
# A comprehensive overview of global start-ups for Advanced Air Mobility (AAM)

Christian Scheidler | www.ev-portal.net

Advanced Automotive Battery Conference 2026 Europe

Mainz May 19 – 21.

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# AAM – Advanced Air Mobility

## NASA definition

- *"**Safe**, **sustainable**, ... **aviation** for ... **local** and **intra-regional missions**"*
- Focus on **short distances** in urban and rural areas
  - Local: up to 75 miles (~120 km)
  - Regional: up to 500 miles (~800 km)
- **Low altitudes** up to 3000 meters

## Missions

- Passenger transport
- Cargo transport
- Emergency Operations
- Aerial work: photography, fire fighting, etc.


**A Proposed Taxonomy for Advanced Air Mobility**

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There has been a large growth in interest of utilizing new technologies—most notably electrified propulsion and automation—as well as new business models to bring aviation services into the daily lives of a greater segment of society. Generally, these services are envisioned to augment existing ground modes of transportation or to enable new operating capabilities for shorter-range aviation missions. These services, which have become known as advanced air mobility (AAM), include passenger transportation, cargo transportation, and aerial work missions, such as aerial photography. In this paper we describe advanced air mobility and provide a framework based on demand and supply concepts that can be used for developing a taxonomy for AAM with a focus on passenger applications. This taxonomy is intended to facilitate the nascent AAM stakeholder community in adopting a common terminology and to enable better coordination among disparate AAM research and development activities.


**I. Introduction**

In recent years there has been a growing interest in regularly transporting passengers and cargo in small aircraft over distances that have historically been served by ground transportation modes. Although the general concept of flying a small aircraft for transportation is not new, over approximately the past decade there have been advancements in technologies and societal changes that may make these operations become a practical part of the average person's typical experience. Notably, the convergence of new technologies, such as electric propulsion and autonomy, as well as new business models, such as mobile application-based ride sharing and network-enabled on-demand services, are generating the potential for new aviation markets to emerge. These new aviation markets are becoming collectively known as advanced air mobility (AAM).

AAM aims to reinvent the idea of air travel. While the current commercial air transportation system is distinct from other modes of transportation because it has a monopoly on long-distance, high-speed journeys, AAM systems

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1

https://ntrs.nasa.gov/api/citations/20220006225/downloads/Aviation2022_AAM_Taxonomy_Final.pdf


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Wildfire Fighting Operations
On Demand Air-Taxi
Rural Operations
Urban Operations
Regional Network
Inter-City eC/STOL
Inter-City eVTOL
Cargo Delivery
Airport Transfer
Cargo Delivery
Air Ambulance
Distribution Center/Warehouse
High Density Corridor
Medical Supply Delivery
Fleet Operations
Inter-city eCTOL
Small Package Delivery
Cross-metro Transfer

Source: NASA

# AAM – eVTOL Taxonomy

## eVTOL

### Wing*less*

+ Hight Agility
– Short Range

Source: Volocopter

**Volocopter**: Vertical rotors

### Wing*based*

+ Medium Range
– Medium Agility

+ Simple Tech

Source: Autoflight

**Autoflight**: Vertical & horizontal rotors

+ High Speed

Source: Joby

**Joby**: Tilting rotors

Source: Archer

**Archer**: Vertical & tilting rotors

# AAM – Aircraft Properties

*Including Pilot

eVTOL – electric Vertical Takeoff and Landing
eCTOL – electric Conventional Takeoff and Landing
eSTOL – electric Short Takeoff and Landing

