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Impacts of User Privacy Preferences on Personalized Systems – a Comparative Study

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Abstract
Recent developments in privacy awareness and legislation may have a significant impact on the advancement of personalized systems. Though many countries have enacted comprehensive privacy laws, user concerns are still high. We compared 30 opinion surveys on Internet privacy, categorized the responses, and matched them with possible impacts on personalized systems. The analysis of a cross-section of privacy surveys should provide a more objective view of consumer concerns than results from a single study. This research thus represents a first contribution towards the identification of requirements for privacy-preserving personalization, to improve users' trust when interacting with personalized systems.

Introduction

Personalized (or "user-adaptive") systems have become increasingly popular since the beginning of the 1990's, and have gained substantial momentum with the rise of the World Wide Web. The market research firm Jupiter defines personalization as predictive analysis of consumer data used to adapt targeted media, advertising, or merchandising to consumer needs (Foster 2000). A more general definition was proposed by Kobsa et al. (2001) who regard a personalized hypermedia application as a hypermedia system which adapts the content, structure and/or presentation of the networked hypermedia objects to each individual user's characteristics, usage behavior and/or usage environment. In contrast to user-adaptable systems where the user is in control of the initiation, proposal, selection and production of the adaptation, user-adaptive systems perform all steps autonomously. A well-known example of a personalized website is Amazon.com, which generates purchase recommendations based on a user's purchase and interaction history. Other examples of personalized web sites are listed in (Dean 2000). A categorization of user-adaptive systems according to Kobsa et al. (2001) is depicted in Table 1.

The advantages of personalization can be manifold. Online users see the major benefits in sites being able to offer more relevant content and to recall user preferences and interests (Cyber Dialogue 2000). However, personalization of hypermedia presentation is beneficial for several other purposes as well, most notably for improving the learning progress in educational software (Brusilovsky et al., 1998; Eklund & Brusilovsky, 1998; Specht, 1998).

In order to deal with impacts of privacy concerns on personalization systematically, it is helpful to identify privacy-critical personalization processes. Personalization can basically be depicted as a cycle of recurring processes consisting of *data collection*, *profiling* and *matching* (Foster 2000). From collected data, user profiles can be created that are the basis for adapting user interfaces to individuals or groups of individuals.

We focused on the step of data collection because it is the most privacy-critical in the personalization process. The collection of extensive knowledge about users' interests, behavior, demographics and actions is necessary for most user-adaptive systems. However, this could provoke privacy fears that limit consumers' willingness to share information.

We looked at privacy issues from a user's standpoint and not from a legal point of view. While privacy legislation should serve and protect the users' interests, user concerns should be a central starting point for the legislative process.[1] For a recent discussion of privacy legislation in different countries we refer to the International Survey of Privacy Laws and Developments (Electronic Privacy Information Center 2002).

Data Sources

The amount of personal data that is available online has rapidly increased over the years. Individuals often transmit personal information online, either actively by submitting data (e.g. a shipping address for books), or passively, by leaving electronic traces in log files both at the server side as well as in the network. Improved accessibility of data – not only from the World Wide Web but also from multiple user touch points and external data sources – have further increased the amount of information available about individuals.

[1] This does not seem to be very much to be the case at the moment: studies suggest that legislative actions seem to only have a marginal impact on consumer concerns (EU/Interactive Policy Making, 2002)

Kobsa (2001) partitions data types into *user data*, *usage data*, and *environment data*. User data denotes information about personal characteristics of the user, while usage data is related to a user's (interactive) behavior. *Usage regularities* are based on frequently re-occuring interactions of users. Environment data focuses on the user's software and hardware and the characteristics of the user's current locale.

Personalization systems often need to acquire a certain amount of data before they can start adapting to the user. Thus, they are often only useful in domains where users engage in extended (and most often repeated) sessions of system use. They may not be appropriate for infrequent users with typically short session.

