The issue of personal integrity and ethics from system developers’ view

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- from System Developers’ view

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Autumn 2001
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Abstract

Personal integrity and the issue of ethics are important aspects considering the modern society’s dependency on information technology. For example, it is quite easy to trace someone’s electronic path on the Internet. E-business uses this new technology to individualize their products to suit all different kinds of customers. This is done through gathering a great deal of sensitive information about their customers; which is a serious matter when considering personal integrity and the issue of ethics. But, steps are being taken by the Swedish government to protect personal integrity by creating laws, such as the Personal Data Act, which is concerned with protecting the private citizens personal integrity. As stated, it is quite easy to trace someone’s electronic footsteps on the Internet, one way to do so is by using cookies, something the e-business has caught on. Cookies are used more and more by different companies to store information about buying behaviour and profile their customers. Cookies are considered to exist in a kind of grey zone in an ethical and legal sense, ethical because consent is seldom asked for, which also concerns the law.

The aim with this Master Thesis is to examine how system developers, who work with design of e-businesses, deal with ethical issues and personal integrity at a general level and especially when using cookies. As theoretical framework the theory of Systems Design, theory of Cookies, theory of Personal Integrity, theory of The Personal Data Act and theory of Ethics was used. In order to draw conclusions and complete the aim of the thesis, qualitative interviews were made. The raw data was then analysed with the help of Cross-Sectional Indexing of Data (Mason, 1996).

The thesis points that the system developers considers personal integrity and ethical issues throughout the design process, by showing responsibility in relation to the customer and the end-customer. Cookies will also be used as long as permitted, the system developers are aware of the ethical issues but consider cookies only to have value of technology.

KEYWORDS: Personal integrity, Ethics, Cookies, Systems design, The personal data act, Cross-Sectional Indexing of Data.
Foreword

This Masters Thesis is a part of our studies at the program for Informatics and Systems Science at the Institute for Industrial Economy and Social Science at Technical University of Luleå.

We wish to thank the people who were interviewed, without them we could not have created this thesis. We would also like to thank our supervisor, Christina Mörtberg, for the ideas, hints and wonderful support through out the thesis. We would also like to thank our families for being there for us.

Luleå, 2002-06-12

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# Table of Contents

1 BACKGROUND AND PROBLEM DISCUSSION ......................................................... 1
   1.2 PURPOSE .............................................................................................................. 2
   1.3 DELIMITATION ................................................................................................... 3
   1.4 RELEVANT CONCEPTS ..................................................................................... 3
   1.5 DISPOSITION ..................................................................................................... 3

2 THEORETICAL STANDPOINTS ............................................................................. 4
   2.1 SYSTEMS DESIGN ............................................................................................ 4
   2.2 COOKIES ......................................................................................................... 6
   2.3 PERSONAL INTEGRITY ..................................................................................... 9
   2.4 THE PERSONAL DATA ACT ........................................................................... 11
   2.5 ETHICS ........................................................................................................... 14

3 RESEARCH STRATEGY .......................................................................................... 17
   3.1 RESEARCH APPROACH ................................................................................... 17
   3.2 COURSE OF ACTION ....................................................................................... 17
      3.2.1 Idea, literature studies and questionnaire .................................................. 18
      3.2.2 Interviews ................................................................................................. 19
      3.2.3 Analysis ..................................................................................................... 20
   3.3 METHOD DISCUSSION ..................................................................................... 21

4 EMPIRICAL WORK ................................................................................................ 23
   4.1 THE INTERVIEWS ............................................................................................ 23
      4.2.1 Personal Integrity ...................................................................................... 23
      4.2.2 Ethics ......................................................................................................... 25
      4.2.3 Cookies .................................................................................................... 26
      4.2.4 Law ........................................................................................................... 28
      4.2.5 Policy ....................................................................................................... 29

5 ANALYSIS AND DISCUSSION ............................................................................. 30
   5.1 CATEGORIZATION OF THEORY – A SHORT SUMMARY ................................. 30
      5.1.1 Personal integrity ....................................................................................... 30
      5.1.2 Ethics ......................................................................................................... 31
      5.1.3 Cookies .................................................................................................... 32
      5.1.4 The Personal Data Act ............................................................................. 33
      5.1.5 EG – directive ......................................................................................... 33
   5.2 ANALYSIS AND DISCUSSION OF THE INTERVIEWS ..................................... 33
      5.2.1 Personal Integrity ....................................................................................... 34
      5.2.2 Ethics ......................................................................................................... 41
      5.2.3 Cookies .................................................................................................... 41
      5.2.4 Law ........................................................................................................... 45
      5.2.5 Policy ....................................................................................................... 49
   5.3 GENERAL DISCUSSION .................................................................................. 49

6 CONCLUSION ......................................................................................................... 52
   6.1 CONCLUSION ................................................................................................. 52
   6.2 FUTURE RESEARCH ....................................................................................... 53

7 REFERENCES ......................................................................................................... 54

APPENDIX A – QUESTIONS FROM MMST TO THE QUESTIONNAIRE .............. 57
APPENDIX B – INTERVIEW QUESTIONS ................................................................. 59

APPENDIX C – CATEGORY TREE FOR THE QUESTIONNAIRES .................. 61

APPENDIX D – INDEXING CATEGORIES ............................................................... 62

APPENDIX E – ETHICAL RULES FOR DATA PEOPLE ........................................ 64

LIST OF FIGURES:
Figure 2.1 The design process in ideal oriented design theory (Stolterman, 1991, p 179) .... 5
Figure 3.1 Course of action .................................................................................... 18
Figure 5.1 Category tree of the theory ................................................................. 30

LIST OF TABLES:
Table 5.1: Summary of the tables in the subcategories ........................................ 34
Table 5.2: General definition of personal integrity .................................................. 35
Table 5.3: Violation of the personal integrity ......................................................... 35
Table 5.4: Non-violation of the personal integrity .................................................. 36
Table 5.5: Personal integrity in relation to the customer and the end-customer .......... 37
Table 5.6: Summary of the tables in the subcategories .......................................... 38
Table 5.7: General definition of ethics ................................................................. 38
Table 5.8: Ethics in relation to the customer ......................................................... 39
Table 5.9: Responsibility in relation to the customer ............................................. 40
Table 5.10: Ethics in relation to the end-customer ................................................. 40
Table 5.11: Responsibility in relation to the end-customer .................................... 41
Table 5.12: Summary of the tables in the subcategories ........................................ 42
Table 5.13: Cookies. Definition and functions ....................................................... 42
Table 5.14: System developers’ advantages and disadvantages of the use of cookies .. 43
Table 5.15: Customers advantages and disadvantages of the use of cookies ............ 43
Table 5.16: End-customers advantages and disadvantages of the use of cookies ....... 44
Table 5.17: General knowledge about cookies ..................................................... 44
Table 5.18: Summary of the tables in the subcategories ........................................ 45
Table 5.19: Application of the law in relation to the customer .............................. 46
Table 5.20: EG-directive. Definition and consequences ........................................ 47
Table 5.21: Personal Data Act. Definition and how it applies to the customer .......... 47
Table 5.22: Personal data. Definition and use ....................................................... 48
1 Background and Problem discussion

“Privacy is like oxygen. We really appreciate it only when it is gone”
Charles Sykes (1999, p. 4).

When we began searching for a subject to this Master’s Thesis it seemed like finding a needle in a haystack. Like so many other times when searching for information we went online, surfed the Internet, to see if there was something of interest. Just out of curiosity we checked if we got any cookies when surfing some websites and to our mutual surprise we did. Though neither one of us could understand why. After a discussion about personal integrity and cookies we decided to find out more about cookies, what they really are, what kind of information they may contain and what one can do with them. Since e-business is a rising development and the e-businesses often use cookies at their websites, where the question of personal integrity is an important aspect (Olsson, 2000) we decided to focus on them.

The modern society’s growing dependency on information technology (IT) affects the personal integrity in such a way that we all have to consider the personal integrity and how we shall protect it (Collste, 1993). This is especially important on the Internet where just about everything you do can be traced (Olsson, 2000). Electronic traces are often left behind that one is completely unaware of. It is automatically registered when you buy something or surf a website (Datainspektionen, 1997; Lindberg & Westman, 1999).

Lately it has become easier and more acceptable to do business over the Internet (Janson, 1997). To create an e-solution one need someone who want an e-solution, a customer, and most important of all a company that can build it. After all it is the system developer that has the responsibility for designing working e-solutions that satisfies both customers and end-customers (Stolterman, 1991). The e-businesses are collecting more and more sensitive information about their customers. The companies want to find out as much as possible about them, so they can individualize the commercials and win market shares. In the beginning it might be small things like offers to subscribe to a specific magazine, but some time in the future a line will be crossed. This is a serious matter in regards to personal integrity (Olsson, 2000).

The society in Sweden has taken steps to protect the personal integrity by creating a law, The Personal Data Act (PDA). The PDA is based upon a directive from the European Union. The PDA is concerned with protecting the private persons personal integrity, for example regulating how one is allowed to collect and process personal data. The PDA has a very strict interpretation in Sweden (Petersson & Reinholdsson, 2000).

Personal integrity is the right to privacy, to have your own personal sphere. Personal integrity can also be defined as the right to have an individually delimited sphere, in an abstract or mental sense, which should be protected from infringement and violation (Nek, 1997). Personal integrity can be seen from two perspectives. It is a

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1 Cookies are small text files that are downloaded to a computer when visiting a web page.
feeling of personal space or privacy and to some extent regulated by law. On the basis of the Swedish legislation, a protection against undue infringement of the personal integrity has been created (Lindberg & Westman, 1999). There is no total sphere of privacy, but a citizen should be made aware of the fact that information is being gathered about her/him (Freese, 1983). It has become more and more usual in the everyday situation that information is being registered. It is often automatic when for example buying an article or a service. This information is called electronic tracks and can tell someone where you have been on the Internet and what you have been doing there (Datainspektionen, 1997).

One way to trace one's online surfing is by using cookies. A cookie is a small file containing some information. It is downloaded to the users’ hard drive from the homepage s/he is visiting. When the user returns to the homepage for another session, the cookie lets the server know which computer it is and its preferences (Danesh, 1997). Because of the rising commerce over the Internet, a discussion about the use of cookies has arisen. The web was not created to deal with electronic commerce and electronic transactions. To handle it something was needed; what we got was cookies (Lowe & Arevalo-Lowe, 2002). Cookies that are used more and more often to map out and store information about the customers’ buying behaviour (Berggren & Herdenberg, 1999). Cookies are definitely in the grey zone both in an ethical and legal sense. In an ethical sense by not asking for consent nor informing the user about the cookie and furthermore this is something that also concerns the law. The PDA consider cookies as something that can violate one's personal integrity and therefore should be handled with care (Carlén-Wendels, 2000).

The extensive use and rapid development of information technology affect humans' personal integrity in many varied ways, both in violating and non-violating manners. The system developers have part in this IT development since their inventions and ideas very much controls the rest of the society. This has lead us to ask ourselves some questions: Do system developers care about their end-customers’ personal integrity? Do the companies, where the system developers work, care for their customers and end-customers’ personal integrity by creating policies regulating it? What are they doing with the information gathered from cookies? Why do they decide to use cookies? Do they inform the user that a cookie is being downloaded when visiting a Website?

1.2 Purpose

Our aim is to examine how system developers, who work with design of e-businesses, deal with ethical issues and personal integrity at a general level and especially when using cookies.
1.3 Delimitation

We will examine businesses in Sweden since it gives us the possibility to find and meet some of the companies. We focus on the use of cookies, which means we focus on the designing of websites, e-solutions. Web browser generally accepts cookies. Therefore we assume that when system developers decide to use cookies, they have taken that into consideration.

1.4 Relevant concepts

According to Merriam–Webster (2001) the definition of privacy is freedom from unauthorised intrusion, a place of seclusion or a private matter. The definition of integrity is to adhere to a code of moral values. We consider these two notions by themselves or in combination to correspond to the Swedish term personal integrity. It depends on how the author of the book defines these terms; and if we can judge them to be close enough to the meaning of the Swedish term personal integrity. We then use it as if they had written personal integrity.

Policy stands for basic principles in a company or organisation, principles that regulate actions in general or in particular. For example a newspaper can have a policy regarding protecting their sources anonymity (Nationalencyklopedin, 2001).

We use the concept customer in order to refer to the system developer’s company’s customer. The person or company that order the e-solution. End-customer stand for the actual user of the e-solution or visitor to the website. The person that buys or orders something from the customer.

1.5 Disposition

In chapter two we will present the definitions of the theories of ethics, personal integrity, cookies, systems design and the Personal Data Act. In chapter three the method used during the ongoing work with the thesis will be explained. Chapter four consists of the empirical work. Chapter five shows our analysis of the empirical work of the interviews. We also discuss our analysis of the interviews in this chapter. Chapter six consists of conclusions and further research.
2 Theoretical points of view

The theories presented in this chapter were used to examine our problem area in order to answer our purpose. System design theory, cookies, personal integrity, ethics and the Personal Data Act (PDA) are all used in the analysis. They are compared to what the system developers feel happens and involves during the development process. We focus our thesis on cookies and use the different theories to compare them to the system developers’ definitions of system design, cookies, personal integrity, ethics, the PDA including the EG-directive. The System design theory is also used in the discussion to point out the different roles and system developer’s responsibility.

2.1 Systems design

The design process is a process where one is given a task and/or requirements, to create something, for example an IT system. This process has to be finished within a certain time limit and exhibiting a certain quality. These time-limited processes are often work related and conscious in matter of creating, valuing and choosing the product, not to forget the construction, testing and implementation of the finished product. During this process the characteristics of the product are chosen. These characteristics can be found, for example, in areas of function, economy, aesthetic and ethics. The design process is often organised in the form of a project, the work of a team, even though it consists of individuals with differentiating trains of thought (Stolterman, 1991).

Traditional system development is often defined by the lifecycle model, which according to Stolterman (1991) can be considered aged and important aspects of the process are forgotten, such as the power of conceptions and figure of thought. People’s different conceptions about processes affect their opinion and treatment of these specific processes. These conceptions are formed by our reality, our ambient environment and therefore this is an important issue to consider during a design process, regardless of what kind of design process one is using. Image of thought is a stable idea that is universally accepted, and as such survives for quite some time. They are often very simple and therefore very powerful, for example Time is linear or The user knows best (Stolterman, 1991, p. 49). These images of thought are not coherent, they are varied and incongruous. It is a person’s image of thought that decides how s/he will act; they are the basis for our actions (Stolterman, 1991).

