Summary

Abstract

This report is my master’s thesis at the department of Numerical Analysis and Computer Science, Nada, Royal Institute of Technology. I did my Master’s project at the company called Cell Network that, on May 19th 2003, changed its name to Mandator.

Löfbergs Lila had on its Web site, during may 2003, a competition where you could win a wedding trip or a love trip for two (worth 50000:-). A campaign consisted of advertising signs and advertising leafs in the grocer’s shops, a advertising film on TV, ads in popular press and Internet, advice sites on the Internet and free postcards in the café shops and restaurants.

In this report I have examined different methods that can be used for traffic monitoring and to examine the visitor’s behaviour on the Web site. I have also evaluated the Löfbergs Lilas campaign from the usability perspective using one of the examined methods.

Referat

Olika metoder för trafikanalys och utvärdering av användarvänligheten av en Webbplats


Löfbergs Lila hade på sin Webbplats, under maj månad 2003, en tävling där man antingen kunde vinna en bröllopsresa eller en kärleksresa för två (värd 50000:-). Kampanjen släpptes i form av reklamskyltar och reklamblad i matvarubutiker, en reklamfilm på TV, annons i populär press och Internet, tipssidor på Internet samt gratisvykort på caféer och restaurang.

I den här rapporten har jag undersökt olika metoder som finns för att mäta trafiken och undersöka besökarnas beteende på en Webbplats. Jag har också utvärderat Löfbergs Lilas kampanj ur ett användbarhetsperspektiv med hjälp av en de undersökta metoderna.
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1 Problem definition

To be effective in evaluating the success of the Internet campaign we need to do more than just measuring the click-through rates, consider campaign conversion and return on investment (ROI) [15]. In this document I use the term Internet even when I only refer to the Web (WWW – World Wide Web).

There are different methods that can be used to analyse the traffic and the visitors’ behaviour on the Web site. Some of them are: site analysis tools, user tests, usability questionnaires etc. The questions that I want to answer using one of them are:

1. What is it that drew visitors to a Web Internet campaign?
2. What methods should be used to increase the number of visitors?
3. What methods should be used to make a visitor accomplish the set goals?
4. Does the Internet campaign contains the rich, relevant and clear information?
5. Does the Internet campaign meet visitors’ expectations?

2 Introduction

2.1 About Internet campaigns

It is becoming more and more important to conduct and control the traffic to Web sites. Many companies have realised that there are many advantages with customers ordering goods or communicating with them (e.g. customer service and other information services) through their Web sites.

The companies are conducting the traffic to their Websites via the traditional offline campaigns (printed ads, advertising films etc.) and on-line campaigns (different types of banners and campaign sites).

It is difficult to measure the flow: banner → campaign-site → Web site → e-commerce solution (fig. 2.1), i.e. how many customers that click on the banner actually complete the purchase. The statistics from each system is easy to receive but it is more difficult to measure the whole flow.

Fig. 2.1 The click-trough flow. If the visitor for example makes a purchase in an e-shop starting by clicking on the banner. His click-through path is: banner – campaign site – Web start page (home page) – e-commerce solution.
2.1.1 Banner

A banner is a rectangular advertisement space that can either have a static or animated content. It is very often used as a form of advertising on the Internet. The banners are usually graphics, sometimes logos and sometimes signboards and they are often used to mark the place where the visitor can click to get more information or to go further (for example to a campaign site) [9]. At many search motors you can via banners reach a target group based on specific search words and fraises. A banner-advertisement can be implemented by rich-media technologies like Flash.

The advertisement type offers big possibilities for creativity and interaction. It is an advantage if the advertisement aims to interaction directly in the advertisement. It is an efficient tool for interaction with the target group, introducing the new product etc.

The efficiency of a banner is often measured by counting the number of the clicks on it. It is an extremely uncertain way of finding out how many that have seen the advertisement but it is more or less the only one today.

2.1.2 Campaign sites

A banner is usually advertising a Web site. If you want to launch news you can link your banner to a special campaign-site as a part of your marketing. The campaign is presented there in details and from that page you have the possibility to go further to the ordinary homepage.

2.1.3 Web sites

A Web site is a location on the WWW. Each Web site contains a home page, which is the first document visitors see when they enter the site. A Web site contains several Web pages and a Web page contains several different components (text files, audio files, pictures etc).

HTML, SGML, DHTML and XML

Web pages are encoded with a set of tags called Hypertext Markup Language (HTML), the language used for publishing hypertext on the World Wide Web. It is based upon Standard Generalized Markup Language (SGML), the tag-set building rules, for HTML and for most other descriptive tag-sets. HTML can be created by a wide range of tools, from simple text editors to authoring tools. HTML uses tags such as <h1> and </h1> to structure text into headings, paragraphs, lists and hypertext links [9].

SGML texts are comprised of ASCII\(^1\) text, combined with items in angle brackets, e.g. <title>my page</title>. For most digital library or digital publishing SGML content, the texts are encoded in more powerful and descriptive tag sets, such as the Text Encoding Initiative Guidelines. HTML versions are then created for Web delivery.

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\(^1\) American Standard Code for Information Interchange. ASCII is a code for representing English characters as numbers, with each letter assigned a number from 0 to 127.
Tags allow one to create well-structured documents by encoding such information as structural divisions (title page, main body of text, date, author, etc.) or conveying information about typographical elements (changes in typeface, line breaks, etc). The tags are composed of plain text ASCII characters, so no special software or binary code is necessary to create an SGML file. This makes the files easy to transport across a network. For example, Word code for italics is specific to that word processor and is typically lost when the text is transferred out of Word into another format. SGML tags are simply other letters and characters typed in as part of the text, and they travel with the text if it moves from the computer system to the computer system [26].

DHTML (Dynamic HTML) is an extension of a HTML that enables us to send several layers of information during one server connection. The information can be viewed some other time or when the visitor is taking some actions on the site, without connecting to the server again [19].

XML (Extensible Markup Language) is a parent language to HTML like SGML. XML gives the possibility of making the advanced data structures on the Web. The applications can be developed and sent over the Internet. XML is more advanced than DHTML [19].

**URL**

The address of a Web page is called URL (Uniform Resource Locator). The protocol[^2] that URL uses is HTTP (Hyper Text Transfer Protocol) that is the underlying protocol used by the World Wide Web. HTTP defines how messages are formatted and transmitted, and what actions Web servers[^3] and browsers[^4] should take in response to different commands. When we enter a URL in the browser, this actually sends an HTTP command to the Web server directing it to get and transmit the requested Web page [22]. The URL contains three parts (fig.2.2): the protocol, the domain name and the search way.

![URL: http://www.server.se/user/gorana](http://www.server.se/user/gorana)  
- http:// - the protocol  
- www.server.se - the domain name  
- user/gorana - the search way

Fig 2.2 The example of different parts of an URL: the protocol, the domain name and the search name. The URL is invented.

### 2.1.4 E-commerce

The word e-commerce refers to online store communication, buying and downloading software and business-to-business connections that make purchasing easier for companies. The major sellers seem to be computer products, consumer products, books and magazines, music, video etc.

E-commerce occurs between companies, between companies and their private persons and between companies and public administrators. B2B or business-to-business e-commerce is the process of selling items to another business.

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[^2]: The name of the language for the communication  
[^3]: A computer or device on a network that manages network resources.  
[^4]: A software application used to locate and display Web pages. The two most popular browsers are Netscape Navigator and Microsoft Internet Explorer.
B2C or business-to-consumer e-commerce is the process of selling items to consumers. E-commerce comprises a trade of e-commerce, EDI, electronic markets and Internet commerce (fig 2.3) [9].

![Diagram of e-commerce categories]

- **Internet commerce**: The information and communication technology can be used to market and trade the services and goods on the Internet. Internet is an open network that anybody can connect to. That kind of e-commerce is a typical commercialised use of Internet. Within Internet commerce there are applications for the trade between several companies and companies and private persons. The example of this type of e-commerce: a customer buying a book on the Internet or booking a ticket for an event.

- **Electronic markets**: Their main function is to simplify the search of services and goods. It is a private network that only authorised can reach and it works as an electronic meeting place. Buyers can for example compare the prices and make the purchase of services and goods on an electronic market (e.g. a booking system for flights where the travel agencies, connected to that electronic market, can book the tickets for their customers).

- **EDI**: a standardised system (a set of protocols) for conducting well-structured inter-organisation exchanges. The manual handling of paper-formatted orders and invoices is often the reason of delays and errors and can be avoided with EDI. The system is being used by many organisations that have many standardised transactions. Big vehicle manufacturers, to communicate with their customers, for example use it [9].

