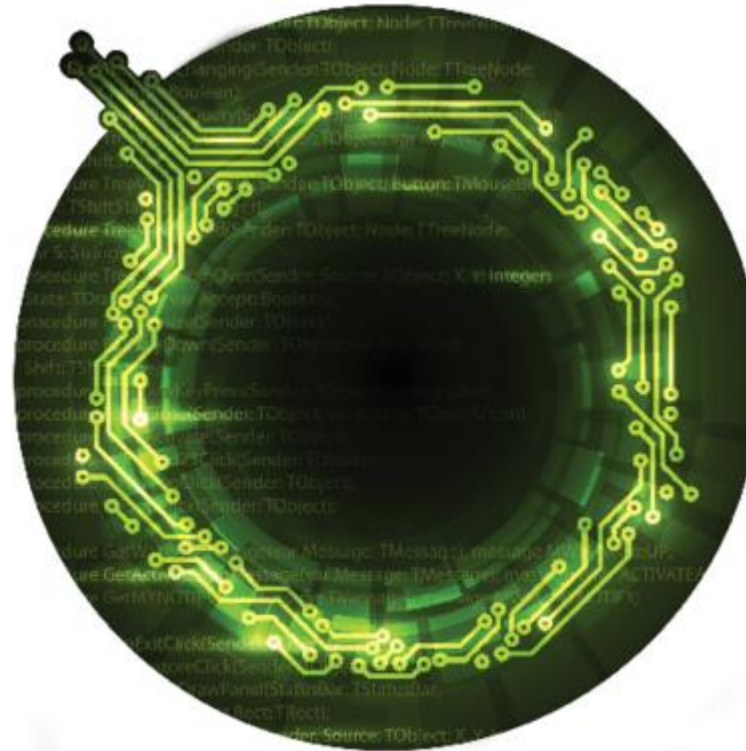# Deloitte.

Emerging issues of data ownership, interoperability, (re)usability and access to data, and liability

Liability in the area of autonomous systems and advanced robots / IoT-systems'

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Introduction
Main objective and scope of the study

The main objective of the present study is to: "*support the European Commission and inform the Commission's Impact Assessment* concerning emerging issues in relation to the data economy, IoT, contractual arrangements and research data in relation to:

- Data ownership,

- Interoperability,

- (Re)-usability and access to data, and

- Liability.

Restrictions linked to **data protection and data location** are out of scope of the assignment.

Sectors covered: Health, Finance, Agriculture and food, Energy, Machinery, Chemistry, Aerospace, Transport, Telecom, FMCG

The Internet of Things and robotics

Scoping remarks

Working definitions:

- **IoT** = "Internetworking" of physical devices, allowing them to collect, exchange or otherwise process data (semi-)autonomously in order to support certain functionalities

- **Robotics** = mechanical or virtual agents embedded in physical devices that allow the devices to act (semi-)autonomously

Examples? Self-steering drones, self-driving cars, domotics (vacuum, lawnmower, …), maintenance / construction robots

Core characteristics

- **Physical devices:** not necessarily constrained to a virtual environment

    Therefore: physical impact, potentially implying material / physical damage

- **(Semi-)autonomous**: fully human controlled systems are out of scope

    Therefore: data driven: dependant on sensors or external data sources

    Therefore: logically controlled: dependant on pre-programmed routines

    Therefore: attribution challenge: to which entity (human/company) is behaviour assigned?

Ecosystems and classifications

One size does not fit all

Autonomy

	Semi – autonomous	Autonomous
What?	Human controls operation of the device *E.g. smart car – lane support – speed control*	Device operates fully independently *E.g. smart car – self-driving*
Implication?	Human bears some liability	Liability must go 'elsewhere'

Dependence

	Self - contained	External driver
What?	Device depends fully on its own sensors *E.g. agricultural drone detects soil humidity and irrigates when needed*	Device obtains external data *E.g. agricultural drone obtains soil humidity data from land sensors and irrigates on that basis*
Implication?	Drone errors originate solely from drone	Drone errors may have external causes

Ecosystems and classifications

One size does not fit all

Operating environment

	Closed	**(Semi-)open**
What?	Device remains in tightly confined space *E.g. delivery robot in a storage facility*	Device could operate semi-freely *E.g. delivery drone in public airspace*
Implication?	Risk must be managed within the space	Risk may escape its context

Risk context

	Low	**High**
What?	Device errors are (relatively) low impact *E.g. vacuum robot shortcircuits and causes fire*	Device errors are (relatively) high impact *E.g. nuclear facility maintenance robot shortcircuits and causes fire*
Implication?	Liabilities are foreseeable and manageable	Liabilities may escalate

Extra-contractual, contractual and statutory liability
Problem definition

Basis for liability claims and concepts of damages		
Contractual liability	**Extracontractual liability, including torts**	**Statutory liability, including Product Liability**
Compensatory (actual) versus punitive versus nominal – Direct versus indirect – Intentional versus unintentional and (grossly) negligent - Incidental, special, strict or consequential – Material (including physical and lethal harm) and immaterial (including notably lost profits, lost business opportunity and reputational harm)		

Key problems:

- **What does this mean?** Interpretation and laws can differ from country to country.

- **Applicability?** Is an IoT / robotics device a product? A service? A hybrid?

- **Innovation?** How do we deal with unforeseeable risks, autonomous devices, self-learning, …?

- **Effectiveness?** How do we ensure that access to compensation is available?

Extra-contractual and contractual liability – Product liability
Preliminary findings – Product Liability Law

Scoping

- What is a 'product'? IoT? Robot? Data?

