



MINI BEE

PERSONAL AIRCRAFT

Agenda : Mini-Bee TRL2 description

- TRL2 Partners
- Concept and technical description
- Cabine configurations
- Vehicule and system description
- SWOT analysis
- Project history

Annexes :

- State of the art
- Other innovative projects

Mini-Bee : 2PAX VTOL Hybrid



TECHNOPLANE

MINIBEE

HAMZA FOUATIH © LESSER OPEN BEE LICENSE 1.3

Mini-Bee Project partners



Lesser Open Bee License 1-3

Coordinator :



Universities :



POLITECNICO
DI TORINO

Institution & financial partners :



Design:



MINI BEE

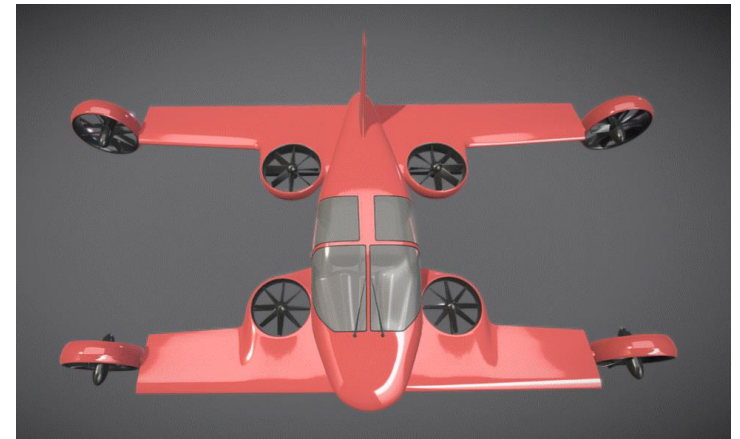
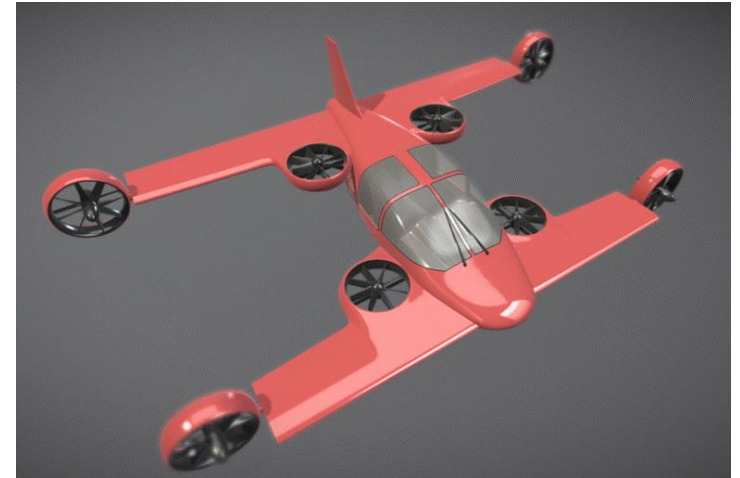
PERSONAL AIRCRAFT

www.mini-bee.com
Lesser Open Bee License 1.3

v9.1 – 16 Jan. 2017
Copyrights Technoplane SAS

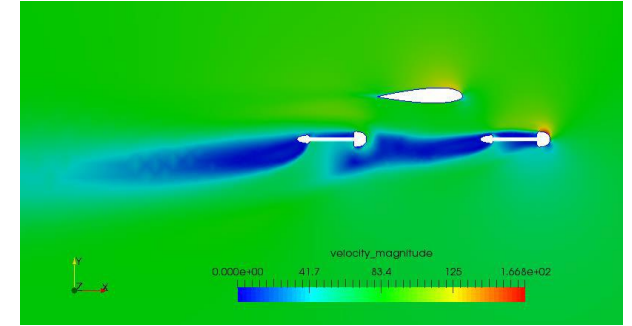
Mini-Bee description

- Project state : TRL2
 - Electric octocopter : 4 vertical + 4 tilt
 - Hybrid energy : fuel + batteries
 - 2-3 seats
- Characteristics :
 - VTOL capacity, short wings, 1.2 ton
 - Range 600km, max speed 300km/h
 - Electric controls and engines
 - « Car like » interface
- Goals and market
 - VIP, Taxi, Air Ambulance
 - Estimated price 1m€ (0,7 to 2m€)



