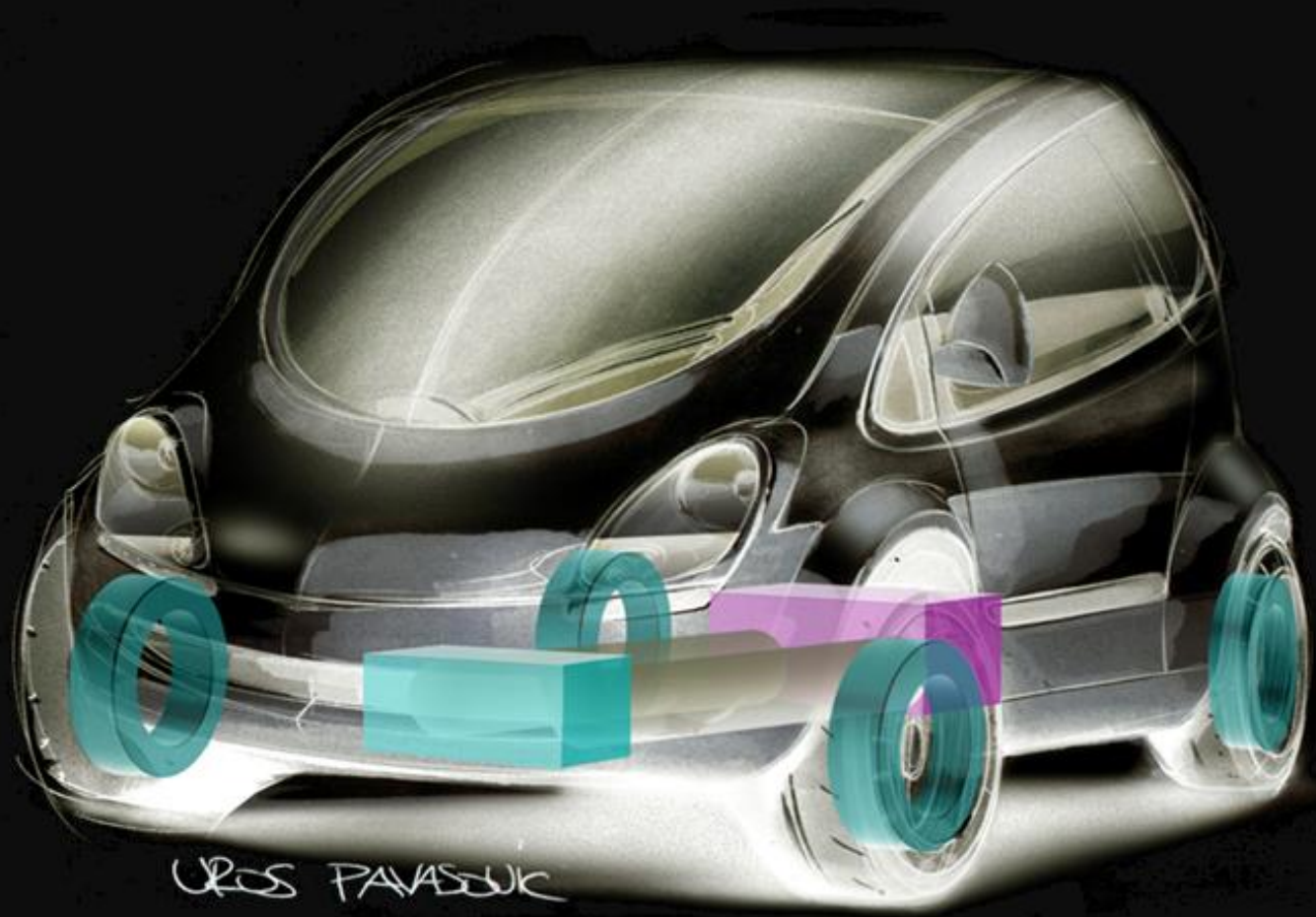
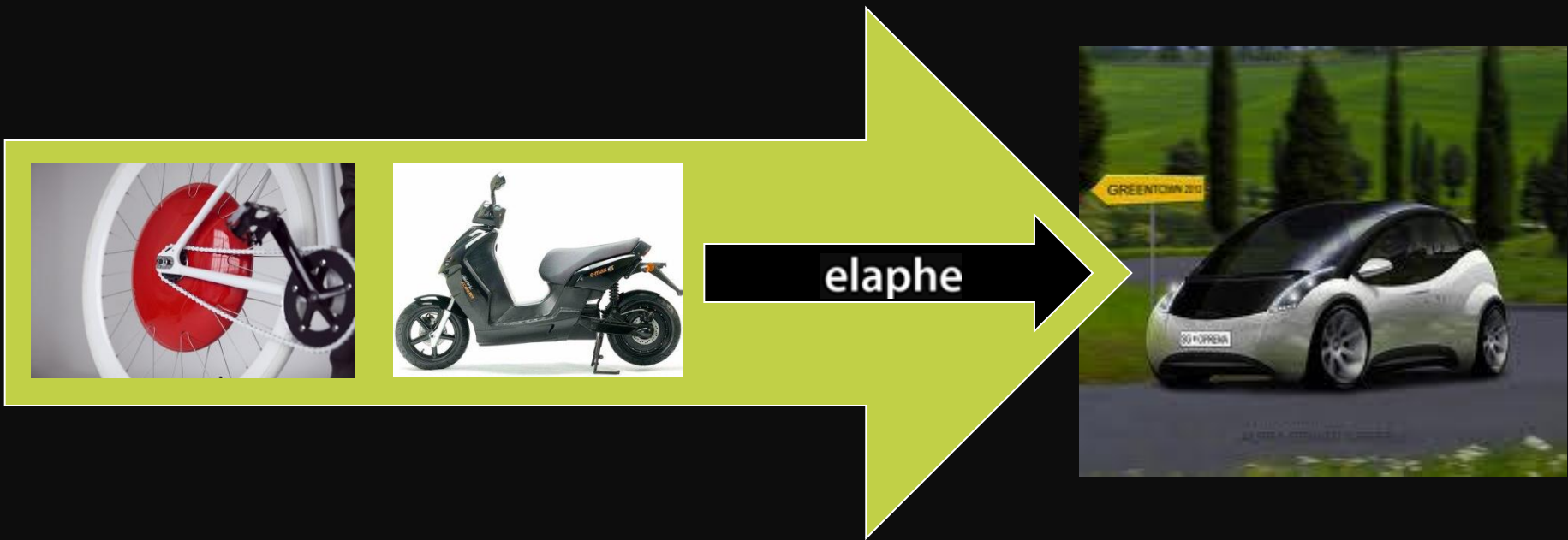