VFR – Visual Flight Regulation
IFR – Instrument Flight Regulation

EV-Portal.net

| Type | Multicopter | Wingbased eVTOL | | | E-Plane |
|---|---|---|---|---|---|
| **Propeller Configuration** | Vertical rotors, wingless | Horizontal and vertical rotors | Vertical and tilting rotors | Tilting rotors | Horizontal rotors, BEV or hybrid powertrain |
| **Takeoff / Landing** | eVTOL | eVTOL | eVTOL | eVTOL | eCTOL, eSTOL |
| **Agility** | +++ Very high | ++ High | + Medium | + Medium | 0 Normal |
| **Capacity** [#Passengers] | 2 - 3* | 4 - 6* | 4 - 6* | 4 - 6* | 4 - 30 |
| **Range** | ~50 km | ~200 km | ~200 km | ~200 km range | ~400 to 800 km |
| **Flight Regulation** | VFR | VFR + IFR | VFR + IFR | VFR + IFR | IFR |
| **Manufacturer** | Ehang, SkyDrive, Volocopter  | Airbus, Autoflight, Beta Tech., ERC, EVE Air, Horizon Air, Jaunt Air  | Archer Aviation, Vertical Aero, Wisk Aero  | Joby Aviation, Supernal Aero  | Beta Tech., Electra, Heart Aero., Vaerdion  |
| **Roots** | Toy drones  | Helicopter/Plane  | V-22 Osprey  | V-22 Osprey  | Plane  |

# AAM Business Cases – Urban Missions

**Sao Paulo**
Capital of urban aviation
Home market **Eve Air**

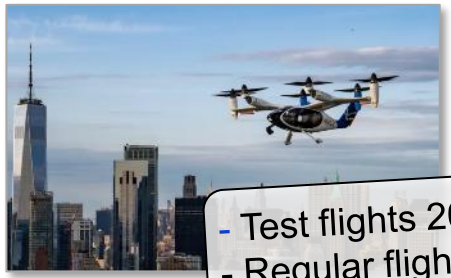
- Helicopter flight every 45s
- Over 260 helipads
- 430 helicopters licensed

Urban aviation in **New York** ...

… 1967 by Pan Am

Source: John Atherton, via Wikimedia Commons, CC BY-SA 2.0

… 2026 by **Joby Aviation**



Source: Joby Aviation

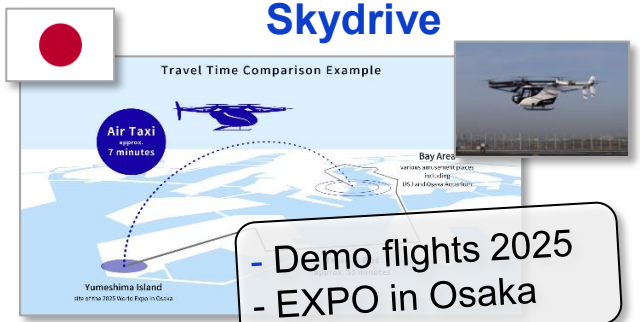
- Test flights 2026
- Regular flights 2027

**Dubai**


- April 17th, 2026

Source: timeoutdubai

**Skydrive**




- Demo flights 2025
- EXPO in Osaka

Source: Skydrive

**Archer Aviation**


- Launch planned for 2028
- Olympics in LA

Source: Archer Aviation

**Volocopter**

- Over 2500 test flights worldwide
- Singapore, Saudi Arabian, China, France, USA, etc.
- Most widely flown multicopter

Source: Volocopter

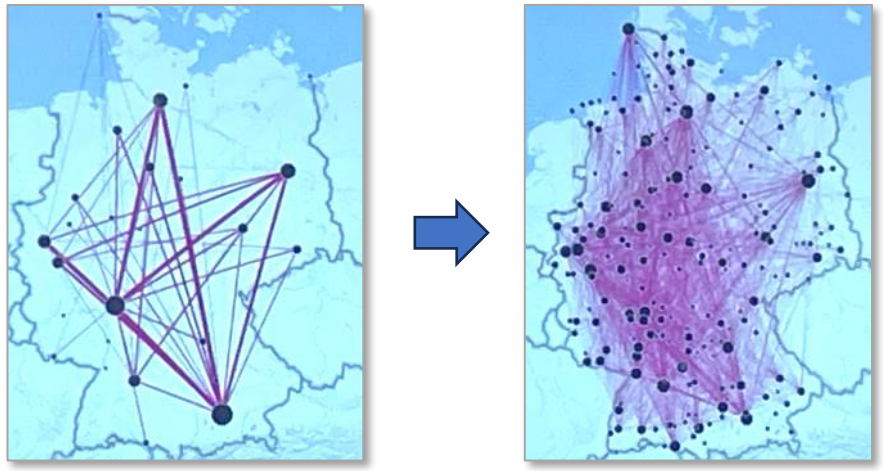
# AAM Business Cases – Regional Missions

