

The Information Sharing Report



This document is a report of the Kantara Initiative's Information Sharing Work Group based on a comprehensive literature review, research and report by Mark Lizar, with additional contributions from Joe Andrieu, Judi Clark, and Iain Henderson.

This is a working draft, released for comment by interested parties. Send comments to joe@switchbook.com or post to the ISWG mailing list at wg-infosharing@kantarainitiative.org.

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Information Sharing

Information Sharing Work Group

The Information Sharing Work Group¹ (ISWG) at the Kantara Initiative² seeks to enable individuals to share information online under specific permissions.

This sharing should fuel a new class of applications that use dynamically provided data to automatically personalize services. Our contention is that when individuals are able to set usage policy for information they give to service providers, individuals will share higher quality and more sensitive information, more often. Also, by being able to use a canonical source for commonly requested information, the quality and efficient use of that information is likely to improve.

We hope to increase the rate and quality of information sharing by making it easier to share in a secure manner and increasing the trust that individuals have in information sharing.

Information Sharing Overview

This report examines the value of information sharing, where individuals provide information to service providers, typically in exchange for some added value like enhanced services. For example: giving a Search engine your GPS location to enable local search, telling a service your birthday so they can provide birthday reminders to your friends, or simply publishing a status update or a blog article so an online service can publish it to the world.

Shared information can also be information created or curated by the disclosing party and it may or may not necessarily be about the disclosing individual. This kind of information drives services like Flickr, YouTube, and Wikipedia as well as blogs and status updates at Facebook and Twitter.

When this information contains personally identifiable information (PII), it comes under strict protection and scrutiny. Sometimes it contains nearly meaningless trivia. Sometimes the aggregation of seemingly innocuous information can reveal private details presumed safe from public eyes.³ Because of this relationship between shared information and personal

¹ The information Sharing Work Group is an effort hosted by the Kantara Initiative. The Charter can be found at <http://kantarainitiative.org/confluence/display/infosharing/Charter>.

² Kantara Initiative (formerly Liberty Alliance) is a pioneering community focused on the development of global recommendations in identity management.

³ In 2006, AOL released millions of search queries for over 600,000 AOL users to academic researchers, believing they had appropriately "anonymised" the data. Reporters from the New York Times were able to de-anonymise the data and identify specific individuals from their presumed anonymous Search history. (Barbaro and Zeller 2006)

identity, our work in information sharing is intimately tied to recent advances in identity and data management architectures.

This report aims to describe the emerging information sharing phenomenon, illustrate its challenges, discuss working examples and provide recommendations to further research and development.

Today, 26.6% of the world's population is online (Miniwatts Marketing Group, 2010), and the global information base will double every 11 hours in 2010. (IBM, 2006) A significant portion of this data is shared information, provided by individuals. (Nielson, 2010) This digital information sharing is dramatically challenging societal norms of privacy and information control as intimate profiles of people are commoditized and stored for unknowable future uses. This presents great risk as people trade personal information for what are otherwise considered free services. Ultimately, people trade their attention, demographics, current location, and other details of their private lives for a variety of online and offline services. As a result, detailed profiles and aggregates of personal information become available in significant volume for analysis and action by anyone willing to pay the going price. The consequences of this vast personal data sphere—which is essentially outside the control of individuals today—are not yet clearly understood.

Identity is at the core of information sharing. Even when individual bits of information appear to be suitably "anonymous," they can in aggregate become dangerously revealing. Andrew Churchill aptly explains that, "[p]rivacy and identity are often grouped together as a single issue by virtue of information needing to be identifiable and associated with an individual for it to be a privacy concern." (Churchill, 2009: 131)

Our research indicates that individuals would benefit from having greater control of their information sharing relationships. When using the Internet, greater control for the individual reduces the risk inherent in using online services. This report describes the value of distributed control of information, focusing on person-to-organisation sharing.

"[C]ustomers can retain control over their personal and transactional information, they decide at what time, with what information, and with what firms, they interact and share information to complete any phase of the Customer Service Life Cycle." (Watson et al, 2003: slide 3)

The Information Industry

The information industry⁴ is going through rapid evolution as the Internet transforms personal, corporate, and governmental information systems. A significant, recent part of that evolution is the rapid growth of proactive

⁴ Information industry as we mean it includes information services, database companies, analytics firms, online advertisers and advertising services, marketing firms and networks, customer relationship management software and services, and those explicitly involved in the management of information.

sharing of information by individuals using services like Facebook, Twitter, YouTube, Foursquare, Blogger, and Google.

In the industrial age, information had been largely centralised in proprietary databases and used to manage large public and private sector organisations. It made sense that organisation-centric information policies were the norm. Organisations were the ones burdened with large service infrastructures to manage and communicate with customers. The development of policies to facilitate commerce and reduce transaction friction (e.g. Terms of Service Agreements (TOS or TOSA), Privacy Policies (PP), Acceptable Use Policies (AUP) and so on) protected a significant investment in information technology. These policies were designed to minimize risk and liability and maximize the potential value of information to the organization.

Customer Relationship Management (CRM) refers to a business process that gathers and analyzes information about customers in support of advertising and marketing services. CRM is based on finding, acquiring, welcoming, developing and retaining a customer relationship, balanced with how much revenue/profit comes from it. The global market for CRM applications and business services alone is currently estimated to be close to a \$15 billion a year industry in 2010. (Lauchlin, 2009) However, Henderson points out that traditional CRM manages "relationships" that are almost entirely one sided. Only one of the parties—the supplier—has sophisticated relationship management tools in place. The power they generate is used to extract value from the buyer, not necessarily to build a win-win relationship. (Henderson, 2009)

In the first part of this era of centralized information, a company's data was a core proprietary asset, built as a unique competitive advantage largely through the company's own efforts at data gathering and analytics. In the mid-80s, the rise of sophisticated Information Service Providers enabled corporate Marketing Information Systems and their descendents, Customer Relationship Management systems to use data about present and potential customers, purchased from outside vendors. This led to a rapid rise of the multi-billion dollar consumer information industry.

The Internet and the World Wide Web took the information industry from essentially isolated information services run by major organizations as a means to run internal operations, to a widespread internetwork of diverse services facilitating business-to-business, business-to-consumer, and consumer-to-consumer interactions. Corporations and governments are no longer using information technology just to manage their own activities, they are using it to reach out to their constituents and stakeholders and provide services external to the organization.

Many of the most popular new services are based on "user-generated content" rather than providing access to proprietary content or services. As

users create content that drives these services, they are contributing significant information that, in aggregate, benefits other Internet users.

An example of this is Wikipedia, searched 375 million times a day in May. (Wikimedia, 2010) Wikipedia illustrates the power of shared, aggregated information—a power now available to millions of people. In comparison, Google receives over 2 billion searches a day in 40 different languages, (BBC, 2010) while YouTube gets more than 2 billion views a day. (YouTube, 2010)

This is predicted to continuously increase as overall IP traffic is expected to grow at a compound annual growth rate of 34 percent, and quadruple from 2009 to 2014. In 2014, global IP traffic will reach 767 exabytes⁵ per year or 64 exabytes per month. (Cisco, 2010)

The Rise of Information Sharing

The advancements in personal and mobile computing over the last two decades⁶ have greatly decentralised the access to, storage of, and use of digital information. In the resulting internetworked digital world, industrial age approaches to information management are rapidly becoming outdated. Typically, they limit information sharing, often lack contextual integrity, and actively minimize the consideration required for individuals to effectively balance the social, legal and economic risks of their online interactions.

The first generation of services built on shared information focused on "user-generated content" and followed a quintessentially industrial model: accumulate data or content in a central location using an organization-centric Terms of Service, then package & redistribute that content in a way that creates value for both users and the company. This is the model of Google, who built an index of content based on websites built by others, and of CompuServe and AOL which ran bulletin boards and discussion groups not just using the posted conversations of their users, but with users actually running the groups.

A second generation of services emerged based on facilitating focused distribution of information to one's social contacts. These "social networks" or "social media" sites rapidly caught on as people were able to pick and choose whose information they viewed and who, in turn, got to see their shared information.

