



# Low Carbon Transport

## Coventry University Perspective

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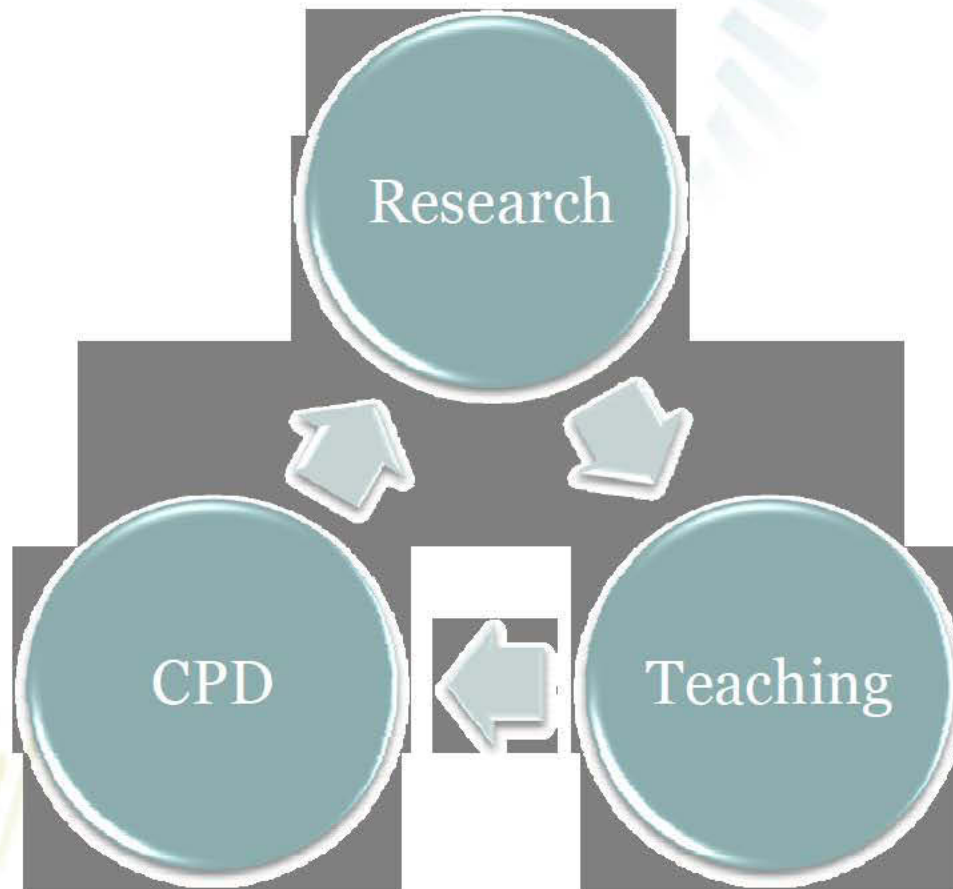
# Why is Coventry Interested

- The university has a long background in Automotive Design and Automotive Engineering
- There are three main reasons why the LCV agenda is important
- Teaching:
  - Undergraduate
  - Post graduate
  - Demand Led

# Why is Coventry Interested

- Continuing Professional Development
  - Upskilling of existing workforce in OEMs and Supply base
  - Acquisition of knowledge for sector entrants
- Research
  - Fundamental and Applied
  - Technologies
  - Integration