## AAM start-up Vaeridion

- Regional transport as use-case
  - Rural regions badly connected
  - ~80% of people in Germany live within 20 km of an airfield
- E-plane with 9 passenger seats for ~400 km range
  - Replacement of turboprop's – 19,000 in operation globally
  - Supplementation of helicopter services

**Today**
**24 airports –**
**55 connections**

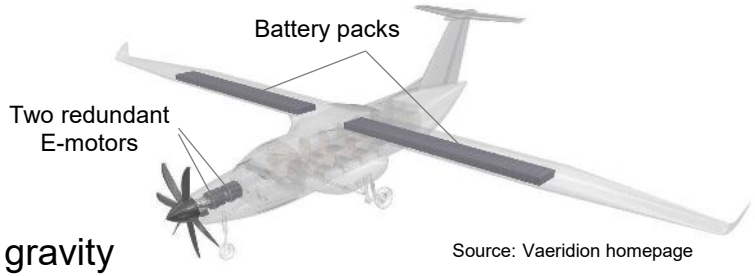
**Tomorrow**
**209 airports –**
**2087 connections**



Source: Vaeridion presentation at German eVTOL Forum 2024

## Battery system

- Li-Io cells from Molicel
- Battery pack in the wings
  - Optimal with respect to center of gravity
  - Challenging with respect to safety/thermal runaway
- Battery lifetime expected to be one year




Source: Vaeridion homepage

**19,000 passengers in 2030**


COPENHAGEN HELICOPTER

Source: Vaeridion presentation at German eVTOL Forum 2024

# AAM Business Cases – Emergency Missions

## Volocopter with ADAC Air Rescue


Source: ADAC Homepage

### Use case

- Transport **emergency physician** to accident location
  - First aid at accident location
  - At 60%, the **most common use** for rescue helicopters*
- Blood/Organ transport Hospital2Hospital

*Source: Presentation ADAC Air Rescue 2024 eVTOL Forum Germany

## ERC System


Source: ERC System Homepage

### Use case

- Transport **injured patient** in supine position to hospital
  - eVTOL specially designed for this use case
  - Consultation with physicians on medical equipment
- Up to 70% lower operation cost than helicopter**

**Source: ERC System Homepage

# AAM Business Cases – Tourism

Source: Booking.com

Source: Getyourguide.com

## Tourism as an economic factor

- Nearly $850 billion in global revenue in 2024
- *"The global ... tourism market is experiencing ... a trend toward … protection of the environment …"*


Source: Ehang

## AAM potential in tourism

- Sightseeing flights at tourist hot spots
- Additional areas of application
  - Ecotourism, e.g., safaris, whale watching
  - Sports, e.g., eVTOL skiing
  - Leisure events, e.g., music festivals
  - ...

