Department for International Trade

Automotive Investment Organisation

Department for International Trade

BUSINESS IS GREAT
BRITAIN & NORTHERN IRELAND

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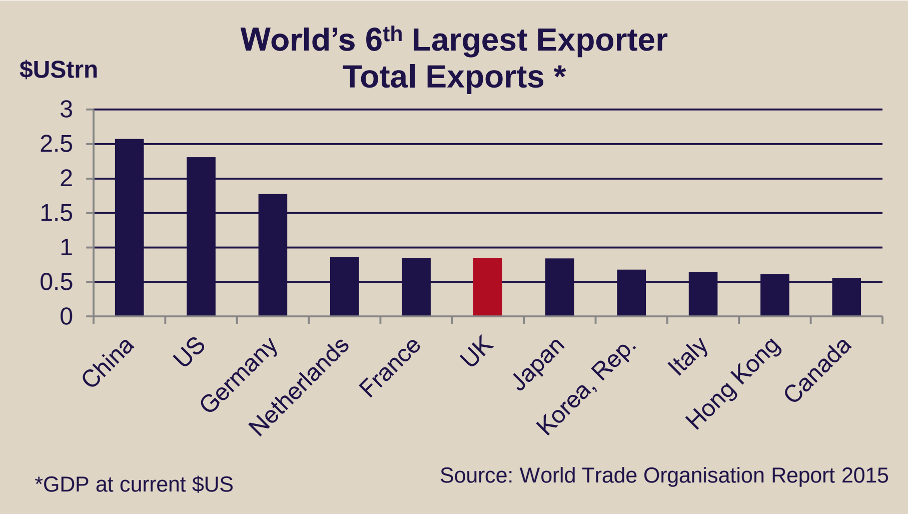
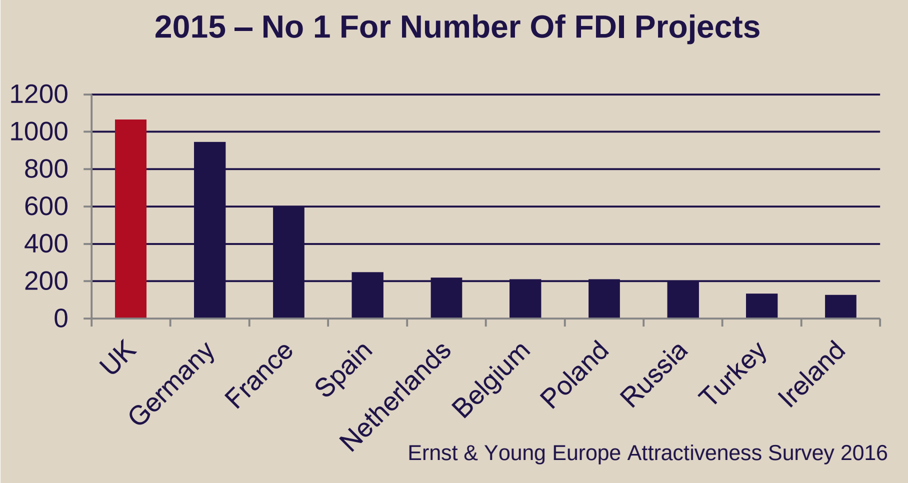
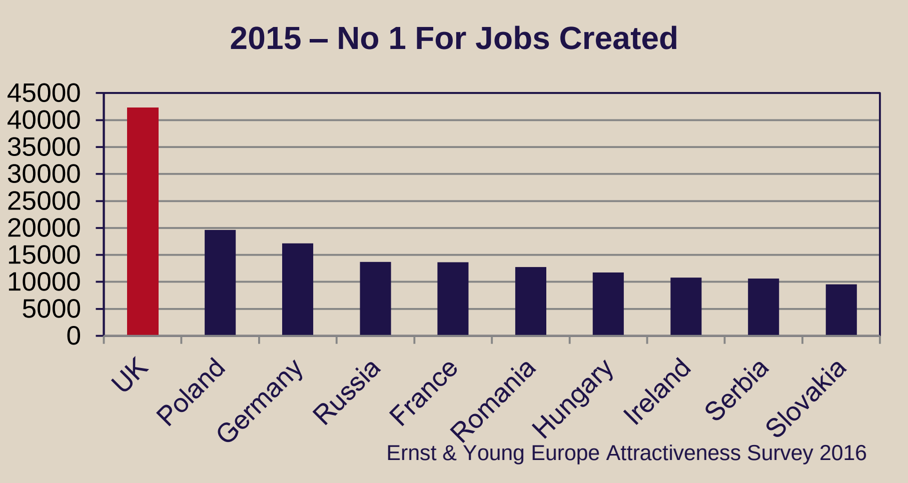
Britain's strong economy







2010-2015: The UK economy grew 18.8% - 2nd fastest growing economy in the G7 (World Bank)