Take-off and flight transition

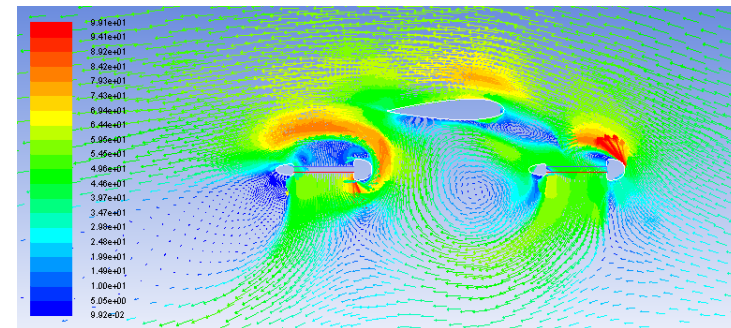
Cruise
flight



Tilt
transition

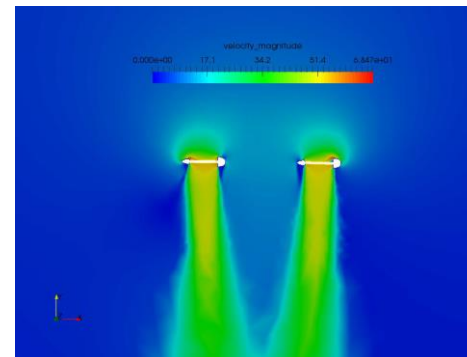


Estaca 2016



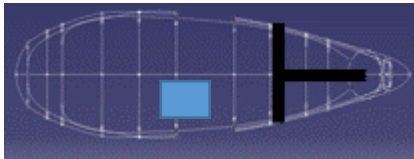
Supméca 2016

Vertical
take-off

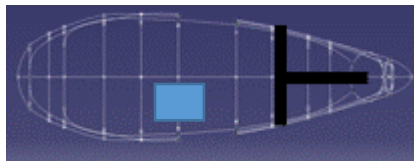


Cabine configurations

Sport

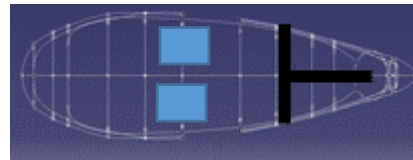