Facebook emerged as the largest player in this space, with symmetrical relationships between "friends," and detailed profiles and sharing of photos, links, and status updates. Facebook has over 500 million active users who spend over 500 billion minutes per month interacting with over 160 million objects. The average user is connected to 60 pages, groups or events, and

⁵ 1 Exabyte = 1,048,576 terabytes

⁶ Technical advancements in personal and mobile computing include; storage space, computing power, connectivity, mobile devices.

creates 70 pieces of content each month. Overall, more than 25 billion pieces of content (web links, news stories, blog posts, notes, photo albums, etc.) are shared each month. (Facebook, 2010)

Twitter is arguably a close second, with short, 140 character text-only status updates that are shared centrally and can go direct to your phone via SMS, using an asymmetrical sharing model that allows people to "follow" the status updates of others who don't necessarily "follow" back.

The third generation of services based on shared information is just now emerging, allowing individuals to share information not just with other individuals, but with third-party companies and organizations seeking to provide enhanced online experiences. Facebook is also leading in this area with its popular application framework that allows companies to offer applications directly within Facebook's service; and with its recently launched Open Graph, which allows third party websites to access user's identities and friend lists at Facebook to customize their services. As of this report, "two-thirds of comScore's U.S. Top 100 websites and half of comScore's Global Top 100 websites have integrated with Facebook." (Facebook, 2010) There are more than 200 mobile operators in 60 countries working to deploy and promote Facebook mobile products. (Facebook, 2010)

This mistrust of how these online services might use personal information is fuelling an evolution from traditional, organisation-centric customer relationship management (CRM), to customer-managed interactions. (Watson et al., 2003) The move to customer-managed interactions is not only happening in commerce, but is also apparent in government as both the United Kingdom and the United States begin to embrace newer distributed identity systems.

In 2009, the Open Identity Exchange (OIX) trust framework⁷ was developed for the U.S. General Services Administration (GSA) on behalf of the Identity, Credential, and Access Management (ICAM)⁸ industry to support E-Government activities and to leverage industry-based credentials—which citizens already have for other purposes. Such a framework was required in order to ensure these credentials are trusted by various federal agency websites.⁹ (OIX, 2010) As a result the OIX trust framework is now seen as a useful starting point to develop an information sharing infrastructure and enable the extension and use of identity-related data across the Internet. This approach is being designed to help people to start interacting and accessing institutional and commercial information with an identity that is self-managed.

⁷ OIX Trust Framework. <http://openidentityexchange.org/>

⁸ Identity, Credential, and Access Management (ICAM)_
http://www.idmanagement.gov/drilldown.cfm?action=openID_openGOV

⁹ OITF is intended to enable Open Id to be usable with US institutions such as the National Institute of Health (NIH), the National Library of Medicine (NLM), and the Library of Congress (LOC)] to begin accepting OpenID and Microsoft Information Card credentials.

In the United Kingdom, the push back against centralised identity management and large inter-connected databases has had a clear impact in the political realm. The recently elected "coalition government" dramatically halted a national identity scheme and has launched a Freedom Bill (Number10, 2010) that indicates they will be decommissioning major centralised database projects that clearly weaken civil liberties. (Anderson et al., 2009) One driver of this trend has been "the data breach," i.e. the large-scale loss of personal data, typically from a centralised system run by a large organisation. The largest data breach in British History was by HM Revenue and Customs, which lost 25 million child benefit records in October 2007. From October 2007 to October 2008 there were an estimated 277 data breaches. This grew to 434 recorded data breaches recorded in the next year from October 2008 to October 2009. (Whitehead, 2009) Many of these high profile data breaches have served greatly to change perceptions, policies, and economics surrounding information regulation in British society.

The Value of Personal Information

Understanding the value of information sharing is difficult. Quantifying it is even harder. "The value of personal information is determined by how much it takes to relinquish it." (Solove, 2004:p.87) In Solove's book *The Digital Person*, he describes an information industry where the emphasis has been on the organisation's ability to gain access to personal information in order to better target direct marketing. Solove's research reveals that in 2001, direct marketing resulted in 2 trillion dollars in sales in the USA. (p.19) As a result "due to targeting, direct mail yields \$10 in sales for every \$1 in costs." (p.19) Solove points out that when aggregated, personal information is also valuable because it can be very revealing. He further notes, "The aggregation effect severely complicates the individual's ability to ascribe a value to personal information. In addition, the future uses of personal information are so vast and unknown that individuals are unable to make the appropriate valuation." (p.88)

Current research in the UK (illustrated in Figure 1) indicates that people have divergent opinions regarding the value of their personal information.

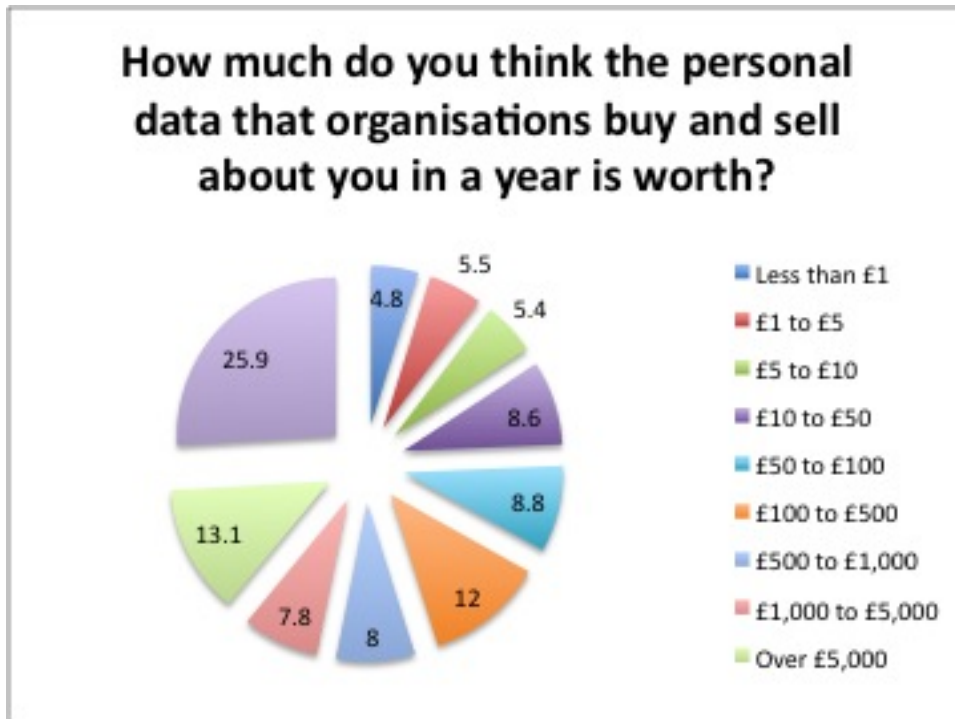


Figure 1: Guessing the Value of Personal Information (Mydex, 2010)

There is widespread confusion regarding the value of personal information. This confusion is well founded, in fact, as one transaction (e.g. a qualified sales lead for a new car acquisition) alone could easily be worth £50-£100.

Another way to look at the value of personal data is by the business cost it takes to maintain this information. Current estimates are that a data breach costs £64 per record in the UK. (Broersma, 2010) A large organisation might easily spend an average of £3 to manage and maintain one record per year. (Henderson, 2009) A news article (WGAL, 2008) provides insight into the value proposition inherent in the maintenance of the data. This article from the USA depicts a scenario where “billions are made off of loop holes in data protection in the USA.” In this article people are encouraged to opt out of credit card and insurance offers whilst the derivative information from these offers are shared with 3rd party affiliates.

One further way to look at the value of personal data is to look beyond the information bought and sold by data brokers to the more immediate, attention-based, personal interest information harvested while people surf the web. As people micro-invest their attention, time and personal information, value is co-created. This time, effort, and value, in the aggregate, is a huge investment in information sharing globally.

This bodes well for growth in advertising industries. Even as traditional web banner advertising declines online, behavioural-based advertising is growing rapidly. For example, Google's profits are up 37 percent in the first quarter of 2010. (Liedtke, 2010) The company has earned nearly \$2 billion in the first

quarter and is considered to be the leading company in what is expected to be a \$24 billion a year on-line advertising industry. (Lee, 2010)

Personal information is now being aggregated and mined on a massive scale to target advertising and direct marketing efforts. This is not what most people initially expected when they began using Internet-based services. As a result, regulators are becoming increasingly aware of potential abuse and exploitation of personal information that is now being shared at an unprecedented scale.

