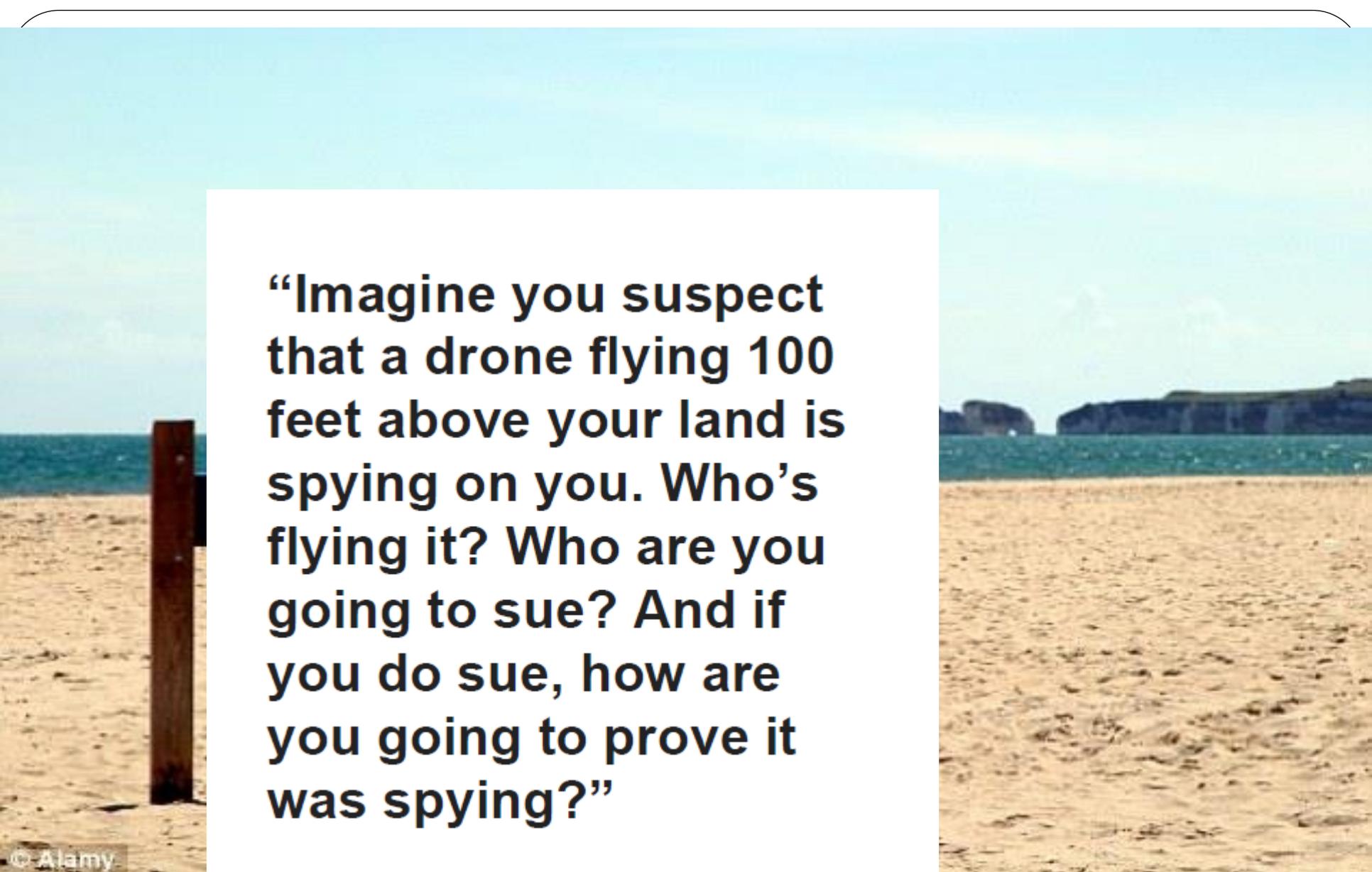


Outline – Drones and privacy

- Civilian drones: use scenarios
- Privacy
- Data protection legislation (The upcoming GDPR)
- Drone based support for visually impaired persons– idea by Rocio Chongtay and Klaus Robering
- Use case: Airport
- Tool: Privacy by design
- Draft: privacy embedded in the design of the Drone navigation support system



“Imagine you suspect that a drone flying 100 feet above your land is spying on you. Who’s flying it? Who are you going to sue? And if you do sue, how are you going to prove it was spying?”

