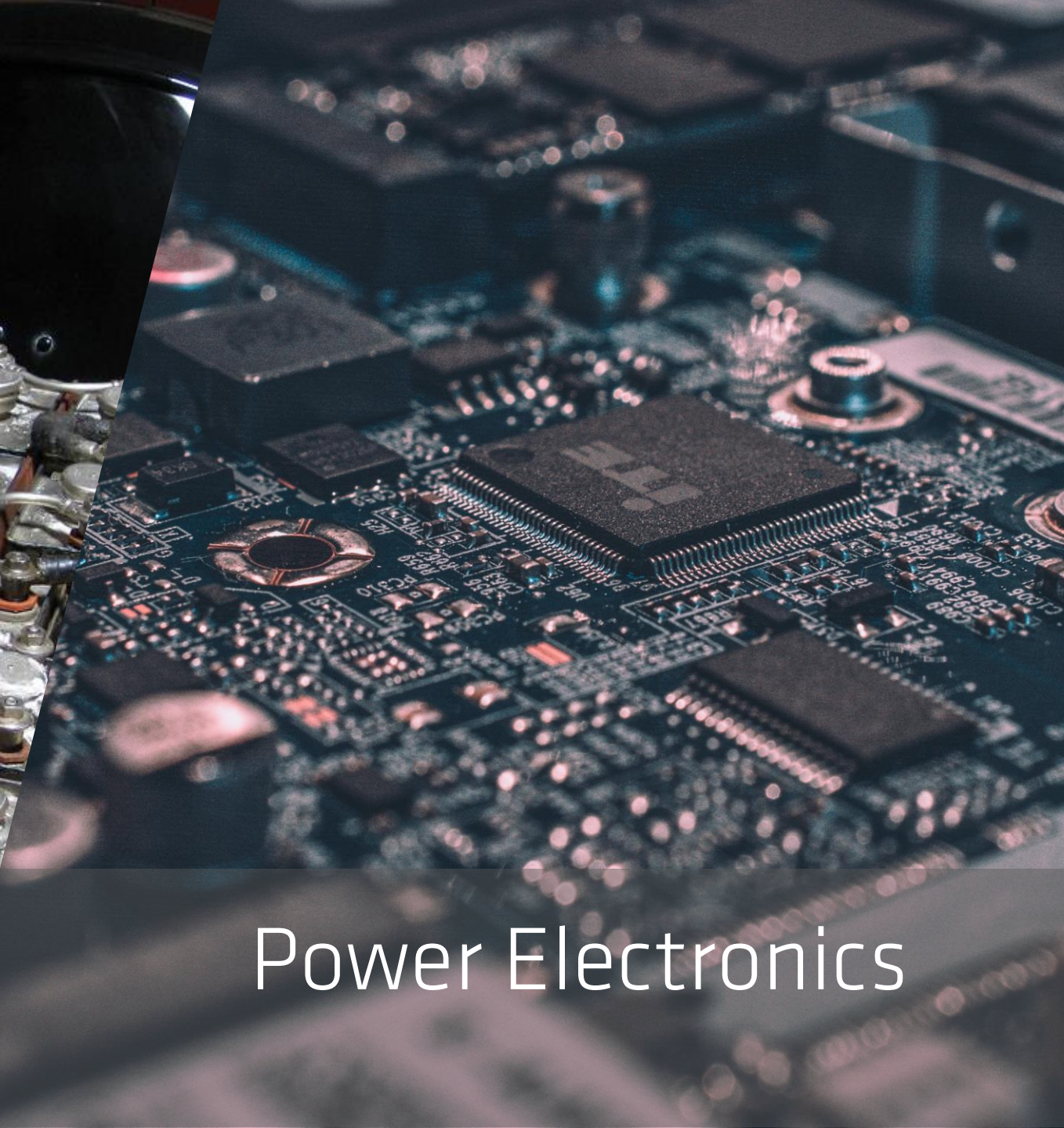
Source: https://www.tesla.com/de_DE/autopilot

