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# Acabion.



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**Experten für Innovation und  
strategische Innovationsberatung.  
D4 Center Luzern, e-mail: [contact@acabion.com](mailto:contact@acabion.com)**

**Youtube: „Murata Boy“ /  
„Murata Girl“**







Youtube: „SBU unicycle“





**Auto-Balance und Auto-  
Pilot werden kommen.  
Kein Zweifel.**

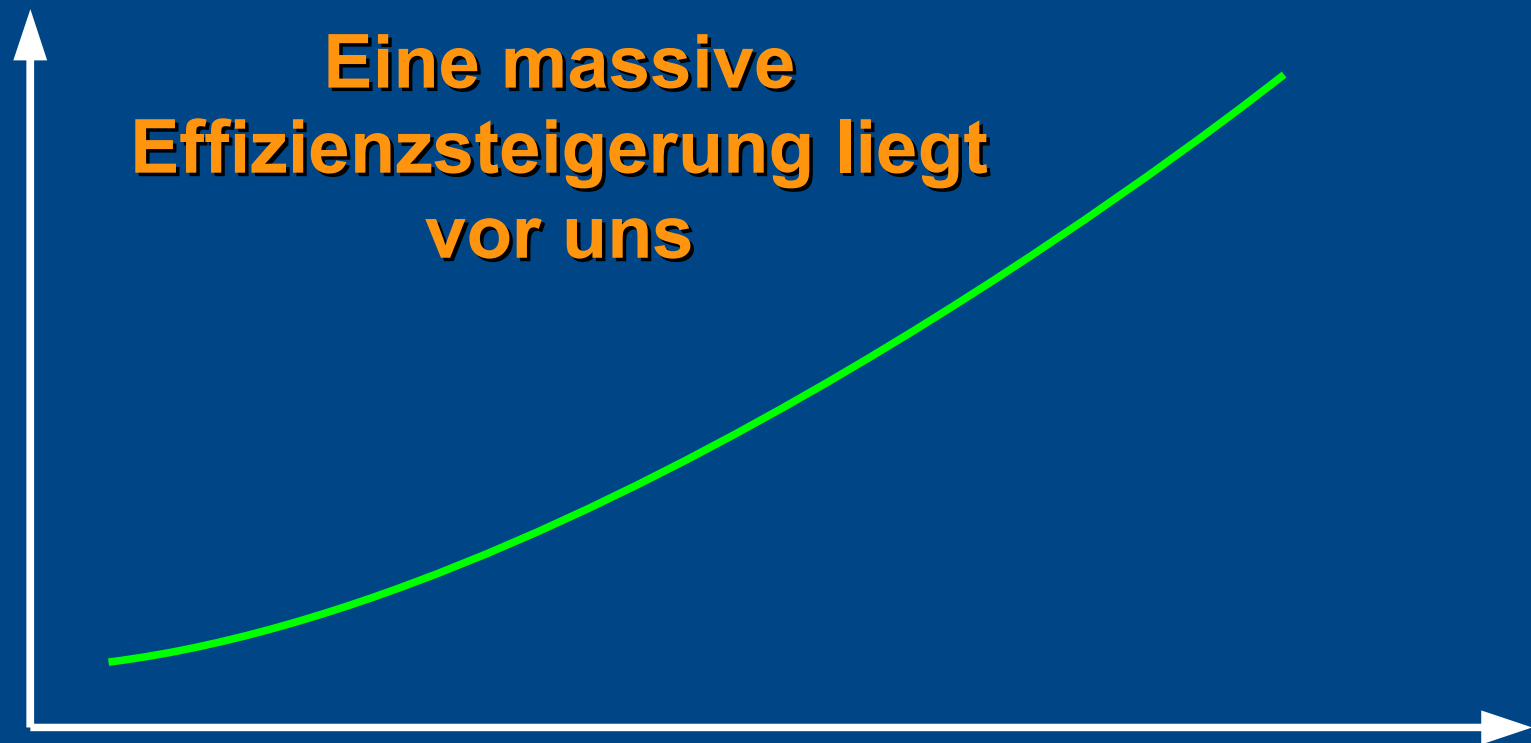


# CHANGE IN VALUES



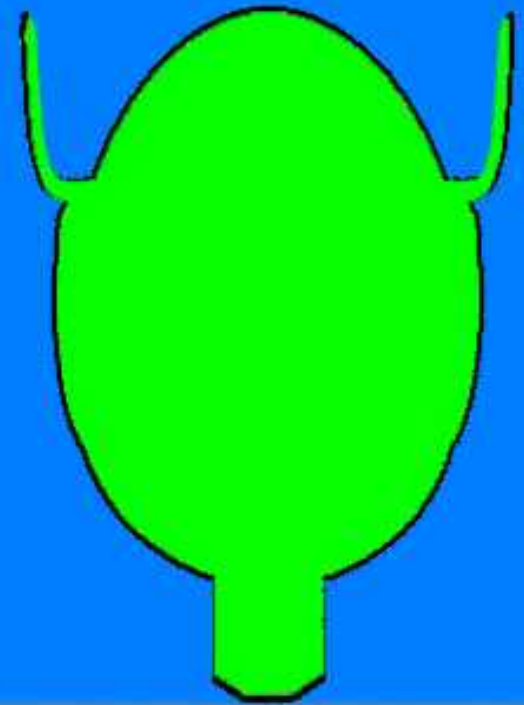
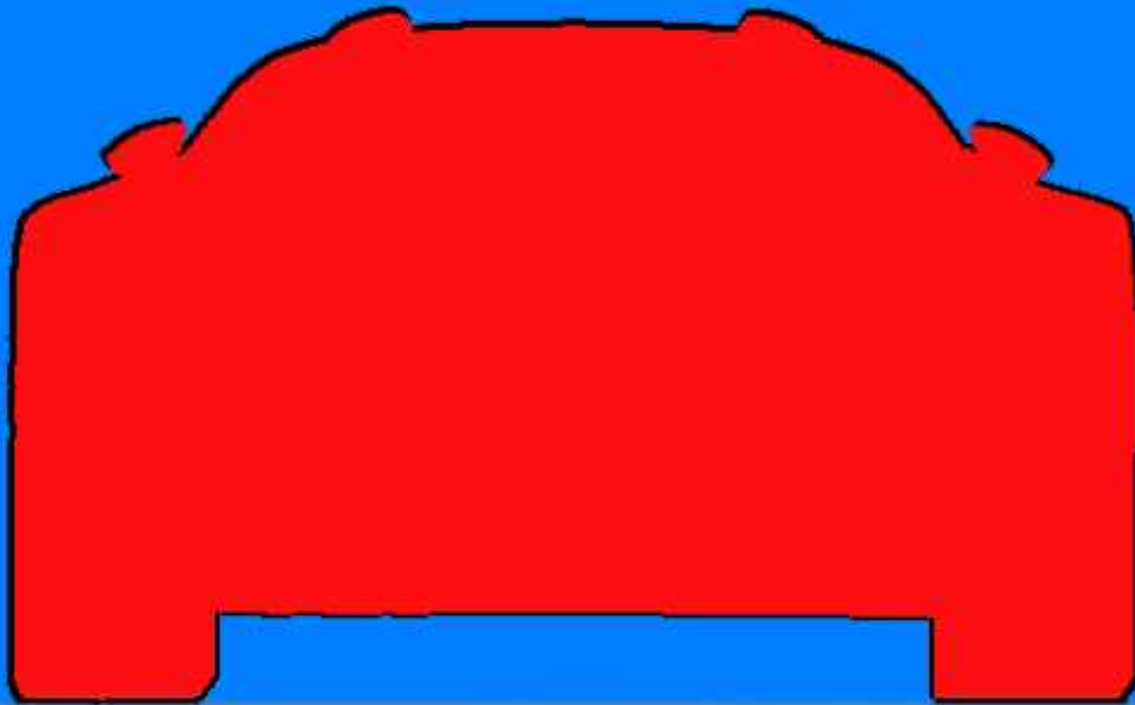
**Ziel: Natur im Vordergrund...  
Technik im Hintergrund /  
„unsichtbar“**

# EFFICIENCY



# EFFICIENCY

**Projected area reduction leads to an efficiency increase**

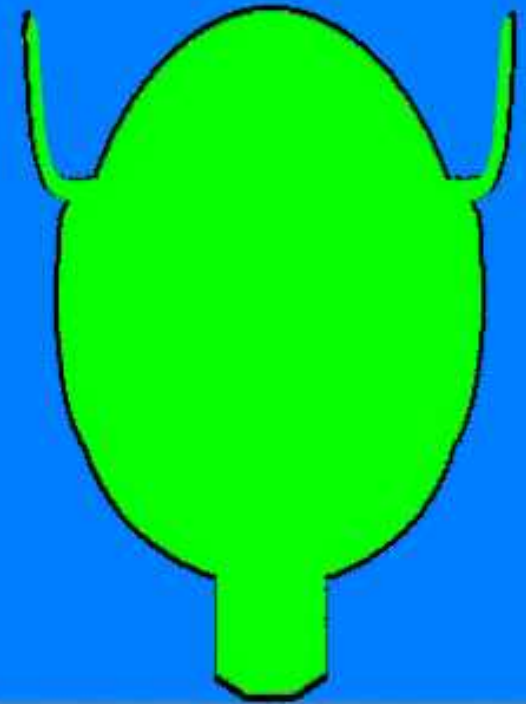
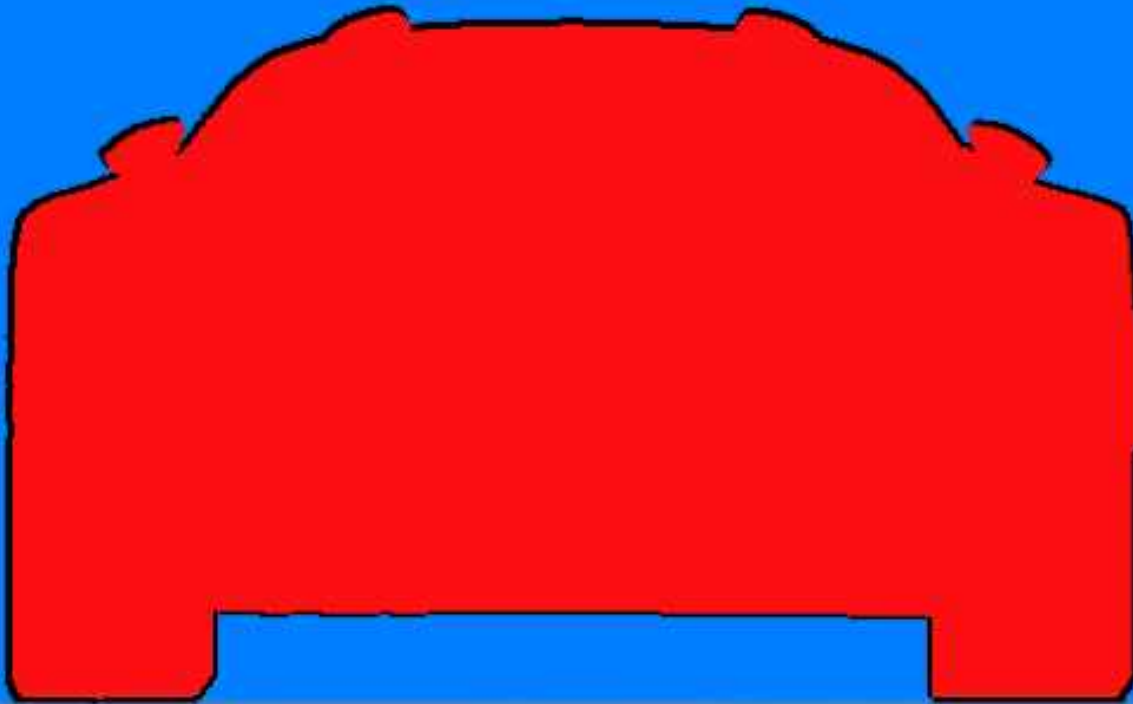




# EFFICIENCY

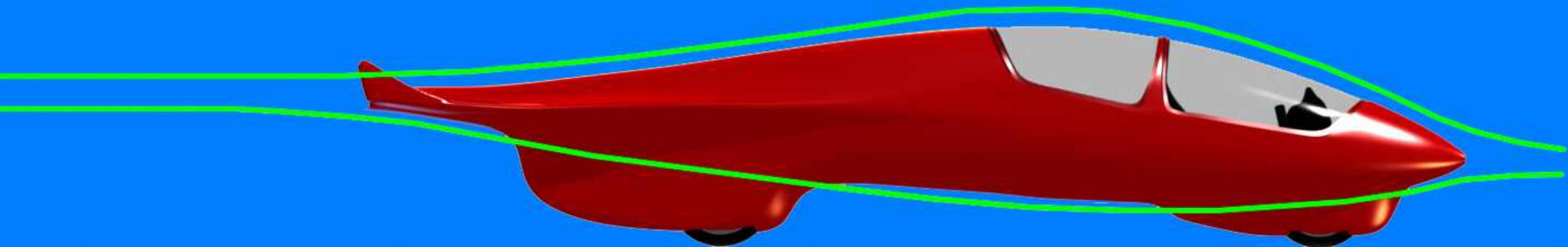
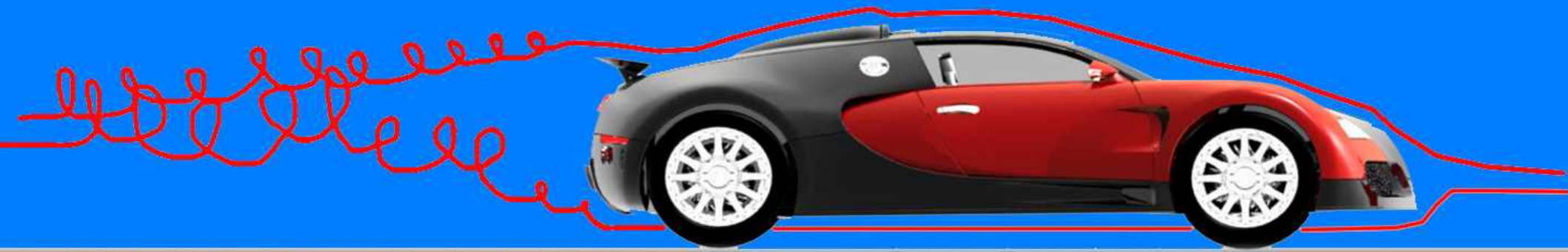
Projected area reduction leads to an efficiency increase

**+ 300% up to + 500%**



# EFFICIENCY

**Aerodynamic drag / turbulences reduction leads to another efficiency increase**

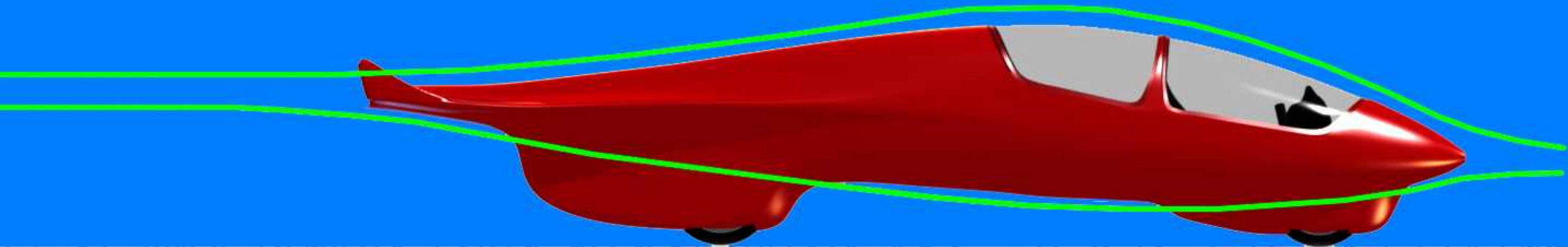




# EFFICIENCY

Aerodynamic drag / turbulences reduction leads  
to another efficiency increase

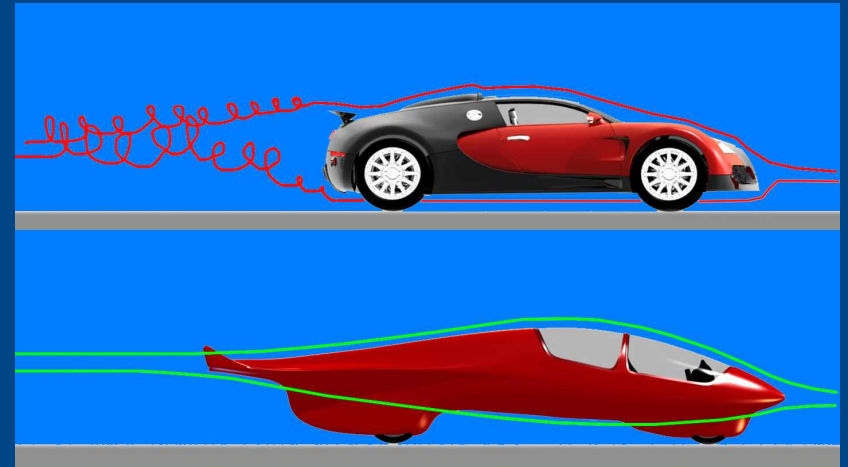
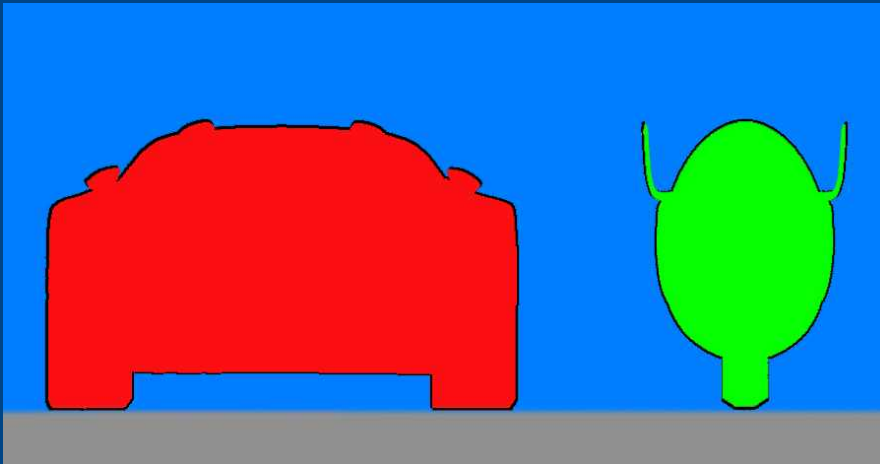
**+ 300% up to + 500%**



# EFFICIENCY

Physics multiplies both effects !

