Science, Technology, Engineering & Maths (STEM)

Mr Bateson

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Brief Introduction

- Electronic Engineering Degree, University of York, 2001-05
- RAF Engineering Officer, 2006-2011
- Cybersecurity Consultant, 2011-2016
- Head of Cybersecurity, McLaren, 2016-now
- Occasional 135 Sqn Civilian Instructor, 2015-now







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Previous STEM Sessions

- Aug 2018:
  - Bridge and crane building
  - A look at a Flying Suit



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Before We Start

- These sessions aren’t on any exam.
- These slides can be downloaded from www.timbateson.co.uk/rafac/

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Warm Up Exercise

- Split into teams.
- Each team needs some post-it notes and some marker pens.
- You have 3 minutes (from “go”) to write down some:

Emerging technologies that are changing (or will change) the world

- One idea per post-it note.
- It’s team activity – work together!

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3 minutes left…

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2 minutes left…

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60 seconds left…

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30 seconds left…

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10 seconds left…

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Time’s up!

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Emerging Technologies

- What did you come up with?

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Emerging Technologies

- Some things I thought of:

Artificial Intelligence (AI) & Machine Learning (ML)	Automation / Robotics	Augmented Reality (AR)	Cloud Computing
Internet of Things (IoT)	Big Data	Smart Spaces (Smart Homes, Workplaces, Cities)	Cryptocurrency & Blockchain