Source: www.bwana.de

Source: Getyourguide.com

*https://de.statista.com/outlook/mmo/reisen-tourismus/weltweit

# AAM Manufactures – Preorders, Partners and Suppliers

| Manufacturer | Country | Pre-orders | Investors, Partners | Suppliers | Type |
|---|---|---|---|---|---|
| **Eve Air Mobility** |  | 2,850 | Embraer, United Airlines, SkyWest Airlines, Helisul Aviation | BAe Systems, Diehl Aviation, Honeywell | Wing-based eVTOL |
| **Vertical Aerospace** |  | 1,500 | American Airlines, Japan Airlines, | Dassault, GKN Aerospace, Honeywell, Molicel | Wing-based eVTOL |
| **Archer Aviation** |  | 1,300 | United Airlines, Stellantis | Honeywell, Toray | Wing-based eVTOL |
| **Ehang** |  | 1,200 | JAC Motors, CCIT | JAC Motors | Multicopter |
| **Autoflight** |  | 1,100 | CATL, NIO Capital, GIC | CATL | Wing-based eVTOL |
| **Beta Technologies** |  | 890 | UPS, Amazon (Climate Fund), BLADE Urban Air Mobility | Garmin, Cuberg | Wing-based eVTOL & cTOL |
| **Joby Aviation** |  | unknown | Delta Airlines, Toyota | Garmin, Honeywell, Toray, Toyota | Wing-based eVTOL |
| **Volocopter** |  | Unknown | Diamond Aircraft, Wangfeng | Diehl Aviation | Multicopter |

# AAM – Li-Io Cell, Module & TMS

## Li-Io Cells

- **Molicel:** Archer Aviation, Vertical Aerospace, Vaeridion
- **CATL:** Autoflight
- **Gotion:** Ehang
- **Automotive pouch cell supplier:** Joby

Source: Molicel

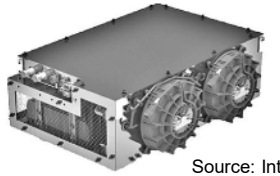

## Modules & Packs

- **BAe Systems:** Eve Air, Heart Aerospace
- **EP Systems:** Skydrive, Supernal
- **In-house:** Joby

Source: EP Systems

## Thermal Management System (TMS)

- **Honeywell:** Archer Aviation
- **Intergalactic:** Eve Air
- **In-house:** Beta Technologies, Joby, Vertical Aerospace



Source: Intergalactic

Source: Beta Technologies

## Beta Technologies

- Inhouse on- and off-board energy system
- 5 Modules á **45 kWh**, 255 kg → ~176 Wh/kg
  - **255 kWh**, 1,275 kg
  - 2,720 kg MTOW* → **~46%** of weight for battery system
- Long-haul tractor Daimler Truck: **621 kWh**
- Thermal Management Systems
  - <u>No active cooling during flight!</u>
  - Pre-chilling of battery modules during charging

*MTOW – Maximum Take-Off Weight

# AAM – Private Aviation

- Non-scheduled flights
- Private or chartered aircraft
- Personal, business, or recreational use

| Type | Multicopter | | | | | | Wing-based eVTOL | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Start-up** | **Jetson**  | **Ryse Aero?**  | **LIFT**  | **Volocopter**  | **Bellwether**  | **Alef Aero**  | **Pivotal**  | **Air**  | **Skyfly**  | **Aska Fly**  |
| **URL** | jetson.com/ | ryseaerotech.com ? | www.liftaircraft.com/ | www.volocpter.com | www.bellwether-industries.com | alef.aero | pivotal.aero | https://www.airev.aero/ | skyflytech.com | www.askafly.com |
| **Country** |  |  |  |  |  |  |  |  |  |  |
| **#Seats** | 1 | 1 | 1 | 2 | 3 | 2 | 1 | 2 | 2 | 2 |
| **Target market** | Leisure | Farmers | Tourism (rental) | Leisure, Business, Tourism, Air Taxi | Leisure | Leisure | Leisure | Leisure, Business | Leisure, Business | Leisure |
| **SOP** | 2025 | 2026? | 2023 | 2026 | 2028 | 2028 | 2026 | 2026 | 2026 | 2027 |
| **Price** | 148,000 $ | 150,000 $ | $349 per flight | 490,000 € | ? | 299,999 $ | 190,000 $ | 150,000 $ | 180,000 $ | 789,000 $ |
| **Flying Prototype?** | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes (fixed) |
| **Ultra-light vehicle? (ULV)** | Yes* | Yes* | Yes* | Yes** | No | No | Yes* | No | No | No |
| **Other** | 655 orders | Farmers as target market | Hourly rental at tourist hot spots | Low noise emission due to 18-rotor ring. Key to public acceptance. | Encapsulated rotors, eye-catching design | Flying car, 3,400 pre-orders | No disclose of sales figures, order backlog 9–12 months | 3,200 pre-orders | 20 pre-orders | Flying car |