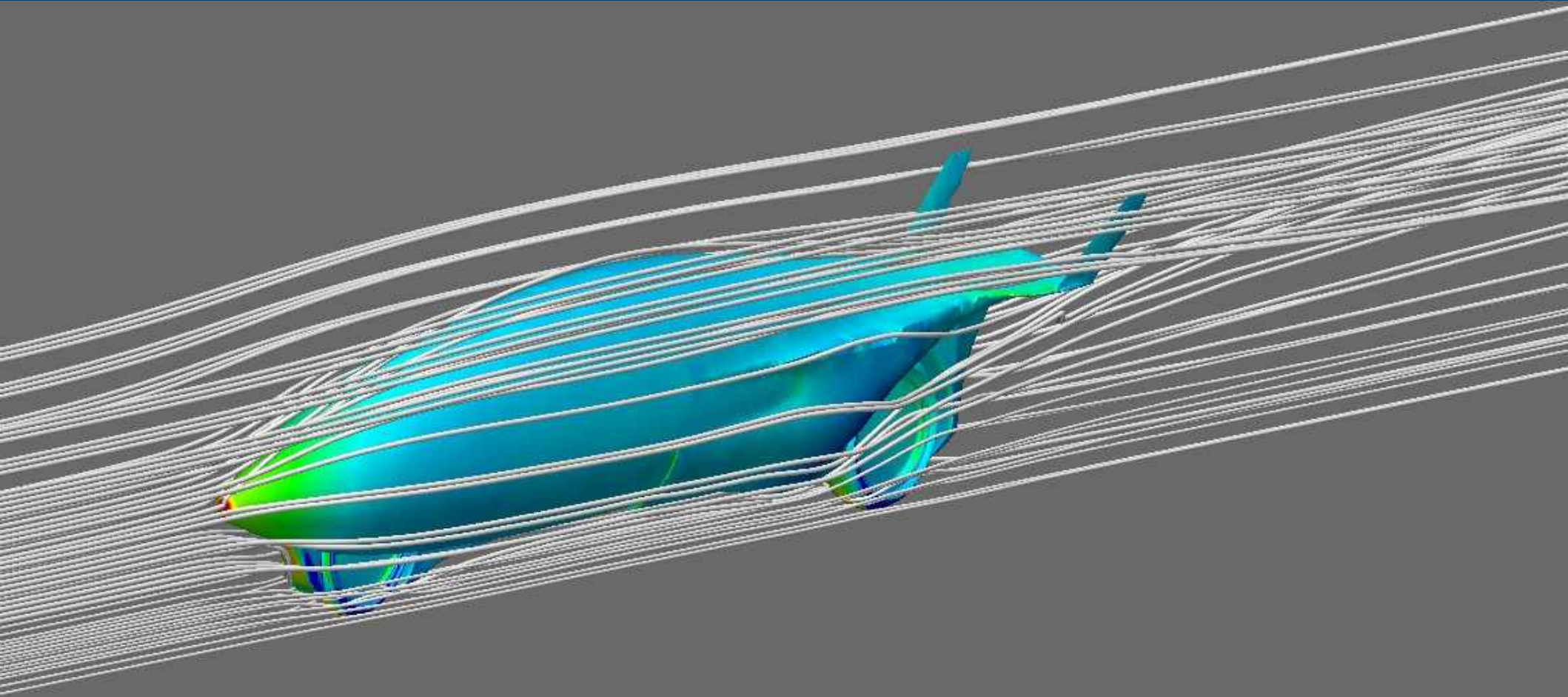
**+ 900% up to + 2500%**





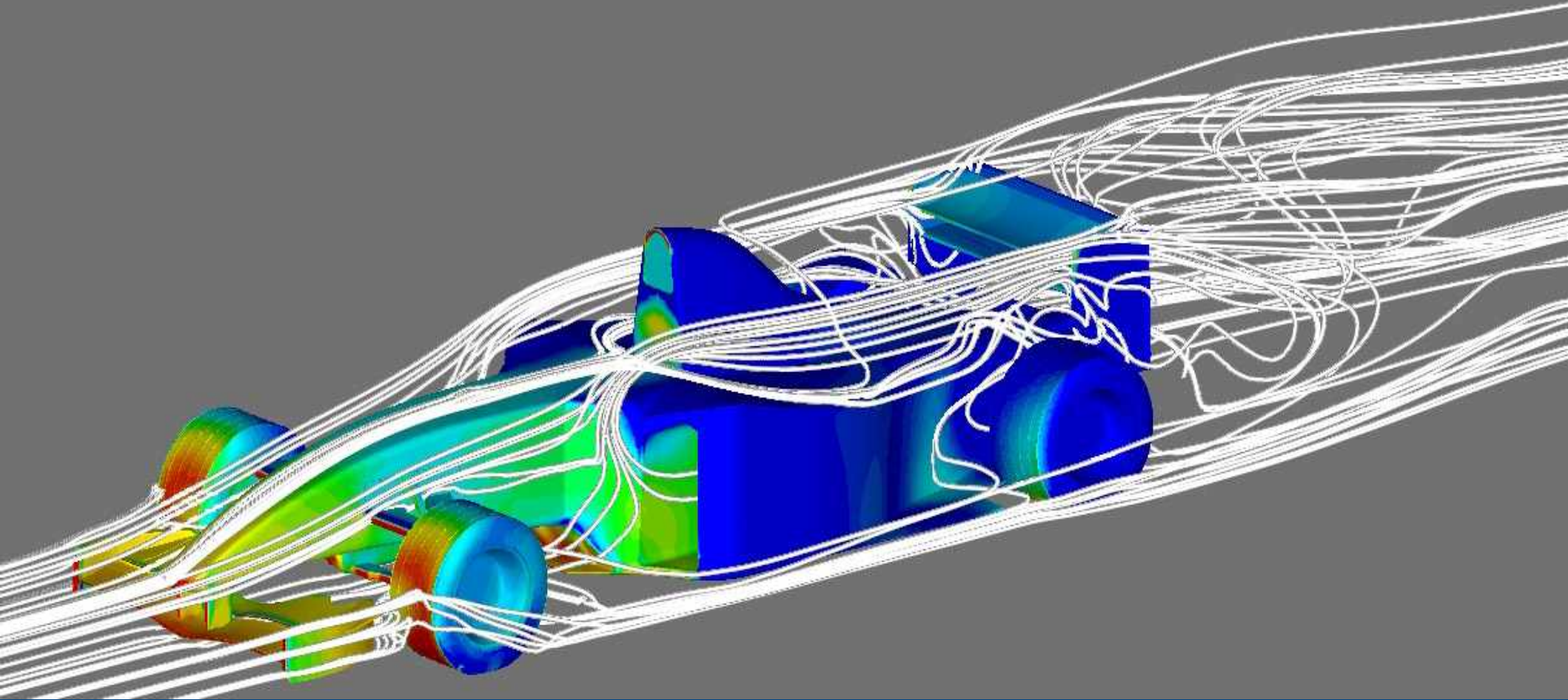
EFFICIENCY

**Physics multiplies both effects !**



# EFFICIENCY

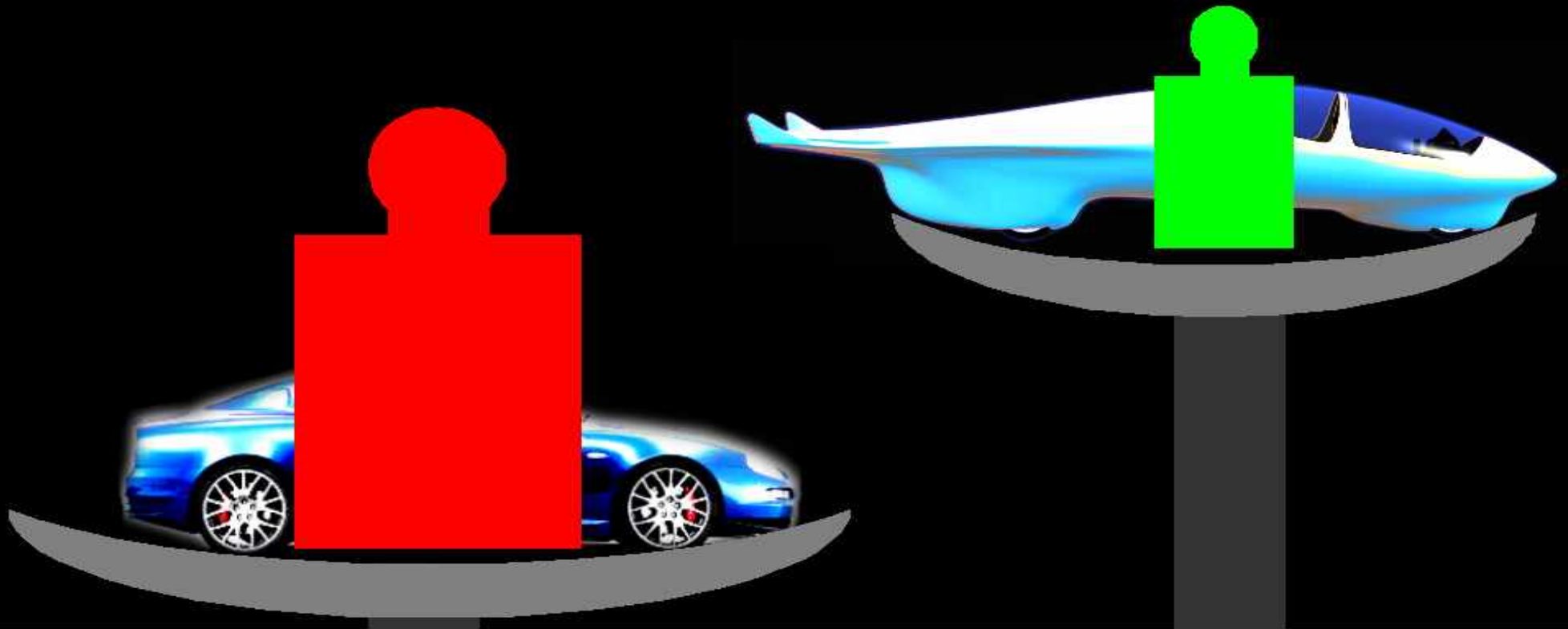
**Physics multiplies both effects !**





# EFFICIENCY

On top come further effects by reduced mass...



**+ 1000% up to + 3000%**

EFFICIENCY

...and reduced rolling resistance etc.

**+ 1100% up to + 3500%**





**Das wichtigste von allem:  
Schon bei 1 km/h + 800%  
Effizienzvorsprung**



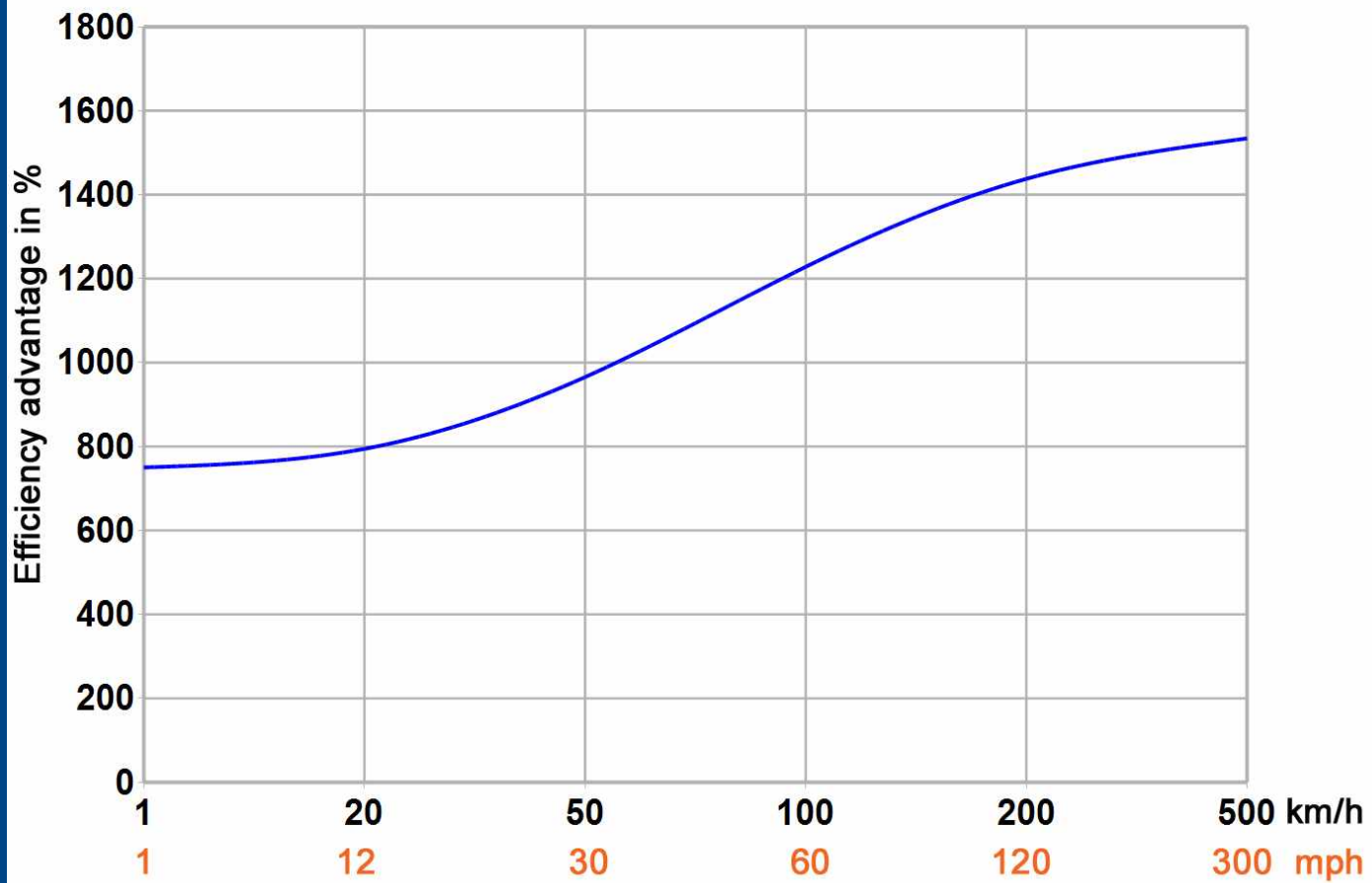
# URBAN MOBILITY



....gegenüber einem  
„Designer-Klumpen“



# URBAN MOBILITY



URBAN MOBILITY

**Acabion GT:  
21st Century Urban and Long Range Shuttle.**





# CERTIFICATES



# CERTIFICATES

## Data Confirmation

**All Data of the Acabion were confirmed by the ETH Zürich and by Prof. Dr. tech. Ernst Fiala as well as by Dr.-Ing. Tilo Hamann, University of Bremen.**