During the 1990's the Internet was seen as "the next industrial revolution." In a BBC interview for a 2010 documentary series called *The Virtual Revolution*, Andrew Keen explains that our demographics are driving advertising, recommendation systems, and Internet behaviour. "Behaviour-based advertising is effectively driving our digital identities." (BBC, 2010)

The migration of value and control of an individual's Volunteered Personal Information (VPI) (depicted in Figure 3) illustrates the change that information sharing control and management will have over time. Research by Mitchell et al. (2009) reveals that over the next 10 years the UK alone is expected to realise this potential through the emerging demand for VPI. The scale of the monetary value of VPI during this time is shown in the graph below. This graph illustrates four categories of VPI that are central to the individual in UK society and the growth in value these markets will have over the next 10 years.

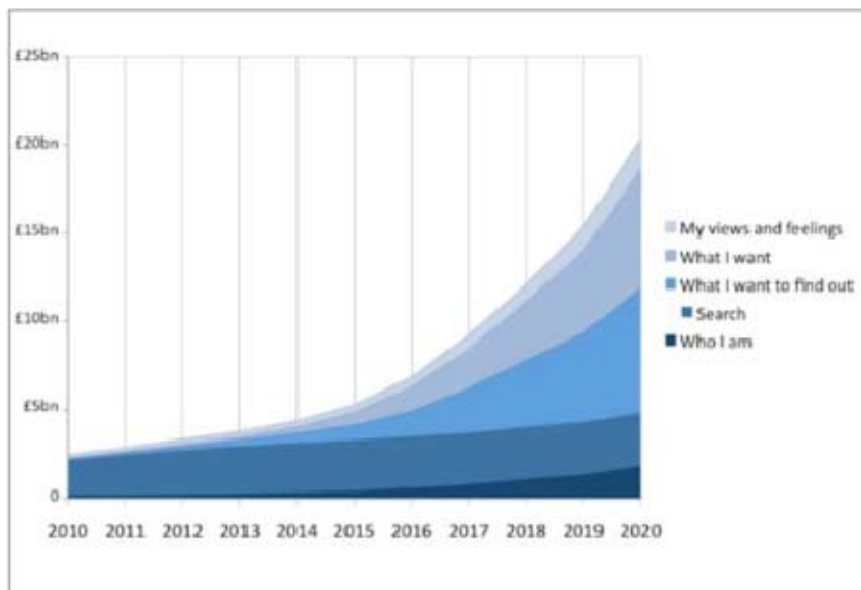


Figure 3. Growth of value in Volunteered Personal Information: This figure depicts the estimated value of VPI in the UK from 2010-2020.

Much of the value will be created in situations where customers manage their own information sharing with their suppliers. In turn, the suppliers seek to allow customers to manage their interactions with the suppliers. According to Mitchell, specific types of information are most suited to the volunteered or intentional information sharing approach between enterprise and individuals when the individual is the source of that data. (Mitchell et al., 2009) A list of these data types is shown in Appendix 1.

Conceptual Models and Technical Approaches

There are several different approaches for thinking about and implementing information sharing.

Volunteered Personal Information

Relationships that exist around controlling data become much more complex when sharing information. The diagram below is taken from the *Personal Data Eco-System* (Henderson, 2009). It illustrates five generic typologies of personal data and explains how information sharing could evolve over time.

1. **My data** (mine and only mine)
2. **Your data** (yours, and only yours – typically a supplying organisation)
3. **Our data** (jointly owned)
 - a. The data I brought to the relationship
 - b. The data you brought to the relationship
 - c. The data we co-create within the relationship
4. **Their data** (the data aggregators, with no direct relationship to the individual)
5. **Everybody's data** (public domain data, e.g. www.data.gov)

In the *Personal Data Eco-System*, Henderson displays the customers' commercial flows of digital information:

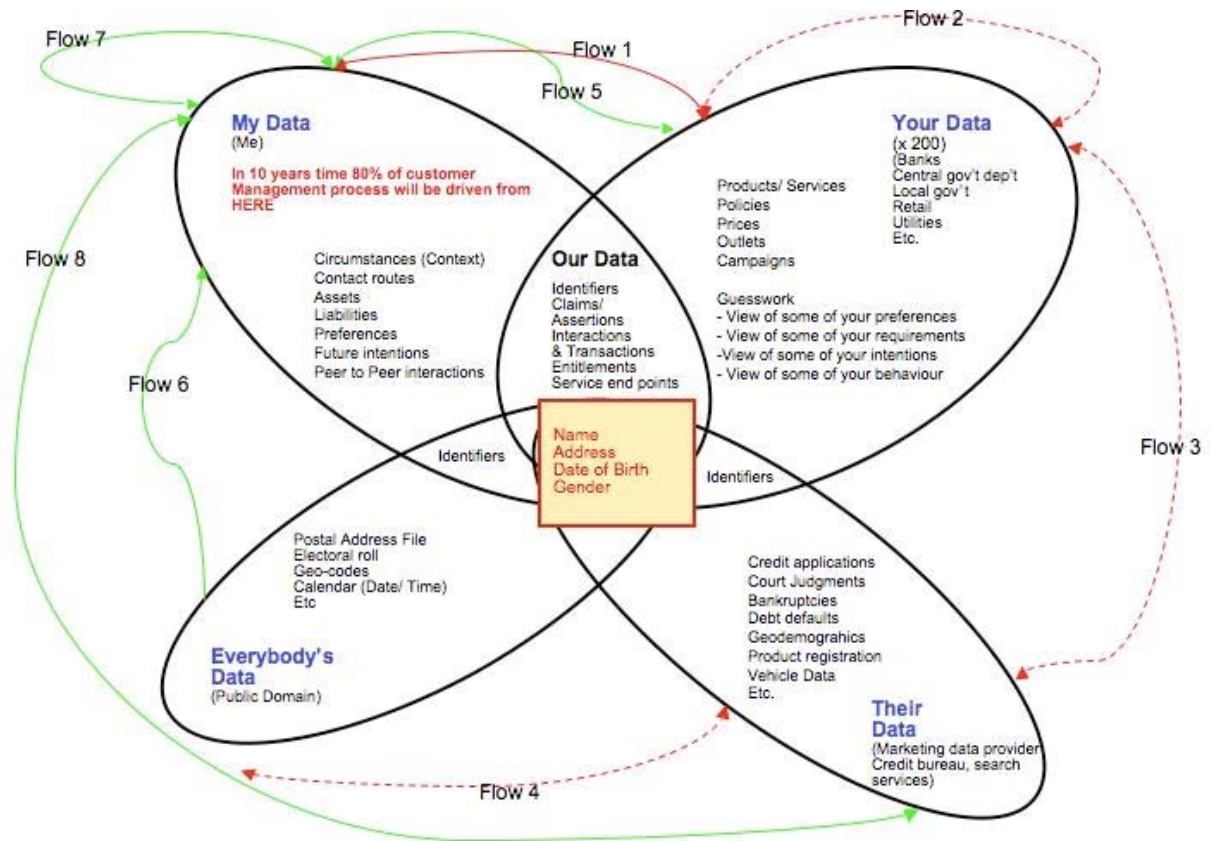


Figure 2: Data Relationships

Existing and future data flows:

Red lines = current flows, green lines = to emerge

[T]he individual and “My Data” can become the dominant source of information fed into customer management processes (e.g. buying intentions, verified changes of circumstance), and in doing so will eliminate vast amounts of guesswork and waste. (Henderson, 2009)

“My Data” has the key distinguishing feature that it can only be released under the power and control set by the individual—either overtly or derivably through positive action. (Henderson, 2009)

Edgar Whitley, a professor at London School of Economics, recognises that, “[I]n recent years there has been growing recognition that providing users with control over their personal data is an important aspect for maintaining trust in an online environment.” (Whitley, 2009:p.3) Whitley explains, “in an Internet enabled society it is increasingly important to understand how disclosed data is being used and reused, and what can be done to control this further use and reuse.” (p.5) Critically, Whitley points out that “consent to the processing of personal data is probably the most important mechanism that currently exists for determining how and when this data can be used.” (p.5) Clearly, informed consent is meaningless if the individual has no choice about providing consent in the first place. (p.5)

Revocation of consent introduces a new form of control over personal data that “has not been well studied in the literature or in the practice of informational privacy.” (p.6) Consideration of consent opens up our understanding of the nature of informational privacy and offers new opportunities (beyond anonymisation) for addressing the concerns individuals have about data handling.

From a better understanding of the dynamics of control in information sharing, an individual’s perceived risks should be considered in a comprehensive manner. In so doing, issues of trust can be addressed while increasing individual engagement and improving the quality of information.