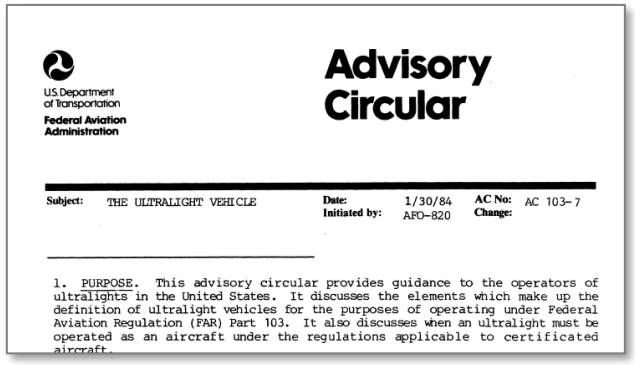
*US ULV – FAR Part 103 Max Empty Weight 115 kg 

**German/EU ULV – Max Take-Off Weight 600 kg 

# AAM – Jetson & Lift Aircraft

## FAA regulation Part 103

- Single person
- No pilot license
- Max empty weight: 254 lbs (115 kg)
- Max speed: 55 knots (~102 km/h)
- Daytime operations only (VFR)
- No flights over densely populated areas



U.S. Department of Transportation
Federal Aviation Administration

**Advisory Circular**

Subject: THE ULTRALIGHT VEHICLE | Date: 1/30/84 | Initiated by: AFO-820 | AC No: AC 103-7 | Change:

1. PURPOSE. This advisory circular provides guidance to the operators of ultralights in the United States. It discusses the elements which make up the definition of ultralight vehicles for the purposes of operating under Federal Aviation Regulation (FAR) Part 103. It also discusses when an ultralight must be operated as an aircraft under the regulations applicable to certificated aircraft.

Source: FAA

## Jetson

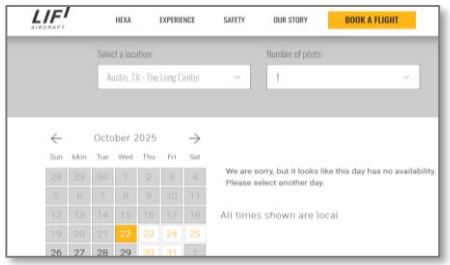
Source: YouTube, Jetson

- Private Ownership
- 148,000 $, more than **650 orders**
- FAA regulation part 103

## Lift Aircraft

Source: Lift Aircraft

- Pay per fly
- 249 $, VR-Training
- FAA regulation part 103



# AAM – Back to the future: the Flying Car


AI-generated image inspired by the movie *Back to the Future*

## Drives on the road and flies in the air!

### Aska Fly – wingbased eVTOL

Source: Aska Fly

### Alef Aeronautics – Multicopter

Source: Alef Aeronautics

## Other interpretations

### Doroni – Fits into a standard US double garage

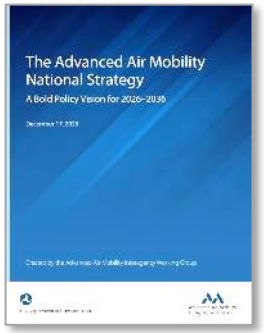

Source: Doroni

### Xpeng Aeroht – Multicopter with carrier vehicle

Source:Aeroht

# Outlook AAM — **the next tech race Europe is losing?**

Source: Department of Transportation




## USA

- **National AAM Strategy**, Dec. 2025
- Whole-of-government approach:
  Coordination across 19+ federal agencies (DOT, FAA, NASA, etc.)
- Pilot programs such as eIPP*:
  Demonstrations and early operations
- R&D funding:
  NASA research, airport/vertiport funding, and state-level initiatives

