«Internet of Things Summit. The Rise of the Interconnected World» - London, 12.5.2015)

Legal certainty as a tool for the spread of the Internet of Things

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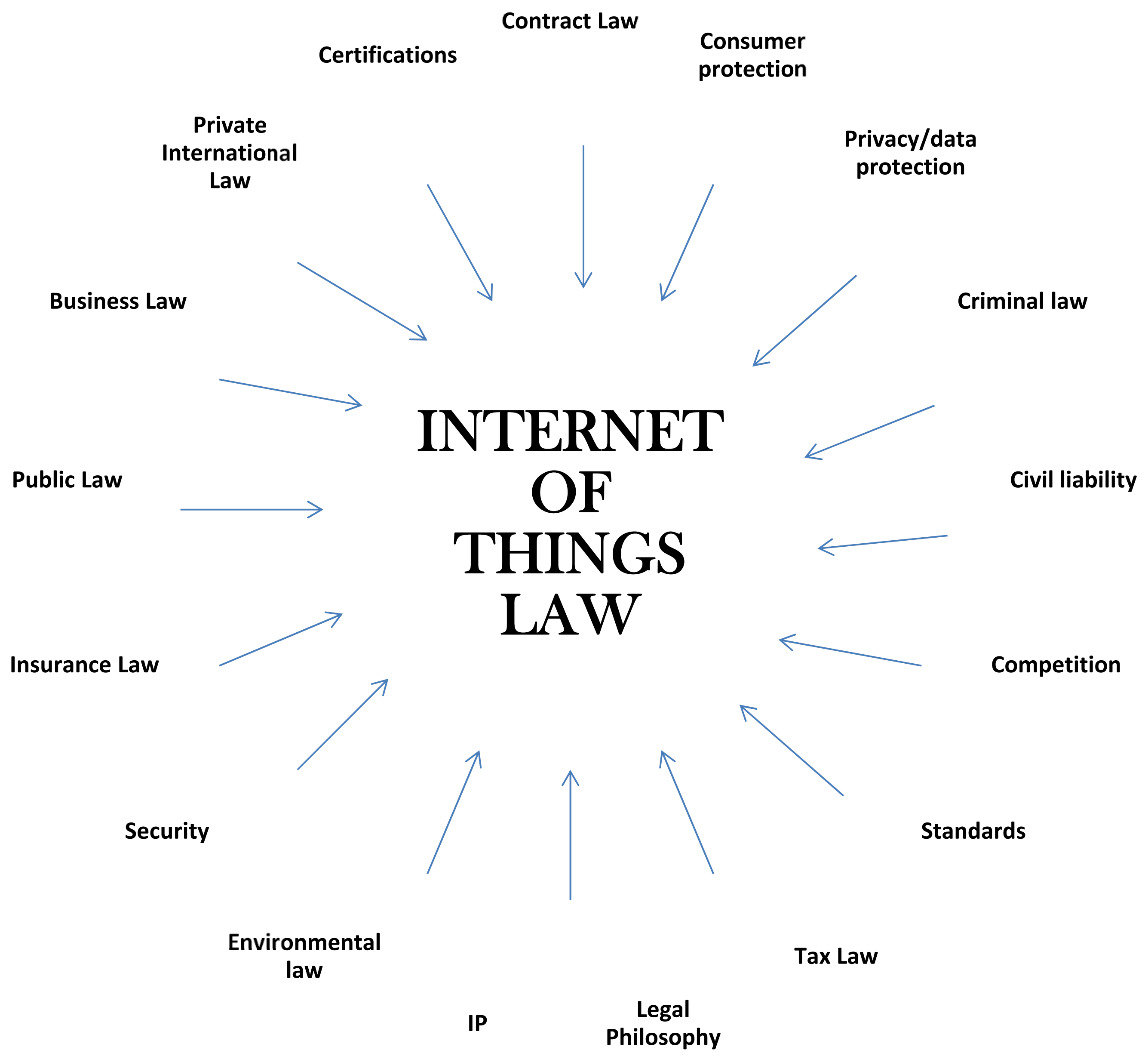
Overview

- IoT Law (issues and main regulations)
- Actors
- Contract Law
- Nest use case
- Product liability
- Privacy and data protection



