Driver & Vehicle Standards Agency

The Driving Theory Test Recent Developments & Looking to the Future

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Background

- Introduced in 1996, the theory test became a computer based test in 2000.
- Now the largest ‘high stakes’ test in the world; over 2 million tests each year.
- Tests for 14 different licence categories including:
  - Car, Motorcycle, LGV, PCV, ADI
- Car test; 50 questions cover 14 topic areas, set out in EU law, in January 2012 we stopped publishing the questions.
- The hazard perception test (HPT) was added in 2002, candidates are required to pass both parts of the test at the same sitting.

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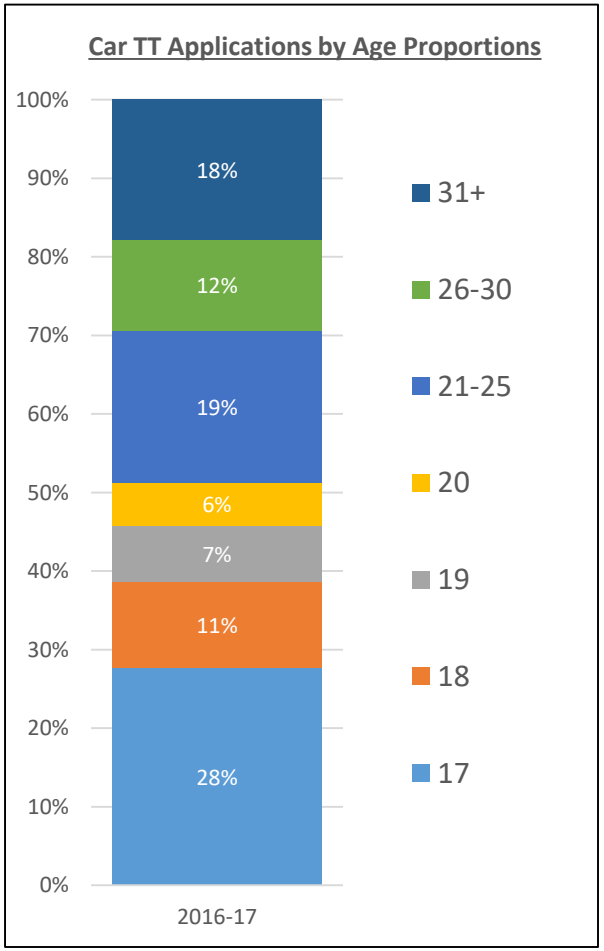
Background

Driving theory test delivery today

- Learner Car drivers
  - Age profile – 50% over 20
  - Pass rate: 65.4% 2007-08
    48.7% 2017-18
  - 43% first time takers
  - Few booked by Driving Instructors
- Motorcycle riders
- Lorry and bus drivers
  - most booked by trainers
- Potential driving instructors



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Basic principles

Discriminates between good and poor candidates	Fair	Accessible
Cost effective	Looks professional	Adaptable
Up-to-date	Available	Secure