To run a business via Internet demands more than just a Web page. The interface between the warehouse system, economy system and other systems that are vital for an interactive e-commerce site is complex. That is why the implementation of an e-commerce site is often outsourced to a third part.

Some small companies do not have to look beyond their local Internet service providers for a basic solution. The cost of an e-commerce varies a great deal. The outsourcing conveys the dependence, not only during the development of the Web site/portal but also under the following maintenance and the development of the site.

E-commerce is a demanding market place, where customers expect quick service 24 hours a day, 7 days a week. While hardware is important, an efficient, reliable software application makes all the difference as the basis for the company's online store.
2.1.4.1 Extranets

Extranets are an extension of a company intranet\(^5\) that connects the internal network of one company with the intranets of its customers and suppliers. This makes it possible to create e-commerce applications that link all aspects of a business connection, from ordering to payment [23].

An intranet is accessible only to people who are members of the same company but an extranet provides various levels of accessibility to outsiders. To access an extranet you need a valid username and password, and your identity determines which parts of the extranet you can view.

2.1.4.2 Technology

When it comes to choosing the right technology for the e-commerce we have to think of several factors. It takes around one minute to process a credit card transaction before the consumer becomes impatient. If the payment processing system cannot keep up with consumer expectations, consumers will not make a purchase.

2.1.4.3 Marketing

Branding is as important on the Web as it is everywhere else. Brand building is expensive but it becomes less expensive as the number of the customers grows. Direct communication with the customer and clear, well-written branding campaigns is the key of the successful marketing.

With an e-commerce system it is important to think of delivering services far more than what a mail-order catalogue can deliver. For example [23]:

- Offer personalised sale pricing
- Recommend products based on past purchases
- Provide customer service
- Initiate low-cost direct marketing through email
- Provide forums for customers to build a sense of community

2.1.4.4 Internet transaction (payment) services

An Internet payment service functions between merchant register software and the financial institutions. Internet payment services enable a merchant to accept online payments from customers. These payments are securely processed from the store through the existing system of financial institutions and credit card processing companies [21].

CyberCash

CyberCash is one of the oldest Internet transaction services and has been processing credit cards online since April 1995. CyberCash currently accepts VISA, MasterCard, Discover, American Express, Carte Blanche, Diners Club and JBC. Its function is to transfer credit card and purchase information from server

\(^5\) A network belonging to a company accessible only by the company’s members, employees, or others with authorization.
to banking network and back to the seller. CyberCash offers two products that make easy the payment processing on the Web:

- CyberCash cash register
- Wallet - the software that handles the client side of the transaction

The CyberCash product actually includes three servers necessary to complete different types of payments: Credit Server, Coin Server, and Administration Server.

The scripts that are controlling data extraction and reporting on CyberCash are written in PERL, which makes it easy for developers to change the existing code at the back of the processing control of the cash register.

The CyberCash software can be easily installed and configured and is free. It can be found at CyberCash's Web site: www.cybercash.com. CyberCash does not charge for the software but there is a fee for CyberCash service and a fee per transaction [23].

The Credit server

It has the function of standard credit card readers we can find in shops. It collects the buyer's card information and sends it to CyberCash's Gateway. CyberCash’s Gateway manages communication between all CyberCash cash registers and payment processing centres. The money is captured if the card is accepted. The payment processor, e.g. VISA, sends notice back to the CyberCash Gateway, which forwards the confirmation to the seller's cash register. When it receives the confirmation of the transaction, the cash register software takes the suitable action (prints receipt etc.) by communicating with the other software running on the site [23].

The Coin server

Coin Server makes low-price sales easy. Too many transaction expenses would be too high comparing to sellers profit. Using the CyberCash Wallet customers can buy a block of digital cash, called “CyberCoins,” from their credit card banks and it can be spent on any seller's site that supports it. The amount of CyberCoin value in the consumer's Wallet is being reduced after each purchase [23].

The Administration server

The administration server is a Web-based server. Buyers can put in credit cards directly from the interface, process returns and voids, check the status of orders and search for the history of purchases [23].

ICVerify

ICVerify is using existing technology to verify and transfer money. The ICVerify cash register software is installed on the seller's server and requires a modem connection to communicate with bank’s services. When an order comes in, the payment is cued and the seller service is dialled by the modem. ICVerify says it can process as many as nine transactions per minute, much more than enough for the typical e-commerce Web site (enough for the small companies). The cash
register is easy to integrate with the design of a site. The ICVerify cash register can be integrated into solutions built with e.g. Lotus, Oracle and Microsoft Site Server 2.0. For the small sites and many commerce services, ICVerify is the economical answer to processing payments [23].

PCVerify

PCVerify is an ICVerify card that supports Level 3 purchasing. It is issued to employees who make purchases on behalf of their company. The company guarantees the card and pays the administration costs. In return they have a paperless mechanism for tracking the purchases made by their employees. VISA and MasterCard have defined three different levels of data capture and reporting for credit card transactions [23]:

- Level 1 is a traditional credit card transaction (includes either address verification information or card swipe data)
- Level 2 adds a few additional elements to level 1 (tax information and an invoice number)
- Level 3 is the highest level of data capture (adds a few additional elements to level 1 and level 2 - line item details = item by item descriptions of each component of the purchase and other data)

WebAuthorize

It supports all types of payment transactions that can be sent over the Internet to bank networks and processors. It is a strong system that can securely send over 720 transactions per minute and uses the Internet to securely transport payment transactions directly to payment processors.

Visa’s latest requirements to properly mark transactions entered through an Internet browser with a special “e-commerce indicator” is being supported by WebAuthorize. It also supports the latest requirements from VISA and MasterCard to keep extra credit card information for all transactions where the card is not physically present.

Integration with WebAuthorize is simply made through several programming interfaces e.g.: JAVA API, C++ API etc. WebAuthorize is fully integrated with Microsoft Site Server, Commerce Edition, and the SAP R/3 enterprise application for e-commerce. All credit card transactions and storage of credit card information are encrypted, including transactions from buyer to payment processors, from payment clients to WebAuthorize and the credit card information within the transaction database [23].

Authorize.Net WebLink

It allows Internet-based businesses to process and manage credit card transactions directly from their Web site. WebLink collects the needed customer information (name, credit card number, etc.) either from a seller’s own secure transaction page, or a transaction page (the customer fills it in) hosted on an Authorize.Net secure server.

The customer’s information encrypts using Secure Socket Layer (SSL) technology and sends to an Authorize.Net transaction server. The server sends the data through the authorization network to the card issuer's bank, using a secure
connection. When the authorisation process is complete the customer receives an approval or decline answer and the Authorize.Net server stores the transaction.

The status of transactions and reports on past activity can be checked by going to the Authorize.Net Web site and logging on to a password-protected Authorize.Net site. Linking a seller's Web site to the Authorize.Net WebLink system is simple. The seller's Web site designer inserts a few lines of HTML code into the transaction page. Authorize.Net supports most available shopping cart software, so it can be easily integrated with most existing e-commerce solutions.

Below is an example of the basic code that must be implemented to link to WebLink [7]:

```html
<form action="https://secure.authorize.net/gateway/transact.dll">
  <input type="hidden" name="x_login" value="MyLoginID">
  <input type="hidden" name="x_version" value="3.0">
  <input type="hidden" name="x_show_form" value="payment_form">
  <input type="hidden" name="x_amount" value="1.00">
  <input type="submit" value="Click Here to Continue">
</form>
```

2.1.4.5 Security

The transactions are less dangerous in cyberspace than in the physical world according to most vendors and analysts. E-commerce systems are encrypting the numbers (on the credit cards) on a server. E-commerce is safer than opening a store that could be robbed or burned. Consumers do not believe that e-commerce is safe but according to experts e-commerce transactions are safer than ordinary credit card purchases [9].

**Secure Sockets Layer (SSL)**

Transactions can be encrypted using SSL, which is a protocol that creates a secure connection to the server, protecting the information as it travels over the Internet. SSL uses public key encryption, which is one of the best encryption methods. A Web site is secured by SSL when the URL begins with `https://`. SSL technology is the industry-standard method for protecting Web communications developed by Netscape Communications Corporation. The SSL security protocol provides: data encryption, server authentication, message integrity and optional client authentication for a TCP/IP connection. SSL is built into all major browsers and Web servers. After installing a digital certificate their SSL capabilities turn on.

