Jason Cronk's Strategic Privacy by Design sets forth a clear, comprehensive, and highly practical blueprint for incorporating privacy into design. Cronk deftly explains the dimensions of privacy in a sophisticated way that is enlightening not just to novices but also to seasoned experts. Cronk's copious use of concrete examples is some of the very best I've seen. Wellorganized and accessible, this book has numerous helpful charts and illustrations. This book is an essential resource for engineers as well as privacy professionals.

- Prof. Daniel Solove, George Washington University Law School and President of TeachPrivacy

Having created Privacy by Design so many years ago, it is truly heartwarming to see a book dedicated to exploring its application and breadth! Jason has done an excellent job in outlining the value of proactively embedding privacy into the design of one's operations, in an effort to prevent the privacy harms from arising, Jason's book will no doubt become a welcome addition in many jurisdictions

> - Ann Cavoukian, Ph.D., Three-term Information and Privacy Commissioner of Ontario, Canada, Distinguished Expert-in-Residence, Privacy by Design Centre of Excellence, Ryerson University

This book is a formative piece of work. Individually I've read Cavoukian, Solove and Nissenbaum, but Jason introduces Hoepman among others and then blends their concepts, resulting in a framework that is pragmatic, thorough and probably quite different from most of the other approaches you may have come across.

- Tim Clements, Program Manager, Copenhagen

Jason operationalizes the seven PbD principles into a practical formula that links privacy threats and controls into a repeatable framework. The approach holistically integrates legal and philosophical foundations of privacy with practical technical controls and mitigations that engineers can apply, today.

- Prof. Travis Breaux, Editor of Introduction to IT Privacy

Cronk's book provides a strong foundation for analyzing potential privacy issues in the design of products and services, and I have already started using some the strategies and the thought-provoking examples when I create internal frameworks and hold training sessions. I highly recommend it for anyone looking for a constructive, structured and repeatable approach to PbD.

- Lars Vinden, Corporate Privacy Counsel/DPO, Telia Norge



R. Jason Cronk began his interest in privacy in the early 1990s when his roommate, a private investigator, introduced him to the world of data brokers. Years later, working in information security, he went to law school to turn his passion for privacy into a career. Jason became an active member of the privacy community through the IAPP, writing and speaking on the need for privacy engineering and design. Early on, the IPC of Ontario, Canada designated him a PbD Ambassador for his advocacy. When not helping clients at his boutique consulting practice, Enterprivacy Consulting Group, he can be found tweeting @privacymaverick

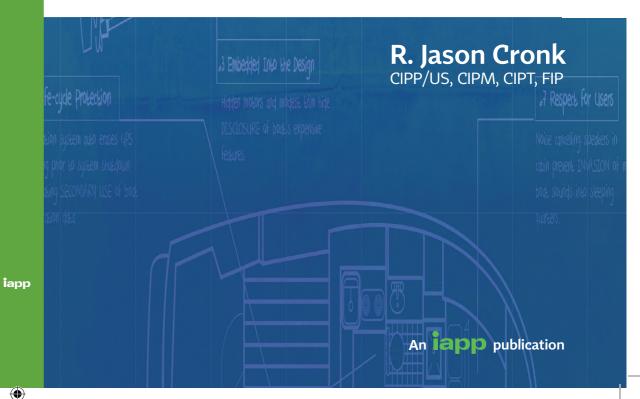


An Iapp publication



PRIVACY BY DESIGN

STRATEGIC **Privacy By Design**







Contents

SECTION I: INTRODUCTION

Foreword	Χ
Many Thanks	ΧV
Chapter 1: What Is Privacy by Design?	
The 7 Foundational Principles	. 2
Principle 1: <i>Proactive</i> , Not Reactive; <i>Preventative</i> , Not Remedial	. 2
Principle 2: Privacy as the <i>Default</i> Setting	. 3
Principle 3: Privacy <i>Embedded</i> into Design	. 4
Principle 4: Full Functionality — <i>Positive Sum</i> , Not Zero Sum	. 5
Principle 5: End-to-End Security — Full Life Cycle Protection	6
Principle 6: Visibility and Transparency — Keep It Open	7
Principle 7: Respect for User Privacy; Keep It User Centric	8
Short History of Adoption	. 8
2009	. 8
2010	. <u>c</u>
2011	. <u>c</u>
2012	. <u>c</u>
2015	10
2016	10
2018	11
Challenges of the Principles	12
Why It's Important to Build in Privacy	13
Structural Asymmetry	13
Cognitive Biases	14







