CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management



Search Engine Optimization

Diploma thesis

Author: Petr Fidler Supervisor: Ing. Petr Benda Academic year: 2009/2010

Declaration

I declare that I have worked on my diploma thesis titled "Search Engine Optimization" by myself under guidance of supervisor of diploma thesis and I have used only the sources mentioned in references.

In Prague, March 31, 2010

.....

Petr Fidler

Acknowledgement

I would like to thank to my supervisor, Ing. Petr Benda for his advices and support during my work on this thesis. I also would like to express my gratitude to my family for their support during my study.

Search Engine Optimization

Optimalizace web site pro vyhledávače

Souhrn

Práce se zabývá problematikou optimalizace webových stránek pro vyhledávače (search engine optimization – SEO). Jejím cílem je analyzovat novinky a trendy v SEO, navrhnout optimální metodiku a definovat přínos jednotlivých kroků optimalizace.

Teoretická část je rozdělena do dvou základních kapitol. V první je analyzován vývoj fulltextových vyhledávačů, zbožových vyhledávačů a mobilních verzí stránek, druhá obsahuje popis chyb, které se na stránkách nejčastěji objevují.

Praktická část definuje proces optimalizace konkrétního elektronického obchodu na základě poznatků z teoretických kapitol práce. Jedná se především o důkladné nastavení měřicího systému Google Analytics, optimalizaci zbožových vyhledávačů a popis a analýzu satelitních webů (tzv. micro-site).

Jedním z výsledků této práce je shrnutí pokročilých optimalizačních metod a jejich vyhodnocení v podobě vlivu na zvyšování počtu návštěvníků a následně i na počet objednávek v elektronickém obchodě.

Klíčová slova

Optimalizace stránek pro vyhledávače, SEO, vyhledávač, klíčová slova, analýza klíčových slov, interní navigace, Google Analytics, satelitní web.

Summary

The thesis deals with issues related to the search engine optimization (SEO). The goal of this thesis is to present news and trends in the search engine optimization and to show benefits of a single optimization steps.

There are two main chapters in the theoretical part of the thesis. The first chapter provides an analysis of progression of full text searches, products searches and the mobile version of websites. The second chapter deals with the most common mistakes that appear on websites.

The practical part defines the process of a specific electronic shop optimization based on the knowledge gained in theoretical chapters. The most important part is a complete Google Analytics settings, products searches optimization and the description and analysis of so called micro-sites.

One of the results of the thesis is a summary of advanced methods of search engine optimization and evaluation of their influence onto the number of visitors and the number of orders via e-shop.

Key words

Search engine optimization, SEO, search engine, keywords, keyword analysis, internal navigation, Google Analytics, micro-site.

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1. Introduction

The Internet is now a very important medium for business as a majority of customers uses the Internet not only for searching information about products but also for online shopping. Online sales in e-shops are still increasing. Companies have to pay more and more attention to the Internet market and they need to have visible and efficient advertisement there.

One of the most important traffic sources of visitors are search engines, which can bring to website about 70% of users. If web is not visible in search engines, firm looses many potential customers.

The main aim of Search Engine Optimization (SEO) is to make web visible in search engines for potential customers in the behalf of acceptably costs. For optimization "keywords" are very important those are phrases describing each page and words entered by users into search engines.

SEO is now considered to be very important aspect of commercially successful websites and it therefore becomes a more important factor in the whole process of websites developing.

2. Objectives of thesis and methodology

The diploma thesis is focused on advanced methods and techniques of search engine optimization. The main goal of this work is to study influence and efficiency of optimization on a specific e-shop. Very important part of the analysis is a very detailed description of correct settings of Google Analytics, the measuring system of the website. Next objectives of the thesis include especially the following:

- To describe news and trends in search engine optimization,
- to explain the most common mistakes on websites,
- to describe the process of e-shop redesigning,
- to study efficiency of products searches optimization,
- to evaluate efficiency of micro-sites.

News and trends in search engine optimization and common mistakes and problems of websites will be described in the theoretical part of the thesis. A practical analysis and determination of changes on a selected e-shop during the time based on theoretical background described in the first part of the thesis will be commented in the second part of this work.

The main criterion of measuring will be the profit gain by each change. If it is impossible to measure the profit the second criterion will be the number of visitors brought by each change can bring to the e-shop. The measurement and evaluation will be carried out in Google Analytic, a powerful and complex system for web analytics.

SEO is a very wide branch and this thesis is working only with several parts of it. It is not assumed to be a complex review and manual for search engine optimization. A reader should remember that even maybe more important than SEO is an usability and accessibility of a website. If a user comes to a web and cannot use it he will leave it. The user is the most important factor in whole web developing and optimizing process.

3. News and trends in SEO and search engines

Search engine is a tool designed to search for information on the internet (1). Search results may consist of web pages, images, information and other types of files (2). Search engines can be divided into three basic groups – web directories, search engines and product searches (price comparison services).

Web directory is a directory of other websites which is usually categorized into sections. Web directories often allow site owners to directly submit their site for inclusion and to have editors review submissions for fitness. Web directories are not widely used tool today and their future is doubtful.

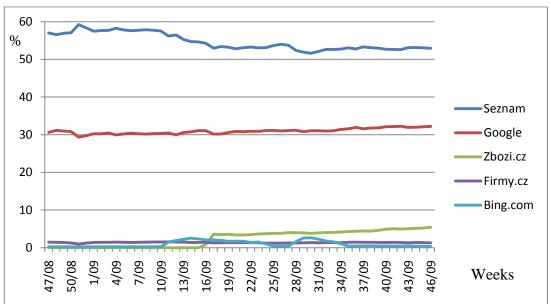
Search engines operate algorithmically; they have their own database of pages. When a user enters a query (keywords) into the search engine, the engine will provide a list of best-matching web pages according to its own criteria.

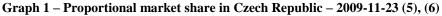
Product searches allow user to compare prices of a given product in different e-shops. E-shops have to have a special feed and provide it to product search engine. Product searcher downloads this feed and store product's information to their own database. Searching is processed onto such database. Product searchers are a very good traffic source of visitors for e-shops because a user is searching for specific product and there is a very good chance that he will make a purchase. Product searches usually have higher conversion rate than other traffic sources.