Utilities

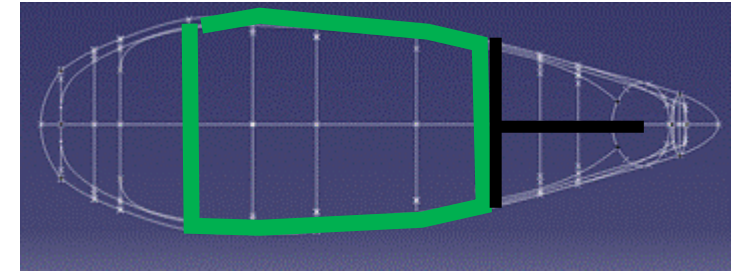


1 PAX

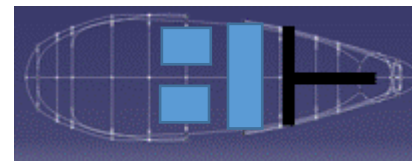
VIP



2 PAX

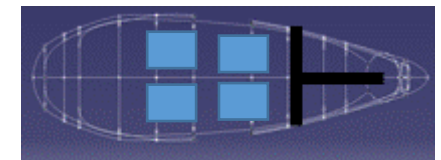


Ambulance



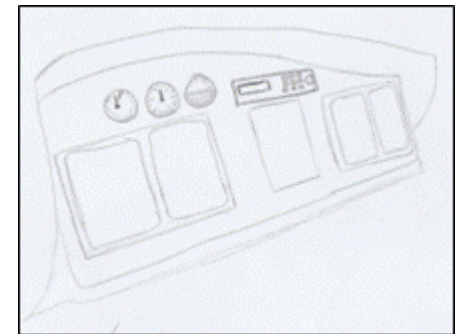
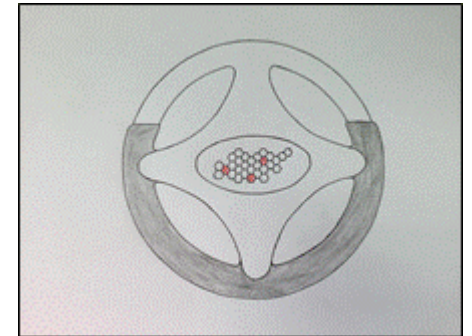
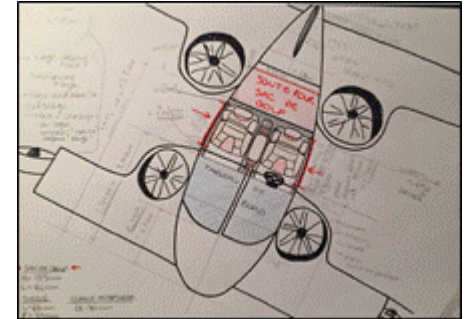
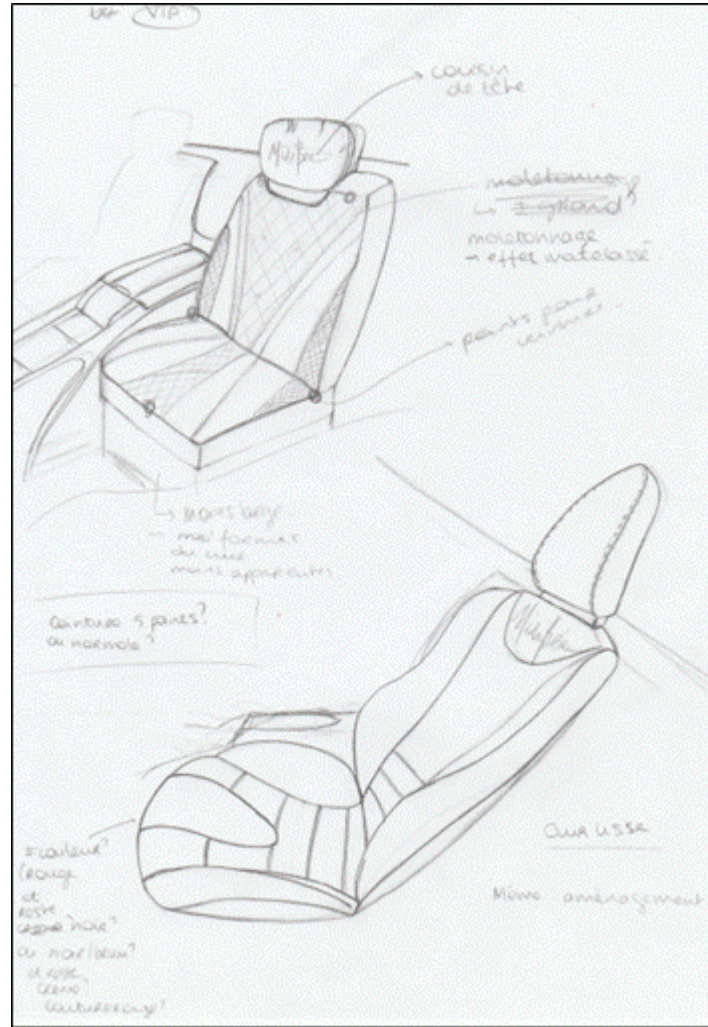
3 PAX