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This Session

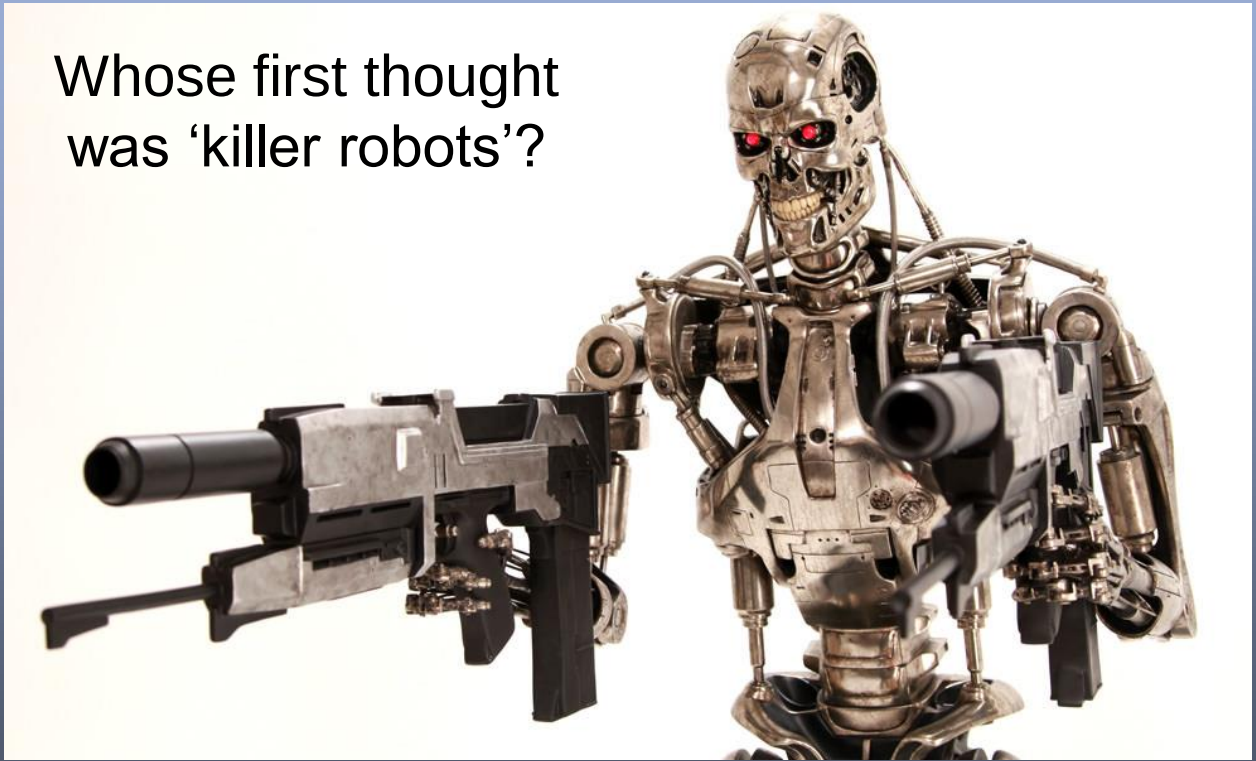
Emerging Technologies

- Artificial Intelligence (AI)
- Automation
- Augmented Reality