There exist three kinds of design processes where the designer is an: artist, researcher or engineer. The artist is a creator who in her/his solitude creates something within the aesthetic aspect with a message to the outside world. The artistical process is somewhat intuitive and it demands devotion and satisfaction of an inner need. The researcher tries to interpret and discover the real world and also search for patterns in it, which is important when creating a system. The process focuses on the researcher being correct, thorough and creating testable results. It is all based on the idea of a hypothesis that will be satisfied or dissatisfied. The actual process is considered both
experimental and inductive. The main objective for the engineer is that s/he has a problem and tries to find a solution for it. The basis is the assumption that there exists a problem that can be either simple or hard to solve. The process focuses on function, accuracy, satisfying demands and objective. The process itself is deductive (Stolterman, 1991).

When it comes to matters as values and ethics the artist is considered subjective, but always responsible for her/his actions, the artist is usually honest to her/himself. The researcher on the other hand is considered relatively objective and not very responsible for her/his actions. The researcher is honest to nature, the environment s/he is examining. The engineer is also fairly objective but in an extent responsible for her/his actions, and s/he is honest to the task. Within traditional system development the process of the engineer has dominated the scene for quite some time (Stolterman, 1991).

A new kind of design theory, ideal oriented design theory, considers the designer or developer to be responsible for her/his actions at all times and is therefore responsible for all functions in the design process. This in part since in ideal oriented design theory all parts constantly affect all other parts, it is a dynamic process. The process is dynamic regardless of which kind of designer who is designing the IT system, if it is the artist, researcher or the engineer.

Therefore system development can affect the development of the whole society, which means that the system developer has to think twice before creating something because of possible far-reaching consequences. System development and system developers have to develop figures of thought that are aesthetically and ethically focused, something that to a great extent is missing today. System developers have to be regarded as designers whose ability to design is as much a result of the aesthetic and ethical sense as their common sense (Stolterman, 1991).
2.2 Cookies

History
A most popular legend states that in the early 70’s, an angry programmer wrote a subroutine that he implemented in his company’s system before quitting his job. It would occasionally freeze the system and simply display ‘Give me a cookie’ on the user’s terminal. The system would not work until the user typed in the word ‘cookie’, then all was back to normal for a while. Apparently the code were so hidden and embedded in the system that the company were afraid to remove it, so it was left there. To give tribute to the story, the term cookie were incorporated into a couple of different programming scripts, and from there to the actual cookie we refer to nowadays (Anonymous A, 2000).

Another legend is that early hackers loved Andy Williams’ TV show where a “cookie bear” often performed. The sketch consisted of a man in a bear suit trying to get a cookie from Andy Williams and the sketch always ended with him screaming the words: “No cookies! Not now, not ever…NEVER!” (Harding, Reed and Gray, 2001, p17). One of the hackers stole the name ‘cookie bear’ and infuriated computer operators by taking over their consoles and displaying a message ‘want cookie’. The message would not disappear until the operator typed in the word cookie and a cookie bear would answer with a ‘thank you’. Fortunately the cookie did nothing more than infuriating the operator’s. That is one explanation for the name cookie. The article also states that it was Loui Montulli who for Netscape invented the actual cookie we now use, in 1994, with the soul purpose to enable online shopping baskets (Harding et al, 2001).

Cookie technique
An e-shop, which usually use online shopping baskets and subsequently its cookies, can contain a number of homepages that have different functions such as, find articles, order them and so on. Below this homepage there is a webserver that provides the functionality that the whole page is build upon. The potential customer or user has a PC, Internet access and a web browser. The web browser and the webserver can communicate according to a certain protocol, the HTTP protocol, the cookie and the information, usually an ID value, is sent through this protocol. One also wants to limit the webserver’s access to the local PC because of virus threats and such (Anonymous B, 2001). The cookie technique is a function that is build into the web browser, it is allowed to write information on the local PC in a small text file that is put somewhere on the hard drive. The user can turn off this function in the web browser, but it is a standard feature to have it turned on. This means that the whole platform for cookies are already there, and one does not have to do anything (Anonymous B, 2001; Carlen-Wendels, 2000; Langford, 2000).

The shopping basket-cookie is a popular cookie in online ordering because it simplifies the work for the webmaster as it assigns an ID value to the user through a cookie. As the potential buyer selects items, it includes that specific item in the ID file on the server. There is also the tracking cookie, it works like the shopping basket-cookie but it adds the sites URLs one have visited instead of items. One can be very thoroughly profiled for targeted marketing. There is a potential for companies to
spam, to send an excessive amount of advertisement, the user on products based on the gathered information. Cookies are only used when data are being moved around. When visiting an e-shop the web browser checks if the visitor already has a cookie from that site. If there exists a cookie then the browser sends the cookie to the e-shop. The server receives the information and can now use it to see the visitors shopping or browsing behaviour. If the browser does not find a cookie it assign one to the visitor's hard drive (Harding et al, 2001).

A cookie contains a name, a value, an expiration date, and the originating site URL. The name is the name of the cookie; the value can be just about anything, it is what the original server chooses to send. The date determines for how long the cookie will exist on the hard drive, if it has no expiration date the cookie will most likely expire when one leaves the web browser. This information exists in the header, which describes the HTTP protocol, and it is removed from the web browser so that it cannot be viewed (Harding et al, 2001; Danesh, 1997).

An example of information gathering could be the different kinds of e-shops one uses when ordering something (Anonymous B, 2001; Harding et al, 2001). There are places where most buyers are one-time buyers and there are e-shops where the customers are regulars, where one orders a lot or often, which often is the case in business between companies. As a private citizen, one cannot say that one is a regular customer. What one want to do is to find information and choose the products to order. When one has completed the order one has to write some personal information such as name, address etc. That is something that one as a customer usually wants to be there the next time so that one do not have to write it again, the information is saved for the next session. Then the e-shop company can choose to build a customer database and put this kind of information in the cookie-file so that the next time the customer shows up s/he does not have to bother with this kind of information. This is information gathering, pure information about the buyer (Anonymous B, 2001; Harding et al, 2001).

**Use of cookies**

When cookies were first being used, rumours went around that they could scan information off ones hard drive and collect various information, such as pass-words and credit card number, it is not possible (Carlén-Wendels, 2000; Harding et al, 2001). The technique should only be able to retrieve the information in the cookie and what kind of operative system and web browser there is on the computer. The cookie cannot by itself access things like settings, names and e-mail addresses. It can neither store credit card numbers without permission. But it can store the information from a form, which may contain information such as credit card numbers. Another misconception is that one can get a virus from a cookie. The text file can contain virus code but it is highly unlikely that it ever can be executed and is therefore of no real danger to the user (Carlén-Wendels, 2000; Harding et al, 2001).

Typical uses for cookies are following a visitor from page to page, keep track of what the customer is putting in her/his shopping basket and when the visitor has filled a form the name, address and such are saved in the cookie and can be used at a later date with automatic pre-fill of an order (Carlén-Wendels, 2000). They can also be
used to store information for a longer term to be used to create as personalized welcome messages or to individualize a Website but the most common information in a cookies is actually some kind of id while the information about the visitor is stored on the server (Carlén-Wendels, 2000).

Internet users can use cookies to store their passwords and user IDs, so the next time they want to log on to the Web site, they don't have to type in the password or user ID. However, this function of cookies can be a security risk if the computer is shared among other users. Hotmail and Yahoo are some of the common sites that use this type of cookie to provide quicker access for their e-mail users (Harding et al, 2001).

If the owner of the e-shop wants to get an image of what one specific buyer likes to buy cookies are useful (Anonymous B, 2001; Langford, 2000; Harding et al, 2001). For example: customer Z is interested in cars and that s/he visits an online bookstore and buys a book about old cars. It is then possible for the e-shop owner to collect all this information – bought a book about cars – so that the next time that customer Z visits the e-shop can directly offer her/him a discount on car books or suggest other books related to the subject. This is an example of how to profile a customer and how to individualize an e-shop to a customer (Anonymous B, 2001; Langford, 2000; Harding et al, 2001). Which is the point with cookies, to connect individual information about different users or visitors (Carlén-Wendels, 2000).

Advantages and disadvantages
There are both advantages and disadvantages with cookies. Cookies can be used to track customize the information on the homepages and also the user do not have to put in the same information every time s/he visits the homepage, site personalization can be exemplified by accessing the CNN.com site. One can select different options, such as no sport news or no domestic news (Harding et al, 2001). Cookies also enable online businesses to target ads, so that one as a customer does not need to look at repetitive ads or banners. The marketers also receive a better understanding of their customers and their needs. Another advantage is something mentioned earlier, keeping track of a customers shopping basket online, so that if the user suddenly goes offline the items will still be in their shopping basket. Cookies can also be sued to store passwords and such, so that the next time one visits for example Hotmail one does not have to type in the password and user ID again. There is a certain risk with this especially if the computer is shared among a number of users (Harding et al, 2001). In other words, cookies were meant to provide online users with benefits such as improved usability and other conveniences over the Internet (Bayan, 2001).

There are some users or customers that think that the functions and advantages, as some see it, are really disadvantages (Bayan, 2001). An example is the target campaigns that are directed towards the users or surfers whose profile has been sold to different companies, usually without their knowledge. These surfers might then find themselves swamped with junk mail, telemarketing calls and similar ways of marketing (Bayan, 2001). When it comes to disadvantages or negative issues the main concern are security and privacy issues. It is believed by some people that cookies are dangerous to the Internet by being a security risk and a violation of the personal
integrity\(^2\). If cookies are ethical or not depend on how the gathered information actually is collected and how it is used. An example of how cookies can be misused is when the computer is shared within a group of users, which is the case with Internet cafes, where one can see what the last user has done by looking at the cookies stored on the computer. This is a potential disaster since sensitive information can be uncovered. Sensitive information such as someone’s civic registration number, maiden name or credit card information is a definite threat to the Internet users (Harding et al, 2001).

Surprisingly there are quite a few people who do not know what cookies are. According to the Pew Internet and American Life Project (2001) only 43 % of all Internet users\(^3\) know what a cookie is and 10 % of these have set their web browsers to refuse cookies. This is a frighteningly low number. This means that a majority of the online users are unaware of how their information is handled, how their buying behaviour can be stored and used in a profile, how others make money on the surfers profiles, this shows why it is so important to maintain online privacy (Bayan, 2001).

2.3 Personal integrity

*The pistil is the flower’s only protection against intrusive insects.*\(^4\)

Hermods Grodblad (in Nek, 1997 p. 11)

Through time humans have had very little privacy, which is a part of the personal integrity. Most humans lived their entire life without ever being alone. Everyone knew everything about everyone. For the past two decades we have revelled in the opportunity of being alone. The technology invented, such as the car, the television and the invention of computers, has made it possible to a degree of privacy never seen before. The development has also gone the other way; it is now easier for a person far away to find out minuscule facts about a total stranger, all because of the technical developments and especially the development of the Internet. When it earlier only was the neighbour next door that knew what kind of clothes you liked because of the clothes you hung on the clothesline. Today just about anyone with a computer and an Internet connection can find out sensitive and personal information about you. In the case of the Internet we as private persons do not always realise that the photo album that we put up on our personal homepage can be accessed by anyone, not just the family and ones friends. We have all different definitions of the term personal integrity and also react differently to violations of our personal integrity. It also depends on what relation we have to the person violating our sphere of integrity. We all have a ladder of intimacy, in which the family is closest and moving downwards to perhaps government (Sykes, 1999).

\(^2\) Original word is ‘privacy’, the authors correlates this with personal integrity in this case.

\(^3\) The study surveyed 2,117 Americans where 1,017 were Internet users. We assume that the numbers are somewhat similar for Sweden.

\(^4\) Pistillen är blommans enda skydd mot närgångna insekter. Authors translation.
There are quite a few definitions of personal integrity such as: personal integrity is the right to have a sphere, both mental and physical, that is protected from violations (Nek, 1997). Freese (1983) also points that it is the right to your own personal sphere namely privacy. The definition of personal integrity can vary depending on how the person experiencing the situation defines the term, but there are some things that exist in, more or less, all definitions (Sykes, 1999). That is, that there is a kind of border that protects your personal life. What one wants to protect or delimit are personal characteristics, habits and the feelings and opinions that are central for one’s identity. It is also important to point out that we, people all over the world, are different and therefore have different views of how the border between the private life and the public life should be (Collste, 1993).

Furthermore this becomes even more important when talking about the definition of personal integrity, and especially when it has been violated. Definitions and borders are not always easy to realize. But by using violations as example one can more easily discover what can be considered personal integrity and what not. Collste (1993, p. 145) means that there are three situations when a person’s integrity can be violated:

- Person P is violated and feel violated,
- P is violated but do not feel violated, and
- P is not violated but feels violated.  

The claim of feeling violated has to be reasonable. Though it is difficult to find one definition of what that feeling might be. Claiming to feel that your personal integrity has been violated because someone said your first name during a conversation you overheard is not reasonable and therefore not a violation, since there is a great possibility they were talking about someone else. It can be quite difficult at times to decide what is a subjective experience and a well-founded experience of violation of the personal integrity. There is an obvious grey area when it comes to the issue of Internet and computer-surveillance (Collste, 1993). Especially if the computer-surveillance is done without the persons being surveyed knowing about it. Their opinions and wishes have not been taken into consideration and that can be a violation of their personal integrity. It depends on how they feel about it (Collste, 1993).

Protection of the surfers’ integrity where never really considered when the Internet was constructed. According to one integrity-expert the Internet can be seen as a laboratory experiment that escaped (Olsson, 2000, p. 22). The expert referred to the fact that in the beginning the Internet was a controlled experiment in a stable environment, but after some time it escaped and became its own. It is now widespread throughout the world and no one has any real control over it. Internet users are often tempted to try out new features, but these features often create dangerous situations for ones personal integrity. An example is the program I Seek You (ICQ) where one can easily keep track of ones friends. The possible dangerous situation that might

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5 Person P är kränkt och upplever sig kränkt,  
P är kränkt men upplever sig ej kränkt och  
P är inte kränkt men upplever sig kränkt. (Authors translation.)  
6 Ett laboratorieförsök som rymde. (Authors translation).  
7 Olsson used the word “personvärn” which in English can be translated to personal protection/defence, the Swedish word “personvärn” correlates with our use of the term personal integrity.
arise is when someone with bad intentions use the information you give in this program to hurt someone, physically or mentally (Olsson, 2000). The Internet is not all good or all bad, it is a little bit of both. However when it comes to the issue of collecting and disseminating information, questions such as these arise: What kind of information is gathered? When is it gathered and who gathers it? How is the information used? These are questions that are important for everyone to consider when creating something on the Internet or using the Internet (Olsson, 2000).