No.	Input Data of User-Adaptive Systems	Examples of User-Adaptive Systems
A) User Data:		
I	Demographic data	Personalized Web Sites; Software Providers: e.g. Broadvision, Personify, Kana etc.
II	User Knowledge	Kobsa & Wahlster 1989; Kok, 1991; McTear 1993; Sales Assistant (Popp & Lödel, 1996); Metadoc, Boyle & Encarnacion, 1994; KN-AHS (Kobsa *et al.,* 1994); SETA (Ardissono & Goy 1999, 2000b); Ardissono *et al.*, 1999
III	User Skills and Capabilities	Unix Consultant (Chin, 1989), Küpper and Kobsa (1999); AVANTI (Fink *et al.*, 1998)
IV	User Interests and Preferences	Recommender systems, e.g. in the used car domain (Jameson *et al.* 1995), in the domain of telephony devices (Ardissono & Goy, 1999), (Resnick & Varian, 1997)
V	User Goals and Plans	Plan Recognition (Lesh *et al.,* 1999) ; PUSH (Höök *et al.*, 1996), HYPERFLEX (Kaplan *et al.*, 1993)
B) Usage Data:		
VI	Selective Actions	WebWatcher (Joachims *et al.*, 1997); HIPS (Oppermann & Specht, 1999, 2000), Adaptive Graphics Analyser (Holynski, 1988)
VII	Temporal Viewing Behavior	Joerding, 1999; Joerding *et al.*, 1998; Konstan *et al.*, 1997; Morita & Shinoda, 1994; Sakagami *et al.*, 1998
VIII	Ratings	Firefly (Shardanand & Maes, 1995), Syskill and Webert (Pazzani & Billsus, 1997), GroupLens (Konstan *et al.*, 1997)
IX	Purchases and Purchase-related actions	Amazon.com, e.g. suggestions of similar goods after purchase
X	Other confirmatory and disconfirmatory actions	Saving, printing documents, bookmarking a web page etc. (Konstan *et al.* 1997), Zdnet.com
C) Usage Regularities:		
XI	Usage Frequency	Adaptive icon toolbar (Debevc *et al.,* 1996); Flexcel (Krogsæter *et al.*, 1994; Thomas & Krogsæter, 1993); AVANTI (Fink *et al.*, 1998)
XII	Situation-action correlations	Interface agents, eg. for routing incoming mails (Mitchell *et al.* 1994), (Maes, 1994), (Kozierok & Maes, 1993).
XIII	Action Sequences	Recommendations based on frequently used action sequences and frequent action sequences of other users, prediction of future user actions
D) Environment Data:		
XIV	Software Environment	Browser Version and Platform, Availability of plug-ins, Java and JavaScript
XV	Hardware Environment	Bandwidth, Processing Speed, Display Devices, Input Devices
XVI	Locale	Users' current location, Characteristics of usage locale

Table 1: Summary of user-adaptive systems (Kobsa et al. 2001)

Privacy Surveys

We looked at 30 surveys or summaries of survey results primarily from 2001 and 2002. Most of the studies focus on users' privacy concerns on the Internet.

Eleven surveys included all questions and were thus classified as *full reports*. Six studies provided an extensive discussion of survey results and were marked as *elaborate executive summaries*. For ten studies, factual executive summaries were given. For three studies, only press releases were available. The full names of the organizations responsible for the survey, survey names, dates of appearance, populations surveyed and source types can be found in a separate table, which will be part of a more elaborate paper version.

In Table 2, we collected central user responses from the regarded studies and assessed their potential impacts on personalized systems. We distinguished several categories of user statements addressing different aspects of privacy. *Privacy of personal information in general* and *privacy in a commercial context* were distinguished. Statements in the first category have a direct impact on personalized systems requiring personal information, whereas statements in the latter category primarily affect e-commerce in general and specifically personalized systems in an e-commerce environment. *Tracking of user sessions* and the *use of cookies* were

listed separately because user statements in this category influence user-adaptive systems requiring usage data. A few studies focus on *e-mail privacy*, which could have an impact on user-adaptive systems dealing with e-mails. Two studies directly addressed the topic of privacy and personalization (Mabley 2000; Personalization Consortium 2000). They are highly interesting because they affect most personalization systems.

Questions related to more general privacy-related topics in society were listed separately and are not addressed in this paper. They deal with legislation and effects on public opinion. Three of them are related to reactions on terrorism. Categories of user statements pointing out how companies currently address privacy and how Internet users favor privacy policies is also part of future work.