*eIPP Emerging Aviation Technologies Integration Pilot Program

## China

- “Low-altitude economy” embedded in 14th & 15th **Five-Year Plan**
- Direct support for OEMs, infrastructure, ecosystem development
- Fast-track certification
- Early approvals and operational use cases (e.g., logistics, tourism)
- Large pilot zones and real-world operations
- Infrastructure development

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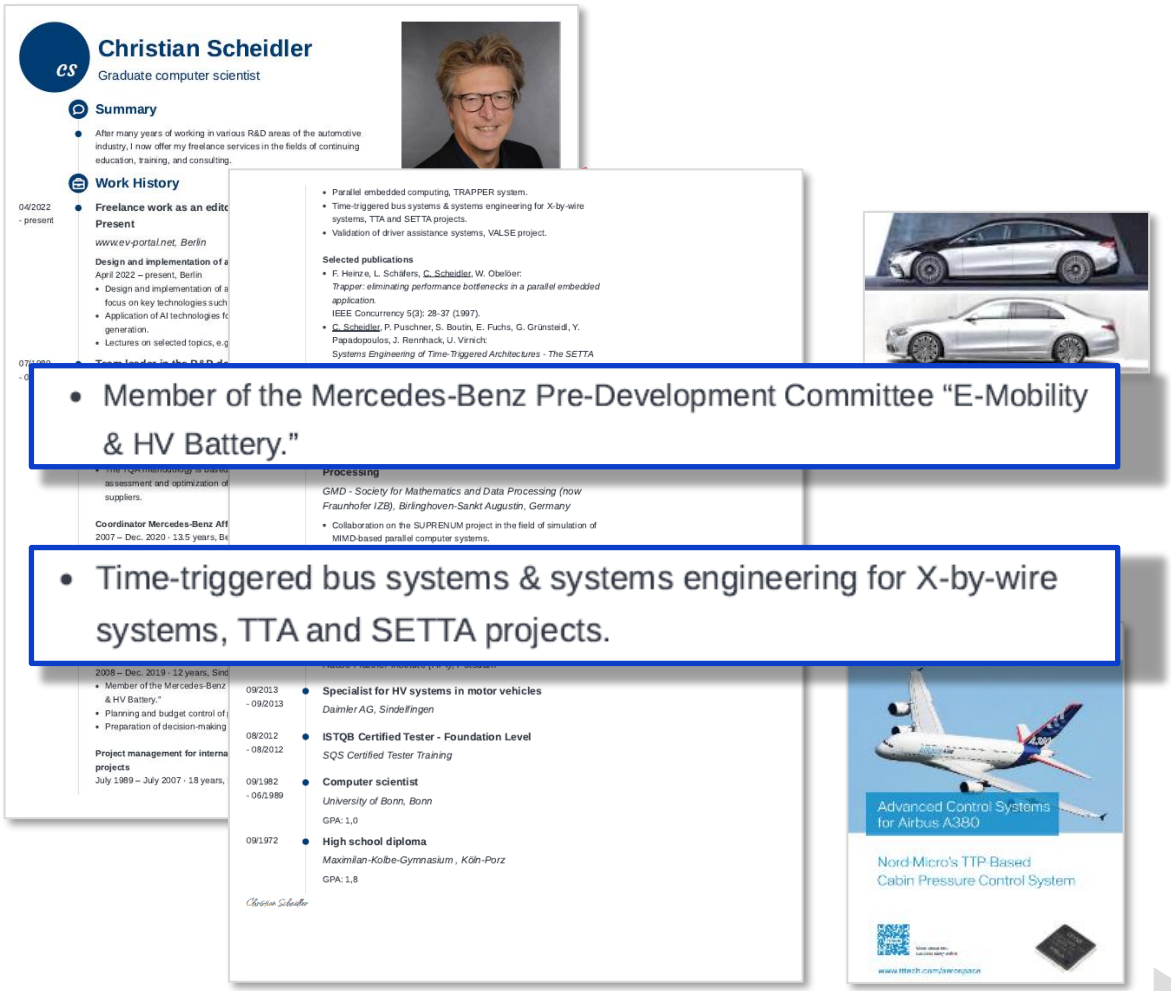
# Backup