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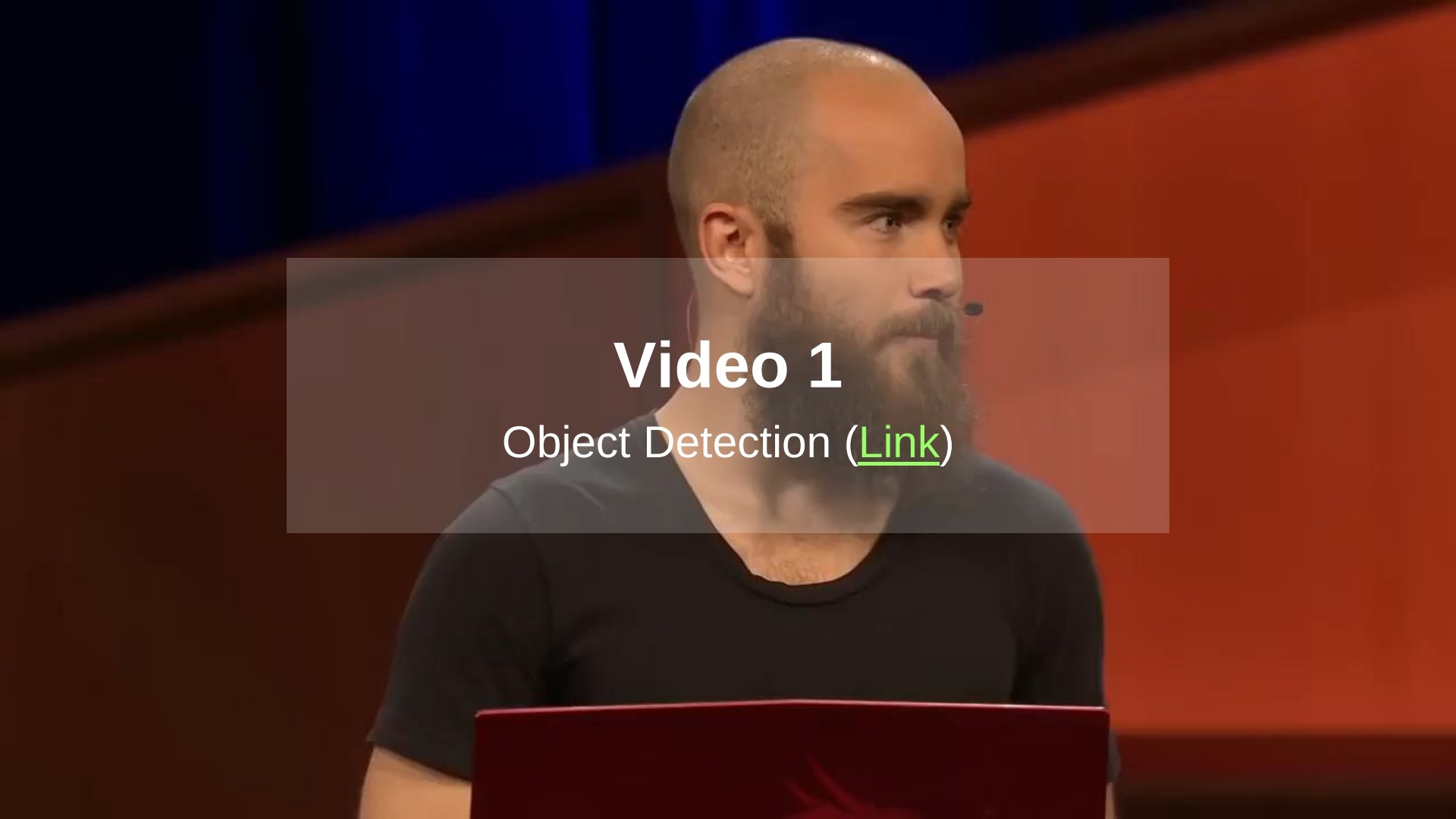
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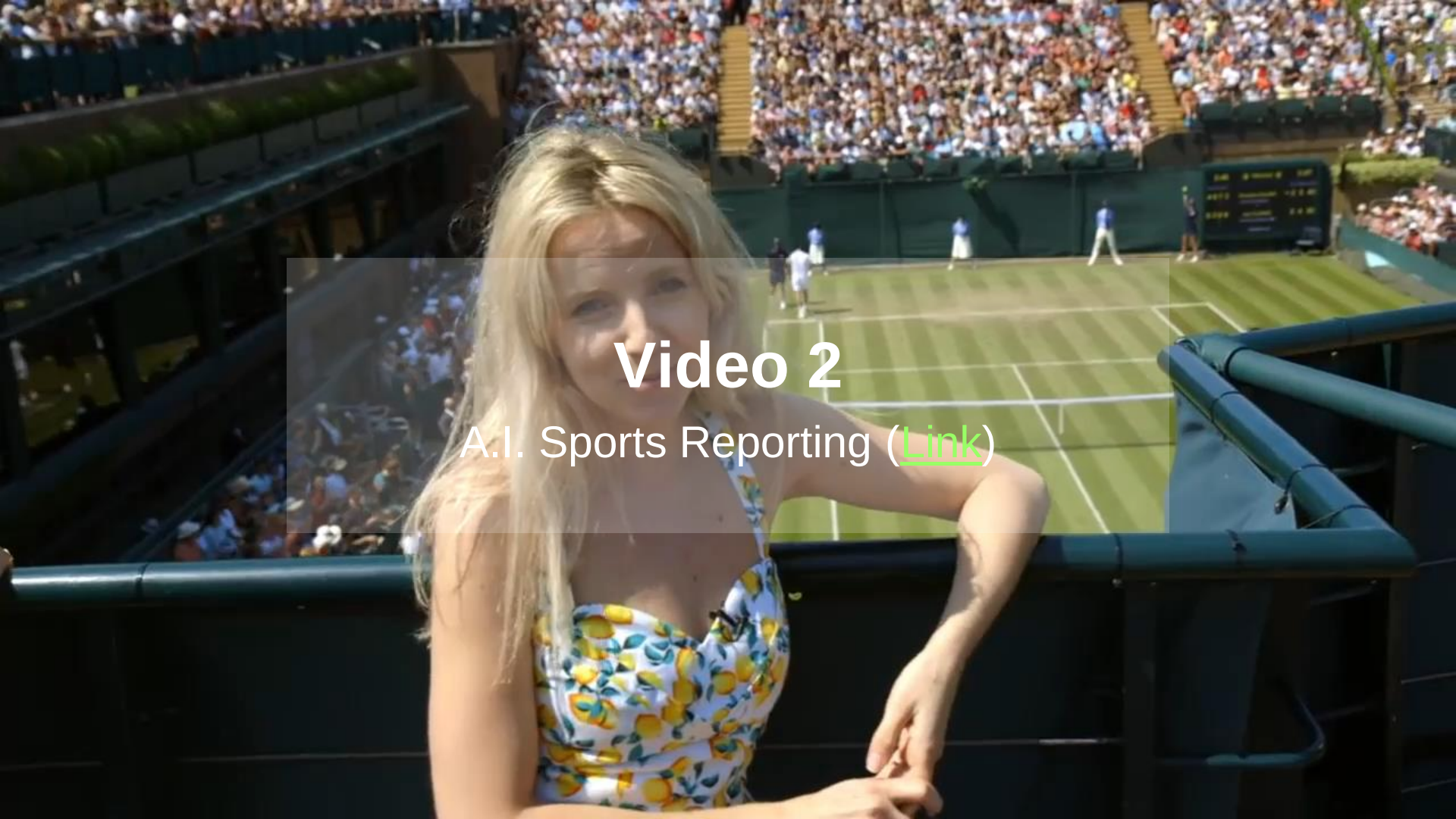
Artificial Intelligence (AI)



