Toward secure and privacy sensitive ID/authentication?

This template reveals all the personal information necessary to purchase alcohol (for use with new format driver’s licence).

IPSJ Public Lecture #1 – Fall 2009
September 28, 2009

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¹Information Policy Research Program, ²Identity, Privacy and Security Institute & ³Knowledge Media Design Institute
University of Toronto
Overview

- Introduction to IPSI and Identity, Privacy and Security
- Update on Ontario’s Enhanced Driver’s Licence (EDL)
- Lessons for identity card/scheme design
- Understanding IDentity as performance
- Toward user-centric, privacy sensitive ID/ authentication
Introducing IPSI

the Identity Privacy and Security Institute

IPSI aims to carry out a pioneering, interdisciplinary program of research, education, outreach, and industry collaboration, combining technological and policy perspectives. Supported by U of T’s Academic Initiatives Fund (AIF).

Management Committee:

Dimitrios Hatzinakos (Chair)
Professor, Dept of Electrical and Computer Engineering (ECE)

Andrew Clement
Professor Faculty of Information

Kostas Plataniotis
Associate Professor, Dept of Electrical and Computer Engineering (ECE)
Introducing IPSI

Activities

- Public lectures series
- Graduate course and specialization
  - JIE1001 Seminar in Identity, Privacy & Identity
- Other events
  - Public Information Forums
  - Colloquia
  - Conference presentations (e.g. IEEE TIC STH)
- Research round tables (Spring)
- Research Day (May)
Identity, Privacy & Security
in a Surveillance Society
Designing Ontario’s enhanced drivers licence (EDL) for privacy and security:

Integrating technological and policy perspectives

Andrew Clement
Identity, Privacy and Security Initiative & Information Policy Research Program
Faculty of Information
University of Toronto

IPS! Public Lecture
University of Toronto
Sept. 22, 2008
## Summary - EDLs are a bad idea

Stop! Think again

Stop! Think again

Still preferable

### Four-part test

<table>
<thead>
<tr>
<th>Four-part test</th>
<th>FRT</th>
<th>RFID</th>
<th>Passport</th>
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<tbody>
<tr>
<td>Necessary</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Effective</td>
<td>?</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Proportionate</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Minimal</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
</tr>
</tbody>
</table>
Public Participation in Development process

- What part will the public, civil society organizations and independent experts play in the development of this ID scheme?
  - Timetable
  - Social impact assessments
  - Venues and modes of involvement
    - Legislative review
    - Concept and prototype design
    - Field trials

- What on-going accountability and oversight mechanisms?
Timeline – Bill 85 – Photo Card Act

Jun 3-10, 2008 – 1\textsuperscript{st} & 2\textsuperscript{nd} Reading
Jul 16 - Public Information Forum on the EDL
Oct 20 – Legislative hearings
Nov 27 – Royal Assent
Mar 24, 2009 National Public Forum on the EDL (Ottawa)
Jun 1 – WHTI comes into effect, first cards issued
Jun – slow uptake of EDLs see: http://IDforum.ca
Introducing the NEW

Ontario Enhanced Driver’s Licence
Outstanding issues

- Unique RFID tag number – personal info?
  - EDL Applicants Guide: “The chip … contains a unique identification number only and does not contain any personal information” p.4
  - IP Commissioner: “WRONG” Privacy by Design, p. 209

- Protecting the RFID tag number?

A protective sleeve is provided with your EDL card to help shield your personal Radio Frequency Identification (RFID) number. It’s recommended that you always keep your EDL card inside the sleeve and only remove it when you are using it at U.S. or Canadian ports of entry or if asked by any police officer to show your driver’s licence.

- Creation of a large, biometric, on-line data base for facial recognition
  - Effectiveness? Redress? Scope creep? Oversight?
Outstanding issues

- **Lack of public information and consultation**
  - Bare minimum of public info, Legislative hearings ill-informed and *pro forma*, No feedback on regulations consultation,

- **Access to Information requests**
  - Professional handling – timely, courteous, efficient,…
  - Many (excessive?) redactions of key info
EDL is “botched,” but …

EDLs are flawed as:
- Policy
- Technology
- Governance process

But, Ontario is not alone. Since 9/11, there has been a surge of jurisdictional ID schemes. Most show similar characteristics of:
- Privacy threat, but no good evidence of security gain
- Lack of public disclosure and discussion
- Against much expert and industry advice
- High costs + cost overruns
- Implementation delays
Lessons for ID governance

- Governments can prevail with mis-guided schemes in the absence of strong opposition
  - Need a civil society capacity for ID politics
Lessons for ID research & development

- Privacy alone is not an adequate frame
- Mis-match between organization/system and subject perspectives on ID:
  
  Organization: “Are you in our databases?”
  i.e. first identify yourself, then we may authorize.
  