2.4 The Personal Data Act

The development of information technology has created international networks since the Internet contributed to the change of communication. The communication between individuals is seen as more simplified and has a greater importance. One consequence of the increased use of Internet for communication is that it created greater possibilities for processing personal data in such a way that it might violate the personal integrity. It is the society’s obligation to make sure that such integrity-violations do not occur. To protect the individual’s personal integrity the Data Act were created in Sweden. This legislation was replaced by the Personal Data Act (PDA) in October 2001 (Petersson & Reinholdsson, 2000). The PDA is based upon an EG-directive and all members in the European Union (EU) have introduced similar legislation. Sweden has interpreted the EG-directive very strictly which is reflected in the legislation called the PDA (Berggren & Herdenberg, 1999). Personal data ordinance and regulations is in Sweden issued by the Data Inspection. The board is a supervising authority which purpose is to make sure that the PDA is followed. The decree and the regulations also regulate how a report to the Data Inspection Board should be done (Carlén-Wendels, 2000). The previous legislation, the Data Act, and the current, PDA, have co-existed for a period of three-years but, from October 2001, the PDA is the only one. With the except for the occurrence of manual treatment of personal data (Ekelund, 1999).

The main purpose of the PDA is "...to protect people against the violation of their personal integrity by processing of personal data". Concerning the term personal integrity, the PDA gives no univocal definition. But it does say that no one should have to accept that her/his personal data is stored without permission. Protected information can be marital status, telephone number, children, statements about property, buying habits and debts. This is the general definition with some restrictions but principally, the PDA wishes to regulate all undue trespass or violation of the personal integrity (Ekelund, 1999).

Personal data is defined by the PDA in the following way: "All kinds of information that directly or indirectly may be referable to a natural person who is alive". This is all kind of information that can be related to a person who is alive. Name, civic registration number and customer id are examples of personal data, information about health and credit rating can also be evaluated as personal data (Lindberg & Westman, 1999; Petersson & Reinholdsson, 2000). The information can be cryptically written so

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8 PDA Section 1
9 PDA Section 3
it is unintelligible but it is still personal data if the data can be related to someone. Even a trivial statement such as *My neighbour says that the world is round*\textsuperscript{10} is considered as personal data, since it is my neighbour that stated this and this person then can be identified, because it is my neighbour (Carlén-Wendels, 2000).

The term processing of personal data is defined as:

\textit{Any operation or set of operation which is taken as regards personal data, whether or not it occurs by automatic means, for example collection, recording, organisation, storage, adaptation or alteration, retrieval, gathering, use, disclosure by transmission, dissemination or otherwise making information available, alignment or combination, blocking, erasure or destruction.\textsuperscript{11}}

The law give no detailed definition on what constitutes automatic treatment of personal data but the term has a broad meaning and does not only concern digital technology but also other kinds of technology where the processing could be automatic (Petersson & Reinholdsson, 2000). An example of automatic processing is digital texts where some personal data or digital images of people exists. When it comes to analogous registration that happens without direct interference by the individual person like, for example, surveillance-cameras, the people responsible for the cameras should consider the PDA (Lindberg & Westman, 1999). Even information that is collected manually and then summarized by using computers or some other kind of automatic tool encompasses the PDA (Petersson & Reinholdsson, 2000). To sum up, one could say that processing mean anything from collecting and registering personal data to the use or transfer of it. Even the processing of the information that occurs between these task such as systemizing, sorting, selection or merge (Carlén-Wendels, 2000). However, a private person who process personal data in an activity or of private nature is not included by the Personal Data Act (Petersson & Reinholdsson, 2000).

For processing of personal data to be allowed the law demands some fundamental requirements. The requirements include, for example, that the collecting of personal data may only happen “…for specific, explicitly stated and justified purposes”\textsuperscript{12}. Since personal data according to the PDA only can be processed with certain goals in mind, there has to be a controller of the personal data (Petersson & Reinholdsson, 2000). It is the controller of personal data “who alone or together with others decides the purpose and means of processing of personal data”\textsuperscript{13}. Personal data may consequently not be used for some other purposes than for which it was originally collected. The purpose with the processing has to be settled before the information is collected, so the person who gives the information is informed of its use. One is not allowed to change the purpose with collecting and the use of the personal data a later date. It has to be explicitly stated to what the personal data will be used to avoid misunderstandings. It should also be entitled to collect the personal data. It is the PDA

\textsuperscript{10} Min granne säger att världen är rund. (Authors translation.)
\textsuperscript{11} PDA Section 3
\textsuperscript{12} PDA Section 9
\textsuperscript{13} PDA Section 3
that controls what can be considered as entitled, the purpose also has to be detailed so there are no doubt of what the processing concern (Petersson & Reinholdsson, 2000). Sensitive personal data such as ethnicity, religion, membership in a union, sexual preferences or health, where the restrictions are even more strict than processing of ordinary personal data (Petersson & Reinholdsson, 2000).

The law also states that personal data can be processed “… only if the registered have given consent to the processing”\(^{14}\). The registered means the person to whom the personal data belong and consent should be possible to give after the registered person is informed about the purpose of the processing of the personal data. Consent builds upon voluntarily given information, so there is no kind of force allowed when the data is being registered (Petersson & Reinholdsson, 2000). There are some exceptions to when personal data can be processed without consent and that is when a contract is being fulfilled with the registered person (PDA Section 10). For example being registered in a customer register when buying or ordering something. There usually are some kind of terms one has to read before agreeing to buy something (Lindberg & Westman, 1999). Another example of exception of the law is when the controller, that is, the one responsible for the personal data, has to fulfil a legal obligation or when the controller has to protect the registered person’s vital interests (PDA Section 10). The registered one might be very ill and can therefore not give consent. Personal data therefore can be treated without consent if a work task of public interest has to be performed, work task such as research or creating statistics (Lindberg & Westman, 1999).

The PDA in relation to cookies

How a cookie should be interpreted according to the PDA has been a much-discussed question lately among both jurists and laypeople. Since PDA’s definition of “processing” and “personal data” is very comprehensive you can possibly interpret that the information a cookie collects can be within the frame for these definitions. The information that exists cannot be connected to a specific individual, though the information can be connected to a specific computer (Petersson & Reinholdsson, 2000). The connection to a specific computer can according to the pre-work, the EG-directives, of the PDA be seen as personal data if it is a limited group of people that have access to the same computer or net-connection and that an individual in the group can be identified by other kinds of information (Petersson & Reinholdsson, 2000; Berggren & Herdenberg, 1999).

To process personal data one has to have consent from the actual person. Information about the processing of the personal data must be given so that s/he can decide if it is an advantage or disadvantage for her/him before consenting to the actual registration. S/he must be given the opportunity to commit an informed choice (Edmar, 1999). A cookie often collects information about the visitor of a website without letting the visitor know that registration of certain information is made (Carlén-Wendels, 2000). The visitor does not get the opportunity to consent, they do not know how the information is going to be used and it is not clear either who is going to use the information nor who is responsible for it (Lindberg & Westman, 1999). They do not also know that the cookie is being stored on their own hard drives, so the cookies are

\(^{14}\) PDA Section 10
spread out to thousands of computers and not in a single database (Carlén-Wendels, 2000).

Cookies exist according to the different laws in a kind of grey area, which can be exemplified by the issue if cookies can be seen as public documents. The administrative court of appeal in Gothenburg decided that a cookie could be considered as a public document that had been handed in to an authority, but that it was only a part of the technical processing. This processing is done for some one else, in this case to the ones who owns the website that generates the cookie. Cookies can therefore not be considered to be a public document that someone else can take part of. On the other hand the administrative court of appeal in Sundsvall related the use of cookies to an earlier investigation that did not consider cookies as a technical processing, but as a quantity of information stored in a file. The storage is not done for someone else since there exists no agreement between the different parties, namely the authority and the owner of the website. Cookies should therefore be considered as public document (Rindforth, 1998).

New EG-directive
Sweden wishes to protect the consumers personal integrity and it has shown itself that the EU-parliament also wishes to limit the use of cookies (Carlsson & Dahllöf, 2001). The suggestion is a new directive with respect to protection of personal life within the sector for electronic communication. The latest that have happened is that the council of ministers have accepted a mutual point of view about this, at a telecom meeting the sixth of December 2001. It means that the suggestion now will go back to the European parliament for a second reading, thereafter will the council of ministers make a final decision (Allvin, 2001). The Internet marketing business considers the proposed EG-directive as a disadvantage to the advertisement market on the Internet, where one with the help of cookies can find out what ads the website visitor has seen so that s/he always sees new ones (Holmström, 2001). Even the companies that today uses cookies to keep track of their customers electronic shopping baskets will have to reprogram their website if cookies will not be approved for the websites function (Carlsson & Dahllöf, 2001).

2.5 Ethics

Ethics, in the sense of formulated codes and principles for moral behaviour, have existed since the beginning of time. However, it was the Greeks that first rouse the question about moral, what it is and why one should care about it (Xrefer, 2001). Two ways of thinking arouse, the conservative where moral was an integral and important part of human life, and the more radical ones that regarded moral as a game with no real value or purpose. Today’s society is ambiguent, some people feel that moral has

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15 To further free exchange of opinions and comprehensive information should every Swedish citizen have the right to take part of public documents (TF Chap 2 1§) (Authors translation from the Swedish press law). Documents are documents that can, with the help of different technologies, be listened to, read or in some other way grasped. Public documents are the one that have been handed in, drawn up or kept at some authority (Rindforth, 1998).
Theoretical points of view

no value and others feel it does (Xrefer, 2001). According to the Nationalencyklopedin (2001) the word ethics comes from the Greek word thiko’s, which concerns ‘character’ and ‘moral’. Ethical studies focus on moral concepts and phenomenon and have for quite some time been related to philosophy and theology. Moral is seen as humans actions and their, sometimes hidden, values. Therefore a person or a group’s moral is shown in their actions. Ethics is the theoretical reflection of moral and its underlying basis. Ethical standpoints are based upon actual facts and values. Something that matters greatly in practical ethics is empathy, which can be thought of as trying to put oneself in the same position as another group or person (Nationalencyklopedin, 2001).

For the past decades the interest in ethics in the academic world has grown (Xrefer, 2001). It is a reappearance of Greek and Roman traditions, where questions such as how we should live and die have arisen. In applied ethics one tries to apply the moral philosophical principles to some ethical problem with the aim to clarify and structure it, examine and systematize arguments for different standpoints and possibly suggest a solution for it. Modern applied ethics have specialized in several areas, such as bioethics that deals with ethical issues in life sciences issues like euthanasia and fertilization in vitro. Vegetarians have raised the issue of moral when experimenting on animals, moral and farming etc. Environmentalists are pushing for a complete replacement of the Western attitude of ‘humans know best’ with a more holistic view. Questions about ethics in business have also arisen. This is something, which is a very important issue, since ethics has, seemingly, never been an important issues in business before (Xrefer, 2001). Quite a few large corporations and smaller ones have been caught ‘red handed’ so to speak, as for example buying off officials. But there are still people that feel that applied ethics have no real value or use. These people often feel that reason has no place in ethics, which is something that literature in applied ethics will find not to be true. Reason can solve problems and if not giving an outright solution, then at least the problem has been discussed and ideas have arisen. So the basic moral principles are still very up to date and important in today’s society (Xrefer, 2001).

The basis of moral principles are, for example, **reverent life** (Albert Schweitzer), **do the good and avoid the bad** (Thomas of Aquino), **Do not inflict on other what you do not want the to inflict on you** (Konfucius) (Nationalencyklopedin, 2001). These principles are values that are expected to be universal. They are also expected to be found obvious, and reflect our moral values (Nationalencyklopedin, 2001).

Another way to look at ethics and ethical issues is through Multi Modal Systems Thinking (MMST), which is a theory created by J. D. R. de Raadt (1997). The theory is based upon Dooyeweerd’s philosophy of the cosmonomic idea and his fifteen modalities. De Raadt has expanded the modalities by adding the epistemic and the operational modality (Mirijamdotter, 1998). Each modality represents a perspective, a way of thinking, in a system, regardless of what kind of system. Each and everyone of these modalities has a nucleus that corresponds to the systems function.

We interpret the essence of ethical modality as love, which is to care and to be concerned with humans and their world. The ethical modality was used in the analysis to help with the definition of ethics, which is quite an individual undertaking. The
essence of the juridical modality is justice, which is right and wrong. The modality has more to do with getting what ones due than law. The economic modality and its essence viability deal with the resources used during the development process, to economize the resources. These modalities and their essence can be used in analysing an existing system or used by the system developer as a kind of check list, so that s/he is fairly certain that they have considered as many perspectives as possible (De Raadt, 1997).

Ethical and moral values are also appearing in computing and has done so for quite some time. The Association of Computing Machinery (ACM), an international computing association, created their first ethical codes in 1972, which were revised in 1992 (Vehviläinen, 1994). The 1992 ACM ethical code consists of ‘General Moral Imperative’, ‘More Specific Professional Responsibilities’, ‘Organizational Leadership Imperatives’ and ‘Compliance with the code’. An example of a general moral imperative is rule 1.2 “Avoid harm to others. …This principle prohibits use of computing technology in ways that result in harm to any of the following: users, the general public, employees, employers… if one’s superiors do not act to curtail or mitigate such dangers it may be necessary to “blow the whistle” to help correct the problem or reduce the risk.” (Vehviläinen, 1994, p. 150). More specific professional responsibilities deal with issues such as achieving the highest quality and to analyse the possible risks of creating the systems. Organizational leadership imperatives deals with the users and their need of the system, user-participation and use of resources. Compliance with the code of course deals with compliance with the code (Vehviläinen, 1994).

The ACM ethical codes are not alone. In Sweden there exists a pamphlet authored by DataForum (2002) with the purpose to support the different computer-workers (programmers, system engineers, administrators etc.) The ethical rules can be found in appendix E. The important aspects of these rules are to follow different laws that might apply and to inform others of these laws, also to see to it that the project is ethically sound in relation to people and the society. Something very important is respect and protection, respect for the users and also the obligation to protect them, respect for the need of resources and time.
3 Research strategy

Before I know what I will examine, I cannot know how to do it.16
Fog (in Holme & Solvang, 1991, p. 84)

3.1 Research approach

When it comes to the research approach one often chooses between two main methods: quantitative and qualitative. By doing this one might exclude other methods. For example if one chooses the qualitative approach then it is likely that an interpretative or hermeneutic approach also will be used.