# CV – Christian Scheidler




… until 03/2022

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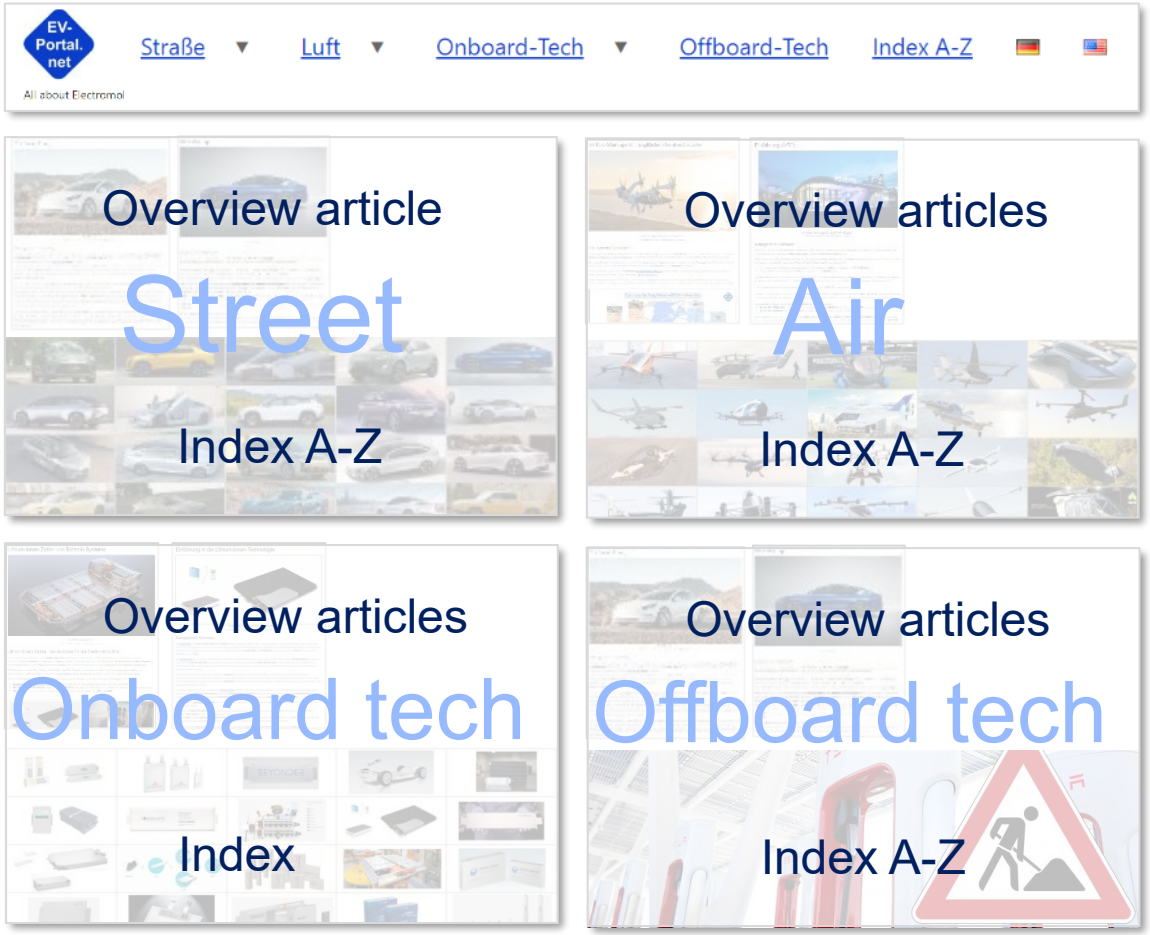


Since 04/2022 …