Privacy

- “Instantaneous photographs and newspaper enterprises have invaded the ... private and domestic life; and numerous mechanical devices threaten to make good the prediction that “what is whispered in the closet shall be proclaimed from the housetops”. What shall be whispered in the closet shall be proclaimed from the house-tops.” (p.195)
 - Warren, S. D., Brandeis, L. D. 1890. The Right to Pricacy. *Harvard Law Review* Vol. 4, no. 5 (DEC: 5, 1890), 193-2002.
- Quoting Judge Cooley, Warren and Brandeis noted the importance of guaranteeing the individual “the right to be let alone.” (p. 195).
- “**Dataveillance** – the systematic monitoring of people or groups, by means of personal data systems in order to regulate or govern their behavior.”
- Monitoring of inanimate objects.
- “**Informational privacy** - the interest individuals have in controlling or at least significantly influencing the handling of data about themselves.”
 - Clarke, R. 2013. Introduction to Dataveillance and Information Privacy, and Defintions of Terms. <http://www.rogerclarke.com/DV/>)



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The EU General Data Protection Regulation

- The EU GPDR (coming into force 25 maj 20018) – all EU member states must align national legislation with the GPDR + all public authorities, organisations, and companies, which handle personal and sensitive data.
- The systematism of the GPDR is already reflected in the Danish Persondatalov
- Differences:
- The GDPR will require some organisations to designate a Data Protection Officer (DPO) - public authorities or organisations / companies with activities involving systematic monitoring of data subjects on a large scale.
- Data protection by design and by default (article 25) .Mandatory data protection impact assessments to foresee privacy risks (article 35), clearly formulated consent models (article 7), the individual's right to control flow of data about herself, including *the right to be forgotten* (article 17), and data portability, (article 20) i.e., the right to move your data to another service (for instance move all data from Facebook to another social network service, or, perhaps, move all data related to oneself from one's bank to another bank).
- Consequently, the GDPR underscores the importance of shielding individuals' privacy by trying to control the data life cycle of personal data, and enforcement are ensured by introduction of “administrative fines up to 20 000 000 Euro, or in the case of an undertaking, up to 4% of the total worldwide annual turnover of the preceding financial year, whichever is higher” (Article 83, part 5)
 - (Gerdes, draft, Big data and profiling – challenges to privacy and policy making)

Law lack behind technology: challenges aligning drone tech with data legislation

Brug af droner til overvågning med henblik på en eller anden form for kontrol påkalder sig særlig interesse, dels fordi overvågningen har en upersonlig karakter, der i sig selv kan virke truende under et integritetsperspektiv, dels fordi droner i modsætning til traditionel tv-overvågning let omfatter meget store områder og dermed kan komme i strid med proportionalitetsprincippet og forstærke den almindelige tendens til, at samfundet bliver et overvågningsamfund.