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



42 kW **Combustion Engine**

~95 % Efficiency



~30 % Efficiency

20 kg



85 kg

~ 250 Parts



~ 2500 Parts

Low Costs



High Costs

Fourth Challenge: Flight Control System



CONTROL ASSY 2453A03
DTD NO. 2
VARI 2 R/T
28 VDC

ADAPTER 1711
SERIAL NO. 10000
CONTRACT NO. 10000
REV. 10000
10000

J103

J104

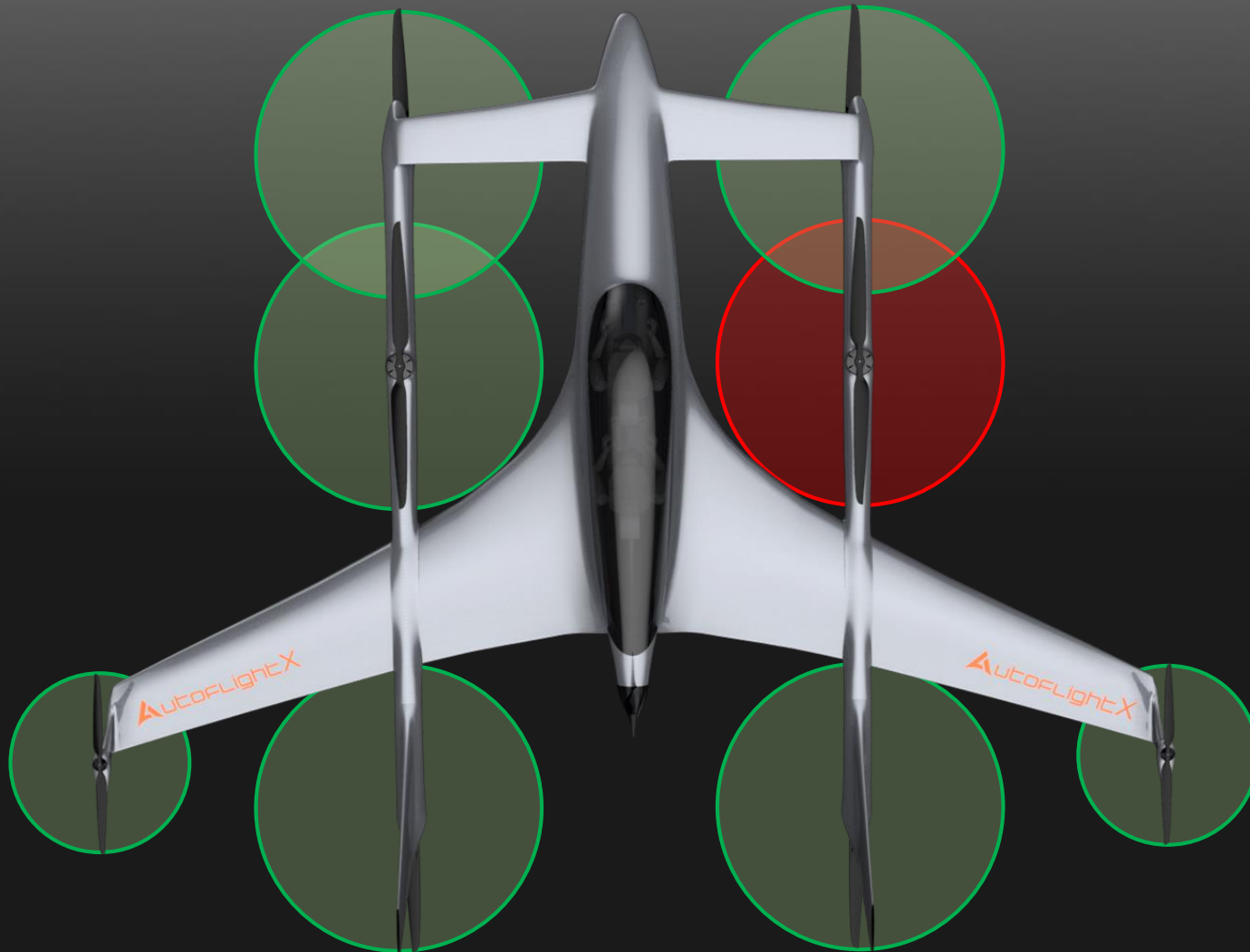
REMOVE LAST

CONTROL ASSY 2453A03
DTD NO. 2
VARI 2 R/T
28 VDC

J104

J105

Safety and Reliability



Size

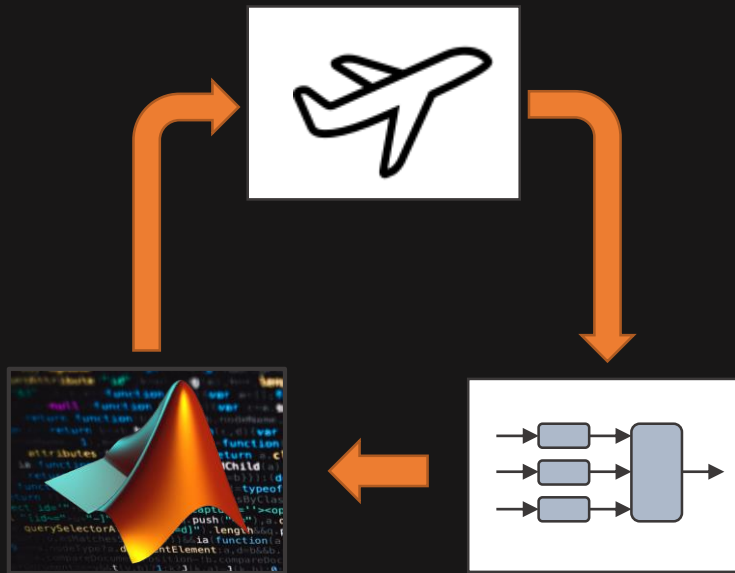


Weight

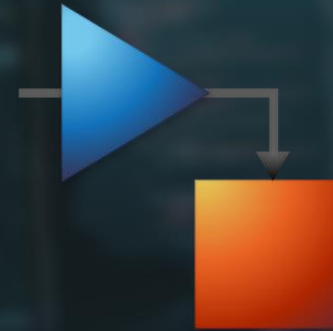


Cost

Opportunity: Development Methods



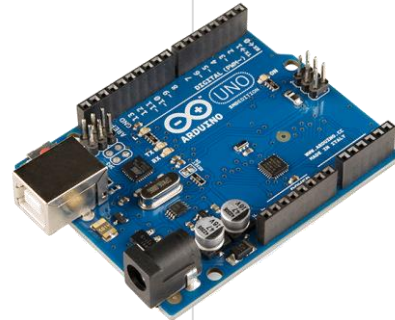
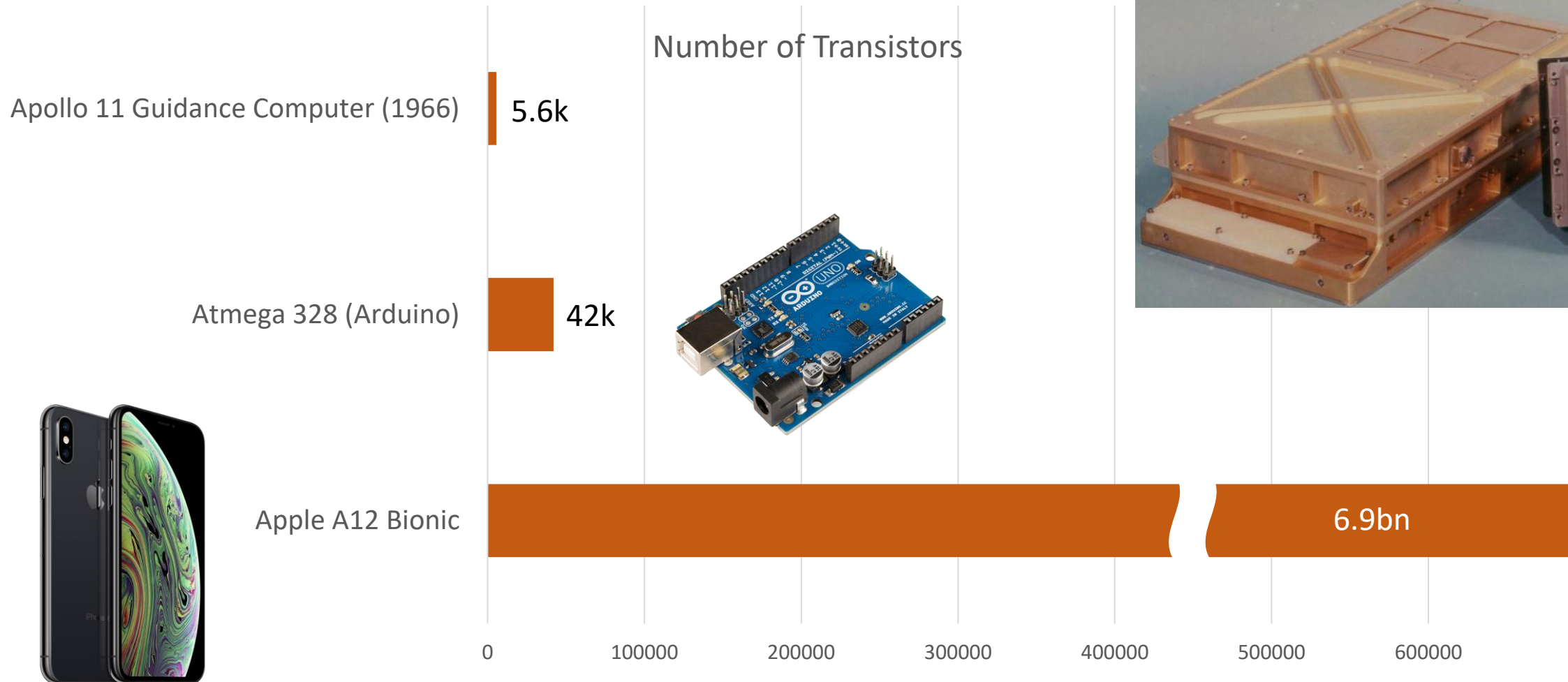
Model-based Development