SECTION II: PRIVACY MODEL

			_	_		
Ch	วท	ter	7.	Λ,	rtn	rc
CII	av	LEI	Z .	M	LLU	13

enapter 2. Actors	
Individuals	23
Domain/Threat Actors	26
Relationships	30
Example 1: An interactive online multi-player game	32
Example 2: Human resources department vetting job candidates through an online skill-testing service	33
Example 3: Political activist website	34
Chapter 3: Violations	
Information Collection	42
Surveillance	
Interrogation	
Information Processing	
Aggregation	
Insecurity	
Identification	
Secondary Use	
Exclusion	
Information Dissemination	
Breach of Confidentiality	
Disclosure	
Exposure	
Increased Accessibility	
Blackmail	
Appropriation	
Distortion.	
Invasions	
Intrusion.	
Decisional Interference	
Decisional Interference through Dark Patterns	









Chapter 4: Controls
Architecture79
Identifiability81
Centralization
Strategies
Architecture Redux
Chapter 5: Information Flow, Domains and Subdomains
Information Flow
Domains and Subdomains
Example and Exercises
Pothole App
Exercises
CECTION III ANALYSIS
SECTION III: ANALYSIS
Chapter 6: Consequences
Privacy Harms153
Subjective Harms Examples156
Objective Harms Examples157
Chapter 7: Risk Analysis
A "FAIR" Method for Privacy Risk166
Frequency171
Attempt Frequency
Vulnerability175
Magnitude177
Applying Controls189
Organizational Risk194
Domain Redux195
Chapter 8: Quantifying Risks
Risk of Exposure in a Restaurant Bathroom
Opportunity Frequency203
Probability of Action

(





	Attempt Frequency	.203
	Vulnerability	.204
	Action Frequency	.205
	Population Magnitude	.205
	Risk	.206
	Adverse Consequence Risk	.207
	Risk of Secondary Use of U.S. Census Data	.208
	Opportunity Frequency	.209
	Probability of Action	.209
	Action Frequency	.210
	Vulnerability	.211
	Action Frequency	.211
	Population Magnitude	.212
	Risk	.212
Exa	ample and Exercises	.215
	Pothole App	.215
Exe	ercises	.222
CECTI	ON IV. METHODOLOGY	
	ON IV: METHODOLOGY er 9: Methodology	
	r 9: Methodology king in Privacy	220
Dar	Identify the Purpose	
	Understand Quality Attributes	
	Identify Information Needs	
lmr	posing Controls	
11111	Architect	
	Secure	
	Supervise	
	Balance	
	Online Behavioral Advertising	.243







_	-
(4	•
1.	7
	\sim

Integrating Privacy by Design into the Business	245
Accountability	245
Awareness	246
Expertise	246
Chapter 10: Final Thoughts	
Privacy-by-Design Redux.	251
Principle 1: <i>Proactive</i> , Not Reactive; <i>Preventative</i> , Not Remedial	251
Principle 2: Privacy as the <i>Default</i> Setting	252
Principle 3: Privacy <i>Embedded</i> into Design	252
Principle 4: Full Functionality — <i>Positive Sum,</i> Not Zero Sum	253
Principle 5: End-to-End Security — Full Life Cycle Protection	254
Principle 6: Visibility and Transparency — Keep It Open	254
Principle 7: <i>Respect</i> for User Privacy; Keep It <i>User Centric</i>	255
Example and Exercises	257
Pothole App	257
Eversions	250