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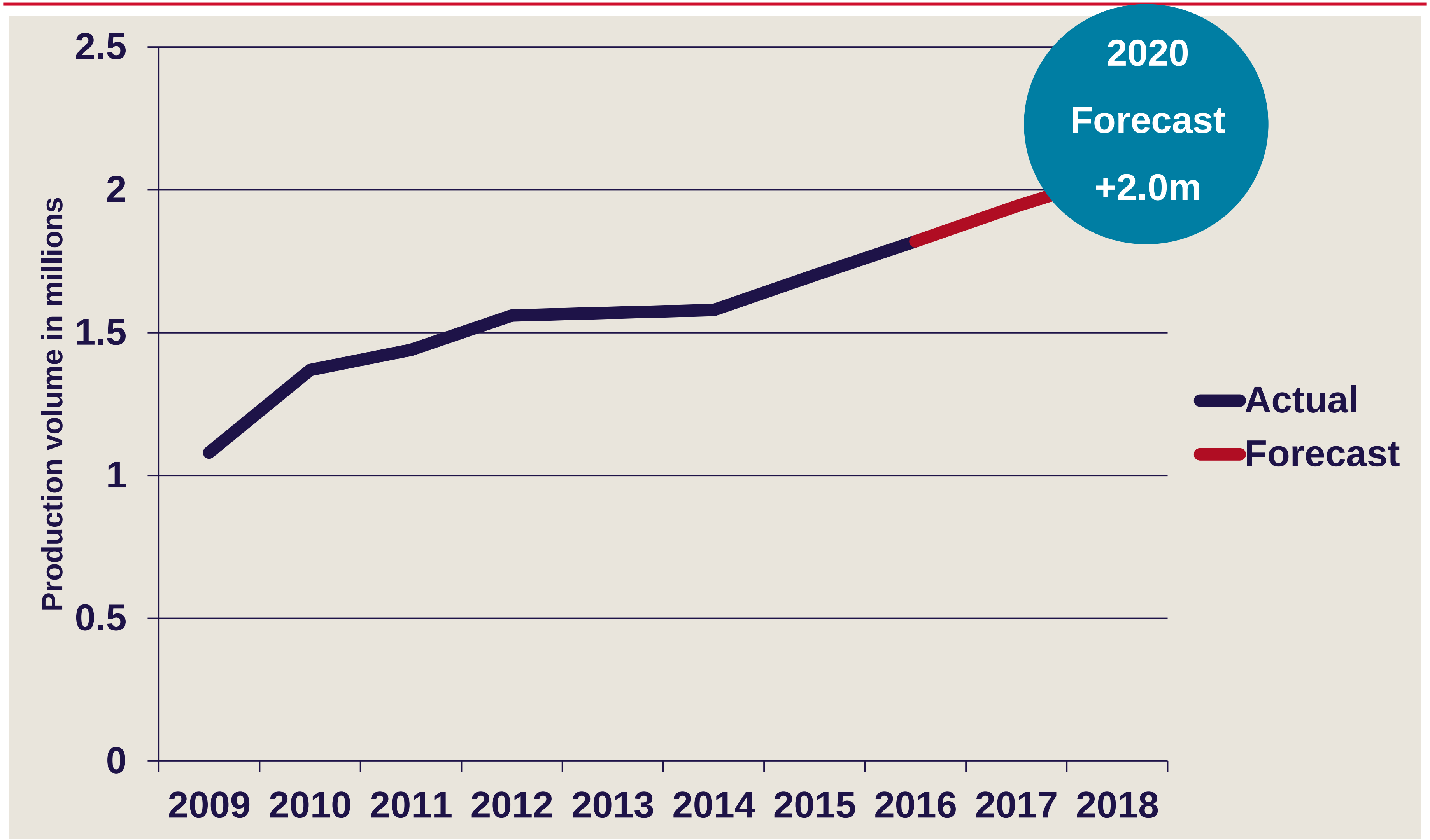
Projected production growth



Source: SMMT 2016

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Key Ministry in Cabinet

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Industrial Strategy

Government is 'committed to creating and supporting the right conditions for the automotive industry so it continues to grow – now and in the future.'

Theresa May, The Prime Minister

"I want to demonstrate to the world that there has never been a better time for international companies to invest in the UK or for UK companies to export overseas".

Dr Liam Fox, Secretary of State for International Trade

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Industrial Strategy

"Our investments, supported by the UK Government, demonstrate our total confidence in the UK's status as, not only a manufacturing hub, but as a leading global destination for cutting edge automotive research and innovation."

Paul Berry, Finance Director of Borg Warner UK

"We are excited about the future prospects that the new R&D Centre based at Millbrook will bring. The newly established centre will carry out research and development with the aim of expanding business with the U.K.'s leading automobile parts manufacturers."