  Person: “Recognize my entitlement. Here is my credential.”

- ID subject experiences are ignored

Need citizen-centric ID technology and policy research and development
Counter design - Mock ID cards

See: TotalTransparencySolutions.pbworks.com
Prototype of **SafeTBioID™** ID card

**High Public risk attendee**

- **RFID tag**
  - with full personal data for remote wireless reading

- **2D barcode**
  - with full personal data for remote optical reading

**Anonymous Conference Super Safety Uni**

- ID: 1446781
- Birth: CA1681348
- DNA: GACTGCTAACGACTGCTAAC

**Public risk factors**
- B = Anti-Social Behaviour
- F = Flatulence
- H = Hijacking
- L = Lung Cancer
- O = Overweight
- P = Pregnancy

**Public risk score:**
- 0-99 = Safe
- 100-199 = Caution
- 200-350 = Watch out!
- 350-499 = Lock up now

**Personal risk factors**
- A = Athletes Foot
- D = Internet Obsessive Disorder
- I = Insomnia
- N = Finger Nail
- S = Saliva
- U = Urine

**Biometric samples provided:**
- B = Blood
- F = Feces
- H = Hair
- N = Finger
- S = Saliva
- U = Urine

**TOTAL TRANSPARENCY SOLUTIONS**
Ironic agitprop RFID demo

<table>
<thead>
<tr>
<th>Andrew</th>
<th>Bruce</th>
<th>Brenda</th>
<th>Chan...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chris</td>
<td>Grae...</td>
<td>Joseph</td>
<td>Karen</td>
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<tr>
<td>Patricia</td>
<td>Roch</td>
<td>Stuart</td>
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<td>Don</td>
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<td>Mich...</td>
<td>Dalton</td>
<td>Jean</td>
<td>Maher</td>
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<tr>
<td>Domi...</td>
<td>Krista</td>
<td>Alice</td>
<td>Gilles</td>
</tr>
</tbody>
</table>

The current threat level is: EXTREME

Current Threat: EXTREME

ID: 102
Threat score: 140
Bruce Schneier

Born: January 15, 1963
Parents: Schneier, Rebecca (b. 1942)
          Schneier, Martin (b. 1935)

Warning: Known Disguise
Warning: Arab sympathizer?

Warning: Liberal sympathizer?

2008 Political Donations:
Democratic Congressional Campaign Committee $1000
Moveon.Org $1000

Warning: Itinerant/ Unstable?
Previous addresses:
101 E Minnehaha Pkwy Minneapolis, MN 55419
730 Fair Oaks Ave #1 Oak Park, IL 60302
1300 Army Navy Dr #807 Arlington, VA 22202
7115 North Ave #16 Oak Park, IL 60302
1935 W Pratt Blvd #1 Chicago, IL 60626
1711 Hampshire Green Ln Silver. Sp. MD 20903
17th St #Pvt, Brooklyn, NY
1090 La Avenida St, Mountain View, CA 94043

Bruce Schneier
BT Counterpane

ID: 456670301 Birth: US1691237
DNA: TGCTGATTACCTTACAGATTA

BFH P > 250

TOTALTRANSPARENCYSOLUTIONS
Performing Identities
An alternative approach

- Identity re-conceptualized
  - as multiple, partial, context-specific, performative
- Policy engagement
  - interact with and learn from policy actors
- Public education
- Subject perspectives
- Ethnographically informed
Wallet ethnography

Waiting line recruiting

Questions:

- What ID do you have in your wallet? Please tell us about it.
- Do you have an ID story to share?
ID we carry - Dave
Karen’s ID
Greg’s ID