Taxi

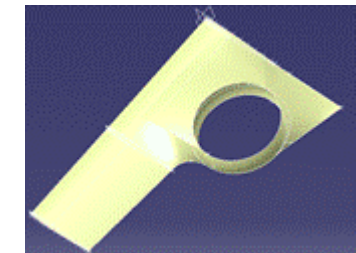
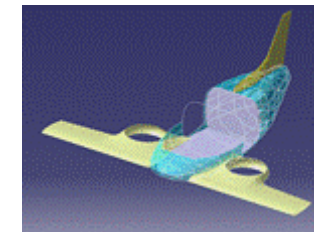
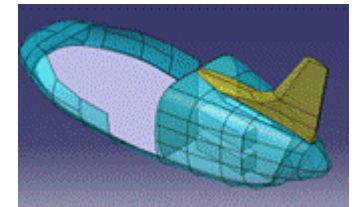
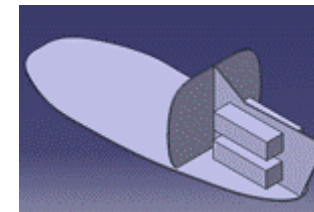
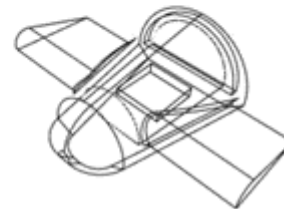
