UNIVERSITY OF OXFORD

DEPARTMENT OF COMPUTER SCIENCE

Beyond the Individual

Exploring Data Protection by Design in Connected Communal Spaces

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Data Protection and Privacy

- The use of internet-connected technology is often accompanied by concerns of data protection and privacy
- Legislation is traditionally concerned with individuals’ right to privacy (and data protection in the EU); for example …
    - The General Data Protection Regulation (GDPR) has a ‘household exemption’
    - The California Consumer Privacy Act (CCPA) includes ‘households’ as deserving of data protection rights without a clear definition of personal information in relation that concept
- In the academic literature, privacy beyond the individual has been approached in different (technological) contexts providing different interpretations, but there is a lack of understanding privacy in communal spaces.

Problem Space

- Communal and shared spaces such as homes, cafes, or airports are equipped with ambient and pervasive internet-connected technology
- Heterogeneous groupings of individuals with dynamic social structures, (un)attributed responsibilities, and varying levels of skill
- Privacy is context dependent and situational, and there's a lack of understanding privacy beyond the individual

How can research explore and facilitate design for privacy in communal spaces

Research Approach

Participatory Co-Design Workshops

- Inspired by *Future Workshop* format: critiquing the present, envisioning the future, and implementing (not included in workshops)
- Focus on *social and communal factors* of technology use inherent to the method
- Facilitate workshops using design techniques and artefacts

Part A – critiquing the present

(1) **Exploring** – social and physical aspects of shared spaces
through affinity diagramming and sketching (similar to *context scenarios*); we chose 'home' and 'café'

(2) **Attuning** – to popular data protection issues,
e.g. browser bar padlocks and mobile application permissions (researcher led)

(3) **Reflecting** – on further issues of data protection
facilitated by guiding questions (participant led)

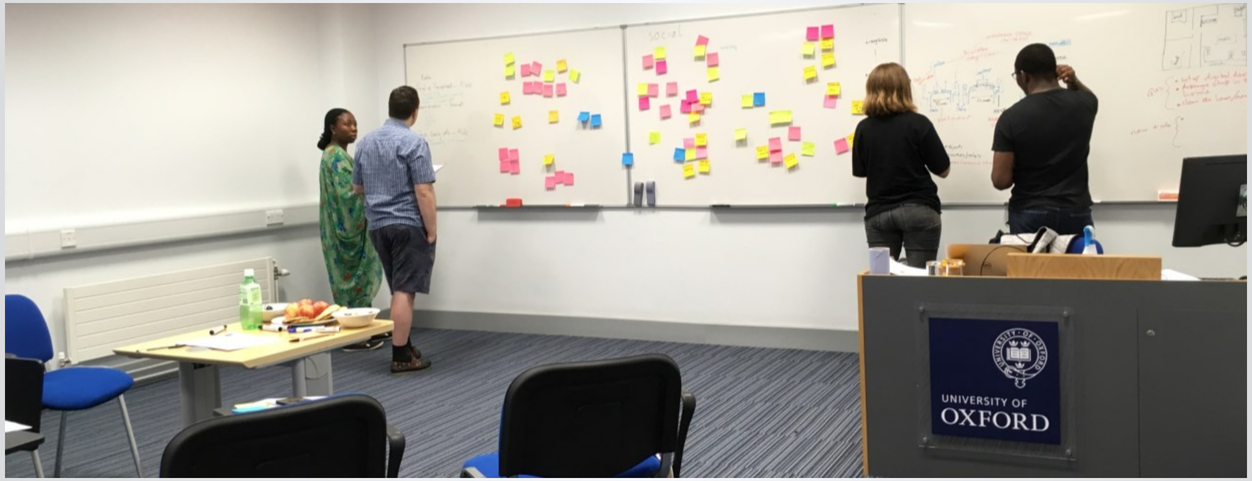
Part B – Envisioning the future

(1) **Designing** – for either shared space from Part A.
assist when prompted; *optionally,* provide a set of personas.

