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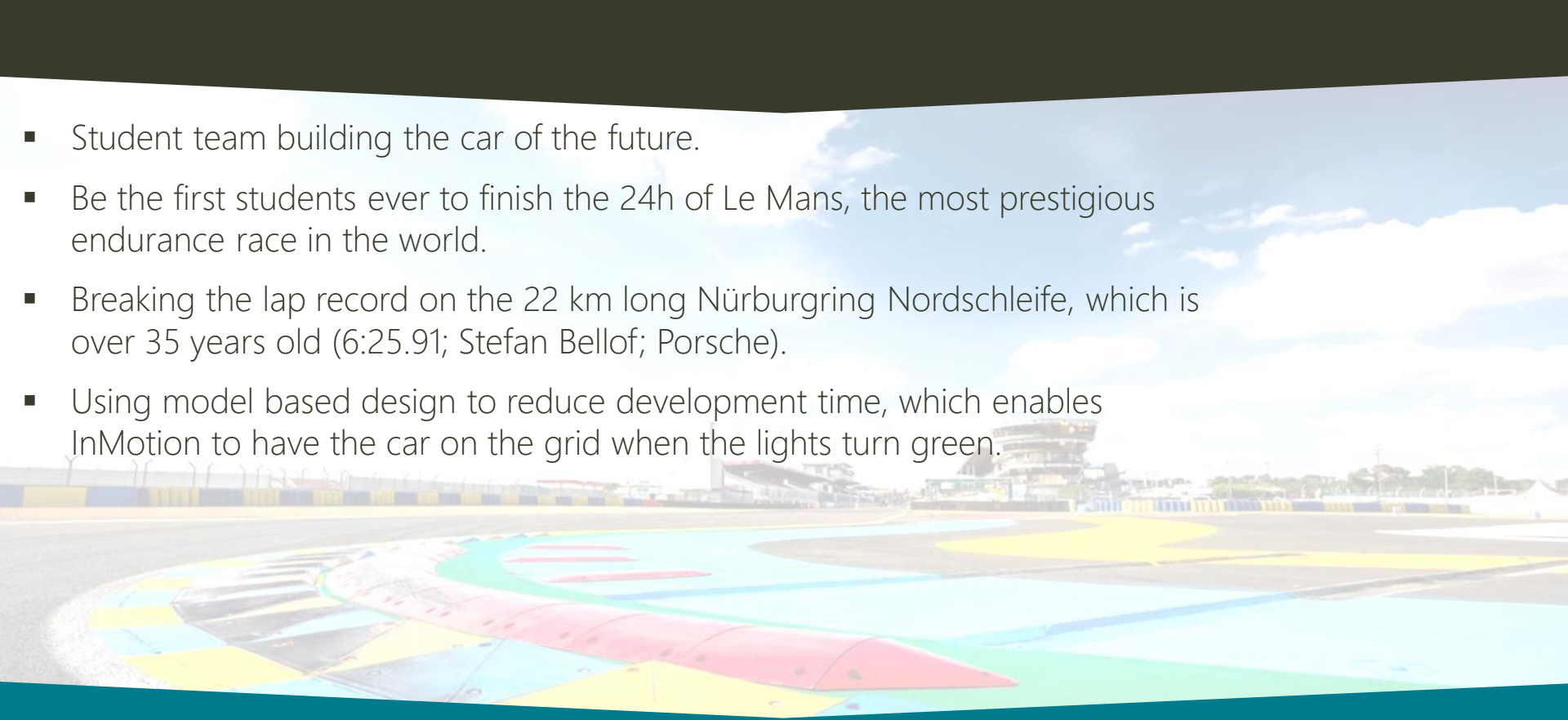
InMotion
The Road to Le Mans



- Student team building the car of the future.
- Be the first students ever to finish the 24h of Le Mans, the most prestigious endurance race in the world.
- Breaking the lap record on the 22 km long Nürburgring Nordschleife, which is over 35 years old (6:25.91; Stefan Bellof; Porsche).
- Using model based design to reduce development time, which enables InMotion to have the car on the grid when the lights turn green.