Neil O'Brien, Head of R&D and HR at Calsonic Kansei

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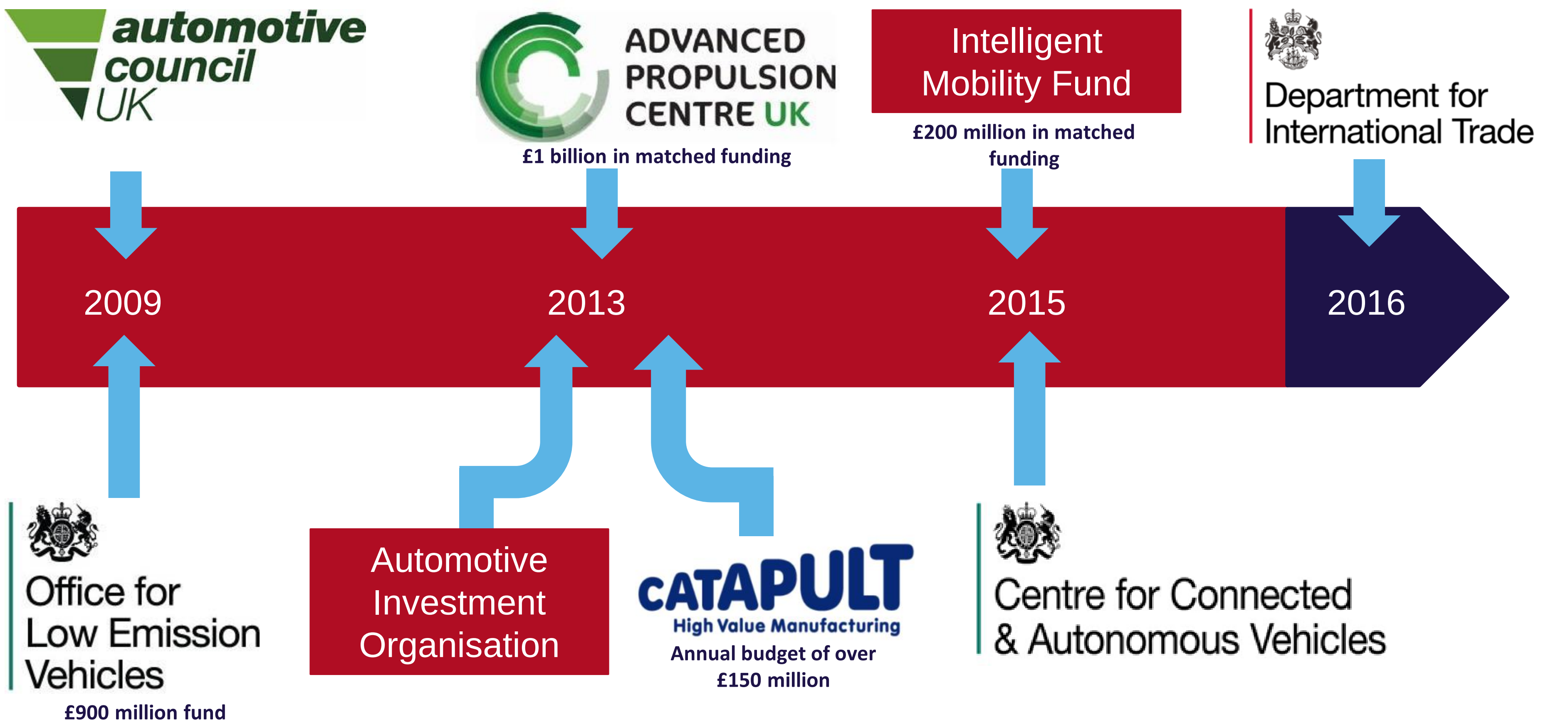
Transformational Approach to UK Auto Industry



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UK Automotive Industry - Overview

- 1.8m vehicles manufactured in 2016
- 2.5m engines produced in 2016
- 78% of UK-built cars are exported
- Over £15 billion FDI into UK automotive since 2012
- 800,000 people employed across UK auto
- World's largest producer of luxury cars

- **UK vehicle production has grown every year since 2008**

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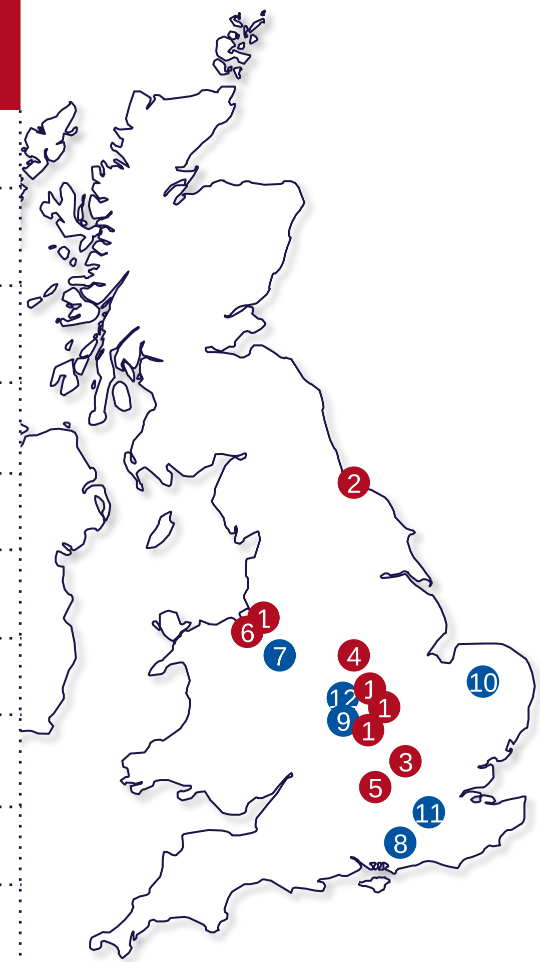
UK Automotive Industry – OEMs

#	Manufacturer	Location	2016 Production	Model
1	JAGUAR LAND ROVER	Halewood, Solihull, Castle Bromwich, Coventry	544,000	• All
2	NISSAN	Sunderland	507,000	• Leaf, Qashqai , Juke, Q30, X-Trail (2018)
3	BMW	Oxford	211,000	• All Minis except Countryman
4		Burnaston	180,000	• Avensis, Auris • Auris Hybrid
5		Swindon	134,000	• 5-door Civic
6	GM	Ellesmere Port	118,000	• Astra
7	BENTLEY	Crewe	11,700	• All
8	ROLLS ROYCE	Goodwood	4,100	• All
9	ASTON MARTIN	Gaydon	3,700	• New factory in Wales
10	LOTUS	Hethel	1,300	• All
11	McLaren AUTOMOTIVE	Woking	3,200	• All
12	GEELY	Coventry	1,300	• New £250m Coventry factory