INTERNET OF THINGS LAW

Contract Law

Consumer protection

Privacy/data protection

Criminal law

Civil liability

Competition

Standards

Tax Law

Legal Philosophy

IP

Environmental law

Security

Insurance Law

Public Law

Business Law

Private International Law

Certifications

IoT regulation in Europe

- WP29, *Opinion 8/2014 on the on* ***Recent Developments on the Internet of Things,*** 16.9.2014
- WP29, *Opinion 02/2013 on* **apps on smart devices**, 27.2.2013
- ECJ, 11-12-2014, ***František Ryneš*** *c. Úřad pro ochranu osobních údajů*
- Commun. ***Internet of Things — An action plan for Europe***, 18.6.2009 (s. opinion ECOSOC 17.12.2009)
- Commun. on "*Future networks and the internet*", 29.9.2008 (s. Staff WD on ***Early Challenges regarding the "Internet of Things"***)
- DG Connect, ***Europe's policy options for a dynamic and trustworthy development of the Internet of Things***, 31.5.2013
- ECOSOC, ***Opinion on 'The Internet of Things'***, 18.9.2008
- WP29, *Opinion 02/2012 on facial recognition in online and mobile services,* 22.3.2012
- WP29, *Working document on data protection issues related to RFID technology,* 19.1.2005
- WP29, *Opinion 13/2011 on Geolocation services on smart mobile devices,* 16.5.2011
- WP29, *Opinion 4/2004 on the Processing of Personal Data by means of Video Surveillance*, 11.2.2004 (s. also WD of 25.11.2002)
- WP29, *Opinion 04/2014 on surveillance of electronic communications for intelligence and national security purposes,* 10.4.2014 (and WD of 5.12.2014)
- Commun. *"Radio Frequency Identification (RFID) in Europe: steps towards a policy framework"*, 25.3.2007
- Council of Europe, *The rule of law on the Internet and in the wider digital world*, December 2014
- ENISA, *Smartphone Secure Development Guidelines for App Developers,* 25.11.2011
- ENISA, *Appstore security*, September 2011
- Parl. Res. on the Internet of Things, 15.6.2010
- EDPS, *Internet of things. Ubiquitous monitoring in space and time*, 29.4.2010
- EDPS, Opinion on Promoting Trust in the Information Society Fostering Data Protection and Privacy, 18.3.2010
- IERC-Internet of Things European Research Cluster (groups together the IoT projects like IoT-A and IoT-I)
- IoT experts group, *Report on the Public Consultation on IoT Governance ,* 16.1.2013 (and other material from the IoT experts group)
- ISTAG, *Scenarios for Ambient Intelligence in* 2010, February 2001

ECJ, *František Ryneš*

- Art. 3.2 dir. 95/46 This Directive shall not apply to the processing of personal data…by a natural person in the course of a purely personal or household activity
- **“The operation of a camera system**, as a result of which a video recording of people is stored on a **continuous recording device such as** a hard disk drive, installed by an individual on his family home for the purposes of protecting the property, health and life of the home owners, but which also monitors a **public space**, does **not** amount to the processing of data in the course of a **purely personal or household activity”**
- i. The camera was in a **fixed** position and could not turn; ii. it recorded the entrance to his home, the public footpath and the entrance to the house opposite; iii. only a **visual** recording; iv. Stored on a **hard disk** drive; v. As soon as it reached full **capacity**, the device would record over the existing recording; vi. **No monitor** was installed on the recording equipment: **no real time** study; vii. Only Mr Ryneš had **direct access** to the system and the data.

IoT regulation: a comparative perspective

- UK: OFcom*, Promoting investment and innovation in the Internet of Things,* 27.1.2015; Government Chief Scientific Adviser, *The Internet of Things: making the most of the Second Digital Revolution,* 18.12.2014 and ICO, *Response to Ofcom's consultation 'Promoting investment and innovation in the Internet of Things'*, October 2014
- USA: FTC, *Internet of Things. Privacy & Security in a Connected World,* January 2015; *MacPherson v. Buick Motor Co*
- Italy: AGCOM, *Survey on M2M*, 23.3.2015 e GPDP, *Launch of the consultation on IoT*, 28.4.2015
- China: reg. 19.4.2013 prevents manufacturers of mobile smart devices from preinstalling apps that raise privacy, security, or prohibited content concerns
- India: *Draft Policy on IoT*, 8.4.2015 (sensors for early defect detection)

