

# **The Future of Personal Digital Information – Scarce Resource, Valuable Commodity or an Efficient Utility?**

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## ABSTRACT

Contemporary practices—regarding the use of personal information in digital networked environments—have been strongly affected by economic interests and business-orientated thinking. The methods and applications of data processing have been broadly defined and adaptively adhered to by the preeminent actors in the industry. Although we have witnessed a growing interest towards personal information on behalf of the users themselves, the majority of people are not aware of the policies and practices concerning the varying uses of their personal public and private information. In essence, the exact uses of personal data remain ambiguous to the very people that generate, create and modify these data. The obsolete conceptions of ownership of information and strictly guarded economic interests restrict the creative uses of personal data for the benefit of an individual and her environment. In this paper, I briefly analyze some substantial factors affecting the current situation and provide some insights on the possible futures of the use of personal information in online environments. I will argue that actively increasing awareness about the characteristics and qualities of personal information will facilitate the creation of processes and products that will allow and enable people themselves to observe and control the use of their personal digital information more efficiently.

## General Terms

Design, Experimentation, Human Factors, Theory.

## Keywords

Personal information, networked environments, user-centered design, digital experience, digital existence

## 1. INTRODUCTION

Today, a remarkable variety of diverse human activity is occurring and thus preserved within digital networked environments. At the same time, our ordinary everyday actions generate digital data through the widespread use of ubiquitous and tangible digital technologies. Accordingly, an unprecedented amount of qualitative and quantitative digitized personal data are generated, processed, modified and viewed by ourselves, our peers, as well as by numerous other actors in the different fields of society [1].

The ongoing discourse around digital personal data and their use has taken new forms as current discussion concerning the development of new digital techniques and solutions, business models, and marketing strategies, has been accelerated by the far-reaching implications of the socio-technological innovations and the reshaping of the existing media sphere [2]. Continuously accumulating personal information has been seen as a valuable resource for various for-profit actors, e.g. in the field of media industry, marketing and advertising. Accessible resources of personal data could provide new possibilities to understand and approach potential "customers" and "users". Accordingly, various actors are continuously developing more efficient and sophisticated data mining and processing methods to be able to

analyze personal data [3]. At the same time, an individual's own rights to her multilayered personal data, as well as the development of adequate policies considering the uses of this valuable material, have been significantly neglected.

## 2. EMERGING VALUE – FROM RAW DATA TO CONTEXTUALIZED INFORMATION

Diverse personal data become meaningful only through continuous structuring, contextualizing, and conceptualizing. In this process, raw data are structured into comprehensible information that can be used in the creation of useful and valuable experiences.

Picture a situation in a meeting room. A person, while listening to your presentation, is simultaneously perceptibly busy with her laptop. At that very moment, without your direct knowledge she is seeking additional information about you from the Internet. In just a few minutes time, she has found your profile on LinkedIn, Facebook, Brightkite, Delicious, Last.fm, Dopplr and Flickr, and has additionally obtained other versatile information through Google's search results. Besides professional things, the person has acquired a significant amount of specific personal information. She has learned things about your social activity, music tastes, favorite websites and events that you have attended during the past month. By now, she knows your previous travel destinations, in addition to the brand of your digital camera (that you have used during your holiday trip), as well as your mobile phone number, several mail addresses, and the minute details of your working history.

Consequently, in that very moment, your existence becomes visible and accessible through your current actions in physical reality as well as through your non-physical digital information accessible in digital networks. In the process, personal data is transformed into valuable, contextualized information about an individual. Continuous everyday access to personal digital information significantly affects the ways and complex processes that are used to approach and interpret other people, our environments, and the world as a whole. Our versatile digital traces, our emerging multi-linear existence—based on contextualized digital information—affect the way we perceive ourselves and how others are perceiving us [4].

In this paper, I use the concept of personal digital information to denote information that is generated, created, modified, or shared in online environments by an individual herself, or an approved entity on behalf of the individual. From the individual's perspective, the value of personal information is contingent on its approved use that is considered to be beneficial to the individual according to her own standards [5].