The quantitative approach is characterized by control from the researcher. The actual research is characterized by width and a few questions to a large number of research units. The researcher is considered to be on the outside, observing (Holme & Solvang, 1991). All in all the quantitative researchers gather data and study relations between these facts. They measure the situation, using numbers, and techniques that can give quantifiable results. Qualitative researchers on the other hand are more interested in finding out how people feel and relate to the world. Their goal is more insight than statistical analysis (Bell, 1995). The qualitative method is characterized by the researchers wish to receive a more thorough understanding of the problem he/she is researching. The research itself is characterized by depth and a number of questions to a small number of research units. The researchers are observing the phenomenon from within, he/she is part of the situation. The qualitative researcher is also trying to grasp the whole situation, which increases the understanding of social processes and context (Holme & Solvang, 1991).

Our thesis is therefore qualitative research. The pure quantitative approach does not give us meaningful data that can lead to meaningful conclusions. The thesis is about issues that cannot be measured in numbers, it is about the system developers and how they consider ethics and personal integrity when designing e-business solutions and especially when using cookies. It also has an interpretative approach because the material demands it. We cannot analyse the material without some kind of interpretation.

3.2 Course of action

To get an easy view of the course of action taken in this thesis we present figure 3.1. The process follows the direction of the arrows. But the process has been iterative and

16 Innan jag vet vad jag ska undersöka, kan jag inte veta hur jag skall göra det. (Authors translation).
we have gone back and forth. For example, we continued to read literature while analysing and discussing the material.

Figure 3.1 Course of action.

The idea-stage consisted of the first four steps in Figure 3.1. Step 0. Idea to step 3. Questions from literature studies and questionnaire. The idea-stage was when we were trying to figure out what to do and how to do it. The action-stage incorporated the other steps of Figure 3.1 Step 4. Interviews to step 9. Conclusion/Further research. The action-stage refers to the part of the thesis were we actually conducted interviews, conducted analysis and discussed our findings.

3.2.1 Idea, literature studies and questionnaire

The first thing we asked ourselves was what kind of phenomenon we wished to investigate (Mason, 1996). After a lot of thinking the answer was personal integrity and how system developers handle it. We also felt that their attitude towards cookies could be of interest. During the idea stadium the question of “what am I doing it for?” (Mason, 1996, p. 12) came up. We wrote this thesis to try to show the importance of personal integrity and examine how the system developer, which has a lot of power when designing new technologies, deals with cookies in a way that respects the users personal integrity.

It was also of interest to know what kind of knowledge that exists in this phenomenon (Mason, 1996). Our knowledge was represented by the framework of theories that are used in this thesis. We conducted an extensive literature study, step 1 in Figure 3.1. In
the beginning focusing on literature about methodology to help us design our research approach and other methodological issues. We also read about personal integrity, ethics, the Personal Data Act, EG-directive, MMST, Cross – Sectional Indexing of Data, system design and cookies.

To find the e-businesses we were using in our research we used a very simple method. We searched for companies with websites and checked if we got a cookie on the hard drive when we visited the website. If we got one, we contacted the company’s webmaster by phone in order to ask for more information. All in all, we contacted ten webmasters who work in Sweden. Then we sent out ten open-ended questionnaires to the web managers at the e-businesses we found. Some of the questions could be combined, some were superfluous and some were not very interesting. The remaining questions made with the help of Multi-Modal Systems Thinking (deRaadt, 1997) can be found in Appendix A.

A questionnaire was used in order to give an overall view of how the different companies viewed their customers’ personal integrity. Further how they use cookies and if the use of cookies and the issue of personal integrity had a formal definition at the company in the form of a policy. The questionnaires were based on qualitative variables, such as the use of policy when dealing with customer information.

3.2.2 Interviews
The answers to the questionnaires pointed out some inconsistencies between our interpretation of how one should use cookies according to ethical and legal issues. Further the answers also lead us to another area within e-business, namely development. After considering the answers to the questionnaire and attending seminars we were the question of system design arose we decided to change our purpose with this thesis. We decided to research the subject from the system developers’ point of view. We contacted some of the companies that had arisen during our search for e-businesses. These companies catered to e-businesses, they created e-business solutions, where one solution is an actual website.

We have conducted four semi-structured interviews, based upon the answers we received in the questionnaire. We choose semi-structured interviews because it expands the researchers’ understanding of the situation, which also is the purpose with asking questions (Mason, 1996). To guarantee anonymity to these companies, we will not mention the person’s names interviewed, or the name of the companies. The question of anonymity was an important one, because a majority of the interviewees brought it up. To receive truthful answers from the interviewees, trust between the interviewer and the interviewee is important and the issue of anonymity is a part of that trust.

We conducted one of the interviews in person and three over the telephone. The interview questions can be found in Appendix B. A speakerphone was used so that both interviewers could be heard. The fourth and last interviewee did not as the others deal with e-solutions such as websites for net-shoppers. She mainly created websites
used for support centres, but we decided to interview her because she had conducted similar work and could still give contribution to our research. All interviews were recorded and they were all about forty-five minutes long. The interviews were all transcribed for the analysis.

### 3.2.3 Analysis

We decided to use Cross – Sectional Indexing of Data (CSID) when analysing the material. The Cross–Sectional Indexing of Data here defined is in accordance to Jennifer Masons (1996) definition of the method. It is a kind of categorical indexing that uses different categories to create an index. CSID has to be consistent so that whole sets of data can be categorised according to a set of principles and measures. One way to do this is to insert the indexing categories as subheadings in the text-based data. This gives a description of what each section of text is about.

There are three main limitations with using this form of indexing, which also is called simple serial indexing (Mason, 1996). Firstly, the indexing categories very easily become too broad as to be of any use, especially if the purpose is to make comparisons between different texts. Secondly, qualitative texts are likely to address several topics at a time, and serial indexing might therefore be difficult to use. Thirdly, it is unlikely that serial indexing works well in qualitative texts, because they do not have a standardised layout. Therefore complex indexing should be used with qualitative material, where one can use several different types of categories and subcategories on the same set of text. These categories and subcategories are both unrelated and interrelated, which creates quite a complex system (Mason, 1996).

#### Analysis Zero

The first part of the analysis of the empirical work, which we call Analysis Zero, was conducted by reading the questionnaires and the interviews and at the same time finding indexing categories. The reason for indexing the data was because it were text-based. We also wished to get a systematic overview of the data, to get a clear view of the scope of the data.

**Analysis Zero - Interviews**

We then read the transcribed interviews to categorize them and to see if we could find some categories. During the analysis we also noticed that the categories were too large to handle. Therefore we decided to reduce them to even smaller categories (See appendix D). We then wrote summarized answers on a paper to get a general view of the different categories. During the first section of the analysis we found that the detailed categories and subcategories were useful at first. When we actually moved the text to their right place, some were too specialized and had to be joined and some were superfluous altogether and were removed. The empirical and analysis chapter was structured after these categories (See figure 4.1). We also decided to call the system developers A, B, C and D.
Analysis One:
The second part of the analysis, Analysis One, consisted of interpretations of the categorized text from the interviews.

Analysis Two:
In analysis Two, we compared the interpreted questionnaires and interviews from Analysis One with the categorized theories in order to see where there were similarities and differences. To do this, we had to categorize and summarize the theories. The different categories used when categorizing and summarizing the theories did not always correlate with the categories in the analysis chapter so when this happened we looked at different theories to see if they fit the text in the analysis chapter.

After conducting the whole analysis on the transcribed interviews we concluded that our original opinion of slight negativity towards cookies shone through and therefore we decided to redo the analysis again. During this second analysis we examined the answers from the system developers point of view. We only remade Analysis One and Two since the categories still fit after a check. The results were different from when we remade the analysis and tried to think like system developers than the result we got when we were thinking like users or Internet-surfers.

3.3 Method discussion

A thesis, regardless if it is a quantitative or qualitative one has to have trustworthiness. Lincoln and Guba (1985) define trustworthiness in a qualitative thesis by four notions: credibility, transferability, dependability and confirmability.

Credibility is as the credibility of the results of the qualitative research from the perspective of the participants in the research. This judgement can only the participants do, since the main objective in qualitative research is to understand and interpret a phenomenon (Lincoln & Guba, 1985). Therefore we cannot say that the thesis is credible from all of the participants’ views since the interviewees have not read the finished thesis. But we can as authors point out that we consider our analysis to be consistent and credible.

Transferability is how much of the results of the qualitative research that can be generalized. The actual transfer is the responsibility of the person wishing to generalize the work. The qualitative researcher can of course enhance the transferability by doing a thorough job of describing the context and the central assumptions in the research (Lincoln & Guba, 1985). We think that we have done an as thorough job as possible describing the problem area and the assumptions we have made. The question of transferability is therefore in the hands of the person reading this thesis.

Dependability means that the qualitative researcher has to describe the ever-changing context in which the research is taking place. The researcher should depict the
changes in the settings and how these changes affect the way s/he approaches the study (Lincoln & Guba, 1985). This is something we think that we have accounted for in Chapter Three: Method, especially in the section of Course of Action.

Confirmability is defined as the degree to which the results can be confirmed or substantiated by others. There are a number of ways for the researcher to enhance confirmability. For example, search for negative instances that contradict prior observations. The researcher can detail the procedures for inspecting the data throughout the study. The researcher can also conduct a data audit, that scrutinizes the collected data and analysis, and assess the potential for bias or irregularities (Lincoln & Guba, 1985). We think that we have considered confirmability by detailing the procedures for collecting and analysing the data.

In the light of these four norms, we consider out thesis to be trustworthy.

Method critique

We are two students from Luleå Technical University that studies at the program Informatics and Systems science. We therefore have backgrounds as system scientist and accompanying way of thinking. We are not jurists and cannot interpret the different laws completely. We can only interpret parts of the different laws and what other jurists have written about the laws and especially the EG-directives.

The majority of the interviews were conducted over telephone and we would yet again point out the difficulties with that. We for example could not see the interviewees body language and made it more difficult to direct the interview towards more interesting issues. We assume that the interviewees told the truth within their frame of reference. Something that also has to be considered is the fact that we learn as we do. The first interview was not as the last one because of more or different follow-up-questions to their answers. But all in all they answered more or less the same questions.
4 Empirical Work

The empirical data of the interviews will be presented in this chapter. The chapter is structured after the categories from figure 4.1.

Figure 4.1 Category tree for the interviews.

4.1 The Interviews

We decided to change the name of subcategories to further the readers understanding. For example 4.2.2 Ethics – Definition is now called ‘General definition of ethics’. This of course refers to the system developers’ opinions. The major categories such as Ethics and Personal integrity are called the same except for the category PDA and the EG-directive they were put under a common denominator, Law. Also the interviewed system developers are called system developer A, B, C and D. We did not receive answer to every question from every system developer therefore there might not be four answers to every question. The reason for not getting an answer to everything is because qualitative interviews very much resembles a discussion or a conversation where the discussion might take you just about anywhere. The questions and the answers were originally in Swedish and have, by the authors, been translated into English.

4.2.1 Personal Integrity

Firstly, we will present the systems developers’ general definition of personal integrity. Secondly, how the systems developers define violation and non-violation of personal integrity. Finally, we present the systems developers’ definition of personal integrity in relation to the customer and the end-customer.

General definition of personal integrity

Systems developer A said personal integrity is to treat the gathered personal data in a correct way. One should be able to have opinions without being registered without permission. B stated that one should not abuse information about juridical persons and
thereby encroach their sphere of personal integrity. He also stated that when it come
to the example of mobile phones, where there might be a risk of violation of the
personal integrity, does the responsibility to whether one is violated or not on oneself
since one has the choice to turn off the telephone or not simply answer it. System
developer C also pointed out the importance of choice, in connection with users and a
system that demands some kind of information. It was also important that it is an
informed choice, that the user or end-customer knows about the gathering of the
information.

Violation and non-violation of personal integrity
System developer A considered a violation of the personal integrity to be if given
information was used in a way the giver of the information did not know about. As an
example he pointed out that some websites sometimes delivers personal welcoming
messages when entering the website. The question ‘How do they know my name?’
arises and a sense of discomfort appears. This is according to him a violation of the
personal integrity. B also thought that using information in such a way one has not
informed the customer about is a violation. Gathering information about the customer
or about people behaviour was also considered a violation. One should have been
informed and consented to it. He also stated that if the user or end-customer needs the
service, the e-solution, in his work it is considered a service not a violation. The
feeling of violations is to be considered as highly individual. And also the third
system developer, C, considers a violation of personal integrity to be using
information or personal data in such a way that has not been communicated.

When it comes to the issue of what is non-violation system developer A mentioned
cookies, that they are not a violation as long as they are not forbidden. He also pointed
out that e-businesses might in the future be able to market themselves by proclaiming
that they are not using cookies at their website. The system developer also asks
himself if the public really knows if cookies exist. B could not see how cookies could
be an integrity problem unless one is misusing cookies and its containing information.
System developer D simply stated that she had not thought about personal integrity
and non-violation before.

Personal Integrity in relation to the customer and the end-customer
In order to consider a customers and/or an end-customers personal integrity systems
developer A stated that one of their customers deals with data from banking and
therefore is the end-customers personal integrity very important to that customer. B
stated that he thought a lot about the end-customers personal integrity. The system
developer made the customer pay attention to the end-customer and the fact that
something the customer considers as service can be considered a violation by the end-
customer. He also stated that it is important that the end-customer does not in any way
feel violated or persecuted, and that for the end-customer can a personalized
welcoming message not only be a good thing but frightening and uncomfortable. He
mentioned that they advise the customer against tracking their end-customers too hard
because of the end-customers personal integrity. He also talked about checking up on
the customers business so that there are no strange irregularities that can hurt or put
the end-customer in strange situations. The third system developer, C, tried to create
systems that do not need cookies because of consideration to the end-customers
personal integrity. He made an intriguing example. He stated that the end-customer
should never feel that someone else knew what he has bought. That if one, for example, was using a school-computer when buying a product it would be possible for the person after you to find out what you have bought. He stated that that was one of the reason that they avoided using cookies and that that function had been removed as much as possible.

### 4.2.2 Ethics

Firstly we present the system developers’ definition of ethics. Secondly the system developers’ definition of ethics in relation to the customer and responsibility in relation to the customer. We also present the system developers’ definition of ethics in relation to the end-customer and responsibility in relation to the end-customer.

**General definition of ethics**

The definition of ethics is slightly varied. System developer A talked about one keeping what one promise and standing up for ones opinion. One should consider good form and not do anything that does not feel right. Another one, B, referred to ethics as not working with certain lines of business such as the pornographical branch and the branch of racism. One should also not abuse the information gathered about the customer. System developer C mentioned consideration to personal data that is being processed by a system, something that has to be considered during the whole development process. The fourth system developer, D, simply stated that ethics is build upon common sense.

**Ethics and responsibility in relation to the customer and the end-customer**

The issue of ethics towards the customer was according to system developer A honesty towards the customer, discussions about the investment was very important. C talked about that they discuss ethics with their customers, a discussion about what kind of information one should or should not store. Ethics towards the customer is also seen to it that the customer is protected towards other companies’ curiosity when it comes to company secrets. System developer D simply stated that they do not discuss ethics with the customer.