Den aktuelle persondataret

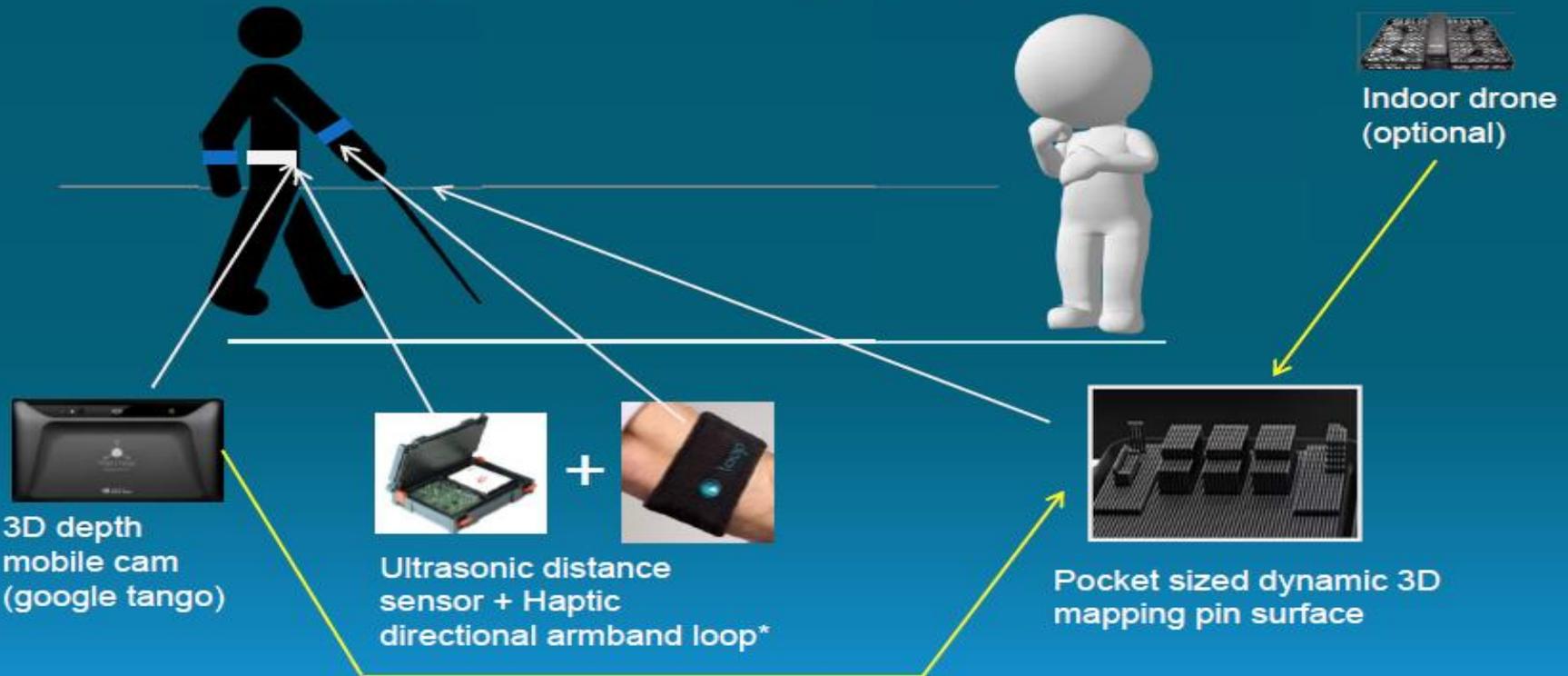
Det kan på nuværende tidspunkt konstateres, at der ikke i dansk persondataret eller på EU-niveau er taget stilling til denne problemstilling, der ej heller er direkte tematiseret i den persondataforordning, som forventes gennem-

- Article 29 Data protection working Party: *Opinion on Privacy and Data Protection Issues relating to the utilisation of Drones*

Blume, P. (2015) Droner og Persondataret, Juristen, nr. 1); (http://ec.europa.eu/justice/data-protection/index_en.htm)

Indoors

- Input: 3D depth camera (google tango project) and/or echolocation ultrasonic distance sensor
- Feedback: haptic feedback, 3D mapping on pin surface



*Loop: It has vibration points spaced evenly around the band that guide users right or left by pulsing in a clockwise or counter-clockwise direction, respectively

Privacy by Design (PbD)