# ELAPHE in-wheel motors

In every wheel



# In-wheel drive - disruptive technology



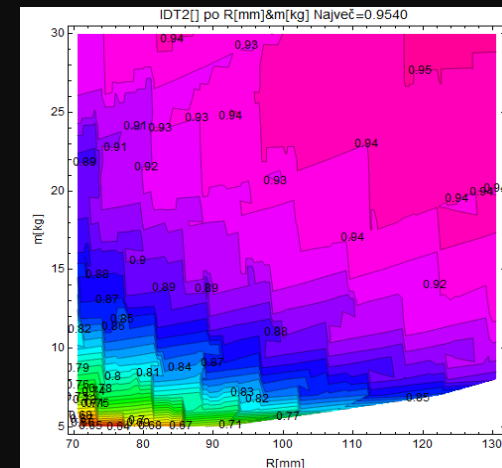
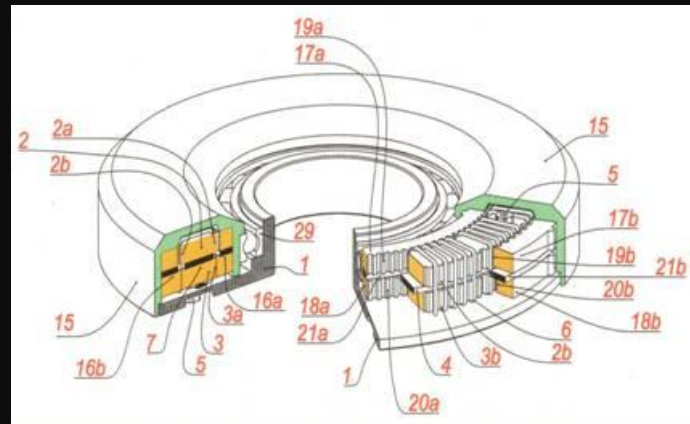
Historia est vitae magistra

# ELAPHE\* product

We Design & Deliver...