3.1. Search engines

There is a different situation in the Czech Republic in the comparison with other countries where Google is usually the most widely used search engine (3). The biggest share of market in Czech Republic has Seznam.cz and Google, 53% and 32% respectively and the biggest product searcher Zboží.cz stands for 5.5%. These are only orientation values, actual data can differ significantly. Statistics cannot be accurate as there is no real statistical source (4). Considering long-term trend Seznam.cz is slowly

losing market share (under same methodology 64% in 2007) and Google is slowly increasing its position (25% in comparable period).





3.1.1. New screenshot generator of Seznam.cz

Screenshot generator is making screenshots of websites which are displayed in search engine result page (SERP).

At the beginning of February 2009, Seznam.cz launched new version of its screenshot generator. The previous version was based on the core of Internet Explorer browser and it encountered problems with speed, quality and credibility (7).

Fig. 1 – Search result screenshot



<u>Kočárky, autosedačky - **dětský dům** - Kočárky, **dětské** a... **Dětský dům** ...4 jsme pro Vás rozšířili sortiment o **dětskou** zdravotní obuv české výroby Santé a nově také o dětské certifikované biooblečení ze 100% BIOBAVLNY. www.detskydum.cz/ - Hlavní město Praha - <u>Zobrazit na mapě</u></u>

The new version of generator is based on Mozilla core and on the contrary to the old generator, it can run dynamic components on a website (like JavaScript) too.

Unfortunately, it was found a problem that the robot has had an influence to measuring systems. Unlike other robots, this generator was running measuring scripts such as Google Analytics, Toplist etc. This error was fixed on April 16, 2009.

3.1.2. Link canonical tag

In February 2009, Google launched new link canonical tag (8). This tag should help with the problem of duplicate or similar content.

Duplicate content is major problem for search engines, it is not desired to have same content twice in the index. More information about duplicate content is described in chapter 4.1 Duplicate and similar content.

The canonical tag allows webmaster to mark page as a copy of another document. Search engine can make a canonization and can find primary URL address. All rankings are calculated for primary site whereas one page is the usually depreciated in normal case of duplicate content.

Canonical tag is very useful especially for following problems (9):

- More-pages lists with similar content or search engine invaluable lists,
- different sort order of a table of products,
- goods with little difference, for example different colors of one product.

All world major browsers – Google, bing.com, Yahoo! and Ask.com now support canonical tag. Unlikely, the biggest Czech search engine Seznam.cz has no such support yet (10).

3.1.3. Update of Seznam.cz rules

Back links are one of the most important factors for search engine ranking, thus as much as possible of links is gathered by webmasters. One of the effective ways is to use link bars. Link bar is usually a paid system that is grouping various webs and there are links to other involved webs on each website. When a webmaster aims to use such system he needs to register web to the system and to insert keywords there. He inserts link bar to own maintained website too.

These exchangeable systems are difficult for search engines do not like, as they disturb relevancy of result in search engine and they have very low value for normal user. For this reason, robots try to block (block in the meaning not to count these links to ranking) non-relevant links such as footer links of link bars. Robots are looking for these links algorithmically but they cannot identify all links as owners of link bar systems are trying to make it difficult to recognize them. For example, very common method is a placing normal text around links or changing links after each visit of a robot.

In July 3, 2009, Seznam.cz did an onetime operation when it performed a manual penalization of websites with link bars. The operation was mentioned for the first time by Dušan Janovský (11), the project manager of Seznam.cz. This penalization should have been a warning signal for web designers not to use link bars system, footer links etc. At the same time, Seznam.cz has modified his rules for websites where link bars and other automatic exchangeable system are explicitly forbidden now (12).

3.1.4. New version of Seznam.cz full text

In October 26, 2009, Seznam.cz has launched new version of his full text searcher. The main difference lays in the new interpretation of searched query (13). In the old version of full text, all keywords of phrase were joined with AND operator that meant that all keywords had the same importance for searching.

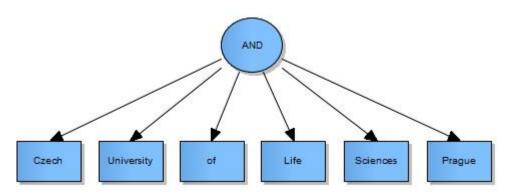
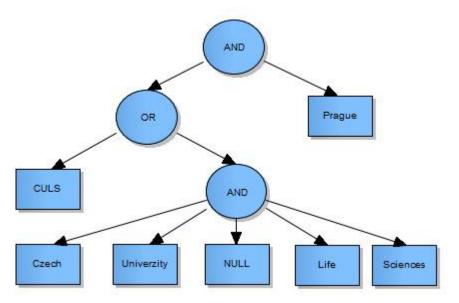


Fig. 2 – Evaluation of query "Czech University of Life Sciences Prague" under old full text system

In the new searcher, a query is decomposed into a tree structure that allows working with each part of the tree separately. Except for AND, also OR operator is used now. Seznam.cz aims to improve an understanding of user's query and now can use more keywords (for example synonyms) for evaluation results.





3.2. Product searches

3.2.1. New version of Zboží.cz

Zboží.cz is the biggest product searcher in Czech Republic and it belongs under the structure of Seznam.cz. In the previous version of searcher, defined products from various e-shops accompanied with a link were shown for each query.

On October 13, 2009, Seznam.cz has released a new version of Zboží.cz including a significant change – for each search Zboží.cz displays aggregated products where each aggregated product has consolidated same goods in different e-shops (14). Majority of competitors of Zboží.cz are based on such principle.



Fig. 4 – Aggregated product under new version of Zboží.cz

Basic difference for e-shops owners is that to the aggregated product will be included only e-shops with "*Zboží Standard*" service activated now. This is a paid service valued by 1 CZK per click (15). E-shops with *Zboží Standard* service activated were prioritized and they were displayed above e-shops that had not activated this service, in the normal search in the old version of Zboží.cz. When user had ordered goods by price, order of e-shops did not depend on activation of *Zboží Standard* service (nevertheless, e-shop already paid for a user's click). Under the new version of Zboží.cz, e-shops without activated *Zboží Standard* will be displayed only in full text search that is shown if Zboží.cz has no aggregated products or if a user clicks onto the full-text link. Such searching approach can be a problem for e-shops with competitive advantage based on the lowest price of goods on market, because Zboží.cz is usually important traffic source of visitors and e-shop costs will increase with activation of paid *Zboží Standard* service.