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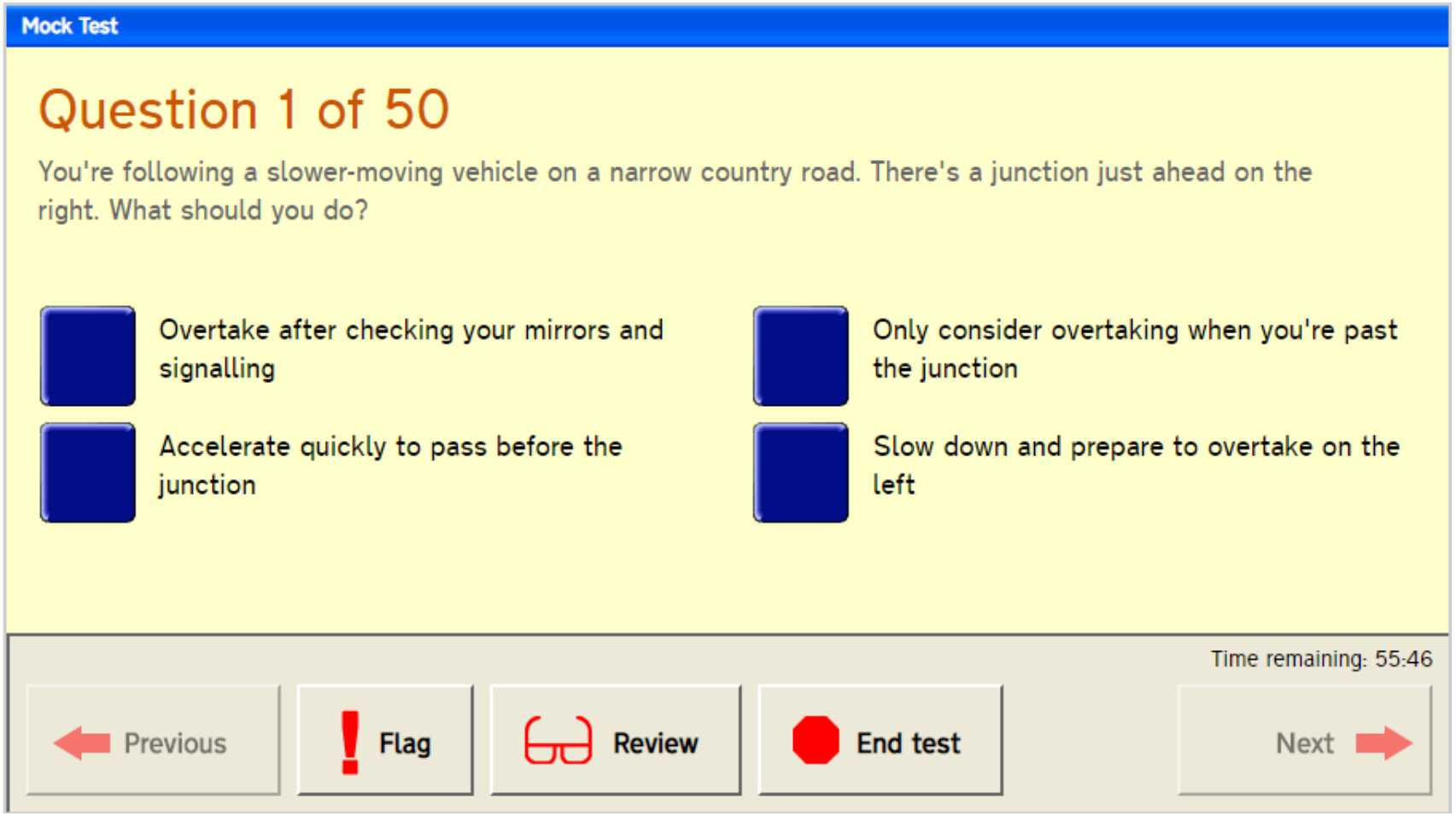
Current test



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Hazard perception test

- Introduced in 2002 (filmed clips of on-road scenarios)
- Tests candidates' response to hazards – can they identify developing hazards?
- CGI clips developed from 2012 to
  - Improve clarity
  - Bring 'up-to-date'
  - Introduce new 'dangerous to film' hazards
  - Be more adaptable e.g. weather, darkness

[1] Development of HP testing, 2002, Barry Sexton

[2] Wells et al (2008), Cohort II: A Study of Learner and Novice Drivers, Road Safety Research Report No.81, TRL

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Hazard perception test

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Development focus

- Improving the wording of questions
  - Improved accessibility
  - Improved ‘look and feel’
- Developing HPT
  - Depicting different weather and lighting conditions
  - Greater focus on vulnerable road users
- Developing and trialling visual media clips to support multiple choice questions