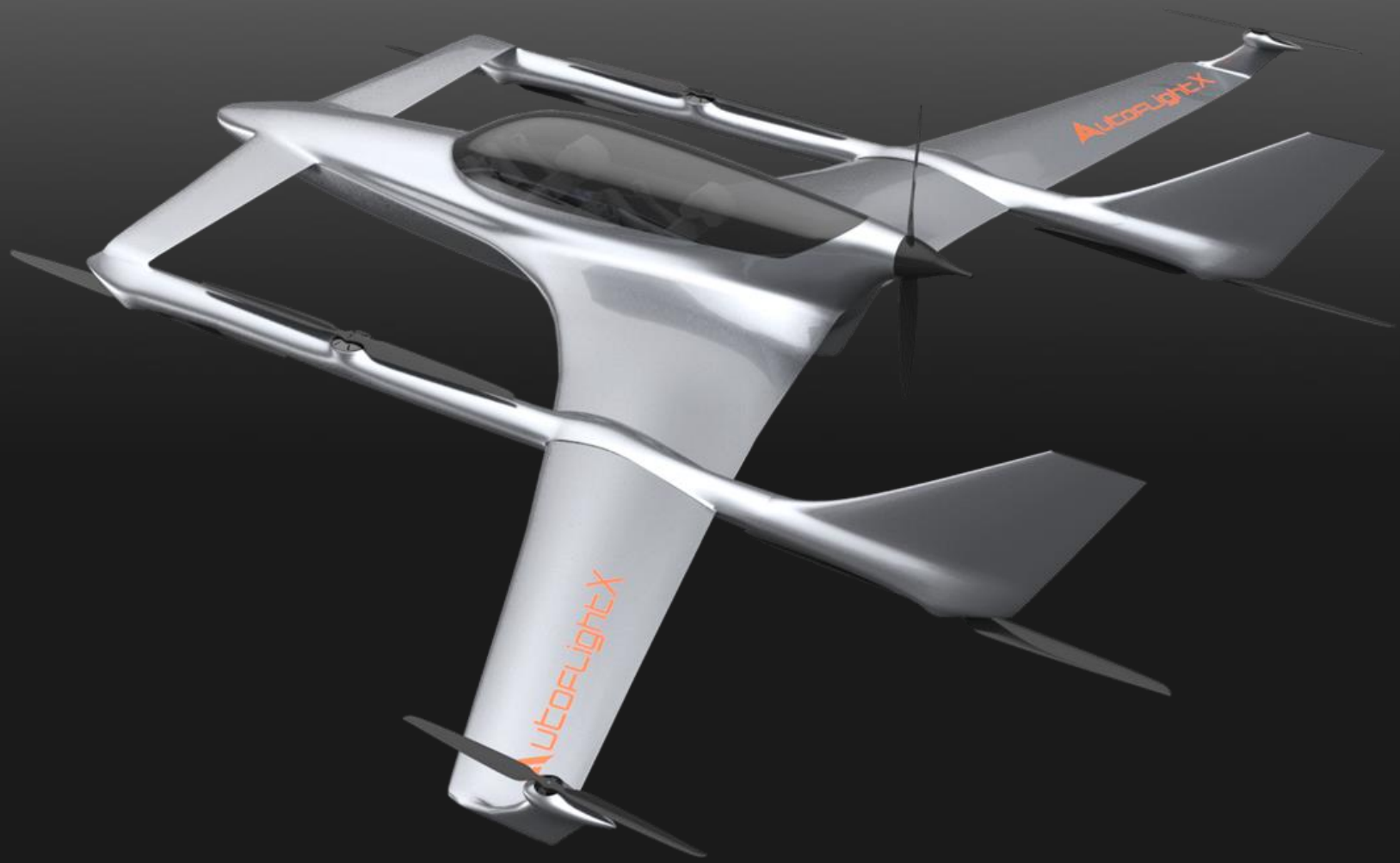
Certified Toolchain



Opportunity: Computing Power



AutoFlightX V600





02/2018
Founding of
AutoFlightX

04/2019
Unveiling of
V600

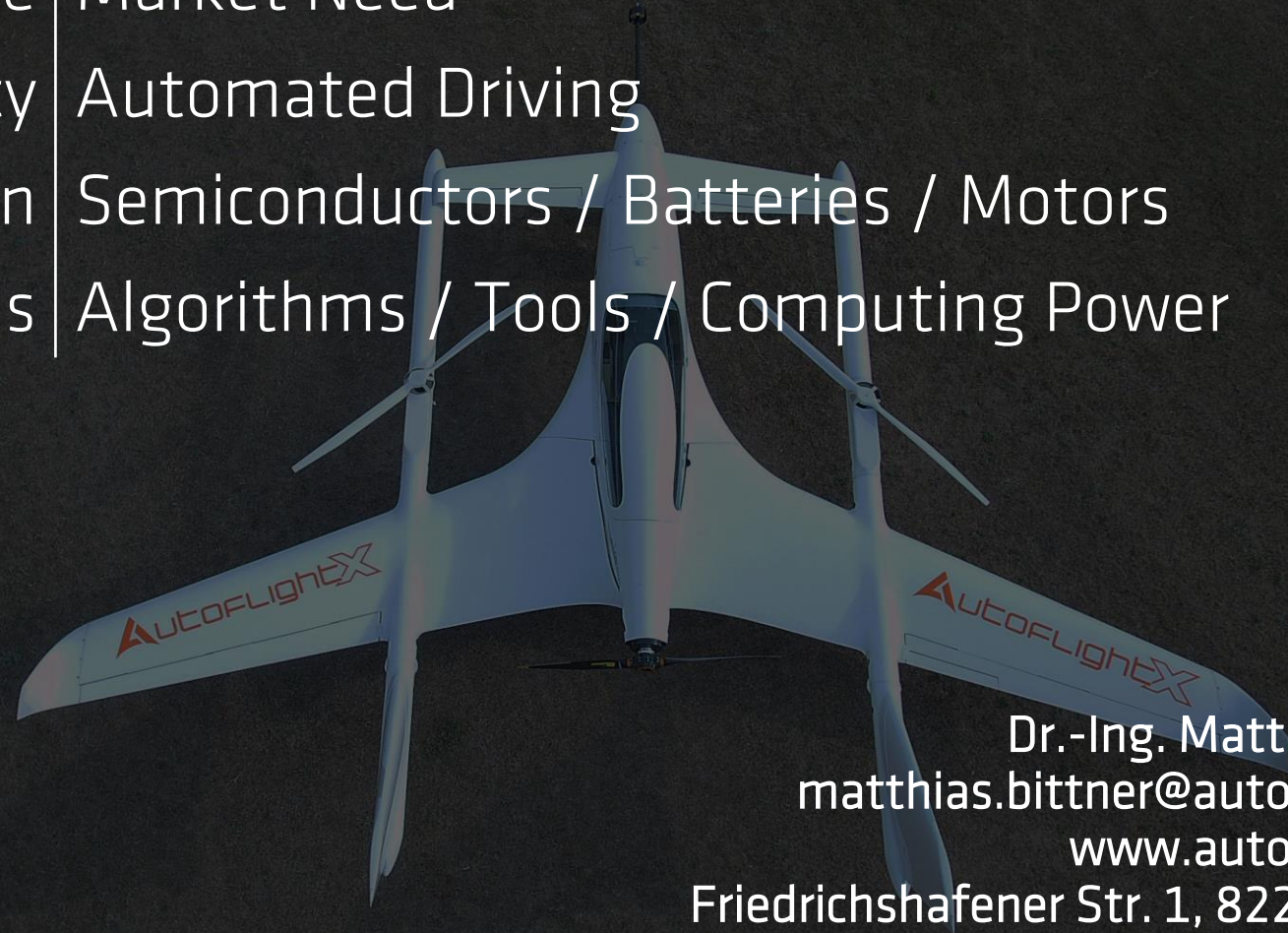
05/2018
Project start
of the V600

Summer 2019
First fixed-wing
flight

Later
First manned
transition



Challenge	Opportunity
Public Acceptance	Market Need
Operating Complexity	Automated Driving
Electric Propulsion	Semiconductors / Batteries / Motors
Flight Control Systems	Algorithms / Tools / Computing Power



Dr.-Ing. Matthias Bittner
matthias.bittner@autoflightx.com
www.autoflightx.com
Friedrichshafener Str. 1, 82205 Gilching