Key Takeaways

What to remember

Contents

What will be discussed today

- Introduction InMotion
  - Formula Bio
  - KP&T IM/e
- Using Model based development to have the racecar ready in time
  - Applying Motar at InMotion
- Innovative challenges and achievements
  - Realizing the KP&T IM/e
- Future goals and milestones
  - IM01

Specifications

Weight: 350 kg

Power: 120 hp

Speed: ±205 km/h

Runs on bio-ethanol

Formule Bio

The Origin

Specifications

Weight: 655 kg

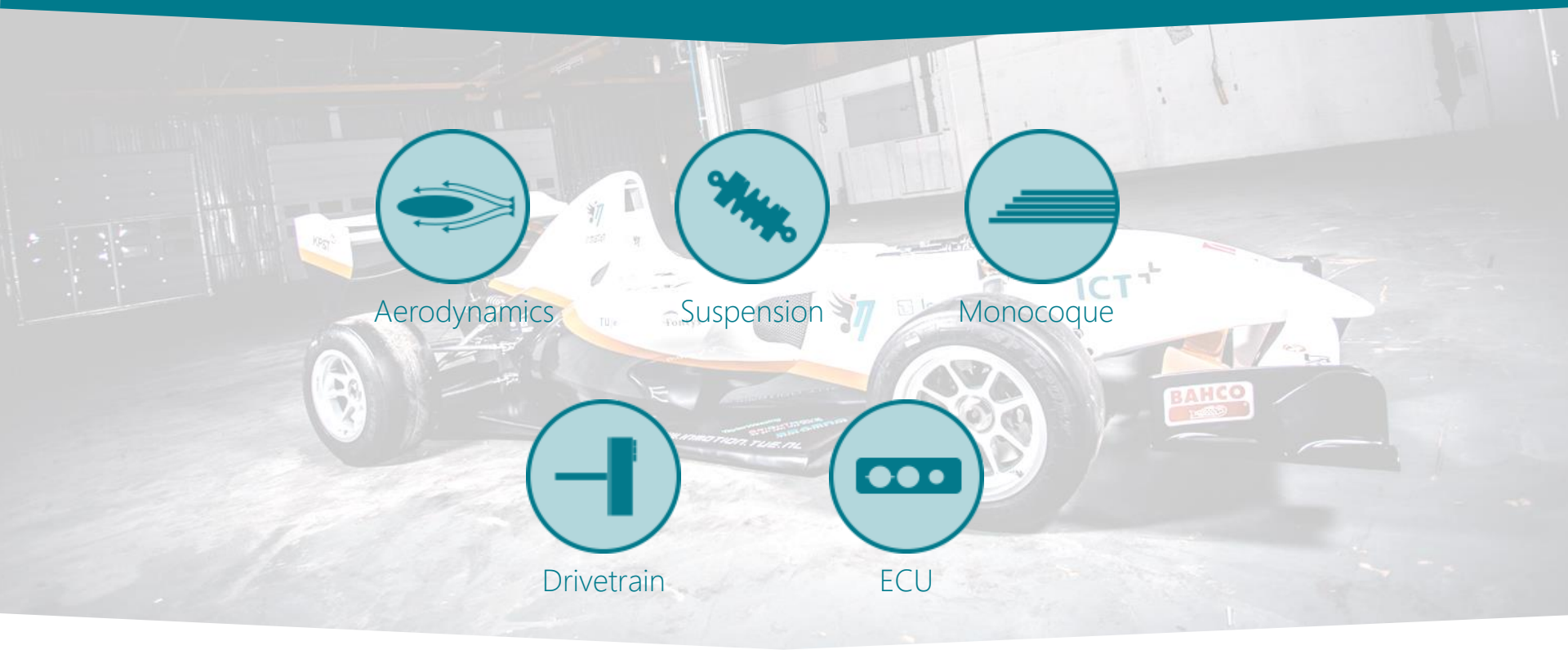
Power: 544 hp

Speed: ±285 km/h

Fully electric formula racecar

IM/e

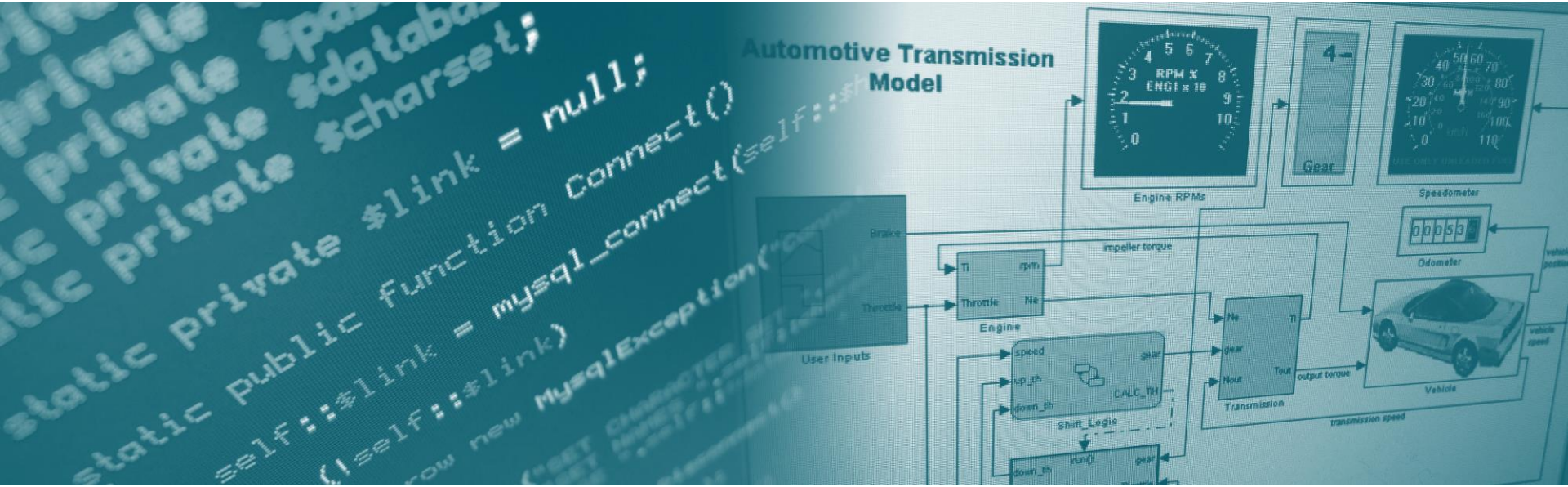
Development-platform



IM/e

Development-platform

From Coding to Modeling