International documents

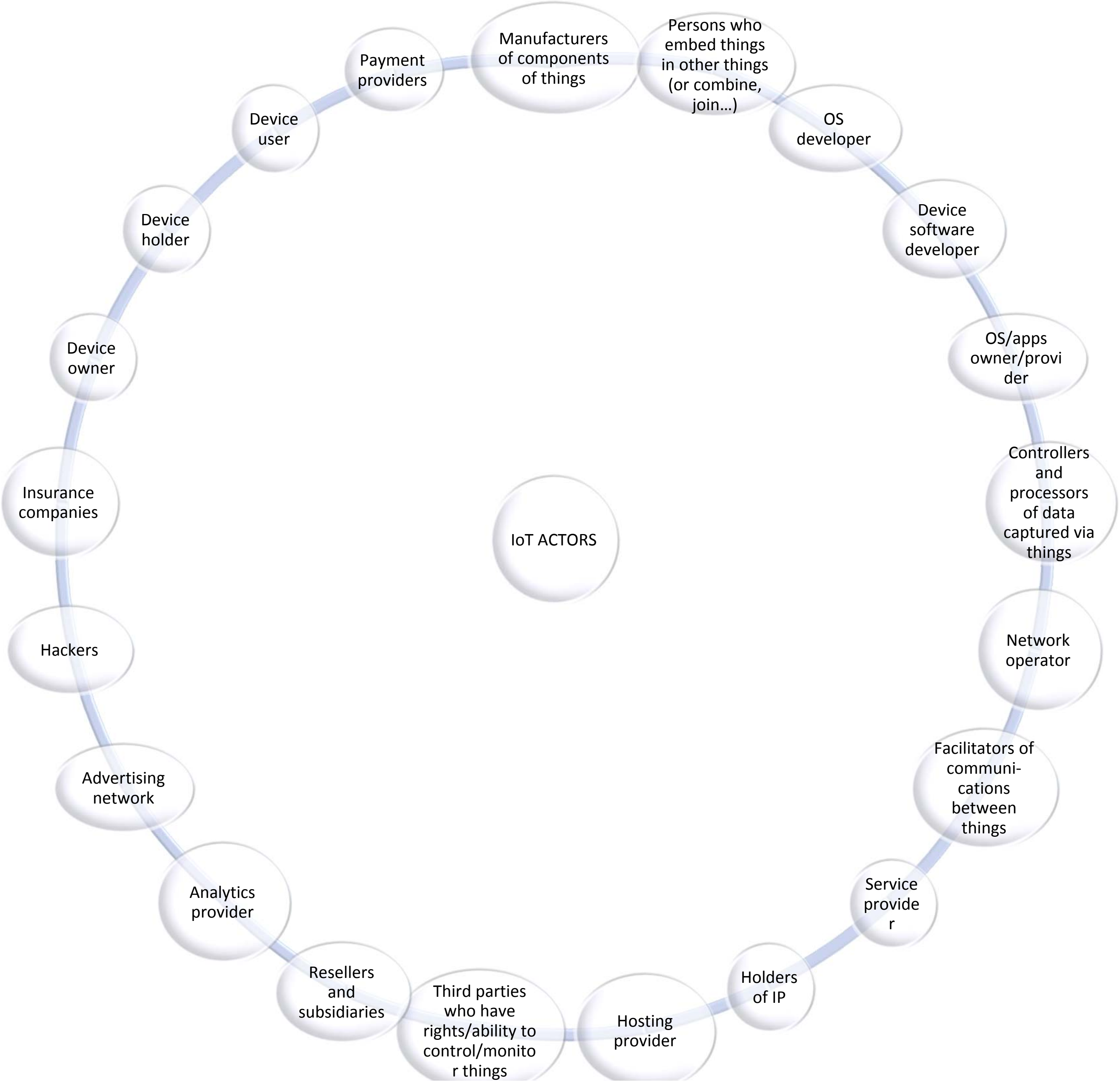
- ITU, *The Internet of Things*, November 2005 (report)
- ITU-T, *Overview of the Internet of Things*, Y.2060, June 2012 (recommendation)
- JCA-IoT, *IoT Standards Roadmap*, 19.11.2014
- ISO/IEC JTC 1, *IoT Preliminary Report 2014* (2015) on standards and market requirements
- *Mauritius Declaration on IoT*, 14.10.2014