*SMMT

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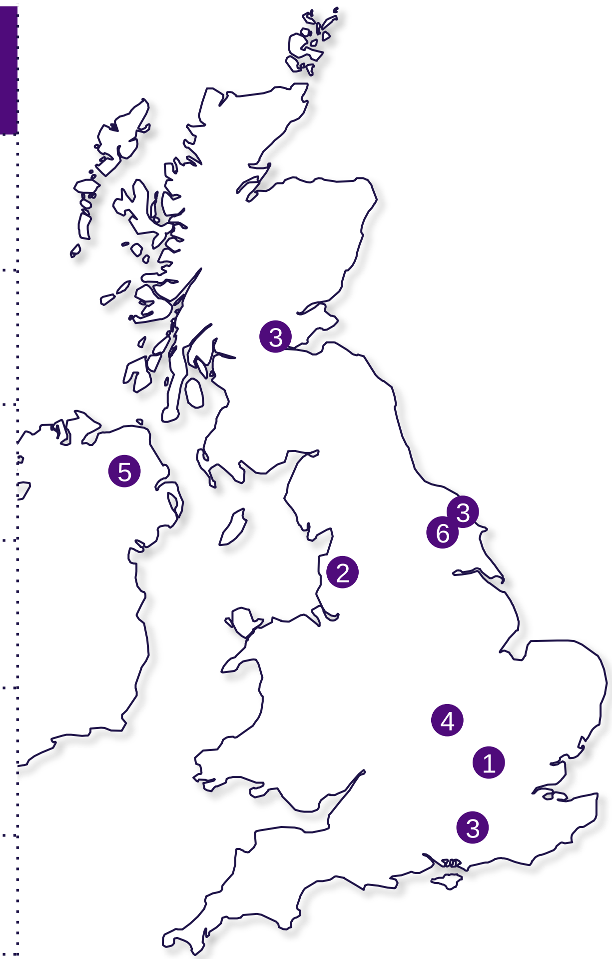
UK Automotive Industry – Commercial Vehicle OEMs

	Manufacturer	Locations	2016 Production
1	GM	Luton	73,600
2	LEYLAND TRUCKS	Leyland	14,700
3	ALEXANDER DENNIS	Larbert, Guildford, Scarborough	2,200
4	DENNIS EAGLE RosRoca	Warwick	700
5	WRIGHTBUS	Ballymena	600
6	Optare	Sherburn	200



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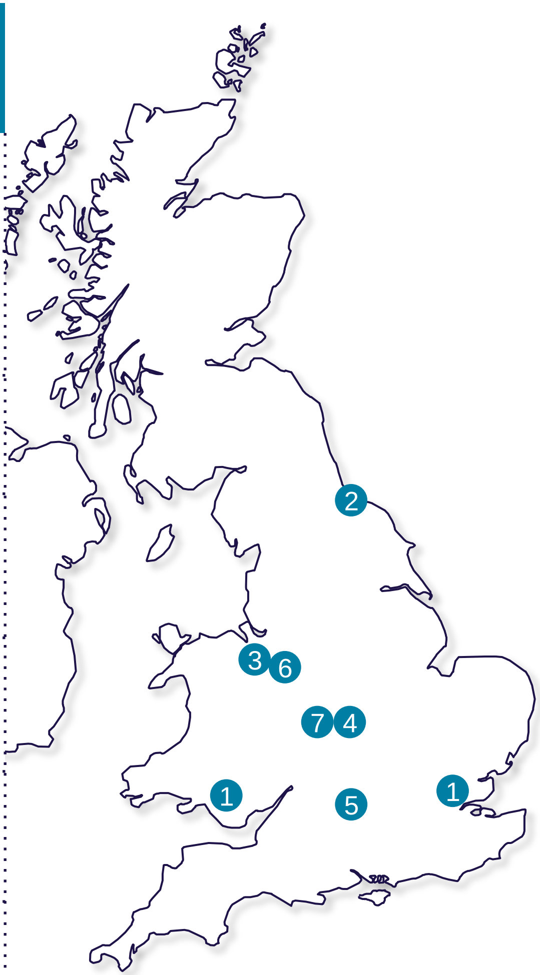
UK Automotive Industry – Engine Manufacturing

#	Manufacturer	Locations	2015 Production
1	Ford	Bridgend & Dagenham	1,606,887
2	NISSAN	Sunderland	250,539
3		Deeside	204,352
4	BMW	Hams Hall	170,659
5		Swindon	124,940
6	BENTLEY	Crewe	11,100
7	JAGUAR LAND ROVER	Wolverhampton	TBC



