802E Privacy Report

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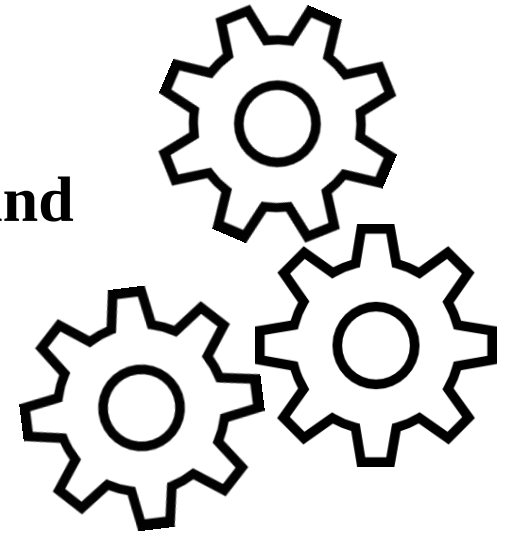
Privacy Scope: Individuals

- **Narrow: focused on individuals**
- **Broad: any information related to an individual that can identify him/her, directly or indirectly, may be relevant**
- **Limited to what can be addressed in protocol design - vs. deployment and operation**

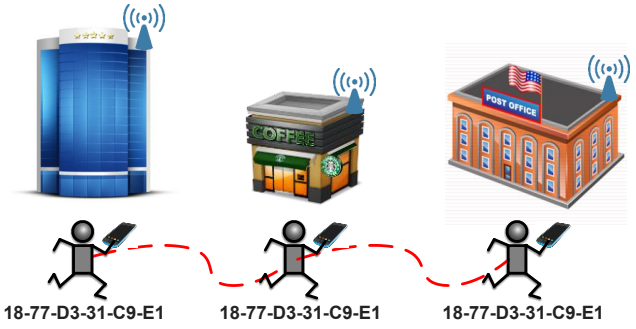
Privacy Scope: Technical Only

- **Discussion without reference to any particular legal framework**
- **Mitigating privacy threats strictly from the technical point of view (e.g. protecting PIIs), and regardless of the motivation of the attacker**
  - If the attacker does it for criminal reasons, privacy-unfriendly commercial reasons, legally or illegally, it is irrelevant
  - **The actions of the attacker are technically indistinguishable** and they should be mitigated in the same way



Privacy Threats: Identification

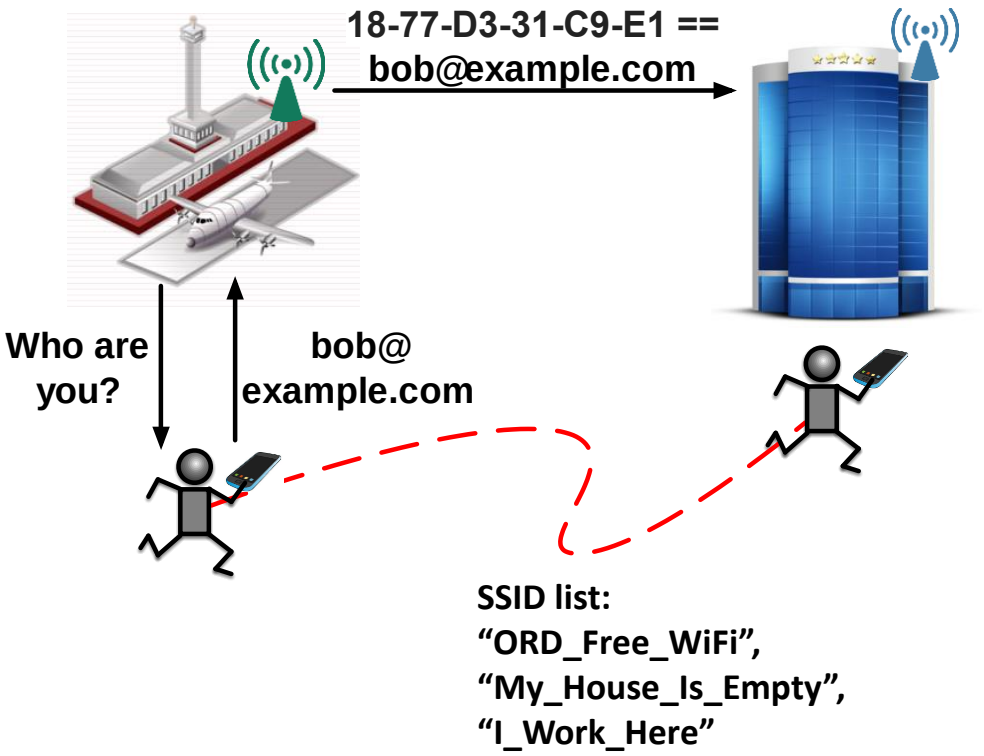
Tracking Wi-Fi mobile devices of by-passers is an easy job, even if devices are not actively connected to any Wi-Fi network



[REF: "Wi-Fi Internet connectivity and privacy: hiding your tracks on the wireless Internet"; Bernardos, C.J., Zuniga, J.C., and O'Hanlon, P.; IEEE CSCN 2015]