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Video 1
Object Detection (Link)


Video 2
A.I. Sports Reporting (Link)

Video 3

Robot vs. Door
(Link)

The Guardian

Automation

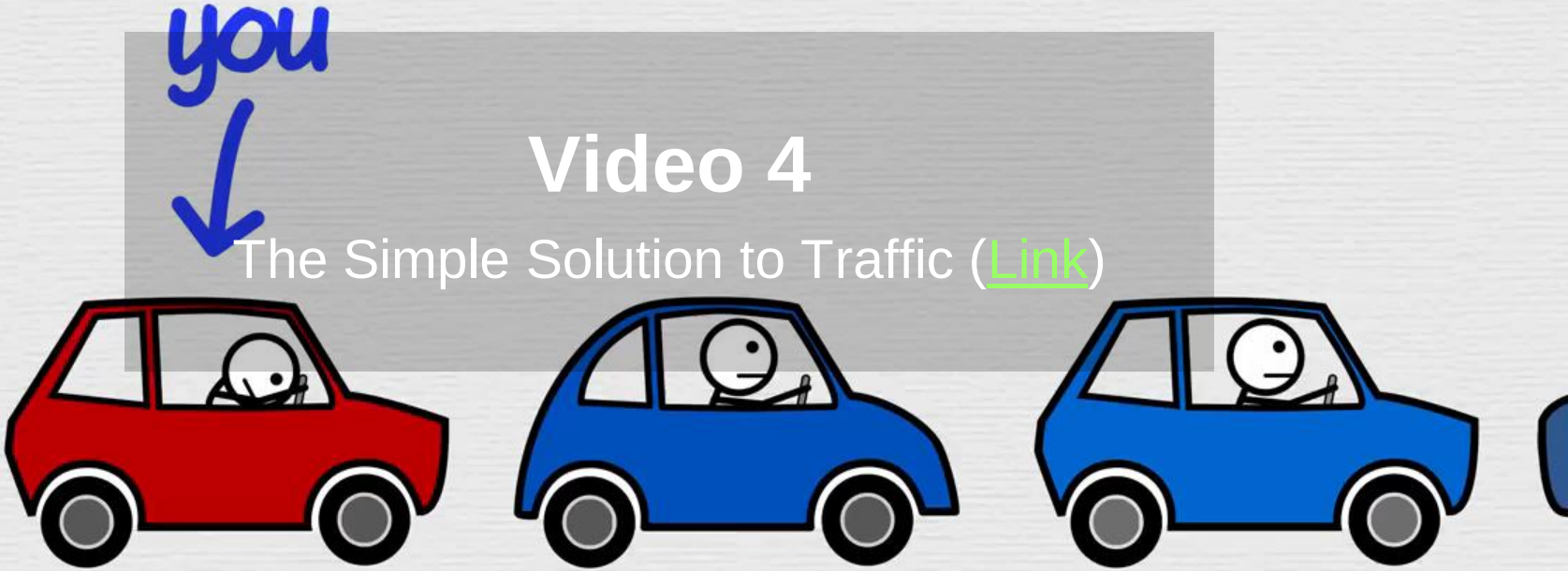
- What kind of things are we trying to automate?
  - What problems are we trying to fix and why?
- Typically best to start with:
  - Every-day problems that affect a lot of people – *widespread*
  - Are repetitive and procedural (based on rules) – *relatively easy*
  - Things that humans aren't good at – *room for big improvements*
  - Things that would save a lot of time or money – *good cost:benefit*
- For example:
  - Driving and logistics (moving people and things from A to B)

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Video 4

The Simple Solution to Traffic (Link)