*SMMT

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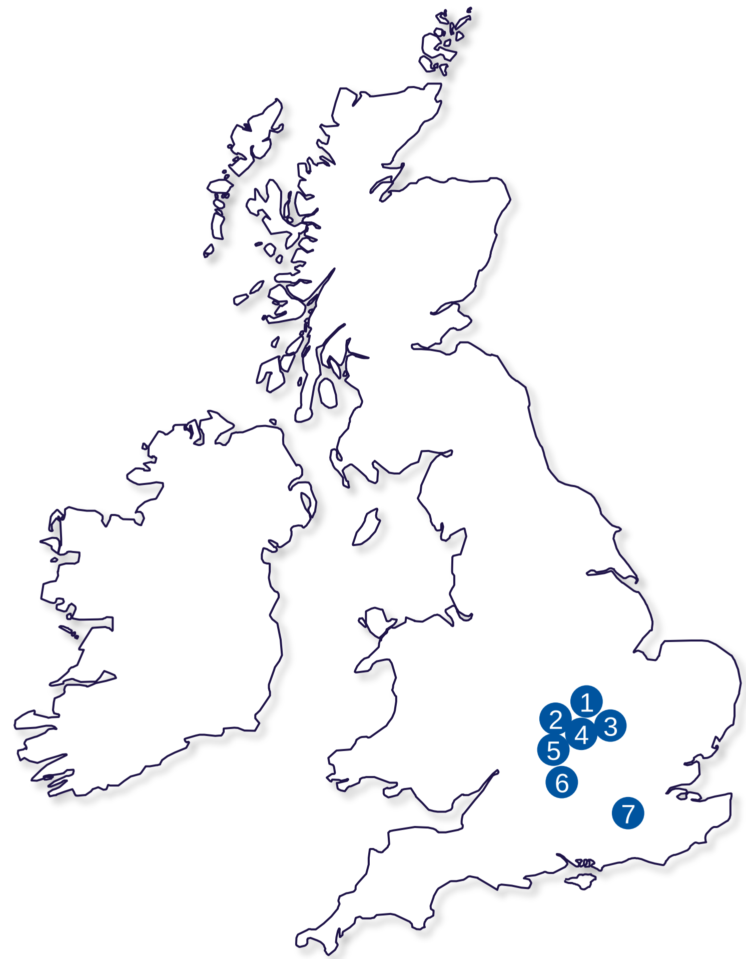
UK Automotive Industry – Motorsport Valley

#	F1 Team	HQ Location
1	Sahara Force India formula one team	Silverstone
2	Manor Racing	Banbury
3	Red Bull Racing Formula One Team	Milton Keynes
4	AMG Petronas Formula One Team	Brackley
5	Renault Sport Formula One Team	Enstone
6	Williams Martini Racing	Grove
7	McLaren Honda	Woking



- Turnover of £9bn, R&D spend of £2.25bn
- 4,500 companies, 25,000 engineers, 87% of companies export
- 7 of 11 Formula 1 teams have a UK HQ, plus home of Formula-e

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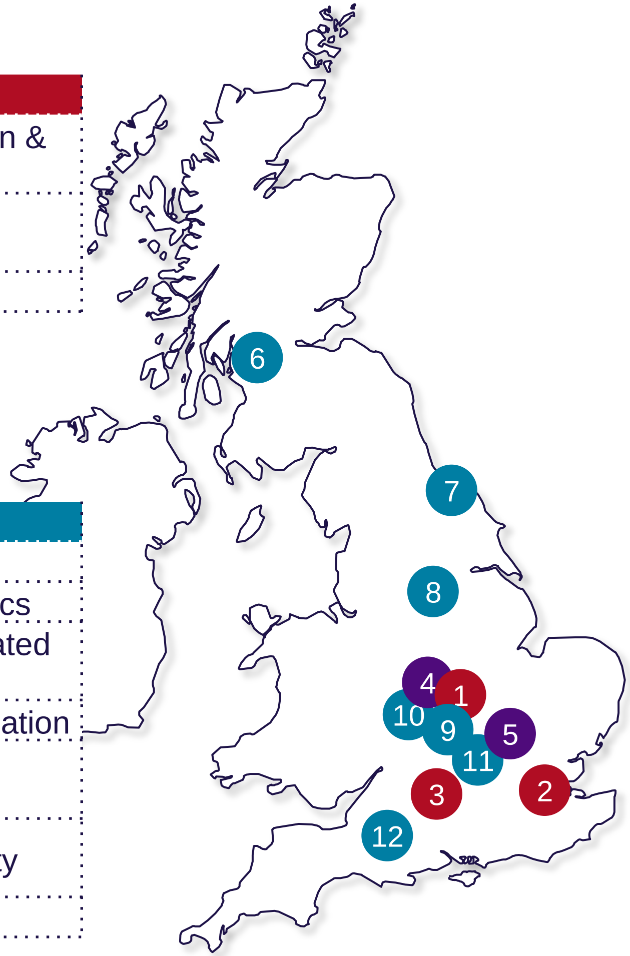
UK Automotive R&D Centres

Automotive Research Funding Hubs			
1	APC - Advanced Propulsion Centre	Coventry	Low Carbon Propulsion & Lightweighting
2	C-CAV - Centre for Connected & Autonomous Vehicles	London	CAV Development
3	Innovate UK	Swindon	Materials Technology

Commercial Engineering Centres /Technology Parks		
4	Horiba MIRA	Nuneaton
5	Millbrook	Millbrook

High Value Manufacturing Catapults			
6	AFRC - Advanced Forming Research Centre	Strathclyde	Metal Forming
7	CPI - Centre for Process Innovation	Wilton	Printed Electronics
8	AMRC - Advanced Manufacturing Research Centre	Sheffield	Castings, Integrated Manufacturing
9	MTC - Manufacturing Technology Centre	Coventry	Intelligent Automation
10	WMG - Warwick Manufacturing Group (also National Automotive Innovation Centre)	Warwick	EV Batteries
11	TSC - Transport Systems Catapult	Milton Keynes	Intelligent Mobility
12	NCC - National Composites Centre	Bristol	Composites