Zboží.cz has upgraded format of product feed too. It has added some new parameters which should mostly increase a probability of including goods to aggregated products or which allow to insert more detail information about goods. Some old tags were depreciated too. The old format of feed is still supported, but it is highly recommended to upgrade feed to new version.

3.2.2. Heureka.cz

Heureka.cz has started in October 2, 2007 as shopping guide service for consumer electronics. Currently, Heureka.cz ranks the second biggest product search engine in the Czech Republic. It is based on PPC (Pay Per Click) model but there is a possibility to set up individual price for each category. E-shops with higher price are shown above the other ones. Heureka.cz is not only a catalogue of products or a basic product searcher. Heureka.cz tries to help users with choosing and purchasing products. Heureka.cz offers several services that should help a user with his purchase.

3.2.2.1. Category and product advisory

Each product has its own specification and detail description, advisory for users and review section. Each category has an advisory part with basic guideline and question section where a user can write own query and a specialized partner for category should have provide an answer. There is a logo with link to the partner e-shop in each category too.

3.2.2.2. Ověřeno zákazníky ("verified by customers")

Each e-shop has its own profile on Heureka.cz. A very important part of the profile is a review section where users have an opportunity to write own opinion about the e-shop. *Ověřeno zákazníky* ("verified by customers" in English) is a certificate for e-shops. To acquire this certificate an e-shop has to implement service to its order process. E-mail with invitation to Heureka's question mark is sent to each customer that has made an order in the e-shop. If e-shop has mostly positive reviews, it gets certificate *Ověřeno zákazníky*. Certificate counts to the e-shop's rank and it can help e-shop with positions in search.

Fig. 5 – E-shop with Ověřeno zákazníky ("verified by customers") certificate

Heureka.cz » Internetové obchody » Detail obchodu

DetskyDum.cz



 Obchod ověřený zákazníky

 celková spokojenost

 dodací lhůta

 ★★★★

 přehlednost obchodu

 kvalita komunikace

98 % zákazníků by doporučilo obchod svým známým 76% zákazníkům dorazilo zboží do 10 dnů

3.2.2.3. Guarantee of purchase

In November 9, 2009, Heureka.cz has started guarantee of purchase service. If an e-shop with this service does not fulfill legal obligations, Heureka.cz together with PaySec guarantees money pay-back up to 10 000 CZK (16).

There are many users not performing purchases via e-shops because they are afraid of problems with services. The guarantee of purchase can argue user into the online purchase.

3.2.2.4. Integration of other product searches

Recently, Heureka.cz tries to make an acquisition of other product searches. Due to this approach, Heureka.cz an increasing number of users and its market share is rising

continuously. In March 16, 2010, following product searches are only alias for Heureka.cz (17):

- seznamzbozi.cz
- srovnanicen.cz
- onlineshopy.com
- zbozi.centrum.cz
- zbozi.atlas.cz

If an e-shop is registered on Heureka.cz, its products will be automatically shown in above mentioned product searches; there is no need for a separate registration as it was earlier.

3.3. Mobile internet

The world is going mobile, with many people using mobile phones on a daily basis. However, for webmasters it is not easy to run both mobile and desktop version of a website. "One of the most common problems is that the mobile version of the site appears for users on a desktop computer or that the desktop version of the site appears when someone finds them from a mobile device" (18). There are two ways, how to deal with this problem:

3.3.1. Redirect mobile users to the correct version

When a mobile user accesses the desktop version of a URL, he can be redirected to the corresponding mobile version of the same page. Content on the corresponding mobile/desktop URL should match as closely as possible, ideally it will be same page optimized for mobile users. This kind of redirect is important for users as if redirect is done to another page (homepage for example), user has to find right page again by himself. Correct redirect can boost page's search ranking too (18).

On the other hand, when there is an access to a mobile URL from a desktop browser, it is not necessary to redirect user to the desktop version. Instead of redirect, there can be a link on the mobile version page to the desktop version. These links are especially helpful when a mobile site does not provide the full functionality of the desktop version - users can easily navigate to the desktop-version if they prefer to (18).

3.3.2. Switch content based on User agent

User agent is a string that can identify a browser (and some other things) (19). It is possible to identify a browser or to change website format according to the user agent. Such action means that there is only one URL address for each document and no redirects are necessary.

If the web is not correctly configured, it could be considered as cloaking. "Cloaking refers to the practice of presenting different content or URLs to users and search engines. Serving up different results based on user agent may cause site to be perceived as deceptive and removed from the search engine index." (Webmaster Tools Help) (20). Google uses "Googlebot" for web search and "Googlebot-Mobile" for mobile search. To avoid cloaking technique, webmaster "should serve the same content to Googlebot as a typical desktop user would see, and the same content to Googlebot-Mobile as you would to the browser on a typical mobile device." (18).

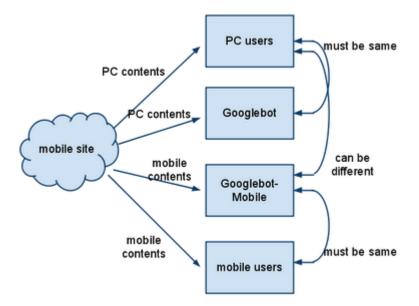


Fig. 6 - Diagram of serving content from mobile-enabled site (18)

4. The most common mistakes on websites

4.1. Duplicate and similar content

Duplicate content refers to the content that appears on more than one web page (21). Similar content is in principle the same as duplicate one, it refers to the content or pages that are very similar. Search engines do not want to index same content more than once, thus they try to recognize it, choose only original and toss out duplicate pages (22). That causes that links and all other factors of eliminated page are ignored.

The most common cases of duplicate / similar content are following:

- Parallel use of URL with and without third level domain (www.example.com and example.com),
- cross domain duplicity same web is accessible on several domains,
- one page is available through more address as www.example.com, www.example.com/index.php, www.example.com/homepage or www.example.com/homepage/,
- printer-only version of a page is on different URL address,
- URL addresses reflect the structure of web (e.g. product in e-shop is placed in two categories – example.com/category1/product/ and example.com/category2/product/,
- web uses secure protocol (https://) that is a duplicate of normal http:// version,
- website uses session id¹ in URL for clients which have not allowed cookies,
- different sort order of a table of products,
- e-shop categories which contain only product list and no description text.