Automation

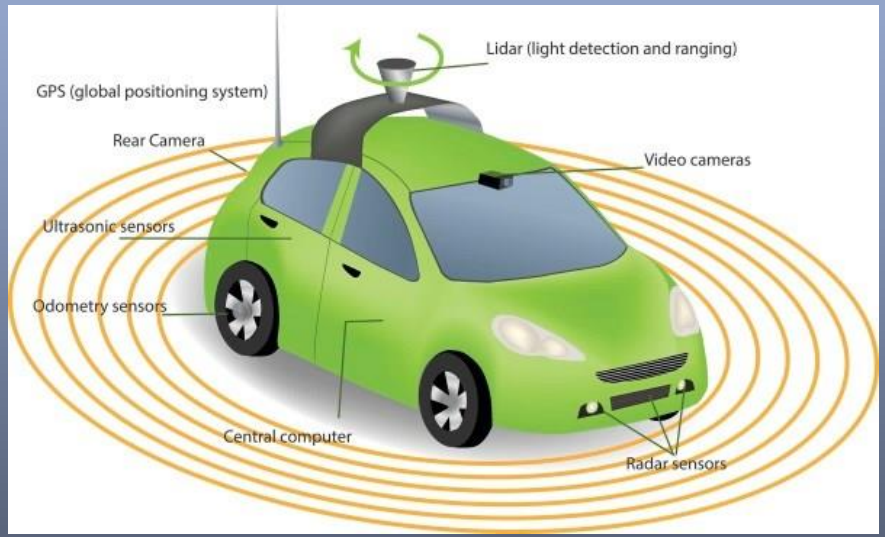


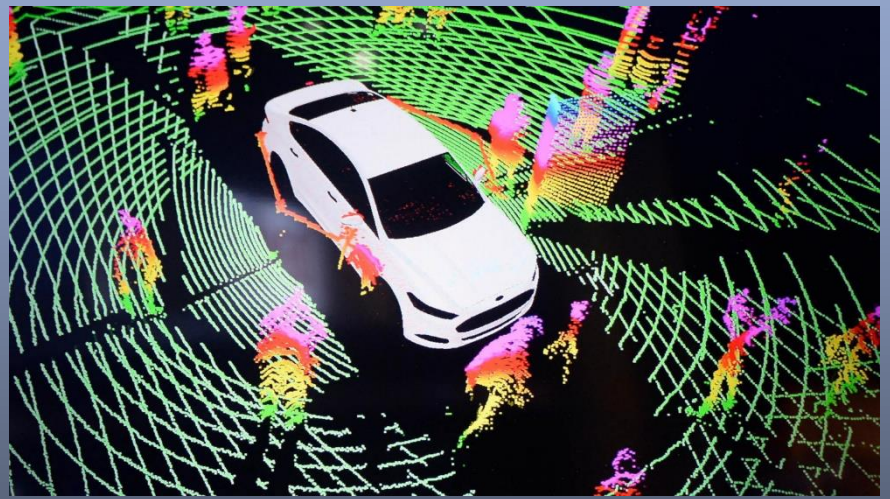


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Automation





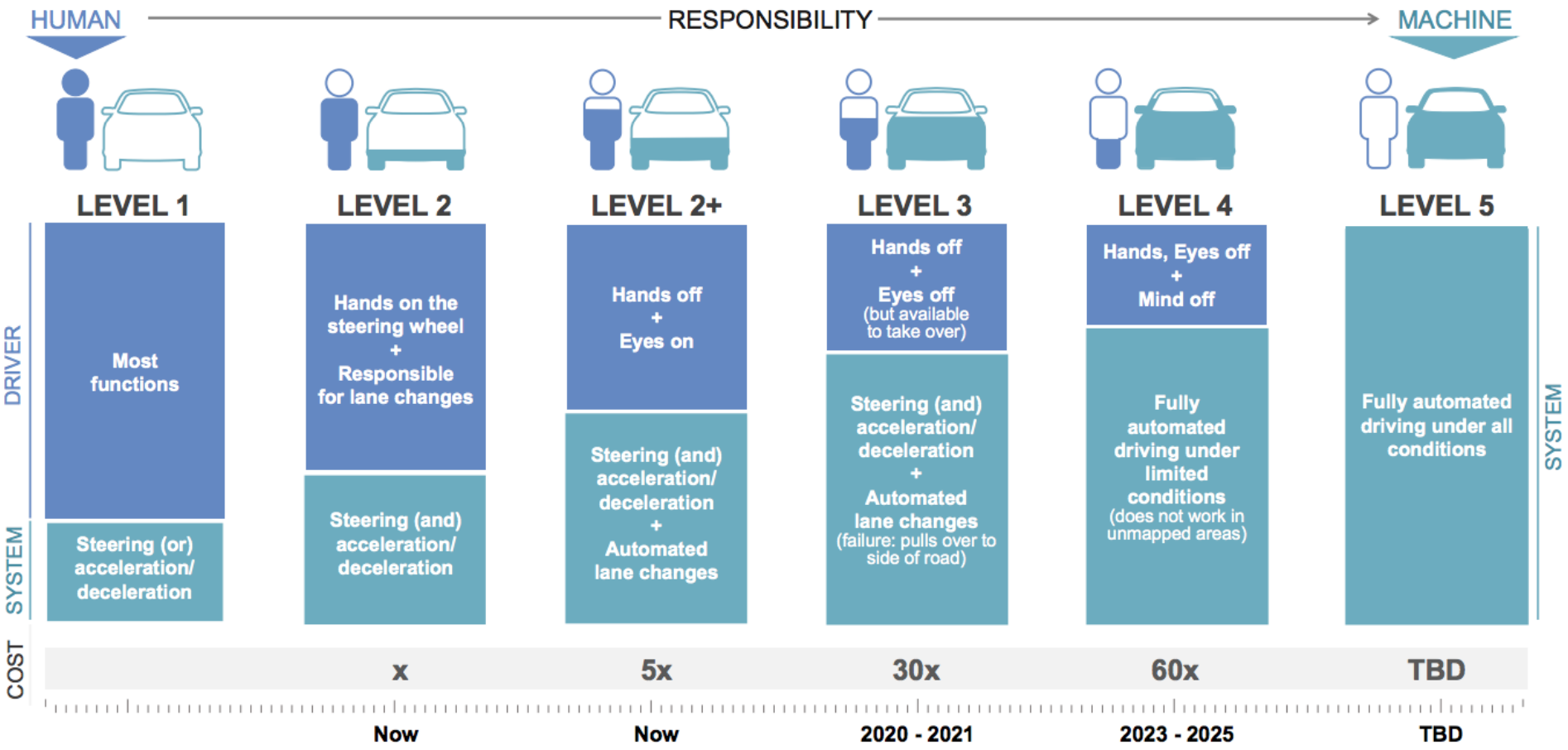
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Video 5
How a Driverless Car Sees the Road (Link)

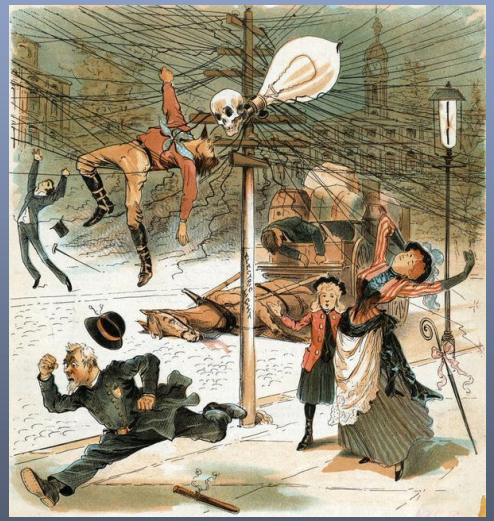
AUTONOMOUS DRIVING

Level of Automation, Cost, Timing



Automation

- What's the opportunity here?
  - 2.5m people killed in road collisions every year, globally
  - Billions of man-hours spent driving every day
- What are some of the challenges?
  - Will people accept it?
  - Can people afford not to?
  - What will the 300,000,000 people who work as professional drivers do instead?
  - How do we manage the transition?