A user-centric approach to identity management infrastructure (like that of the emerging OIX Trust Framework in the USA, mentioned earlier) equips individuals with new information-based relationship management tools akin to those currently available in the business-to-business market. These tools serve to level the deal-making playing field so both parties are more empowered to find mutually beneficial opportunities.

Vendor Relationship Management (VRM)

One community that is actively driving a conversation around customer-managed interactions is ProjectVRM. VRM stands for Vendor Relationship Management,¹⁰ and is the conceptual reciprocal to CRM. In contrast to enterprise software that helps large organizations make more money from consumers, VRM hopes to build tools that help individuals get more out of their relationships from vendors. (ProjectVRM, 2010)

VRM aims to “provide customers with both independence from vendors and better ways of engaging with vendors. With VRM operating on the customer’s side, CRM systems will no longer be alone in trying to improve the ways companies relate to customers. Customers will be also be involved, as fully empowered participants, rather than as captive followers.” A cornerstone of Searls’ approach to VRM is the idea of an emergent class of businesses he refers to as “Fourth Party Services” (Searls, 2009), which work on behalf of individuals to support their relationships with vendors.

Another VRM idea is the Personal Request for Proposals (pRFP). Based loosely on the big business practice of publishing Requests for Proposals (RFP) for procuring big-ticket items or major contract work, the pRFP is seen as an open platform for individuals to publish their intent to purchase a specific item, or even a shopping list of items. Rather than directing that pRFP to a single company, it would go through one or more pRFP brokers to any number of interested vendors. Each pRFP broker is acting as a Fourth

¹⁰ VRM is a project run by Doc Searls, a fellow at the Berkman Center. “By providing customers (and users) with their own tools for managing relationships with vendors, Doc sees VRM as “a way to fulfil one of the promises of The Cluetrain Manifesto” — the widely-cited website and book written in 1999 by Doc and three others. For more information, see <http://cluetrain.com/> — the book’s website.

Party Service on behalf of the individual, where the individual has complete control over which companies are allowed to view the pRFP and how the pRFP process proceeds. (ProjectVRM Wiki, 2009)

Also emerging from the VRM conversation is the notion of a Personal Data Store (PDS), a virtually distributable collection of information accessible by Vendors according to permissions set by individuals. A number of services already act as limited personal data stores, including Flickr, blogs, and IMAP and POP mail services. However, few of these services give users the fine grain control and robust identity management that is required for users to effectively publish something like a pRFP. The full potential of the personal data store requires user-controlled identity-moderated data stores, third party claims validators, legally binding access rights agreements, and open standards and protocols for communications between Vendors and personal data stores. (Andrieu, 2007a)

User Driven Services

Businesses and services of all types are also becoming more and more "user-driven," giving users greater authority and control in order to create more value for both individuals and the companies themselves. (Andrieu, 2009) Andrieu presents ten characteristics¹¹ of User Driven Services as a road map for companies seeking to leverage volunteered personal information effectively.

Services with these characteristics, Andrieu argues, will be best able to leverage emerging personal data architecture by building their services with the user as "the point of integration." This architecture puts volunteered personal information under the individual's control, yet seamlessly accessible by authorized vendors. This enables a personal data store to fuel user driven services in the cloud. (Andrieu, 2007b)

Andrieu also proposes that in order to realize information sharing, regulators and privacy advocates direct attention away from complex and distracting debates about data ownership toward a contractual information sharing agreement entered into at the point of sharing. He argues that such an agreement would bootstrap a regime for managing shared information independent of arguments about ownership. (Andrieu, 2010)

¹¹ Ten Characteristics of User Driven Services:

1. Impulse from the User
2. Control
3. Transparency
4. Data Portability
5. Service Endpoint Portability
6. Self Hosting
7. User Generativity
8. Improvability
9. Self-managed Identity
10. Duty of Care

Customer-Supplier Engagement Framework & Models

In the information sharing work group, the 'Customer-Supplier Engagement Framework' (ISWG, 2009) is used to map out 11 high level stages in a customer-supplier relationship. The following diagram of the framework illustrates current information flows, identifies where new and/or improved flows will be of use and what capabilities are required to enable these flows. This reverse flow (customer-to-business) of information can then be used to develop generic (Internet scale) processes like pRFP.

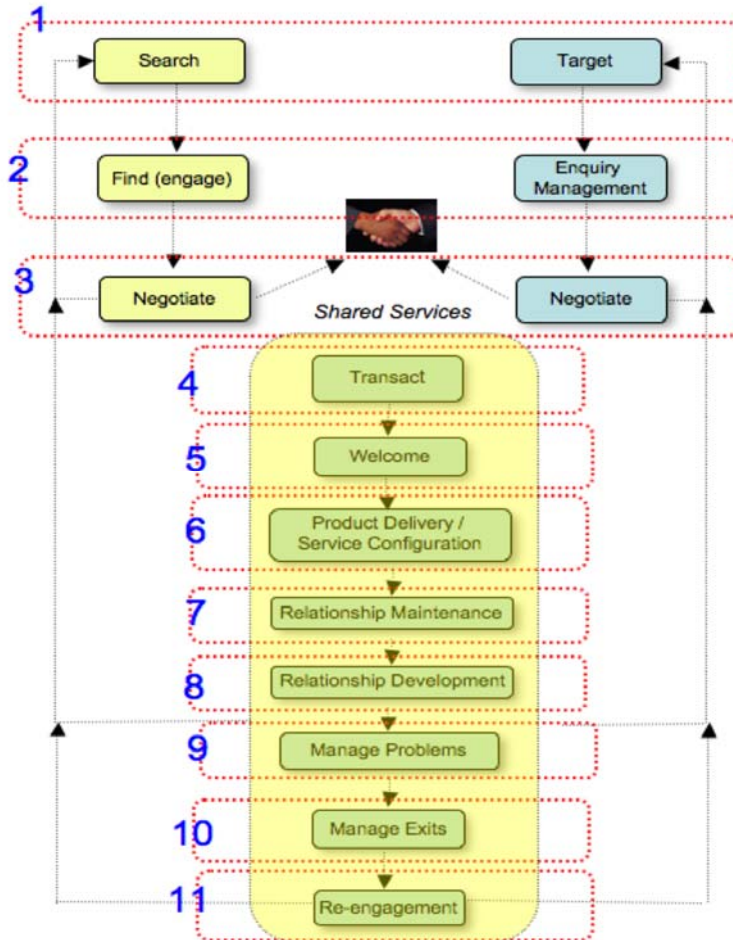


Figure 6: Customer-Supplier Engagement Framework
(ISWG, 2009)

User Managed Access (UMA)

The User Managed Access Work Group (UMA) at the Kantara Initiative has designed an information sharing protocol based on Oauth 2.0 (a core protocol for federated identity management) that offers controlled, granular, access to the information people share.

The purpose of the UMA Work Group is to develop specifications that let an individual control the authorization of data sharing and service access made between online services on the individual's behalf, and to facilitate interoperable implementations of the specs. (Maler 2010a)

User-Managed Access (UMA) involves the following entities:

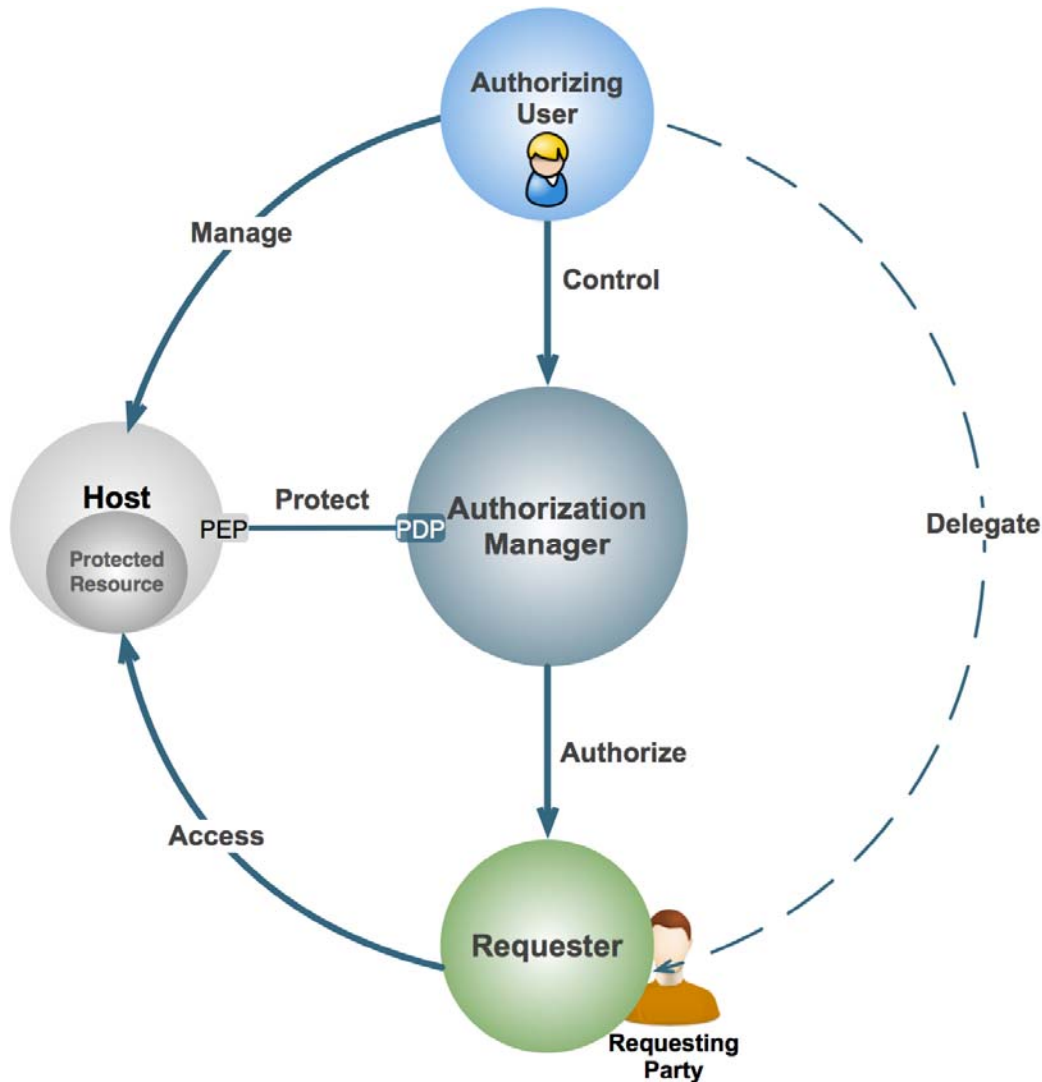


Figure 7: User-Managed Access

For example, a web user (authorizing user) can authorize a web app (requester) to gain one-time or ongoing access to a resource containing his home address stored at a "personal data store" service (host), by telling the host to act on access decisions made by his authorization decision-making service (authorization manager).

The requesting party might be an e-commerce company whose site is acting on behalf of the user himself to assist him in arranging for shipping of a

purchased item, or a friend who is using an online address book service to collect addresses, or a survey company that uses an online service to compile population demographics. (Maler, 2010b)

Challenges

Several key challenges must be overcome to effectively realize the promise of Information Sharing as envisioned in this report:

1. Privacy and Contextual Integrity: How does privacy work in the digital realm?
2. Trust: How do we establish and deliver on the trust required for people to share information?
3. Risks: What are the risks we must overcome?
4. Uncertainty and Ambiguity: How do we resolve the uncertainty and ambiguity—both inherent and transient—in this emerging field?
5. Regulation: How do current regulations affect information sharing and how should we regulate this domain moving forward?

Privacy and Contextual Integrity

Violations of privacy can be understood as violations of contextual integrity. The idea of contextual integrity refers to information disclosed in one trusted context that is revealed in another, possibly undesirable one. For example, we tell our doctor about an embarrassing problem and he tells his wife, who happens to know us from the PTA.

Context is vital to understanding notions of digital privacy. Databases and applications have inherent semantic limitations, due to a lack of context and historically questionable accuracy. Helen Nissenbaum's 'Contextual Integrity Framework' (2004) highlights how important context and accuracy works in a trustworthy society.

A central tenet of contextual integrity is that there are no arenas of life not governed by norms of information flow, no information or spheres of life for which 'anything goes.' The basis of privacy as contextual integrity is based on two "informational norms"--norms that 'govern these contexts of social life,' defined as norms of 'appropriateness' and 'distribution'. (Nissenbaum, 2004: p.106)

Management of shared information means that we must also manage the context in which the information is released and propagated. Within each context, there are purposes for which the information was provided—purposes that dictate the appropriate use and distribution of that information.

Ian Glazer and Bob Blakley (2009) of The Burton Group offer a principled approach to the development of information sharing practices for organisations. These principles begin with the understanding that privacy is

fundamentally contextual. Any question about privacy must be understood in the context of:

- The starting assumptions and principles of the parties
- The relationship between the parties
- The interaction between the parties where private information is shared
- The domain (e.g., sector, nation, etc.) in which the parties are interacting
- The societal norms to which the parties adhere (Glazer & Blakley, 2009:p.31)

For organisations, this principled approach is essential to allow people to properly manage their expectations about the use of information. Traditionally, individuals have done context management automatically, largely by moderating what they say, where they say it, and to whom they say it. The challenge is to enable the individual to control the context of information usage in the broader digital realm—where copying and distribution isn't just commonplace, it is innate to the medium itself. (Kelly, 2008)

Trust

Trust and control are interchangeable and in the absence of trust there is control. ... Trust in fact is a deficiency of control that expresses itself as a desire to progress despite the inability to control. ...[W]hile control is reducible to trust, trust cannot be reducible to control." (Cofta 2007:p.28)

Trust, which Cofta defined as "a leap of faith" (p.22), is difficult to translate to the online environment. People need an understanding about how information will be used, based on the context in which they reveal it. Unfortunately, websites and mobile phone apps are inherently new to society, and understandings and practices are still emerging. As a result, uncertainty about the use and potential abuse of information greatly reduces trust and limits the way in which people choose to share information.

Only 20 percent of Internet users say they read privacy statements, if provided, "most of the time." Only 5% have read a policy again for changes. (TRUSTe, 2006) "60% of online shoppers abandon their carts at some point during their shopping experience, mostly due to fear of identity theft, and almost half (44%) say they're less likely than they were just a year ago to trust a Web merchant with personal data." (Maier, 2009)

Morrone, Tontoranelli, and Ranuzzi (2009) produced an OECD Statistics Working Paper to explore the value of trust in society. Their work illustrated that inter-personal trust and institutional-trust are different concepts that need to be made operational in different ways. The need for distinguishing them lies in the fact that they enter people's lives in different ways, and that they have different effects on various dimensions of progress.

Trust is one of the dimensions of the framework to measure the progress of societies proposed by the OECD Global Project. In this framework, trust is considered as a key input into human well-being because it indicates the willingness of individuals to co-operate with others. As underlined in this paper trust has emerged as one of the best available measures of social capital and the evidence in this paper shows that trust displays close associations with a number of other dimensions of social progress. (Morrone, Tontoranelli, & Ranuzzi 2009: p.31)

Seligman (paraphrased in Lewis, 2009) supports this report with the argument that "there is a fundamental difference between *trust in people* (interpersonal relationships) and *confidence in institutions*."

[i]f a trusting act was based upon calculation of expected outcomes or on the rational expectation of a quantified outcome, this would not be an act of trust at all but an act based on confidence. This would be based upon the idea of confidence in the existence of a system that delivered what it promised. The suspension of reciprocal calculation is precisely what defines trusting relationships. (Seligman, 1997)

Accordingly, privacy attitudes and behaviours will change according to the level of trust or mis-trust (risk) people have with regard to the people or institutions with which they are interacting.

In the Trustguide (Lacohée et al., 2006: p.14-15), a qualitative trust research report, the authors found a very low level of trust with information communication technologies (ICT's) from the outset. Research participants revealed "as more data is gathered and stored electronically—particularly in central databases—and the more they use ICT mediated services, the more vulnerable they feel." The perceived risk of involvement with ICT increases with use, revealing that "the perceived risks and associated decision making processes that users are prepared to undertake in order to avail themselves of the advantages that technological advances afford are worthy of a good deal more attention." Research participants "commonly referred to 'risk' rather than 'trust' when describing their ICT mediated experiences."