Regarding the system developers responsibility towards the customer A stated that one shows responsibility by satisfying the customers need and to give a good return on the investment. There is also a responsibility too keep oneself and the customer within the law. System developer B stated that system developers has to take care of the customers profile so that it is not distorted in any way, it was also important to quickly find the nuclear issues in the investment. He also stated a sense of responsibility towards the customer’s level of knowledge and competence to be able to complete such an investment that buying an e-solution contains. Customers have usually a low level of knowledge in these matters and he thought that he had the responsibility to educate them. The third one, C, mentioned that responsibility is to build a good base with the customer and to often check so that one is following the customers needs and wishes. System developer D said that system developers have a responsibility to create a user-friendly system, but that it is more important to satisfy
The issue of ethics towards the end-customer were according to system developer C very hard to consider, since they are so removed from the situation. He expressed a sense of vigilance but also a sense of fear of missing something and accidentally hurting, in some way, the end-customer. He also stated that he did not wish to use cookies because of ethical reasons, as an example he gives the use of shopping baskets. System developer C said: “If someone is using a computer at a school for example and puts something in the electronic shopping basket, and then the next person can come and see what he has put in it”. System developer D also stated that the topic of ethics, moral towards the end-customer is difficult to grasp, but that in the end it is to not encroach the end-customers personal integrity.

Regarding the responsibility towards the end-customers system developer A stated that he was the one who builds the system, but in the end it is the customer that has to take responsibility for the end-customer. B mentioned that during the design process and also after, they discourage the customer to sell on or give out information about the end-customer to a third party. He also stated that things that he felt were ethically questionable were discussed with the customer when the need occurred. System developer C considered himself responsible as a developer of the system, by continuously giving opinions about the product and thereby considering the end-customer. But in the end it was the customer that had to take responsibility for the end-customer and the information about them. The fourth system developer, D, stated that it is the customer who decides, whether they want to sell information about the end-customer or not. The system developer feels no responsibility toward the end-customer in that sense.

4.2.3 Cookies
Firstly we present the system developers view of the definition and functions of cookies. Secondly the system developers’ thoughts about cookies advantages and disadvantages. Thirdly we present the system developers opinions about advantages and disadvantages in relation to the customer. Fourthly the system developers’ thoughts about cookies advantages and disadvantages in relation to the end-customer are presented. Finally system developers’ state their general view on cookies.

Definition and functions
Regarding the function of the cookie system developer A stated that cookies have functions that can satisfy the customer’s demands and therefore should be used. Using other technical solutions it might become more expensive in matter of time, money, resources and that is something customers seldom wants. B felt that the need of the customer decides if one should use cookies or not. One function a cookie might take is a shopping basket where one can keep track of the products in it, and without ending the buy leave the website come back and its all there. More functions are for example gathering information about articles, the end-customer can also ask for an offer, and of course end the buy. He also points out that it is important for the customer to be able to store what the end-customer is interested of during a period to
be able to develop the website further. System developer B said: “There are as many area of use that there are developers… it is only the imagination that limits”. The third system developer, C, stated that the function saving credit card numbers was something a system developer should not do or condone.

**Advantages and disadvantages of the use of cookies**

Advantage for system developer A was that it is a very simple technique where there already exist functions for cookies in web browsers and web servers. C stated that the reason a system developer would like to use cookies was that they are a simple technical aid when programming systems. He also expresses a wish not to work with cookies since there exists better technical solutions. The disadvantage was that it gives an extra file to handle. There is always talk about cookies. System developer C thought that the function of a cookie could be solved with other means. System developer D simply stated that cookies simplify things for her.

**Customers advantages and disadvantages of the use of cookies**

Regarding the customer system developer A stated that it is an easy way for the customer to identify the end-customer and check if s/he has visited the website earlier. For the customer the cookie is an easy way to store information about the end-customer. He could see no technical disadvantages, but he could see a disadvantage considering the negative attention the use of cookies has got in the media. The second one, B, pointed out that it makes it simple for the customer to further develop the website to attract the end-customer. System developer C could not see any direct disadvantages for the customer. The fourth one, D, felt that it is an advantage for the customer because it simplifies the process of gathering information about the end-customer. It was also an advantage for when, for example, having a poll the cookies enables the voters to only cast one vote.

**End-customers advantages and disadvantages of the use of cookies**

An advantage according to one system developer, A, was that the function of the cookie is a service. The disadvantage is that the cookie and its contained information can be misused. System developer B felt that it gives the end-customer freedom to surf around, to visit another site and return without losing anything in the shopping basket. A third system developer, C, also stated that the advantage of a cookie is that it stays even after one have turned of the web browser, deliberately or by mistake. The disadvantage were if important information, such as credit card numbers, were saved in the cookie, but he felt that it was something every sensible system developer avoided creating.

**General knowledge about cookies**

System developer A stated that few of the public actually know anything about cookies and that it is good that it is being discussed, so that one can decide once and for all how cookies should be seen and used. He also mentioned that cookies are in the grey area just because people do not know of their existence or their use. B felt that cookies are a question of education; that many believe that cookies are synonymous to violation of personal integrity, which was something he could not understand. On the other hand he also pointed out that very few end-customer know that cookies exists and are being downloaded to that persons computer. The third system developer, C, simply stated that the customers never ask for a cookie, they ask for the function of a
cookie. And that it is unusual that one asks for permission to download a cookie to an end-customers computer.

4.2.4 Law

Firstly we present how the system developers’ think the law applies to the customer. Secondly how the EG-directive is defined and its consequences. Thirdly we present the Personal Data Act, how the system developers’ define it and related to the customer. And finally we present the system developers’ definition of personal data and its uses.

The application of the law in relation to the customer

Regarding the issue of law, system developer A said that a system developer should know about the different kinds of laws such as the Personal Data Act and “slow down” the customer if they start coming to close to the frames of the law. He also pointed out that he had never needed to discuss the different kind of laws with the customer. That there had, as he had seen it, not been any need for it. The second system developer, B, simply stated one should act according to the law. He discusses the legislation with their customer, such as personal data the issue of using pictures and such. System developer C has never really discussed any laws with the customer, because he was not in such a position, he felt that it was something the head-negotiator should do. The fourth one, D, had not discussed it with any customer but assumed that someone else has done it on an earlier design-level.

EG-directive – Definition and consequences

System developer A was unsure of what the EG-directive really was about. The second one, B, defined it as not being allowed to use cookies to identify end-customer’s behaviour, buying behaviour for example. He also states that s/he cannot really see that cookies are so dangerous, but if is decided so then one can use other techniques. System developer C felt that he did not use cookies in such a way that s/he has to care about the directive. The fourth one, D, had not read anything about it.

Personal Data Act – Definition and how it applies to the customer

When it comes to the definition of the PDA one system developer, A, stated that one is not allowed to register or store information in such a way that makes it possible to later misuse it. He also stated that it depends on how one interprets the law, but that the system developer had to consider the PDA during the development process. System developer B knew how to use the law but could not during the interview clearly state what it contained. He also stated that one had to inform the customer about laws such as the PDA because the customer would like to strip the end-customer of so much information as possible. C could not define the PDA. The fourth system developer, D, defined the PDA as not giving out information but that one as a user is protected.

Personal data – Definition and use

System developer A stated that personal data is information that can in one way or another be used to identify someone. He gave the example: “if someone knows that I
have a blue car and live in a brown house in this area then it is personal data”. This system developer also felt that the information contained in the cookie decided if it could be considered as a violation of the law. He strongly felt that cookies were in the grey area when considering personal data. Since the information is not stored with the customer but with the end-customer, he felt that the customer could assert that since the information was not stored with them it was not a problem. According to system developer B personal data is name, address, telephone number and civic registration number. Our example “Anna in Luleå” was considered to be too wide, too unspecified to be considered as personal data. He did not think that cookies contained any personal data and were therefore not a problem. System developer C also stated that personal data was name, address, civic registration number and similar information. He stated that personal data are data that should be treated privately and with care unless the person consents to it. The fourth one, D, considered personal data to first and foremost be the civic registration number and then where one lives.

4.2.5 Policy
Policy referring to ethics and personal integrity
In this section the system developers defines their policies, their formal definitions, of ethics and personal integrity.

System developer A did not know if there existed any policy about ethics and personal integrity. The second one, B, knew that they did not have an official policy about it. System developer C claimed that their policy consisted of written down guidelines of how one should handle personal data when creating an e-solution. For example should one not create a system where one could save the last four numbers in the civic registration number. He also stated that the guidelines helped the customer with security issues such as the end-customers anonymity. D was not certain but assumed that a policy existed.
5 Analysis and discussion

Firstly, we will present the categorization of theory, a short summary to give an idea of why just these theories were used when comparing the theory and the interpreted interviews. Second is the analysis of the questionnaire where we also discuss our findings. Thirdly the comparison between the categories from the interviews with the ones from the theories and also the discussion of the analysis findings. The analysis was conducted using Cross–Sectional Indexing of Data (Mason, 1996). The result was compared with our theoretical framework, which consisted of definitions of ethics, personal integrity, cookies and the Personal Data Act.

5.1 Categorization of theory – a short summary

We have decided to put the categorised theory here in summarized form to help the reader understand analysis Two, which is to compare the categories in the analysis to the categorised theory and see what we can find. To further the readers understanding we present a figure of the categories.

![Category tree of the theory](image)

Figure 5.1 Category tree of the theory

5.1.1 Personal integrity

**Personal integrity - Definition**

There are several different definitions of personal integrity, which points to the difficulty to actually define it. All of these definitions mention a sphere with a border that protects ones personal integrity. According to Freese (1983) personal integrity is the right to your own personal sphere, privacy.

**Personal integrity - Violation**

One way to define personal integrity is by finding out what violation of someone’s personal integrity means, because you yourself know what it is and what it is not. There are three situations when the personal integrity is being violated:

*Person P is violated and feel violated,*
*P is violated but do not feel violated,* and
*P is not violated but feels violated.*

(Collste, 1993, p. 145)

17 Personen P är kränkt och upplever sig kränkt,
As stated in Chapter two does a person have to be reasonable when claiming to have been violated. Claiming a violation because someone said ones first name during a conversation is wrong because there are most likely others with the same first name (Collste, 1993).

**Personal integrity – Computer - surveillance**
The issue of Internet and computer-surveillance is a difficult question, since the sense of being violated is highly individual. One cannot state that everything on the Internet is a violation or that nothing is a violation. Most people turn against being surveyed without their knowledge, their opinions and wishes have not been respected there is a strong possibility of violation of their personal integrity (Collste, 1993).

**5.1.2 Ethics**
Ethics is ones moral principles, the moral guidelines by which one lives. Ethics is also a rising issue in business (Xrefer, 2001).

**Ethics - Empathy**
Some aspect that greatly matters in the definition of ethics is to show empathy towards others. It is easier to have an ethical thinking if one can empathize, namely strive to put oneself in someone others place (Nationalencyklopedin, 2001).

**Ethics – Basic Moral**
Basic moral are principles that are more or less universal and obvious to most, these principles reflects our moral values. Principles such as Thomas of Aquinos statement *Do the good and avoid the bad, Act by the principle you wish to see as public law* (Kant), *As much happiness to as many as possible* (John Stuart Mill) (Nationalencyklopedin, 2001).

**Ethics – Responsibility**
The design process is a time-limited process and conscious in matter of creating, valuing and choosing the product, not to forget is also the construction, testing and implementation of the finished product. During this process the characteristics of the product are chosen, characteristics such as function, aesthetics and ethics (Stolterman, 1991).

There exist three kinds of design processes where the designer is an: artist, researcher or engineer. The artist is considered responsible for her/his actions at all times. The researcher not fully responsible for her/his actions, and the engineer is considered to be fairly responsible for her/his actions. But in ideal oriented design theory the designer is considered to be responsible for her/his actions at all times and responsible for all of the different functions in a design process. The system designer or developer also has to consider ones affect on the society since many of the IT systems created have more consequences that what one can imagine (Stolterman, 1991).

---

P är kränkt men upplever sig ej kränkt och
P är inte kränkt men upplever sig kränkt. (Authors translation.)
MMST – Ethical modality
The kernel of the ethical modality is love (De Raadt, 1997). This modality is used to further the definition of ethics.

MMST – Juridical modality
The kernel or essence of the juridical modality is justice. Justice in the sense that one receives what one is due, what is right and what is wrong (De Raadt, 1997). This modality is used in discussion.

MMST – Economic modality
The essence of the economic modality is viability. Viability handles the resources that are used during the development in as economizing manner as possible (De Raadt, 1997). This modality is also used in discussion.

Ethics – Computing
Ethics has existed in computing for some time. The different ethical aspects are on an international level regulated by the ACM, with that we mean that the ACM has constructed ethical codes for different aspects of the computer professionals work. In Sweden there exists DataForum (2002), which has constructed some rules for computer professionals. The rules touch aspects such as follow the different laws that might apply, as see to it that the project is ethically sound, and also to respect and protect the different people in the project. One way to protect the different people, such as users, in the project is to see to it that only the data that is absolutely necessary is used in the system.

5.1.3 Cookies
Cookies are small text files that the web servers, from the website one is visiting, stores on the users computer. These cookies and the containing information can later be retrieved and read by the web server when visiting the websites again (Carlén-Wendels, 2000; Langford, 2000). For example, when visiting the website x.com it registers a cookie called user that has some kind of value. When one visits any website below the x.com address, the cookie and the value are sent back to the web server as part of the HTTP request for every page. Which in essence means that one can customize any page for an individual visitor (Langford, 2000).

Cookies – Function
There are some typical uses for cookies. For example shopping baskets, where one can find articles, store them in the basket, buy them or simply leave, come back and its all still there in ones shopping basket. Cookies can also be used to compose personalized welcome messages to individualize a website. The most common information in a cookie is some kind of id, which can be used to identify the end-customer. Information such as name, address and similar information about the visitor is stored on the web server (Carlén-Wendels, 2000). The function of cookies can be seen as service or a violation to ones personal integrity. This is a highly individual issue but also something we all should consider (Bayan, 2001).
5.1.4 The Personal Data Act

Personal Data Act - Definition
The purpose of the PDA is to make sure peoples personal integrity is not violated during processing of their personal data. Personal integrity is that one should not have to accept that her/his personal data is stored without consent. Personal data such as telephone number, children and buying habits (Ekelund, 1999).

Personal Data - Definition
Personal data is information that can directly or indirectly point to a living natural person. This means all kinds of information not only as stated above telephone number, children and buying habits but also information about health and credit ratings (Lindberg & Westman, 1999; Petersson & Reinholdsson, 2000). It does not have to be clearly stated that it is this and this person it is about to be considered as personal data (Carlén-Wendels, 2000).

