KU LEUVEN CiTiP

CENTRE FOR IT & IP LAW

imec

CIF Seminars

Is the law getting outpaced by autonomous vehicles?

Orian Dheu & Charlotte Ducuing

www.law.kuleuven.be/citip

- **Research funded by** the MSCA ETN Safer Autonomous Systems (SAS) project which has received funding from the European Union's EU Framework Program for Research and Innovation Horizon 2020 under Grant Agreement No. 812.788 / https://etn-sas.eu/

- **Research based legal study** in CONCORDA (Connected Corridor for Driving Automation) which has received funding from the European Union’s Connecting Europe Facility (CEF) programme Transport Sector under grant agreement No INEA/CEF/TRAN/M2016/1364071.https://concordaproject.eu/

Prolegomena

Alleged societal benefits

Safety

Reliability

Increased mobility

Time saving

Complex technological features

Some of which 'disruptive'

Various deployment configurations/scenarios

Legal implications?

Safety regulations

Liability

‘Disruptive’ technological features

AI/ML’s dynamicity/opacity

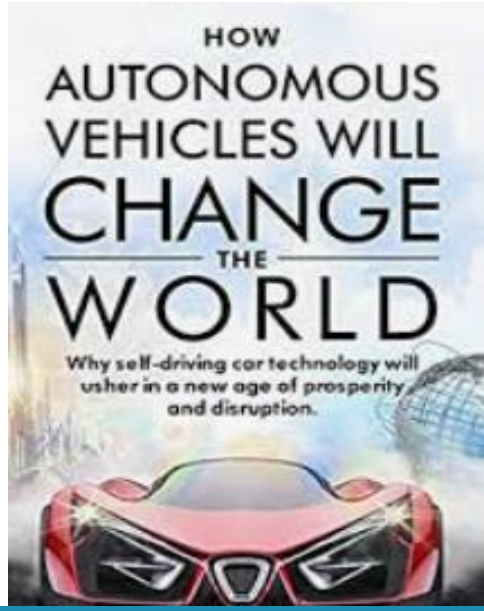
Digitalization: increased data reliance of safety critical functions

(Inter)connectivity: increased interdependencies

Increased range of actors

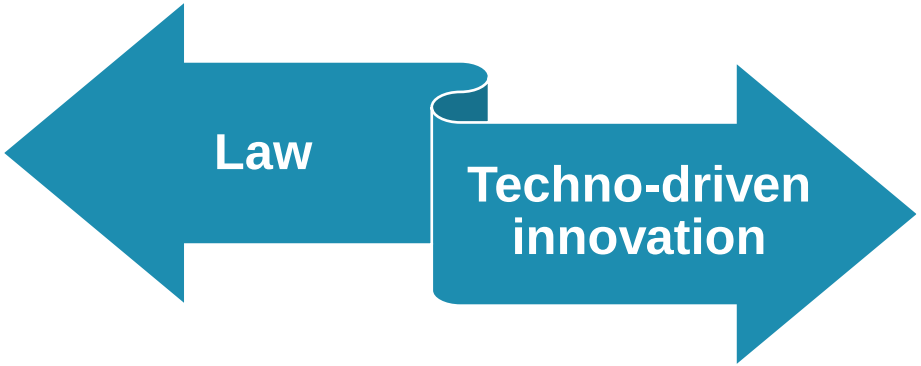
- Complex socio-technological eco-system
- Different operational/deployment scenarios/configurations

Will these new vehicles and associated technologies outpace the law?



The concept of outpacing

- Long decision-making process (democracy!)
- Non-expert actors
- Inevitably grounded in the existing (law as stratification of past policies)
- Difficulty in anticipating all effects of new technos



- Fast development
- Trial & error process
- Unpredicatability of the outcome
- High level of technicality & complexity

The law would be outpaced by new technos

- ‘Pacing problem of the law’ & the ‘Collingridge dilemma’ (Collingridge, 1981)
  - The law is lagging behind?
  - The law perceived as a hurdle to new technos
- On a philosophical & sociological note, H. Rosa, 2013 (Social Acceleration: A New Theory of Modernity) – Mis-synchronisation between law-making → techno-economical development as a threat to democracy

YES, BUT…

The law to democratically channel innovation

- Law as (also) a necessary building block for innovation + political choice for society
- AVs in particular:
  - Perception of AVs as an ineluctable future that the law should therefore “make happen”
  - By default prohibited by law → outpacing problem or democratic choice?
  - CAUTION with path dependency: today’s regulatory choices (to “make it happen”) influence tomorrow’s technologies, environment & regulation

Do AVs disrupt the technical regulation of road vehicles?