Privacy Threats: Correlation

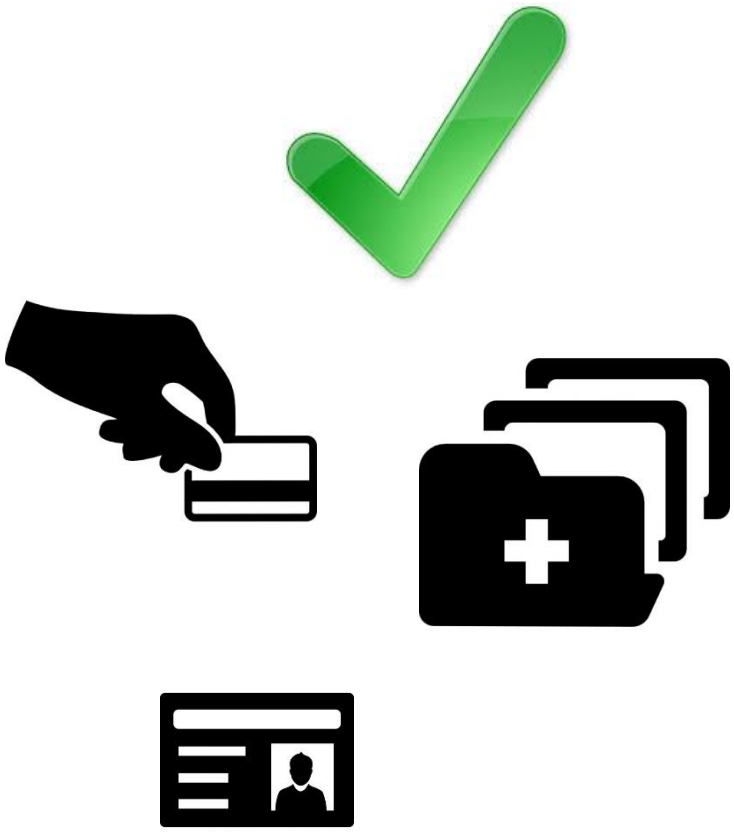
The combination of several pieces of information reveals patterns and behaviors that can be used to profile users

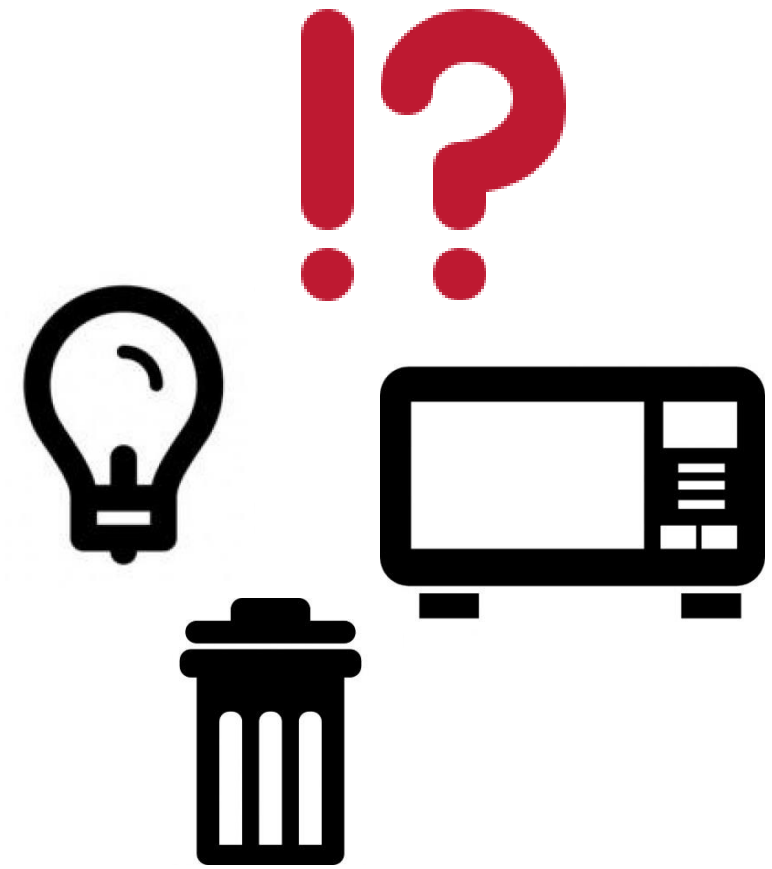


[REF: https://mentor.ieee.org/802-ec/dcn/14/ec-14-0043-00-00EC-internet-privacy-tutorial.pdf]

PIIs in the Internet of “Things”

Personally Identifiable Information (PII)





Threat Model

- **Document skeleton by Jerome Henry (Tech Editor)**
- **Threat Model contribution by Brian Weis**
  - http://www.ieee802.org/1/files/public/docs2016/802E-weis-privacy-threat-analysis-0718-v01.pdf
  - Currently with analysis for 802/802.1, planning to work on other 802 specifications
  - Discussion about PIIs in IEEE 802 protocols
    - Direct, indirect, and by-association
- **Fingerprinting based on optional parameters Mathieu Cunche**
  - Potentially presenting to 802.11 at WNG in Warsaw

Key Mitigations

- **Data minimization**
  - Avoid as much as possible the collection, disclosure, sensitivity, and retention of PIIs
- **Privacy as the default**
  - When there are options in the protocol, Privacy features should be used by default
- **Allow user to opt-out - or rather opt-in!**
  - Users should be allowed to opt-in (or out) to provide personal information at any point in time

Resources

- **Several related initiatives in IETF**
  - DHCP, IPv6 addressing, generation and use of numeric identifiers, multicast, etc.
- **Mailing list - reflector**
  - **STDS-802-PRIVACY@listserv.ieee.org**
- **Mentor - document repository**
  - https://mentor.ieee.org/privecsg/documents