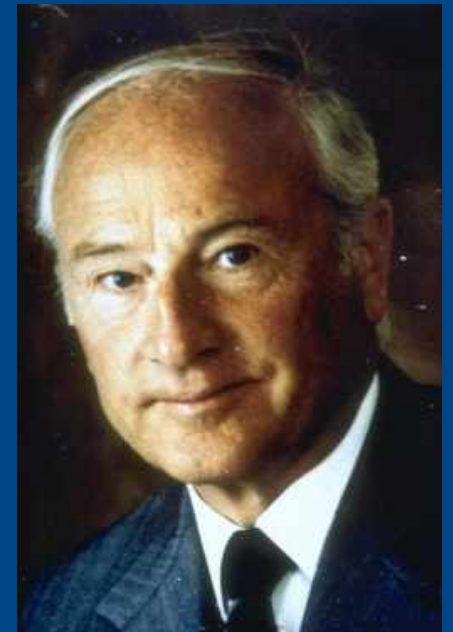


# CERTIFICATES

**Acabion, neutral evaluation**

**„The Acabion is ingenious  
in its efficient consequence.“**

**Prof. Dr. tech. Ernst Fiala,  
former member of the board of Volkswagen  
and father of the VW Golf.**

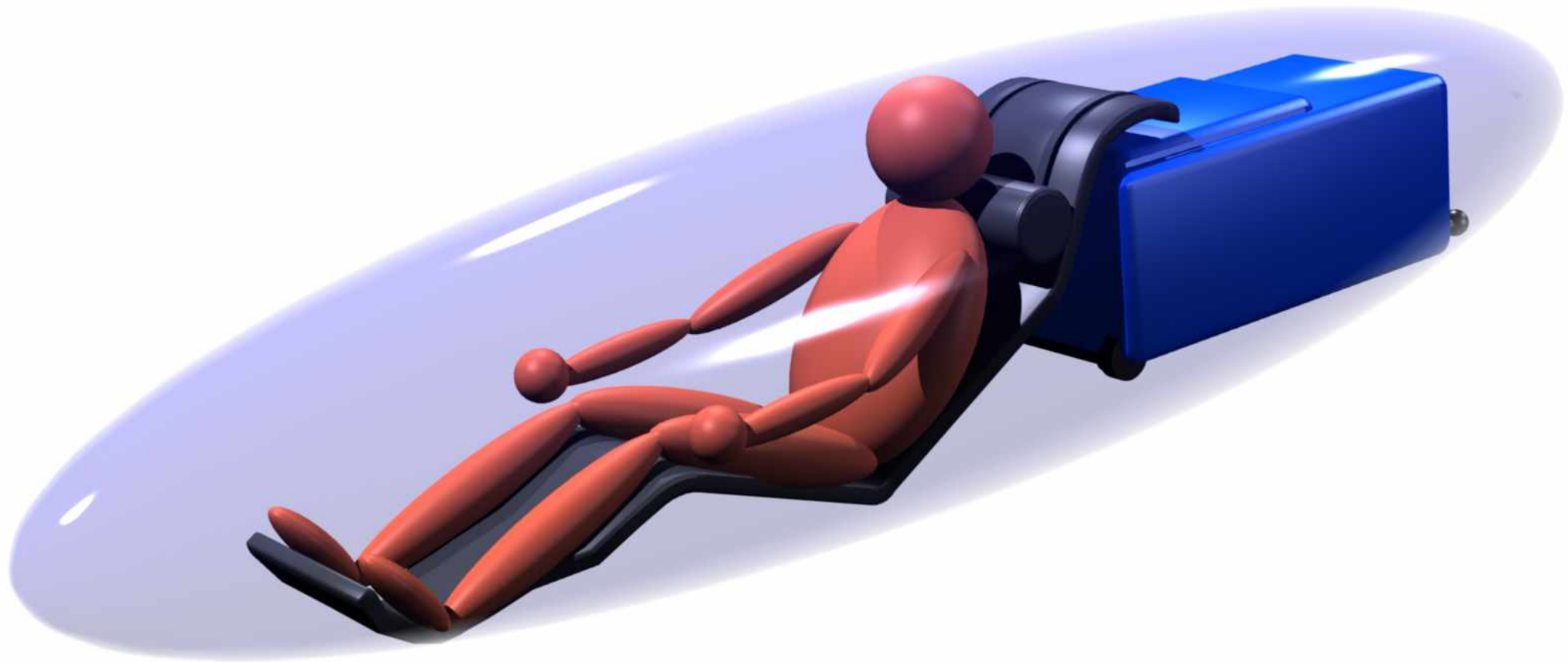


# ORIGIN / GENESIS

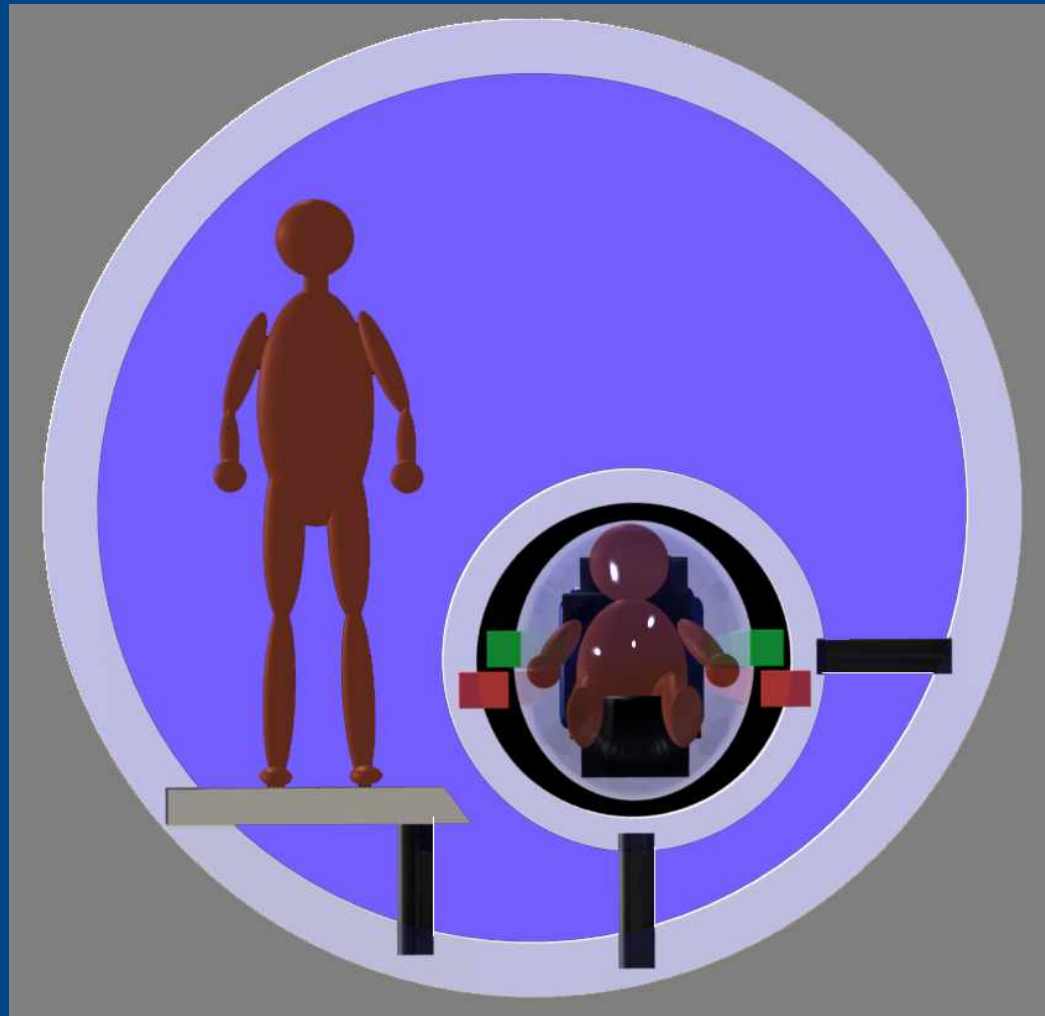




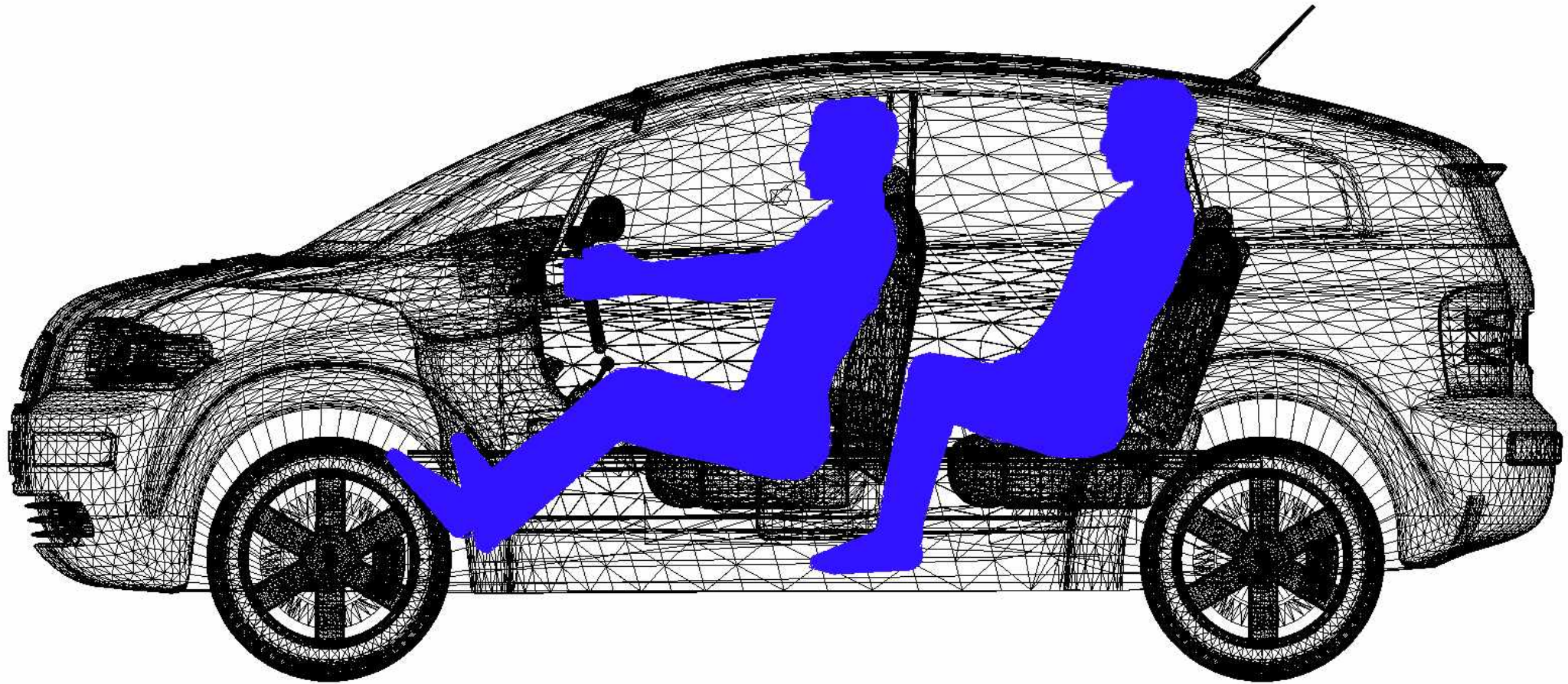
# ORIGIN / GENESIS



# ORIGIN / GENESIS



# ORIGIN / GENESIS

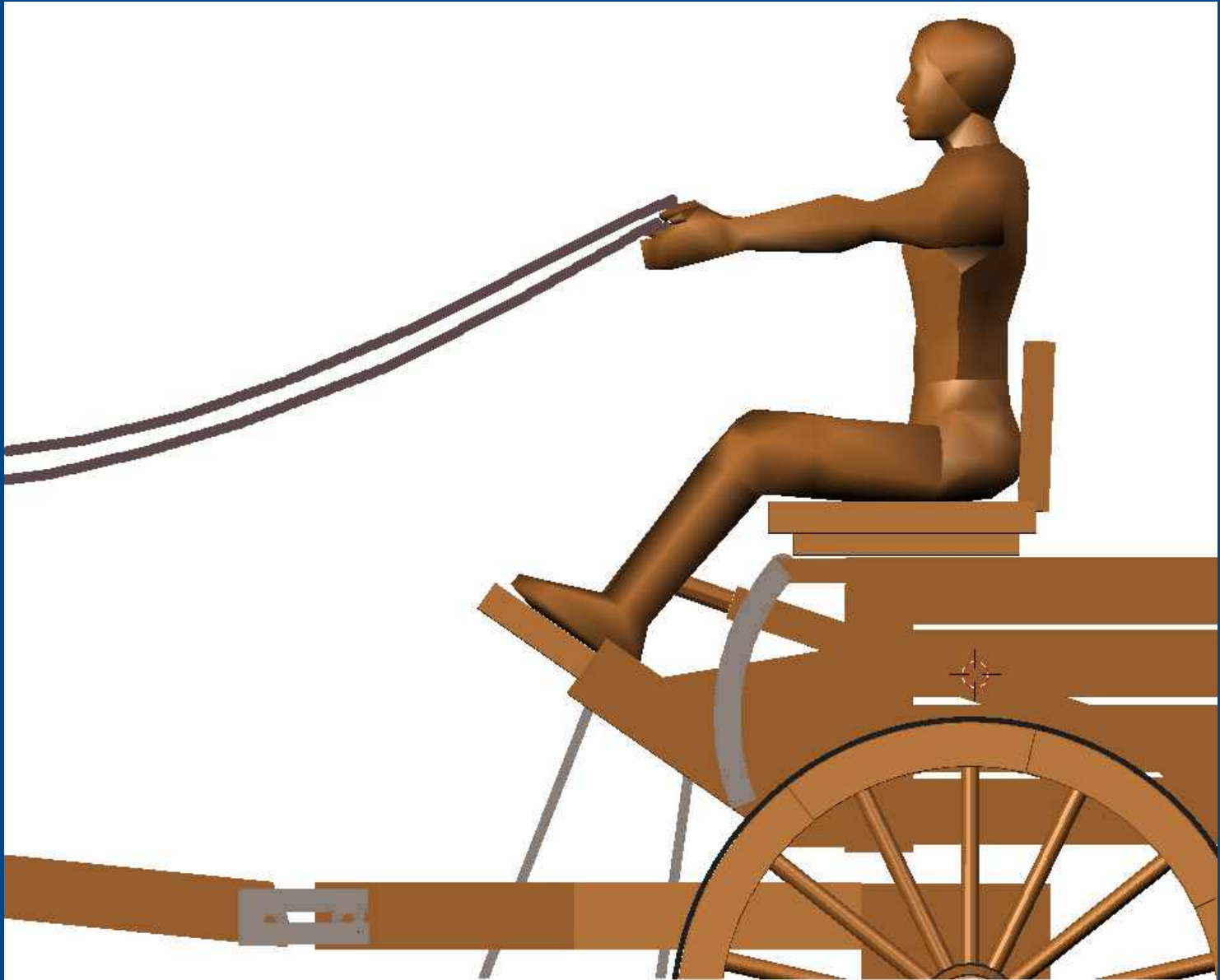




# ORIGIN / GENESIS



# ORIGIN / GENESIS



# URBAN MOBILITY

## Acabion Integrated Urban Mobility



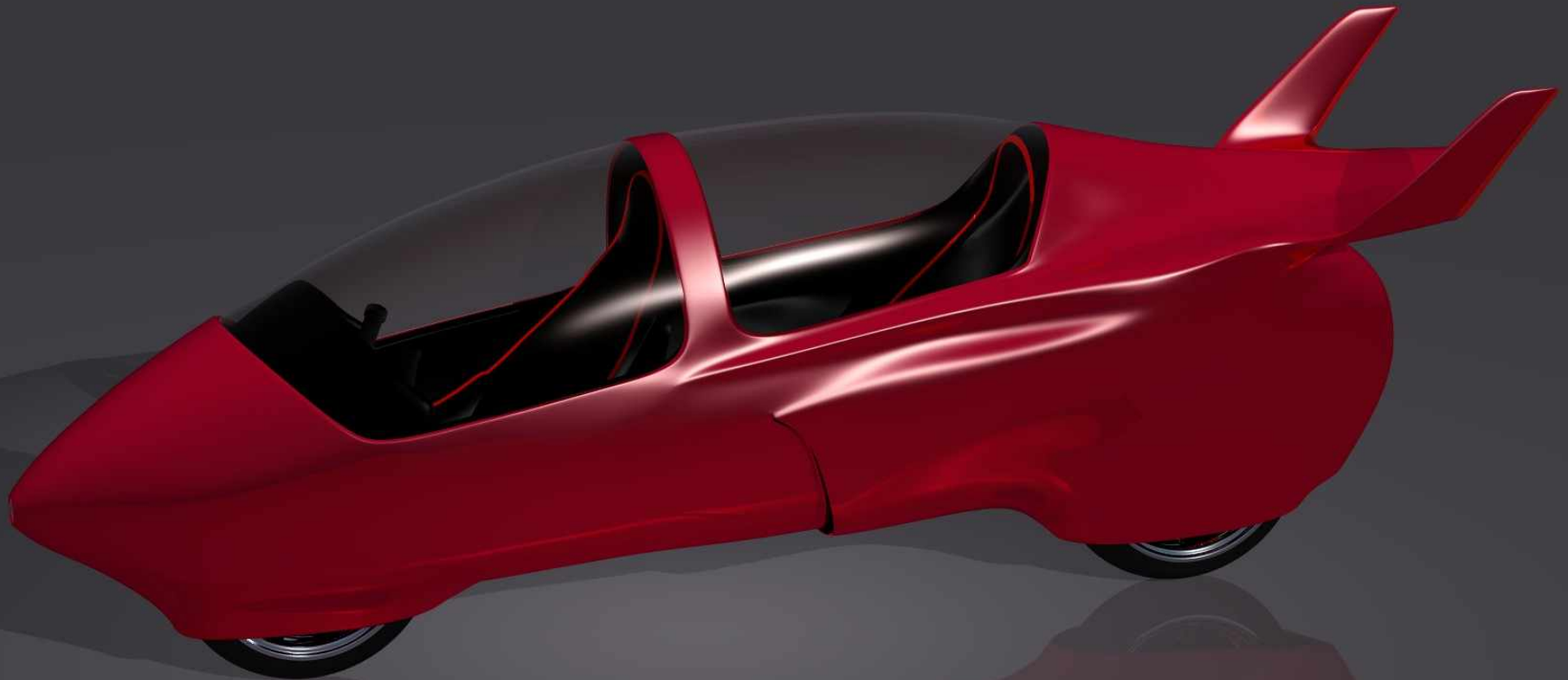


# URBAN MOBILITY



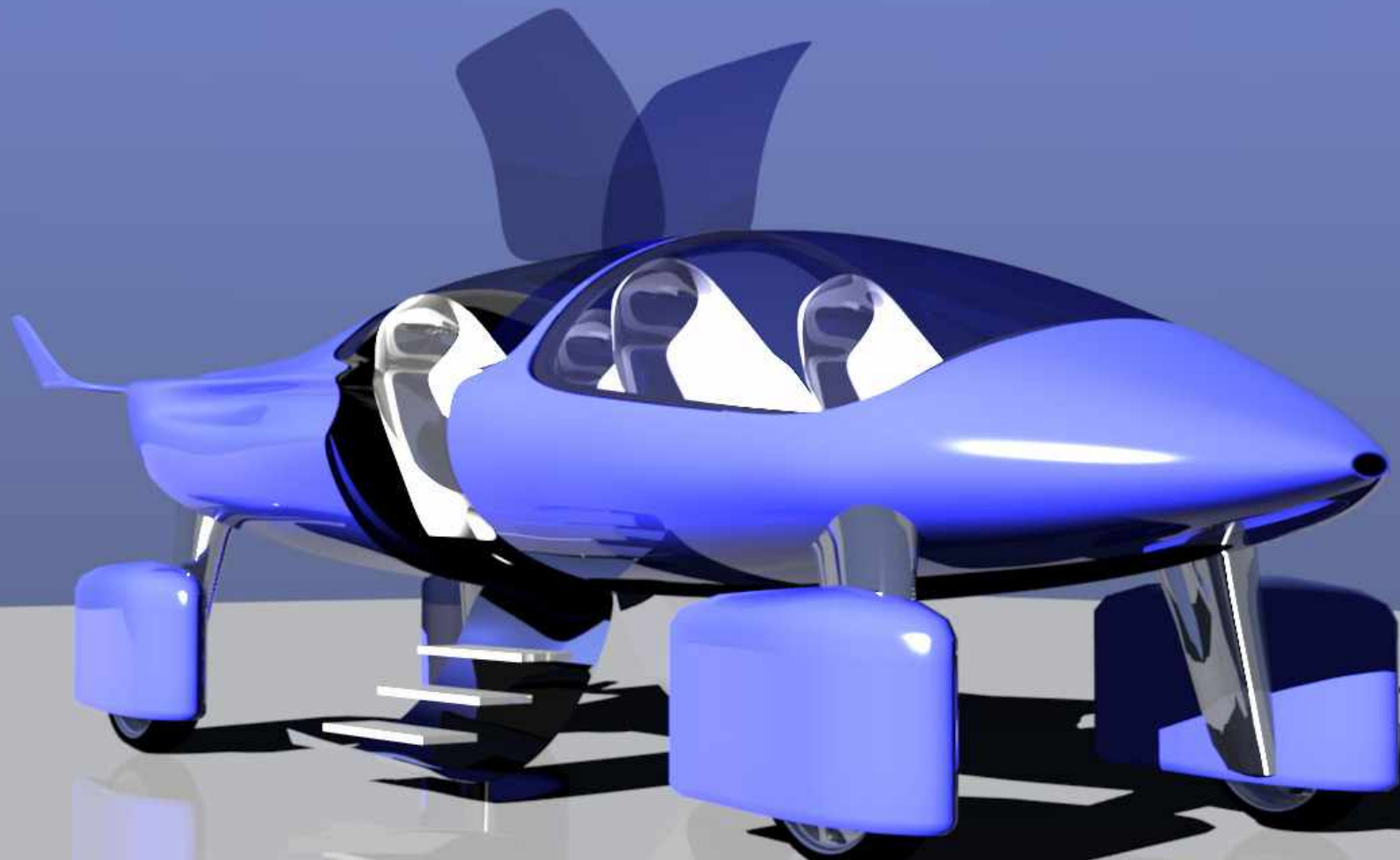
URBAN MOBILITY

**Acabion Marley:  
21st Century Urban Scooter.**



# URBAN MOBILITY

Other Acabion Versions: 4-Seater

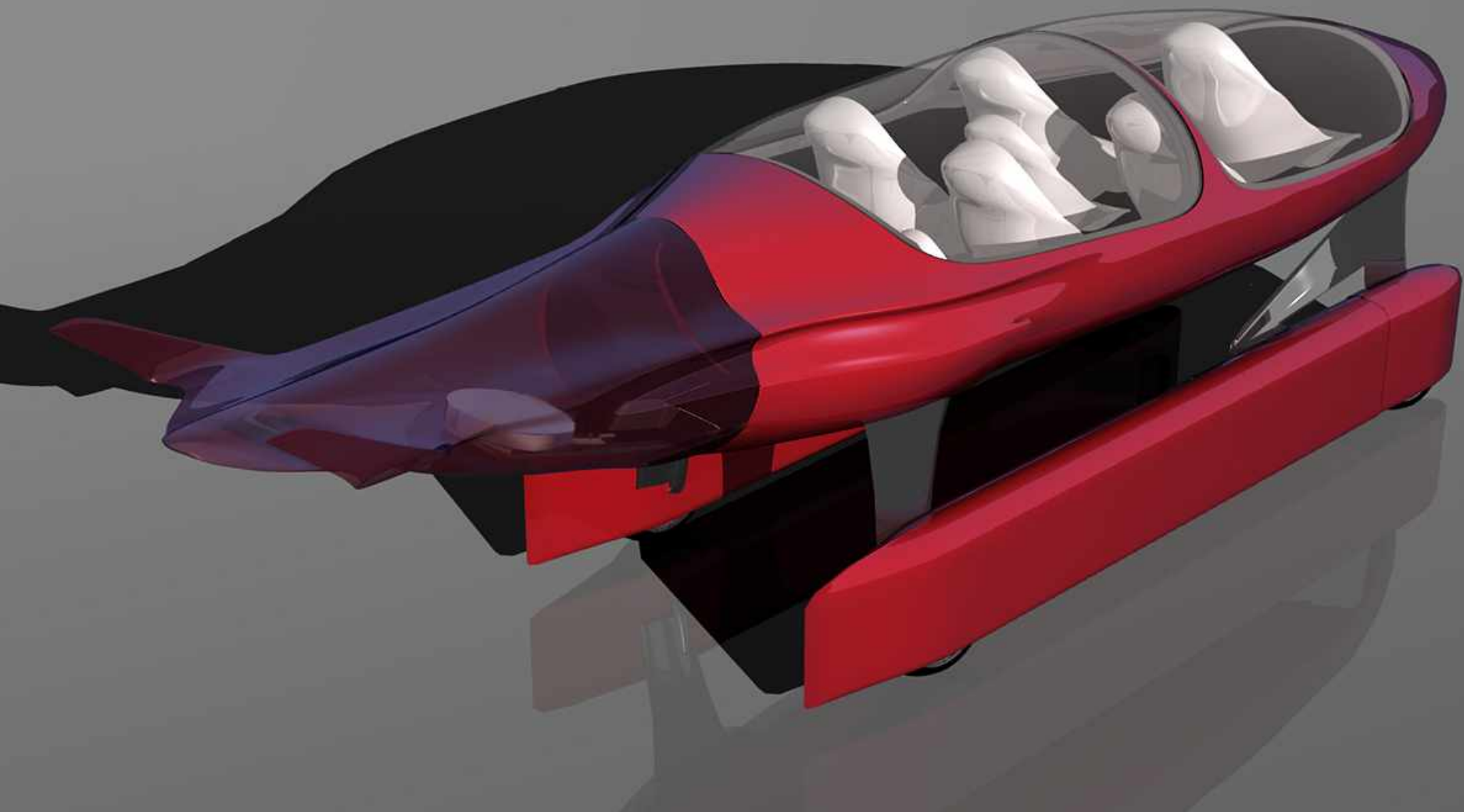




# URBAN MOBILITY

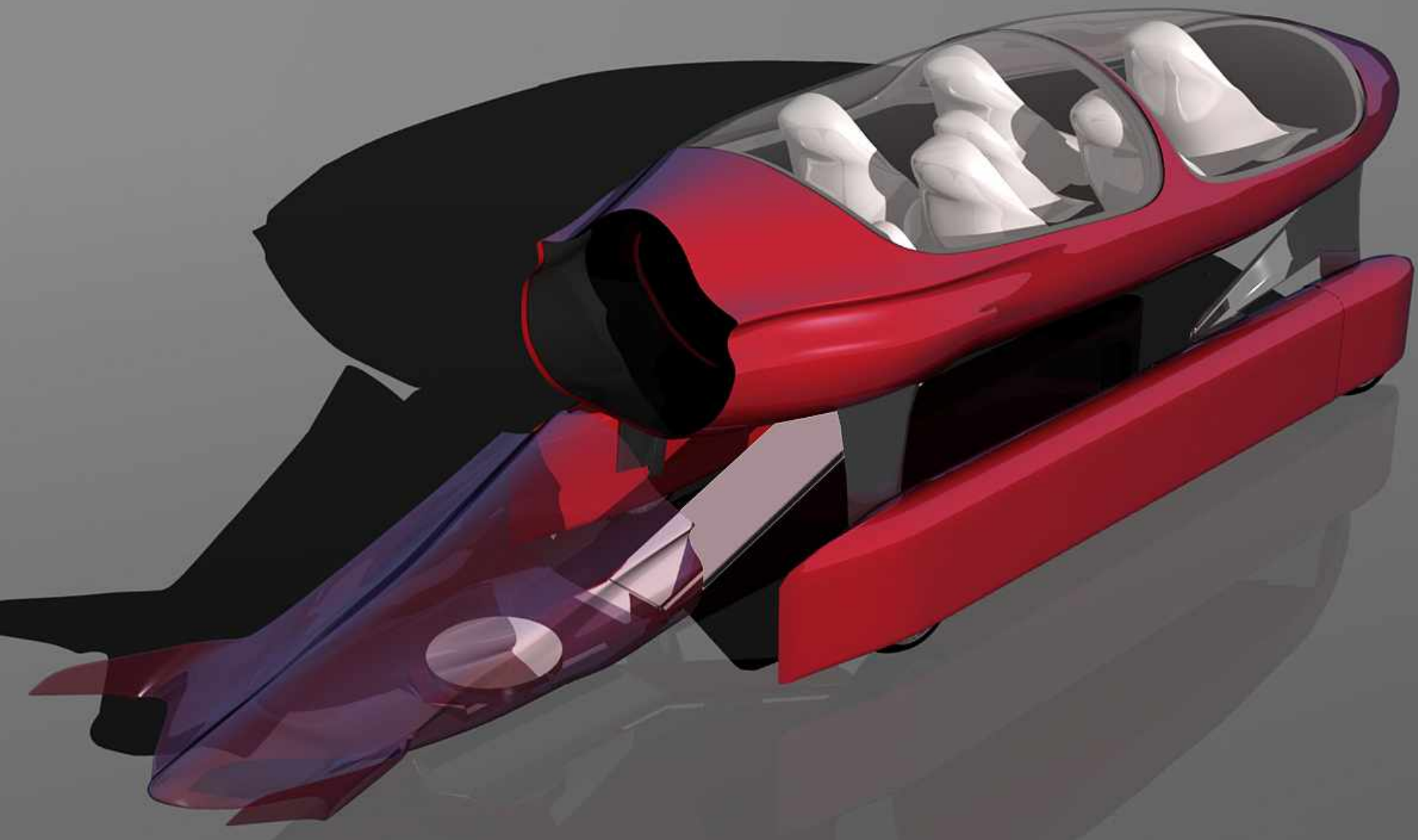
**Other Acabion Versions: 9-Seater  
with 6000 l cargo module**





# URBAN MOBILITY

## Other Acabion Versions: 9-Seater





# URBAN MOBILITY

Other Acabion Versions: 9-Seater



- 0,88 l / 100 km (9 KWh equivalent)
- 40 KW are good for 180 km/h