The issues of risk and trust are examined in a Flash Eurobarometer research report consisting of a Europe-wide comparative privacy survey of consumer worry about data security. The authors found that "[a] large majority of those respondents who were Internet users reasoned that data transmission over the Internet was not sufficiently secure (82%), while only 15% of respondents trusted data security transfers over the Internet." (The Gallop Organization, 2008)

Lewis suggests that only discussions using motivation as a starting point can get it right. Regulation and legislation (data protection legislation, for example) or technologically based solutions (identity management solutions) can exacerbate rather than allay fears because they fail to take into account the trust relations underpinning them. (Lewis, 2009)

An individual's identity is generally very important to him/her. An individual-centric approach that starts with the individual in control enables information sharing interaction as a matter of trust. Starting with the point of control, a person has the choice of sharing his or her information. From a trust perspective, information sharing becomes a platform of confidence for addressing challenges the individual and the institution encounter.

A lack of trust in the online environment, however, is seriously hampering the development of Europe's online economy. The three of the top five reasons among people who did not order goods or services online in 2009 were: payment security concerns, privacy concerns, and trust concerns (Figure 3, below). The data protection regulatory framework aims to modernise all relevant legal instruments to meet the challenges of globalisation and to create technologically neutral ways of enhancing trust and confidence. Thus, citizens' rights are effectively strengthened. (Jaquet-Chiffelle & Buitelaar, 2009: 12)

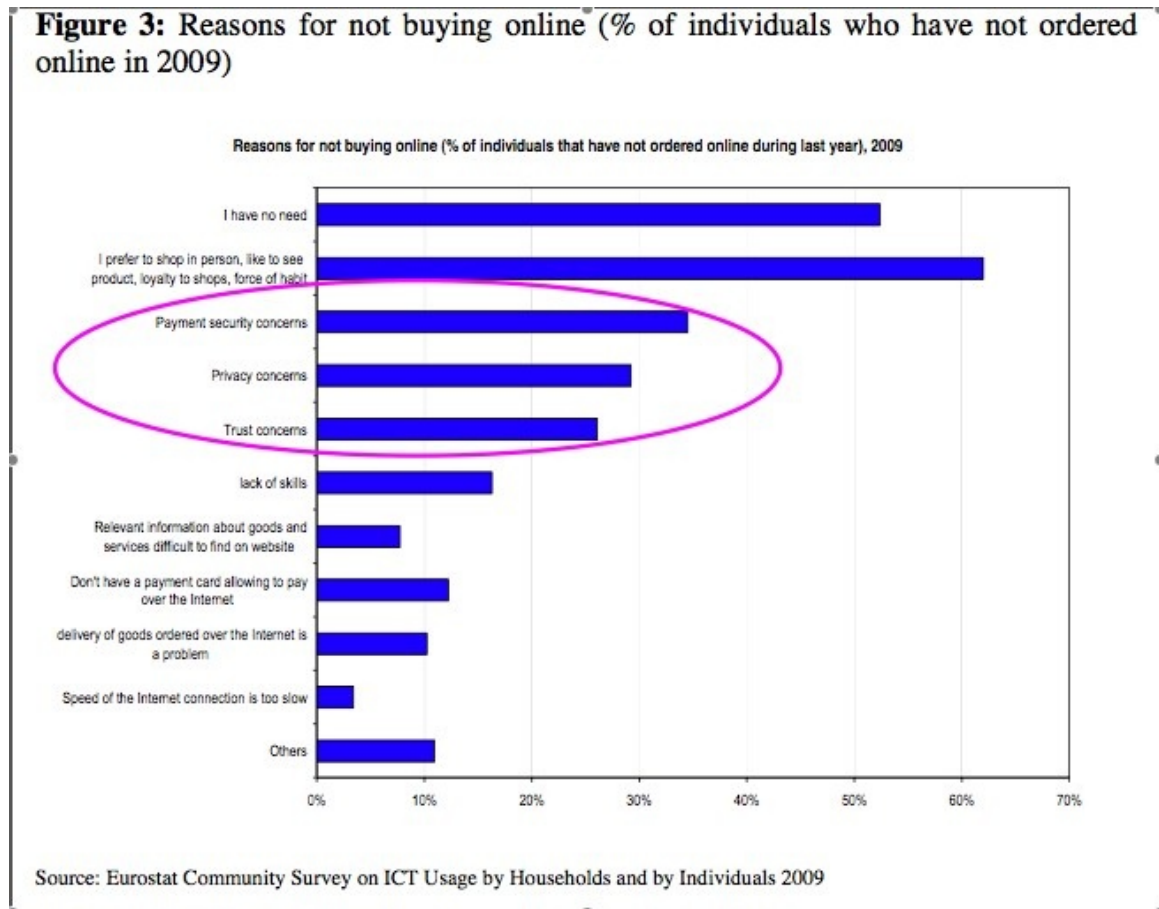


Figure 5: Reasons for not buying online

Risks

In the article *Reflections on Privacy, Identity and Consent in On-line Services*, Louise Bennett (2009) noted that "on the Internet we are all, to some extent, operating both in private and public." She pointed out that consumer engagement offers a perceived convenience, discounts, and satisfaction, which is weighed against the perceived risk of using online services.

In a report by the Australian Communications and Media Authority (2009), attitudes towards the use of personal information online were examined. This qualitative research report found that:

The type of, and level to which personal information is disclosed is seen to be within an individual's control and a matter of personal choice. More specifically, the decision to disclose personal information is based on an assessment of the benefits that will be afforded by the disclosure of such information, versus the risk inherent in such information being disclosed.

These risks are identified in this report are:

- Risks to personal safety and well being, or the safety of others (particularly children)
- Risk of identity theft
- Risk of financial loss/fraud/theft (could include malicious software)
- Risk of damage to reputation
- Risk of an invasion of privacy (access to personal information without permission)
- Risk of exposure to unwanted communications (spam or push marketing) (Australian Communications and Media Authority, 2009: 1-2)

The risks expressed here are well founded. *Privacy and Security of Personal Information*, Acquisti (2004) offers an example of how easily identification happens in common information sharing practices.

In the majority of real life instances the off-line and on-line identities of a same individual are linkable (or, in fact, linked) together because of legacy applications and existing infrastructures. Re-identification or "trail" attacks can expose an otherwise anonymised identity by matching data from different sources. In the Amazon case, I might login with a certain un-identifiable email address and then receive a certain cookie on my computer (two items potentially representing on-line identities). The cookie and the email address could then be linked to my credit card information (the off-line identity) released when I check-out. Now not only Amazon, but also possibly also other third parties may be able to link my on-line behaviour to my real identity. (Acquisti 2004:p.3)

Personal transparency created by an individual when using on-line services is significant. The level of surveillance people are now under is creating un-quantifiable risk. The Canadian Privacy Commissioner Jennifer Stoddart warns that Facebook exposes people to blackmail. (McNish & El Akkad, 2010) Not only are people vulnerable on Facebook, but recent policy changes that have made personal data more available to companies on Facebook have been implemented overnight and with out warning. (Kohnstamm, 2010a) What is clear is that people are not aware of their exposure. Companies are aggregating information without a defined purpose against Fair Information Practice (FIPS)¹² (BBC, 2010) and in contravention of data protection law. (Kohnstamm, 2010b)

Data retention and related data protection issues are not isolated to the commercial sphere; governments have a long history of developing regulation in this area. Beginning with the Universal Declaration of Rights in 1948, legislation has been evolving globally. Between 1973 and 1988, 18 OECD countries implemented privacy legislation or action. (Bennett, 1992: p.57) In Europe, Directive 94/95, data protection aimed at harmonising privacy regulation was implemented in the late 1990's (illustrating a mature discourse in information sharing regulation), although today adhering to these regulations continues to present significant challenges.

Perhaps this is why the Open Identity Trust Framework (OITF) report (Maler et al., 2010) stated that "it is clearly important to safeguard against ways in which a system with the potential to enable trusted transactions at Internet scale could be abused..." The OITF report concluded:

"The authors [of the OIX report] want to make it clear that trust frameworks for identity information portend to be so important for the future information society that they warrant extensive scrutiny, participation, and feedback from a wide representation of stake holders." (Maler et al., 2010: p.14)

Uncertainty and Ambiguity

Privacy is more difficult to "sell" than to protect. There is considerable ambiguity of the very concept of privacy. Privacy means different things to different people, including the scholars who study it. Hence "protecting privacy" is a vague concept. (Acquisti 2004: p.2) To an extent, a close look at privacy requires an understanding of humility.