¹ Session id is a token, which is used as unique identifier for each user. Each new visit of web generates new identifier, so search engine find different URLs in each visit.

4.2. Missing landing pages

"Landing page, sometimes known as a lead capture page, is the page that appears when a potential customer clicks on an advertisement or a search-engine result link" (23). Each landing page can be optimized to a few keywords, usually at most to three.

The basic goals of landing page are:

- To persuade visitor that he is on the right page,
- to motivate user to action (call-to-action),
- to direct user onto next step.

If there is no landing page for the keyword, there is a low probability that website will have good position in search engines for such keyword.

To have proper landing pages on web is a basic premise for good positions in search engines. Unfortunately, missing landing pages are generally one of the most common mistakes.

4.2.1. Keyword analysis

The keyword analysis has to be made before creation of landing pages (24). During the analysis, all suitable keywords for a website are found and then keywords can be categorized and landing pages can be created.

The most widely used tool for keyword research is Keyword Tool External². It is a tool designed for Google Adwords³ which is a pay-per-click advertisement system from Google. Keyword tool shows a value of searching of each keyword.

There are another tools for keyword research, tools from Seznam.cz – Sklik keyword tool and "Našeptávač" (Suggest) are important for Czech language. Sklik keyword tool

² https://adwords.google.com/select/KeywordToolExternal

³ http://adwords.google.com/

has similar functions as Keyword tool external, "Našeptávač" completes in search results while typing a query to give popular queries. With several modifications, described for example in (25) or (26), it is possible to display relative value of searches of keywords.

4.2.2. Keyword classification

There will be many keywords found by keyword research and it is necessary to evaluate them. Following three basic things should be considered:

4.2.2.1. Searches of keywords

Searches of keyword are very important values because optimization to non-searched phrase is a waste of time. Number of the search is not a real accurate number but it should help with the problem whether the keyword is valid or not.

4.2.2.2. Keyword relevancy

Keyword relevancy is the practice of making page relevant for a targeted search keyword term. The more target and relevant keywords are the better conversion rate⁴ is obtained.

High relevancy has usually specific compound terms; on the other hand, low relevancy has usually general keywords.

4.2.2.3. Keyword competition

Keyword competition indicates how difficult will be to get a good positions for the keyword. Higher competition means more effort to be input.

Keyword competition can be found out in several steps. Some marketers use the total number of search results to the keyword. However, some pages are not competing to rank for searched key phrase but are part of the total results displayed (27). "Therefore,

⁴ "Conversion rate is the ratio of visitors who convert casual content views or website visits into desired actions based on subtle or direct requests from marketers, advertisers, and content creators" (48).

using the total number of search results for a particular keyphrase to gauge its competitiveness is misleading. It is by no means an accurate guide." (27).

Fig. 7 – Total number of search results for "diploma thesis" query is 890 000.

Google	diploma thesis Search			
Web Show option	Results 1 - 10 of abou 890,000 for diploma thesis. (0.42 seconds)			
Diplom - Wikipedia, the free encyclopedia Diplom (from Greek Δίπλωμα diploma) is an academic degree in some European (study research project), and write a Diplomarbeit (diploma thesis) In Germany / Austria / Switzerland - In Greece - See also en.wikipedia.org/wiki/Diplom - Cached - Similar				

"Anyone who is seriously targeting a keyphrase would naturally make use of it in the page title of the targeted page and in the webpage content. Also, they are most likely to use the keyphrase in verbatim form at least once." (27). For search pages which use keyword in verbatim form just type speech mark before searched term in Google.

Fig. 8 – Number of search result for "diploma thesis" in verbatim form is 449 000.

Google "diploma thesis	Search
Web E Show options Results 1 - 10 of about 449,000 for "diploma thesis. (0.	.10 seconds)
Diplom - Wikipedia, the free encyclopedia	
that follow the Vordiplom, complete one or sometimes more than one Studienarbeit	(study
research project), and write a Diplomarbeit (diploma thesis)	
<u>In Germany / Austria / Switzerland</u> - <u>In Greece</u> - <u>See also</u>	
en.wikipedia.org/wiki/Diplom - <u>Cached</u> - <u>Similar</u>	

If the page is seriously targeted to the keyword, then the keyphrase should be placed in the title of page. To search those pages just type term "*allintitle:*" in front of the keyword.

Fig. 9 - Number of search result for "diploma thesis" in verbatim form in title is 18 800.

Google allintitle:"diploma thesis Search
Web 🗈 Show options Results 1 - 10 of abour 18,800 for allintitle:"diploma thesis. (0.06 se
YouTube - Future Designer laptop - ROLLTOP //Diploma Thesis//
1 min 31 sec - 17 Sep 2009 - **** www.orkin-design.deThe device of the flexible display allows a new concept in notebook design growing out of the traditional bookformed laptop into www.youtube.com/watch?v=7H0K1k54t6A - <u>Related videos</u>

Results of such analysis can be good base for keyword competition classification. More detail evaluation of competition can give evaluation of pages that appears in the search engine's result page. However, this method can be very time-consuming.

4.2.3. Creating of landing pages

When keywords are classified, it is possible to create groups of similar keywords such as brand keywords, general keywords, basic categories or product name keywords. Usually, mind map⁵ is created from the list of groups which can be used for creation of structure of the website. This is important as internal navigation have to take into account the structure of web.

4.3. Internal navigation

Internal navigation is a very important part of website optimization (especially for large websites) because a number of internal links can be influential factor for pages ranking. Many sites have only basic primary, insufficient navigation. Parallel navigation schematics are very useful for creating of various landing pages and can help the user with navigation and movement throughout the web. Basic types of parallel navigation are breadcrumbs, content navigation, footer navigation or tag clouds.

⁵ "A mind map is a diagram used to represent words, ideas, tasks, or other items linked to and arranged around a central key word or idea." (63)

4.3.1. Breadcrumbs

Breadcrumbs provide links back to the parent pages in the website structure of the current one or to every previous page, the user is navigated through to get to the current page. Typically, breadcrumbs appear horizontally across the top of a web page, usually below title bars or headers. Usual breadcrumbs look like following:

Home page > Category > Subcategory > Product

Breadcrumbs are not used for creation of new landing pages; their main benefit is in the usability. "This navigation technique is increasingly beneficial to users. All that breadcrumbs do is make it easier for users to move around the site, assuming its content and overall structure make sense." (28).