## 3. EXPOSING THE LAYERS OF PERSONAL INFORMATION

In digital social networks and platforms, an individual creates, modifies, and shares her personal information intentionally with her social sphere and possibly with other people. Thus the individual makes her personal information available and accessible for a wider audience on purpose. In these versatile online environments, the individual can control the potential uses of her information to some extent. She can explicitly decide who can access and interact with (e.g. view, comment, rate, modify) her "visible" layer of information. Simultaneously, the individual shares her information with the administrators and owners of the given service or system. In this process, the individual authorizes

the actor(s) (i.e. company, organization) behind the service to manage and control her information. Accordingly, depending on the terms of use of the given service, the individual has only a very limited effect on how the administrators and owners of the given service will use her personal information [6].

### **3.1 The Value of Personal Information from a Business Perspective**

The rapid development of digital technologies and efficient distribution of digital content has led to the reorientation and reorganization of traditional business models and strategies. In the era of the new "radical economy" or "freeconomics" [7] the commercial sector is actively seeking new ways to reach and connect with people. The effective use of personal information has become substantially interesting since it provides new methods to understand, reach, and engage potential customers and users. The use of personal information has been expected to enable more precise real-time and micro-targeted marketing, advertising, product development, and evaluation [8].

Furthermore, an efficient analysis of an appropriate amount of "customer data" could enable the observation and forecasting of the micro and macro trends, as well as wider patterns of customer behavior. Acquired knowledge would thus create a basis for more accurate and applicable business strategies, marketing endeavors, and future forecasts [9]. Naturally, such knowledge would be a significant advantage for any company or organization. Accordingly, strictly controlled and well-guarded personal data repositories have become a profoundly valuable asset for the preeminent actors in the industry (e.g. Google, Facebook). The protection of conflicting interests has led to so-called "customer data wars" [10] which explicitly expose the underlying intentions and objectives related to the use of personal data.

### **3.2 Invisible information?**

From a business perspective, people are valuable for the given digital service as long as they use it. The business-orientated, profit-seeking owners and stakeholders of digital services see users as valuable sources and conveyors of information. An individual's personal information is thus treated as raw material (with instrumental value) that is used primarily for the economic benefit of others (i.e. the service, advertisers) than the individual herself.

Consequently, the for-profit actors often see personal information as a scarce resource, a valuable commodity, that must be guarded and primarily controlled according to their own interests. Due to indistinct ownership policies and information management techniques, there thus emerges an invisible layer of personal information that can't be directly affected or controlled by an individual. The individual can produce more information and modify the existing material, but the information that is processed and managed by the administrators and owners of the system is beyond the individual's direct control. Additionally, the individual does not know precisely how her personal information is processed and managed (i.e. archived, analyzed, distributed) by the administrators of the given environment. Furthermore, the individual does not know (or cannot be sure) how and on what terms her information is used by the interconnected businesses that are utilizing her personal information.

This "invisible" layer of personal information can have various concrete implications in an individual's everyday life and her environment (e.g. targeted advertising, content recommendations, insurance policy). Therefore, it is increasingly important to raise

people's awareness considering the existence and possible and probable uses of the invisible layer of personal information, that is controlled by others than the user herself. Through the increasing awareness of the possible uses of personal information, people can demand more control over their own information in existing environments.

## **4. MAKING INFORMATION VISIBLE**

In the middle of "customer data wars" and ambiguous conventions of personal data management, essential questions emerge: how do we find a way to unite various interests and intentions regarding the versatile uses of personal information? How can information processing and management be made more open and transparent? Various acknowledged projects, applications, initiatives, and services, such as ProjectVRM, OpenID, Wikipedia, Open Access publishing and Linking Open Data [11], are focused on aiding people to manage and control their information, knowledge, and identities in online environments. Various other actors in different fields of society (e.g. scientific and public sector) have been prominently interested in supporting the secure, yet transparent, management and processing of personal information [12]. The awareness about the advantageous use of personal information is also increasing due to the colliding interests of individuals and economic, political, and societal actors (e.g. the restrictions considering Google search results in China, biopassports, medical data used for insurance calculations).