	Consumer concerns that may influence Personalization Systems	**Respondents and Survey (in brackets)**	**Systems mainly affected**
Personal Information in General	Internet Users who are concerned about the security of personal information (name, address, income etc.)	83% (CD, UCO), 70% (Gartner), 25% (DTI), 72% (UMR), 84% (Fox et al.)	I-V
	People who are concerned about the sharing of credit card information	89% (CD, UCO), 83% (Gartner), 83% (Ipsos Reid/Globe), 37%, depends on Internet experience (DTI), >89% (UCLA)	e-commerce in general
	People who have refused to give information to a web site	82% (Culnan)	I-V
	Internet users who have shared personally identifiable information at a Web site	82% (Ipsos Reid), 54% (Pew), 97% (PC)	I-V
	Online users who think that sites who share personal information with other sites invade privacy	49% (CD)	XIII
	Internet users who would never provide personal information to a web site	27% (Pew)	I-V
	Internet users who supplied false or fictitious information to a web site when asked to register	34% (Culnan), 24% (Pew)	I-V
Personal Information in a Commercial Context	Frequent Internet purchasers who are concerned about the security of personal information	69% (Ipsos Reide/Globe)	I-V
	People wanting businesses to seek permission before using their personal information for marketing	90% (Roy Morgan Research)	I-V
	Internet users who are very concerned about the security of bank and brokerage account numbers when doing online transactions	86% (Gartner)	I-V
	Non-online shoppers who weren't purchasing online because of privacy concerns	66% (Ipsos Reid/Globe), 68% (Interactive Policy), 64% (Culnan)	e-commerce in general
	Online shoppers who would buy more if they were not worried about privacy/security issues	37% (Forrester), 20% (DTI)	e-commerce in general
	Shoppers who abandoned online orders because of privacy reasons	27% (CD, UCO)	e-commerce in general
	People who are concerned if a business shares their information for a different than the original purpose	91% (UMR), 90% (Roy Morgan)	IX, XIII
	Internet Shoppers who experienced credit card fraud	2% (DTI), 3% (Pew)	e-commerce in general
	Users who have been cheated when they bought online	3% (Pew)	e-commerce in general
User Tracking and Cookies	People who are concerned about tracking on the Internet	60% (CD, UCO), 54% (Pew)	VI-X
	People who are concerned someone might know what web sites one has visited	31% (Pew)	VI-X
	Internet users who generally accept cookies	62% (PC)	VI-X
	Internet users who set computer to reject cookies	25% (Culnan), 3% (CD) (31% in warning modus), 10% (Pew)	VI-X
	Internet users who delete cookies periodically	52% (PC)	VI-X

E-mail Privacy	People who have asked for removal from e-mail lists	78% (CD, UCO), 80% (Culnan)	XII
	People who complain about irrelevant e-mail	62% (Ipsos Reid/Globe)	XII
	People who have received unsolicited e-mail	95% (CD)	XII
	People who have received offensive e-mail	28% (Pew)	XII
Privacy and Personalization	Online Users who see personalization as a good thing	59% (Harris 2000)	I-XVI
	Online Users who do not see personalization as a good thing	37% (Harris 2000)	I-XVI
	Types of Information users are willing to provide in return for personalized content	Name: 88%, Level of education: 88%, Age 86%, Hobbies: 83%, Salary 59%, Credit Card No.: 13% (CD)	I-XVI
	Types of information users would give to a web site agreeing that it would be shared with other web sites in return for personalized content	Promotions responded to: 56%, Products bought: 48%, Hobbies: 48%, age: 41%, Salary: 13%, Credit Card No.: 1% (CD)	I-XVI
	Internet users who think tracking allows the site to provide information tailored to specific users	27% (Pew)	VI, VII, VIII, IX, X
	Online Users who think that sites who share information with other sites try to better interact	28% (CD)	I-XVI
	Online users who find it useful if site remembers basic information (name, address)	73% (PC)	I
	Online users who find it useful if site remembers more information (preferred colors, delivery options, music etc.)	50% (PC)	I-V
	People who think banner ads and pop-ups are an invasion to privacy	35% (PC)	
	People who are willing to give information to receive an personalized online experience	51% (PC), 40% (Roy Morgan), >51% (Privacy&American Business)	I-XVI
	People who are bothered if web site asks for information one has already provided (e.g. mailing address)	62% (PC)	I-V

Table 2: Central User Statements in Survey Sample (CD = Cyber Dialogue; DTI = Department for Trade and Industry; PC = Personalization Consortium)

Discussion of the Results

A significant concern over the use of personal information can be seen throughout most of the studies. Quite a few users claim having supplied false or fictitious information to a web site when asked to register (Culnan and Milne 2001; Fox, Rainie et al. 2000). A significant percentage of Internet users indicated that they would never consider providing personal information to a web site (Fox, Rainie et al. 2000). This severely affects personalized systems that require users to submit user data (like systems that need personal information such as age, zip code, name etc. in order to create a personalized user experience).