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The current £4bn supply chain opportunity

Component	Opportunity value (£m)	Component	Opportunity value (£m)
Engine castings	550	12V Lead/Acid Battery	90
Steering systems	330	Cast aluminium sub-frames	90
Trim	255	Brakes	80
Engine forgings	255	Drive shafts	80
Pressings and hot stampings	240	Fuel tanks	75
Seat components	225	Engine accessories	75
Alloy wheels	210	HVAC assemblies	75
Lighting	210	Misc. (pedals, mirrors etc.)	60
Electronics	170	Shock absorbers	60
Plastic mouldings	150	Oil pans	30
Entertainment & navigation	135	Premium finish	50
Bearings	120	Weather strips	50
Instrument Clusters	120	Switchgear	30
Glass	110	Other	520
Hinges	105		

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Areas funded by APC and CCAV - examples

APC **Low carbon propulsion** **£1 billion matched funding**	**CCAV** **Connected and Autonomous Vehicles** **£200 million matched funding**
Energy storage/battery technology	Connectivity (V2X)
Electric machines/motors	Sensors
Power electronics	Navigation
Digital engineering and test	Control systems
ICE thermal efficiency	Driverless shuttles
ICE system efficiency	On road testing
Lightweight materials	Telematics

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£2.3bn annual automotive R&D spend

MIRA
A HORIBA COMPANY
AVL
BorgWarner
Haldex
Panasonic Automotive
CHANGAN
NISSAN
ZF
TRW
JAGUAR
LAND ROVER
GEELY
NIFCO
BOSCH
brose
Technik für Automobile
Gestamp
Calsonic Kansei
Ford

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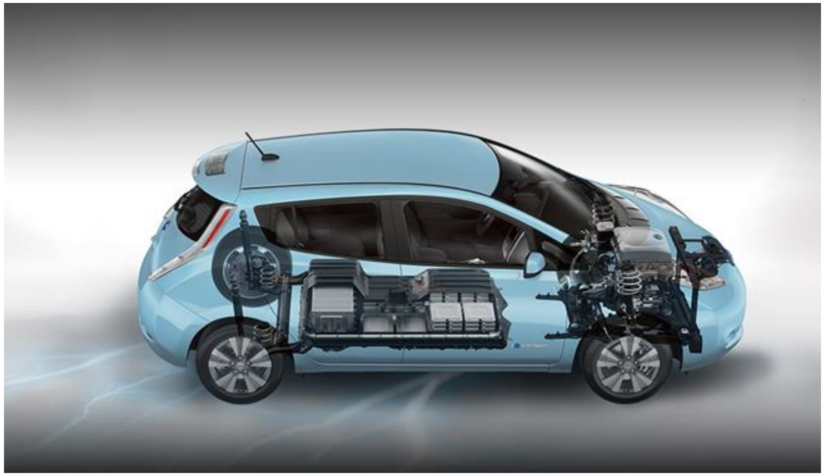
Low carbon propulsion

UK is already a propulsion centre:

- 2.5 million engines produced per year
- Centre for ICE development, e.g. Ford 1.0 Ecoboost, all Ford diesels, JLR Ingenium, VW W12
- Largest EU manufacturer of electric vehicles (Nissan Leaf) – 20% market share
- Largest EU market for electric vehicles – 20% market share
- Breadth of innovation:
  - e-supercharger
  - micro turbine
  - flywheel hybrid
  - mechanical super-capacitor



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Light weighting - composites

AIO Strategy

- AIO is working with the Affordable Composites Group to involve overseas companies in collaborative R&D
- A collaboration workshop held in 2015 generated 13 projects worth £21.5m
- Over £300 million of government funding into composites in recent years – mostly to aerospace and automotive

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Connected and autonomous vehicles

UK supports CAVs development

- Centre for Connected and Autonomous Vehicles (CCAV) established
- UK has most progressive regulatory environment; to test CAVs, companies only have to:
  - Inform Highways England
  - Arrange public liability insurance
  - Abide by industry’s own code of practice
  - No bonds or sureties required
- Plus, pragmatic data protection rules for Big Data

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Three major CAV trials underway

Milton Keynes/ Coventry Autodrive UK

- Real-world evaluation of cars with increasing autonomy
- Development and evaluation of lightweight fully autonomous self-driving pods.
- Three cars in 2016, rising to 40 by 2018

Greenwich – Gateway

Evaluation of autonomous vehicles in London

- Development of new testing protocols and benchmarks for long-term development
- Shuttles are developments of successful Heathrow pods

