



UNIVERSITY OF  
**OXFORD**



# Social and privacy implications of novel computing systems

**Meredydd Williams** and Jason R. C. Nurse  
meredydd.williams@cs.ox.ac.uk  
@MeredWilliams

**HHMC 2017**  
20th September 2017  
University of Surrey

# The Internet-of-Things (IoT): The good



- A nebulous agglomeration of connected devices
  - *Smartwatches, drones, self-driving cars, smart fridges, home automation, smart speakers et al.*
- A blurred line between humans and machines
- The elderly can be remotely monitored and assisted
- The isolated can interact with distant relatives
- Wearables can encourage health/fitness activities



# The Internet-of-Things (IoT): The bad and the ugly



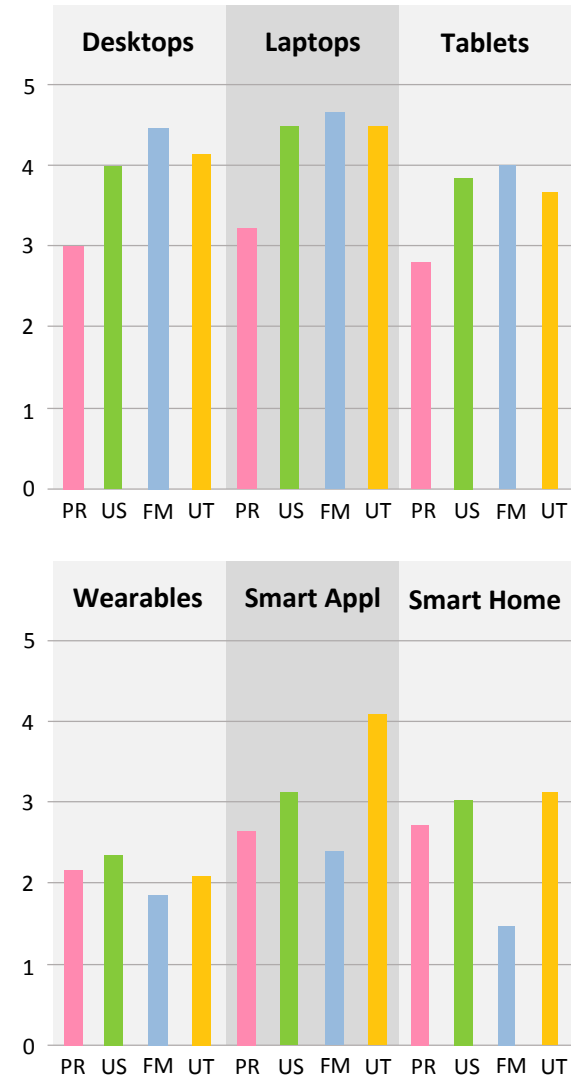
- Sensitive conversations are eavesdropped/analysed
- Our geographical movements can be surveilled
- Does a car preserve the driver or a pedestrian?
- We claim to value privacy, but do we act that way?
- Concern-behaviour disparity is *Privacy Paradox*
- The IoT is unfamiliar, less-usable and data-collecting
  - *What does this mean for privacy protection?*



# Internet-of-Things (IoT): Privacy Perceptions



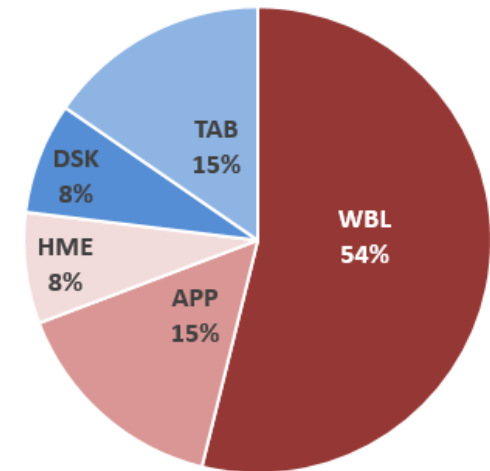
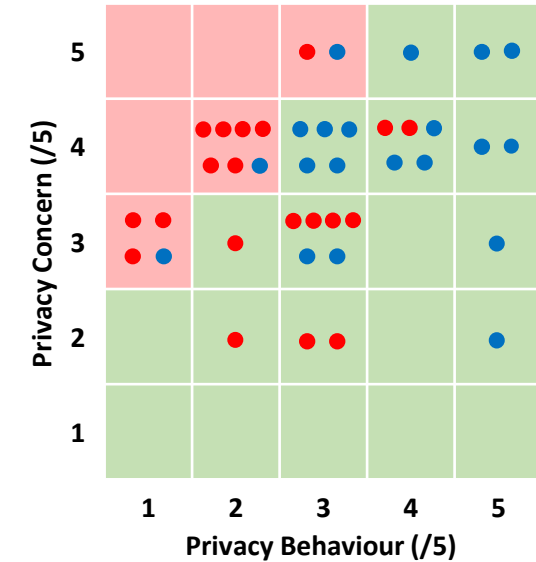
- *How do perceptions of IoT differ from other tech?*
- We surveyed high-level evaluations from 170 users
  - Participants rated factors and justified purchases
- IoT devices were considered less privacy-respecting
  - However, privacy rarely mentioned in rationale
- IoT products were rated less usable and familiar
  - *Might challenges constrain privacy protection?*



# Internet-of-Things (IoT): The Privacy Paradox



- We compared the Paradox across different devices
- Interviews with **20 IoT owners** and **20 non-IoT users**
- Concerns and behaviour grounded in user's device
- Paradox was significantly-more prevalent in the IoT
  - Participants primarily blamed a lack of awareness
  - Issue was most prevalent for wearable owners
- *Above work published through PST 2017*



- Data collection will become normal and ubiquitous
- IoT purchases are usually driven by \$\$\$ not privacy
  - But prices tend to decrease as markets mature...
- People often extol privacy through social norms
  - Change when “*nothing to fear, nothing to hide*”?
- Individuals aren’t aware of what their products do
  - This will get worse as devices become opaque



I would like to thank the below for the generous student travel grant:

## ACM SIGIR

Institute for Advanced Studies (IAS), University of Surrey, UK Surrey Centre for Cyber Security (SCCS), University of Surrey, UK School of Computer Science and Informatics, Cardiff University, UK EU FP7, Marie Curie Initial Training Network, ESSENCE EU H2020 Project, QROWD EU H2020 Project, Stars4All EU H2020 Project, LETS CROWD Singapore-UK Project, COMMANDO-HUMANS Singapore-UK Project, STRICT



UNIVERSITY OF  
**OXFORD**



**Thank you!**  
**Questions? Comments? Controversy?**

**Meredydd Williams** and Jason R. C. Nurse  
meredydd.williams@cs.ox.ac.uk  
@MeredWilliams

**HHMC 2017**  
20th September 2017  
University of Surrey