¹² Over the past quarter century, government agencies in the United States, Canada, and Europe have studied the manner in which entities collect and use personal information -- their "information practices" -- and the safeguards required to assure those practices are fair and provide adequate privacy protection. The result has been a series of reports, guidelines, and model codes that represent widely accepted principles concerning fair information practices. (28) Common to all of these documents [hereinafter referred to as "fair information practice codes"] is five core principles of privacy protection: (1) Notice/Awareness; (2) Choice/Consent; (3) Access/Participation; (4) Integrity/Security; and (5) Enforcement/Redress. (Federal Trade Commission, 2007)

In many ways privacy is a usefully vague term that evolves as society's concept of privacy changes. Privacy as a social space is comprised of visible discretion for society to manage the use of personal and sensitive information. (Acquisti, 2004 p.2)

Privacy, consent, control, usability, and confidence are all enmeshed in what is often described as trust. In the article *Privacy and Consent in the Digital Era*, Shirin Elahi (2009:p.114) identified these elements as having a profound importance for society because these concepts have an "impact on human relationships, human rights and societal governance on many different levels." Elahi described five dilemmas that need to be addressed in order to understand and develop workable policies and approaches to developing a shared concept of trust in information sharing:

- Kaleidoscope Society: shifting cultures, values and identities
- Individual rights
- Who owns what? Conflicting attitudes to ownership and the role of rights
- Tensions of scale: different temporal, geographic, communicative and political environments
- Trust and control (Elahi, 2009:p.117)

In addition to these five dilemmas, a re-evaluation of assumptions, apparent in industrial-age information practices needs to continue. Paul Ohm points out that the concept of representation through 'anonymised' data is also problematic:

[C]omputer scientists have recently undermined our faith in the privacy-protecting power of anonymisation, the name of a technique for protecting the privacy of individuals in large databases by deleting information like names and social security numbers. These scientists have demonstrated they can often 're-identify' or 'de-anonymise' individuals hidden in anonymised data with astonishing ease. By understanding this research, we will realise we have made a mistake, laboured beneath a fundamental misunderstanding, which has assured us much less privacy than we have assumed. This mistake pervades nearly every information privacy law, regulation, and debate, yet regulators and legal scholars have paid it scant attention. We must respond to the surprising failure of anonymisation, and this Article provides the tools to do so. (Ohm, 2009:1)

Ohm provides a clear example of how technology is currently out-pacing law, and the scope of vulnerabilities that individuals are now exposed to. The potential loss of anonymity in information sharing illustrates a need for regulation and more appropriate governance to administer what was once understood as privacy.

Regulation

By its nature, the Internet makes it easy for services to reach across international boundaries, resulting in complicated legal and jurisdictional

questions. Dealing with issues of both enforcement and policy, regulators grapple with establishing appropriate doctrine to address this rapidly evolving part of society.

The EU research network Future Identity in the Information Society (FIDIS)¹³ suggests that what is legal for off-line information sharing is useful to guide the development of an online information sharing infrastructure.

Putting it into a wider context of the fundamental goal of law, which finds its roots in the philosophies of Aristotle, it may be argued that law should seek to inculcate habits of good conduct and should support a social environment which will encourage citizens to pursue worthy goals and to lead valuable lives. Thus law and ethics complement each other. Ethics sets the basic societal interests that law should guarantee. If we extend this principle to the codes of conduct in the digital world, it is easiest to take as a starting point the principle of "what applies off-line should apply online." (Jaquet-Chiffelle & Buitelaar, 2009)

Carrying norms from offline to online allows people to anticipate "normal" behavior, and, when normalcy is clearly defined, enables greater trust in online services and related information sharing. Although the Internet is perceived by some as a cyberspace of its own, independent of earthly geography, "an electronic place and sovereignty" (Zekos 2007), the individual users, the organizations providing services, and the hardware itself all exist in well-defined geographic jurisdictions. Unfortunately, in any given interaction, numerous jurisdictions may apply, making it difficult for regulators and enforcement agencies to understand the best way to oversee online activity.

With interactive services, one can, in theory, trace the communications path "in realtime" to work through the various jurisdictions from endpoint to endpoint. However, in many information sharing scenarios, the information is created or provided in one jurisdiction to a service provider who may or may not share that jurisdiction, then that information may be distributed to other service providers in potentially new jurisdictions later in time. Furthermore, the information may be transformed or aggregated en route, making the provenance—and hence originating jurisdiction—difficult or impossible to discern. This cross-jurisdictional nature of information sharing has led to numerous jurisdictional disputes that "straddle[] the boundaries between public and private law, criminal and civil law" (Kuner, 2009) The result is a myriad of efforts in multiple jurisdictions as each interested party attempts to address their own needs—or impose their own controls.

In the UK the Information Commissioners Office (ICO) has received this year (and is going to receive in the future) greater powers to audit and fine

¹³ FIDIS (Future of Identity in the Information Society) is a NoE (Network of Excellence) supported by the European Union under the 6th Framework Programme for Research and Technological Development within the Information Society Technologies (IST) priority in the Action Line: "Towards a global dependability and security framework" (Future of Identity in the Information Society, 2010).

organisations who break privacy regulations. In addition, there are already laws that are due to be implemented that effect information sharing. In Europe these include 'Cookie Law' (Parliament, 2009) and in the UK the controversial Digital Economy Bill (Parliament, 2010), which imposes penalties for peer-to-peer file sharing of copyrighted material. An online regulation that will attempt to enforce privacy related public policy for Internet cafes and Internet Users in the UK.

The Article 29 Working Party released a report on the 26th of May 2010 revealing that the 3 major search engines, Yahoo, Google, Microsoft, are not compliant with data protection law (e.g. illegal) when managing search queried information. "Personal data related to search queries is very sensitive, and search history should be treated as confidential personal data. This legal guidance (also found in FIP principles) indicates that the retention period shouldn't be longer than necessary for the specific purpose. Even if IP address or cookies are replaced by a unique identifier, the individual can still be identified by correlating stored queries." (Article 29 Data Protection Working Party, 2010)

The EU titled "The Council Of Europe: The Consultative Committee Of The Convention For The Protection of Individuals with Regard To Automatic Processing of Personal Data" (Council of Europe, 2009) is a draft regulation that explicitly deals with quality of consent and profiling, implements regulation, provides a much greater degree of notice to the individual, and therefore, is intended to regulate information sharing transactions. (See section 5.1)

In the USA there are state laws regarding information sharing that have already been passed. Massachusetts regulation 201 CMR 17.00 stipulates any business (in and out of Massachusetts) that holds personally identifiable information on residents of the state must encrypt that information during transit and storage. Along with an online privacy bill, announced on May 4 2010 in the USA, proposes new federal legislation that would require companies to get a user's explicit approval (that is, it would require users to "opt in") before they "knowingly collect" information about a person's medical history, financial records, Social Security number, sexual orientation or precise geographic location. (Ingram, 2010)

Regulation of the consumer information sharing environment is a topic of growing concern for regulators.

Regulator Calls for Participation

FTC Roundtable (2009-2010)

The US Federal Trade Commission in the US has hosted a series of day-long public roundtable discussions to explore the privacy challenges posed by the vast array of 21st century technology and business practices that collect and use consumer data. Such practices include social networking, cloud

computing, online behavioural advertising, mobile marketing, the collection and use of information by retailers, data brokers, third-party applications, and other diverse businesses. The goal of the roundtables is to determine how best to protect consumer privacy while supporting beneficial uses of the information and technological innovation.