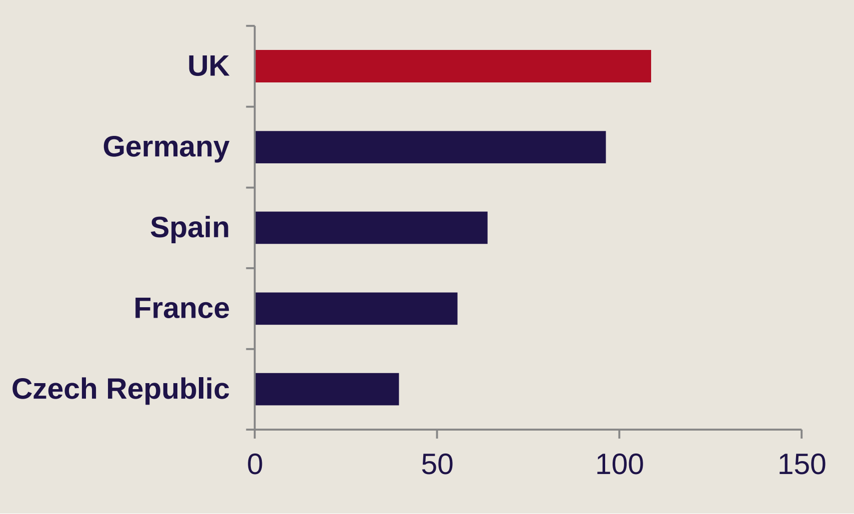
Bristol - Venturer

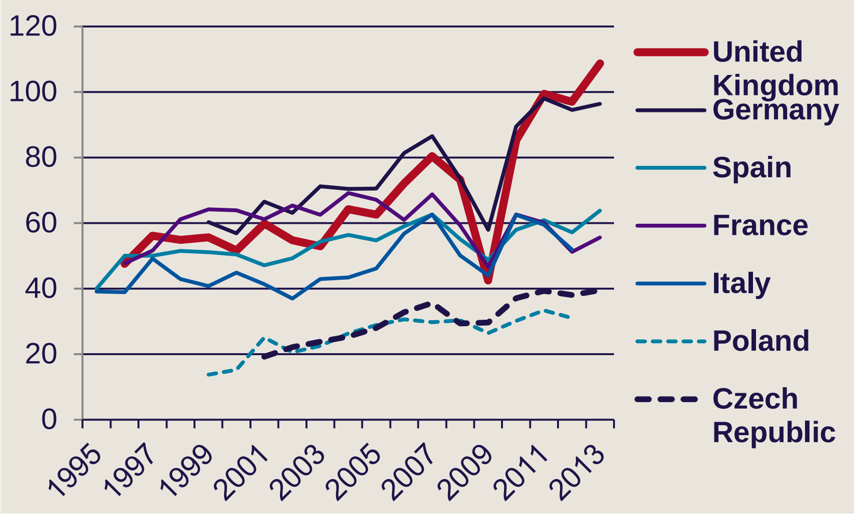
- Autonomous Land Rover testing interactions with other road users
- Exploring legal and insurance aspects of CAV

Volvo Cars start real-world trials in London in 2017

Productivity – value added

- The UK now has the highest value-added per employee of any automotive industry in Europe





Source: Eurostat

International Tax Comparison

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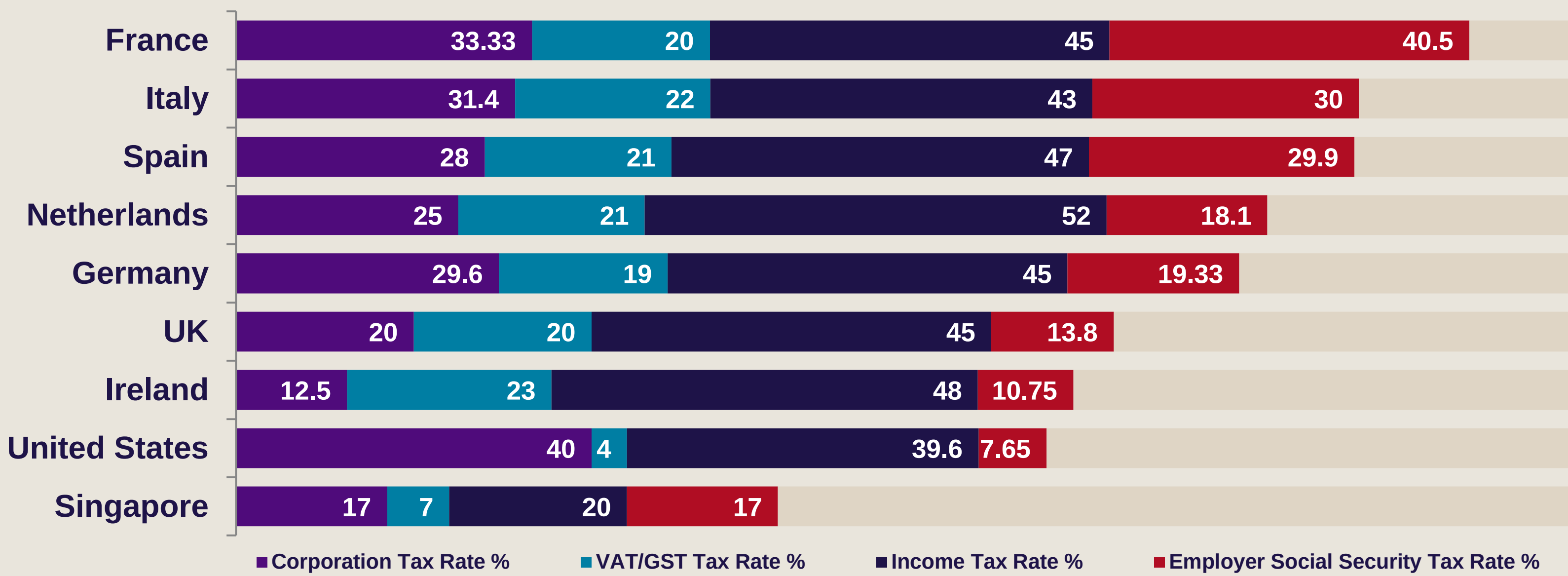
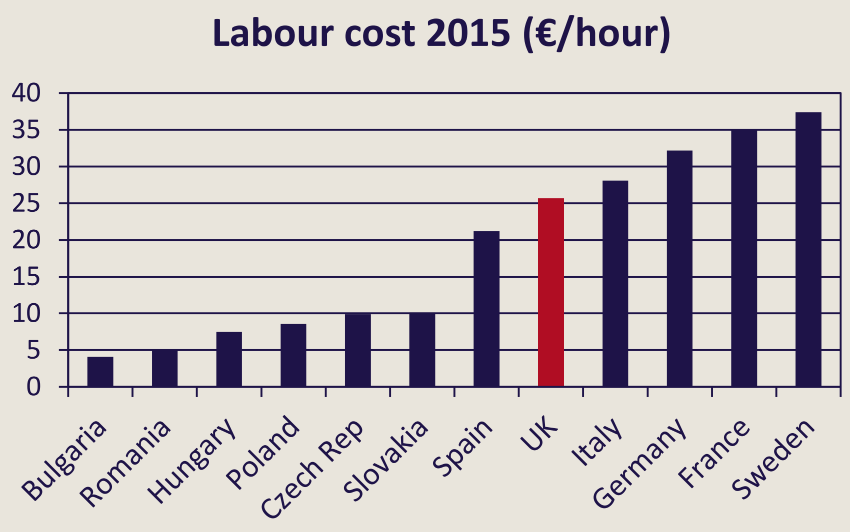
The UK's overall corporate tax burden is the lowest of all major European countries