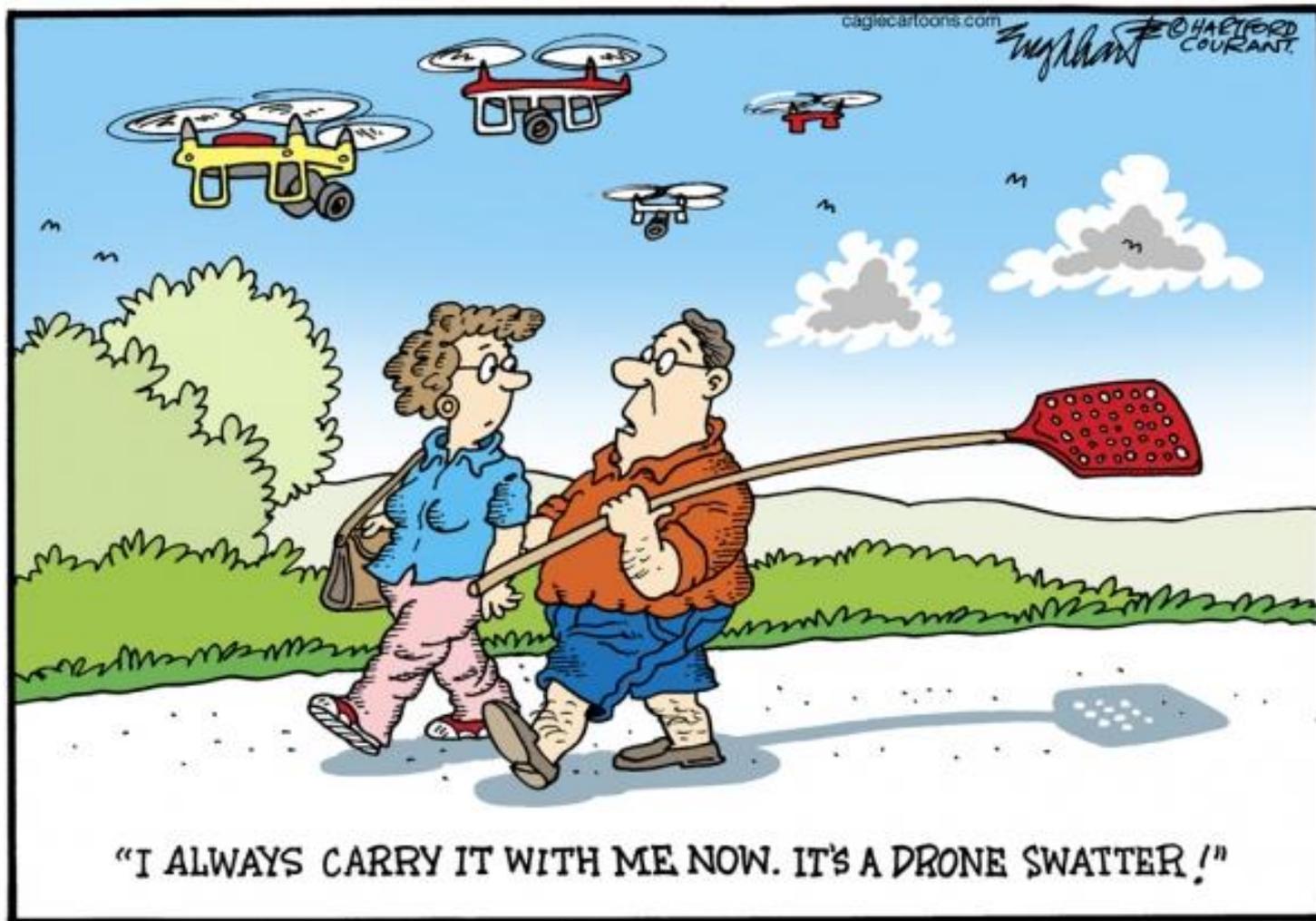
- Defined as the philosophy and approach of embedding privacy into the design specifications of various technologies, making it the default.
- May be achieved by building the principles of Fair Information Practices (FIPs) into the design, operation and management of information processing technologies and systems.
- Areas of application: (1) information technology; (2) business practices; and (3) physical design and infrastructures.
- 7 principles:
 - Proactive not Reactive; Preventative not Remedial
 - Privacy as the Default
 - Privacy Embedded into Design
 - Full Functionality – Positive-Sum, not Zero-Sum
 - End-to-End Security – Lifecycle Protection
 - Visibility / Transparency
 - Respect for Users
 - (Information and Privacy Commissioner, Canada, Ann Cavoukian, <https://www.ipc.on.ca>)

Indoors: Airport drone support for the navigation of visually impaired people



Draft: PbD: Privacy embedded in design

- Privacy risks – the processing of data: images,(sound), geolocation => identification of a data subject.
- Blurring faces is no guarantee that user's cannot be re-identified => image blur detection algorithms.
 - Andhavarapu, S. K. (2015): Image Blur Detection with Two-Dimensional Haar Wavelet Transform.
- Real time data streams:
- (1) During navigation: store position data temporary + delete personal data on the run => Decide interval in which to delete data => event logic modelling.
- Approach: Event logic Galton (1987): Temporal Logics and Their Applications.
- (2) Delete all data: After the traveler has finished using the drone.
- Eliminate privacy discomfort among other travelers.
- This implies general awareness of the fact that the drone comes with this feature.



"I ALWAYS CARRY IT WITH ME NOW. IT'S A DRONE SWATTER!"