Personal Data - Consent
The PDA clearly states that one is only allowed to process someone’s personal data if that person has given consent. One also has to have an explicitly stated purpose with his process. The processing is even more strict when it comes to sensitive information such as ethnicity, membership in the union and sexual preferences (Petersson & Reinholdsson, 2000).

5.1.5 EG – directive

EG – directive - Definition
The EU-parliament wishes limit the use of cookies without consent to protect personal life in electronic communication. This directive affects the use of cookies for advertisement and may affect the overall use of cookies (Carlsson & Dahllöf, 2001).

5.2 Analysis and Discussion of the Interviews

Below every major category we present a table that summarize the corresponding theories with the corresponding empirical data. This to further the understanding of the different categories.

The structure of the analysis and discussion of the interviews is as follows. Under every major category, for example 5.2.2 Ethics a summary of all subcategories is presented in a table. These subcategories have the same structure. First we present Analysis One, the interpretation of the transcribed interviews. The table present Analysis Two, the corresponding categorized theories. For example 5.2.2 Ethics, subcategory General definition of ethics, here we find that the system developers’ definition of ethics correlates with the theories of ethics and basic moral. If one looks at the categorized theories one can see that ethics consists of more than a definition and basic moral therefore the table also contains the theory of empathy, responsibility and MMSTs definition of the ethical modality. Now the things in our analysis that corresponds with the theories of ethics are marked with an X those that do not correspond are not marked at all. The reason for simply presenting the titles of the
different summarized theories, that can be find in full in section 5.1, is that there is no room for yet again present the theories. Below the table the argumentation and discussion for the correlations and non-correlations can be found. The discussion is in the same order as the correlating theories are presented in the table.

5.2.1 Personal Integrity

Table 5.1 shows a summary of the corresponding theories in the main category personal integrity. Table 5.1 presents the system developers’ opinions from the top, represented by the different categories, such as General definition of personal integrity, and the corresponding theories, such as Personal integrity – Definition, from the right. And as explained above when a category from the system developers’ answers to a theory it is marked with an X, if does not correlate it is not marked at all. Below these categories, the columns with corresponding rows will be further explained.

<table>
<thead>
<tr>
<th>System Developers Theory</th>
<th>General definition of personal integrity</th>
<th>Violation of personal integrity</th>
<th>Non-violation of personal integrity</th>
<th>Personal integrity in relation to the customer and the end-customer</th>
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<tbody>
<tr>
<td>Personal integrity – Definition</td>
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<tr>
<td>Personal integrity – Violation</td>
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<td>Personal integrity – Computer Surveillance</td>
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<tr>
<td>Ethics - Computing</td>
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</table>

Table 5.1: Personal integrity - Summary of the tables in the subcategories.
**General definition of personal integrity**
The system developers’ think that when one as a user or end-customer gives out information it should be done in such a way that one is aware of it and that the information is gathered in a correct way. Also one should know how the information will be used, and therefore has an informed choice that seems very important. If one can make an informed choice part of the responsibility to consider the personal integrity lies with oneself.

<table>
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<th>Theory</th>
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<td>Personal integrity – Computer Surveillance</td>
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Table 5.2: General definition of personal integrity.

The system developers’ definition of personal integrity does not fully answer the theory of the definition of personal integrity. But since they mention to have a choice one needs to have a border, when to make that choice and that meets the theory of the definition of personal integrity. The fact that the system developers’ point out choice as something important do to an extent answer to the theory of personal integrity and violation. In the sense that it is a reasonable border to make a stand at. It is quite natural to want to have a choice, regardless if it is about choosing to accept cookies or not, or turning on the mobile phone or not. The system developers’ definition correlates with what both Olsson (2000) and Collste (1993) pointed out in the theory of personal integrity and computer surveillance. That one should be informed about that the information is being gathered and what it is going to be used for before having to give out information.

**Violation and non-violation of personal integrity**
The system developers’ definition of what violation of personal integrity was, is that it first and foremost is to gather information or personal data and use it without the information giver’s consent. Violation can be to receive a personalized message when visiting a website. If the e-solution is used in the visitor’s work then it should be considered as a non-violation. The issue of violation as an individual issue also emerged.

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<tr>
<td>Personal data - Consent</td>
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Table 5.3: Violation of the personal integrity.

The system developers’ statement does answer to the theory of the definition of personal integrity. Because we interpret that they define the personal sphere with the
help of work. When one has to use an e-solution or visit a website the function
cookies provides are considered as a service, but once one leaves work the personal
sphere begins and cookie might possibly be considered as a violation. The fact that the
feeling of violation is individual strongly correlates with Collste (1993) in the theory
of personal integrity and violation, where he writes that: a person can be violated and
feel violated, or be violated but not feel violated or not be violated and feel violated.
Something that is pretty easy to spot is that the system developers define personal
integrity by using violations as examples. This furthers the idea that personal integrity
is difficult to define and very individual. The system developers’ opinion that one
should be able to give ones consent corresponds to the theory of personal integrity and
computer surveillance. Where it is stated that most people wish to know when
someone is surveying them (Collste, 1993). The system developers’ definition of a
violation is that one has not been given a chance to consent does strongly correspond
to the theory of personal data and consent. The theory clearly states that it is a
violation of the PDA to process someone’s personal data without that persons consent.

All in all system developers seems to consider cookies as a non-violation of the
personal integrity as long as it is permitted to use them and as long as the information
in the cookie is not misused. Also the question if the average user knows of cookies
arose.

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<tr>
<td>PDA - Definition</td>
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Table 5.4: Non-violation of the personal integrity.

The system developers’ opinion about cookies and violation of personal integrity
show no similarities to the theory of the definition of personal integrity. Since they do
not mention anything about having a personal sphere of some kind. The system
developers’ statement does not correspond to the theory of personal integrity and
violation since they stated that cookies are a non-violation to the personal integrity.
The system developers’ opinion do not correspond to the theory of personal integrity
and computer surveillance since Collste (1993) states that it is a violation if one is
being surveyed without their knowledge, which in essence a cookie does. The system
developers’ view of the issue of cookies does not correlate with the theory of the
PDA. The theory states that one has to consent to someone storing and processing
ones personal data.

**Personal integrity in relation to the customer and the end-customer**
The system developers’ thinks that the customers care about their end-customers
personal integrity and if not the system developer tries to make the customer pay
attention to it. Also the system developers try to keep a close eye to the design process
to avoid situations where the end-customers personal integrity might come into question. For example, a personalized message being a violation of the personal integrity, to the end-customer. Also the possibility that someone might have access to the computer after oneself and have access to one’s cookies is seen as a possible violation of the end-customers personal integrity. It seems that the system developers are making efforts to not disregard the end-customers and their feelings of personal integrity.

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</table>

Table 5.5: Personal integrity in relation to the customer and the end-customer.

The system developers’ statements about customers and end-customers do not correspond to the theory of the definition of personal integrity. This because they do not mention a border or personal sphere of any kind. The system developers’ examples of possible violations show similarities to the theory of personal integrity and violation, and to the theory of personal integrity and computer surveillance. Because they feel that the end-users probably feels violated at these instances. The system developers’ statements answers to the theory of ethics and empathy because they try to put themselves and get the customers to put themselves in the end-customers position. It also corresponds to the ethical modality with its essence love and meaning care for human concerns. To try to make the customer pay attention to the end-customer and her/his personal integrity show care for the end-customer. The system developers’ tries to protect the end-customer, which corresponds to the theory of ethics and computing.

We see a clear effort to look after the end-customers and their integrity during the design process, but as stated before the customer does go first. This is something that we think is pretty ordinary in the business world. To get satisfied customers who come back, you have to satisfy their needs. With that said we maintain the opinion that the system developers at least try very hard to keep an eye on the end-customer, which in our opinion is a noble mission.

### 5.2.2 Ethics

Table 5.6 shows a summary of the corresponding theories in the main category ethics. Table 5.6 presents the system developers’ opinions from the top, represented by the different categories, such as General definition of ethics, and the corresponding theories, such as Ethics – Empathy, from the right. And as explained above when a
category from the system developers’ answers to a theory it is marked with an X, if does not correlate it is not marked at all. Below these categories, the columns with corresponding rows will be further explained.

<table>
<thead>
<tr>
<th>System Developer</th>
<th>General definition of ethics</th>
<th>Ethics in relation to the customer</th>
<th>Responsibility in relation to the customer</th>
<th>Ethics in relation to the end-customer</th>
<th>Responsibility in relation to the end-customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethics – Empathy</td>
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<tr>
<td>Ethics – Basic Moral</td>
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<td>X</td>
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<tr>
<td>Ethics – Responsibility</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MMST – Ethical Modality</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>MMST – Juridical Modality</td>
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<tr>
<td>MMST – Economic Modality</td>
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<tr>
<td>Ethics - Computing</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Table 5.6: Ethics - Summary of the tables in the subcategories.

**General definition of ethics**

Common sense and basic moral such as keeping promises and ask for permission is very much the concern of the system developers. Ethics is also keeping away from questionable businesses such as the pornographic and racist branches.

<table>
<thead>
<tr>
<th>Theory</th>
<th>System Developer</th>
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<tbody>
<tr>
<td>Ethics – Empathy</td>
<td>X</td>
</tr>
<tr>
<td>Ethics – Basic Moral</td>
<td>X</td>
</tr>
<tr>
<td>Ethics – Responsibility</td>
<td>X</td>
</tr>
<tr>
<td>MMST - Ethical modality</td>
<td>X</td>
</tr>
<tr>
<td>Ethics – Computing</td>
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</tbody>
</table>

Table 5.7: General definition of ethics.

The system developers’ definition of ethics and the theory of ethics and empathy show some differences. To show empathy it has to be done in a context, which is not the case here. The system developers’ idea of basic moral is equivalent to the theory of basic moral, it meets for example Thomas of Aquino statement, *do the good and avoid the bad* (Nationalencyklopedin, 2001). Basic moral seem to be obvious to the system developer, which can only be a good thing in their work. The system developers show a sense of responsibility by showing moral principles such as
keeping what is promised and asking for permission. The ethical modality (De Raadt, 1997), which its essence of love correlates with the definition of ethics, the system developers show a clear sign of caring for others. The system developers’ definition of ethics and the theory of ethics and computing show some difference, since the system developers’ definition is on a more general level.

**Ethics and responsibility in relation to the customer and the end-customer**

In general does the system developers consider discussing ethics with the customer as important. They are honest towards that customer and try to protect the customer and its information from competition.

<table>
<thead>
<tr>
<th>Theory</th>
<th>System Developer</th>
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<tbody>
<tr>
<td>Ethics – Empathy</td>
<td>X</td>
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<tr>
<td>Ethics – Basic Moral</td>
<td>X</td>
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<tr>
<td>Ethics – Responsibility</td>
<td>X</td>
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<tr>
<td>MMST - Ethical modality</td>
<td>X</td>
</tr>
<tr>
<td>MMST - Juridical modality</td>
<td>X</td>
</tr>
<tr>
<td>Ethics – Computing</td>
<td>X</td>
</tr>
</tbody>
</table>

Table 5.8: Ethics in relation to the customer.

System designers’ do not at this instance when regarding ethics in relation to the customer show empathy in the meaning Nationalencyklopedin (2001) defines empathy. According to the Nationalencyklopedin (2001) the system developers’ ought to put themselves in the customer’s position in a deeper meaning than just seeing ones point during a discussion. The system designers’ show basic moral by discussing right and wrong with their customers, for example what kind of information that should be gathered and stored. They show a certain responsibility toward incorporating ethics into the process and the specifications to the product by discussing ethics with the customer. This is quite important considering that the issue of ethics have arisen in the business community. The system developers’ showed caring for their customer by trying to protect their customer and their customer’s information, which correlates with the ethical modality and its kernel love. Discussing right and wrong also corresponds to the juridical modality with its kernel justice, since justice has to do with what is right and what is wrong (De Raadt, 1997). The system developers’ relate to the theory of ethics and computing by being honest and trying to protect the customer.

The most visible is the feeling of responsibility to satisfy the customer’s needs and wishes, but within the frames of the law. For example needs as a user-friendly system and a good economic return on the customer’s investment. They also express a sense of responsibility towards educating the customer about e-solutions and somewhat about e-business.
Table 5.9: Responsibility in relation to the customer.

The system developers’ are showing empathy because to be able to develop a system that satisfies the customer one has to put oneself in others situations. They show basic moral by wishing to obey the law (Nationalencyklopedin, 2001), which do not have to depend on the law but on ones ethical standpoint. The system developers’ show of responsibility corresponds to the theory of ethics and responsibility. They show responsibility towards society as a whole, since creating user-friendly systems means not only that they are easy to use but also that one can use them without getting work-related illnesses. Which at a whole can only benefit us all. Since the system developers’ care about their customers, to satisfy their needs, it answers to the ethical modality where the essence is love and concern for humans (De Raadt, 1997). It also corresponds to the economic modality (De Raadt, 1997), because satisfying the customer’s needs of a good return is good economization of the resources, which is the whole point with the economic modality. The system developers’ answer to the theory of ethics and computing by seeing to it that they and the customer keep within the frames of the law.

When it comes to ethics in regards to the end-customer it seems to be difficult for the system developers to put themselves in the end-customers situation because they are so far away. There is also a wish to not use cookies because of ethical reason. It is obvious that they still try to consider the end-customer and her/his vulnerable situation.

Table 5.10: Ethics in relation to the end-customer.

This shows a difficulty with ethics and empathy (Nationalencyklopedin, 2001), since it is stated that it is difficult to put oneself in the end-customers position. This might be because the end-customer is so far away, the system developer usually have no or little contact with the actual user of the product. It does not answer to the theory of ethics and basic moral since the principles by which they act should be more or less universal. It does correspond to the theory of ethics and responsibility, since the system developers at least try to consider the end-customer while developing the e-
solution. The system developers therefore take responsibility for what they do during the process. By trying to consider the end-customers vulnerability the system developers’ answer to the theory ethics and computing by showing a desire to protect them.

When it comes to the system developer and responsibility towards the end-customer the system developers regards the customer as the one with the final responsibility towards the end-customer, even though the system developers experience a certain responsibility to discuss and point out ethically questionable situations during the development process.

<table>
<thead>
<tr>
<th>Theory</th>
<th>System Developer</th>
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<tbody>
<tr>
<td>Ethics – Empathy</td>
<td></td>
</tr>
<tr>
<td>Ethics – Basic Moral</td>
<td></td>
</tr>
<tr>
<td>Ethics – Responsibility</td>
<td>X</td>
</tr>
<tr>
<td>Ethics – Computing</td>
<td>X</td>
</tr>
</tbody>
</table>

Table 5.11: Responsibility in relation to the end-customer.