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HPT weather conditions

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HPT weather conditions

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HPT lighting conditions

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Visual media clips

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Visual media clips

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Visual media clips

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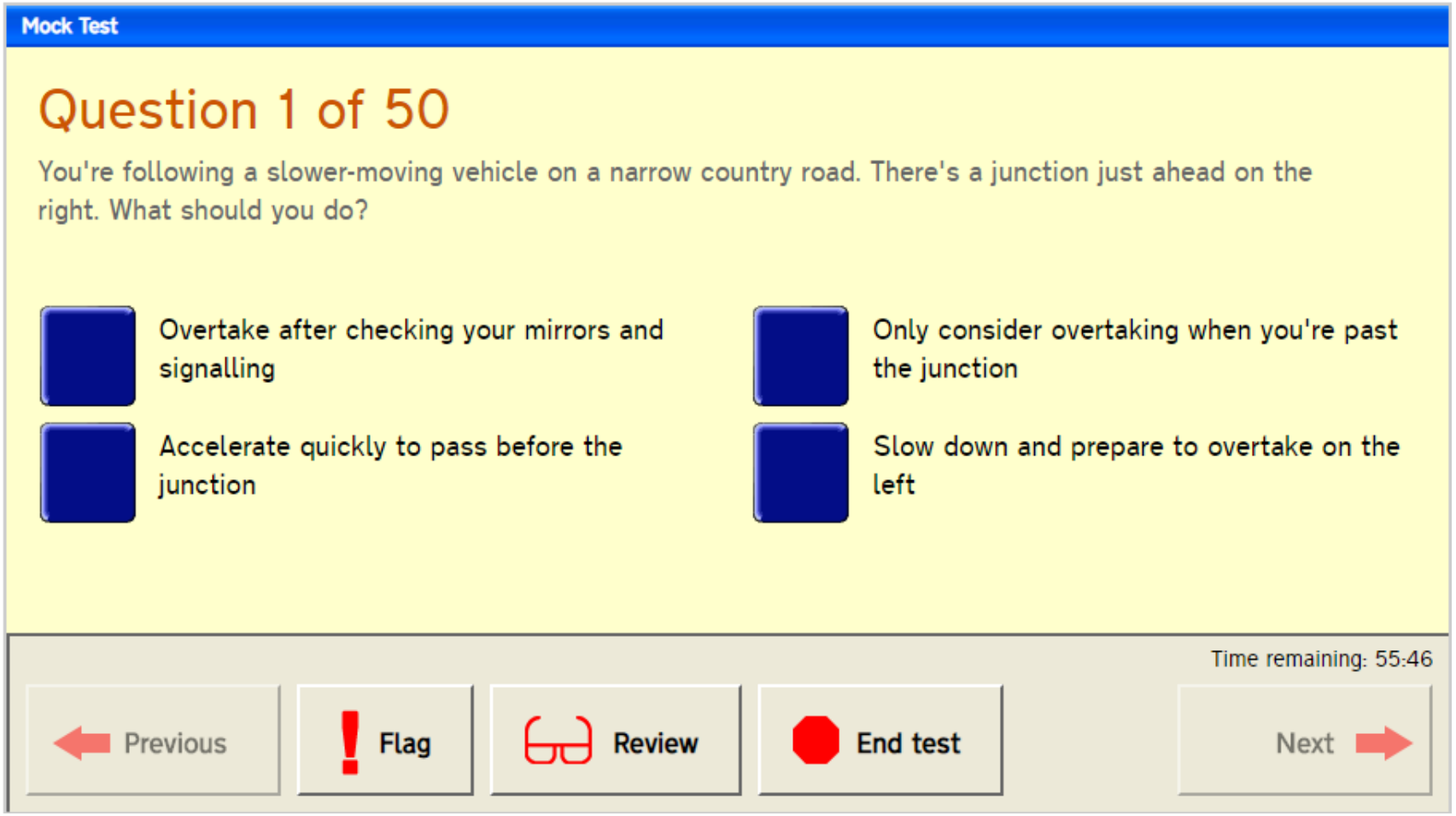
‘Look & Feel’



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New ‘Look and Feel’

Car - Candidate Name

Time Remaining 56:22
Question 2 of 50
Flag for Review

Mark one answer

What does this sign mean?

- D
- T
- L
- S

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The DVSA Five Year Strategy 2017-22

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Helping you stay safe

On Britain's roads

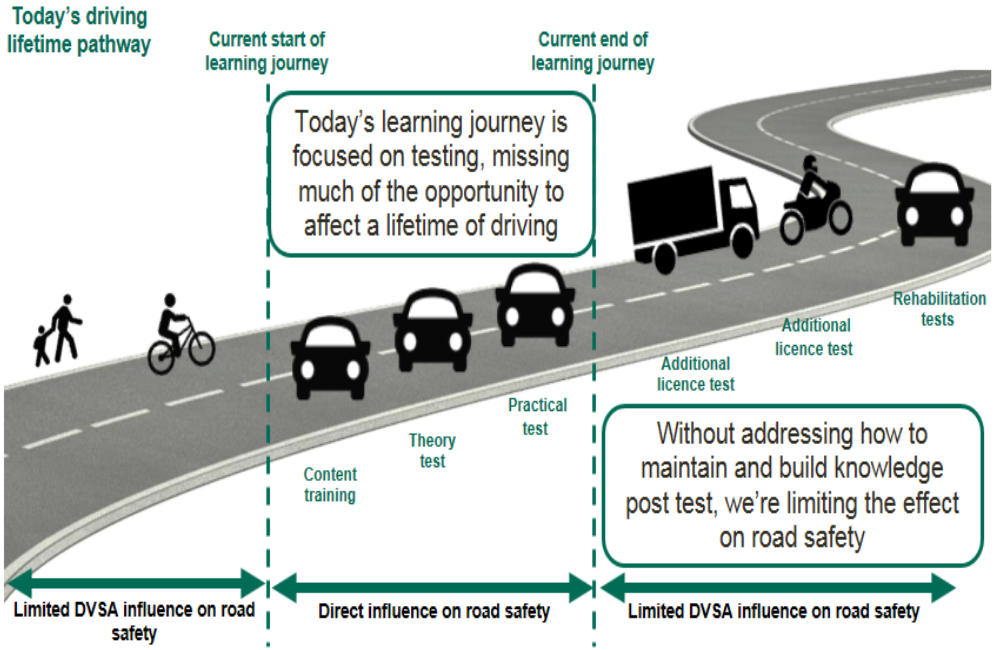
The 2017-2022 strategy is about improving:

- Road Safety
- User Experience
- Value for Money

The vision and purpose of the theory test service is:

"To provide the statutory assessment of the knowledge, skills and understanding you need to be legal and safe on our changing roads, delivering a coherent learning experience available when and where you need it."

Helping you through a lifetime of safe driving…



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The Future Theory Test Service (FTTS) Project

- FTTS Project initiated in June 2017
- Focus is on the future ‘delivery model’ for the Driving Theory Test, to deliver the content of the test in an appropriate way.
- The proposed models have a critical dependency on the content; both influencing and influenced by the content, methodology, scope and nature of the test and how it develops in the future.
- The scope of the test content and the nature of the test i.e. how, when and where the test mechanism is deployed… multiple choice, drag and drop, 2-D, pictures, moving images, immersive technology?

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… Looking to the Future

HELP!

- Academics, Road Safety Practitioners and Government Sector… collaboration and shared objectives? IMPACT.
- What, where and who…
- Questions. Evidence. Direction.

… Looking to the Future

DfT Innovation Challenge Fund

'The aim is to identify innovative developments and/or applications - such as Augmented Reality (AR), Virtual Reality (VR), gamification or similar technological solutions - that could be used to improve drivers' hazard perception skills'

3 projects selected for the 'Driver Training' section:

- NTU & Jelly Learn: Developing an integrated hazard perception and highway code training and assessment tool.
- Institute for Transport Studies, University of Leeds: Using Virtual Reality to develop Risk Awareness Perception Training for the UK.
- Onteca Ltd and Liverpool John Moores University: VR Driver. Use of Virtual Reality (VR), gamification and real-time 3d driving simulation