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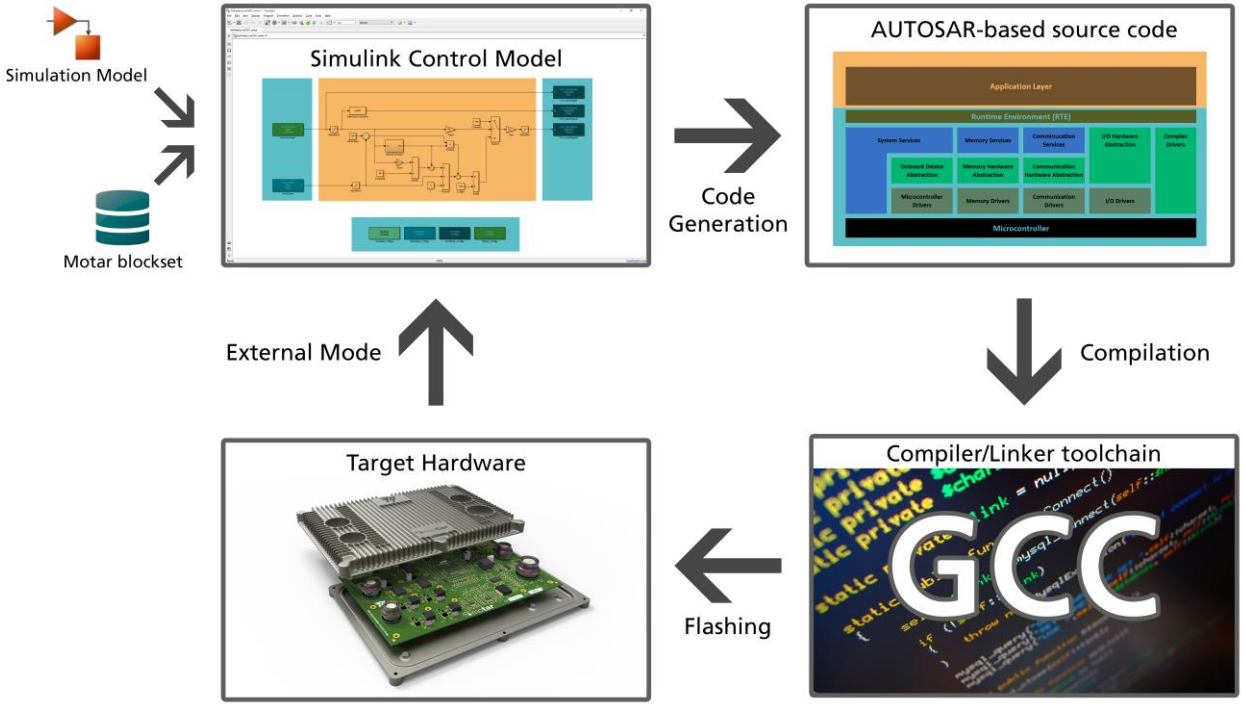
Motar workflow



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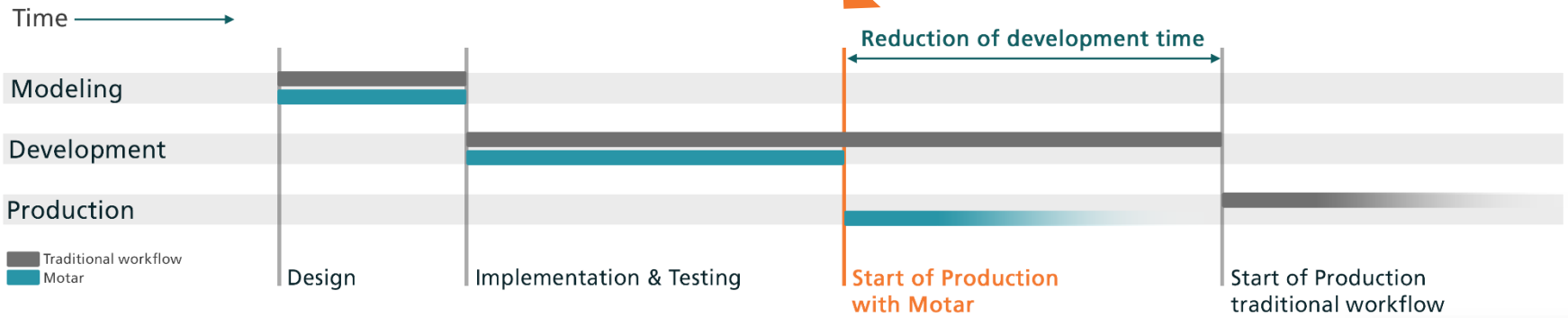
A new way of development



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Motar in the InMotion KP&T IM/e

InMotion KP&T IM/e systems under Motar control:

Active Aerodynamics

Energy management

Anti-lock brakes Traction control

Electric power train

Human Machine Interface

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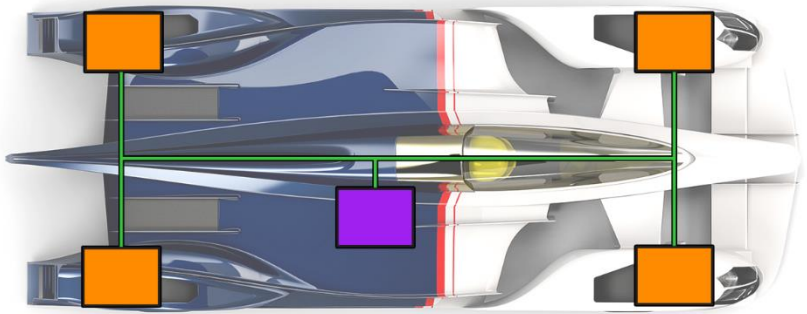
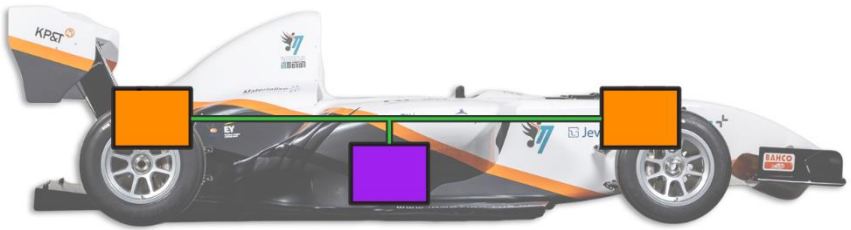
Motar & InMotion





Central ECU Satellite ECU Communication bus

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Realization of the KP&T IM/e

- Car presentation: October ’15
- Shakedown: July ’16
- Electric record Zandvoort: August ’16
- Electric record Nürburgring: 2017

- Engineering, production and assembly in just over 8 months
- Less than 8 weeks of testing and adjusting the finalized car
- Deadlines are set in stone (race starts when the lights turn green)

Innovative challenges and achievements

Tight deadlines of motorsports

Toyota Motorsport GmbH

- Over 250 professional fulltime employees
- More than 20 years of experience in motorsports (since 1993)
- 30,000m^2 facility
- Electric record Nürburgring since 2011
- Time to beat: 7:22.33

TMG

Innovative challenges and achievements

Competing with the established order

Stefan Bellof - Porsche 956

- Stefan Bellof: King of the Nürburgring
- Porsche 956 Fastest car ever to lap the Nürburgring
- Average speed 202.073 kph
- All-time record Nürburgring since 1983
- Time to beat: 6:25.91

Innovative challenges and achievements

Competing with the established order

Nissan Motorsport Ltd. (Nismo)

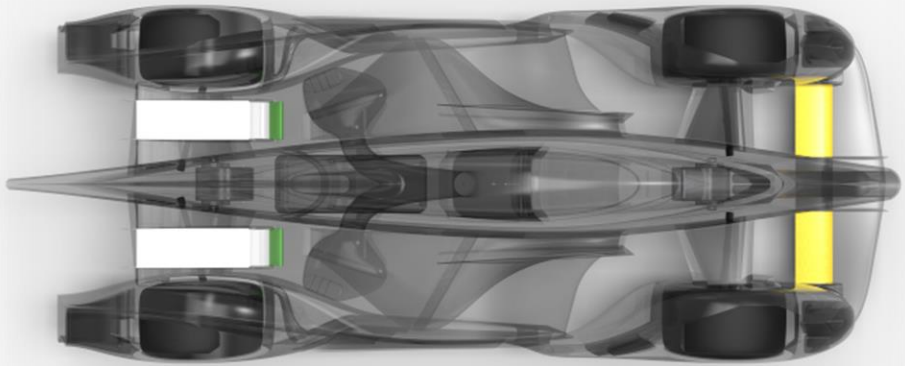
- Over 200 professional fulltime employees
- More than 30 years of experience in motorsports (since 1984)
- Over € 20 billion annual revenue
- 24h of Le Mans Garage 56 contender 2012 and 2014 (Both DNF)