1/ Short intro: technical regulation of road vehicles
2/ Regulation of dynamic cyber-threats
3/ Regulation of AI

1/ Short intro: Technical regulation of road vehicles

UNECE — **Vehicle Technical Regulation**

- "1958 Agreement"
- Vehicle Technical regulations as harmonized 'UN Regulations'

Working Party on Automated / autonomous and connected vehicles

EU — **Type-Approval legislation (product legislation)**

- Revision of Type-Approval Regulation (process)
- Revision – proposal for a General Safety Regulation

Car manufacturer — **Type vehicles certification**

- Vehicle types have to be approved before placing on the market.
- Car manufacturer responsible for ensuring that individual vehicles conform: certificate of conformity

- *Ex ante* certification of vehicle-types
- Specific focus on safety requirements – increasingly cybersecurity as part of safety requirements

2/ Regulation of dynamic cyber-threats – How to certify cybersecurity of AVs?

UNECE Proposal for a recommendation on Cyber security

UNECE Draft Recommendation on Software Updates of the Task Force on Cyber Security and Over-the-air issues

Extensive interpretation of the CAM vehicle in space

- Challenge: uncertain delineation of the vehicle wrt its environment
- External connectivity in (even X2V)
- 'data' used for safety-sensitive programmes

Extension of the scope of technical regulation to the whole lifecycle of the vehicle

- Disruption of the "Manufacturing > placing on the market > consumption" steps.
- Covering post-manufacturing changing cyber risks
- Software updates / upgrades obligations

Extension of the scope of technical regulation to the manufacturer's organisation

- Proposal to create a new certification of the car manufacturer, in addition to certification of cars
- wrt its cybersecurity & software update risk management

Nota bene: last update Dec. 2019

Based on C. Ducuing. Towards an obligation to secure connected and automated vehicles 'by design'? Security and Law: Legal and Ethical Aspects of Public Security, Cyber Security and Critical Infrastructure Security; 2019; Vol. 7; pp. 183 - 213

2/ Regulation of dynamic cyber-threats – How to certify cybersecurity of AVs?

Changing nature of the vehicle when growing in connectivity & autonomy →
Can vehicle technical regulation & type-approval certification keep up?

Regulation of the entity responsible for cybersecurity (car manufacturer) →

- Outside type-approval (product?) legislation
- Regulation of cybersecurity service provision –throughout the lifecycle of the vehicle

Limit to type-approval legislation: the integration of the CAM vehicle in its spacial environment

- Car manufacturer really the best placed to secure external connectivity (e.g. X2V)?
- Multi-brand platooning?

Changing role of the car manufacturer?

Or emergence of a new role (fleet operator?)?

Consequences for liability

Are we looking at CAM future with the lenses of today while claiming it will be so different?

3/ Certification of dynamic and evolutive AVs

***Ex ante* certification**

Dynamic & evolutive AVs

Current practice

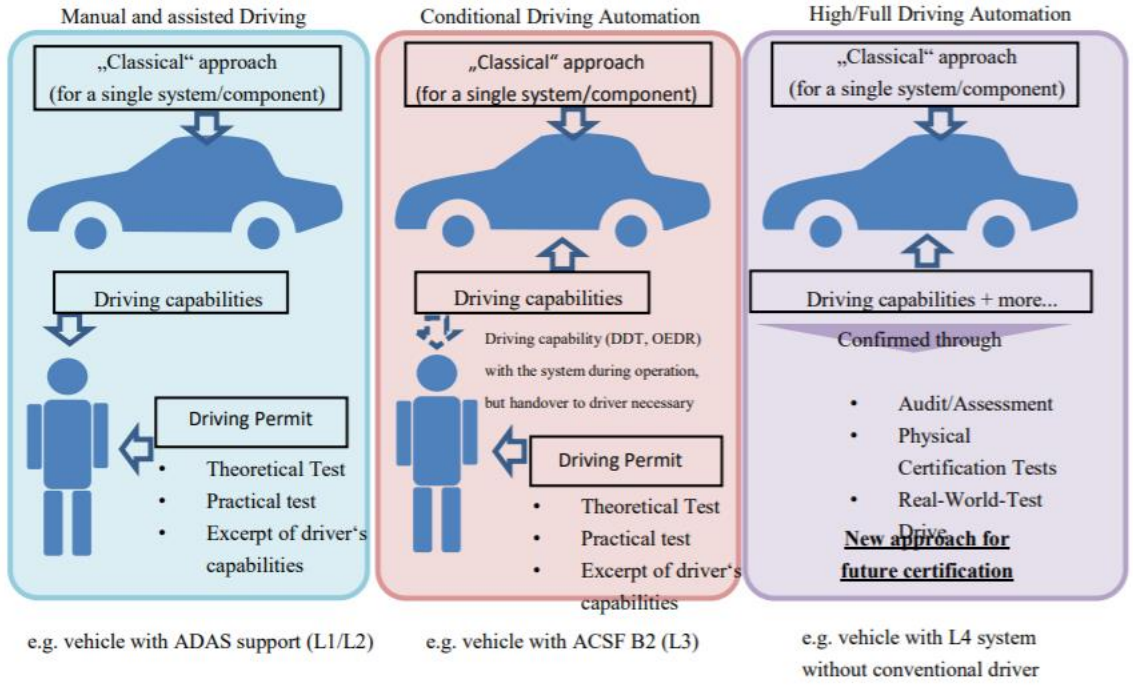
- *Ex ante* evidence that a system or component complies with pre-determined requirements
- *Ex ante* = prior to placing on the market (vehicle-type)