- 1200 km from one battery charge
- 150 KW are enough for 320 km/h
- Up to 600 KW in four wheel hub motors
- Autopilot function as part of the vision
- Urban speeds up to highway speeds
- 6000 l cargo module for urban logistics
- Foldable to 4.9 m length for reduced parking space

# Acabion Urban Facts

Version 1, 02.08.2010	Total travel time in minutes and energy consumption of the entire journey in KWh							
	Car / Taxi 2020		Bus / Tram 2020		Acabion 4...9 seater 2020		Acabion Marley 2020	
	Travel time total	KWh total	Travel time total	KWh total	Travel time total	KWh total	Travel time total	KWh total
		per passenger		per passenger	Not on elevated tracks	per passenger	on elevated tracks	per passenger
urban distance km	minutes	KWh	minutes	KWh	minutes	KWh	minutes	KWh
1	2,40	0,15	7,00	0,07	2,40	0,04	2,60	0,02
2	4,80	0,30	11,00	0,14	4,80	0,08	3,20	0,04
3	7,20	0,45	13,00	0,21	7,20	0,11	3,80	0,06
5	12,00	0,75	19,00	0,36	12,00	0,19	5,00	0,09
6	14,40	0,90	23,00	0,43	14,40	0,23	5,60	0,11
9	21,60	1,35	31,00	0,64	21,60	0,34	7,40	0,17
10	24,00	1,50	35,00	0,71	24,00	0,38	8,00	0,19
20	48,00	3,00	65,00	1,42	48,00	0,75	14,00	0,38
30	72,00	4,50	95,00	2,13	72,00	1,13	20,00	0,56
40	96,00	6,00	125,00	2,84	96,00	1,50	26,00	0,75