Almost half of the Internet users think that sites that share personal information with other sites invade privacy (Mabley 1999). This has a severe impact on central user modeling servers that collect and share data with different user-adaptive applications (Kobsa 2001a), unless sharing can be controlled by the user (Schreck and Kobsa, 2003).

Furthermore, users' opinions about *tracking* and *cookies* affect personalization systems based on usage data. More than 50% of Internet users are concerned about Internet tracking (Fox, Rainie et al. 2000; CyberDialogue 2001). A significant number claimed they would set their browser to reject cookies (Culnan and Milne 2001; Mabley 2000; Fox, Rainie et al. 2000) and more than half of the users stated they would delete cookies periodically (Personalization Consortium 2000). This directly affects machine-learning methods dealing with log data since sessions of the same user cannot be linked any more.

In the category of E-mail privacy, 62% of the users complain about irrelevant e-mail (Ipsos Reid 2001). Almost every Internet user has already received unsolicited e-mail (Mabley 2000). This especially affects personalization systems that deal with personalized e-mail as described in Mitchell et al. (1994) and Maes (1994). Mitchell and Maes propose machine learning methods that learn users' preferences automatically and could perform customized tasks such as prioritize, delete, forward and sort mail on users' behalf. The findings in the studies show that many e-mail personalization systems that are applied in practice are not yet able to address user needs specifically enough to evoke positive reactions among users.

The last category of user statements in Table 2 directly reflects users' attitudes towards personalization, and their willingness to share personal information in return for personalized content. According to the studies, most users would share very personal information such as name, zip code, age and hobbies in return for a personalized user experience. However, most users would not share sensitive data such as credit card numbers, household income or salary. Internet users also demonstrated less commitment to providing personal information in return for personalized content when a web site would share this information with other sites (Mabley 2000). A study by the Personalization Consortium (2000) with 4500 users identifies pieces of information users would provide to a web-shopping site that uses the information for personalization, in comparison to a site that does not offer any personalized features[2]. In another study, Fox et al. (2000) showed that the tracking of users is not welcome even when users receive personalized content in return. A reason could be the lack of knowledge about the actual impact of tracking on users' privacy.

Critical Discussion of the Methodology

A general problem of this meta-analysis is the lack of comparability of the studies: small differences in the wording of the questions, their context in the questionnaires, the sample size, the recruiting method and the demographic characteristics of respondents make user statements difficult to compare. Nevertheless, this analysis tried to provide a more objective overview of privacy concerns than it could be expected from a single study.

Harper and Singleton (2001) criticized privacy studies more generally: they point out the use of manipulative questions, imprecise terminology (e.g. the term "privacy" is often used as a synonym for security, or a panacea against identity fraud or spam) and a lack of trade-offs between privacy and other desires.

In fact, the users' stated privacy preferences and the actual behavior might diverge: for example, 76% of survey respondents in (Gartner 2001) claimed that privacy policies on web sites were very important to them, but in fact users barely view such pages when they visit web sites. In an experiment, Spiekermann et al. (2001) demonstrated that users often do not live up to their self-reported privacy preferences. Users' willingness to share information with a web site also depends very much on other factors such as the usability of a site, users' general level of trust towards a site, and the company or industry to which the site belongs (Princeton Survey Research Associates 2002). For example, company reputation makes 74% of the surveyed Internet users more comfortable disclosing personal information (Ipsos Reid 2001). The development of a general user model that describes factors influencing consumers' willingness to share information would be an interesting research topic.

Future Directions for Privacy-Preserving Personalization

Our meta-analysis of privacy surveys demonstrated that users' privacy concerns are significant and have a direct impact on personalization systems In order to alleviate user concerns regarding privacy in personalized systems, two different directions seem to be possible. In one approach, users receive guarantees that their personal data will be used for specific purposes only, including personalization. Such guarantees can be given in, e.g., individual negotiations or publicly displayed privacy commitments ("privacy policies"), or they can be codified in privacy laws. It is mandatory though that these privacy promises be guaranteed. Ideally, they ought to be enforced through technical means (Agrawal et al. 2002; Karjoth et al. forthcoming; Karjoth and Schunter 2002; Fischer-Hübner 2001), or otherwise through auditing and legal recourse. Since individual privacy preferences may considerably vary between users, Kobsa (2003) proposes a meta-architecture for personalized systems that allows them to cater to individual privacy preferences and to the privacy laws that apply to the current usage situation. The personalized system would then exhibit the maximum degree of personalization that is permissible under these constraints.