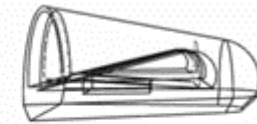
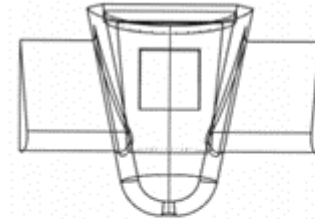
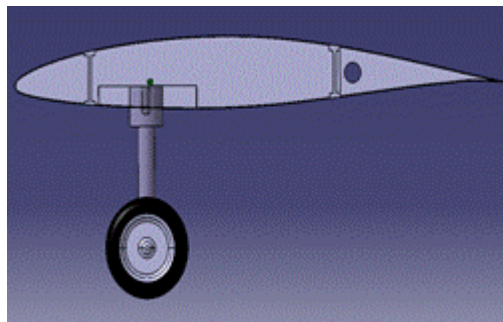
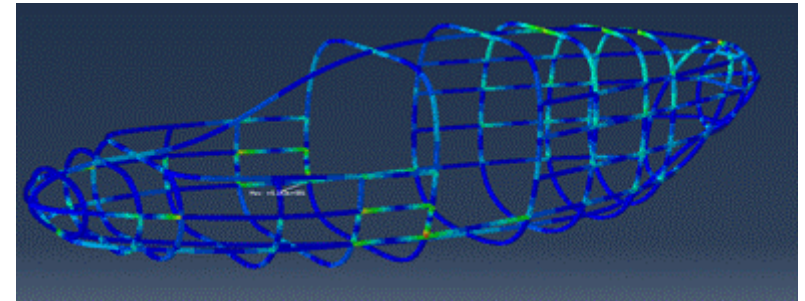
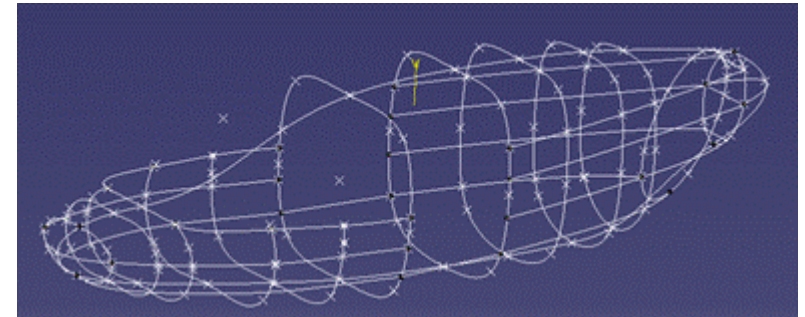
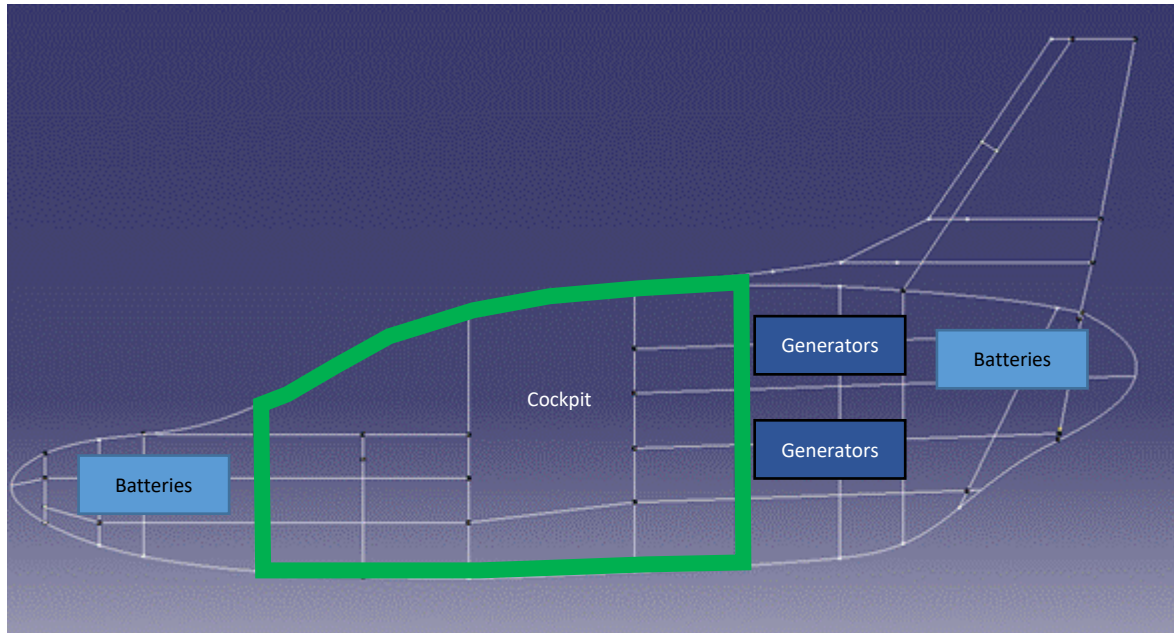