# Why is Coventry Interested



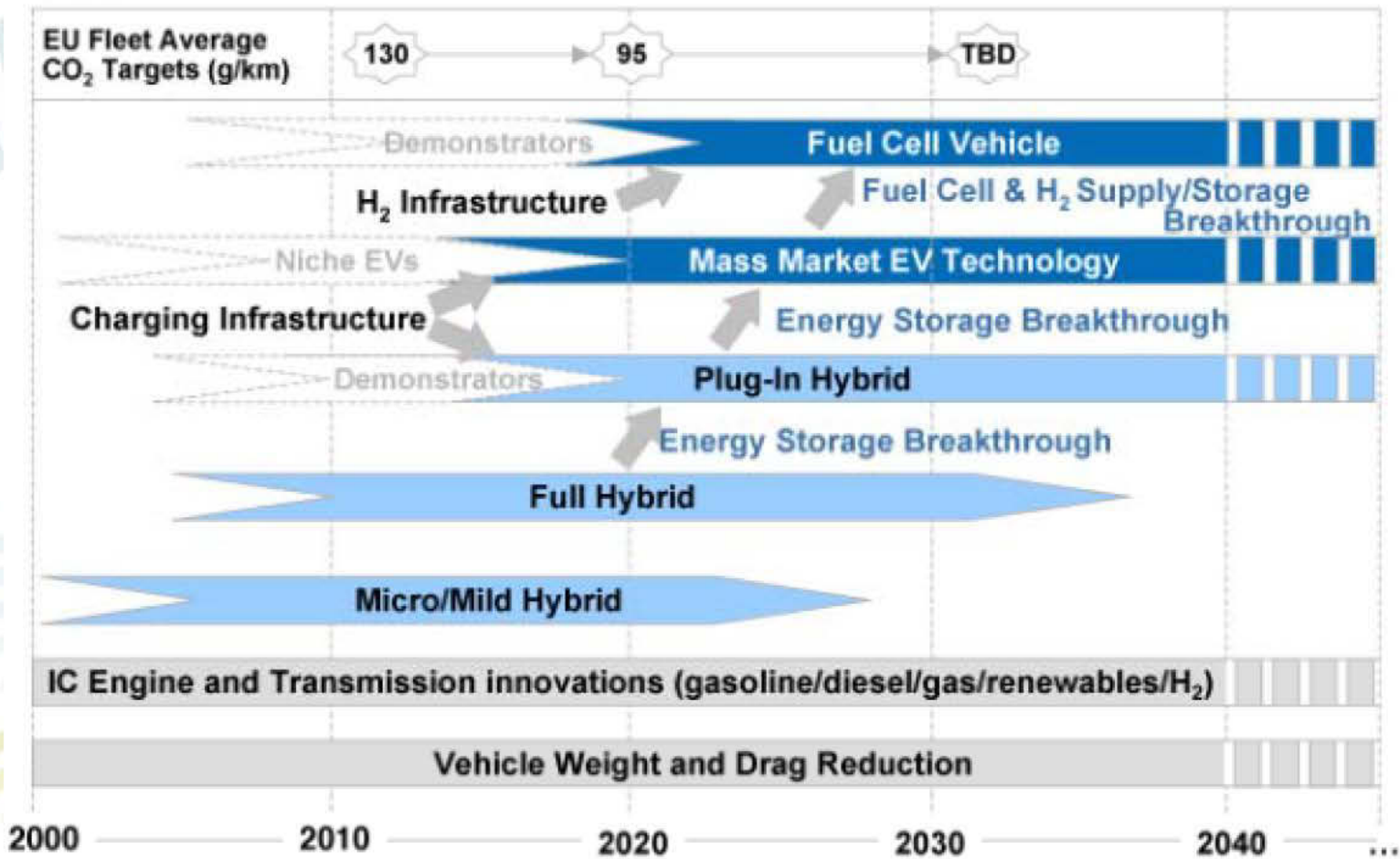
Our authority to teach is predicated on  
our Applied research