There are two SSL strengths, 40-bit and 128-bit, which refer to the length of the “session key” generated by every encrypted transaction. The longer the key, the more difficult it is to break the encryption code. Most browsers support 40-bit SSL sessions, and the latest browsers, including Netscape Communicator 4.0, enable users to encrypt transactions in 128-bit sessions [9].
Secure Electronic Transactions (SET)

SET is the standard for e-commerce and is still used by relatively few. It is sponsored by Visa and MasterCard and has been in the works for years. SET encodes the credit card numbers that sits on the vendor’s servers so only banks and credit card companies can read the numbers.

The SET specification is an open technical standard for the commerce industry developed by Visa and MasterCard. The protocol is supposed to make buying with a credit card on the Internet as safe as in the physical world. Digital Certificates create a trust chain throughout the transaction, verifying card holder and merchant validity, a process unparalleled by other Internet security solutions. Software vendors whose products pass SET Compliance Testing are eligible to display the SET Mark on their products.

SET relies on cryptography and digital certificates to ensure message confidentiality and security. Message data is encrypted using a randomly generated key that is further encrypted using the recipient’s public key. This is referred to as the “digital envelope” of the message and is sent to the recipient with the encrypted message. The recipient decrypts the digital envelope using a private key and then uses the symmetric key to unlock the original message [11]. Software developed to the specifications must perform at least the following functions:

- Create a digital signature using distinct key pairs
- Generate a dual signature used to link an order message to another component
- Verify the digital signature

2.2 Content management system

Content management system is software that enables one to add and/or manipulate content on a Web site or intranet. It helps organising collection, management and publishing processes online [6].

When it became possible to work with databases the companies needed some kind of an administrative interface to manage the inflow and outflow of the information. It is a password-protected part of a Web site that has to be developed when the functionality of a Web site is being developed. The fundamental parts that have to be in the system are:

- An “explorer” so the user can easily orientate and find the right level of the page
- An intuitive pattern system
- Help manuals
- Possibility to easily build the system without it crashing technically and pedagogically

The employees of the IT-companies and the Web offices worked hardly on inventing hundreds of variants of the WCM-tool (Web Content Management), CMT, CMS, publishing system or publishing tool [26]. Content management works by separating the content from the Web page design so there is no way to break the look of the Web site when unskilled operators update the text. It enables the people who create the content to add or edit their work without adding to their existing work, needing technical training or having to involve the IT department. They can do the following:
- Publish information
- Distribute the publishing process to many people within or outside the organisation
- Keep track of volumes of information the site
- Pre-publish information on the site
- Maintain processes for information published to the site
- Reduce costs of ongoing manual updates to the site
- Decrease the reliance on technical resources for daily site maintenance
- Manage online communications with the clients and other businesses
- Put forms on the site

Web site publishing technology and Web site builders: through the forms-based Integrated Configuration Environment (ICE), customers can easily implement their own Web services created in almost any technology (HTML, XML, or more advanced technologies such as Java).

A classification of publishing tools [26]:

1. Big "enterprise wide"-systems
2. Pure suppliers of publishing tools
3. Consult solutions
4. Standardised free and cheap solutions

3 General methods

Methods for building usable systems have been introduced and developed over the past fifteen years under the discipline Human-Computer Interaction (HCI). HCI principles include an early focus on users and their tasks, practical measurements of system usage, and iterative development. Much effort has been put into exploring cognitive models of human behaviour as it relates to computer usage, and developing guidelines for screen layout and system dialogues.

We can not be sure how well the design works until it is used and we get some measure of our success. There are many different methods that can be used to analyse the traffic and the design of the Web site (site analysis tools, usability testing, usability questionnaires etc.).

3.1 Site analysis tools

The site analysis tools are used for traffic monitoring which is measuring the number of visitors and analysing their actual behaviour on the Web site. That means that traffic monitoring has two primary purposes: Development/-improvement/follow-up of the Web sites function/attraction power and as a sale argument/value.

The ground for the traffic analysis is the log files that Web server, where the Web site is, generates. The log file interprets to understandable information by using log file analysis tools. When we want to analyse Web site activity, we need a high-performance Internet log analysis tool.

There are many types of this software (Web site management software) that generate simple and easy-to-understand reports. These reports are usually in table or graph formats and illustrate statistical, demographic, and marketing trends in the usage of Web sites. It is important to know the strengths and
weaknesses of the Web site when we are creating as effective as possible Web site. There are filters that allow us to customise reports to suit our needs. We can view and save the reports in HTML or a word processor format. Reports saved as HTML files can be viewed by any browser on the local system or from anywhere on the Internet.

Some of the software for traffic monitoring is (I will write more about some of them later in this rapport):

- Apsis Visitor Pro
- WebTrends Reporting Series
- TNS Gallup ReadMeasure
- Targian SiteStat

**Cookie**

The main purpose of cookies is to identify users. When Proxy servers and firewalls became common it was necessary to discern IP-numbers in order to keep the information about the visitor from one page to another. The solution was cookies, that are messages given to a Web browser by a Web server: the browser stores the message in a cookie file — the message is sent back to the server each time the browser requests a page from the server, that contained the IP-number and added the random number [23]. Cookies can not get data from the computer other than what is in the cookie file [15].

Using cookies enables Webmasters to get detailed information about how visitors are accessing a site. With cookies it is possible to calculate the number of unique visitors. A unique visitor is identified by [2]:

- IP address
- Domain name
- Authenticated username
- Cookie
- Session parameters

With cookies and a site analysis tool we can measure the number of new visitors and the returning visitors. The differences between different analysis software are mainly how functional they are and how good the quality of the code is.

**Web server**

A Web server is a program that runs all the time and waits for Web clients (e.g. Explorer or Netscape) to connect to it and request data, usually a file. All surfing on the Internet is a series of single requests. The Web server registers every request in the log file. Servers and browsers communicate using the Hypertext Transfer Protocol (HTTP). Web servers are often called HTTPD servers. The “D” in HTTPD stands for daemon. A daemon is a UNIX term for a program that sits in the background and waits for requests. Web servers on any platform are still called HTTPD servers, or simply HTTP servers [9].

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6 Servers that sit between a client application (e.g. Web browser) and a real server. They receive all requests sent to the real server and see if they can accomplish them and if not they forward requests to the real server

7 A system designed to prevent unauthorized access to or from a private network

8 A person who manages a Web site.
Filename Conventions

Filenames have different conventions and restrictions depending on the platform. It is important to understand these distinctions before publishing the Web information, because we want the documents to be as transportable between platforms as possible. If we are working with more than one platform, naming the files is very important.

For example, if we are moving the file to or from DOS-based systems, we will need to follow the 8.3 rule (the file name must be only 8 characters long with 3-character extensions). If we are moving files from a Mac OS to other systems we must only use letters and numbers and keep the file names shorter than 8 characters.

Log files

Web servers keep log files containing all the requests made to the server. With log file analysis tools, it is possible to get an idea of visitors’ behaviour on the page (where they are coming from, how often they return etc.).

The visiting statistics can be easiest received either from the log file of the Web server alto by means of a script\(^9\) that was putt in the HTML code. The Web server (on which the Web site is) generates log files. Before we make the system, we should think of it being analysed in the future. A log file contains [2]:

- IP address or domain name at the connected computer
- Username if logging is performed
- Time and date of the connection
- Status code of how the connection is being managed
- Page, picture or any other object that has being loaded
- Parameters if the dynamic pages have been loaded
- Browser version and operating system at the connected computer
- Referring page if the user has clicked on the extern link
- The time that took for the server to deliver the object
- Visitors’ cookie and its parameters

Examples of the log files [2]:

\[\begin{align*}
X. & \text{ Microsoft IIS 5} \\
/contact.htm & – 200 3003 431 0 HTML /1.1 SOMEHOST Mozilla/ 4.0/+compatible;+MSIE+6.0;+Windows+NT+5.1/ \\
\end{align*}\]

\(^9\) A list of commands that can be executed. A script language is a programming language with which you can write scripts.
3.1.1 Apsis Visitor Pro

It is a system that is used for evaluating the marketing on and outside the Internet. You start by linking the Web pages that you want to analyse with Apsis Visitor Pro by putting a few lines of the code in the Web pages HTML code (between <body> and </body> tags). That connection tells the database, of the Apsis Visitor Pro, what is happening on the page and making the basis for the reports that the system generates [3].