4 PAX (light)

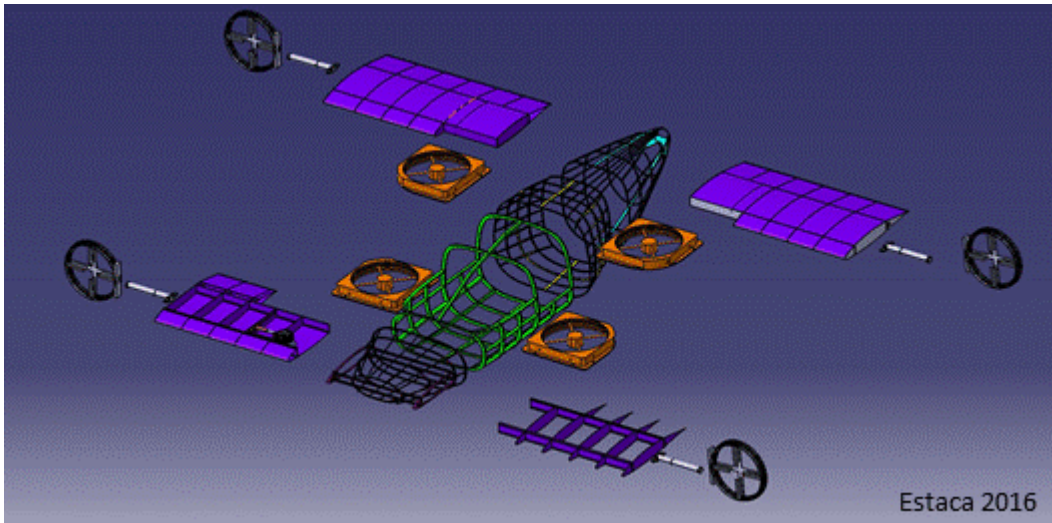
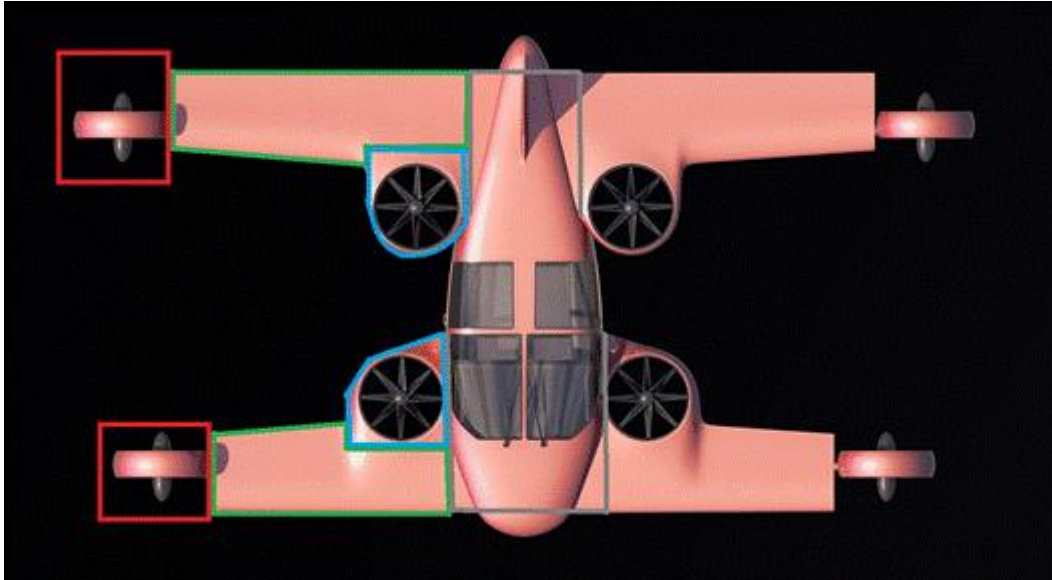
VIP Configuration



Architecture



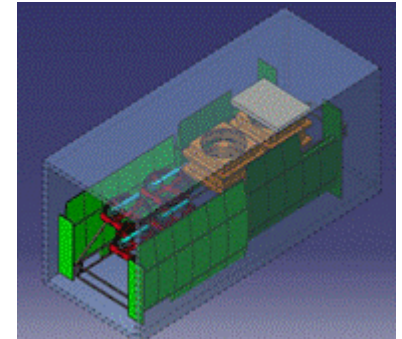
Modular structure



Production, delivery
and MRO optimization



Delivery in 20' Container



2 main flight
configurations



Taxi :

- VTOL Short intra city
- Short wings, high NACA
- Vertical central engines
- Fixed landing gear

VIP :

- VTOL + cruise
- Longuer wings
- Fuel capacities
- Retractable landing gear

Actions for Mini-Bee TRL2 Project

- Mini-Bee TRL2 tasks :
 - Refine detailed technical and equipment configuration
 - Evaluate market opportunities, production and flight costs
 - Define partnership for TRL2 and TRL3
 - Draw project financial path
 - Investigate for lovemoney phase

