Get Smart:
Lead with Privacy by Design

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Southern Ontario Smart Computing Innovation Platform
Scientific Advisory Committee
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Presentation Outline

1. *Change the Paradigm: Positive-Sum, Not Zero-Sum*
2. *Privacy by Design: The Gold Standard*
3. *Big Data Needs Big Privacy!*
4. *SmartData: Privacy by Design 2.0*
5. *Privacy-Protective Surveillance, by Design*
6. *Privacy by Design and SOSCIP*
7. *Concluding Thoughts*

Privacy is Essential to Freedom:
A Necessary Condition for Societal Prosperity and Well-Being

- Innovation, creativity and the resultant prosperity of a society requires freedom;
- Privacy is the essence of freedom: Without privacy, individual human rights, property rights and civil liberties; the conceptual engines of innovation and creativity, could not exist in a meaningful manner;
- Surveillance is the antithesis of privacy: A negative consequence of surveillance is the usurpation of a person's limited cognitive bandwidth, away from innovation and creativity.

It's Time for a Change:

Change the Paradigm to Positive-Sum,

NOT

Zero-Sum

Positive-Sum Model: *The Power of "And"*

Change the paradigm
from zero-sum to
a "positive-sum" model:
Create a win-win scenario,
not an either/or (vs.)
involving unnecessary trade-offs
and false dichotomies …

replace "vs." with "and"

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The Decade of *Privacy by Design*

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Adoption of "Privacy by Design" as an International Standard

Landmark Resolution Passed to Preserve the Future of Privacy

By Anna Ohlden – October 29th 2010 - http://www.science20.com/newswire/landmark_resolution_passed_preserve_future_privacy

JERUSALEM, October 29, 2010 – A landmark Resolution by Ontario's Information and Privacy Commissioner, Dr. Ann Cavoukian, was approved by international Data Protection and Privacy Commissioners in Jerusalem today at their annual conference. The resolution recognizes Commissioner Cavoukian's concept of Privacy by Design - which ensures that privacy is embedded into new technologies and business practices, right from the outset - as an essential component of fundamental privacy protection.

Full Article:

http://www.science20.com/newswire/landmark_resolution_passed_preserve_future_privacy

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Privacy by Design:

Proactive in 35 Languages!

1. *English*
2. *French*
3. *German*
4. *Spanish*
5. *Italian*
6. *Czech*
7. *Dutch*
8. *Estonian*
9. *Hebrew*
10. *Hindi*
11. *Chinese*
12. *Japanese*
13. *Arabic*
14. *Armenian*
15. *Ukrainian*
16. *Korean*
17. *Russian*
18. *Romanian*
19. *Portuguese*
20. *Maltese*
21. *Greek*
22. *Macedonian*
23. *Bulgarian*
24. *Croatian*
25. *Polish*
26. *Turkish*
27. *Malaysian*
28. *Indonesian*
29. *Danish*
30. *Hungarian*
31. *Norwegian*
32. *Serbian*
33. *Lithuanian*
34. *Farsi*
35. *Finnish*

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Privacy by Design:

The 7 Foundational Principles

1. ***Proactive*** not ***Reactive:***
   Preventative, not Remedial;
2. Privacy as the ***Default*** setting;
3. Privacy ***Embedded*** into Design;
4. ***Full*** Functionality:
   Positive-Sum, not Zero-Sum;
5. End-to-End **Security**:
   Full Lifecycle Protection;
6. Visibility **and** Transparency:
   Keep it **Open**;
7. Respect for User Privacy:
   Keep it **User-Centric**.

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Privacy by Design

The 7 Foundational Principles

Ann Cavoukian, Ph.D.
Information & Privacy Commissioner
Ontario, Canada

Privacy by Design is a concept I developed back in the 90's, to address the ever-growing and systemic effects of Information and Communication Technologies, and of large-scale networked data systems.