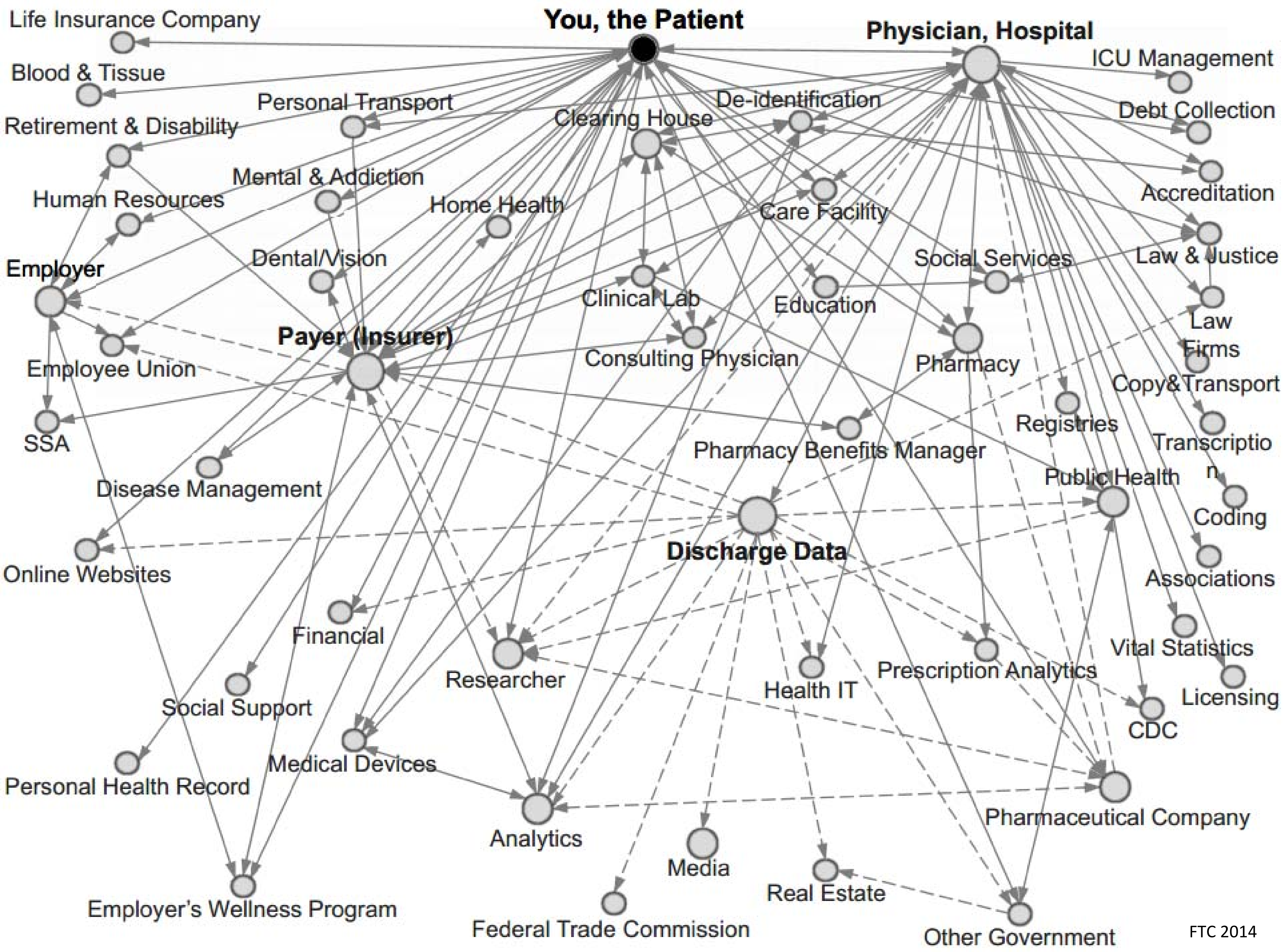
Mauritius Declaration on IoT

- 36th Int'l Conference of DPAs
- Big Personal Data: sensor data are high in quantity, quality and sensitivity→inferences→identifiability
- Value not only in the devices, but in the new services and in the data
- Clear about what data they* collect, for what purposes and how long this data is retained