(2) **Re-designing** – for a different shared space from Part A.
Optionally, exchange sketches from Part A between groups

(3) **Reflecting** – on design process and presenting solution

Piloting the Approach

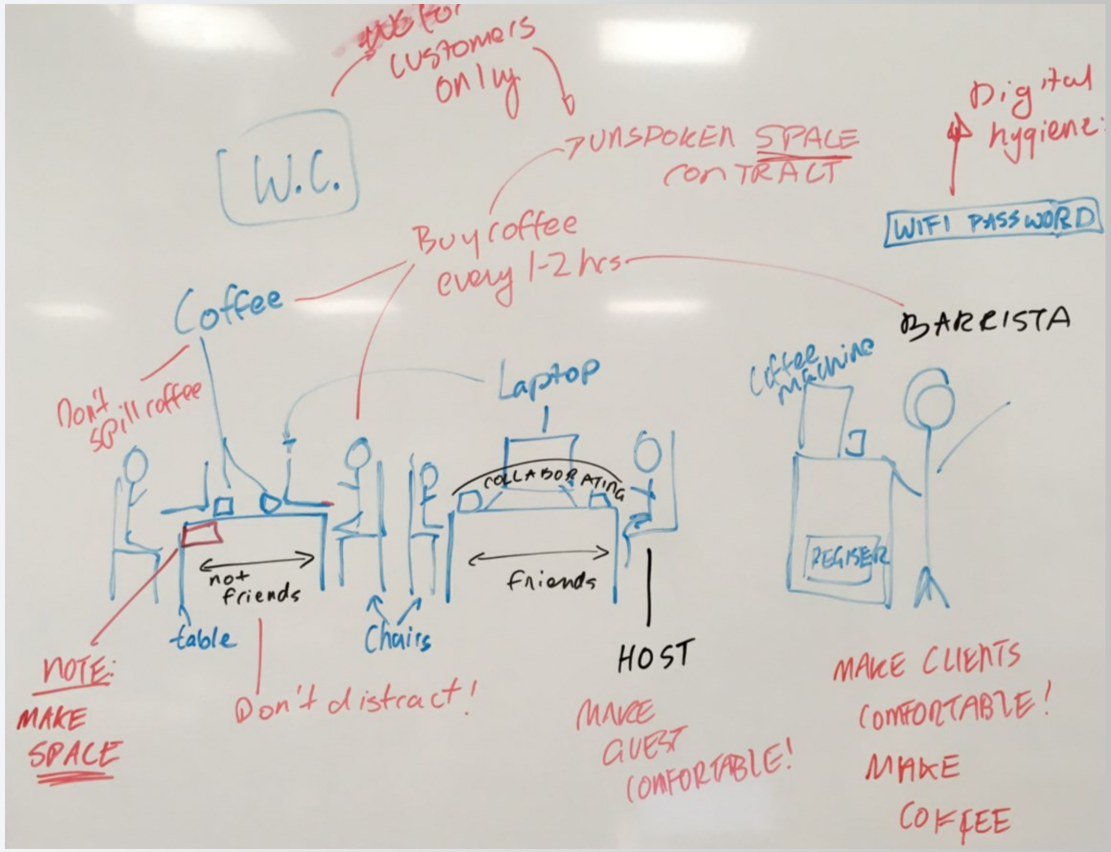


Four groups of students and expert researchers **co-designed a ‘good’ internet connection experience** considering usable security and privacy for homes and cafes

The ‘Data Flush’

by Group 2

- Focus on achieving anonymity on the WiFi network during and after use
- Devices remembered for 24h, and network not remembering device seen as proof of erasure
- Design idea: ***data flush*** – provides reassurance of data deletion by tapping out
- Initially only considered friends sharing a table; last person to leave flushes data at table
- Café Context 1 included strangers sharing a table; considering, the group moved the button from the table to the door