# URBAN MOBILITY





# URBAN MOBILITY



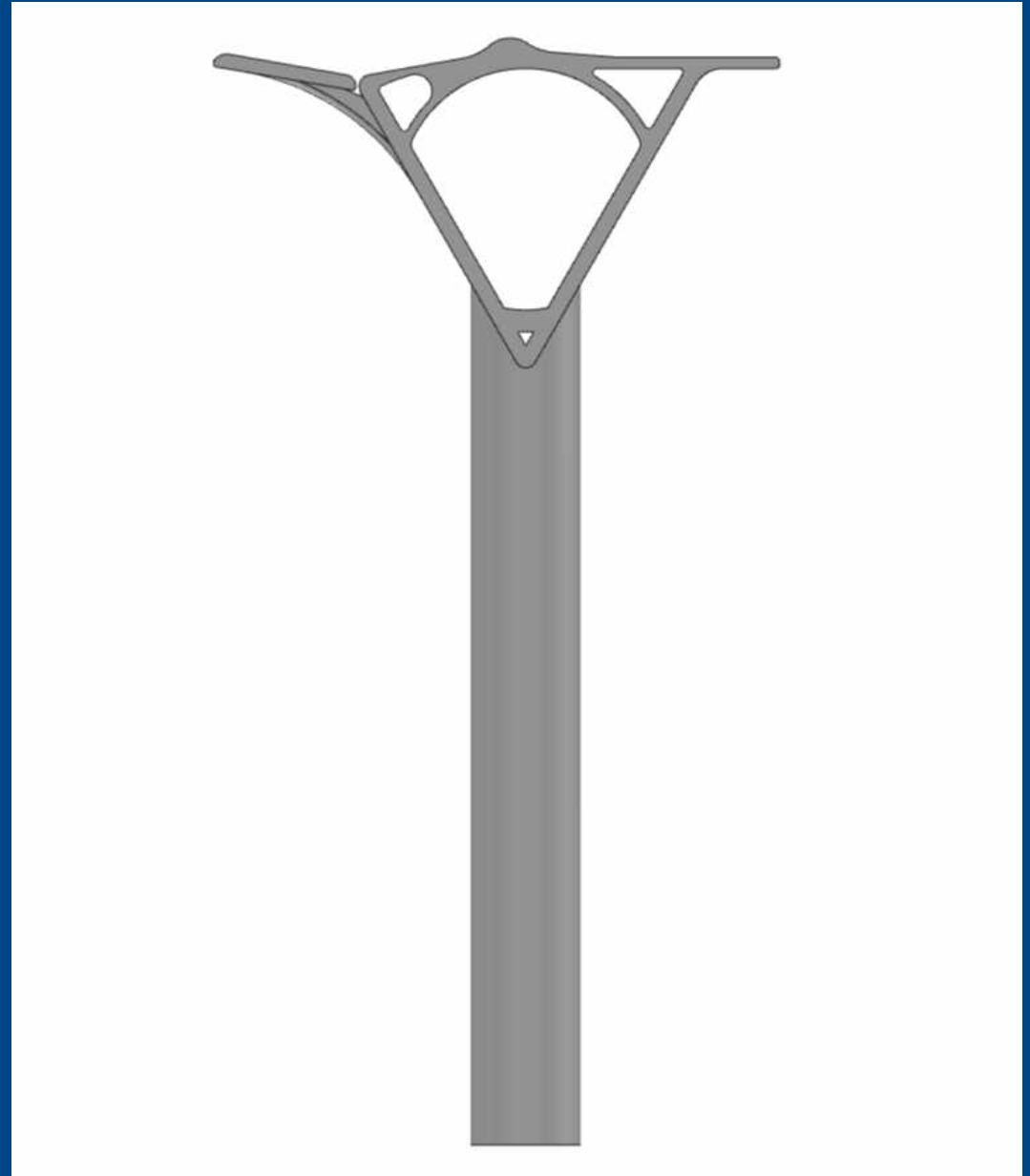


# URBAN MOBILITY

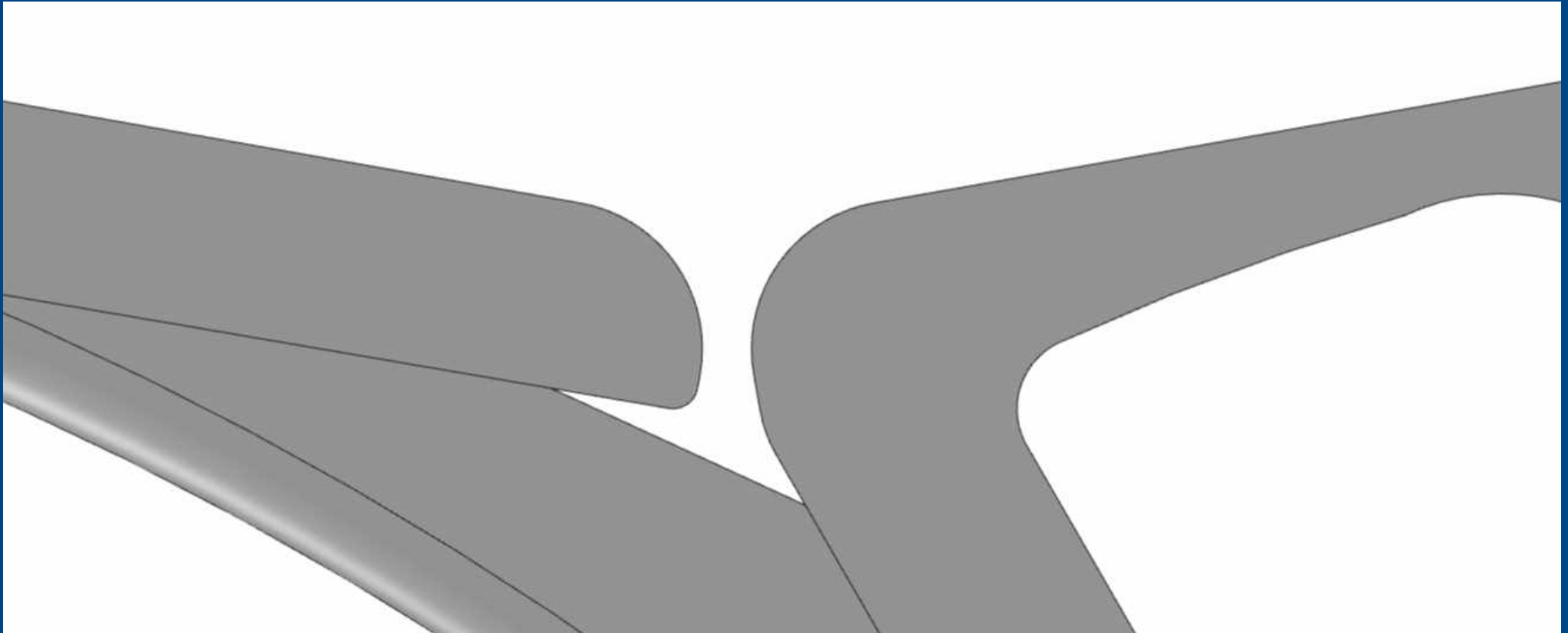




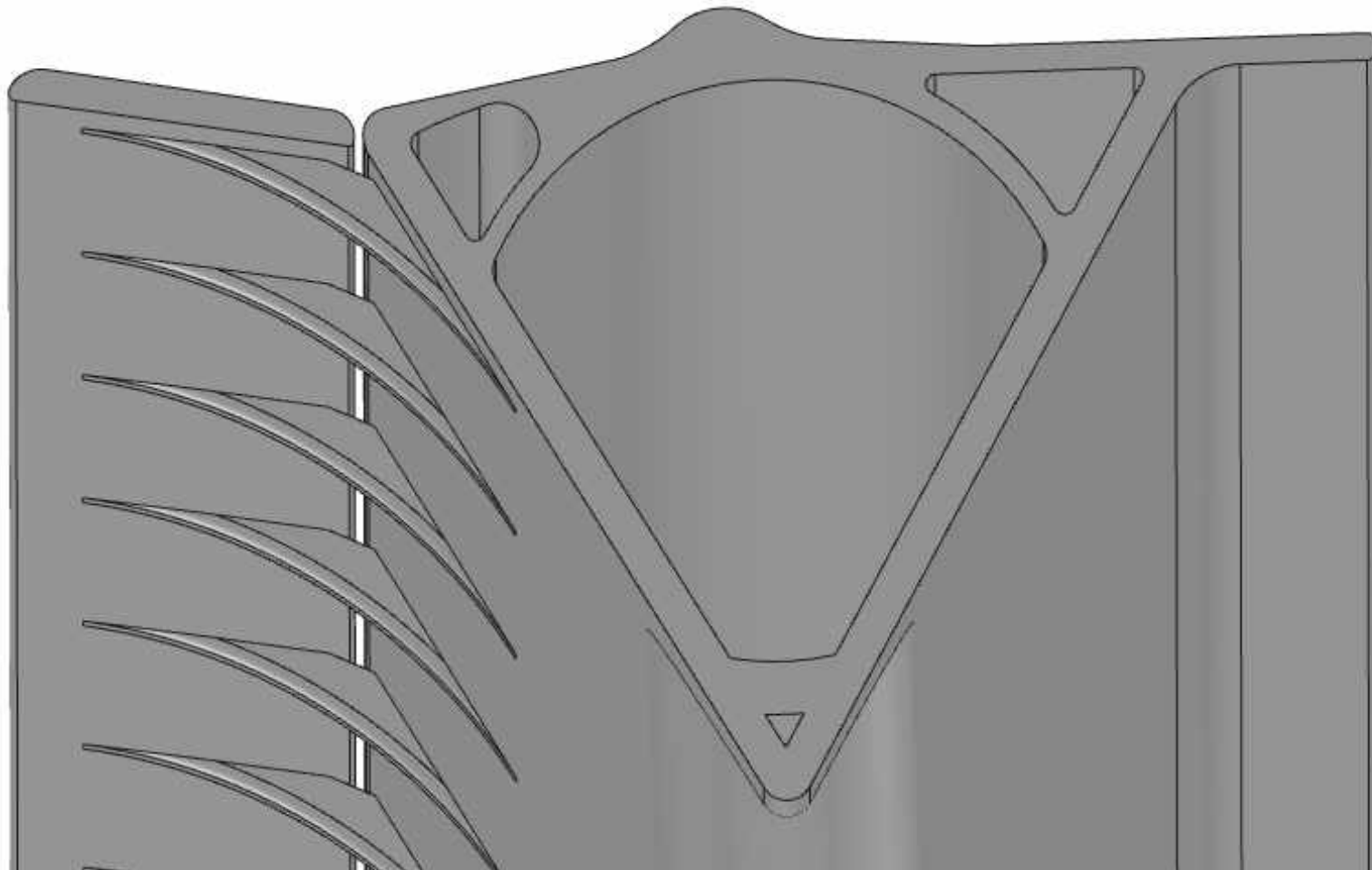
**Hochtrasse**  
**Vollautomatisch**  
**400 km/h**  
**Individuelle Shuttles**



# URBAN MOBILITY

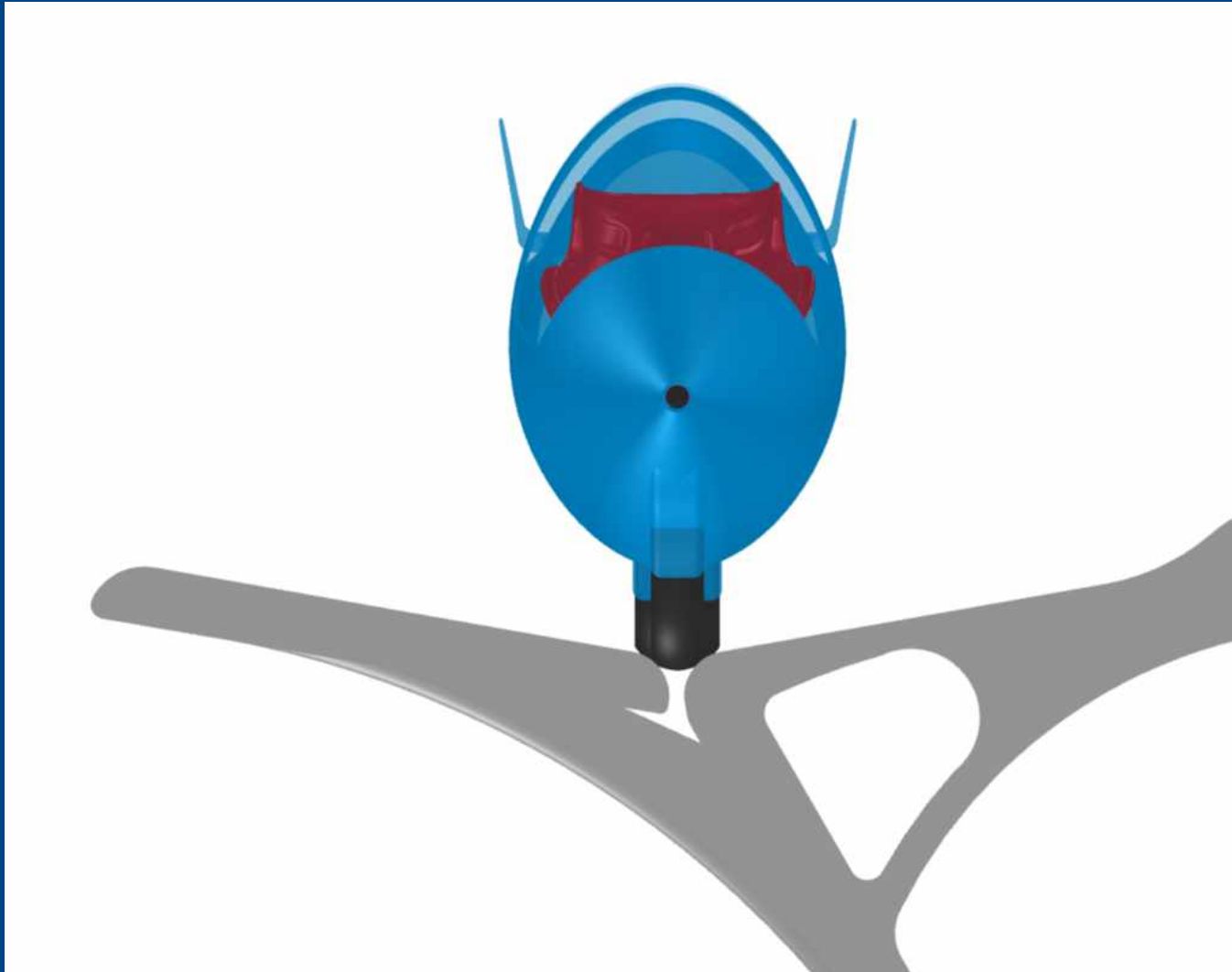


# URBAN MOBILITY





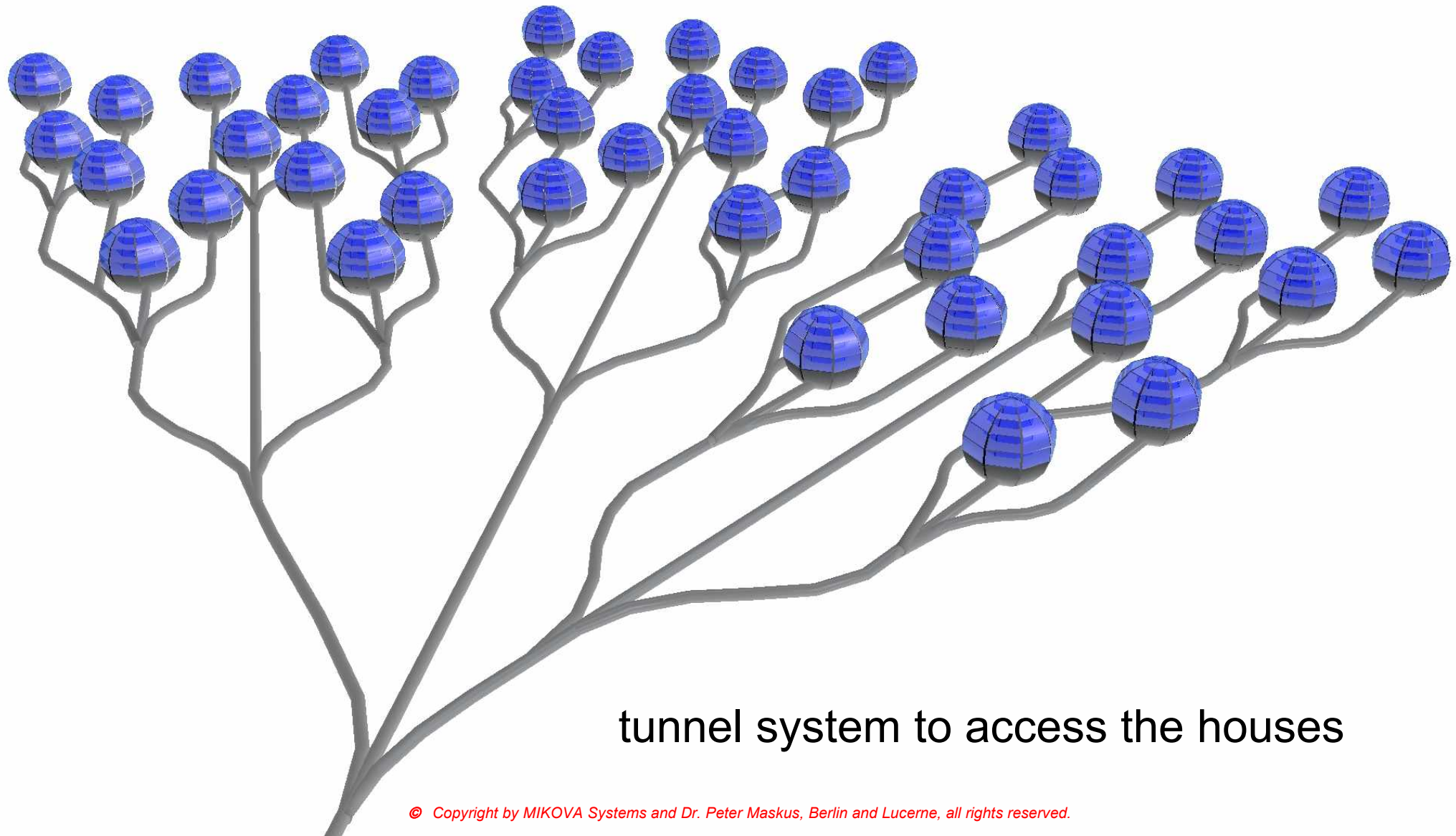
# URBAN MOBILITY





**Siedlung mit  
unterirdischer Zufahrt.**

**„Natur im Vordergrund,  
Technik im Hintergrund  
oder unsichtbar...“**



tunnel system to access the houses



# GLOBAL MOBILITY

From 2010 to 2100 ...