...customized in-wheel electric motor using  
ELAPHE\* proprietary technology

- Low weight
- High power and torque
- Excellent efficiency



# Market potential (2015)

**60 million** new cars  
annually

**10%** electric or  
series hybrid

**1500 €** average per  
motor



**9 billion €** total market for passenger car electric motors in 2015

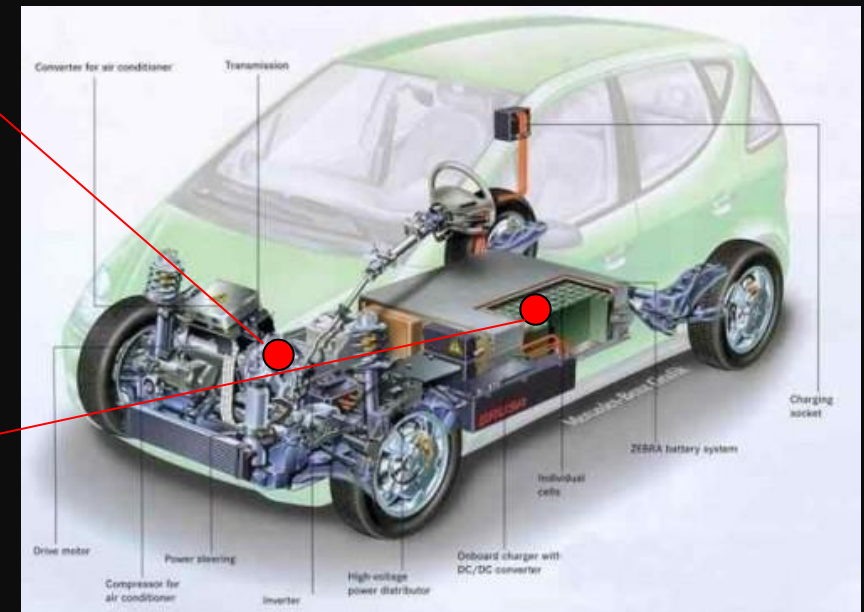
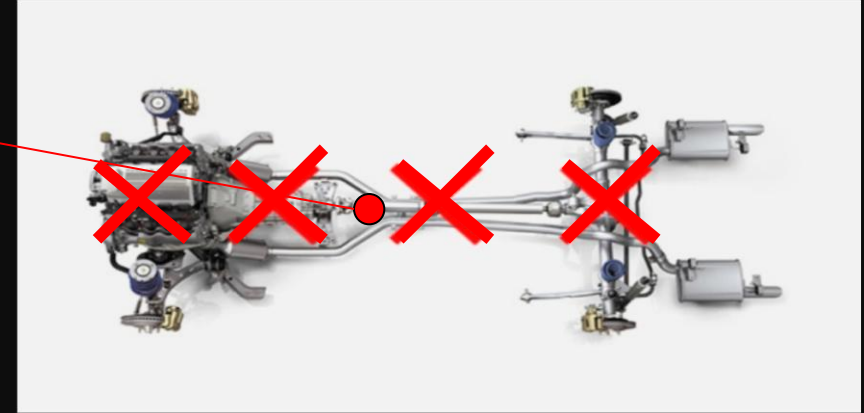
Year	2015	2020
Total market (TAM)	9 000 M€	30 000 M€
In-wheel market (SAM)	500 M€	5 000 M€
Elaphe obtainable (SOM)	45 M€	800 M€

# Solving the pain

○ Reducing the weight and number of components

○ Increasing the overall efficiency by up to 20%!