### **4.1 User Controllable Information Flows**

Information, as a virtual, abstract entity is a process rather than an easily framed or owned "artifact". Thus information cannot be straightforwardly owned, or fully controlled, by any one party or entity. Once digitized, personal information can be modified, copied, and distributed ad infinitum without the direct control of the individual or another party. The controllable/visible and uncontrollable/invisible layers of information will exist in the future, yet their significance and implications in the people's lives will fluctuate. Nevertheless, an individual's control over her personal information can be enhanced and the benefits derived from its use can be substantially increased.

Today, an individual has become a significant actor in the field of digital media in which we are witnessing a demanding and continuous competition for people's attention. Subsequently, the individual is an agent of change whose everyday choices have a significant effect on the evolution of digital services, and the use of personal information. To increase the positive implications of visible information, an individual's awareness of the alternative uses of personal information should be enhanced through concrete, user controllable applications of personal information. Accordingly, the most beneficial uses of personal information (from an individual's perspective) will triumph over the irrelevant and questionable uses of uncontrollable personal information.

For example, ads that have been implemented in an individual's email service based on automatically processed information deriving from her email correspondences, are usually actively neglected by the individual. On the other hand, a simple example of the sensible use of versatile personal information would be a user-centered service that allows an individual to combine various data feeds (i.e. location data, weather forecast data, traffic data and personal calendar information) to inform her about the most suitable routes and methods of transportation in the given area. When this information would be combined with the information about the individual's eating habits and the localized restaurant information, the individual could also find the most appropriate

diner in the neighborhood. Nowadays, a significant amount of internet services provide access to third party developers into their data feeds. The use of open APIs in mashup services and similar applications illuminates the creative “horizontal” utilization of various specific information sources.

Such a service illuminates the substantial value of user-controllable personal information by creating new layers of useful and contextualized information according to an individual’s own intentions and goals. The user affects directly the ways her personal information is used for her own benefit. Consequently, the benefits deriving from the use of personal information are substantially increased. In such a user-centered service model, an individual can combine appropriate information sources to assist her everyday choices and decisions. Thus, the individual herself is in control of the emerging new layers of personal information rather than being a subject for invisible information flows that are controlled by the interests of others.

## 5. CONCLUSIONS

People, as customers and users—supported by the various actors behind the open data movement—are the key to the change regarding more open and transparent uses of personal information. Through increased awareness regarding existing, inadequate data policies, the intensive exploitation of invisible personal information, and invasive applications of personal information, people are starting to affect the ways companies, organizations, and societies will manage and process their personal information in the future. However, the development of more open and transparent uses of personal information will face substantial challenges. Corporate actors will fiercely guard their own interests and positions. Third party developers of creative mashups are significantly dependent on the goodwill and cooperation of the primary service developers and owners. The information itself is scattered and cluttered, as it is managed and processed in closed data repositories without standardized or compatible forms. Nevertheless, people will continue to produce accumulating amounts of personal information, as well as new applications that allow people themselves to enhance the use of that information. The ongoing development indicates, that the creation of functional user controllable information management and processing models and systems will prove to be beneficial for the individual, her environment and society as a whole.

