Innovation Inaction or In Action?
The Role of User Experience in the Security and Privacy Design of Smart Home Cameras

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Introduction

• Smart homes offer great promise but have clear security and privacy risks

• Demographically-diverse home users drive a need for user-centered security and privacy

• Looking beyond usability, we look at how designers factor User Experience (UX) principles into the security and privacy design of smart cameras
Methods

• 20 employees from 3 companies (6, 8, 6)
• Recruitment from online platforms
• Semi-structured interviews (~52 minutes)
• Remote interviews (Zoom, Skype)
• Grounded Theory analysis (155 codes)
Results

• Stakeholders divided into 6 groups according to job responsibilities: security, regulatory, UX, management, software and hardware.

• Five themes identified through Grounded Theory:
  • Development Process
  • UX in Security Design
  • UX in Privacy Design
  • Innovation in Security and Privacy Design
  • Trust
Development Process

• Agile methodology
• Data protection regulation and compliance
  • Delayed Effect
  • Obtaining consent
  • Withdrawing consent
UX in Security Design

- UX was not explicitly factored into security design
- Incompatibilities between UX & Security Design
  - Lack of security expertise in design teams
  - Security seen as a technical-only problem
  - Designers had no sight of security requirements
UX in Privacy Design

- UX was factored into privacy design
- Alignments between UX & Privacy Design
  - Giving users control
  - Being transparent with users
  - Obtaining explicit consent
Innovation in Security and Privacy Design

- *UX helped* design innovative privacy solutions
  - Novel features evaluated with usability testing
  - Novel features supported with qualitative-quantitative research
- *UX did not help* design innovative security solutions
  - Need for tried-and-tested established solutions
  - New solutions increase uncertainty
Trust

- *Improved UX* to build and nurture trust:
  - Creating a customer-first culture
  - Take an interest in protecting user privacy
- *Tried and tested security* to protect trust relationships:
  - Policies to deal with security vulnerabilities
  - Requirements for responding to security incidents
Implications

• Innovation in security and privacy design
  • Established security solutions
  • Security solutions from reputable vendors
• Security design in agile development
  • Security by design in agile
  • “Security says no”
Conclusion

• Explicitly innovate through UX of security
• Align security and privacy in UX
• Factor UX into data protection compliance
Thank You

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