# GLOBAL MOBILITY

**Acabion 2012: 0 to ca. 250 km/h  
on standard Roads**



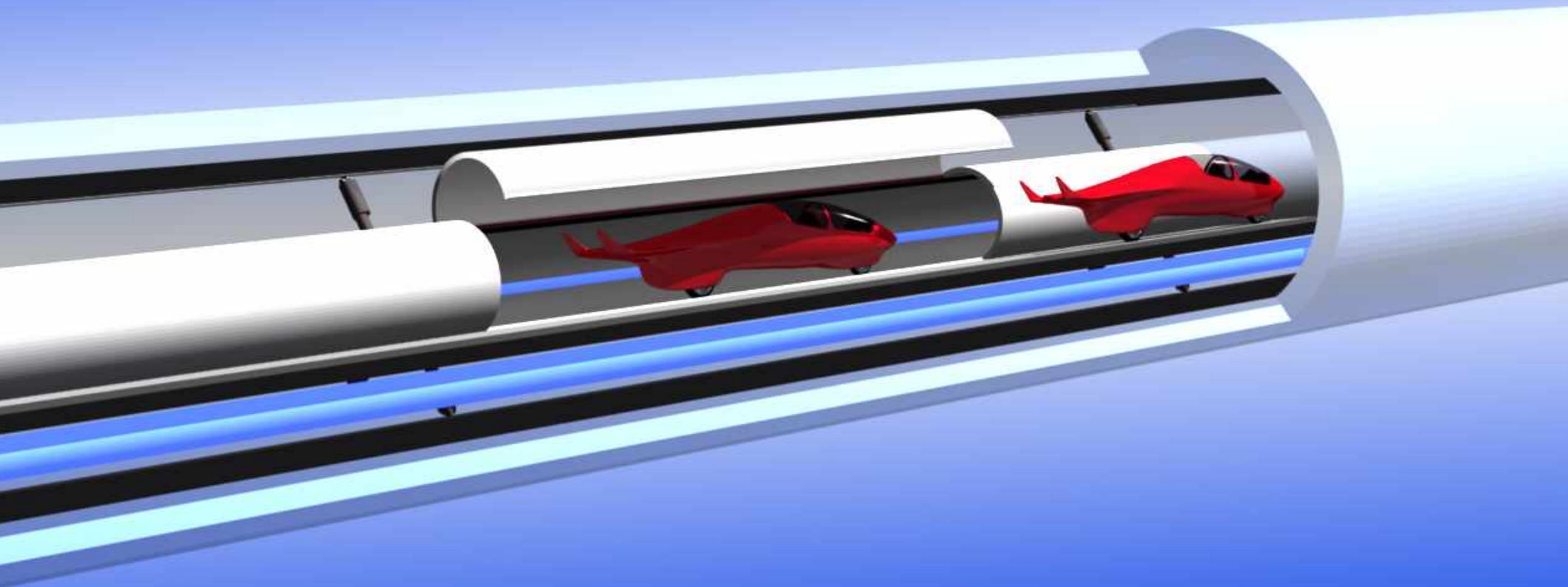
Acabion 2030: 250 to 500 km/h on  
fully automated elevated tracks

## Solar powered

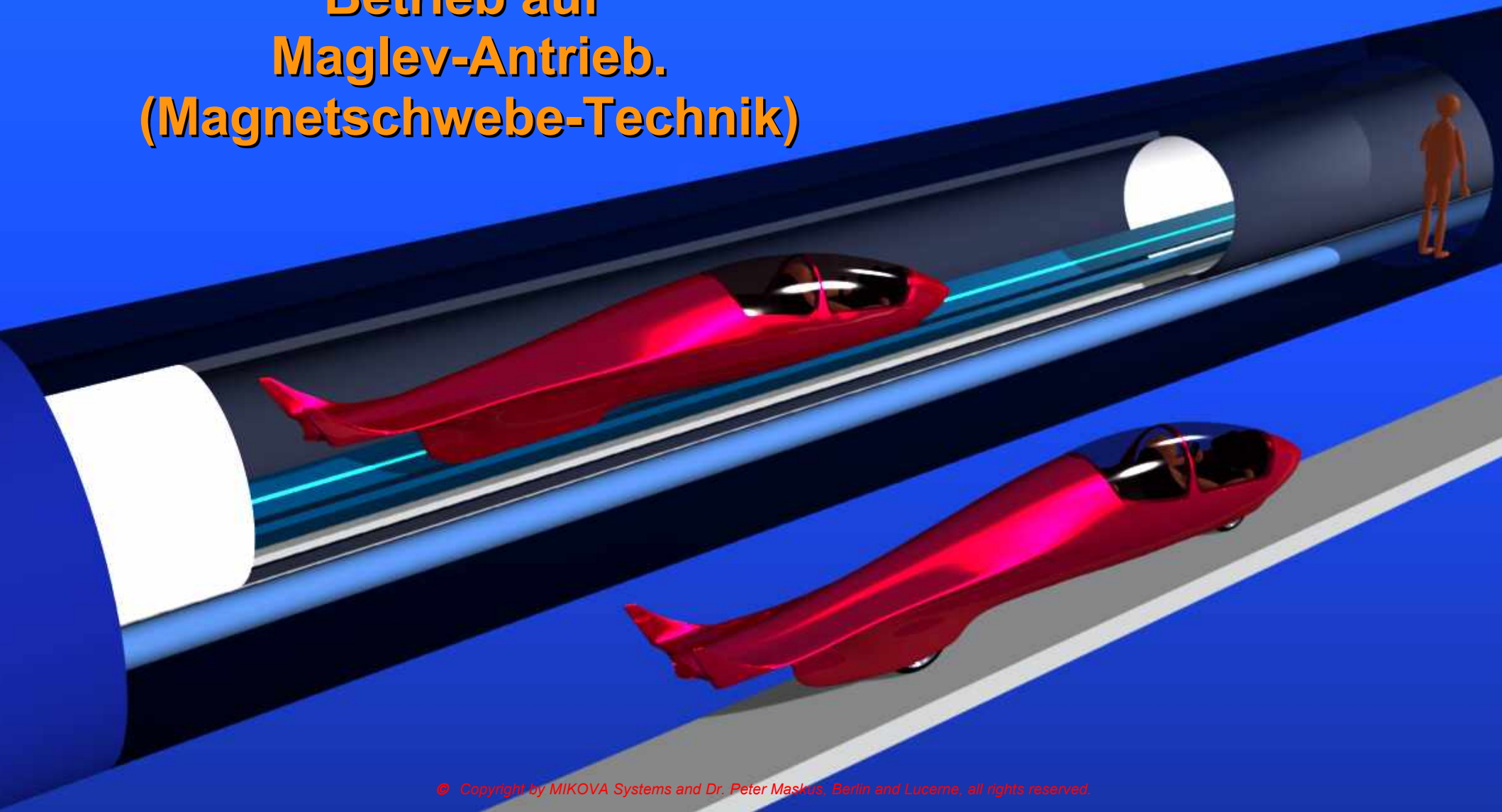




**Druckreduzierter Tunnel,  
0,1...0,2 bar,  
Betrieb auf Rädern.**

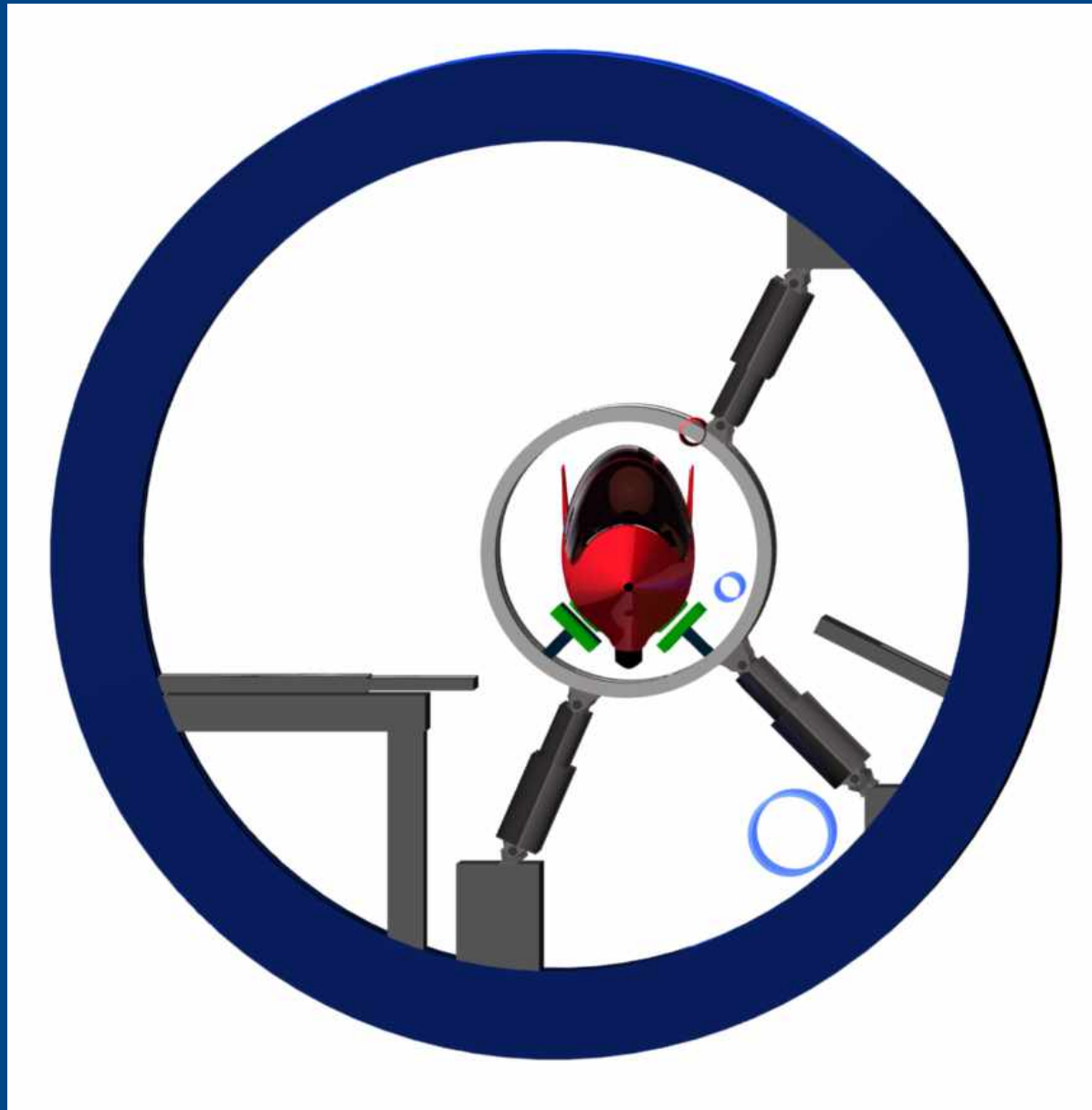


**Vakuumtunnel 0 bar,  
Betrieb auf  
Maglev-Antrieb.  
(Magnetschwebe-Technik)**



# GLOBAL MOBILITY

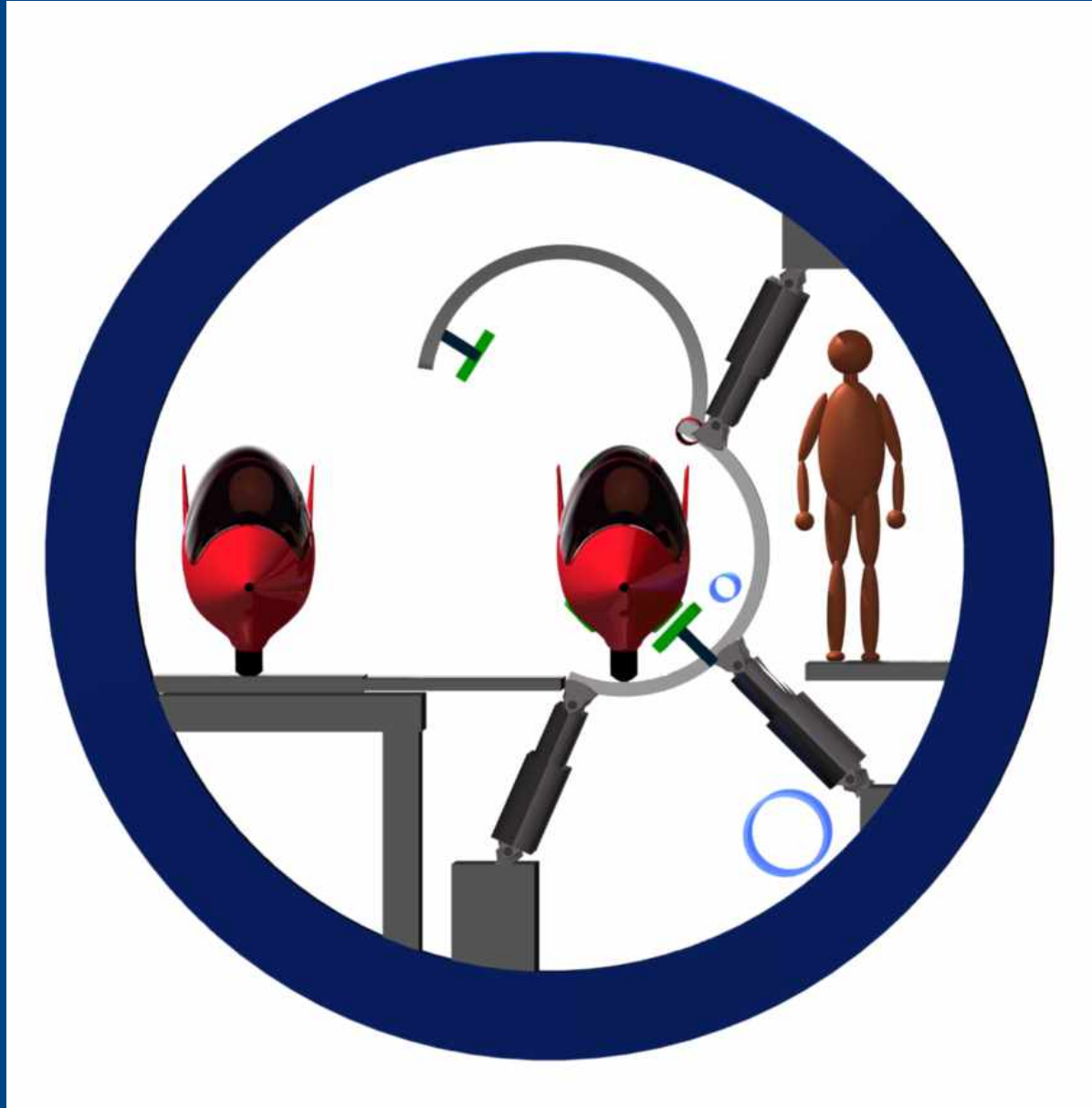
**Acabion 2100: 0 bar vacuum tube  
stage 2, MAGLEV drive at 10 000 km/h**





