A new Approach to RFID Privacy
Zero Knowledge Device Authentication

Enabling the potential value of RFID
through elimination of persistent consumer
and device identifiers in the ambient space

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Making Privacy Default
… because the alternative is not an option

Agenda

- Privacy and security – two sides of the coin
- RFID security problems
- Zero-knowledge Device Authentication
- Advantages Post-Purchase
- Outlining the RFID privacy challanges

The failure of Privacy paradigms

- Code of Conduct – No trust/massive abuse
  - Case: US Telemarketing do-not-call
    - 55 million people registered through 2003 (57%)
- Informed Consent – Advanced blackmail
  - No privacy or no Service ⇒ fatalism and distrust
    - UK analysis: 70% report – ”cannot avoid registering”
  - EU Data Protection – bureaucratic but not ensuring privacy
- Anonymity – No take-up and fear of fraud
  - Market failure of Privacy Enhancing Technologies

Deploy <u>balanced</u> Privacy Enhancing Technologies
Give End-user Control – Get Trust & User Data

RFID Attackers

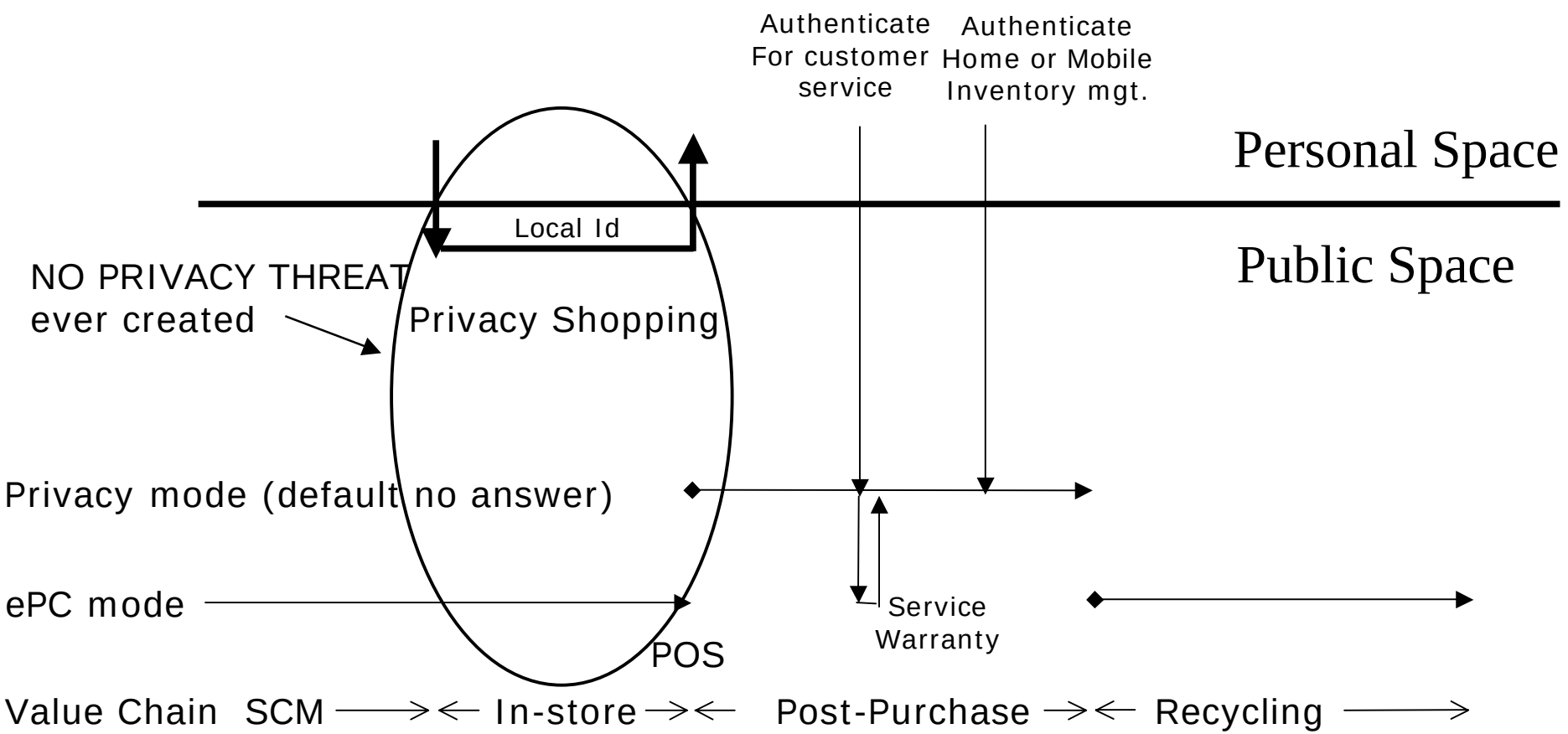
- Terrorists –
- Burglers –
- VIP –
- Workplace –
- Social –
- Retailers –
- Corporate –
- Hackers –
- Government –
- Government –

RFID have many positive uses
but without rethinking also
Security threats
Data Leakage
Tracking
Etc.

Translates into ***Trust destruction***
CLOSE – in the face of the individual

A dramatic escallation of
the Surveillance Society

RFID Privacy overview



RFID Privacy Mode

- At POS, RFID control is transferred to Consumer
  - RFID ”Privacy mode” is activated and RFID go silent
  - RFID remain *killed* unless Consumer activates
- Zero-knowledge Device Authentication
  - Low computational PET scalable to asymmetric keys
  - Single-step so that RFID can remain quiet/killed to strangers
- If RFID active when leaving the store; either
  - Product is being stolen – activate surveillance cameras etc.
  - Shop/supplier violate privacy – document and call police
- The Privacy problem turns into a win-win solution
  - RFID active for update, customer service and recycling
  - Open for Post-Purchase upgrade for intelligent services
  - With in-store Privacy Shopping open for selfservice
  - Open for custumising along the value chain
  - Little trade-of between privacy and CRM/loyalty programs
  - Can in be fully anonymous even with credit payments

Other considerations

- Dual-band solution maintain interoperability
  - Without privacy - mandatory KILL at POS
  - With privacy – consumer option to KILL
- RFID readers interoperability
  - SCM/In-store – no interoperability problems
  - At POS – readers needs additional command
  - Customer Service – more advanced possibilities
- In-store privacy issues is independant of RFID
  - BUT payments, authentication, mobile devices etc. have no security with emerging standards.

Summation

- **From the point of Trust Socio/economics**
  - RFIDs represent huge potential value / security destruction
  - RFID are easily understood threats !
  - Question: Why does Industry ignore privacy and security?
- **To promote RFIDs and reap the huge values**
  - Eliminate the threats – give end-user CONTROL
  - Employ balanced Privacy Enhancing Technologies (PET)
- **Privacy requirements solvable usings PETs**
  - Removing tracking ids post-purchase (Kill/Privacy Mode)
  - Local Identifiers only for consumers in-store (Privacy Shopping)
  - Special requirements for various applications solvable
    - Proximity, authenticity, Theft Control, Shipping, Id Cards etc.

Active Privacy is both possible
and an enabler of RFID take-up