The other approach is to allow users to remain anonymous with regard to the personalized system and the whole network infrastructure, whilst enabling the system to still recognize the same user in different sessions so that it can cater to her individually (Kobsa and Schreck, 2003). Anonymous interaction seems to be desired by users (however, only a single user poll addressed this question explicitly so far (GVU 1998)). One can expect that anonymity will even encourage users to be more open when interacting with a personalized system, thus facilitating and improving the adaptation to this user. The fact that privacy laws do not apply any more when the interaction is anonymous also relieves the providers of personalized systems from restrictions and duties imposed by such laws (providers may however choose to observe these laws nevertheless, or to give other privacy guarantees on top of providing anonymous access). Finally, anonymous interaction is even legally mandated in some countries if it can be realized with reasonable efforts (EU 2002).

It is currently unclear which of these two directions should be preferably researched due to the fact that one is better suited than the other to reconcile personalization and privacy concerns. Each of the two alternatives has several advantages and disadvantages. Neither of them is a full substitute for the other, and neither is guaranteed to alleviate users' privacy concerns which ultimately results from a lack of trust. For the time being, both directions need to be pursued.

[2]These users were self-selected from an opt-in distribution list. It may therefore be the case that they valued privacy less than the general user population.

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Appendix

	Consumer Statements	Respondents and Survey Number (in brackets)
Company View on Privacy	Companies which do not store personal data in an encrypted form	55% (18)
	Companies who do not give access to personal data for verification and updates	40% (18)
	Companies who share customer information to third parties	15%+9% (with consent) (18)
	Fin. Inst. which share banking customer information with unaffiliated third parties	34% (15)
	Sites that collect some sort of personal information	67% (26)
	Companies that exercise their legal right to monitor employees' e-mail and Internet connections	62% (11)
Privacy and Society	New laws need to be written to protect online privacy	62% (19)
	Percentage who felt that data protection laws in the EU offered a good-to-high level of protection	<50% (9)
	Acceptance of extensive public and electronic surveillance for counter-terrorism	Ranges from 81-93% (T1)
	Concern that proper standards, institutional safeguards, and target-boundaries may not be instituted	About 70% (T1)
	Internet Users Trust of Organizations	Lowest for companies that sell products (2)
	Users who feel that submitting information online is riskier than by telephone	60% (20)
Privacy Policies	Internet Users in favor of "Opt-in" privacy policies	86% (22)
	People who find privacy policies very important	76% (12), 58% (21)
	People who have read privacy policies (most of the time/all of the time)	35% (12), 51% (21), 36% (23)
	Stated privacy policy makes them feel more comfortable with providing identity information	55% (3)
	Sometimes/always read privacy notices (depends on e.g. experience, sort of information)	48% (14)
	People who find credit card protection policies very important	93% (12)
	People who have read credit card protection policies (most of the time/all of the time)	57% (12)
	People who find statement about how personal information is handled very important	92% (2)

Table 3: Central User Statements Concerning a Company View on Privacy, Privacy and Society and Privacy Policies

Pieces of information user would provide a web-shopping site…	…that does not provide any personalized features		…that uses the information for personalization/ customization	
Name	3751	85%	4266	96%
Address	2642	60%	3600	81%
Credit Card Number	845	19%	973	22%
Income	855	19%	1508	34%
Job Title	1416	32%	2235	50%
Phone Number	1262	29%	1988	45%
Hobbies/Interests	2222	51%	3426	76%
Social Security Number	295	7%	270	6%
Mother's Maiden Name	607	14%	1001	22%
E-Mail Address	3856	88%	4232	95%

Table 4: Users Willingness to Share Data in Exchange for Personalized/Non-Personalized Information (21)

Users who would provide personal information	68%
Respondents who would agree to have their web site visits used	58%
Users would agree to have their online purchase information used	51%
Users who would bewilling to have their offline purchase information from catalogs and stores used	53%
Users who would agree to have their offline and online purchasing information combined	52%
Respondents who say they would agree to the combination of personal information, web site visits and on/offline purchases	53%

Table 5: Consumers' willingness to provide information about their preferences to receive personalized advertisements if they are given notice and choice (27)