## 6. REFERENCES

- [1] Castells, M. (ed.) 2004. *The Network Society: A Cross-cultural Perspective*. Edward Elgar Publishing Limited, Cheltenham.
- Krishnamurthy, B., and Wills, G. E. 2008. *Characterizing Privacy in Online Social Networks*. In WOSN’08, August 18, 2008, Seattle, Washington, USA. ACM, New York.
- Nathan, L. P., Friedman, B., Klasnja, P., Kane, S. K., and Miller, J. K. 2008. *Envisioning Systemic Effects on Persons and Society Throughout Interactive System Design*. In DIS 2008, February 25-27, 2008, Cape Town, South Africa. ACM, New York.
- [2] McGeeveran, W. 2009. *Disclosure, Endorsement, and Identity in Social Marketing*. University of Illinois Law Review, 1105.
- Reason, B. and Walker, J. 2009. *Data is the New Oil part 1: Business Information*. Live|Work Blog. <http://www.livework.co.uk/articles/data-is-the-new-oil-part-1-business-information>.
- Auerbach, J. 2009. *New Media Demands a New Kind of Media Company*. GigaOM. <http://gigaom.com/2009/09/20/new-media-demands-a-new-kind-of-media-company/>.
- [3] Randall, K. 2009. *Market Research 3.0 Is Here: Attitudes Meet Algorithms in Sentiment Analysis*. Fast Company. <http://www.fastcompany.com/blog/kevin-randall/integrated-branding/market-research-30-here-attitudes-meet-algorithms-sentiment-a>.
- Bunch, M. 2009. *US web users reject behavioural advertising*. Guardian.co.uk. <http://www.guardian.co.uk/media/pda/2009/oct/09/targeted-ads-study-phorm-bill-congress>.
- [4] Taylor, T. L. 2006. *Play Between Worlds: Exploring Online Game Culture*. The MIT Press, Cambridge, Massachusetts.
- Preibusch, S., Hoser, B., Gürses, S., and Berendt, B. 2007. *Ubiquitous social networks - opportunities and challenges for privacy-aware user modelling*. In Proceedings of the Workshop on Data Mining for User Modelling at UM 2007, Corfu, Greece, June 2007.
- Koponen, J. M. 2009. *FutureSelf: Reflection on a Personal Future Simulation System*. Master Thesis. University of Art & Design Helsinki.
- [5] Chapman, G. 2009. *Shaping Technology for the ‘Good Life’; The Technological Imperative versus the Social Imperative*. In Johnson, D. G., and Wetmore, J. M. (eds.). *Technology and Society: Building Our Sociotechnical Future*. The MIT Press, Cambridge, Massachusetts.
- Ellison, N., Lampe, C., and Steinfield, C. 2009. *Social Network Sites and Society: Current Trends and Future Possibilities*. *Interactions Magazine* (16) 1, 6-9.
- [6] Gross, R., and Acquisti, A. 2005. *Information Revelation and Privacy in Online Social Networks*. In Proceedings of WPES’05. Alexandria, VA. Association of Computing Machinery, 71-80.
- [7] Anderson, C. 2009. *Free: The Future of a Radical Prize*. Hyperion Books, New York.
- [8] Liu, H. 2007. *Social Network Profiles as Taste Performances*. JCMC, 13 (1). In Boyd, D., and Ellison, N. (eds). *Special Issue of JCMC on Social Network Sites*. Weigend, A. 2009. *Social Data Revolutions*. Now, New Next Blog. Harvard Business Publishing. <http://blogs.harvardbusiness.org/now-new-next/2009/05/the-social-data-revolution.html>.
- [9] Kuusi, O., and Hiltunen, E. 2007. *The Signification Process of the Future Sign*. Finland Futures Research Centre’s eBook 4/2007.
- [10] Mignon, J. 2009. *Advertising: The Customer Data War*. Media Café Blog: *Conversation on Strategy for The Future of Media*. <http://mediacafe.blogspot.com/2009/07/advertising-customer-data-war.html>.
- [11] ProjectVRM, <http://cyber.law.harvard.edu/research/projectvrm>. OpenID, <http://openid.net/>. Wikipedia, <http://wikipedia.org/>. Open Access publishing, [http://en.wikipedia.org/wiki/Open\\_access\\_\(publishing\)](http://en.wikipedia.org/wiki/Open_access_(publishing)). Linking Open Data, <http://esw.w3.org/topic/SweoIG/TaskForces/CommunityProjects/LinkingOpenData/>.
- [12] Loos E., and Mante-Meijer E., and Haddon L. 2008. *The Social Dynamics of Information and Communication Technology*. Ashgate, Hampshire, England.