4.3.2. Contextual navigation

Contextual navigation is a practical supplement to the main navigation that provides access to related content on other pages. Contextual navigation is independent on website structure and can be used for both – user needs and business objectives. Other purpose of contextual navigation is increasing number of internal links through website.

4.3.3. Footer navigation

Footer navigation is usually displayed on every webpage such as global navigation. However, rather than linking to content sections, footer navigation typically links to administrative content, copyright statements, terms of use, legal disclaimers, website feedback links, etc. Site elements at the bottom of the page are not able to catch visitors' attention which is why footers are often forgotten or ignored and not given the attention they deserve. Footers need to provide users with the information they are looking for. This is why contact details and a brief information about site or / and site owners needs to be placed in the footer. Corporate designs may require to provide driving directions, telephone number, a web form or at least an e-mail. On the other hand, blogs and private webs usually have a bunch of different data displayed in their footers such as the latest posts, comments, last job opening, last forum discussion or link to a random post (29).

Footer can be used for navigation such as basic guidepost of website, contextual navigation or various combinations.

Which Mac are you? Mac FAQs Mac Watch the ads Mac Find out how iMa	ic Pro ic mini icBook icBook Pro icBook Air	AirPort Express AirPort Extreme Time Capsule Which Wi-Fi are you?	Learn more Mac OS X 10.6 Snow Leopard Accessibility	iLife iWork Aperture Final Cut Studio
FAQs Mad Watch the ads Mad Find out how iMa	icBook icBook Pro icBook Air	Time Capsule Which Wi-Fi are you?	10.6 Snow Leopard	Aperture
Watch the ads Mac	icBook Pro icBook Air	Which Wi-Fi are you?	10.6 Snow Leopard	
Find out how Mad	cBook Air	,		Final Cut Studio
Find out how iMa		-	Accessionity	
Photos Aco Movies Mag	ccessories Igic Mouse	Servers Servers Overview Xserve Xsan	QuickTime Movie Trailers QuickTime Player QuickTime Pro	Final Cut Server Final Cut Expre Logic Studio Logic Express Remote Deskto
,	yboard D Cinema Display	Mac OS X Server	Safari	

Fig. 10 – Example of footer navigation on Apple website (30)

4.3.4. Tag clouds

Tag clouds offer a quite interesting approach for site navigation. Although the technique is sometimes considered to be an alternative, it should not replace the common navigation but support it giving users additional clues about the content of the site. Tags are very popular for creating landing pages because in practise there are no limitations for tags.

Tagging is the process of labelling data with related keywords. The basic idea of tag clouds is to represent tags according to their meaning, their weight and frequency relatively to other tags. This can be done with appropriate font sizes, font weight and (eventually) colors. The more important a tag is the bigger and louder it appears (31).

There are several ways how to implement tag clouds (31):

- Tags are sorted alphabetically. The most important or frequent terms are highlighted via an appropriate font size.
- Tags are sorted alphabetically. All terms have the same font size and font weight. More important terms are highlighted with a font color or a background color.
- Tags are sorted according to their importance or frequency. Both font size and colors can be used to emphasize the importance of terms.
- Tags are not sorted at all. Font size, font weight and colors in use.
- Tags are sorted according to their similarity. Similar terms appear as neighbors next to each other. A variety of visual formatting can be applied.

Some methods are more popular than others. Most clouds are primarily sorted alphabetically.

TAG CLOUD Coding CSS Design **Design Process** Design Trends Event Flash Freebies Illustrator Inspiration Javascript Jobs Photoshop Photoshop Tutorials Review SEO Software Talented People Updates WordPress Writing

Fig. 11 – Example of tag clouds from http://www.webdesignerwall.com/

4.4. Web analytics

"Web analytics is the measurement, collection, analysis and reporting of internet data for purposes of understanding and optimizing web usage." (32). Web analytics can be used as a tool for business research and market research.

Each website has its own goal. These goals can be very different, there are several examples:

- To sale of goods (e-shops),
- to obtain order or inquiry,
- registration of user to newsletter,
- to increase number of visitors.

Further, of the most common mistakes is that there is no measurement on the website or no website data evaluation.

4.4.1. Traffic analysis

Traffic analysis offers information about users on the website, for example allows an investigation of user behavior or finding errors on website. Practically all website analytic software monitors number of visitors. However, this can provide only basic report; significant more reports are needed for deep analysis of website.

Very important is to monitor traffic sources of visitors. Traffic sources are for example search engines, referring sites, direct traffic, marketing campaigns and other. More detail reports of traffic sources usually include keywords through which visitors had came to the web from search engines (33), specific referral pages or marketing campaign.

If the website has deterministic goal (a sort of action on website as order completion or newsletter subscription), it is possible to track it and to measure conversions. This data can be combined with other reports, so it is possible to find out which traffic source has good conversion rate and which has not.

Other functions of web analytic software are reports, which are useful for user's behavior estimation. Very important is an exit pages report that comprises pages on which visitors leave website are. Extremely important is analysis of those exit pages, which are on the way of goal completion (for example shopping cart). Improvements of these sites can increase conversion rate. Another report can show how often users return to web or report of pages with high bounce rate⁶.

4.4.2. Web analytic software

There is more web analytic software on the market. The most popular are for example following:

- Google Analytics,
- Omniture SiteCatalyst,
- Webtrends Analytics,
- Yahoo! Web Analytics,
- AWStats,
- StatCounter,
- Webalizer.

Basics of Google Analytics will described in this thesis; description of other analytic software is out of range of this work.

⁶ "Bounce rate essentially represents the percentage of initial visitors to a site who "bounce" away to a different site, rather than continue on to other pages within the same site. The formula used to calculate bounce rate is: Bounce Rate = Total Number of Visits Viewing One Page / Total Number of Visits' (49).

4.4.2.1. Google Analytics

Google Analytics is a free service offered by Google. It generates detail statistics about visitors of a website. It is the most widely used website statistics service, currently in use at around 87 % of the 1 million most popular websites (34).