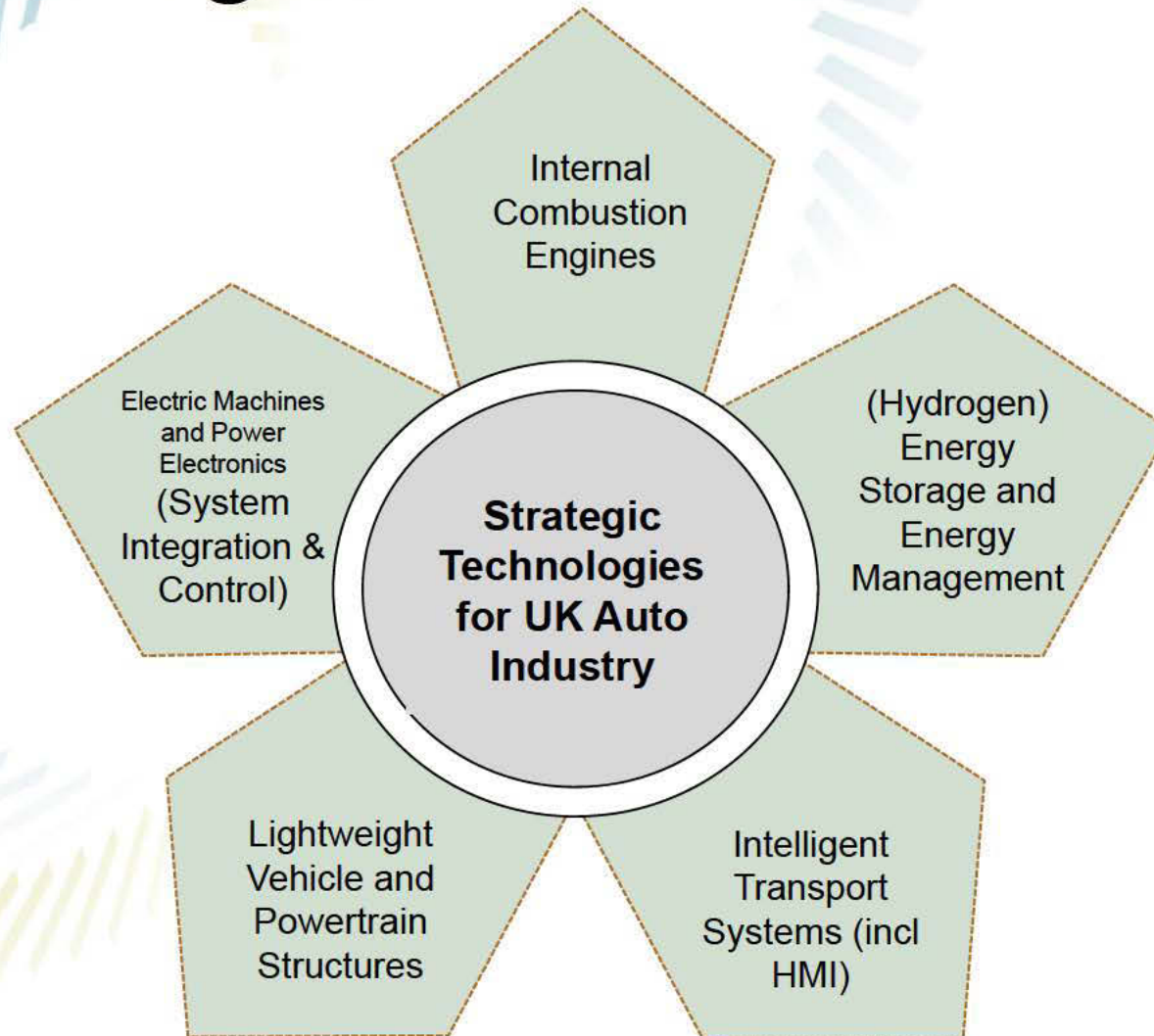
# LCV Grand Challenge

- CU “Grand Challenge Initiatives” are vehicles which stimulate cross-faculty, multi-disciplinary applied research
- LCV GCI has four main themes:
  - Technologies
  - Vehicle Design
  - Social & Economic
  - Niche Vehicle and Supply Chain

# Technology landscape



# CU strengths





# LCV Technology Project

- Two year, £29m project, part funded by ERDF and AWM
- Jaguar Land Rover, TMETC, Ricardo, MIRA, Zyteck, WMG and Coventry University
- 14 work-streams, addressing the JLR '3 Pillars'

## Propulsion

Hybrid Electric Vehicles  
Flywheel [Kinetic]  
Plug in Hybrids  
Electric Vehicles  
Combustion  
Transmission  
Driveline  
Powertrain Efficiency

## Weight

Weight Efficiency  
Vehicle Architecture  
Body in White  
Components

## Parasitics

Aerodynamics  
Tyres  
Chassis systems  
Energy management  
- Chassis systems  
- Electrical



# LCV Technology Project



# CABLED – Coventry And Birmingham Low Emission Demonstrator

- A two-year, £15m project, part of the TSB-funded Ultra Low Carbon Vehicle Programme (UK wide)
- Collaborative consortium comprising JLR, TMETC, Mitsubishi, Mercedes smart, Coventry City Council, Birmingham City Council, E-on, Arup, Aston University, University of Birmingham, Coventry University / Microcab
- In excess of 100 vehicles in a public trial, assessing user behaviours and attitudes



# CABLED



# The Microcab

- The only Hydrogen Fuel Cell vehicle in the entire UK trial
- Delivered by CU, working with a CU spin-out company, Microcab
- All-new, purpose designed vehicle, from 'clean sheet' to road in under 2 years
- Range-extended Electric Vehicle using a 3kW high temperature PEM fuel cell and 4kWh battery; 1.8kg of Hydrogen at 350bar, range of around 100 miles
- CU remains the only UK university with a fleet of Fuel Cell vehicles



# The Microcab



# Student Engagement

- Much of what we are learning is already being ploughed back into undergraduate and post graduate teaching
- Important to give practical as well as theoretical knowledge, if students are to hit the ground running
- How do we do this?