Disrupting features?

- Dynamicity (inc. New data)
- Unpredictability
- Adaptive features
- AVs not yet on the road + technos in constant evolution

Towards new approaches for certification?

→ Proposal for "the Future Certification of Automated/Autonomous Driving Systems" (UNECE)



3 pillars

- Towards an extension of the scope of certification ('driving capabilities')
  Towards more process- and functional safety-oriented requirements
- Towards principle-based regulation → responsibilisation of manufacturers

Technical/safety regulations are one part of the iceberg...
… as liability is lurking beneath...

Do AVs disrupt the attribution of liability?

1/ What is liability?

2/ A seemingly complex net of potential liable actors?

3/ Will current liability frameworks be 'outpaced'?

4/ AVs as a challenge to existing legal paradigms ?

5/ Normative considerations

1/ What is liability?

- Differentiate between:
  - Accountability ≠
  - Responsibility ≠
  - Liability
- Criminal vs. civil liability
- What are the functions of (civil) liability?
  - Compensation
  - Deterrence
  - Risk distribution (Calabresi)
- Liability national specific (except Product Liability)

2/ A seemingly complex net of potential liable actors?

Driver/Owner

Other users
(motorists, passengers, pedestrians, cyclists; etc.)

Manufacturer
Road infrastructure

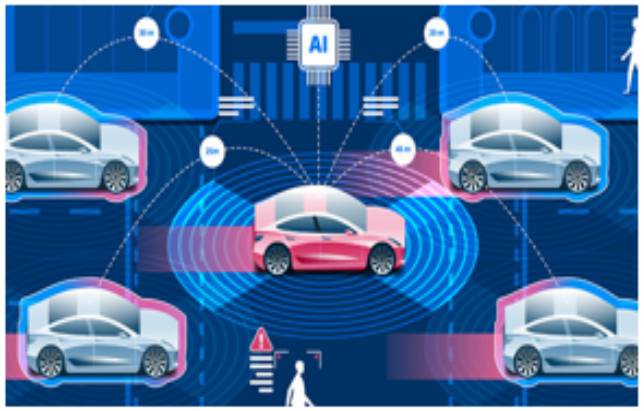
Traditional road traffic setting

- *AV Users*
- *Other Users (motorists, pedestrians, cyclists etc.)*
- *Manufacturers*
- *Software programmers*
- *Data providers (Mapping, etc.)*
- *GNSS providers*
- *Communication network providers*
- *Cloud services providers*
- *Smart road managers*
- *C-ITS station manager?*
- *Mobility operators/fleet managers*
- *Etc.*

Cybersecurity threats: new risks

New road traffic eco-system

Exchange and interaction of safety critical data/Information/processes – involved in the AV operation



