

# P1 2017

1. Evaluate possibility of a merger, of 2 globally operating companies.

Company A - motor vehicles

Company B - embedded systems

- a. For each company

- i. Suggest principle of operation for the company + explain

Vehicle manufacturer - geographical principle

- ability to deal effectively with differences in markets
- tailor activities to the legal and regulatory frameworks in the geography

Software producer - functional principle

- identify economies of scale in company-wide functional units
- help dissemination of learning across the company

- b. Overview of issues due to merger

- i. 2 potential issues from principle of operations

- misalignment of structures
- marketing might be regional for one company and aligned to product type in the other
- HR function might be regionally organised for vehicle company and global for software company.

- ii. Short term principle of operation to ease issues.

- company has divisions in the top level (one for each)
- minimal alignment
  - ensure merged company can comply w/ regulations on reporting, etc.
- least disruptive approach - low risk but low reward.

- iii. One long-term disadvantage for ii.

- divisional structure balkanises capability and can negate synergies the merger was intended to stimulate.

e.g. might be possible to innovate in engine control if the structure allowed more interaction across merged company.

#### iv. HR policy issues.

- aligning reward policies → retention
  - staff are valued appropriately across companies
- training policies are important to let staff gain knowledge acc. the new company to encourage interaction and provide a basis for cross-company projects.

#### v. Issues when interpreting assets of each company.

- Issue of intangible assets
  - software is intangible
  - possible to classify dev't and maintenance expenditure as either relating to purchase of an asset / running cost.
- estimating value of software is inexact.

## 2. Online Learning Technology + Video Capture

### a. Uni wants to measure 'student engagement' tests → PASS / FAIL

#### i. 3 issues in UK DPA.

- consent - inadequate notice
  - need more active way of gaining consent
    - maybe for every session?
  - adequate info on data gathered + how it will be processed
  - right to refuse consent w/o penalties
- explainability - how was the decision arrived at?
- removal - right to forget
  - criteria for accepting deletion requests
  - allow students to review data
  - what to preserve?

#### ii. How to tackle

- Explainability - simple analytical approach that can be explained easily, e.g. decision trees.
- Removal - clear distinction for essential data
  - can only remove non-essential data

b. Facial recognition → find all clips a student appears to authenticate.

i. Issues w.r.t. GDPR

- privacy - errors in facial recognition system
  - lead to inclusion of videos/access to accounts
- how to provide data portability?
- equality act - discrimination against protected characteristics
  - e.g. Faith/Ethnic Origin
  - errors more common for particular group

c. Ethical Issues

privacy - observe personal habits / characteristics

- associate w/ identifier → make links
- breach to RTP
- need to see/request deletion
- investigative powers act.

### 3. Fully autonomous vehicle

#### a. Companies to ensure employees conform to PCS.

public interest - how the development of this tech is understood by the general public

- concerns over automation and safety

professional competence and integrity

- clear view of operational and regulatory env.
- exp in developing such systems
- understanding limits of automation + levels of dependability

duty to relevant authority - employees will not be prevented from objecting to dubious practices.

#### b. How to introduce in large trucks + ethical issues

- trucks - larger accidents scale
- higher level of disruption on labor market → unemployment
- behaviour of vehicle is hard to understand by other road users.

### c. Legal issues

Liability - clear division of risk bet. company, vehicle operators  
and individual drivers  
- established in advance!

Culpability - in the event of death  
- vehicle is not a person → not culpable

### d. Effects of standardisation

standards: DO-178C, IEC61508, Quality standard ISO 9000

- need to situate vehicle in overall transportation system
  - e.g. TO standards in avionics
- ensure dev't tool chains that support dev't
  - e.g. DO 178-C tool standards
- provide robust evidence the tool is fit for purpose using standardised approaches
- ensure suppliers / subcontractors meet the standards
  - like how ISO9000 achieves this
- Need to control system properties under maintenance -
  - IEC61508.