"The Dangers of Electricity" (1900)

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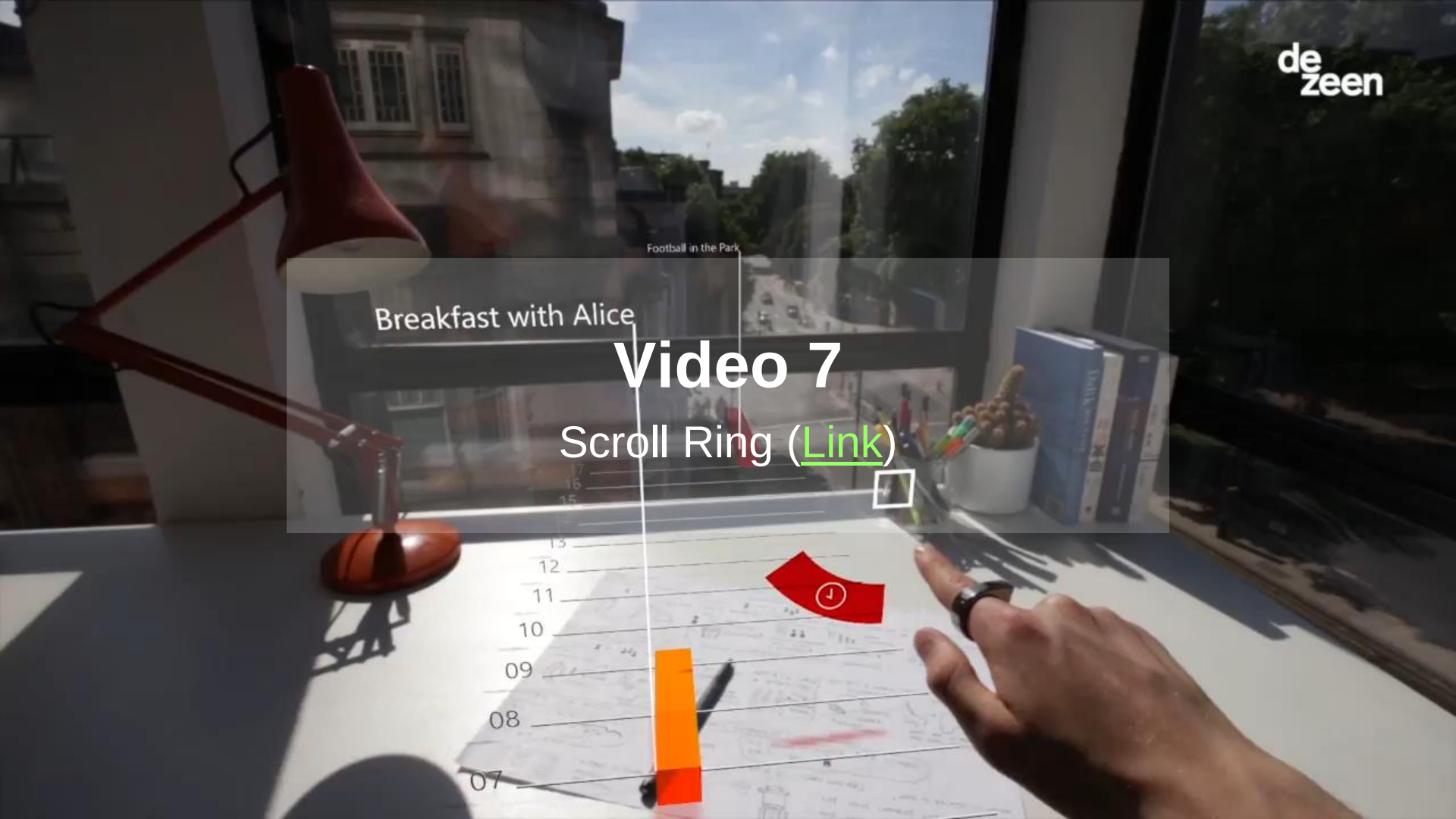
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Augmented Reality (AR)

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Video 6
Augmented Reality (Link)


dezeen
Football in the Park
Breakfast with Alice
Video 7
Scroll Ring (Link)
13
12
11
10
09
08
07



Video 8

Apple’s New A.R. Platform (Link)

Summary

- Things are changing more quickly than ever.
- We've looked at 3 emerging technologies (artificial intelligence, automation and augmented reality) and their application.
- Some positives – things could be easier, faster, safer.
- However, change is disruptive.
  - Some jobs will disappear.
  - Will we replace them with enough new jobs to go around?
  - Will everyone be a winner, or will there be some losers?
- Who's excited to maybe work in one of these areas?

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Any Questions?

(Feel free to ask in private if you prefer)

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