Privacy by Design advances the view that the future of privacy cannot be assured solely by compliance with regulatory frameworks; rather, privacy assurance must ideally become an organization's default mode of operation.

Initially, deploying Privacy-Enhancing Technologies (PETs) was seen as the solution. Today, we realize that a more substantial approach is required — extending the use of PETs to PETS *Plus* — taking a positive-sum (full functionality) approach, not zero-sum. That's the "*Plus*" in PETS *Plus*: positive-sum, not the either/or of zero-sum (a false dichotomy).

Privacy by Design extends to a "Trilogy" of encompassing applications: 1) IT systems; 2) accountable business practices; and 3) physical design and networked infrastructure.

Principles of *Privacy by Design* may be applied to all types of personal information, but should be applied with special vigour to sensitive data such as medical information and financial data. The strength of privacy measures tends to be commensurate with the sensitivity of the data.

The objectives of *Privacy by Design* — ensuring privacy and gaining personal control over one's information and, for organizations, gaining a sustainable competitive advantage — may be accomplished by practicing the following 7 Foundational Principles *(see over page)*:

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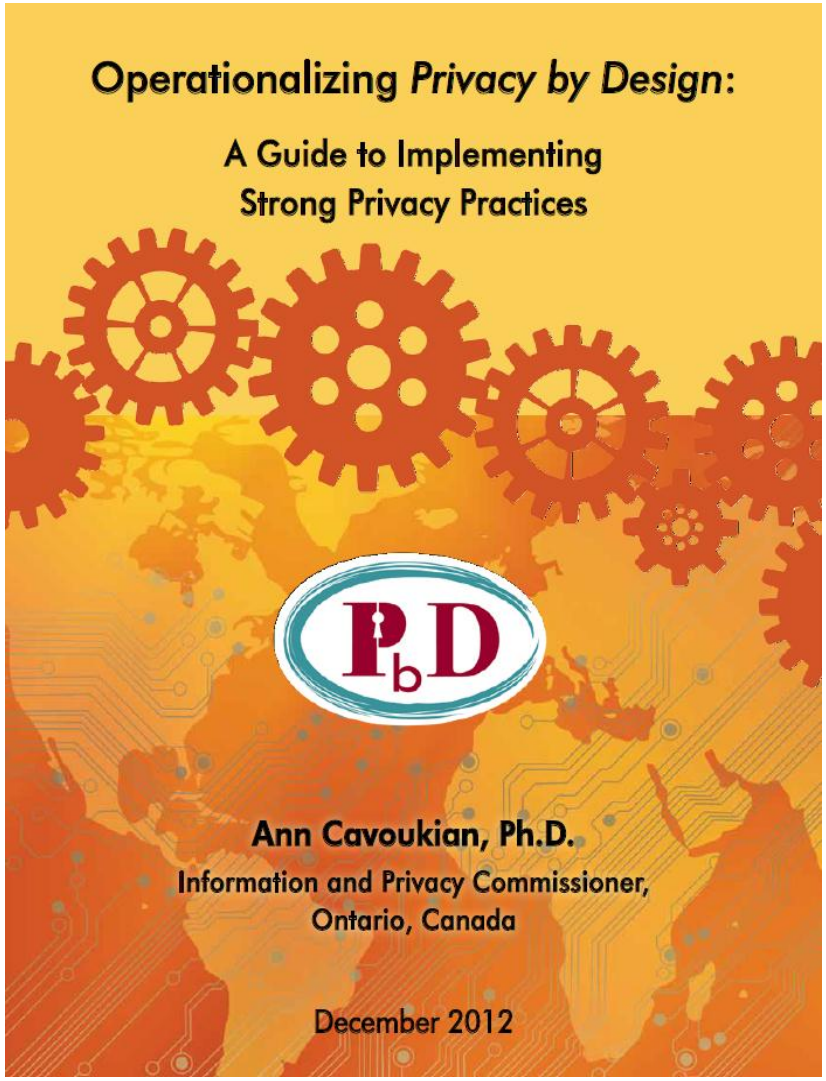
Operationalizing Privacy by Design

Operationalizing *Privacy by Design*

9 PbD Application Areas

- CCTV/Surveillance cameras in mass transit systems;
- Biometrics used in casinos and gaming facilities;
- Smart Meters and the Smart Grid;
- Mobile Communications;
- Near Field Communications;
- RFIDs and sensor technologies;
- Redesigning IP Geolocation;
- Remote Home Health Care;
- Big Data and Data Analytics.