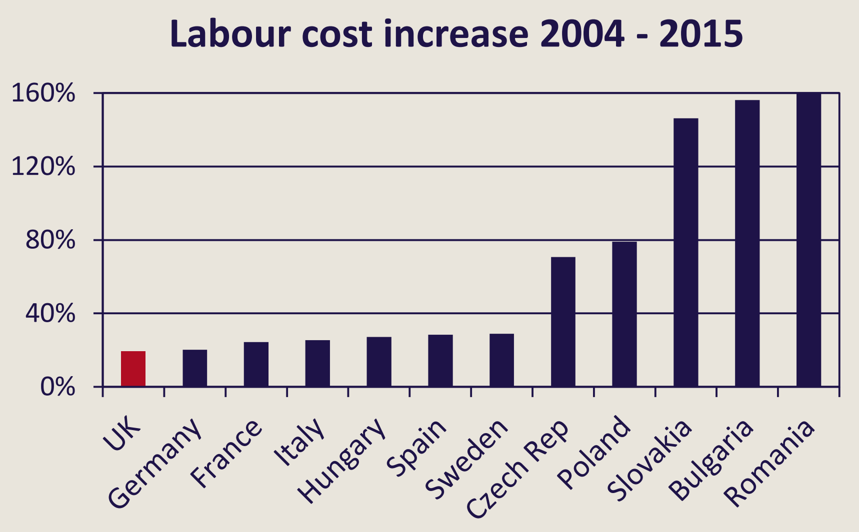


Note: Effective corporate tax rates. The rates do not reflect payroll taxes, social security taxes, net wealth taxes, turnover/sales taxes and other taxes not levied on income. Income Tax Rate selected is the highest rate payable. The United States does not levy a federal value added tax. Individual states levy sales tax at various rates subject to state-set requirements. E.g. a 4% Sales Tax in New York is used as a proxy. Employer social security rates for France and Italy are set at the mid-point the existing range.

European Labour costs

- UK labour costs are the most stable in Europe
- UK labour costs are lower than Germany, France and Italy
- The gap between Eastern Europe and UK is steadily closing





Source: Eurostat

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R&D Support for Automotive

- APC - £1 billion matched funding over five years (low carbon propulsion)
- CCAV - £200m (Connected and Autonomous Vehicles)
- Innovate UK - £500m per year across all industries, including automotive.
- OLEV (Office for Low Emission Vehicles) - £500m to incentivise purchases of ULEVs

- Additional funds announced late 2016 for automotive:
  - — £100 million for new infrastructure to trial driverless cars;
  - — £120 million for plug-in car grant and electric vehicle charging infrastructure;
  - — Enhanced Capital Allowances: Costs of EV charge-point can be set against tax

- Patent Box: Reduced 10% tax rate on profits attributable to patents

- R&D Expenditure Credit: “Above the line” credit, representing 11% of qualifying R&D

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Regional Business Environment

- 38 LEPs (Local Enterprise Partnerships) manage funding programmes across all regions of England

- Two additional initiatives in automotive manufacturing areas:
  - The Northern Powerhouse
  - The Midlands Engine

- The Devolved Administrations of Scotland, Wales and Northern Ireland directly manage funding programmes

- Enterprise Zones offer :
  - 100% business rate discount worth up to £275,000 over 5 years
  - 100% enhanced capital allowances (tax relief) on plant and machinery

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Britain is open for business

Lowest corporation tax in G7
Falling to 17% by 2020

Patent Box: 10% tax rate on profits from R&D done in the UK

World-class research base:
4 of world's top 10 Universities,
18 of top 100

Top 10 economy for global competitiveness

No 1 major European economy for global talent

Highest-ranked major economy for ease of doing business

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Automotive Investment Organisation Future Focus

Exports

Continue to build on AIO success

Target high-tech capability

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