Account settings:

- Account/Get HTML code — Logging out the current user of the program.
- Account/Get Spreadsheet — Get the actual statistics as an Excel sheet via e-mail.
- Traffic/Ignore this browser—Avoid your and your colleges’ visits to be registered in the statistics.

Analysing the number of visitors and page display:

After logging in on the Apsis Visitor Pro you can see the current overview of the traffic amount (from the monitoring start, for a specific year, month, day etc.). The same page can be displayed under the menu Traffic/Summary.

To be able to interpret the information correctly it is important to know the difference between the Daily Unique (a visitor that comes to a Web page for the first time during the day is treated as unique) and Hit Count (a number of page displays during a day, a visitor can have several page displays during a day but only one daily unique).

The information about the traffic amount can be received from the menu Traffic. The Traffic reports contain the summary of the traffic amount and can not be used for the detailed analysis.

- Traffic/Hourly/Daily/Weekly/Monthly/Yearly history - The number of visitors and page displays per hour for the last 24 hours/per day for the last 30 days/per week for the last 14 weeks/per month for the last year/for the last year.
- Traffic/30 days by hour — The number of visitors and page displays per hour for the 30 days.
- Traffic/By page — The most visited pages for a specific time period. The home page is always the most visited page. The page that is the most visited is the one that the visitors are actually looking for and the information on it. It is important to be able to easily reach that page from the home page. When we are analysing a specific page it is important to choose a longer time period to avoid jumping to conclusions.
Analysing the visitors’ characteristic on a Web site – menu Visitors:

- Visitors/Latest page views — The information about the last visited pages, visitors’ way of navigation and technical information about visitors.
- Visitors/Domain searches — Possibility of searching for a certain domain and getting the information visits on the page/day from the domain.
- Visitors/Repeat visitors — The ratio: first time visitors and other visitors. It gives the idea of how good the page’s information is at drawing the visitors back to the page.
- Visitors/Domains — The list of visitor’s domains.
- Visitors/Major Domains — The list of visitor’s major domains.
- Visitors/Language — The language settings that visitors have on their computers.
- Visitors/Countries — The proportion of visits made via domains with land codes.
- Visitors/Latest visitors — This report gives the possibility of analysing the particular visitor on the page (the search terms on the search motors, where the visitor is and what pages that have been shown). In that way we can found out if the visitor has found the searched information or not.

Other functions:

- Latest access time — When the visitor last time was on the page.
- From domain — Via which domain the visitor is connected to the page.
- Referred by — How the visitor has come to the page.
- Visit — How many times the visitor has been on the page.
- More

After clicking on “Details” the detailed information about the current visitor’s computer system receives. Example fig 3.1:

<table>
<thead>
<tr>
<th>Latest Access Time</th>
<th>From Domain</th>
<th>Referred By</th>
<th>Visit</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/3/2003</td>
<td>telia.com</td>
<td><a href="http://www.busineshouse.com">http://www.busineshouse.com</a></td>
<td>1</td>
<td>Details/Pages</td>
</tr>
<tr>
<td>6/3/2003</td>
<td>213.142.10.52</td>
<td><a href="http://www.google.com">http://www.google.com</a></td>
<td>1</td>
<td>Details/Pages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Search term: Apsis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6/3/2003</td>
<td>telia.com</td>
<td>Bookmark or direct</td>
<td>1</td>
<td>Details/Pages</td>
</tr>
</tbody>
</table>

Fig.3.1. An example of a Visitors/Latest visitors report. The latest access time, the domain name, the place visitor comes from and the number of the visits are shown.

Analysing the visitors’ behaviour on the Web site:

The information about what visitors are doing on the site can be found under the menu “Navigation”.

- Navigation/Navigation Paths — The information about the visitor’s behaviour on a particular Web page. That is a very good way of finding out what decisions the visitors are taking on the page and if the page is serving its purpose.
- Navigation/Entry pages — The first page of the Web site that visitors come to. If it is not a “default” or “index” it often means that the visitor came via a search motor or an extern link. This page is a very important and has
to give the right image of the company. It has to be easy to go further from this page to other pages that visitors are looking for.

- Navigation/Exit pages — The last page of the Web site that visitors see. It is important to find out the most common “exits” to find out how to keep the visitors longer on the page. It is as well important to find out why the visitors are leaving the page (maybe it has to be more information on the page, clearer information etc.)
- Navigation/Reloads — The page that has been reloaded several times. The reason for reloading can be that the page is too slow.

I order to get more visitors it is important to find out as much as possible about the existing visitors – menu Referrers:

- Referrers/Referring Sites — The well-presented picture of how the visitors are coming (during one particular time period) to the Web page, i.e. what the Internet “supplies” are. This report is used to analyse Internet campaigns, e.g. a monthly report shows how many visits one campaign has generated during one month.
- Referrers/Referring Sites Detail — Almost the same as Referrers/Referring Sites. The only difference is that it gives more information about the URL instead of just giving the name of the domain.
- Referrers/Search Engines — The same information as under Referrers/-Referring sites, showing only the information based upon visits from search motors.
- Referrers/Search Keywords — Showing the search terms that are used in the search motors to find the page.
- Referrers/Keywords by Engine — Showing the search terms that are used, in the specific search motor, to find the page.
- Referrers/Daily, Weekly or Monthly Search Engine history — The total number of visitors (during a day, week or month) coming via the search motors. It is a good way of finding out how successful the search motor marketing is.
- Referrers/Major Domains — The major domains that generate most visitors to the Web page.
- Referrers/Countries — The list of the countries that visitors surf from.

It is also very important to find out what technical specifications that visitors have on their computers and the which browsers they are using to view the Web page. That information is important especially when the new Web page is being made. This information can be found under the menu Client:

- Clients/Browsers — The list of browsers that are being used to visit the Web page.
- Clients/Browser versions — The same as Clients/Browsers but a more detailed list (browser versions etc.).
- Clients/Operating systems — The list of operating systems that visitors have on their computers.
- Clients/Screen resolutions — The list of the screen resolutions on visitor’s computers. The current standard page size is 800x600 pixels. It is good to know the most common resolution on the visitor’s computers when we are making a new page. If the visitors have lower screen resolution than needed, they might leave the Web page because of that.
- Clients/Colour palettes — The list of how may colours the visitor’s computers show.
- Clients/Script versions — If the Web page is using advanced JavaScript’s it is important to know that the visitors have the same version.
- Clients/Java support — The proportion of the visitor’s systems that supports Java
- Clients/Cookie support — The proportion of the visitor’s systems that support Cookies. If it is high, there is risk of loosing many visitors.

Apsis Visitor Pro contains three special reports that give the information about when the Web page has the most visitors. The first report is under Summaries/Hour of day and shows what hours of the day that the page has most visitors. In that way the information about whether the visitors are viewing the Web page on their work or during their free time can be received.

- Summaries/Day of Week — The information about what weekdays the Web page has most visitors.
- Summaries/Day of Month — The information about what days of the month the Web page has most visitors. This information is very important when sending the information via e-mail.

3.1.2 WebTrends Reporting Series

Every Web site pursues three fundamental strategies: acquire more qualified visitors for the lowest cost, convert those visitors into customers and keep those customers for repeat business.

WebTrends Reporting Series says delivering real-time, accurate answers in each of these areas. The first step in winning new customers today is driving new traffic to the Web site via online marketing (e-mail campaigns, search engine marketing and banner advertising) and offline marketing (print advertising and direct mail). We need to drive the most qualified visitors for the lowest cost.

When the visitor comes to the Web site we need to make them to accomplish the goals we have set (Web site conversion). Whether the goal is for visitors to register or make a purchase the conversion rate is an important measure of the Web site’s success. We can maximise conversion rates by following visitors click-by-click through the content, identifying bottlenecks, confusing navigation and abandonment points.

WebTrends Reporting Series provides a comprehensive picture of click-by-click visitor behaviour, allowing us to improve site navigation and goal achievement, and insight through many reports allowing us to focus on the critical indicators of campaign performance such as campaign response, campaign conversion and campaign return on investment [24].

Once we have attracted visitors to the Web site and persuaded them to convert, we need to keep them as returning customers. It is important to determine how well loyalty campaigns such as customer newsletters and e-mails encourage the most important customers to keep coming back and engage in repeat business. WebTrends Reporting Series enables us to compare the effectiveness of loyalty campaigns [24].

Web analytics has relied on Web server log files. The process of collecting multiple log files from different locations and then analysing them can be difficult and because of caching and proxy servers, the log file may not contain all of the actual visitor activity information [25].