○ Reducing the overall propulsion system price



# Competition overview

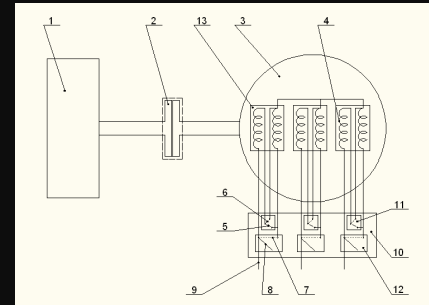
DD Motor 	Cont. Torque [Nm]	Weight [kg]	Spec. Torque [Nm/kg]
Competitor 1	400	23	<b>17.4</b>
Competitor 2	500	31	<b>16.1</b>
Competitor 3	275	33.5	<b>8.2</b>
Elaphe*Chebela	290	14	<b>20.7</b>
Elaphe*Smart	450	17	<b>26.5</b>
Elaphe* HYCAT	660	23	<b>28.7</b>

# Intellectual property

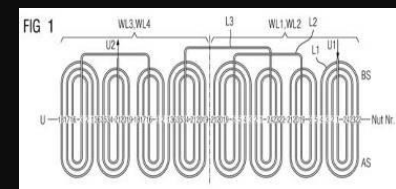
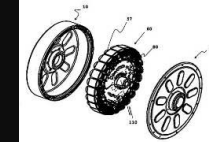
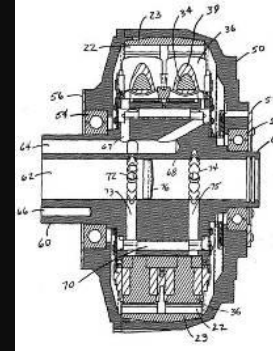
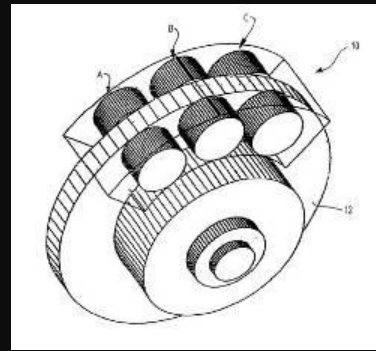
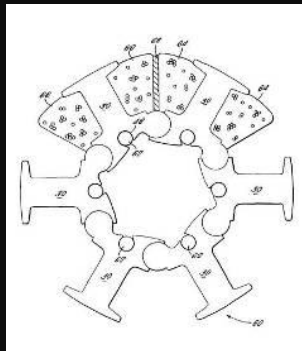
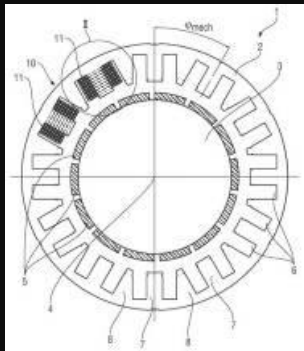
- Radical innovations
- Twelve patents until end 2012

$$f(x) = d + \sum_{i=1}^{i \leq M} A_i \cos(N i k x) \quad \beta_n = \frac{1}{2} \sum_{i=1,3,5,7,\dots}^{i \leq N, M-n} a_i (a_{i+n} + a_{i-n})$$

$$a_n = \frac{4B_r k}{\pi \operatorname{Sh}[n k s]} \int_0^4 \operatorname{Sh}[n k f(x)] \operatorname{Cos}[n k x] dx$$



## Competition patents



# Track record

Elaphe\*1 – Proof of theory

Elaphe\*2 – Simplification of construction

Elaphe\*ET – 30 kW sailplane motor

Elaphe\*3 – drivable Scooter (2 years in operation)

Elaphe\*4 - Bike

Elaphe\*Chebela

Elaphe\*IM

Elaphe\*A1

Elaphe\*HYCAT

2003

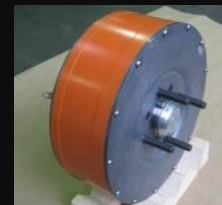
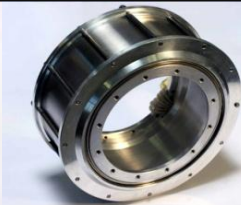
2005