*those who offer internet of things devices

- Privacy by design and by default should become a key selling point
- Firewall not sufficient: local processing or end-to-end encryption


IoT ACTORS
Manufacturers of components of things
Persons who embed things in other things (or combine, join…)
OS developer
Device software developer
OS/apps owner/provider
Controllers and processors of data captured via things
Network operator
Facilitators of communications between things
Service provider
Holders of IP
Hosting provider
Third parties who have rights/ability to control/monitor things
Resellers and subsidiaries
Analytics provider
Advertising network
Hackers
Insurance companies
Device owner
Device holder
Device user
Payment providers


You, the Patient
Physician, Hospital
Life Insurance Company
Blood & Tissue
Personal Transport
De-identification
Clearing House
ICU Management
Debt Collection
Retirement & Disability
Mental & Addiction
Human Resources
Home Health
Care Facility
Accreditation
Employer
Dental/Vision
Social Services
Law & Justice
Clinical Lab
Education
Law Firms
Payer (Insurer)
Consulting Physician
Pharmacy
Employee Union
Copy&Transport
Registries
SSA
Pharmacy Benefits Manager
Transcription
Disease Management
Public Health
Coding
Discharge Data
Online Websites
Associations
Financial
Vital Statistics
Researcher
Health IT
Prescription Analytics
Social Support
CDC
Licensing
Medical Devices
Personal Health Record
Analytics
Pharmaceutical Company
Media
Real Estate
Employer's Wellness Program
Federal Trade Commission
Other Government

FTC 2014

IoT and contract law

- Contracts **difficult to understand** (opaque wording; born old; alien; multi-layer)
- **Chain** of contracts (hard to find/read/jointly interpret; fictitiously separate products)
- **Dependence** (economic d. supply chain; lock-in)
- Freedom of contract and asymmetric bargaining power: rid of **paternalistic consumer law**? (ubiquitous real-time access to information, but reality&contracts still too complex)
- **Things that sell things** (≠coke machine: 1. Everywhere; 2. Autonomy; 3. Things can sell also themselves, s. Brad)
- Consent by design and **awareness by design**
- Private ordering (**hysteresis**: regulatory gaps)

Case Study: Nest

Whirlpool

hue

kēvo

rachio

ooma

august

- **One product, a thousand contracts!**
- "With a smart system, the whole point is that when you use it, it **learns about you over time.** That learning intrinsically involves some sort of **logging**" (James Scott, 2015)

The contractual quagmire

- Terms of Service (sites, web apps, mobile apps)
- EULA (embedded software)
- Sales terms (hardware)
- Limited warranty
- Privacy statement (information collected via the devices)
- Website privacy policy
- The open-source compliance
- Intellectual Property and other notices
- Community Forum Agreement
- EU Declarations
- Installation ToS
- Developer ToS
- Does Google privacy policy apply?
- + Works with Nest
- + [US] FCC Compliance Notice, Customer Agreements for Rush Hour and “Silence the chirp”

Product Legals

+

“n” contracts * interoperable software/apps

+

“n” contracts * interoperable devices

=

∞

‘Product’ under the ToS

Professedly, the “ToS” apply only to the services and **not** to the **hardware**, but it affects the latter

“*If you do not agree with any of the provisions of these terms, you should disconnect your products from your account and cease accessing or using the services*”

1. The product is an **inseparable mixture of hardware and software/service->** <u>**strict liability**</u> under the Product Liability Directive also for services/software/apps flaws
2. Standard contracts: little room for **customisation** (“You must accept this agreement as presented to you, without changes” (Community Forum Agreement))

‘Product’ under the Sales Terms

The ST **professedly** refer to the product as **hardware**, but:

“***These Terms constitute the entire agreement between you and Nest regarding the use of the Services***.”

Confirmation in the “Privacy statement”:

Nest Products include our mobile and web applications.