"Google Analytics uses a first-party⁷ cookie⁸ and JavaScript code to collect information about visitors and to track your advertising campaign data. Google Analytics anonymously tracks how visitors interact with a website, including where they came from, what they did on a site, and whether they completed any of the site's conversion goals. Analytics also keeps track of your e-commerce data, and combines this with campaign and conversion information to provide insight into the performance of your advertising campaigns." (35).

⁷ "First-party cookies are cookies that are associated with the host domain" (50).

⁸ "A cookie is a small piece of text stored on a user's computer by a web browser" (62).

5. Analysis and development of websites

The main goal of a practical part of this thesis is to analyze influence of different works within the frame of search engine optimization to number of visitors and sales realized via e-shop.

The analyzed e-shop is Dětský Dům which is specialized e-commerce to strollers, car seats and other baby's and nursing supplies. URL address of e-shop is <u>http://www.detskydum.cz/</u>, entrepreneur is APEMA s.r.o.

5.1. Original e-shop

Website was established in 2000 as a supplement to the classic shop. At the beginning, website was only catalogue of goods. After few months since foundation, the catalogue was extended to e-commerce website by adding of shopping cart and order process. After such upgrade, only few minor changes were made on the web.

A brand Dětský Dům has become popular and famous among users mainly as it was one of the first e-shop for babies on the Czech Republic's market.



The original website had a very bad technical implementation. The layout was in frames⁹ which caused problem for users who arrived to web through search engines and other similar sources (they could see only one frame with content but no other ones such as menu etc.). There are more problems with frames, for example, URL address does not change, so it is difficult to link to or bookmark a particular item of content.

Further major mistake on original web was that each page has had same title¹⁰ and no structuring of page (headlines etc) was used.

5.2. New version of e-shop

The work on new version of website began in September 2007. The main goal was to build an e-shop with good technical implementation (web should have been easily

⁹ "Frames allow a visual HTML Browser window to be split into segments, each of which can show a different document. This allows for lower bandwidth use, as repeating parts of a layout can be used in one frame, while variable content is displayed in another" (51).

¹⁰ Title represents the title of the document. It is one of the most important elements on the website for search engine optimization.

extendable), good on-page¹¹ SEO factors, good accessibility and usability. Some new features for users and new functions for administration's simplification were added.

5.2.1. Concept of website

First of all, a list of important objects of e-shop was created. Below see the most important ones:

- Shopping basket is visible in the header of page all the time,
- there is a logo and graphical name of website in the left part of header,
- there are some additional information in header such as:
 - \circ date and day of week,
 - o name-day,
 - \circ login information
- there are two menu on the website categories and manufactures in the left part and horizontal menu under the header,
- there is a search box above the menu on the left or in the right part of header,
- list of products should fits to width of screen.

The list of important functions of e-shop was created as the next step:

- Discount system,
- user registration possibility,
- each product has its own discussion,
- availability of each products is shown on the product's page,
- watch dog for availability and price of goods,
- price guarantee,
- online goods exchange.

¹¹ On-page factors are related directly to the content and structure of the website. On-page factors include everything that webmaster can affect on the page itself

Based on above mentioned lists graphical design of website has been suggested:

	nes je neděle 30.3.2008 Svátek slav tskydum o	Z Nákupi cena ko	
\otimes \otimes	Burza Jména Odka	azy Obch. podmínky	Jak nakupovat Kontakt
Rozšířené hledání <u>zde</u> Kategorie Výrobci	Vítáme Vás na www.detskydum.cz.		
Akce Autosedačky Baby monitory Bezpečnostní pomůcky	0102227	názvu od A do Z <u>od nejnižší cenv</u> sbulkový výpis položek na stránku:	od nejvyšší ceny 100 🗸 Změnit
Cyklopotřeby Hopsadla a choditka Hračky Kočáncké potřeby Kosmetika Ohrádky a postýlky Přebalování Textil Vaky a nosiče Vaničky a kyblíky Židle a sedátka Ostatní potřeby Odkazy Obchodní podmínky Jak nakupovat Kontak	ABC design Giro - polohovací golfky - přední kola otočná moznosti aretace - pétibdové srezečnostní pásk, polohovací opěrka zadních kol cena s DPH 19% 2.290,- Kč další designy a podrobnosti - objednas	B & B Buggy Air - dobře odpružený sportovní kočárek s PŘEHAZOVACÍ PŘEHAZOVACÍ RUKOJETÍ - 4 velká nafukovací kola - polohovací opěrka zad i nohou, odnímatelné madlo před ditkem, tříbodové bezpečnostní pásy, prací cena s DPH 19% 3.990,- Kč další designy a podrobnosti - objednat	Babypoint Fábula • výškově nastavitelná zidlička do 6ti poloh • naklápěci opěrka zad do 3 poloh • odnímatelný pultík nastavitelný do 3 poloh se snadno odnímatelným vrchním tácem cena s DPH 19% • 2.390,- Kč další designy a podrobnosti - obiednat
	tel.: 244 913 192 mobil: 777 909 908	<u>kontaktuite nás</u> developed by	Ĺ

Fig. 13 – Final graphical design of www.detskydum.cz

5.2.2. Technical description of e-shop

The core of the application is written in PHP¹² with SMARTY¹³ template system and MySQL¹⁴ database platform. Frontend of e-shop is created in XHTML 1.0, CSS¹⁵ 2.1 and Javascript¹⁶ with jQuery¹⁷ framework.

There is a fluid layout with 1000px minimal width on the website. Maximum width is not limited in some cases – especially list of product fits to screen width.

¹² "PHP (Hypertext Preprocessor) is a widely-used general-purpose scripting language that is especially suited for Web development and can be embedded into HTML" (52).

¹³ "Smarty is a web template and presentation framework written in PHP" (54). "Smarty is primarily promoted as a tool for separation of concerns, which is a common design strategy for certain kinds of applications" (55).

¹⁴ "MySQL is a relational database management system (RDBMS) that runs as a server providing multiuser access to a number of databases" (53).

¹⁵ Cascading Style Sheets

¹⁶ JavaScript is an object-oriented scripting language used to enable programmatic access to objects within both the client application and other applications. (56)

¹⁷ ,jQuery is a fast and concise JavaScript Library that simplifies HTML document traversing, event handling, animating, and Ajax interactions for rapid web development" (57).