WebTrends SmartSource Data Management is an alternative to traditional Web server log file analysis (known as client-side data collection), which collects info-
rmation directly from the visitors' browser and SmartSource stores the information in a SmartSource File. With SmartSource, companies can use the best of both worlds: the benefits of client-side data collection together with the analysis that WebTrends has developed [15].

Technical managers are responsible for maintaining the Web site and making sure business users have the information and analysis they need, when they need it. User Access Permissions allows us to specify the descriptions and functions different users can view. Reporting Templates lets us create views of information relevant to specific departments or users. With Report Templates, the reports and dashboards can be customised on the WebTrends Desktop for a specific business function or user [24].

WebTrends Reporting Series makes it easy to determine if the Web site changes have a positive effect. The free WebTrends Developer Kit provides a set of tools that integrate Web analytics into development environments, simplify the process of tagging and testing a Web site for analysis and ensures the site is properly written for analysis before going live by testing with WebTrends [25].

**Case studies**

- Geopassage (Industry: Travel/Hospitality)

Business Overview: GeoPassage is a worldwide tour company that offers an extraordinary level of e-commerce capability. It allows travellers to automatically customise their vacation in real-time based (on their interests, needs and preferences).

Results: It was easy to determine what search engines were generating the most traffic, measure the specific words that were generating the most visits, what pages are generating the most hits and how many visits it took on average for a customer to book an adventure (New versus Returning Visitors reports).

WebTrends Top Destination Paths Through Site and Top Exit Pages reports was being used to track the way of visitors through the site and look for strengths and weaknesses.

“WebTrends Analysis Suite, Advanced Edition has proven to be a critical tool used by our marketing and IT departments, allowing us to make strategic, fact-based decisions rather than shooting in the dark. We have been able to prove return on investment on our marketing initiatives and spend our money more wisely.” says Arturo Castellanos, system administrator at GeoPassage [4]

- Pharmacia & Upjohn (Industry: Healthcare)

Business Overview: Pharmacia & Upjohn is a pharmaceutical and health care company with offices in 100 countries. The main business is prescription pharmaceuticals [10].

Results: WebTrends Enterprise Suite with ClusterTrends was being used to collect log files from multiple servers (from Web and proxy servers across the intranet) and run daily (show total user sessions and bandwidth) and monthly (show the most popular Web pages and what locations users are coming from) reports.

WebTrends Monitoring and Alerting module was being used to monitor server uptime and receives instant alerts when a server (not only Web servers but the
database servers and proxy servers connected to them) is down. Link Analysis was being used to find broken links to improve Web site quality and presentation WebTrends helps generating reports for each individual department or division that requires their own reports for their own Web site on the intranet [10].

"Pharmacia & Upjohn has enjoyed many important benefits from implementing a WebTrends solution including: improved intranet design, increased availability, capacity planning, and reduced overhead.

3.1.3 KIA

KIA (Kommittén för Internetannonsering. – the committee for Internet advertising) is a so-called Joint Industry Committee, a trade committee for Internet advertising that was established in 1999 in Stockholm, Sweden. The advertisers, media worker, the owners of a Web sites and sales networks are working together on industry questions [12].

KIA recommends a browser based site—centric system, based on tagging of Web sites, as a standard for traffic monitoring (when we want to measure the number of visitors on the Web site, the frequency, page downloading, time spent etc.). The system has to be able to handle the measuring complex of problems caused by [12]:

- Cache\textsuperscript{10} memory
- Firewalls
- Proxy servers
- Disqualified traffic

The tags should be put in the end of the page. The system has to be able to measure the following:

- Unique browsers
- Page displays
- User sessions
- The time length per unique visitor and visit

The data of the system must be shown per hour, day, month and be available on the Web. KIA recommends the following systems:

- TNS-Gallup NetBehaviour-system supplies qualified demographic target group data for Web sites
- Research International are planning on establishing a target group measuring according to similar principles as TNS-Gallup with connection to well established Sesame/Orvesto.
- Nielsen NetRatings are planning on shortly completing with a working panel to be able to give the complete coverage of range and demography.

\textsuperscript{10} The Cache is a file on the reader's computer where the system stores a copy of things asked for recently.
3.2 Usability testing

Usability testing is the process by which the human-computer interaction characteristics of a system are measured, and weaknesses are identified for correction. Such testing can range from very structured to informal and quite expensive to almost free. The amount of improvement is related to the effort invested in usability testing.

"Usability really just means making sure that something works well: that a person of average (or even below average) ability and experience can use one thing — whether it’s a Web site, a fighter jet, or a revolving door — for its intended purpose without getting hopelessly frustrated." — Steve Krug [13]

According to ISO-standard 9241 the usability is defined as [8]:

- **Usability** - The **effectiveness, efficiency, and satisfaction** with which specified users achieve specified goals in particular environments.
- **Effectiveness** - The accuracy and completeness with which specified users can achieve specified goals in particular environments.
- **Efficiency** - The resources expended in relation to the accuracy and completeness of goals achieved.
- **Satisfaction** - The comfort and acceptability of the work system to its users and other people affected by its use.

In a usability test, one or several users at a time are shown something (a Web site or a prototype of a site etc.) and asked to either figure out what it is or try to use it to do a typical task [13]. Usability testing can be done before making the Web site/Internet campaign, during the time we are making it or afterwards for getting the knowledge for future projects.

Since the early 1980:s the attentions to user needs has increased. From the begging, the pressure or limited resources have prevented companies of trying usability testing and realising the importance of it. The companies had to have a usability lab with an observation room behind the one-way mirror and a couple of cameras so they could record the users reactions and the things they were using. In 1989 Jakob Nielsen wrote a paper “Usability Engineering at a Discount” where he wrote that it did not have to be that way and that we could make usability testing outside of the usability lab and without so many users. [13]. He proved that small numbers of users carrying out determined activities on a system gives high quality and cost-effective results. Here are some things about the testing:

- Having a usability test on the schedule is a great help in the design phase of a Web site or an Internet campaign.
- After a certain time of working on the Web site the programmers know too much about the site and the only way of finding out how the site really works is to test it.
- Even if we performing the test with the “wrong” user it is much better than not doing the test at all.
- It is always better to test early in the project than near the end so you have the time and possibility of making the changes.
- It is more important to test early and often than testing people that are likely going to use the site.
- The point of testing is to inform our judgment.
- Testing is a process that has to be done several times (testing-fixing-testing etc.).
While practitioners developed usability testing methods to improve user interfaces quickly, academics were developing experiments to test hypotheses and support theories. One or more people typically work in the usability laboratory with expertise in testing and user-interface design. They may serve 10 to 15 projects per year throughout the organisation. The laboratory workers together with the user-interface architect meet to make a test plan with scheduled dates and budget allocations [17].

The first stage in the usability testing is task analysis or design reviews to provide the software tools or literature references and help developing the set of tasks for the usability test. The next stage is identifying the participants, the number and the type them. The participants should always be treated respectfully and be informed that it is not they who are being tested but the software and user interface [17].

The practice is to ask all users that are being tested to read and sign a statement like this one [17]:

- I have freely volunteered to participate in this experiment.
- I have been informed in advance what my task(s) will be and what procedures will be followed.
- I have been given the opportunity to ask questions and have had my questions answered to my satisfaction.
- I am aware that I have the right to withdraw consent and to discontinue participation at any time, without prejudice to my future treatment.
- My signature below may be taken as affirmation of all the above statements, it was given prior to my participation to this study.

3.2.1 Techniques:

Usability testing can be performed with developers, HCI experts, or representative users. Some authors distinguish between “testing,” they limit to experimental user-oriented methods, and “evaluation,” which utilizes HCI professionals' expertise. In what follows I will use “testing” broadly to describe all methods of measuring system usability. The usability testing techniques that are efficient are [17]:

Think aloud

The idea is for a certain number of participants to use the system and to collect information about their experience of use while they think aloud. The testers listen and analyse how the participants are working with the interface without helping them or giving them the instructions (but are supportive of the participants). After a certain time period they are invited to answer specific questions and make general comments or suggestions.

The technique often leads to many spontaneous suggestions for improvements and is effective to test early prototypes through to delivered systems. It is generally not a one-shot experience and needs several iterations to release quality. Many problems that the user would not remember in an ordinary interview shows using thinking aloud technique. Since the user thinks aloud while interacting, the tester gets a very direct understanding of what parts of the test that cause the most problems, which they would not get with a regular observation.
We must have a representative sample of users. It is important to select which area of the Web site/campaign we are testing and recruit users from the target set that are expected to use these areas of activity.