‘Product’ under the EULA

“*If you do not agree with any of the provisions of these terms,* ***you should cease accessing or using*** *the product software.”* (customisability)

Is it feasible to **use the device without** using the embedded **software**? No (notion of product)

“***Modifications…may*** *be* ***automatically installed without*** *providing any additional* ***notice or*** *receiving any additional* ***consent.*** *(…) If you do not want such Updates,* <u>***your remedy is to stop using the Product***</u>*.”* (asymmetry)

Product Liability

Product Liability Directive of 1985 and Consumer Protection Act 1987 apply also to flaws of services, software and apps→**revival** of this regime (liability without fault) forgotten for a lot of years

Immovables->**movables**->immaterial->IoT (hardware+software+service)

“*The commercial sellers’ growing information about, access to and control over their products, product users, and product uses could* ***expand their point of sale and post-sale obligations toward people endangered*** *by these products*” (Smith 2014)

Under this regime, the **multi-layered** nature of IoT market can’t act as a **disclaimer**

Are the contractual warranty disclaimers/liability limitations **enforceable under dir. 85/374 and CPA 1987**?

Directive on Defective Products

Strict liability: the injured has to prove only to prove the damage, the defect and the causal relationship between defect and damage (art. 4). And it is **not negotiable contractually:** the liability of the producer arising from this Directive may not be limited or excluded by a provision limiting his liability or exempting him from liability (art. 12)

‘**Damage**’: death, personal injuries or damage to, or destruction of, any item of property other than the defective product itself (art. 9)→**not a panacea**

‘**Product**' means all movables, with the exception of primary agricultural products and game, even though incorporated into another movable or into an immovable (art. 2) It encompasses IoT products **notwithstanding the fact that they are equipped with software** (s. above and, also, Dir. 2009/24 on protection of computer programs: nothing on liability)

'**Producer**' means the manufacturer of a finished product, the producer of any raw material or the manufacturer of a component part and any person who, by putting his name, trade mark or other distinguishing feature on the product presents himself as its producer (…) any person who imports into the Community (art. 3) **Compound things+complex supply chain**

A product is defective **when it does not provide the safety which a person is entitled to expect**, BUT the producer is **not responsible if the** <u>state of scientific and technical knowledge</u> at the time when he put the product into circulation was not such as to enable the existence of the defect to be discovered: the **case of the IoT?**

Consumer Protection Act 1987

Broader definition of ‘**product**’: “**any goods** or electricity” (and ‘safety’, in relation to a product, shall include safety with respect to products comprised in that product”)

Broader definition of ‘**producer**’: also the person who won or abstracted a substance used in the product and the person who carried out a process to which is attributable an essential characteristic

Privacy and data protection

"*Every IoT-enabled device, whether an iron, vacuum, refrigerator, thermostat or lightbulb, will come with* ***terms of service*** *that grant* ***manufacturers access to all your data.***" (Goodman 2015)

- Things process **big data**
- Things **communicate to things** (SIoT) **and persons**
- Things are part of everyday life (**every*ware***)
- **Contractual quagmire:** which protection is actually recognised?
- Multi-layer: "we have **no control** over and cannot confirm whether third parties honor the **Do Not Track**" (WPP)
- Processing lawful **without consent** if **necessary "for the performance** of a contract to which the data subject is a party"

Minimising privacy concerns requires:

- Ensuring only data critical to the functionality of the device are collected (data **minimisation)**
- Ensuring data collected are properly protected via technical protections (e.g. **encryption)**.
- Ensuring the device and all of its components properly protect personal data. **(privacy by design and by default)**

IoT privacy in the UK

Government Chief Scientific Adviser, ***The Internet of Things:*** *making the most of the Second Digital Revolution,* 18.12.2014

- More connected objects than people
- Breaches of **security and privacy** have the **greatest** potential for causing **harm**
- **Legislation** should be **kept to the minimum** required to facilitate the uptake of IoT
- The **scale of personal information** (locational and financial information), which is collected by existing technology, is huge: with IoT exponential growth
- Researchers carried out a **cyber-attack** that allowed them to control steering and braking of a **car**.
- Security vulnerabilities were exposed in a baby monitor device, enabling the hacker to **shout at a sleeping child.**

No panic! The owner failed to change the default password

IoT privacy in the UK

ICO, *Response to Ofcom's consultation 'Promoting investment and innovation in the Internet of Things'*, October 2014

- With 'personal' electronic devices (smartphone) "the organisation collecting and using the information is a 'data controller' and is therefore fully subject to data protection law"
- With less 'personal' devices (TV), the application is uncertain

IoT privacy in the UK

The rule: unless **a particular individual** is identified - or is **reasonably likely to be identified** - by the organisation collecting the information from the device, the information will *not* constitute personal data" (multi-tenancy devices≠individual ones).