2007

2008

2009

2010



# Key customers

- Short term:  
Electric vehicle manufacturers
- Long term:  
Traditional automotive industry



**Existing:** OR-Chebela, HYCAT, Turn-E



**Meetings:** Siemens, Reva, Honda, GM, Aptera, Zap!, Saba<sub>9</sub>

# ELAPHE core team

## Gorazd Lampič, CEO

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- 7 years in Direct Drive R&D
- developed Elaphe business to its present state



## Andrej Detela, innovator

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- A number of sold patents
- Successful theoretical physicist

### CTO:

Gorazd Gotovac

### VP of Engineering:

Dr. Joško Valentinčič

### Implementation Engineer:

Matic Franko

### Business advisor:

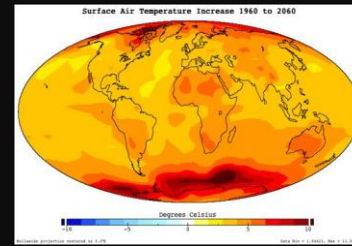
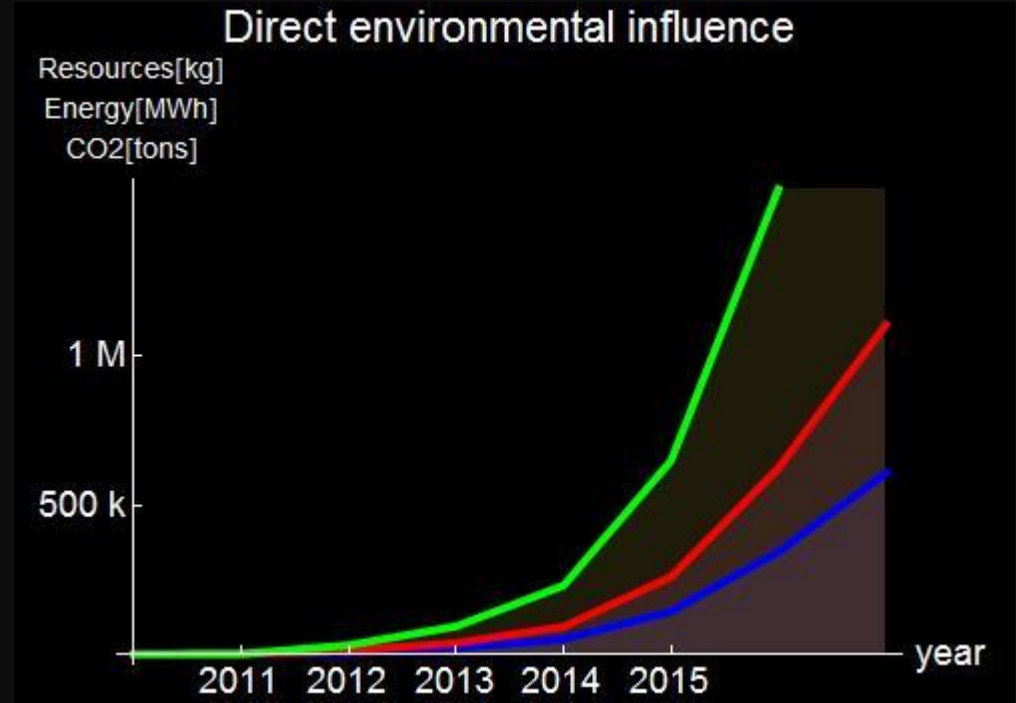
Kristijan Pečanec, Boundbreaker

### EV advisor:

Andrej Pečjak, EV expert

# Motivation

## ELECTRIC MOBILITY WITH ELAPHE IN-WHEEL



Efficient resource use

Clean water

Clean air

Renewable energy  
Global warming fight

# The Deal

2.5 Million € to invest in:

## Going to the market globally

- Pre-developing the product for the global automotive customer
- Complete IPR protection

Exit :

- Sale to the strategic partner or financial investor,...

## ELAPHE LTD.

Technology park, Teslova 30  
1000 Ljubljana, Slovenia-EU

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