https://www.dft.gov.uk/innovation-grants/innovation-grants/icf/

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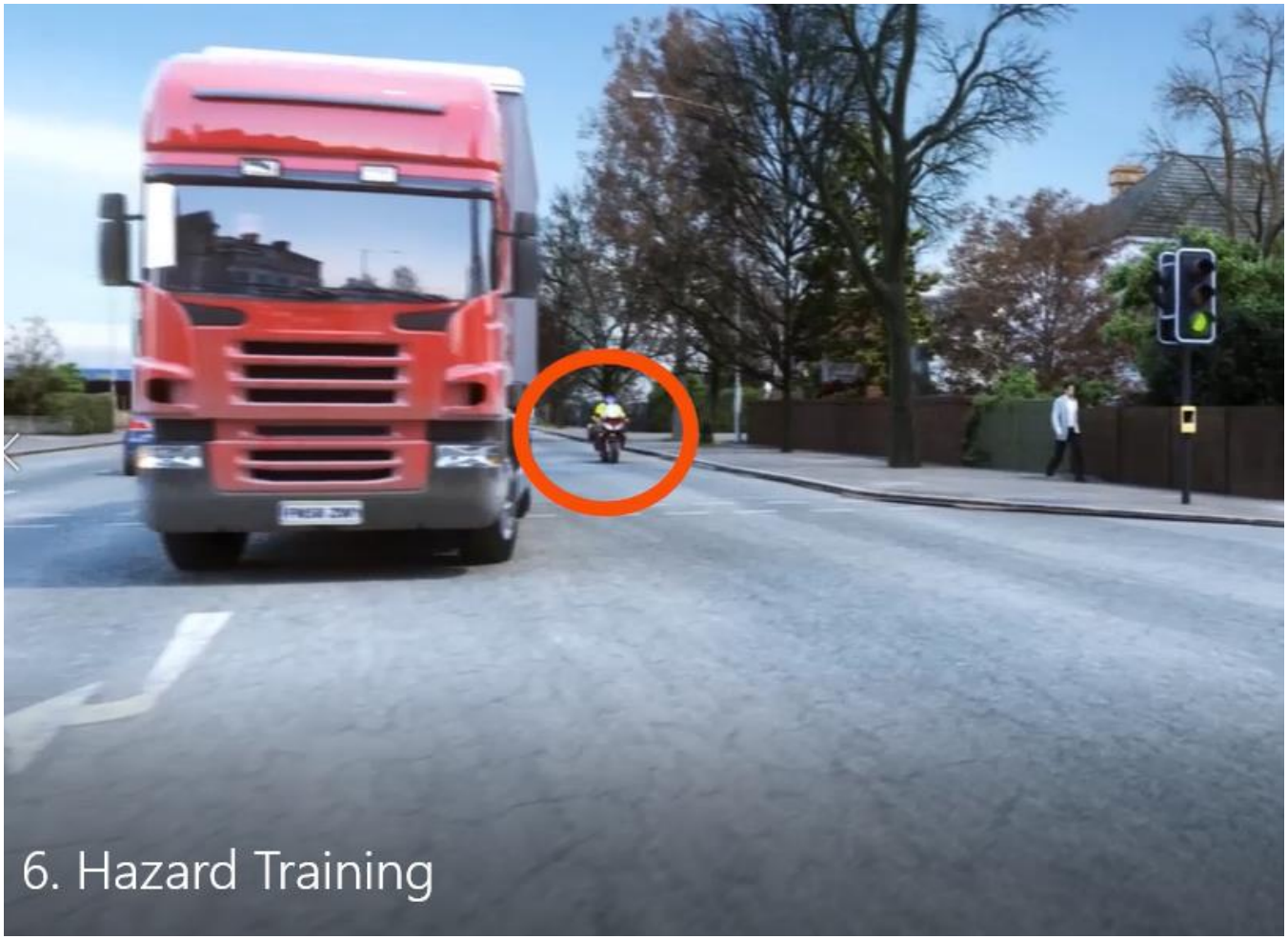

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DfT Driver 2020

- 3 year project which will involve a detailed examination of learning to drive and early post-test driving.
- To identify those training, education and technology-based approaches that give the greatest benefits to young newly qualified drivers in terms of their safety, skill and confidence.
- Feedback will be gathered from over 14,000 young people, in what is a world-leading piece of research

https://www.gov.uk/government/publications/review-of-interventions-to-increase-the-safety-of-young-and-novice-drivers

… Looking to the Future

What's Happening Elsewhere… The International Perspective

Other countries have innovated by:

- Several countries create CGI themselves (for example VICOM Editor software is licensed in Germany, Switzerland, Finland, Sweden, Latvia and Hungary): https://www.vicomeditor.de/
- Extensively using CGI in theory training and testing (Germany have generated 2,000 static and 1,000 moving images, the Netherlands have over 4,000 questions supported by static images)
- Using CGI to ask new types of question (the Netherlands have a drag and drop approach) https://www.cbr.nl/nl/rijbewijs-halen/auto/theorie-examen-auto/soort-vragen-tijdens-theorie.htm
- Visual learning materials; New Zealand DRIVE is bite sized, free and online; DriveVR virtual reality app freely available

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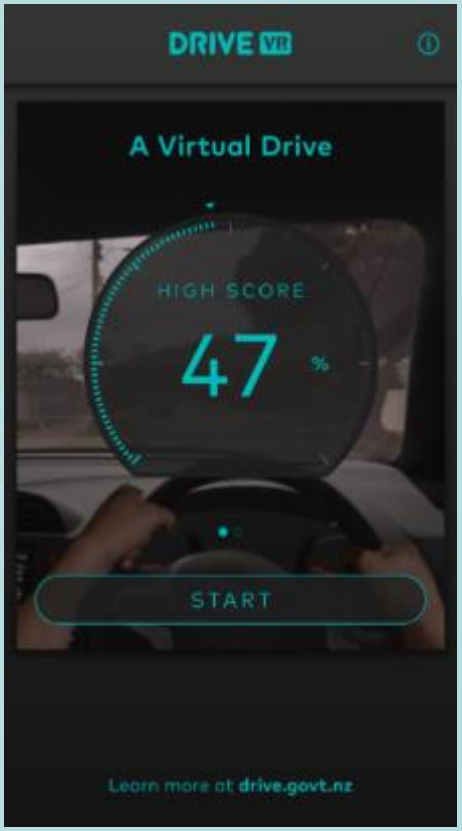
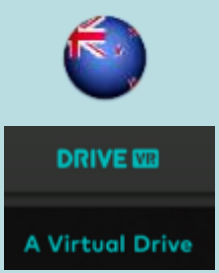
Germany