True, but beware to "**linking or matching data** with other datasets" (not only datasets).

If the DPA doesn't apply->*de iure condendo* introduction of industry **codes of practice** or other **soft-law** instruments that would address this.

IoT privacy in the UK

The 1st of the 8 DPA principles on **good information handling:** any personal data processing is both lawful and **fair**→information also about the **purpose** of any processing.

IoT devices may have **no physical interface** at all with which an individual can interact! Valid informed consent? (crucial especially in medical liability).

On the other hand, things talk and augmented reality: **overload** of information?

No/small interface → 1) connect to a **separate computer** → the configuration software running on the computer will need to be **coded** securely; 2) limited physical interface+complicated underlying technical (and relational) situation = **privacy by design.**

IoT privacy in the UK

The end-user has **little chance to modify** both the object and the service**->privacy by default.**

A device can have privacy features available, and yet may not be as privacy-friendly as it could be because those features are not enabled by default

IoT privacy in the UK

- The DPA's 7th data protection principle requires organisations to take appropriate **technical and organisational measures** against unlawful/unauthorised processing and loss/destruction of personal data.
- **IoT organisational complexity->**if someone discovers a security flaw in the device's software, whose responsibility to fix it?How will this fix be applied. If no action is taken, such a flaw could allow an attacker to compromise the device.

IoT privacy in the UK

- “It will generally be appropriate to use an SSL / TLS connection where it is necessary to transmit any sensitive personal data, user login credentials or unique identifiers”.

- HAVE USERS CONTROLL ON THE CONNECTION AND ON ITS DEGREE OF SECURITY?

IoT privacy in the UK

- **Software lifecycles** are potentially **shorter** than the expected lifetime of an IoT device
- Software projects become soon **unsupported** →**security updates** are no longer provided→increasing security risk+stop of functioning.
- Specifications of the hardware openly available, so that **FOSS** could be written and maintained for the lifetime of the device

IoT privacy in the UK

FROM IPV4 TO IPV6.

- The widespread adoption of **IPv6** (2^{124}) would ease the problem of limited IPv4 addresses and how they should be allocated…
- …however, it would make **IP addresses** much more likely to be **personal data** in any given case (every device in the world a unique address in space and time).

IoT privacy in the EU

- WP29, *Opinion 8/2014 on the Recent Developments on the Internet of Things*, 16.9.2014
- Caveats: **unclear 1)** the possible **convergence and synergies** of the IoT with other technological developments such as **cloud computing** and predictive analytics; **2)** how to transform all the data possibly collected in the IoT into something value sensitive. 1+2=focus only on wearable computing, quantified self and domotics

IoT privacy in the EU

Fundamental assumptions

- “The IoT **usually** implies the processing of data that relate to identified or identifiable natural persons, and therefore qualifies as **personal data in the sense of art. 2 DPD**”.
- The processing of such data in this context relies on the coordinated intervention of a **significant number of stakeholders**

IoT privacy in the EU

These different stakeholders may be involved for various reasons + “once the data is (sic!) remotely stored, it may be shared with other parties, sometimes without the individual concerned being aware of it” = the further transmission of his/her data are thus imposed on the user who **cannot prevent** it **without disabling most of the functionalities** of the device.