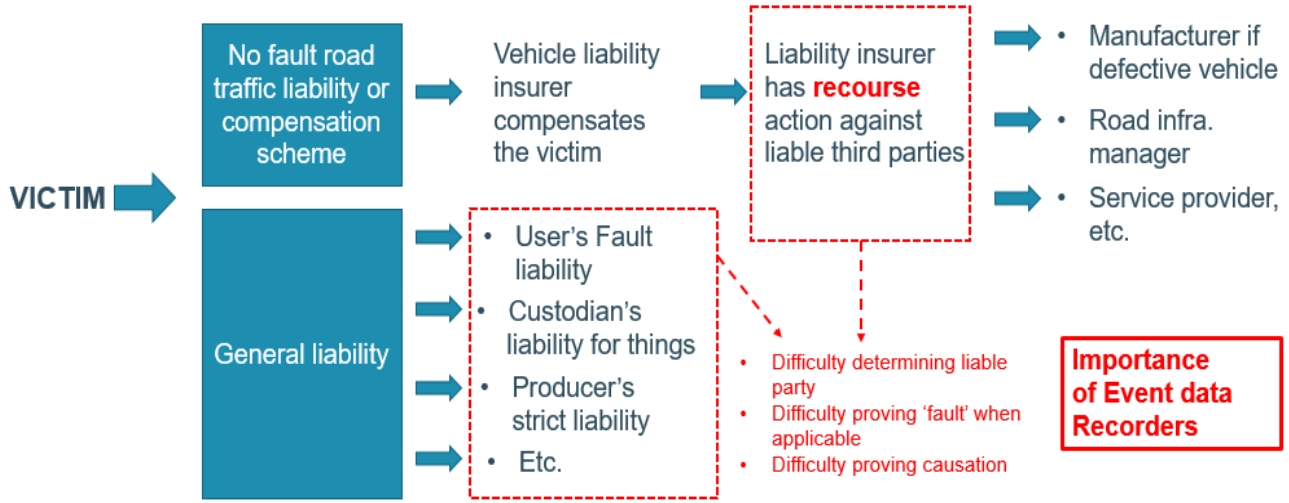
Telecom review webstite: https://www.telecomreview.com/index.php/articles/reports-and-coverage/3985-connected-and-autonomous-cars-balancing-morality-and-regulation

3/ Will current liability frameworks be ‘outpaced’?

Yes & No

- **Nuance the notion of outpacing in liability!**
- Unequal applicability of existing (national specific) road traffic liability mechanisms:
  - **Fault based liability** = difficult attribution of fault to the vehicle ‘user’ depending on the level of autonomy
  - **No fault liability** or compensation mechanisms = usually continued compensation of victim
- **Causation** as a transversal concern
- Primary liability bearers **or their insurers** may apportion liability (costs) through recourse actions against secondary liability bearers

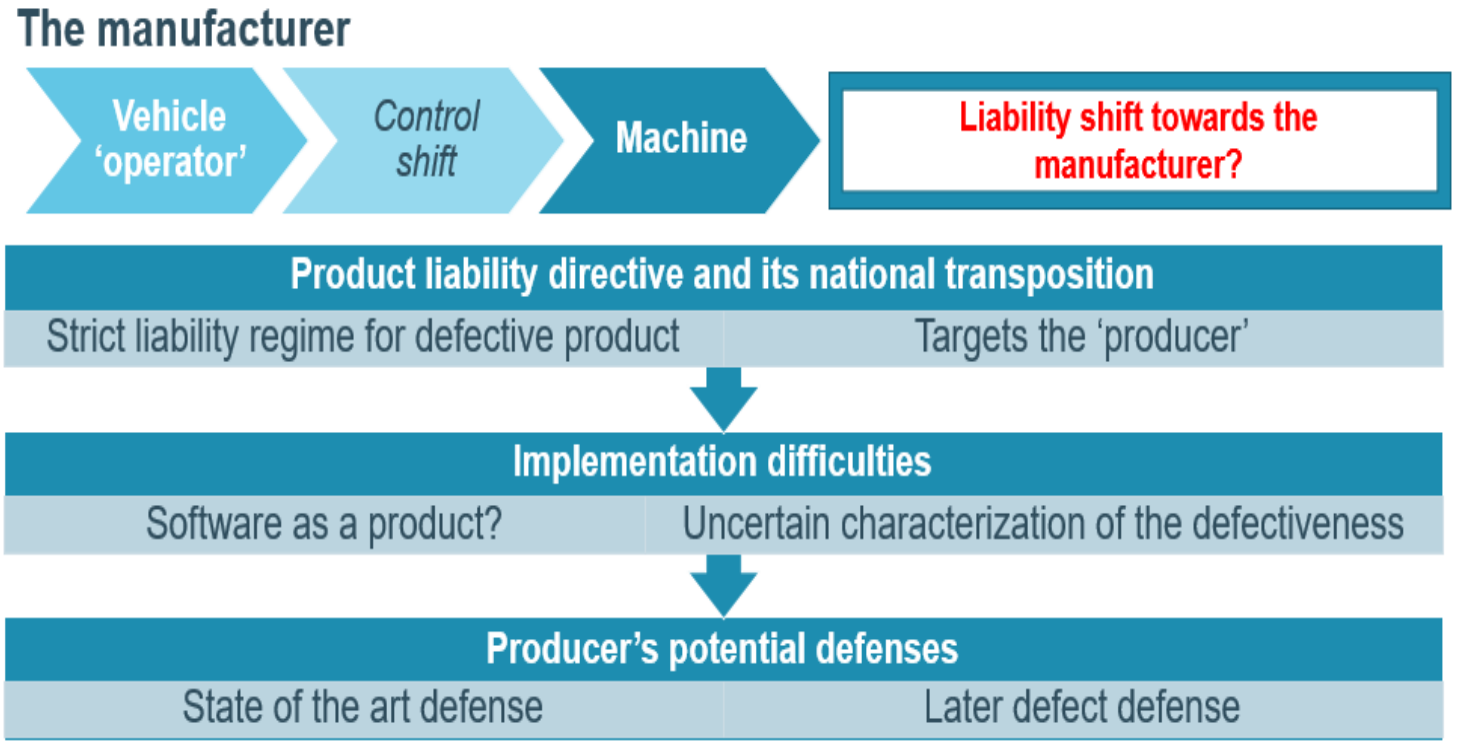
	Level 3 (partial automation)	Level 4/5 (high automation – full automation)
‘driver’ still identifiable?	Yes. Sharing of driving functions between computer and user Duty to supervise = control?	No. User becomes mere passenger.
Can liability still be attributed?	Depends on the moment the accident occurred.	No, except for failing to update software etc.