No.	Survey Group and Title	Date	Population Surveyed	Source Type
1	Cyber Dialogue, UCO Software, "UCO Software To Address Retailers' $6.2 Billion Privacy Problem"	October 2001	500 Internet Users	Executive Summary
2	Webwatch, Princeton Survey Research Associates, "A Matter of Trust: What Users Want From Web Sites"	January 2002	N=1500	Full Report
3	Gartner G2 "Privacy and Security: The Hidden Growth Strategy"	August 2001	7,000 US online adults	Executive Summary
4	Ipsos-Reid/Globe and Emailthatpays poll "Canadians' Love Affair with Email Continues", Canadian Inter@ctive Reid Report	October 2001	1000 Canadian Telephone respondents	Full Report
5	Ipsos-Reid/Globe and Mail/CTV poll "Online Security and Privacy Concerns on the Increase in Canada", Canadian Inter@ctive Reid Report	November 2001	1000 Canadian Telephone respondents	Executive Summary
6	Ipsos-Reid and Columbus Group., "Privacy Policies Critical to Online Consumer Trust", Canadian Inter@ctive Reid Report	February 2001	1000 Canadian Telephone respondents	Executive Summary
7	The First Amendment Center, ASNE, "Freedom of Information in the Digital Age"	April 2001	1005 US adults	Full report
8	Forrester Research "Privacy issues inhibit online spending"	October 2001	-	Press notice
9	Interactive Policy Making, EU, "Views on Data Protection"	September 2002	9156 Europeans	Full Report
10	Directorate General Enterprise Open consultation on "Trust barriers for B2B e-marketplaces"	-	103 answers from various organizations	Executive Summary (elaborate)
11	American Management Association "Workplace Monitoring & Surveillance"	April 2001	435 answers	Executive summary (elaborate)
12	Department for Trade and Industry "Informing Consumers about E-Commerce"	September 2001	2013 British adults	Full Report
13	RSGB "Study for the Information Commissioner's office"	March 2001	975 British adults	Executive Summary
14	Culnan, Milne "Survey on Consumers & Online Privacy Notices"	December 2001	2468 US adults	Full Report
15	Center for Democracy Technology "Online Banking Privacy"	July 2001	100 Financial Institutions	Executive Summary (elaborate)
16	Harris Interactive, "A Survey of Consumer Privacy Attitudes and Behaviors"	December 2000	1026 US telephone respondents	Full Report
17	UMR, "Privacy Concerns Loom Large"	October 2001	750 New Zealanders	Press Notice
18	Deloitte Touche Tohmatsu "Dimension Data Privacy Survey"	September 2001	250 US companies	Executive Summary
19	Pew Internet Tracking Report "Fear of Online Crime"	April 2001	2096 Americans	Executive Summary (elaborate)
20	Cyber Dialogue "Online Privacy Survey", Part II and III	1999 and 2000	500 US online adults	Executive Summary

				(elaborate)
21	Personalization Consortium "Personalization and Privacy"	April 2000	4500 Web Users	Full Report
22	Pew Internet and American Life Project "Trust and Privacy Online"	August 2000	2117 Americans, (1017 online)	Full Report
23	Harris Interactive, "Privacy Leadership Initiative, Privacy Notices Research"	November 2001	2053 US residents	Executive Summary
24	Roy Morgan Research "Privacy and the Community"	July 2001	1524 Australian telephone respondents	Executive Summary (elaborate)
25	UCLA, "The UCLA Internet Report, Surveying the Digital Futire, Year Two"	November 2001	2006 American Interview Respondents	Full Report
26	Consumers International, "Privacy@Net, An International Comparative Study of Consumer Privacy on the Internet"	January 2001	751 Consumer Web Sites	Full Report
27	Privacy & American Business, "Personalized Marketing and Privacy on The Net: What Consumers Want"	November 1999	474 Internet Users	Executive Summary
Studies related to terrorism				
T1	Harris Interactive, "The Harris Poll #49"	September 2001	2x 1012 US Telephone respondents	Executive Summary
T2	Ipsos-Reid/Globe and Mail/CTV poll "Terrorism Threats"	October 2001	1000 Canadian Telephone respondents	Executive Summary
T3	IT Association of America: "Keeping the Faith: Government, Information Security And Homeland Cyber Defense"	December 2001	800	Press Notice

Table 6: Summary of Survey Sample