Detail description of technical implementation is out of range of this work, only some key functions are noted below:

- Application uses mod rewrite¹⁸ for URL addresses,
- keywords for each page are placed in title, main headline, URL and should be placed in text content too,
- important content parts are easy to modifiy in the administration,
- e-shop is connected to Pohoda accounting software where databases of products and orders are placed.

New e-commerce website was launched on Monday, March 18, 2008 after two weeks of operations testing.

5.3. Google Analytics

Google Analytics (GA) was chosen as web analytic software for its performance ratio. There had to be made some modifications and additional settings for proper measurement. Significant part of modifications is related to unique situation in the Czech Republic.

5.3.1. Code modifications

The basic measuring code was modified for better function of GA:

- New search engines (Czech and Slovak mostly) with searched keyword recognition were added to organic medium,
- new product searches were added to organic medium,
- "#" sign as the query string delimiter in campaign tracking is allowed (only "?" is allowed in default, which can caused duplicities on the website see chapter *5.3.2.5. Campaign tagging*),
- tracking for entered domain only,

¹⁸ Mod rewrite is a rewrite engine that modifies a web URL's to more descriptive and better looking ones.

• do not allow multiple download of tracking code.

Complete modified code is included in the supplement of this work.

With modified original code the tracking code has to be changed:

```
<script type="text/javascript"
    src="/script/ga-set.js"></script>
<script type="text/javascript"><!--
    var pageTracker = _ga._getTracker('UA-2886079-3',
'.detskydum.cz');
    pageTracker._trackPageview();
//--></script>
```

Where:

- /*script/ga-set.js* is a path to tracking code,
- UA-2886079-3 is a Google Analytics profile ID,
- .*detskydum.cz* is a domain of e-shop

5.3.2. Google Analytics settings

5.3.2.1. Basic setting

The basic profile information:

```
Profile Name:detskydum.czWebsite URL:http://www.detskydum.czTime zone:(GMT+01:00) Central European TimeE-Commerce Website:Yes, an E-Commerce SiteSite Search:Do Track Site SearchQuery Parameter:hledatNo, do not strip query parameters out of URLDo you use categories for site search?No
```

Some parts of this setting are explained in following chapters.

5.3.2.2. Goals a funnels

The goal is a website page that serves as conversions for your site. A funnel represents the path that you expect visitors to take on their way to converting to the goal (36).

There are several goals for detskydum.cz; the most important goal is for orders tracking:

Goal Name:	order
Active Goal:	on
Goal Position:	Set 1, Goal 1
Goal Type:	URL Destination
Match Type:	Head Match
Goal URL:	/dokoncit-objednavku/

Funnel for this goal:

Step 1:	/nakupni-kosik/	Nákupní košík ¹⁹
Step 2:	/nakupni-kosik-krok-2/	Doručovací údaje ²⁰
Step 3:	/nakupni-kosik-krok-3/	Náhled před odesláním ²¹

5.3.2.3. E-commerce

E-commerce allows detail information tracking (such as number of transactions, revenue or purchased products structure) of orders in Goggle Analytics. This information is very useful for evaluation of various advertisements or traffic sources.

Firstly, it is necessary to turn on e-commerce in each profile settings.

A special e-commerce code has to be inserted to conversion page (when the order is sent):

¹⁹ Shopping basket²⁰ Delivery type

²¹ Order summary

```
<script type="text/javascript"><!--</pre>
pageTracker._addTrans(
                              // Order ID
    "1234",
    "Shop1",
                             // Affiliation
    "1000.00",
                             // Total price without VAT and dues
                             // Tax
    "190.00",
    "100.00", // Shipping
"Prague", // City
"Prague", // State or province
"Czech republic" // Country
);
pageTracker._addItem(
    "1234",
                              // Order ID - same as in _addTrans
                             // SKU - product code
    "ABC123",
                           // Product Name
// Category or product variation
// Unit price
    "Trial1",
    "Shoes",
    "11.99",
    "2"
                              // Quantity
);
pageTracker._trackTrans();
//--></script>
```

Implementation details:

- E-commerce code has to be placed below Google Analytics tracking code,
- price can contain only dot, no other symbols are allowed (such as decimal comma or space),
- transaction and product price should contain only real prices; there should not be any other prices such as tax, shipping and other dues.

There are three methods in e-commerce code (37):

- _*addTrans()* to initialize a transaction object. The transaction object stores all information about a single transaction, such as the order ID, total price and billing address.
- _*addItem()* tracks information about each individual item in the user's shopping cart and associates the item with each transaction via the OrderId field. This method is called for each ordered product.
- _*trackTrans()* confirms that a purchase has occurred, and all data that has been built up in the transaction object is finalized as a transaction.

5.3.2.4. Site Search

Site Search contains reports about the visitors using the search functionality on the website. Site Search reports can help with the analysis in what way people are using the search functionality, whether they convert and for other useful pieces of information (38).

Site search has to be turned on through *Do Track Site Search* radio button in profile settings. Query parameter is "hledat" ("search" in Czech) in the case of Dětský Dům e-shop. Whole URL for searching term "Disney" is http://www.detskydum.cz/hledat/?hledat=Disney.

5.3.2.5. Campaign tagging

Google Analytics allows manual tagging of marketing campaigns. This is very useful functionality for evaluation of advertising campaigns.

Tracking parameters in URL address are used for campaign tagging. All these parameters begin with *utm_*. The example of tagged URL:

- Standard URL: http://www.example.com/
- Tagged URL: http://www.example.com/?utm_medium=cpc&utm_source=sklik

Tracking parameters are separated by question mark ("?") from basic URL. If there is a question mark in normal URL (e.g. http://www.example.com/?page=1) the tracking parameters will be separated with ampersand (http://www.example.com/?page=1&utm_medium=cpc&utm_source=sklik).

Four parameters can be used for tagging:

- utm_medium identify a medium such as cost-per-click (cpc), email, banner or link
- *utm_source* identify a source as a search engine or newsletter name
- utm_campaign identify a specific product promotion or strategic campaign (skyscraper)
- utm_content differentiate ads or links that point to the same URL (for example variant-1 and variant-2)

There are two required parameters which have to be always used: *utm_medium* and *utm_source*. Another two parameters are optional. There is also a fifth parameter *utm_term* which defines a keyword. This parameter is not usually used as Google Analytics can track real keyword from search engines automatically and it is meaningless to use it.