3/ Will current liability frameworks be ‘outpaced’?

Yes & No

- Alleged **renewed interest in Product liability**? The so called ‘liability shift paradigm’ :



Assumption works better in fault-based systems

Not so much in no fault-based systems where victim will have little incentive to apply it

4/ AVs as a challenge to existing legal paradigms ?

Nuancing the ‘product-oriented paradigm’ (Dheu, Ducuing & Valcke, 2020)

- Continuous safety critical software updates

- Safety and Cyber-security monitoring

- Possible control of back-end servers

1) Possible extension of the manufacturer’s activities towards that of ‘operational’ duties?

2) Blurred product versus services dichotomy?
AV at the crossroads of product and services
Technological setting involves various services
Manufacturer sliding towards service provision(s)? Vehicles are not only mobility artefacts but ‘**systems.** This involves many (safety critical) services for the vehicle to operate

3) Foreseen servitization of mobility MaaS + new business models
From private ownership/use to commercial operations and mobility service providers.
Professionalization of road mobility and multimodal transport solutions

5/ Some normative considerations

All these interrogations question the *relevance* of existing legal frameworks:

- Is it still relevant to burden current parties with liability?
- **Do we need** a legislative ***evolution***? Or mere ***adaptation***?
- **Why**? **What** for? What normative **criteria**? How?

- Already different **EU initiatives on AI and liability** = e.g., 2020 EP JURI proposal
  - However, *many shortcomings !*

Conclusion

- Inherent limits of a prospective analysis: different deployment scenarios/configurations = socio technological setting not yet fully determined. Will impact the way such vehicles are regulated
- However, AVs are said to outpace the law. To what extent is that true?
  - Particularly true for technical (safety) regulations:
    - May imply a change/adaptation in some regulatory paradigms
    - Necessity of a more dynamic approval of vehicles
    - Necessity of a dynamic treatment of cyber-security threats
  - Partially true for liability:
    - Depends on the legal system
      - Possible continued application of strict no-fault liability or compensation systems
      - Uneasy application of fault-based road traffic liability
    - Product liability as an uncertain alternative
    - However, manufacturers increased operational duties + foreseen of 'servitization' of mobility = what impact on liability?
- The alleged outpacing of law questions the motives of choices for potential normative evolutions:
  - What do we want? Why? How? Who wants it?

We thank you for your attention!

KU Leuven Centre for IT & IP Law (CiTiP) - imec
Sint-Michielsstraat 6, box 3443
BE-3000 Leuven, Belgium

http://www.law.kuleuven.be/citip