Innovative challenges and achievements

Competing with the established order

IM01

Le Mans Racer



Sidepods

Active flaps

Monocoque

Fan system

IM01

Aerodynamics

TU/e Technische Universiteit Eindhoven University of Technology

Additive Industries
Industrialising 3D printing for functional parts

materialise
innovators you can count on

ICT+

VDL

Fontys

METROPOOL REGIO EINDHOVEN

MITSUBISHI RAYON

ACE

ANSYS

ATHLON

AUTOMOTIVE CAMPUS

AutomotiveNL

BAHCO

BRIGHTMOVE
we get your idea moving

Circuit Park Zandvoort

DD com
technische documentatie visualisatie en animatie

EY
Building a better working world

HALL

Jeveka

MOTON
SUSPENSION TECHNOLOGY

Nederlandse Energie Maatschappij

ppg

Rabobank

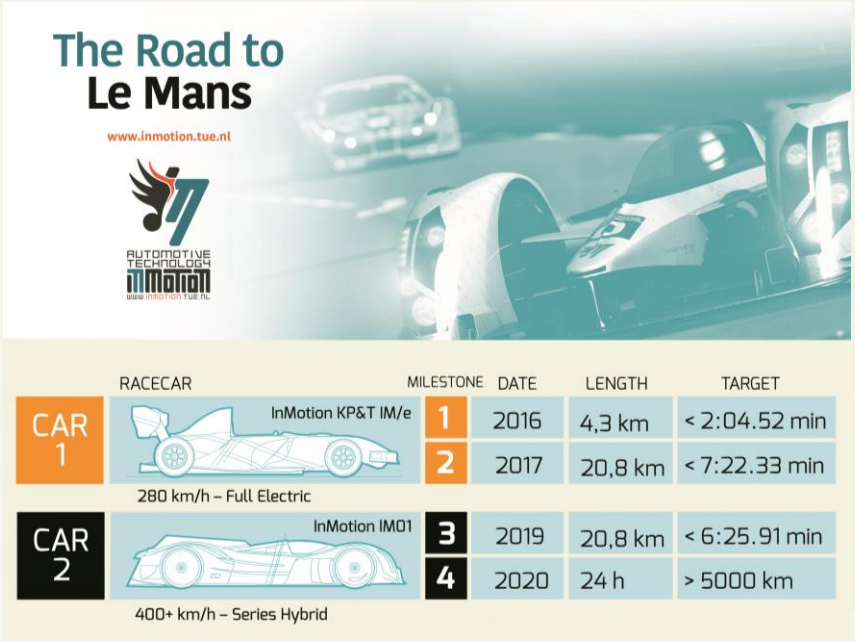
SCABRO
IDEEËN KRIJGEN VORM

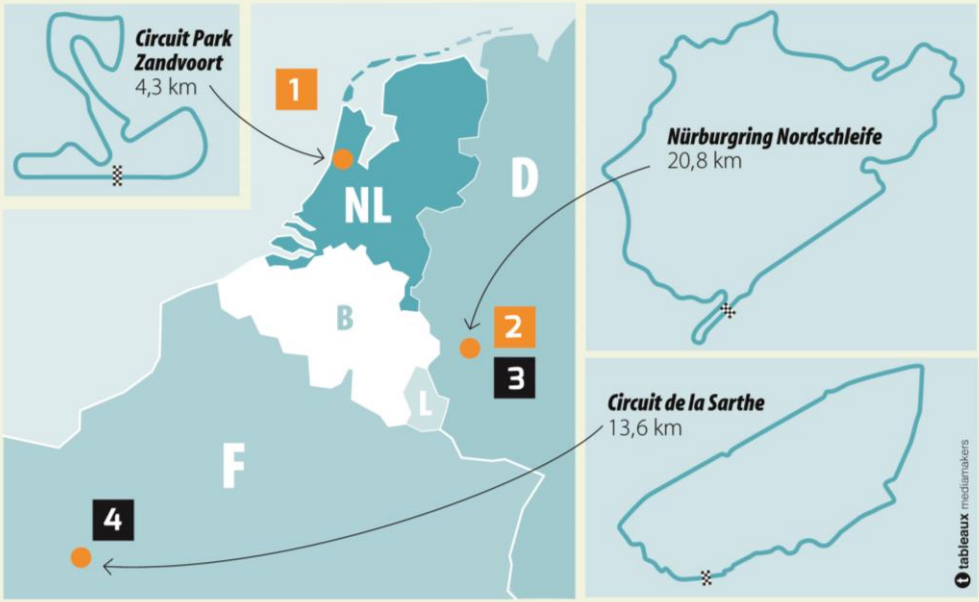
SIEMENS

tableaux
mediamakers

Partners

Helping on the road to Le Mans

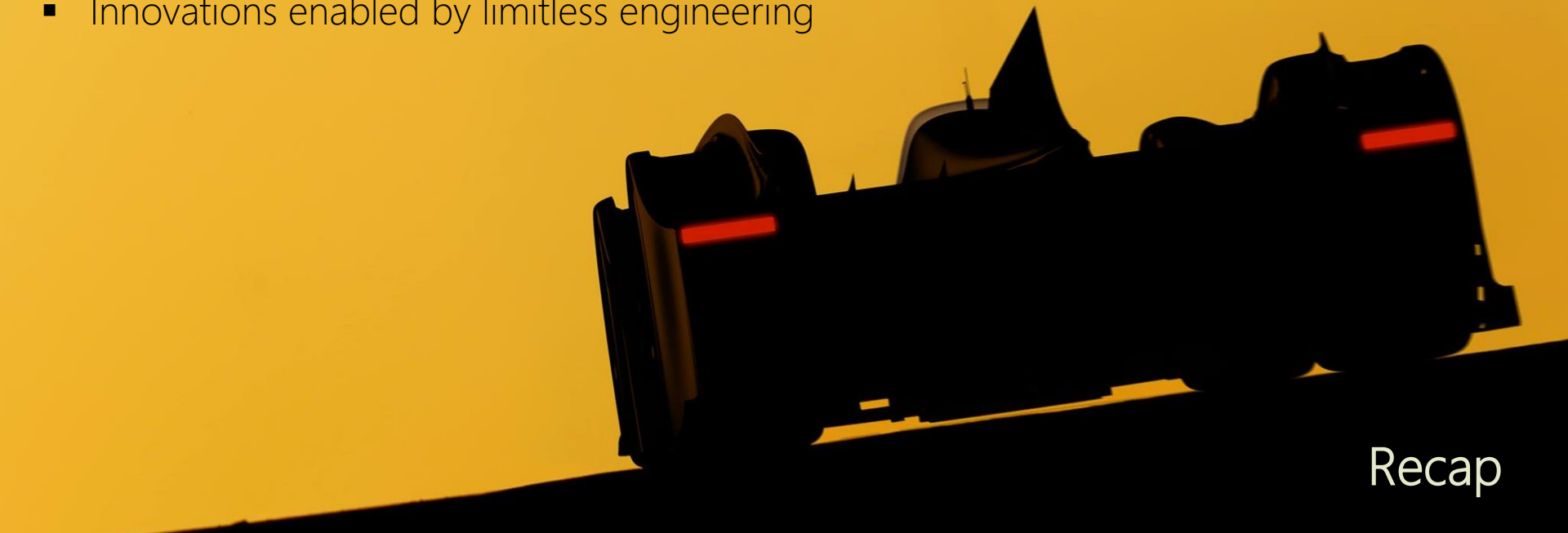




Future goals and milestones

How the road to Le Mans evolves

- Team of students capable of building the racecar of the future
- Beating the established order of automotive and motorsports
- Model based design platform enables the team to finish the car in time
- Innovations enabled by limitless engineering



Recap