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OASIS Technical Committee – *Privacy by Design for Software Engineers*

- Commissioner Cavoukian and Professor Jutla are the Co-Chairs of a new technical committee (TC) of OASIS (Advancing Open Standards for the Information Society) – "*PbD-SE* (software engineers) TC;"
- The purpose of *PbD-SE* is to provide *PbD* governance and documentation for software engineers;
- The *PbD* standards developed will pave the way for software engineers to code for *Privacy, by Design.*

“Big” Data

"Big Data"

- Each day we create **2.5 quintillion** bytes of data
  – **90%** of all data was created in the past 2 years;
- **Big Data** analysis and data analytics promise new opportunities to gain valuable insights and benefits
  – new predictive modes of analysis;
- However, it will also enable expanded surveillance, increasing the risk of unauthorized use and disclosure, on a scale previously unimaginable.

The Age of Big Data … Open Data *and* Big Privacy

Big Data – Yes

Open Data – Yes

Personal Data - No

Focus on applying strong de-identification techniques to identifiable data.

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- *The Big Difference with Big Data;*
- *"Sensemaking" Systems;*
- *Privacy by Design in the Age of Big Data;*
- *The Creation of a Big Data Sensemaking System through PbD.*

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Launch of Our New White Paper with the Respect Network:

Big Data Meets Big Privacy!

December 5, 2013

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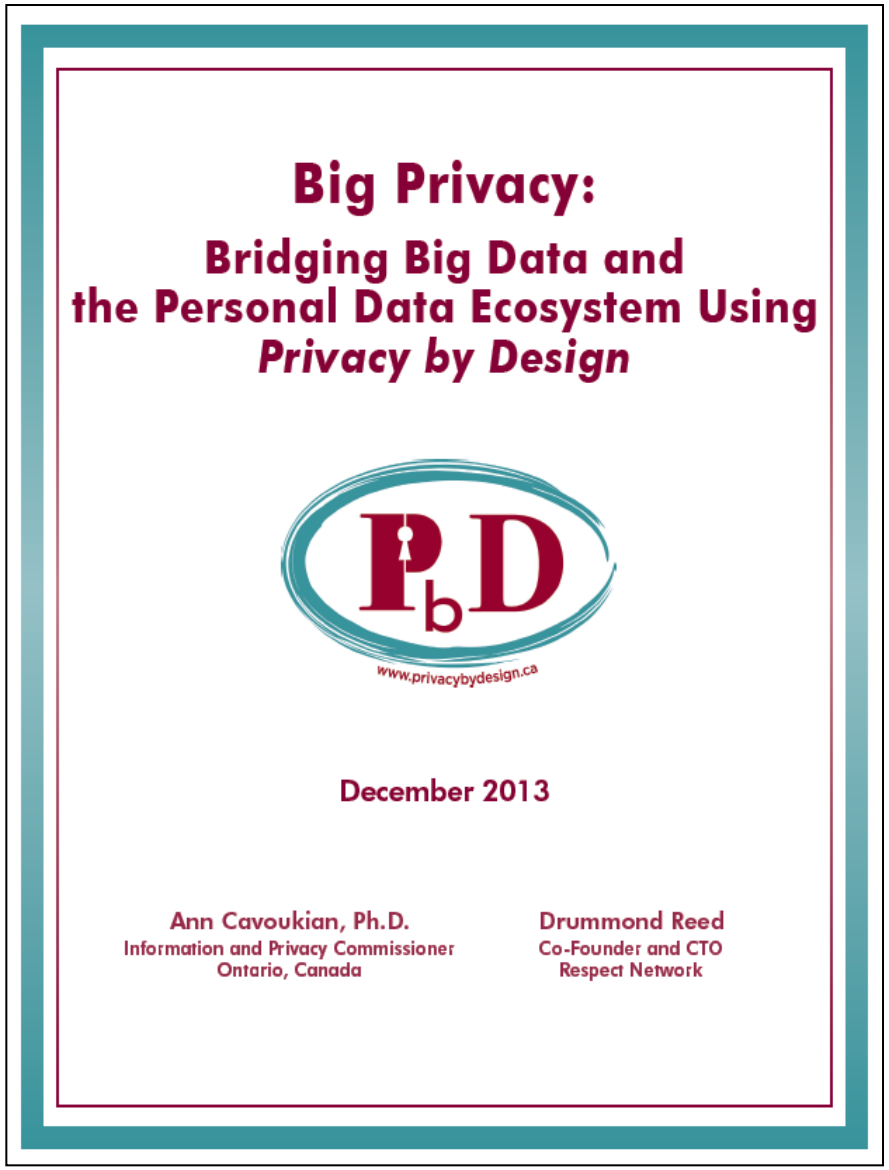
"… Big Data derives economic value from its use of personal data, to such an extent that if personal information is considered to be "the new oil," then Big Data is the machinery that runs on it."