**Motorsport!**



# Formula Student

- Run by IMechE in the UK, Formula Student (Formula SAE) has been around for many years
- Well regarded, well organised, well sponsored
- Student teams design and build a single seater race car to strict criteria
- Number of categories, including design, acceleration, endurance and fuel efficiency
- Coventry University won the Fuel Efficiency award

# Ev grand prix

- Run by Purdue University in the USA as an educational event
- Student teams design and build an electric kart to compete in a 100 lap endurance race, held at the world famous Indianapolis Motor Speedway
- Strict criteria, limited to 8.64kWh for the whole race.
- In 2011, 33 teams competed, of which CU was one of only 2 non-US university teams



# Ev grand prix

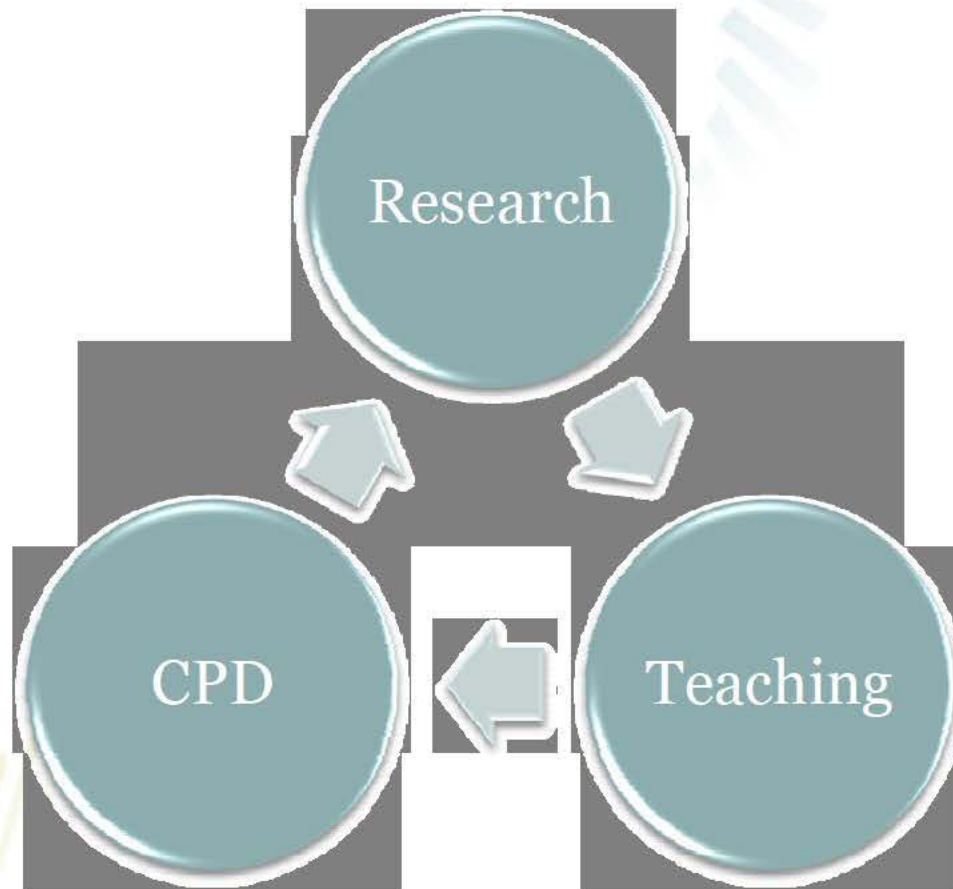
- The event has 4 categories, the combination of which determines the overall result:
  - Community Outreach
  - Energy Efficiency
  - Design
  - Race Placement – wheel to wheel racing!
- First time out, Coventry students achieved:
  - Second place in Design
  - Third place Overall
  - Only non-US team to place in any category



# Ev grand prix



# Why is Coventry Interested



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# Thank You