The advantage of this technique comparing to unobserved testing is that less participants are needed since the quality and reliability of information from tests is considerably better.

The main limitation is that it seems unnatural to most users to think aloud when using a system and especially in front of the people they do not know. Some testers tend to become silent when solving difficult cognitive problems. Another important limitation is that the method requires much of interpretation from the tester. Many of user “theories” about what caused the different problems will be presented by the user but the tester should not give too much weight to these theories.

The procedure of the think aloud technique is [5]:

1. Booking (letting know in advance if the participants have to prepare themselves beforehand. It is important to be sure that they are willingly committed to being there).
2. Pre-briefing the users (letting the participants know what they can expect to happen during the trial).
3. The test location (deciding the test location).
4. The use context (it is important that test is carried out in a “use context” which is as close to normal reality as possible).
5. Who should be involved? It is best to carry on the test on one since it reduces the imbalance of “power.”
6. The start of the test (assuring the participants that everything they say and do is confidential, what they will be doing and how long it is going to take).
7. Getting focused (in asking the user to carry on without saying to him/her as little as possible).
8. Briefing for use (reminding the user the importance of him/her talking as much as possible about what ever comes to their mind).
9. The feeling dumb issue (it is important to explain to the testers that it is the system that is being tested and not them).
10. Carrying out the test – use (reminding the participants of their purpose and asking them to use the Website to meet their objectives).
11. Winding up the test (ending the test with a natural conclusion such as when user’s purpose is met).

Videotaping

The participants are often filmed during performing the test and are usually negative about the video cameras at the start of the test but forget about it after a couple of minutes and focus on the tasks. The technique is often valuable for later review. Since the reviewing videotapes is a hard work that takes time the careful logging and explanation during the test are vital (to reduce the time needed to find critical activities). Most usability laboratories have software that facilitates logging of user activities (typing, mousing etc.) by testers with automatic time stamping.
Field tests

Field tests are putting new interfaces to work in realistic environments for a trial period. If logging software is being used, field tests can be made more successfully. To support more detailed field-testing portable usability laboratories with video-taping and logging software have been developed. Early tests can be done using paper mockups of screen displays. A tester plays the role of the computer by flipping the pages while asking a participant to continue performing the tasks. This method is often productive.

Can-you-break-this

This technique means providing the energetic teenagers with the challenge of trying to break new games. This is a good way of finding the flaws in the system since the software purchasers have little patience with flawed products and the cost sending out the replacement disks is too high.

Competitive usability testing

This technique means comparing the new interface to either an old one or a similar one. This method is close to a controlled experimental study and testers must be careful to construct parallel sets of task and to balance the order of presentations of the interfaces. Fewer participants are needed than in the rest of the techniques but they have to perform the tests for a longer time period.

3.3 Usability questionnaires

Subjective evaluation is an important component in the evaluation of the usability. Using usability questionnaires is a good method when we want to get a general view (idea) of the matter in the early stage. The number of testers is higher than in the other methods. The questionnaires can be sent by mail or administered face to face. Face to face administration often generates much more useful insight. There are several types of questionnaires: the open qualitative, the quantitative etc.

Open qualitative questionnaires

The open questionnaire (fig 3.2) should be done before the quantitative questionnaire. That gives users a chance to review and relive the experience before they start quantifying it. The questionnaire is given to the testers and testers are reminded that everything is going to be treated confidentially. The answers can be received in writing or recorded on a tape and are being analysed afterwards. We should make sure that we spend enough time at the end of the session for proper end of the testing.

Since there are many testers that their description of the experience differs from our observation of the experience it is important to understand the cause of that. It is important to understand the possible reasons for not telling the truth: whether the tester is feeling incompetent and he does not want to admit it for himself and us, the testers do not want to be impolite and make more favourable comments etc. Our job is to make the testers to express as much truth as possible and to make them understand that the more honest answers we get the bigger help the questionnaire is [5].
1. What were your first impressions of the Web site?
2. What were the most useful or attractive features of the Web site?
3. What did you find surprising?
4. How much were your needs, objectives or expectations met?
5. What did you like?
6. What did you dislike?
7. What would have been better for you and in what way?
8. Do you have any other comments?
9. How do you feel about Company-X after using the Web site?
10. What date(s) and time(s) did you use the Web site?
11. How many minutes were you on the Web site?
12. How many minutes did it take you to meet your objectives?
13. How long would you expect it to take you?
14. For the time you are interested in XXXXX, would you expect to use the Web site again?
   - No
   - Sporadically
   - Regularly
15. Why?

Fig. 3.2. The example of an open qualitative questionnaire:

Quantitative questionnaires

After doing the open qualitative questionnaire it is important to carry out a quantitative questionnaire (fig 3.3). The results of the quantitative questionnaires show us the level of user’s perceptions, improvements and the succeeding iterations of the design. The collective scores, that testers have given, can be summed and averaged for each question and be presented as a graph [5].
Please read the statement below and score each with a number between 1 and 8 to indicate how true the statement is for you. Please also add any comment you may have.

<table>
<thead>
<tr>
<th>About the system</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>I never made any mistakes.</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>I found it very useful.</td>
<td></td>
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<tr>
<td>I always feel in control using it.</td>
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<tr>
<td>I found it very easy to understand straightaway.</td>
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</tr>
<tr>
<td>It was always clear what would happen when I clicked on something</td>
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<td>The system provides everything I wanted.</td>
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<td>I never felt lost on this system.</td>
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<td>I found the use very pleasurable.</td>
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<td>I could always find what I wanted quickly.</td>
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<tr>
<td>The calculations provided were everything I wanted.</td>
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<tr>
<td>I found the visual presentation excellent.</td>
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<tr>
<td>The information was excellent quality, concise, clear and understandable.</td>
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<td>I can always find out quickly if it doesn’t have what I want.</td>
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<td>I never had to change or correct anything I entered.</td>
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<td>I found the performance too slow.</td>
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<td>The system was coherent and consistent.</td>
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<td>I feel it provides appropriate security and privacy.</td>
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<td>I can easily contact the right person when I want to on this system.</td>
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<td>I achieved what I wanted very effectively.</td>
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<td>I feel I want to use company’s services.</td>
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<td>I feel it enhances and enables my skills.</td>
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<td>I feel the language used is totally understandable</td>
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<td>I could always get help quickly.</td>
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<td>Everything happened in order I wanted it to.</td>
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<td>I felt the system always treated me with respect.</td>
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<td>I feel it greatly improves the quality of my task.</td>
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<td>I will tell my friends positive things about it.</td>
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Fig. 3.3. An example of a quantitative questionnaire

**Questionnaire for User Interaction Satisfaction (QUIS)**

The Questionnaire for User Interaction Satisfaction (QUIS) is a tool developed by a team of researchers in the Human-Computer Interaction Lab (HCIL) at the University of Maryland at College Park [16]. The QUIS was designed to measure users' satisfaction with different aspects of the human-computer interface (see fig. 3.4).
5.4 Messages that appear on the screen: confusing clear
1 2 3 4 5 6
5.4 Instructions for commands or choice: confusing clear
1 2 3 4 5 6

Fig. 3.4. Examples of the specific satisfaction scale questions

The QUIS 7.0 is the latest version that contains a demographic questionnaire, a measure of overall system satisfaction and hierarchically organised measures of the following interface factors [16]:

- Screen factors
- Terminology and system feedback
- Learning factors
- System capabilities
- Technical manuals
- On-line tutorials
- Multimedia
- Voice recognition
- Virtual environments
- Internet access
- Software installation

Each area measures the users' satisfaction with that side of the interface. The questionnaire is designed to be configured according to the needs of each interface analysis by including only the sections that are of interest to the user.

The QUIS 7.0 packet includes [24]:

- A word processor document containing all the sections of the questionnaire, which can be edited to meet the user's specific needs.
- A single or site version of the questionnaire implemented in HTML. This version can be used on a number of platforms, including Macintosh, Windows 3.1, and Windows 95.
- A selection of relevant papers detailing the validation of the QUIS and some of its uses.

4 This project

During April and May 2003 the company Löfbergs Lila is conducting the traffic to their Web site via the traditional off-line campaigns (TV ads, advertising plates and printed ads placed in the most of the food shops where we can by Löfbers Lila coffee) informing the customers that they can on the Web site either win a wedding worth 50,000 SEK or a love trip for the same amount money. Löfbergs Lila had turned to Mandator to help them make the competition on their Web site.