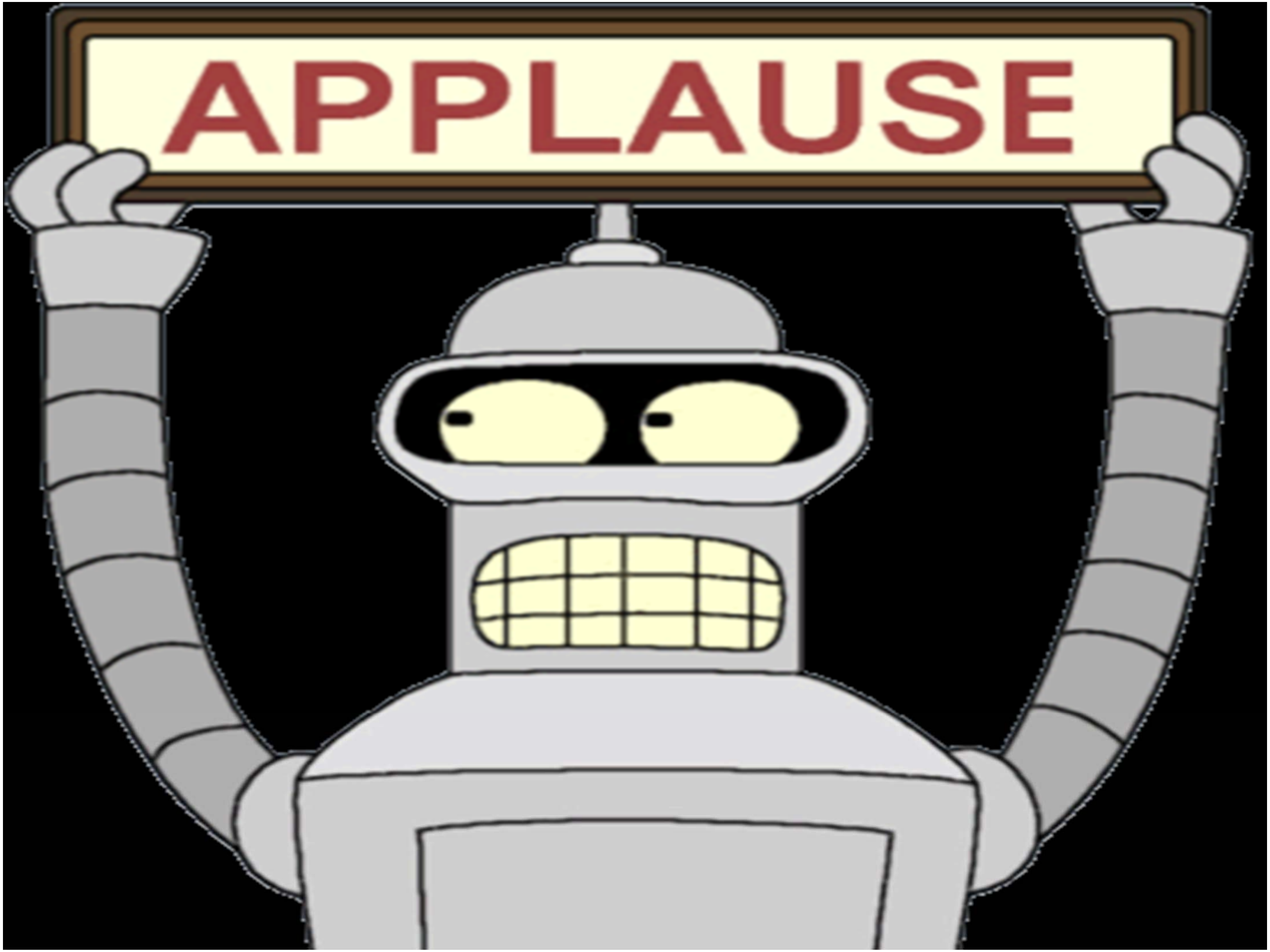
IoT privacy in the EU

IoT privacy and data protection challenges:

1) Lack of **control** and information **asymmetry**
2) Quality of the user’s **consent**
3) **Inferences** derived from data and repurposing of original processing
4) Intrusive bringing out of behaviour patterns and **profiling**
5) Limitations on the possibility to remain **anonymous** when using services
6) Security risks: **security vs. efficiency**

Final remarks

- Contractual quagmire
- No time to overturn the paternalistic approach of consumer law
- Revival of product liability regulations
- By design (privacy, consent, awareness)
- Need for comprehensive and international regulations
- Need for interdisciplinary research groups


APPLAUSE

THANK YOU!

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