The system developers’ opinion about responsibility does not really answer to the theory of ethics and empathy, the system developer do not seem to really put themselves in the situation of the end-customer in this instance. Neither does it correspond to ethics and basic moral since they do not express any universal principle regarding the end-customer. The system developers’ idea of responsibility corresponds to the theory of ethics and responsibility. Because the system developers show responsibility towards the end-customer during the actual process by for example point out ethically questionable situations during the design process, even though they do not take full responsibility for the end product. The question is if they should take full responsibility for the end product, the customer themselves also should have some responsibility for their actions and wishes. The system developers’ opinion on responsibility answers somewhat to the theory of ethics and computing, by pointing out ethically questionable situations they try to protect the end-customer.

### 5.2.3 Cookies

Table 5.12 shows a summary of the corresponding theories in the main category cookies. Table 5.12 presents the system developers’ opinions from the top, represented by the different categories, such as *Definitions and functions*, and the corresponding theories, such as *Cookies - Function*, from the right. And as explained above when a category from the system developers’ answers to a theory it is marked with an X, if does not correlate it is not marked at all. Below these categories, the columns with corresponding rows will be further explained.
Definition and functions

The most usual function of a cookie seems, according to the system developers, to be a shopping basket with its own functions such as gather articles and end a buy. The functions of cookies are also good economy for the customer because it is resource effective. It is also a service to the customer by helping to further the development of their website. The development is somewhat based upon the end-customers or visitors buying or surfing behavior which can be monitored with the help of cookies. The system developers’ also mentions that they avoid storing sensitive information such as credit card numbers in a cookie.

<table>
<thead>
<tr>
<th>Theory</th>
<th>System Developer</th>
</tr>
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<tbody>
<tr>
<td>Cookies – Function</td>
<td>X</td>
</tr>
<tr>
<td>MMST – Economic Modality</td>
<td>X</td>
</tr>
<tr>
<td>PDA – Definition</td>
<td>X</td>
</tr>
<tr>
<td>Ethics - Responsibility</td>
<td>X</td>
</tr>
</tbody>
</table>

Table 5.12: Cookies - Summary of the tables in the subcategories.

The system developers’ view of cookies different functions does answers to the theory of cookies and their functions, functions such as find article and store in shopping basket. The system developers’ idea of good economization for the customers corresponds with the economic modality, with its kernel viability. The system developers shows a wish to economize with the customers resources when using cookies, because they are time-effective, cost-effective and easy to use. This wish also shows a responsibility to the customer, by creating an efficient product.

The system developers’ definition of the cookie functions shows similarities and differences with the theory of the definition of the Personal Data Act. Similarities in the sense that they are correct that one should avoid storing sensitive information. The
difference is that registering someone’s buying habit is according to the PDA a violation of the law.

Advantages and disadvantages of the use of cookies
The advantages are that it is easy to use and functions for the use of cookies already exists. One system developer has found some disadvantages with cookies: it may produce extra work and there are better technical solutions available.

<table>
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<tr>
<th>Theory</th>
<th>System Developer</th>
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<tbody>
<tr>
<td>Cookies – Function</td>
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</tr>
<tr>
<td>MMST – Economic modality</td>
<td>X</td>
</tr>
<tr>
<td>Ethics – Responsibility</td>
<td>X</td>
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</tbody>
</table>

Table 5.14: System developers’ advantages and disadvantages of the use of cookies.

The system developers’ definition does not correspond to the theory of cookies and their functions, this because they do not mention any specific functions. System developers uses cookies because of the technological advantages, but we also see a connection to the economic modality, with viability as its essence, which is economization of resources. It seems to us that when a system developer chooses to use cookies it is part function but also part economy. Since they all state that it is simple to use we draw the connection easy to use, means less resources used. It is also evidence of an efficient process that the system developers are economizing resources such as time, which is in accordance to the theory of ethics and responsibility and what the design process should contain.

Customers advantages and disadvantages of the use of cookies
System developers only see advantages with the cookies different functions for the customer. Advantages such as easy to identify and gather information about the user or the end-customer. No need to store information about the end-customer, the cookie ends up on the end-customers hard drive, easy to develop the customers website to attract more end-customers. Only one disadvantage was found, the negative attention cookies have been shown in media, which can be a drawback for the customers.

<table>
<thead>
<tr>
<th>Theory</th>
<th>System Developer</th>
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<tbody>
<tr>
<td>Cookies – Function</td>
<td></td>
</tr>
<tr>
<td>MMST – Economic modality</td>
<td>X</td>
</tr>
<tr>
<td>Personal Data Act – Definition</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.15: Customers advantages and disadvantages of the use of cookies.

The system developers’ defined advantages are similar to the theory of cookies and their functions, the most important function in a cookie is an ID – number by which one can identify the user. The advantages also correspond to the economic modality with its essence viability, which in this case means economization of resources. Since the cookies and its containing information are stored on the end-customers hard drives
the customer do not have to buy hardware to deal with the information. The system developers’ definition of advantages and disadvantages do not answer to the theory of the definition of the Personal Data Act since they do not mention the issue of consent. The PDA clearly states that to store personal data one should have the registered consent, and earlier theories have also stated that cookies contains personal data.

End-customers advantages and disadvantages of the use of cookies
The system developers think that the advantages for the end-customers are greater than the disadvantages. Advantages such as that is a service to the end-customer, gives freedom and in the case of shopping baskets keep the articles in it even after one has surfed on. The advantages at a whole seem to be the functions of the cookie. The disadvantages are also considered, such as possible misuse of the gathered information and gathering of sensitive information such as credit card numbers.

<table>
<thead>
<tr>
<th>Theory</th>
<th>System Developer</th>
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<tbody>
<tr>
<td>Cookies – Function</td>
<td>X</td>
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</tbody>
</table>

Table 5.16: End-customers advantages and disadvantages of the use of cookies.

The system developers’ definition of advantages corresponds to the theory of cookies and their functions. Functions such as that the shopping basket do not loose any articles even if the web browser is shut down and opened up again. It is also correct that cookies can be seen as a service. The intriguing part is that what are by some seen as a service is by others seen as a violation of personal integrity.

General knowledge about cookies
All in all the system developers’ thinks that few knows about cookies and that they are downloaded when one visits certain websites. They also thought that it was important that people know about cookies to be able to make informed choices.

<table>
<thead>
<tr>
<th>Theory</th>
<th>System Developer</th>
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<tbody>
<tr>
<td>Cookies – Function</td>
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</table>

Table 5.17: General knowledge about cookies.

The fact that cookies are more or less unknown corresponds with the theory of cookies and their functions, it corresponds specifically to the section of how many that knows about cookies in chapter 2.4. According to Pew (2001) does 44 percent of the American surfers know that cookies exists. This is a low number considering how many people around the world that visits the Internet every day. The consequence of this is that it is difficult to have an informed discussion about something that few know about.
5.2.4 Law

Table 5.18 shows a summary of the corresponding theories in the main category personal integrity. Table 5.18 presents the system developers’ opinions from the top, represented by the different categories, such as Law in relation to the customer, and the corresponding theories, such as PDA - Definition, from the right. And as explained above when a category from the system developers’ answers to a theory it is marked with an X, if does not correlate it is not marked at all. Below these categories, the columns with corresponding rows will be further explained.

<table>
<thead>
<tr>
<th>System Developers</th>
<th>Law in relation to the customer</th>
<th>EG – directive definition and consequences</th>
<th>PDA – definition and how it applies to the customer</th>
<th>Personal Data – definition and use</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDA – Definition</td>
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<tr>
<td>PD – Definition</td>
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<td>PD – Consent</td>
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<tr>
<td>Ethics – Basic Moral</td>
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<tr>
<td>Ethics – Responsibility</td>
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<tr>
<td>Ethics – Computing</td>
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<tr>
<td>EG – directive – Definition</td>
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<tr>
<td>MMST – Ethical modality</td>
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</table>

Table 5.18: Law - Summary of the tables in the subcategories.

Customer deals with how the system developers experience the relationship between law and customer. The EG-directive – definition and consequences deals with the definition of the directive and the possible consequences of it. PDA - definition and customer deals with how the system developers define the PDA and how they relate the law to the customers. PDA – Personal data – Definition and Use deals with the system developers’ definition of personal data and how they use it.
The application of the law in relation to the customer

The system developers’ think that they should know about the different law that might be used in their work. A majority would make sure that neither the customer nor the system developer her/hisself would violate any law. When it comes to discussing different law such as the PDA with the customers’ they thought that it was important. On the other hand do they not all personally discuss laws with the customers’ because the felt it was the responsibility of others such as the head-negotiator.

<table>
<thead>
<tr>
<th>Theory</th>
<th>System Developer</th>
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<tbody>
<tr>
<td>Personal Data Act – Definition</td>
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<tr>
<td>Personal Data – Definition</td>
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<tr>
<td>Personal Data – Consent</td>
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<tr>
<td>Ethics – Basic Moral</td>
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<td>Ethics – Responsibility</td>
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<tr>
<td>Ethics – Computing</td>
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</table>

Table 5.19: Application of the law in relation to the customer.

The system developers’ opinions do not show any similarities with the theory of the definition of the Personal Data Act nor with the theory of the definition of personal data. This simply because the category deals with how the law relates to the customer not what the law says. Their opinions do also not correspond to the theory of personal data and consent. The same reason as before it deals with the law in relation to the customer not the actual law. The idea of not having to discuss law with the customer does necessarily not have to do with an ethical standpoint but can attributed to other things such as the system developer not being in such a position that it is needed. But it still seems important and it correlates with the theory of ethics and basic moral in question of obedience to the law. The system developers’ desire to see to it that no one abuse laws such as the Personal Data Act correspond to the theory of ethics and computing.

The system developers’ take responsibility for themselves and the customer by trying to keep within the frames of the law. This corresponds with the theory of ethics and responsibility firstly is the system developer responsible for the product its functions and ethical implications. Therefore caring for the different laws and how they might affect the product or vice versa is a sign of responsibility. According to the ideal oriented design theory (Stolterman, 1991) is the system developer responsible for her/his actions and the products functions at all times. The system developers’ sign of responsibility at this point answers somewhat to this theory.

EG-directive – definition and consequences

The total impression is that the EG-directive is of little interest since only one could clearly state a definition of it. The definition was that one is not allowed to identify for example buying behaviour by using cookies. A majority also pointed out that they did not feel that it concerned them and their work.
Table 5.20: EG-directive. Definition and consequences.

The system developers’ definition corresponds to the theory of the EG-directive, one should not be able to use cookies as some kind of survey instrument. Since so few of the system developers’ care about this directive one ask oneself why? Is the directive useless, insignificant? How has the information about the EG-directive reached the different companies, where the system developers work?

**Personal Data Act –definition and how it applies to the customer**

The majority of the system developers’ has an idea of what the PDA stands for even if it is somewhat vague. The definition is that one is not allowed to store information in such a way that it might be misused. It also seems that the system developers’ thinks that customers should be aware of the law and that it is something that exists in the background during the whole design process.

Table 5.21: Personal Data Act. Definition and how it applies to the customer.

When comparing the system developers’ interpretation of the PDA and the one in the theory it does not fully correlate. The system developers are correct in that one is not allowed to store information just like that, but that is not all. It is also quite important to have permission from the registered. The system developers’ definition does not answer to the theory of the definition of personal data nor does it correspond to the theory of personal data and consent. It does not correspond for a very simple reason this category deals specifically with the Personal Data Act and not with personal data.

The system developers’ use of the PDA with the customers corresponds to the theory of ethics and responsibility. In that by discussing the law with the customer the customer is less likely to violate it and that is a sign of responsibility by the system developers’. The meaning of the ethical modality is to concern oneself with humans and their, the system developers’, concern seeing to that the customers knows about the law, and therefore are less likely to violate it, is a clear sign of concern and therefore answers to the ethical modality. The system developers’ opinion about customers awareness of the law and also their wish to take care with information answers to the theory of ethics and computing.
Personal data – definition and use

The total impression is that personal data is considered to be data found in an address book, such as name, address, civic registration number and similar information. One system developer mentioned that it is information, of any kind, that can be used to identify someone. Another one mentioned that personal data should only be collected and used with the registered consent. The system developers do not consider cookies, when judged by the law, to be a problem because they do not consider the contained information to be personal data and that the cookie is stored with the end-customer.

<table>
<thead>
<tr>
<th>Theory</th>
<th>System Developer</th>
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<tbody>
<tr>
<td>Personal Data Act - Definition</td>
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<tr>
<td>Personal data – Definition</td>
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<tr>
<td>Personal Data – Consent</td>
<td>X</td>
</tr>
<tr>
<td>Ethics – Computing</td>
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</table>

Table 5.22: Personal data. Definition and use.

The system developers’ definition does show differences to the theory of the definition of the Personal Data Act. The system developers do not feel that cookies violate the PDA, while our interpretation of the PDA and personal data is that cookies could very well be a problem since it is in the definite grey area. The grey area can be described by looking at the two cases in the theory of the PDA, they demonstrate the ambivalence towards cookies in society.

Their definition does show similarities and differences with the theory of the definition of personal data. It is correct that name and other similar information can be considered as personal data, but it is also so much more. It is quite clear that the system developers’ do not consider the information in cookies to be personal data. While our interpretation of the PDA and personal data is that the information in a cookie could contain enough data so that it could be seen as personal data. The cookie contains the IP number, an identification code, of the computer and while the system developers argue that this is not personal data we disagree. According to the theory of the PDA it is enough, because a person can be tracked down even if it is a group of people that is using the computer. The system developers’ definition does show some similarities to the theory of personal data and consent. Even though it is only one system developer who points out the importance of consent it is true. The system developers’ opinion of the use of personal data does somewhat answer to the theory of ethics and computing, in the way that they try to be careful with information.

The system developers seems to work consciously from the legislation, but there seems to be some kind of misunderstanding of how it should be interpreted and what for example personal data is, the fact that you have to inform and ask for consent from the visitor to the Website to be allowed to use the personal data. One wonder why the system developers are unsure about the PDA since it is such an important part of their work. We think that it is in part because they remember the old Data Act where personal data was name, address, civic registration number and similar information.
5.2.5 Policy
Policy referring to ethics and personal integrity
The total impression is that the system developers do not really know that much about policies, if they exist and what they contain. Since the system developers could not give a definition of the policy about ethics and/or personal integrity we cannot compare it. It is interesting that the system developers do not know anything about the policies, even more so when one considers the different laws such as the PDA and the EG-directive. It is the company, where the system developers work, that has the final responsibility for creating, maintaining and informing about the policy.