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BIG Privacy – Radical Control

- User control is critical
- Freedom of choice
- Informational determination

Context is key!

Big Data Calls for Big Privacy — Not Only Big Promises

When: **January 24, 2014 @ 9:00 am - 10:00 am**

Where: Webinar

Cost: Free

Dr. Ann Cavoukian
Information and Privacy Commissioner Ontario, Canada

Dr. Alexander Dix
Commissioner for Data Protection and Freedom of Information Berlin, Germany

Dr. Khaled El Emam
Associate Professor
Faculty of Medicine University of Ottawa

Nuala O'Connor
President & CEO
Center for Democracy & Technology

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SmartData:
Privacy by Design 2.0

Context is Key

The Next Evolution in Data Protection:

"SmartData"

Developed by Dr. George Tomko, at the Identity, Privacy and Security Institute, University of Toronto, *SmartData* represents privacy in the future with greater control of personal information.

Intelligent "smart agents" to be introduced into IT systems virtually – thereby creating "*SmartData,*" – a new approach to Artificial Intelligence, bottom-up, that will contextualize the field of AI .

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SmartData:
It's All About User Control

It's All About Context:

- Evolving virtual cognitive agents that can act as your proxy to protect your personally identifiable data;

Intelligent agents will be evolved to:

- Protect and secure your personal information;
- Disclose your information only when your personal criteria for release have been met;
- Put the ***user*** firmly in control –
  Big Privacy, Radical Control!

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Methods of Creating Intelligent Agents

- Top-down, rule-based design (traditional AI);
- Bottom-up "evolutionary robotics design;"
- The combination of a top-down and bottom-up hybrid will yield the most dynamic results.

Privacy by Design and SOSCIP

Privacy by Design and SOSCIP

- Weave privacy measures directly into the Design of research protocols and technology developments, commenced and underway at SOSCIP;
- Take a proactive, positive-sum approach, embedding necessary features directly into the design and architecture of information technology and business practices.

Concluding Thoughts

- Lead proactively with *Privacy by Design;*
- Change the paradigm from the dated "zero-sum" to the doubly-enabling "positive-sum" strategy;
- Deliver *both* privacy AND Big Data in an empowering "win-win" paradigm – abandon false trade-offs;
- Embed privacy as a core functionality:
  the future of privacy (and freedom) may very well depend on it!

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