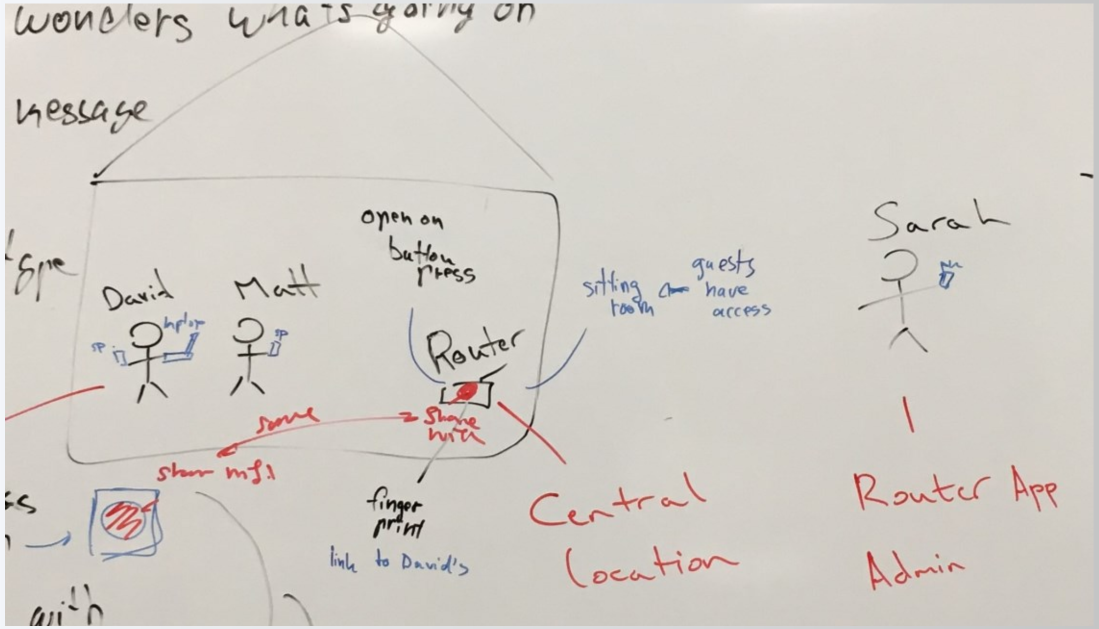


Café context 1: Sketch of a café as seen by Group 1

‘Put the password in the kitchen cupboard’

by Group 4

- Initially technical ‘expert’ counter measures for the router considered
- Considering other personas with varying aptitudes and skills, the proposed solution seemed impractical
- The group considered technical, social, and physical solution alternatives
- For example, a ‘touch and connect’ solution but also placing the password in a kitchen cupboard as a semi public space



Solution sketch 1: secure and accessible network connection setup including connect button, connect app, and notes on the location of the router

Some Reflections

On our methodology

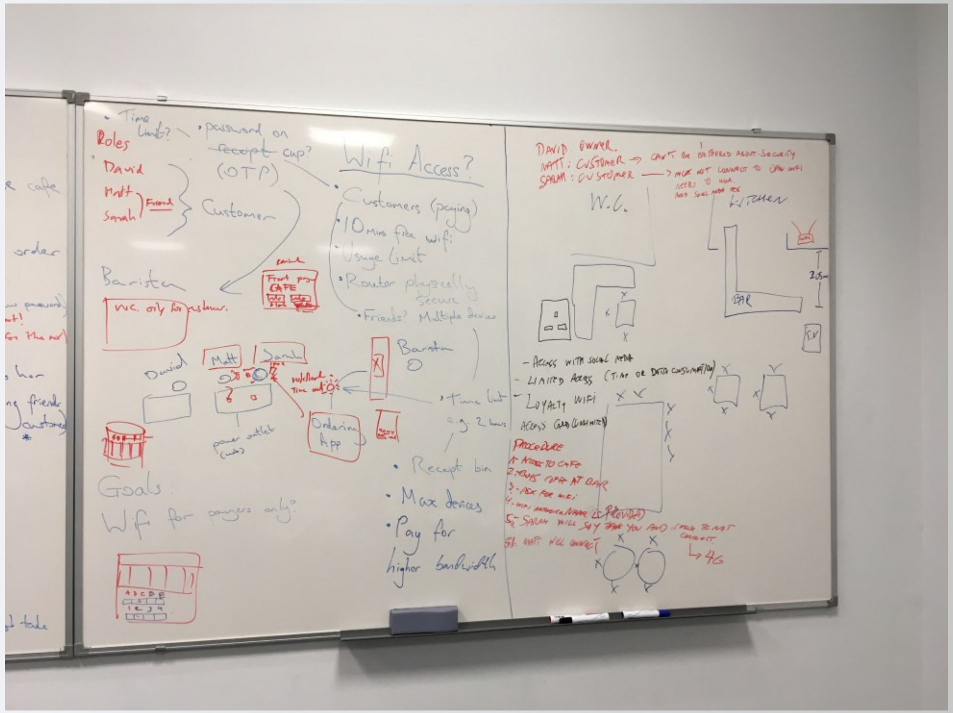
- *limitations*: pilot-groups included students only, somewhat limited in their lived experiences; two very different contexts, the café as more public and the home as private space
- Insights from design artefacts allowed participants readjust the appropriateness of their solutions, e.g. personal characteristics from personas or ‘rules and relationships’ from context sketches
- Artefacts can help surface some of the ‘tacit’ contextual variations that influence co-design for privacy

On our findings

- Potential role of social groups in framing design, e.g. ‘friends’ with common goals can share data protection responsibilities
- Focus on relationships of people in shared spaces, e.g. the need for individuals to considering the abilities of others
- Resourcefulness of participants to enable data protection in communal spaces, e.g. password in the kitchen cupboard as semi-private space

Implications

- Communal spaces and concomitant relationships are important considerations for design of internet-connected technologies
- Structured contextual artefacts capturing social and physical aspects of communal spaces can inform design for data protection
- Communal participatory design approaches can provide innovation for privacy beyond the individual



Questions?

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