After examining different methods that can be used for traffic monitoring we decided to complete that by evaluating the Löfbergs Lila’s campaign. There are two different things that were tested using usability questionnaires and usability testing. The first one is how successful the off-line campaign is and what way the visitors are taking to reach the Web site. The second one is how easy-to-use and successful the competition on the Löfbergs Lila's Web site is.
The history of Löfbergs Lila

Löfbergs Lila is the company that was founded in 1906 in Karlstad, Sweden by the brothers Josef, Anders and John Löfberg. The company worked with import of the colonial merchandises (tee, coffee, spices etc.). In addition to the import of the colonial merchandises they started to import Citroen cars and roast the coffee on their own.

On that time many small shops had a contract with Löfbergs Lila, to buy a certain amount of the coffee for the delivery within a certain time period. These shops were the only ones that sold the coffee. The shops got as a bonus a coffee mill, a shop scales or a coffee container. The coffee wrapping with the trademark designation came already in 1920s. Around 1927 Löfbergs Lila had eleven different blends in the different bags and that started to replace the bulk sales. In that time there was a blend called “Löfbergs Lyxblandning” and that was the origin of the name “Löfbergs Lila” that later became the name of the whole range [14].

Year 1927 the brothers Löfberg split up the company and Josef took over the wholesaler activity with colonial goods. John took over the import of the Citroen cars and Anders took care of the coffee business under the name AB Anders Löfberg. Year 1939 the state introduced an extra taxes on coffee and the coffee was rationed completely in the end. After a while the coffee was released free again and the new coffee sales could begin.

Anders’ son Åke inherited the company in 1945 and around year 1950 the offices were established in a distributions net all over the country. Löfbergs Lila became an all over the country trademark. The consumption of the coffee almost doubled under the 50s and the company continued to expand. The company acquired in 1955 the company “Eda Rostfria Verkstad” and the production of the coffee machines under the name “Löf-Eda” started. That part of the business was later sold in 1973 to Denmark. [14].

Year 1963 the company started to organise a flying activity. The company was growing and it needed several selling places. When representatives of the big shop chains were invited to Karlstad to discus the business it was hart to find a regular flying connection to Karlstad. That is why Löfbergs Lila had its own plane until 1990.

Åke Löfberg’s son Anders became a MD (Managing Director) of the company in 1976 and developed the business in the new areas. Under the last couple of decades big investments were carried out on the production side (with the respect for the environment). In the end of 2001 Anders quit as a MD and continued as a working chairman of the board [14].

4.1 Methods used in this project

It is known from our own experience that [13]:

- Paying attention to usability means less frustration and more satisfactions for the visitors and a better chance of seeing them again.

- A Web site should be self-evident, obvious and easy to understand. It has to be easy to understand especially for the users that do not have any interest in the subject on the site and barely know how to use the computer.
The method that I chose to use to analyse the off-line campaign that draws visitors to the Web site of Löfbergs Lila is usability questionnaires (open qualitative questionnaire and quantitative questionnaire). The URL of the questionnaire form (fig 4.1) along with a short description of this project has been e-mailed to testers randomly chosen form a database of the competitors. To increase the number of answers I arranged a lottery with 4 kg Löfbergs Lila cafe as the prize. All the questions can be found in the appendix.

The same method (usability questionnaires — open qualitative questionnaire and quantitative questionnaire) has been used to test the competition on the Web site. Usability testing technique think aloud has been done on a small number of testers just to compare the results (about the competition) from this method with the results from usability questionnaires.

![Frågeformulärf](image)

Fig. 4.1 The look of the questionnaire that testers had been asked to fill in.

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5 Results

Exactly 300 contesters were asked to fill in the questionnaire and over 100 answers were received. I decided to start analysing them when the number of answers reached number 85. The answers that stick out and are particularly significant are shown in graphs. These are the results:

Question 1:
Have you seen the campaign in the grocer's shops?

![Question 1 graph]

Question 2:
The campaign in the grocer's shops caught my eye.

1 (Disagree) 4,8%
2 0%
3 14,3%
4 28,6%
5 19%
6 (Agree) 33,3%

Question 3:
The campaign in the grocer's shops had a clear and easy-to-understand text.

1 (Disagree) 0%
2 14,3%
3 4,8%
4 9,5%
5 33,3%
6 (Agree) 38,1%

Question 4:
The campaign in the grocer's shops had a beautiful picture.

1 (Disagree) 0%
2 9,5%
3 19%
4 42,9%
5 9,5%
6 (Agree) 19,1%
Question 5:
That was the text in the campaign that caught my eye.

1 (Disagree) 4,8%
2 14,3%
3 23,8%
4 14,3%
5 14,3%
6 (Agree) 28,5%

Question 6:
That was the picture in the campaign that caught my eye.

1 (Disagree) 4,8%
2 19%
3 19%
4 23,8%
5 19%
6 (Agree) 14,4%

Question 7:
The campaign in the grocer’s shops had a clear message:

1 (Disagree) 0%
2 4,8%
3 9,5%
4 23,8%
5 42,9%
6 (Agree) 19%

Question 8:
The campaign in the grocer’s shop made me participate in the contest.
Question 9:
Have you seen the advertising film on TV?

Question 10:
The advertising film caught my eye.

Question 11:
The advertising film had a clear message.

1 (Disagree) 1,6% 2 8,2% 3 18% 4 18% 5 13,1% 6 (Agree) 41,1%
Question 12:
The content of the advertising film was interesting.

1 (Disagree) 1,6%
2 11,5%
3 19,7%
4 22,9%
5 27,9%
6 (Agree) 16,4%

Question 13:
The advertising film made me participate in the contest.

![Bar chart for Question 13]

Question 14:
Your first impression of the contest was:

![Bar chart for Question 14]

The other answers were: time-demanding, advanced, different, cute, difficult to come up with a new dialog, the competitors thought that it was going to be more exciting and more like an ordinary competition.
Question 15:
The competition met your expectations after having seen the film and the campaign in the grocer's shops.

1 (Disagree) 10.7%
2 10.7%
3 14.3%
4 21.4%
5 25%
6 (Agree) 17.9%

Question 16:
It was easy to understand how to change the look and the colour of brides and groom's hair and how to change the look of the brides dress.

Question 17:
After seeing the trial film, it was easy to understand how to participate in the contest.
Question 18:
You would have participated in the contest even if the contest had been more difficult.

Question 19:
Your view of Löfbergs Lila has changed to the better.

Question 20:
The contest has increased your interest for Löfbergs Lila.

1 (Disagree)  21,2%
2               7,1%
3               20%
4               22,3%
5               16,5%
6 (Agree)      12,9%
Question 21:
You think that you will return to the Web page of Löfbergs Lila.

1 (Disagree) 10,6%
2 11,8%
3 20%
4 14,1%
5 18,8%
6 (Agree) 24,7%

Questions 22,23 and 24:
The comments about the competition

Positive: The possibility of deciding the story, writing the lines, to be able to write everything at home without having to send the answers by mail, the prize, the simplicity, the competition form that was different than usual, possibility of making the film without having to write the code itself, interesting, possibility of being creative, possibility of changing the look of the groom and the bride, to be able to create a film on our own, exciting, possibility of using our imagination, the colours and the look of the images, to be able to see the result in the end, writing the text.

Negative: Not to be able to change as much as they wanted in the design and the events, to be forced to spread the film to friends, the colour composing, not to be able to write as much as they wanted in the speech bubbles and some text that was written in the bubbles was not shown when looking at the film, that it was not possible to change all the speech bubbles, it was too easy, the competitors wanted several alternatives, the colours – little dull, the events were too controlled, that the film was not longer, that the best lines were already taken — it made it difficult to come up with better ones.

Question 25:
What drew you to the contest was:

![Question 25 chart](chart.png)

Question 26:
Your age?

Approximately 12,8% of the contestants were 10-20 years old, 46,8% were 20-30 years old, 34% were 30-40 years old, 4,2% were 40-50 years old and 2,2 were 50-60 years old.
The results from the usability testing technique think aloud

Since the competition was on the Web site of Löfbergs Lila only for three weeks and I had to focus on usability questionnaires I managed to do the usability testing on only two persons. Luckily I got the same results that I got from usability questionnaires.

I observed the test persons participated in the contest each at the time and asked them to think loud when doing so. The test persons were one that is 25 year old and has high technical education and one that is 43 years old and does not have any technical education. I asked them to be really honest with me and not to be afraid of hurting my feelings when answering at my questions.