Financial project path

TRL	Statut	Début	Fin	Montant estimé (k€)
0	Terminé	2014	2015	20
1	Terminé	2015	2016	50
2	En cours	2016	2017	200
3		2017	2019	2 000
4				5 000
5				10 000
6				15 000
7				20 000
8				25 000
9				25 000

Detailed numerical mock-up

First flight

Test flights

Final developments

Qualification

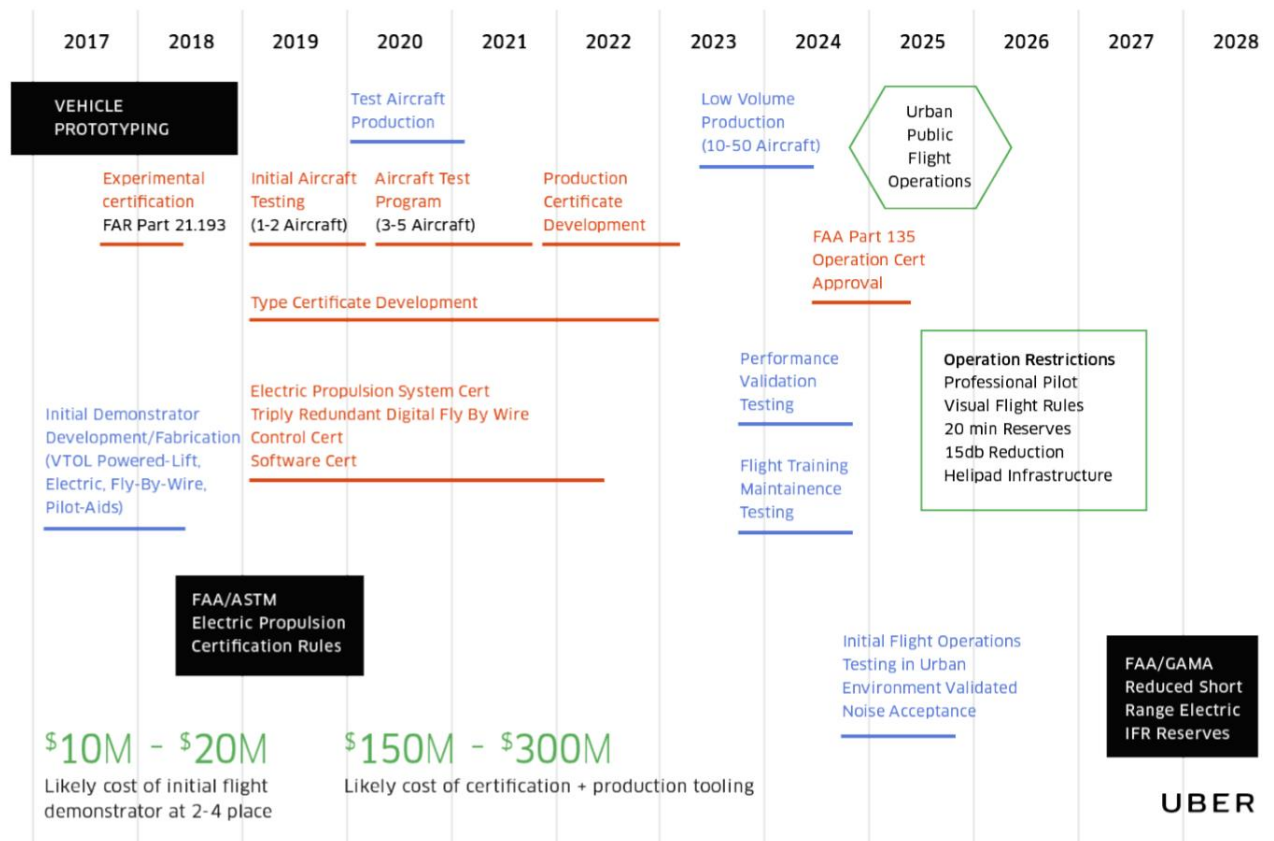
Commercialisation / Operations

Estimated overall project 100m€

Actual step : Lovemoney for 500k€ to 2m€

Uber Elevate planning

Certification



Annexes

Individual Air Vehicules

State of the art

Cessna Skylane



- Height: 2,84 m
- Wingspan: 10,97 m
- Length: 8,84 m
- Max Take-Off Weight: 1406 Kg
- Power: 230 hp
- Engine: lycoming IO-540-AB-1A5
- Maximum speed: 269 Km/h
- Range: 1695 Km
- Price: 277 300 \$