- VICOM was designed to be usable by road safety professionals not CGI experts; creating a 15s dynamic clip about 4 hours

DRIVE VR



- focus on mirror checking and hazard identification
- will extend to roundabouts and parallel parking



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DRIVE VR

https://drive.govt.nz/vr

A Comparison of Virtual Reality and non-Virtual Reality approaches to hazard perception training and testing: Does a 360 environment provide tangible benefits?

Department of Psychology, Nottingham Trent University, UK; RAC Foundation

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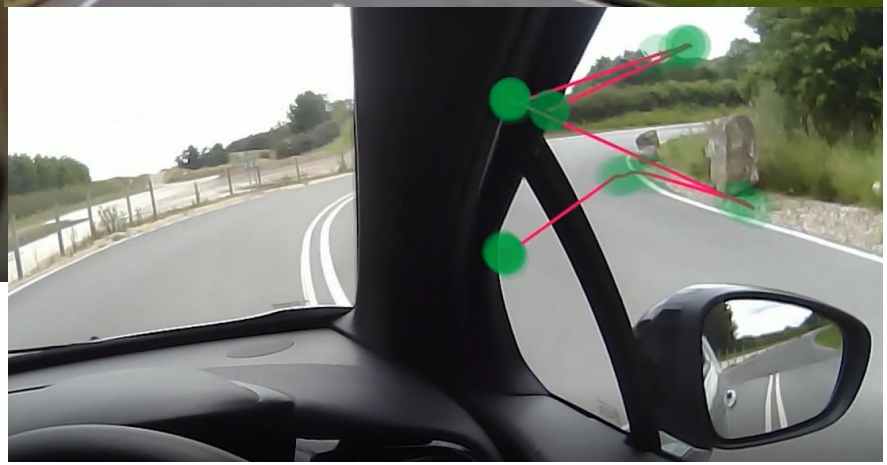
Eye Tracking



East Riding of Yorkshire Council

https://vimeo.com/241683404/f5d07de202

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… Looking to the Future

Some Questions…

- How do we best support the training and testing of hazard awareness. What do we actually mean? What are the objectives?
  - Hazard Perception?
  - Hazard Prediction?
  - Hazard Recognition, prioritisation and management?
  - Situational Awareness?
- How important is screen size? Image Fidelity? Immersion? Realism… Mirrors? Sound? Distraction? Static images, dynamic images, 2D, 3D/VR?

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Theory Test briefing - June 2017

Guy Chamberlain – DVSA Theory Test content

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References

https://www.gov.uk/government/collections/national-driving-and-riding-standards

Practice Theory Test: https://www.gov.uk/take-practice-theory-test

Practice HPT: https://www.gov.uk/theory-test/hazard-perception-test

Annexes

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Expert perspectives – who we talked to

Jonny Freeman, Professor of Psychology at Goldsmiths & MD of i2 Media

Paul Bailey, UX Consultant BJSS (Former Visuals Production Manager)

Richard Romano, Professor of Driving Simulation, Leeds University

David Crundall, Professor of Psychology, Nottingham Trent University

Peter Chapman, Associate Professor of Psychology, Nottingham Univ.

Mike Reddy, Senior Lecturer in Future Technology, Univ. of South Wales

John Wetherall, Managing Director of CGA Simulation

Shaun Helman, Chief Scientist, TRL (Transport Division)

Michael Calver, Senior Technologist, Transport Systems Catapult

Catherine Purcell, School of Health-care Sciences and others (Psychology, Learning Tech.)

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Funding opportunities

- Opportunities might exist to secure funding to develop solutions based on gaming software (eg Unity, Unreal) to use DVSA/DfT wide

GovTech Fund

- government led
- view to procure
- addresses public policy challenge & clearly defined user need
- 2 phases
  - 12 wks 5 sol'ns £50k
  - 12 mnths 2 sol'ns £500k
- now in round 3

Also Transport Systems Catapult

- Visualisation Lab
- bid for DfT funding each year
- scope for independent validation & facilitation

Production innovation for immersive content

- Industrial Strategy Challenge Fund (£8m) – part of Audience of the Future
- business led - develop tech, commercialisation
- single £100-250k
- collaborate £250k-£1m