Both of them were sure that they had not seen the campaign in the grocer’s shops but they had not either seen the advertising film on TV (they participated in the contest since they got a advice from a friend = me). Their first impression of the contest, like the majority of the other contesters, was that the competition was amusing. They both understood immediately how to change the look of the bride and the groom and how to compete after seeing the trial film but they both were very surprised when they noticed that they could not write as much text as they wanted. When I asked them if they would have competed even if the competition had been more difficult and both of them had negative answers. One of them said that his view of Löfbergs Lila has changed to the better and one of them said that it had not changed at all. They did not think that they were going to return to the Web site of Löfbergs Lila, which was surprising.

In general I can say that they liked the competition and thought that it was easy to understand and was fun to do. The only negative thing was that the text in the speech bubbles was too short. Both contesters were drawn by the prize and did not even notice the campaign in the shops or on TV.

8. Conclusion

The answers from the questionnaire were quite self-explaining and after I have read the first 10 answers and got the general idea of what the competitors thought about the competition I could notice that they agreed about major questions.

The campaign in the grocer’s shop

I was surprised about how few have participated in the contest as a result of them seeing the campaign in the grocer’s shops. Only 25,5 %, of all the contesters, have seen the campaign and when I asked them the questions about the campaign they were quite positive about it. Still more than 42 % disagreed when I asked them if the campaign in the grocer’s shop made them participate the contest and only 28,5% really agreed (question nr.8). Even if the competitors were positive about the campaign (the answers at questions 1-7) it is important to notice that they chose the strongest scale to disagree when answering at question nr. 8. I drew the conclusion that approximately 7 % (28,5 % of 25,5 %) of all contesters are the ones that have participated because of the campaign (which is not very good). I got the same result when I looked at the answers at the question nr. 25.

The general opinion about the campaign was that the campaign caught competitors eye, the text was clear and easy-to-understand. About the picture
they were quite positive but still not very impressed (around 50% answered
alternative 4 which is somewhere in the middle between disagree and agree). The
questions 5 and 6 were about what part of the campaign caught their eye and the
answers were very even, which made it difficult for me to determine whether it
was the text or the picture that caught their eye or something else. Around 62
chose answer alternatives 5 or 6 when answering at the question nr 7.

The total impression of the campaign in the grocer’s shops is that the campaign
was well done but nothing extra-ordinary. Since the number of the competitors
that have seen the campaign is so low it should have been better distributed.

The advertising film on TV

Around 66% of the contesters have seen the advertising film on TV and as a
result of that participated in the contest. In general the contesters were very
positive about the advertising film (much more than about the campaign in the
grocer’s shops). Even if the answers at question nr.12 (The contest of the
advertising film was interesting.) were even the film had persuaded the majority
of the visitors to accomplish the set goal (to participate in the contest).
Approximately 77.9% chose the strongest scale to agree when they answered the
question nr.13.

The competition

Surprisingly were all the reactions at the competition very positive. More than
70% enjoyed participating in the competition and found it very entertaining. Only
7% found the competition difficult which is really good. I could notice that the
competition was easy to comprehend when I looked at the answers at question nr
16 where more than 80% answered that it was easy to understand how to
change the look of the bride and the groom. Very positive answers were received
even at the question nr.17 where 60% said that it was easy to understand how to
participate in the contest.

7. Discussion

When I started this project I planed to examine different methods that can be
used for Web traffic monitoring. The plan was that I was going to find the most
suitable one and then test it on one of the campaigns that Mandator has done for
one of their customers.

As the project proceeded I noticed that using site Analysis tools would be too
expensive and too complicated. I had to be content with just analysing different
methods for traffic monitoring and stating that there is a site analysis tool that
can be used to measure the whole flow: banner → campaign-site → Web site →
e-commerce solution, i.e. how many customers that click on the banner actually
complete the purchase.

I chose to use another method, usability questionnaires, to analyse and evaluate
the campaign that Mandator has done with Löfbergs Lila. I had to change my
plans even here. From the beginning I wanted to do usability testing on a small
group of people. I randomly chose 30 testers (contacted on the streets of
Stockholm) and not a single one had seen the campaign nor participated in the
contest. I realised that it would not save me the money or time to continue trying
to find the ones that had participated in the contest comparing to contacting to
ones that have participated in the contest and have seen the campaign. The reason I chose usability questionnaires is because most of the contesters were from other places than Stockholm and it would have been to difficult and expensive to arrange for all of them to come to the same test location.

Test persons that I did usability testing on were told about the competitions by me and because of that participated in the contest. Luckily I got the same results but I still think that using the usability questionnaires were the cheapest and most efficient method in this case.

Using site analysis tools is very efficient when we want to analyse visitors’ behaviour on a Web site during a long time period and by analysing the results improving the Web site. I find usability questionnaires and usability testing more suitable for analysing particular parts of a Web site like a Web competition.
8. References


9. Appendix

The questionnaire

You have participated in the contest on Löfbergs Lila Web site where you could win a wedding trip or a love trip (worth 50000:-). A campaign consisted of advertising signs and advertising leafs in the grocer’s shops, an advertising film on TV, ads in popular press and Internet, advice sites on the Internet and free postcards in the café shops and restaurants.

Please read the questions/statements below and answer/indicate how true the statement is for you. Leave out the questions that concern matters that you have not seen. All the answers are treated confidentially.

-------------------------------------------------------------------------------------------

Part 1

The campaign in the grocer’s shops

1: Have you seen the campaign in the grocer's shops?
   Yes               No                No Idea
2. The campaign in the grocer's shops caught my eye.
   1      2  3           4                  5                    6
   Disagree       Agree
3. The campaign in the grocer's shops had a clear and easy-to-understand text.
   1      2  3           4                  5                    6
   Disagree       Agree
4. The campaign in the grocer's shop had a beautiful picture.
   1      2  3           4                  5                    6
   Disagree       Agree
5. That was the text in the campaign that caught my eye.
   1      2  3           4                  5                    6
   Disagree       Agree
6. That was the picture in the campaign that caught my eye.
   1      2  3           4                  5                    6
   Disagree       Agree
7. The campaign in the grocer’s shops had a clear message.
   1      2  3           4                  5                    6
   Disagree       Agree
8. The campaign in the grocer’s shop made me participate in the contest.
   1      2  3           4                  5                    6
   Disagree       Agree

Adveritising film on TV

9. Have you seen the advertising film on TV?
   Yes               No                No Idea
10. The advertising film caught my eye.
   1       2       3       4       5       6
   Disagree                         Agree

11. The advertising film caught my eye.
   1       2       3       4       5       6
   Disagree                         Agree

12. The content of the advertising film was interesting.
   1       2       3       4       5       6
   Disagree                         Agree

13. The advertising film made me participate in the contest.
   1       2       3       4       5       6
   Disagree                         Agree

Part 2

14. Your first impression of the contest was:
   Amusing   Dull    Difficult    Easy    Other: ______

15. The competition met your expectations after having seen the film and the campaign in the grocer’s shops.
   1       2       3       4       5       6
   Disagree                         Agree

16. It was easy to understand how to change the look and the colour of brides and groom’s hair and how to change the look of the brides dress.
   1       2       3       4       5       6
   Disagree                         Agree

17. After seeing the trial film, it was easy to understand how to participate in the contest.
   1       2       3       4       5       6
   Disagree                         Agree

18. You would have participated in the contest even if the contest had been more difficult.
   1       2       3       4       5       6
   Disagree                         Agree

19. Your view of Löfbergs Lila has changed to the better.
   1       2       3       4       5       6
   Disagree                         Agree

20. The contest has increased your interest for Löfbergs Lila.
   1       2       3       4       5       6
   Disagree                         Agree

21. You think that you will return to the Web page of Löfbergs Lila.
   1       2       3       4       5       6
   Disagree                         Agree

22. What did you like most?
_________________________________________________________________
23. What did you like least?
_________________________________________________________________

24. Do you have any further comments?
_________________________________________________________________
_________________________________________________________________

25. What drew you to the contest was:
   - Campaign in the grocer’s shops
   - Advertising film on TV
   - Advertising in the magazines
   - Advertising on the Internet
   - Advice from a friend
   - Advice pages on the Internet
   - Free postcards in the café shops and restaurants
   - Other

26. Your age:
_________________________________________________________________

Please fill in your address if you want to participate in the raffle off the 4 kg Löfbergs Lila coffee.