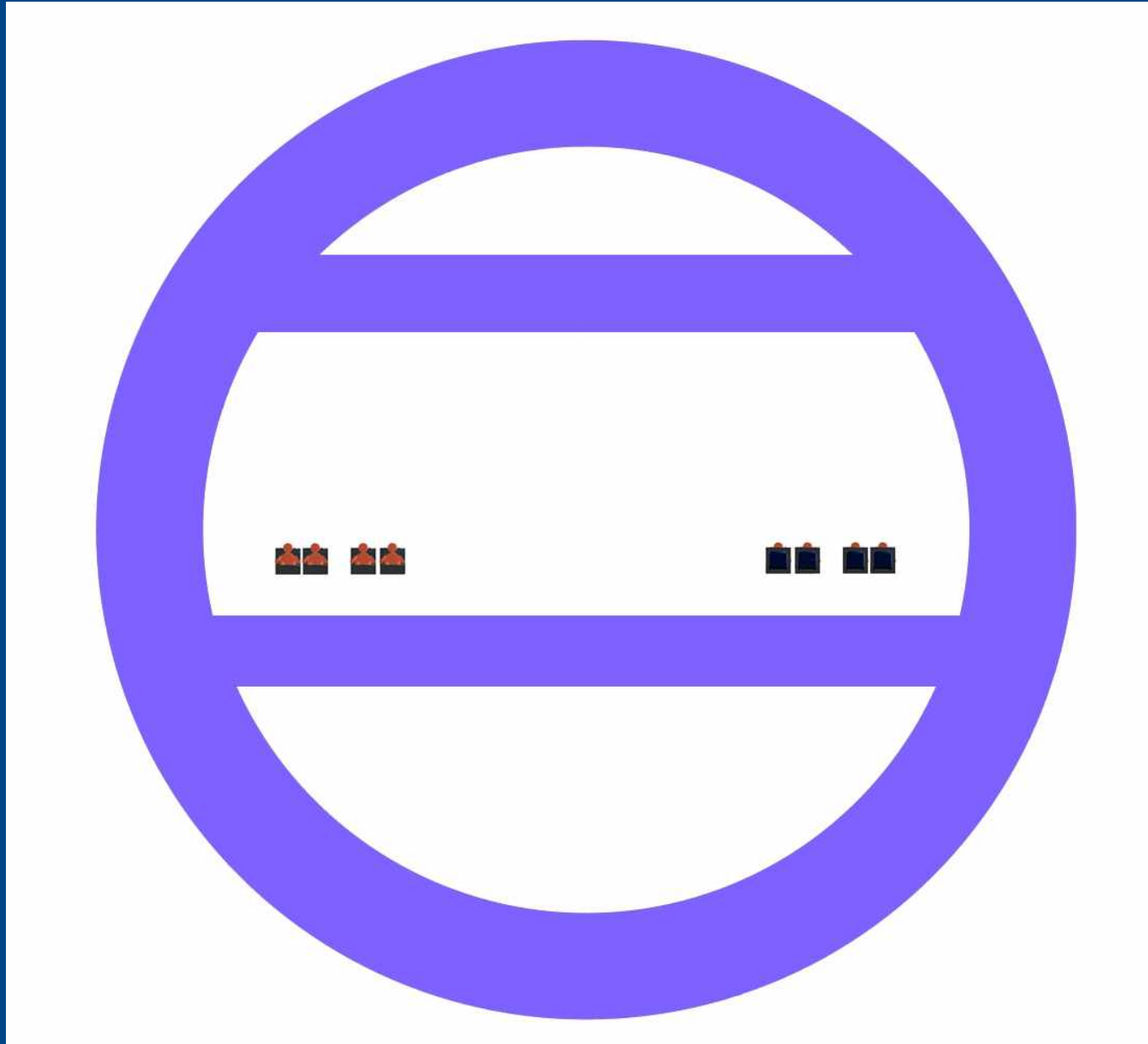
# GLOBAL MOBILITY

**Acabion 2100: 0 bar vacuum tube  
stage 2, MAGLEV drive at 10 000 km/h**



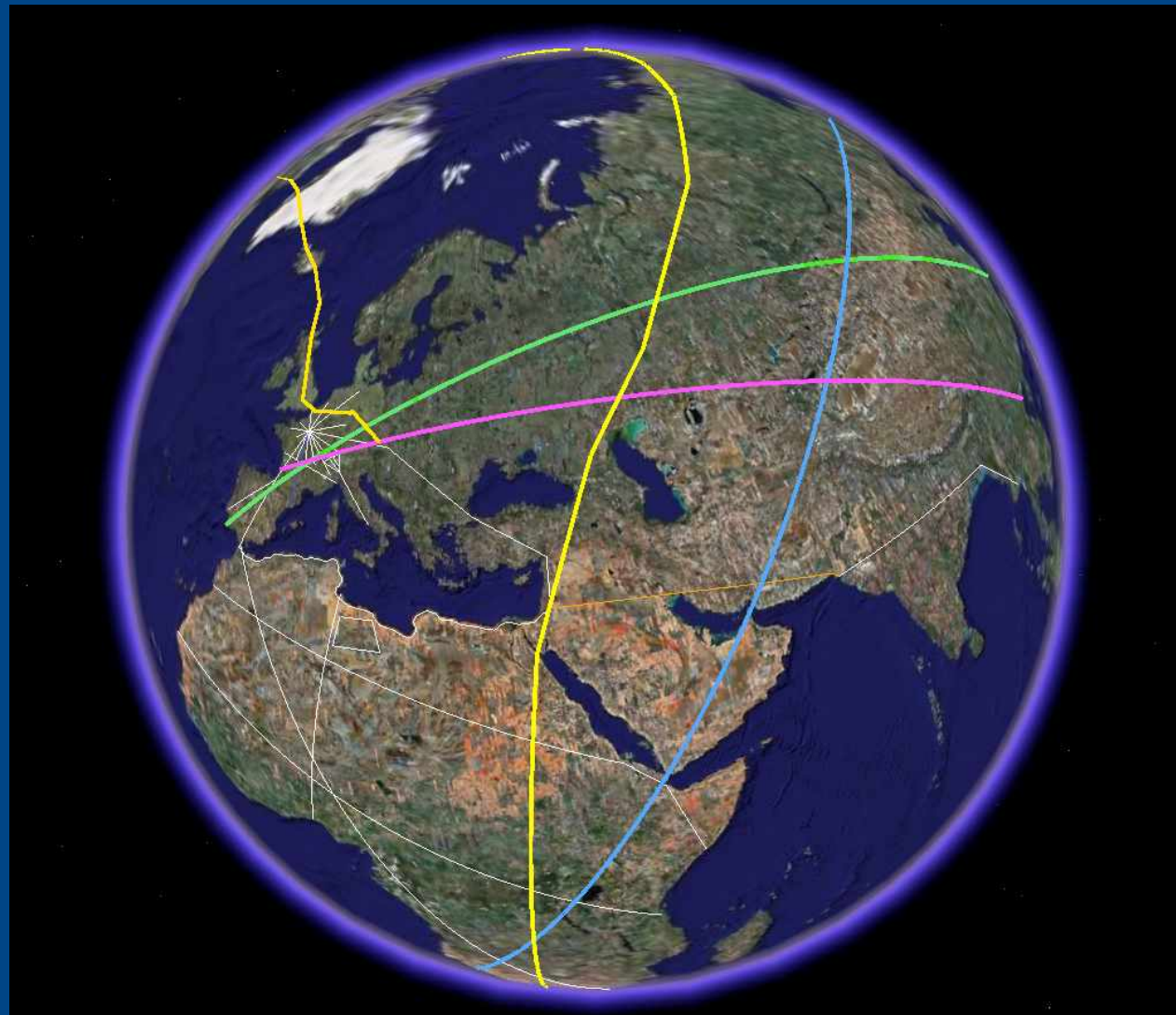
# GLOBAL MOBILITY

**Acabion 2100: 0 bar vacuum tube  
stage 2, MAGLEV drive at 10 000 km/h**



# GLOBAL MOBILITY

**Acabion 2100:  
Reach any point on Earth in 2 hours**





# GLOBAL MOBILITY

## Global Mobility Facts 1)

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Version 4, 19.07.2010	Total travel time in hours and energy consumption of the entire journey in KWh					
	Car 2020		Speed Train 2020		Acabion Shuttle 2020	
	Travel time total	KWh total	Travel time total	KWh total	Travel time total	KWh total
	effective speed	passengers per vehicle:	130 km/h effective	+25 KWh to/from station	at	passengers per vehicle:
	1 overnight per 10 hours	1,1	+1h to/from train station	80	300	1,1
				% seats booked	km/h effective	
distance km						
100	1,00	13,64	1,77	45,00	0,33	6,44
500	5,00	68,18	4,85	100,00	1,67	32,19
1000	19,00	136,36	8,69	168,75	3,33	64,38
2000	38,00	272,73	16,38	306,25	6,67	128,75
3000	57,00	409,09	24,08	443,75	10,00	193,13
4000	76,00	545,45	31,77	581,25	13,33	257,50
5000	95,00	681,82	39,46	718,75	16,67	321,88
6000	114,00	818,18	47,15	856,25	20,00	386,25
10000	190,00	1363,64	77,92	1406,25	33,33	643,75
20000	380,00	2727,27	154,85	2781,25	66,67	1287,50
	Airplane 2020		Acabion Low Pressure Tube 2050		Acabion Maglev Vacuum Tube 2100	
	Travel time total	KWh total	Travel time total	KWh total	Travel time total	KWh total
	500 to 980km/h effective	+50KWh to/from airport	at	passengers per vehicle:	at	passengers per vehicle:
	depending on distance	80	600	1,1	10000	1,1
	+3...7h to/from airport	% seats booked	km/h effective	0.2 bar system pressure	km/h effective	0 bar system pressure
100	3,22	76,25	1,42	8,02	3,51	100,36
500	4,08	131,25	2,08	40,11	3,55	101,81
1000	5,11	200,00	2,92	80,23	3,60	103,61
2000	7,05	337,50	4,58	160,45	3,70	107,23
3000	8,84	475,00	6,25	240,68	3,80	110,84
4000	10,51	612,50	7,92	320,91	3,90	114,46
5000	12,06	750,00	9,58	401,14	4,00	118,07
6000	13,52	887,50	11,25	481,36	4,10	121,68
10000	18,51	1437,50	17,92	802,27	4,50	136,14
20000	27,41	2812,50	34,58	1604,55	5,50	172,28

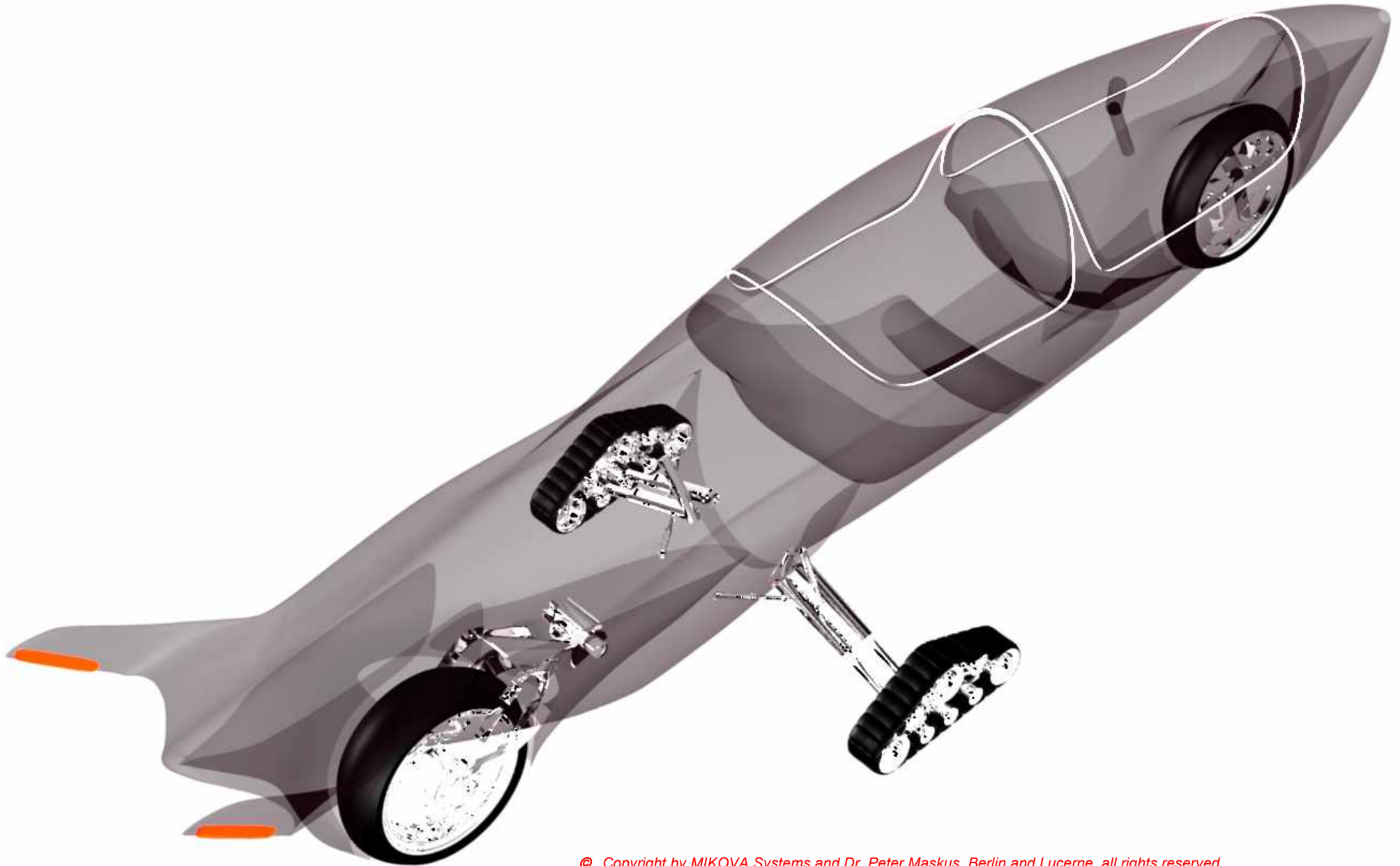
Transport device purchasing costs per seat in €		
System	Comment	€ per seat
Car	Manual drive	7 000,-
Speed Train	German ICE Train data	45 000,-
Airplane	Airbus Data	390 000,-
Acabion Manual Shuttle	Not for elevated track, not for tube	5 000,-
Acabion Automatic Shuttle	fully automatic door to door	40 000,-
Acabion 0,2 bar Tube Shuttle	0.2 bar system, fully automatic door to door	50 000,-
Acabion Vacuum Tube	Vacuum system, fully automatic, 10 000 km/h maglev	300 000,-
Track / Infrastructure costs per passenger and per 100 km		
System	Comment	€ per passenger 100 km
Auto	Costs for street net	4,00
ICE	Cost for train track plus stations	6,00
Flugzeug	Costs for airports and communication	5,00
Acabion Manual Shuttle	Reduced mass per craft (400 kg) reduces road damage, reduced system width doubles number of usable lanes	1,50
Acabion Automatic Shuttle	Elevated tracks will be constructed very cost efficient and will have extremely high transport capacity due to their fully automation. Costs for hubs reduce this cost advantage slightly.	2,00
Acabion 0,2 bar Tube Shuttle	Relatively simple 4 m tube	2,50
Acabion Vacuum Tube	Hightech 4 m maglev vacuum tube	3,00

- **100% compatible to all of today's roads, garages, parking spaces etc.**
- **Additionally upward compatible to future fully automated tracks in form of either elevated lanes or tunnels.**
- **On today's roads the Acabion can become the Successor of Cars.**
- **On future additional high speed tracks the Acabion can become the successor of trains and airplanes.**
- **Full electric drive at 10 KW (180 km/h) up to 500 KW (650 km/h).**
- **Up to + 2500% efficiency increase towards Smart E. (Factor 25).**
- **3-times the acceleration potential of a 2010 Formula 1 race car.**
- **Mecatronic drive and balance (drive by wire).**
- **1200 km range per charge from an 28 KWh LiFePo battery.**
- **Combustion engines (4-stroke) as alternative: 180 hp to 800 hp Turbo.**
- **At 400 kg total vehicle weight that makes up to 2000 hp per ton.**
- **Anyhow less energy needed per 100 km than with a Piaggio scooter.**
- **Palette of future crafts from one to nine seats.**