To be shown at the Surveillance Exhibition, Jan – Apr 2010, Agnes Etherington Art Centre, Queen’s University, Kingston
Alternative ID models - I

Conventional (organizational) model

- ID token as a link between the person and the organizational databases

Involves full identification
Alternative ID models - II

Privacy/identity protective model

- ID token provides recognized credentials

Anonymity and pseudonymities possible
Digital credentials

- Well recognized potential in on-line transactions – see:
  - David Chaum – Anonymous authentication (1980s)
  - Stefan Brands – U-Prove (Credentica > Microsoft)
  - 7 Laws of Identity – Kim Cameron et al

- Can this also work in face-to-face settings?
- A hybrid approach, using digital techniques for both in-person and on-line interactions?
Selectively revealing personal info

This template reveals all the personal information necessary to purchase alcohol

(for use with old format driver’s licence)
Selectively revealing personal info

This template reveals all the personal information necessary to purchase alcohol

(for use with old format driver’s licence)
Selectively revealing personal info

This template reveals all of the personal information necessary to purchase alcohol or gain entrance to an establishment that serves alcohol.

(for use with and older format driver's license)

KEMP, DAVID A
140 LINDSEY AVE,
TORONTO, ON
M6H 1E6

This template reveals all of the personal information necessary to prove identity when picking up items from the post office.

(for use with and older format driver's license)

This template reveals all of the personal information necessary to purchase alcohol or gain entrance to an establishment that serves alcohol.

(for use with and older format health card)
Anonymous “Loyalty”

![Image of AIR MILES card]

<table>
<thead>
<tr>
<th>Your Account #</th>
<th>8408 183 8497</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardholders</td>
<td>ANONYMOUS GIVER</td>
</tr>
<tr>
<td>Primary:</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td>Edit...</td>
</tr>
<tr>
<td>Address 1:</td>
<td>55 BORDEN STREET</td>
</tr>
<tr>
<td>Address 2:</td>
<td></td>
</tr>
<tr>
<td>City:</td>
<td>TORONTO</td>
</tr>
<tr>
<td>Province:</td>
<td>Ontario</td>
</tr>
<tr>
<td>Postal Code:</td>
<td>M5S 2M9</td>
</tr>
</tbody>
</table>
Anonymous “Loyalty”

Print a Temporary Card

Collector Number: 84081838497

Step 1. Print your temporary AIR MILES Collector Card now and continue to collect AIR MILES reward miles on all of your purchases.

Step 2. Just show your printed Collector Card – or tell the cashier at the time of purchase what your Collector Number is.

Order New or Replacement Cards (free of charge)
Upcoming lectures on ID/authentication

Oct 5 – Kostas Plataniotis – Professor, ECE, U of Toronto
   *Introduction to Biometrics for ID and Authentication*

Oct 26 – Roger Clarke – Principal, Xamax; Visiting Prof, ANU
   *A Sufficiently Rich Model of (Id)entity, Authentication and Authorization*

Nov 2 – David Lyon – Professor, QRC, Queens University, Sociology
   *Identifying Citizens: ID Cards as Surveillance*

Nov 16 – Carlisle Adams – Professor, University of Ottawa
   *Credential Systems: Promise, Risks and Possible Mitigations*

Nov 23 – Lorrie Cranor – Program Director, Carnegie Mellon University,
   CyLab/Engineering and Public Policy/ Institute for Software Research
   *Usable Privacy and Security*

Nov 30 – Dmitry Gorodnichy – Senior Research Scientist, Canada Border
   Services Agency
   *Recognition in Video*

Dec 7 – Ian Kerr – Professor, CRC in Ethics, Law and Technology, U Ottawa,
   *Lessons from the Identity Trail: Anonymity, Privacy and Identity in a Networked Society*
IPSII Public Lecture Series Fall 2009

IPSII is once again pleased to present its Public Lecture series where notable speakers from the identity, privacy and security fields present their work and discuss contemporary issues.

Faculty of Information, 140 St. George Street, Room 728, University of Toronto (St. George Campus)

Lectures begin September 28 and run weekly up to December 7 (except October 12, 19 and November 9)
Mondays 4:00 - 5:15 pm

+ Student project presentations: December 14

http://www.ipsi.utoronto.ca/events/fall2009.htm