- Fading line between products/services

E.g. I buy connected sensors that monitor my crop fields, and lets me see my farm via a cloud based service. Suddenly my data is no longer shown. Did I buy a defective product? Or is there a problem with the data? Or the cloud service?

E.g. Will a self-driving car ultimately be a product or a service?

Extra-contractual and contractual liability – Product liability
Preliminary findings – Product Liability Law

Defect

- Exclusive focus on safety, without criteria for assessment

- What safety is a person 'entitled to expect' for evolutive / self-learning / autonomous products?

- What is the role of the consumer for products that receive updates or where users determine the use cases?

E.g. The Mirai botnet – badly secured video cameras were used to stage a DDoS attack. Were they defective? For the consumers, they worked just fine.

E.g. My drone has a collision detection system. After a software update, it no longer works and it crashes into someone. Was it defective? Is it now?

E.g. My car receives an update that will improve impact detection and avoidance. I don't install it and crash soon afterwards. Who is liable?

E.g. Investment algorithms caused the "May 6, 2010, Flash Crash", destroying around 1 trillion dollars in 36 minutes through high frequency trading. Did anything go wrong?

Extra-contractual and contractual liability – Product liability
Preliminary findings – Product Liability Law

The producer of a product

- Manufacturer or importer

- What about composite/complex products and product/software chains?

E.g. *If I monitor my farm through connected sensors from company A, drones from company B, bundled by company C and analysed by company D, where do I go in case of trouble?*

Damage and evidence

- Difficult to attribute the defect and to identify the producer

- Limited scope of damage – material only

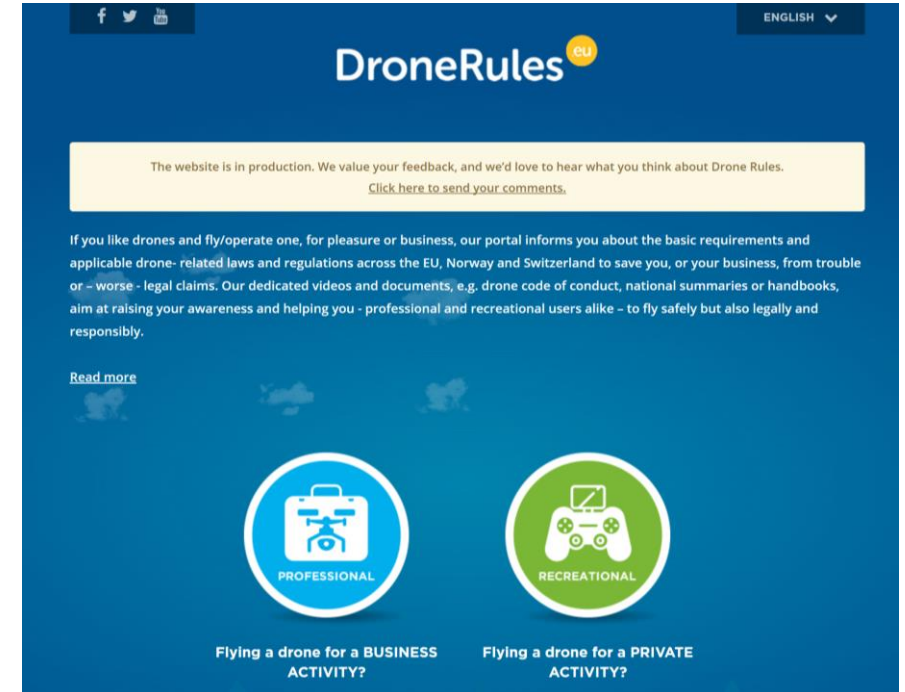- Only 'for private use or consumption'

Extra-contractual and contractual liability – Product liability
Preliminary findings – Product Liability Law

Emerging complementary laws

- E.g. self-driving cars or drones

- Can create fragmentation: how do I develop a cross border drone delivery service or a self-driving taxi service across the EU?

Extracontractual and contractual liability
Possible policy options

No intervention

- No specific measures taken

Non-regulatory options

- Recommended liability provisions, including model contract clauses and best insurance practices in a specific sector or in general

- Identifying appropriate standards for safety assessments and certification in a specific sector or in general

- Establishing Member State specific coordination and cooperation mechanisms to address cross border data economy challenges

- Funding innovation and research, including in particular in relation to industrial / big data platforms

Regulatory options

- Sector specific legislation on minimum liabilities to be borne by certain service providers in certain sectors

- General revision of liability law

  – Expanding the scope of Product Liability law

  – Rules for products with elevated risk profile

  – Alternative liability allocation - risk-opening approach / risk management approach; potentially coupled with insurance obligations

Outcomes of the public consultation on Building a European Data Economy
On emerging challenges of the Internet of Things and robotics liability

From 10.1/26.04.2017 – 212 respondents (producers and consumers) - 50 position papers

- **74%** rated contractual and extra-contractual liability as the **most consumer-friendly** type of product liability regime to deal with damage

- **71%** believe that **contracts** can address the attribution of liability.

- **Most frequent damages are economic losses** (e.g. missed opportunities). The main reason not to launch compensation procedures was **the procedural costs**.

- **67% of producers factor in the risk of liability** when pricing their IoT/robotics device. But **51% of these do not take any insurance** coverage.

- Would a **risk management approach** be a way forward? **42% said yes**, 14% did not know, and 28% did not have sufficient information.

- **60%** believe that an IoT/robotics device should have an **event data recorder**

- **32/50** papers stated that the current liability framework is **adequate, 8 called for a revision**, whereas the remainder did not conclude on the need to revise.