5.3 General discussion
The results of the comparison show both similarities and differences, they are further discussed under the heading of ethics, personal integrity, policy, law and cookies.

Personal integrity
The system developers are fairly aware of what personal integrity is but they cannot clearly state where the border of the personal sphere is, this is done using violations as examples. The intriguing part is that one of our findings namely how personal advertisement on a website were considered a violation personal integrity is not in correlation with what they later states. Using cookies enable the personalized messages but the system developers do not feel that cookies violates the personal integrity when using them in their work. For example system developer B clearly felt that being targeted, by receiving a personalized message enabled by cookies, was a violation of his personal integrity, even though he considered it all right to use cookies in his work. There is a difference here between their professional opinion and their opinion as private citizen that is quite intriguing. It seems that they have a slight problem combining these opinions. This is also true when considering the important issue of choice. The system developers define choice as something that diminish the feeling of violation, but do not seem to realise that by not informing the end-customers that a cookie is being downloaded are removing the end-customers choice and chance of delimiting the feeling of violation of personal integrity.

The opinion that one is responsible for ones own personal integrity is also conveyed. Which according to Langford (2000) is on the Internet part true. We also think that while we ourselves are responsible for our personal integrity the websites that we visit should try and put themselves in the end-users position and build their websites accordingly. They simply have to inform the visitor that a cookie is being downloaded and what kind and that’s that, the feeling of violation is if not gone diminished.

In Sweden we are used to giving out sensitive information quite often and we are registered hundreds of times in our lifetime. The increased use of the Internet has contributed to the collection and dissemination of information. We, the developers of different information technologies and the users, all have a responsibility to think first and act later. The awareness of how much information that actually is being gathered
on the Internet about ones person has to increase. It is quite easy to find out just about anything about anyone at any time, which can create havoc in all levels of society when abused.

Ethics

There exists according to Stolterman (1991) three kinds of designers: the artist, the researcher and the engineer. Each has different proportions of responsibility towards their work. In traditional systems design the designer is seen as an engineer with little responsibility for her/his work. But when it comes to system developers we think that since they have to be creative, artistic to solve the problem, no website to a good website they can be described as both artists and engineers. We think that the system developer should have similar responsibility for the design as the artist does but also be honest to the task. Something in our opinion should show itself with a strong ethical sense in the system developer.

The analysis show that the system developers’ show a clear sign of ethics and responsibility whether it deals with the definition of ethics or responsibility in relation to the customer and the end-customers. It is also clear that ethical issue ought to be considered throughout the whole process, but customer has the primary responsibility for the product. Something that is quite normal for a product, in the case of e-solutions, which also is a service. The issue of responsibility lies not only on the system developers’ but also on the customer, since the customer is in the end responsible for how they use their e-solution. For example how the customer handles the end-customers personal data and information from cookies, if they lend or sell the information to other companies or if they keep the information confidential.

System developers clearly express that knowledge about different law, ethics and how to conduct e-business is an important part of the contact with the customer. They express a responsibility of giving the customer knowledge, but according to their ethical standpoint and as they interpret the law. We think that if we are ever going to get some law and order on the Internet it is going to have to be done by learning what is right and wrong, both according to everyday ethics and laws like the PDA. For Internet to become everyman’s toy or tool we think that the Wild, Wild West stamp has to be, if not removed altogether, partly erased.

Cookies

The function of the cookie is a simple technical solution for the system developers, which seems to be the main reason of using them. The function is the cookies advantages for both the system developer and customer and its service, nothing else. We think that if cookies are used on a website then the visitors should know about it in order not to feel violated in any way. The norm is to not inform the visitor that a cookie is being downloaded. ‘why not?’ we ask ourselves. The answer from the system developers is that they are inconsequential, something we do not agree with and so does apparently the PDA and the EG-directive. It is such a simple thing to state somewhere that the website is using cookies and what kind, and the main problem is solved.
It has been pointed out that since one can turn off the acceptation of cookies in ones web browser and therefore it should not be considered a violation of the personal integrity. The problem is that if one does that ones surfing experience is seriously crippled, for example when visiting an e-shop one does not receive an electronic trolley. This is a precarious situation.

**Law**

The technology, cookies, will be developing regardless that it is, in our opinion, violating the Personal Data Act. Cookies are violating the law because it contains personal data processed without consent. There exists other technical solutions to the functions cookies provides. If one read between the lines it is also more expensive and therefore not as used as cookies.

The PDA is a very strict law just about anything can be considered personal data and a violation of the law. It is so strict that it is impossible to live by. When it comes to the issue of justice, the juridical modality, and what is right and what is wrong the law seems ludicrous. It is quite sensible to try to regulate the use of personal data, but the definition of it is to wide to be useful. The consequence of this might be that either is every single reference to someone on the Internet a violation of the law and should be punished or the law has to change to encompass a more just definition of personal data. There is also the issue of whose country’s law that should be applied. If the web server is stationed in another country and the company owning the website is in Sweden what law should be applied?

**Policy**

Since the system developers’ could not define any policy we decided to not further discuss the issue, but leave it for further research.
6 Conclusion

In this chapter we will present the conclusions of our investigation. There will also be some suggestions to further research. The purpose with this thesis was to examine how system developers dealt with personal integrity and ethics at a general level and when using cookies to develop e-solutions.

6.1 Conclusion

The rapid development of the information technologies has contributed to the increased use of IT such as the Internet. This has brought to the forefront the personal integrity and ethical issues, which of course always have been important but more so now when it is quite easy to gather and abuse information from the Internet. Also over the past years e-business has vastly developed, the e-business of course has to be created by someone and to do that one needs a system developer. Therefore it is important that the system developer has an idea of ethical issues and personal integrity in their work since they, through their creation of information technologies, can affect the rest of the society.

The system developers prove to have ethical thinking throughout the entire design process by showing responsibility in relation to the customer and the end-customer. They show responsibility by trying to protect the customer from competition and the end-customer from being completely stripped of information by the customer.

It is also obvious cookies will be used as long as they are permitted. In the design process the system developers are very much aware of ethical issues but when it comes to the issue of cookies there are no ethical values, only values of technology. It is not only the system developers’ responsibility to consider ethical issues, it is also the responsibility of the customer who in the end has the final say and therefore responsibility when it comes to the e-solution. Also the existing technology, for example cookies, governs the different issues in the system development. Cookies are after all a consequence of the information technology. The issue of cookies is very important; the grey zone it exists in can be exemplified by looking at the advantages and disadvantages, what is considered advantages by some is considered disadvantages by others.

The companies, where the system developers work, have not clearly showed that they have a policy regarding ethical issues and personal integrity. If they had we assume the system developers would know about them and act accordingly. This leads to further research to find out why the companies do not have policies about these issues. In general the system developers know what personal integrity means and can apply it during the design of e-solutions in relation to the customer and the end-customer. When it comes to cookies they do not really consider the end-customers personal integrity because the PDA is misinterpreted, especially the issue of personal data. System developers consider cookies as a service to their customer and end-customer.
not a violation of someone’s personal integrity or the PDA. The consequences of this are that they may be violating the PDA without knowing about it. The PDA on the other hand, which is Sweden’s interpretation of EG-directives, is so strict that almost any reference to a person on the Internet can be a violation of the PDA. The issue of personal data, personal integrity and the use of cookies need to be discussed throughout the society so that we can find a golden middle way.

6.2 Future research
First it would be interesting to further research the issue of the customers right of use and responsibility towards the end-customers. Because an e-solution is a kind of special product, it is a website and a service, the customers right of use and responsibility in the design process.

Secondly, we focused on the system developer during this thesis but it would be interesting to see how the company, where they work, handles personal integrity and ethical issues. Also what kind of responsibility companies has to create and inform about policies within the company.

A third future research could be to ask the actual end-customers how they feel ethical issues and personal integrity is handled by the system developers and the customers when developing e-solutions.

A fourth one could be to examine how cookies could be used to prevent crimes, especially considering sex crimes such as paedophilia on the Internet.
7 References

Allvin, T. (2001). E-mail from Tomas Allvin.


Appendix A – Questions from MMST to the questionnaire

Credal modality
Have you considered the faith the customer puts in your company when designing the website – with special regards to cookies?

Ethical modality
Do you feel that it is ethically correct to make your customer accept cookies? Do you take responsibility for the cookies used for the ad-banners?

Juridical modality
Can the information collected from the cookie violate the PDA? Has the customer given her/his consent to receiving a cookie?

Aesthetic modality
Do you think the customer appreciates receiving a cookie?

Economic modality
Does the use of cookies contribute to a more efficient use of resources?

Operational modality
What kind of information does a cookie produce?

Social modality
Are cookies an important part of the company-customer relation? Do you have any policy regarding your customer’s personal integrity? May take part of that policy?

Epistemic modality
Have you considered the PDA when deciding use cookies on you website?
Why do you use cookies on your website?

Informatory modality
To what is the cookie information used?

Historical
When did you discover cookies and why are you using them?

Psychic modality
Can the customer clearly see that a cookie is being downloaded?

Biotic modality
Are cookies a vital part of the website?

Physical modality
No question found.

18 Authors translation from the Swedish questions.
Kinetic modality
No question found.

Spatial modality
Is there any risk of the cookie disrupting or filling the customers hard drive?

Numeric modality
No question found.

Logical modality
If you have cookie but do not use the information gathered, why do you use them?
Appendix B – Interview questions

Intervjufrågor

Vad heter du? Vad har du för arbetsuppgifter? För position?

Om vi är kunder som kommer till er för att skapa en hemsida till vårt företag som ett led i vår e-handelslösning, hur går du tillväga?

Vilka frågor, aspekter, tycker du är viktiga?

Vad tycker du etik är för något för dig i din yrkesroll som systemdesigner?
(När du som systemdesigner hanterar en kund/hemsida vad är då etik?)
Pratar ni om etik med kunden? Pratar ni om lagar med kunden?
Vad tycker du, som systemdesigner, är viktigast (i designprocessen, gentemot kunden)?
Vilka aspekter begrunder du?
Vilket ansvar har du som systemdesigner/utvecklare mot kund/slutkund/ditt företag/dig själv? (etik och lagenligt.)

När man designar en hemsida eller en produkt, vilka aspekter är viktiga för att slutprodukten skall kunna anses som bra?

Nu när man använder mobiltelefoner så flyter privatlivet och det offentliga livet ihop p g a av att man alltid kan nås.

Vad tycker du om det? (Vad är personlig integritet och kränkning av denna, har ni någon formell definition på företaget?)
Berör det dig som systemdesigner? (ur en etisk synvinkel)

Har det någon inverkan på de applikation ni tillverkar?

Det har kommit nya lagar och förordningar, som t.ex. EG-direktivet T.ex. PuL.
Har ni fått någon information om dem?
Vad säger t.ex. EG/PuL dig? Vad står personuppgifter för dig?
Vad måste du ta hänsyn till i PuL? (Personuppgifter, cookies)

Varför vill kunden ha cookies?
Varför vill du, som systemdesigner, ha cookies?
Hur arbetar cookies?
Fördelar / Nackdelar med cookies?
Om en kund vill ha något speciellt i en cookie, t.ex. kontokortnummer, hur bemöter du det?
När ni planerar för användning av cookies utifrån vems perspektiv gör du det ifrån?
(Användare, kunder, systemdesignern.)
Vilka aspekter beaktar du då?
Hur tänker du på den personliga integriteten?

Hur stor roll spelar kundens krav gentemot användarens personliga integritet? Eller din egen, hur varierar det?
English translation of the interview questions

What is your name? What are your assignments? Your position?

If we are customer that comes to you to create a website for our company, as a part in our e-solution, how would you go about it?
Which questions, aspects, do you feel are important?

What do you think ethics is, to you in your profession as system developer?
(When you as system developer handles a customer or a website what is ethics?)
Do you talk about ethics with your customer? Do you talk about laws with your customer?
What do you, as system developer, think is the most important (in the design process, towards the customer)?
What aspects do you consider?
What kind of responsibility do you as system developer have towards the customer/end-customer/your company/yourself? (Ethical and legal.)
When you design a website or a product, what aspects are important so that you can say that the end product is considered good?

In these days when you are using mobile phones the border between the private and the public life is blurred because you can always be reached.
What do you feel about that? (What is personal integrity and violation of it, do you have any formal definition at the company?)
Does it concern you as system developer? (from an ethical standpoint)
Does it have any affect on the applications that you produce?

Some new laws and legislation have come up, such as the EG-directive and the PDA.
Have you received any information about them?
What does for example EG/PDA mean to you? What does personal data stand for to you?
What do you have to consider in the PDA? (Personal data, cookies)

Why does the customer want cookies?
Why do you, as system developer, want cookies?
How does cookies work?
Advantages / Disadvantages with cookies?
If a customer wants something special in a cookie, for example credit card numbers, how do you handle that?
When you are planning for the use of cookies, from who’s perspective do you do it? (Users, customers, system developers.)
Which aspects do you then consider?
How do you consider the personal integrity?

How big part does the customers demands play against the users personal integrity? Or you own, how does it vary?
Appendix C – Category tree for the questionnaires

Cookies

Policy

Law

Personal integrity
Appendix D – Indexing categories

Ethics
Definition
Violation
Non-violation
Customer
End-customer

Personal Integrity
Definition
Violation
Non-violation
Customer
End-customer

Law
Customer
Violation
Non-violation
EG-directive – Definition
EG-directive – Consequence
PDA – Definition
PDA – Consequence
PDA – Customer
PDA – Personal data – Definition
PDA – Personal data – Use
PDA – Personal data – Third party

Responsibility
Customer
End-customer

Policy
Ethics
Personal Integrity

Cookies
Definition
Function
System Developer – Pros
System Developer – Cons
Customer – Pros
Customer – Cons
End-customer – Pros
End-customer – Cons
Violation
Non-violation
Unknown
Appendix E – Ethical rules for data people

These rules have been translated from Swedish to English by the authors.

Rule 1:
We follow those laws and regulations that regards our scope of work and are obligated to inform others when needed.

Rule 2:
We always demand that purpose and context for the development are clear.

Rule 3:
We see to it that a good effort of work is possible in plans of time and use of resources.

Rule 4:
We develop system in close connection to the orderer/user and use technology in such a way that it protects their interests.

Rule 5:
We show respect for the users knowledge of their work and contribute to the development of these.

Rule 6:
We develop systems that contribute to a good work-environment.

Rule 7:
We abstain from work that wants control that can be harmful for the individual.

Rule 8:
We only take part of such data that is demanded to make it work.

Rule 9:
We, in our profession, feel responsible so that the technology is not abused, in such a way that it harms people, environment or society.