European Commission: Public Consultation on Privacy (2009-2010)

The European Union is based on the respect for fundamental rights. Article 8 of the Charter of Fundamental Rights of the European Union expressly recognises the fundamental right to the protection of personal data. In order to remove potential obstacles to the flows of Personal Data and to ensure a high level of protection within the EU, data protection legislation has been harmonised. The Commission also engages in dialogue with non-EU/EEA countries so as to achieve a high level of protection of individuals when exporting personal data to those countries. It also initiates studies on the development at European and international level on the state of data protection and negotiates international agreements to safeguard the rights of individuals where their personal data are transferred (shared) to (with) third countries for law enforcement purposes, such as the fight against terrorism and serious crime. (European Commission, 2010a)

OECD Roundtables (2010a)

Organisation for the Economic Co-operation and Development - 2010 is an important year for privacy, as the OECD marks the 30th anniversary of its *Guidelines on the Protection of Privacy and Transborder Flows of Personal Data*. (OECD, 1980) The Guidelines were the first international statement of the core information privacy principles and have proven highly influential over the years, serving as the basis for national and international privacy instruments. Several events have been planned for 2010, beginning with an OECD Roundtable (OECD, 2010b) on the impact of the Privacy Guidelines, which took place on 10 March. The keynote speaker for the event was the Honourable Michael Kirby, who chaired the OECD expert group that developed the Guidelines in 1980. Justice Kirby spoke of context in which the Guidelines were conceived, their strengths and enduring value, and their future. (Kirby, 2010) Justice Kirby was then joined by the former Vice-Chair of the expert group, Louis Joinet, and the former Head of the ICCP Division, Hanspeter Gassmann, who recalled the experience of drafting the Guidelines. (OECD, 2010a)

EU-US Consultation (2010)

The European Commission invited “[a]ll stakeholders and organisations involved in the protection of personal data and/or processing, transfer or sharing of information for law enforcement purposes in the transatlantic context as well as the general public ... to respond to the public consultation” on the future EU-US international agreement on personal data protection and information sharing for law enforcement purposes. (European Commission, 2010b)

National Strategy for Trusted Identities in Cyberspace

The Whitehouse and Department of Homeland Security (USDHS) have recently drafted a National Strategy for Trusted Identity in Cyberspace. The draft outlines an ambitious identity management strategy for the United States, but public discussion has been extremely limited. The draft is a very significant and policy document which will likely have an impact on Internet commerce, online speech, identity management, identity trust frameworks, and online anonymity. (USDHS, 2010)

The UK Ministry of Justice

The Ministry of Justice issued a call for evidence on the current data protection legislative framework, seeking views on:

1. How the European Data Protection Directive and the UK Data Protection Act are working
2. The impact of data protection on individuals and business, and
3. Whether the Information Commissioner's powers and penalties could be strengthened. (UK Ministry of Justice, 2010)

The responses will be assessed and used to inform the UK's position in negotiations on a new EU instrument for data protection, "which are expected to begin in early 2011." This fits in with the expected publication by end 2010 of the Commission's draft of the new EU data protection legislation. (Reding, 2010)

Next Steps

Members of the Information Sharing Work Group continue to work towards a world where information sharing is a safe, trusted, and significant contributor to our lives.

Modelling Solutions

Using the Customer-Supplier Engagement Framework, the ISWG will continue to model long-term customer-supplier relationships, such as the Car Buying Engagement Model. These solutions must address the technical, business, and legal needs of all the participants in the system, including individuals and organizations, facilitators as well as information recipients.

Deploying Systems

More than anything else, information sharing practices need interoperable real-world systems that sustainably deliver value to individuals. Working with VRM and user-centric identity advocates, the ISWG will continue to help individuals and companies bring information sharing products and services to market.

Standard Information Sharing Agreement

In order to provide a legal foundation for individuals' control over shared information, the ISWG has started a Standard Agreement subgroup to develop a standard legal agreement covering the use of shared information. Based on a master agreement covering general terms of use and specific, detailed patterns of usage to cover specific transactions, this agreement will allow individuals and information recipients to formally agree to the terms of use for common information sharing scenarios.

Information Sharing Trust Framework

Mydex, a Community Investment Corporation in the United Kingdom, is leading the development of a Trust Framework to streamline automated recognition of organizations that agree to operate under the Standard Information Sharing Agreement.

Interoperability & Standards

Information can only be shared effectively if the parties sharing it have a common understanding of the schema, the encoding, and mechanisms for transporting that information from party to party. The ISWG will continue to work with the Internet Society, groups of the Kantara Initiative, Project VRM, and others, to develop, standardize, and test interoperable standards for information sharing.

Continued Research

Although many companies are aggressively investing in technical solutions for information sharing, end users remain woefully undereducated and uncertain about how to protect themselves when sharing information online. ISWG plans to perform a major international consumer research project to identify and measure how people view the risks of information sharing and what it will take to get people to feel more comfortable sharing.

Support

The Kantara Initiative and the Internet Society funded the original literature review.

This material is also based in part upon work supported by the National Science Foundation under Award Number IIP-0848990. Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the National Science Foundation.

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Appendix 1: Data Types Most Suited to the Individual-Centric Approach

According to Alan Mitchell (2009), specific types of data/information most suited to the intentional information sharing approach are that which the individual is clearly the most obvious source.

- **Factual updates** (e.g. I've changed address/email address, I'm reading War and Peace)
- **Change of Circumstance** (e.g. we're getting married, I've now got 3 points on my licence)
- **My Location** (e.g. I'm in the Wellcome Collection café)
- **Factual queries** (e.g. I don't understand my bill, where's my order)
- **Online searches** (e.g. this is what I am interested in right now)
- **Orders** (e.g. I would like to buy this, please)
- **Specifications** (e.g. please give me these features, functions etc)
- **Complaints** (e.g. this does not work to spec, can you help?)
- **Suggestions** (e.g. why don't you make X?)
- **User generated content** (e.g. personal, creative expression)
- **Views, reviews and opinions** (e.g. I tried that, and in my experience...)
- **Shared experiences** (e.g. I had a similar problem, I know how you feel)
- **Peer advice** (e.g. I had a similar problem, what I learned was)
- **If only...** (e.g. what I would really like is X, but nobody is offering it)
- **Future plans and intentions** (e.g. I plan to buy a car in the next three months)
- **Expressions of interest** (e.g. I am interested in golf but not scuba diving)
- **Preferences** (e.g. I don't like green but I do like blue)
- **Questions** (e.g. I don't understand! But what about?)
- **But what if..** (e.g. what will happen if I do X or if I do Y)
- **Permissions** (e.g. I am happy for A but not B to access my data, for these purposes)

Appendix 2: IS Organisations and Initiatives

List of Information Sharing Organisations/Research Efforts

PrimeLife

<http://www.primelife.eu/>

PrimeLife: Bringing sustainable privacy and identity management to future networks and services.

A research project funded by the European Commission's 7th Framework Programme

FIDIS (Future of Identity in the Information Society)

<http://www.fidis.net/>

FIDIS is a NoE (Network of Excellence) supported by the European Union under the 6th Framework Programme for Research and Technological Development within the Information Society Technologies (IST) priority in the Action Line: "Towards a global dependability and security framework".

WC3 (World Wide Web Consortium)

<http://www.w3.org/>

The World Wide Web Consortium (W3C) is an international community that develops standards to ensure the long-term growth of the Web.

EUROPRISE

<https://www.european-privacy-seal.eu/>

The European Privacy Seal for IT Products and IT-Based Services

ISOC (Internet Society)

<http://www.isoc.org/>

The Internet Society is an independent international nonprofit organisation founded in 1992 to provide leadership in Internet related standards, education, and policy around the world.

Article 29 Working Party

http://ec.europa.eu/justice_home/fsj/privacy/workinggroup/index_en.htm

Article 29 WP is a data protection group working under the EU commission Justice and Home Affairs

OECD

http://www.oecd.org/document/35/0,3343,en_2649_34255_44488739_1_1_1_1,00.html

Currently working on the updating the Privacy guidelines from 1980

OITF (Open Identity Trust Framework)

<http://www.openidentityexchange.org>

Open Identity Trust Framework recently released a document on identity trust framework for the USA governments open identity initiative

ISTPA (International Security Trust and Privacy Alliance)

<http://www.istpa.org/>

DATA PORTABILITY

<http://www.dataportability.org/>

Policies and practices for allowing personal data to be portable.

EID - STORK

<https://www.eid-stork.eu/>

STORK is a competitiveness and innovation framework programme, co-funded by EU. It aims at implementing an EU wide interoperable system for recognition of eID and authentication that will enable businesses, citizens and government employees to use their national electronic identities in any Member State.

VOME

<http://www.vome.org.uk/>

Researchers from the Information Security Group (ISG) at Royal Holloway, University of London, Salford and Cranfield Universities are participating in a three year collaborative research project with consent and privacy specialists at Consult Hyperion and Sunderland City Council, to explore how people engage with concepts of information privacy and consent in on-line interactions.

EnCoRe (Ensuring Consent and Revocation)

<http://www.encore-project.info/>

Ensuring Consent and Revocation is a research project, being undertaken by UK industry and academia, to give individuals more control over their personal information.

TAS

<http://www.tas3.eu/>

TAS³ is building an "end2end trust architecture for services related to personal information.

The goal is to 'automate' the data sharing all while providing user-controlled access to such data. This involves regional / sectoral / national trust networks on specific domains such as employability en e-health.

Understanding how people develop their perceptions of trust and mistrust must be the starting point for any rethinking of the question of privacy. This is the challenge.