Robinson R44



- Height: 3,3 m
- Rotor diameter: 10,1 m
- Length: 11,7 m
- Max Take-Off Weight: 1089 Kg
- Power: 248 hp
- Engine: lycoming IO-540-AE1A5
- Maximum speed: 240 Km/h
- Range: 560 Km
- Price: 456 000 \$

X3 airbus



Osprey V22



Cessna TTX



- Height: 2,74 m
- Wingspan: 10,97 m
- Length: 7,68 m
- Max Take-Off Weight: 1633 Kg
- Power: 310 hp
- Engine: turbo TSIO-550-c
- Maximum Speed: 435 Km/h
- Range: 2315 Km
- Price: 733 950 \$

Agusta Westland AW609



- Height: 5,1-6,6 m
- Wingspan: 11,7 m
- Length: 13,3 m
- Max Take-Off Weight: 7200 Kg
- Power: 1900 hp
- Engine: Pratt & Whitney Canada PT6C-67A
- Maximum speed: 616 Km/h
- Range: 1390 Km
- Price: 10 000 000 \$

Airbus H160



Aeromobil 3.0



- Height: 1,50 m
- Wingspan: 8,32 m
- Length: 6 m
- Power: 81 hp
- Engine: rotax 912
- Maximum speed: 200 Km/h
- Range: 700 Km

Ecureuil



X2



Other innovative projects



Trifan 600 XTI (2015)



Helium (2016)



Agusta Westland
Zero (2015)



Airbus E-fan (2015)



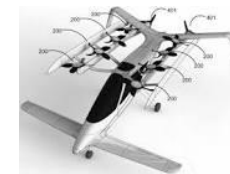
E-volo (<2014)



eHang (fin 2015)



Kitty Hawk (2016)



zee.aero (2016)



Joby (2016) ~ 100m€



Moler skycar
(<2016)



Urban aeronautics
(<2016)



Xplorair (2016)



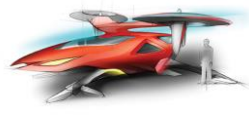
Lilium (2016) ~10m€



SoloTrek Springtail



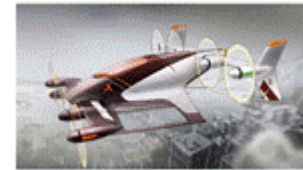
Airbus (2016)



Boeing (2016)



Macro industrie (2016)



Airbus Vahana (2016)



Trekaero.com



Olympus (2016)



Mini-Bee (2016)

Mini-Bee

2 PAX VIP Hybrid Octocopter



TECHNOPLANE

MINIBEE

HAMZA FOUATIH © LESSER OPEN BEE LICENSE 1.3

Lesser Open Bee License 1-3

TECHNOPLANE

AERONAUTICAL INNOVATION



oséo

Prêt à la Création d'Entreprise



PLACIS



CentraleSupélec



POLITECNICO DI TORINO



Le bon sens a de l'avenir.



CCI NORMANDIE



Ecole Internationale des Sciences du Traitement de l'Information



Ecole Nationale Supérieure de l'Electronique et de ses Applications



INSA

INSTITUT NATIONAL DES SCIENCES APPLIQUÉES ROUEN



MINI BEE

PERSONAL AIRCRAFT

17

www.mini-bee.com
Lesser Open Bee License 1.3

v9.1 – 16 Jan. 2017
Copyrights Technoplane SAS