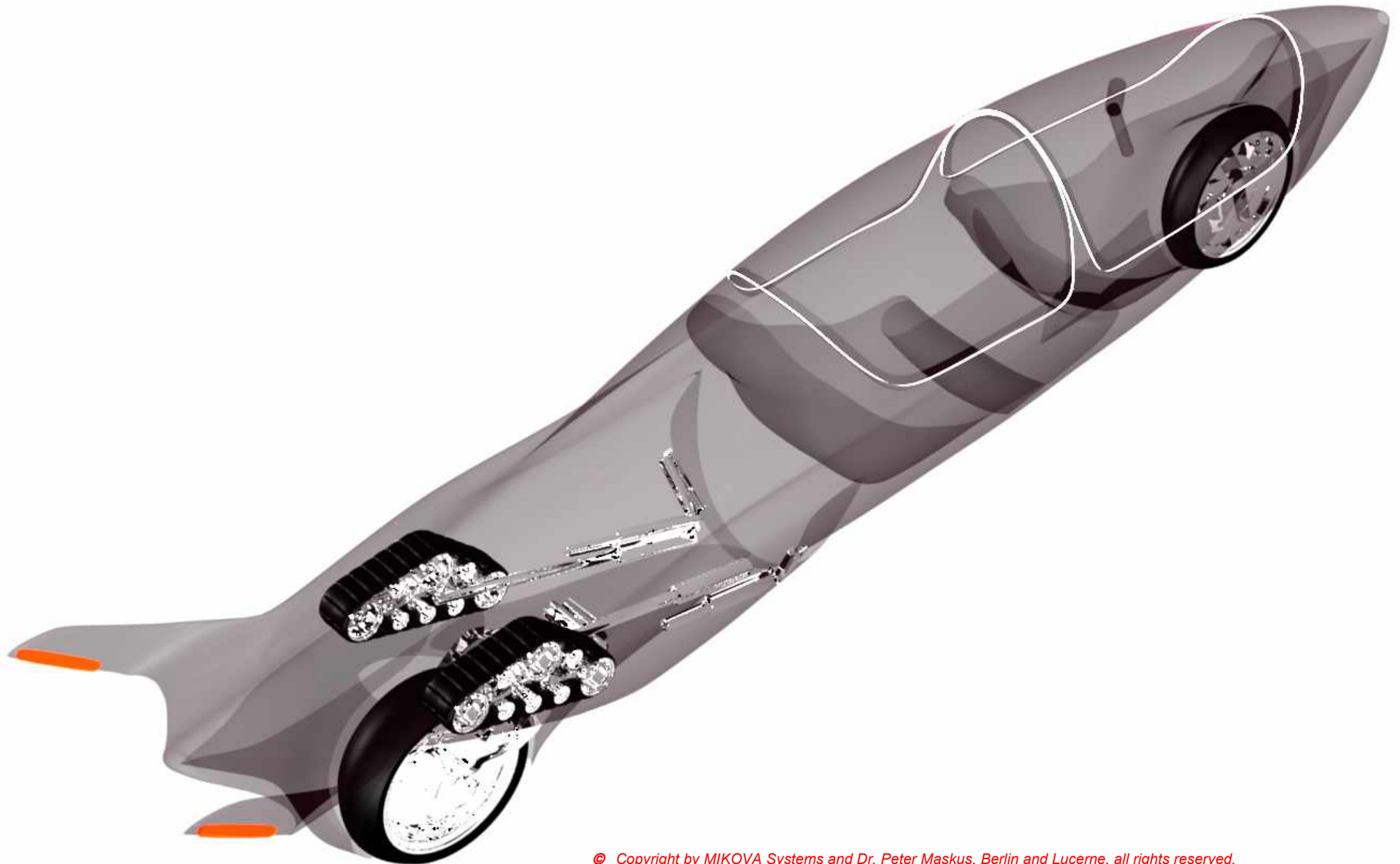
# ATTACHMENT

## Acabion for the Alps



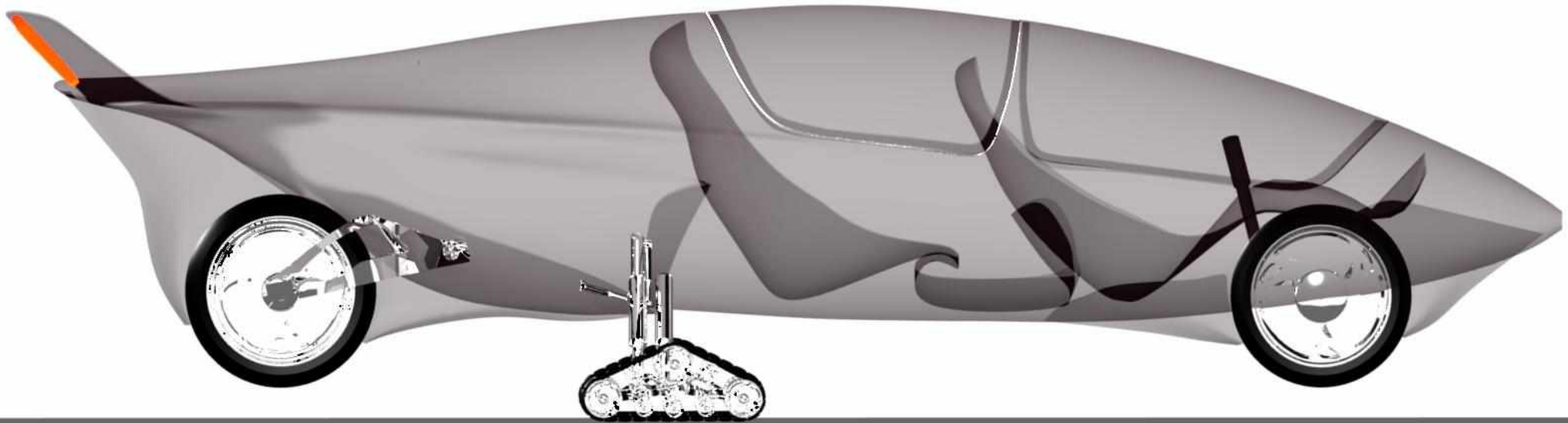
# ATTACHMENT

## Acabion for the Alps



# ATTACHMENT

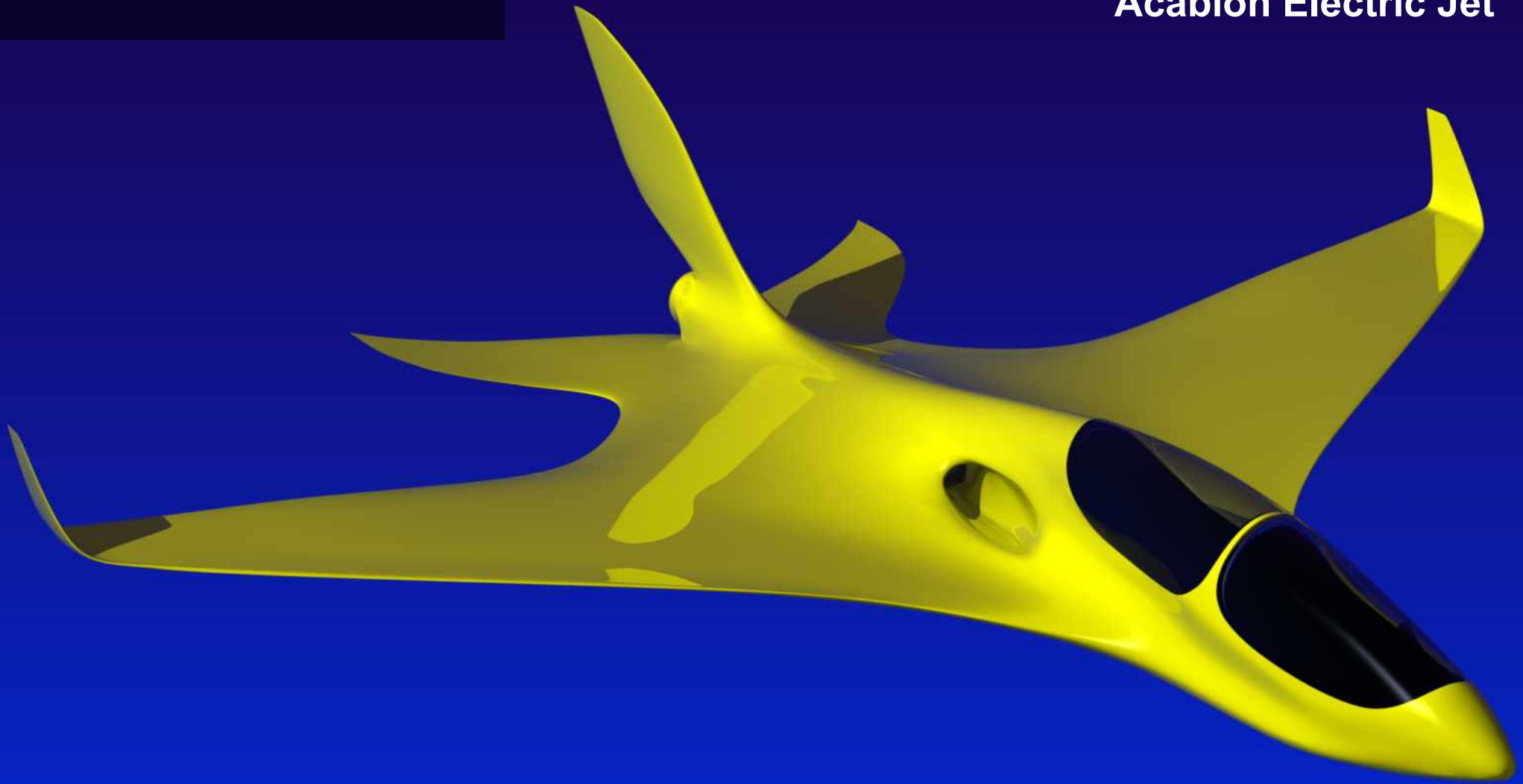
## Acabion for the Alps





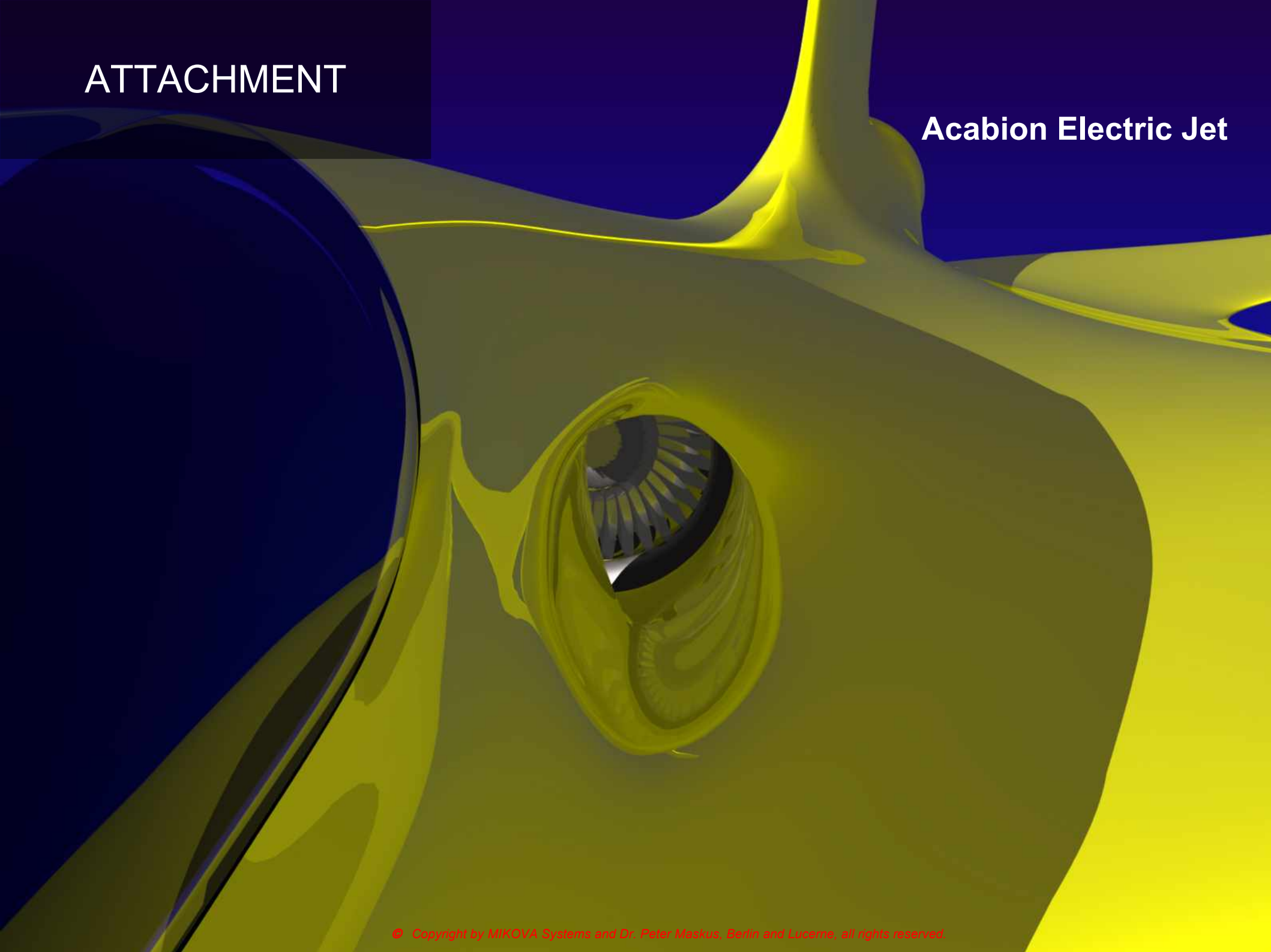
ATTACHMENT

**Acabion Electric Jet**



ATTACHMENT

Acabion Electric Jet



# ATTACHMENT

## Acabion Heli Module





# ATTACHMENT

## Acabion Heli Module



# ATTACHMENT

## Acabion Heli Module



# ATTACHMENT

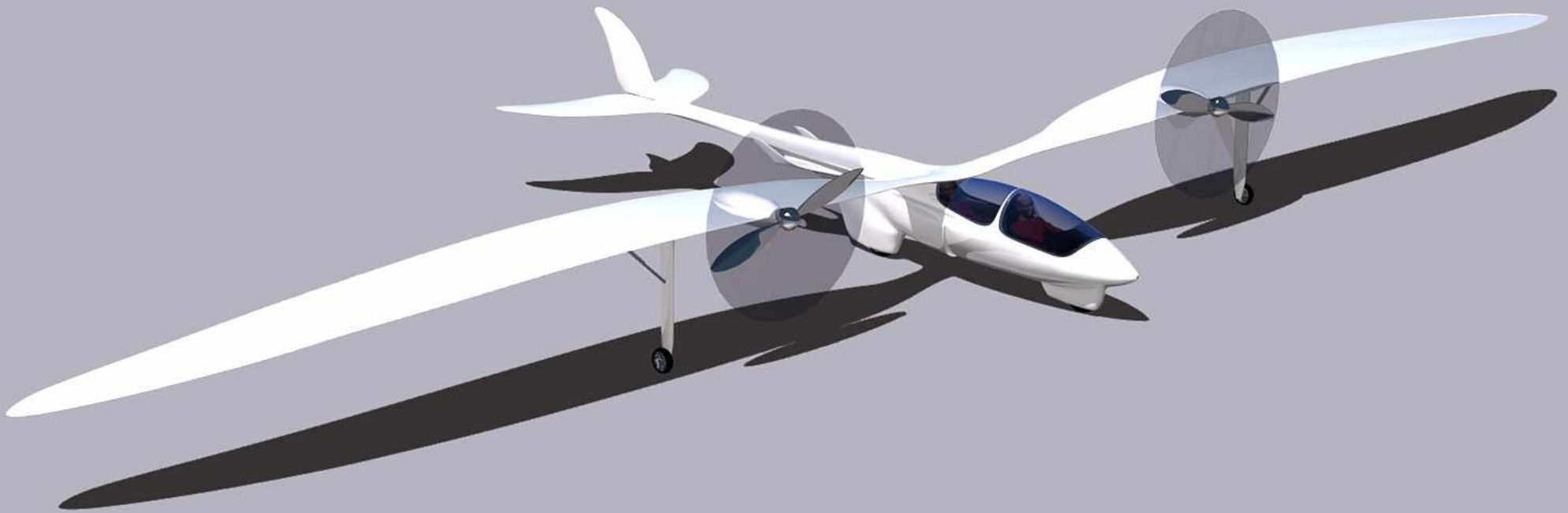
## Acabion Fixed Wing Module





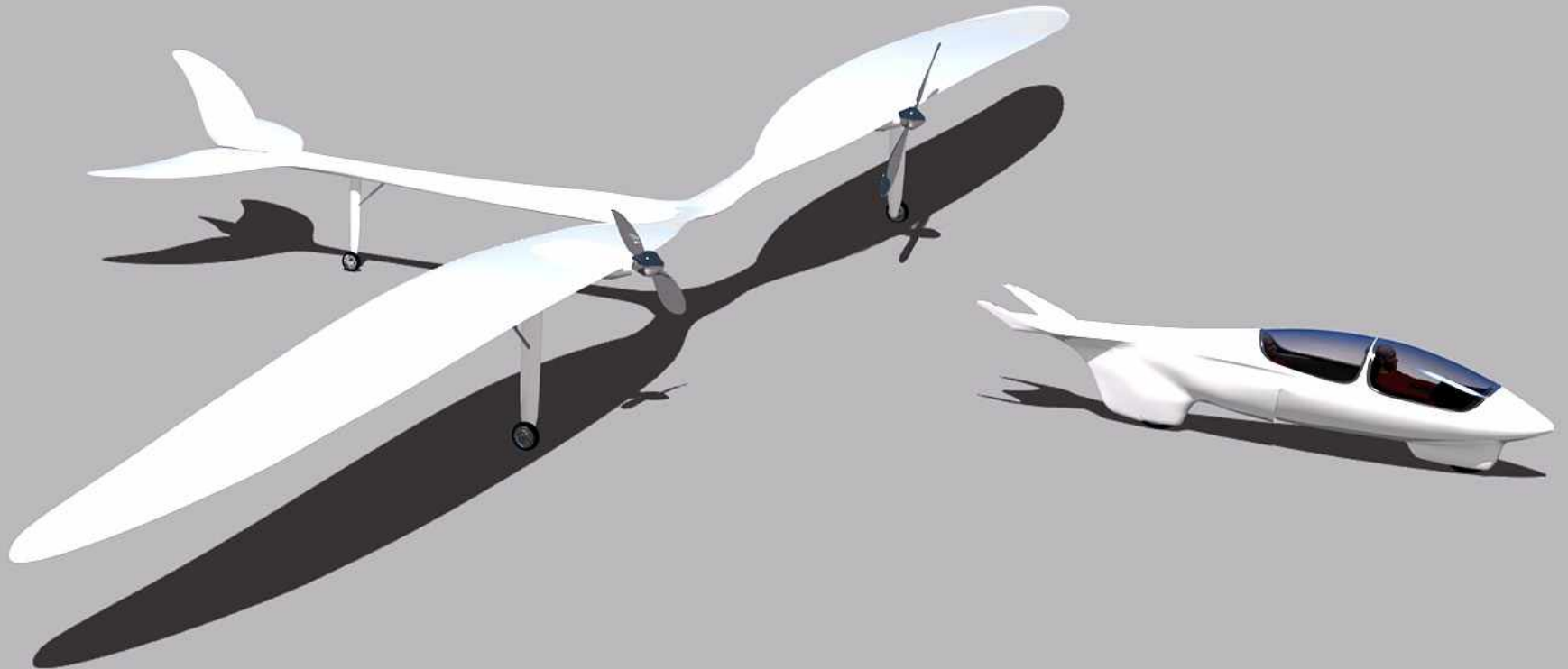
# ATTACHMENT

## Acabion Fixed Wing Module



# ATTACHMENT

## Acabion Fixed Wing Module





ATTACHMENT

**Gesamtprojektleitung:**

**Dipl.-Ing. Lenka Miková,  
MIKOVA Systems  
Luzern.**





# Vielen Dank.