5.3.2.6. Mod rewrite settings

URL addresses tagging can cause duplicate content when one page has two different addresses after URL tagging (http://www.example.com/ and http://www.example.com/?utm_medium=cpc&utm_source=sklik). Google Analytics can recognize tracking parameters separated by hash symbol (#) too when _*setAllowAnchor()* method is set up to true.

Unfortunately, campaigns cannot be tagged by hash generally. There can be problems with redirecting when campaign is not directly linking to destination URL (39). Some

browsers delete part of URL behind hash tag which causes the fact that an address and campaign will not be tagged.

The solution for such situation is that campaigns should be tagged with question mark and on the destination website URL will be redirected to same address with hash instead of question mark. There are rules for .htaccess²² file:

```
RewriteEngine On
RewriteCond %{QUERY_STRING} ^(utm_.*)$
RewriteRule ^(.*)$ /$1#%1? [R=301,NE,L]
RewriteCond %{QUERY_STRING} ^(.*?)&(utm_.*)$
RewriteRule ^(.*)$ /$1?%1#%2 [R=301,NE,L]
```

These rules are generally applicable for Apache²³ server 2.x.

5.3.3. Filters

Later, additional filters for better Google Analytics setting were applied. These filters are important for correct measuring and detail statistic.

5.3.3.1. Unfiltered profile

Filters process raw traffic data based on the filter specifications. The filtered data are sent to the respective profile. Once data has been passed through a filter, raw data cannot be re-processed (40).

²² ".htaccess (hypertext access) is the default name of a directory-level configuration file that allows for decentralized management of web server configuration" (59).

²³ "The Apache HTTP Server Project is a collaborative software development effort aimed at creating a robust, commercial-grade, featureful, and freely-available source code implementation of an HTTP (Web) server" (60)

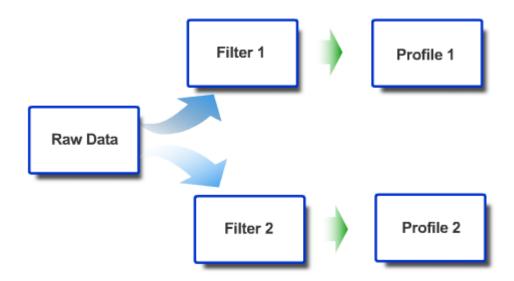


Fig. 14 – Filters in Google Analytics forever modify the data in a profile.

That is a reason of it is recommendation to maintain one unfiltered profile and thus keep always access to all data.

It is recommended to turn on e-commerce, site-search and goals in unfiltered profile.

5.3.3.2. IP addresses bans

There are several IP addresses²⁴ bans for restriction of tracking:

- Apema s.r.o. company,
- web developer,
- some others such as employee's computers.

Example of this kind of filter:

²⁴ "An Internet Protocol (IP) address is a numerical label that is assigned to devices participating in a computer network that uses the Internet Protocol for communication between its nodes" (58)

Filter Name:	Exclude all traffic from Apema s.r.o.
Filter Type:	Exclude traffic from an IP address match
IP address:	^83\.208\.56\.90\$

5.3.3.3. Retain original referrer

HTTP referrer identifies the address of the source web that links to it. This report can be very useful for evaluation of some campaigns; unfortunately, Google Analytics does not show complete original referral. Therefore, there is a filter that retains complete original HTTP referrer in the User-defined value:

Filter Name:	Retain original referrer	
Filter Type:	Custom filter – Advanced	
Field A -> Extract A:	Referral	(.*)
Field B -> Extract B:	User-Defined	(.*)
Output To -> Constructor:	User-Defined	\$A1 \$B1
Field A Required:	No	
Field B Required:	No	

5.3.3.4. Correcting filter for Seznam.cz

Accesses from Czech Search engine Seznam.cz are tracked under two different sources in some cases – *seznam* and *seznam.cz*. Filter shown bellow unifies both of them under *seznam.cz* source:

Filter Name:	Replace seznam by seznam.cz
Filter Type:	Custom filter – Search and Replace
Filter Field:	Campaign Source
Search String:	^seznam\$
Replace String:	seznam.cz

5.3.3.5. Correcting filter for Sklik

If there are Sklik PPC campaigns, which are not perfectly tagged, some accesses can appear under *referral/out-ng.sklik.cz* source. Following two filters correct it to *cpc/sklik* source that is usual for Sklik PPC campaigns:

Filter Name:	Set medium for Sklik	
Filter Type:	Custom filter – Advanced	
Field A -> Extract A:	Campaign Source ^out-ng\.sklik\.cz\$	
Output To -> Constructor:	Campaign Medium cpc	

Filter Name:	Set source for Sklik
Filter Type:	Custom filter – Search and Replace
Filter Field:	Campaign Source
Search String:	^out-ng\.sklik\.cz\$
Replace String:	sklik

The sequence of these two filters is important; filters have to be placed in this order.

5.3.3.6. Correcting filters for Google Adwords

There is a similar problem with Google Adwords. Non-tagged campaigns can appear as *referral/pagead2.googlesyndication.com* or *referral/googleads.g.doubleclick.net* source in Google Analytics. Following filters place it to *cpc/adwords* source:

Filter Name: Set medium for Adwords			
Filter Type:	Custom filter – Advanced		
Field A -> Extract A: Campaign Source			
<pre>^(pagead2\.googlesyndication\.com/googleads\.g\.doubleclick\.n et)\$</pre>			
Output To -> Constructor:	Campaign Medium cpc		

```
Filter Name: Set source for Adwords
Filter Type: Custom filter - Search and Replace
Filter Field: Campaign Source
Search String:
^(pagead2\.googlesyndication\.com|googleads\.g\.doubleclick\.n
et)$
Replace String: google
```

The order of filters is important again.

Some Adwords campaigns can be tagged as *adwords* source. Bellow mentioned filter replaces it to the *google* source:

Filter Name:	Replace Adwords by Google
Filter Type:	Custom filter – Search and Replace
Filter Field:	Campaign Source
Search String:	^adwords\$
Replace String:	google

This filter is independent on previous two and it can be used separately.

5.3.3.7. Keywords from Firmy.cz

Firmy.cz is a very important source of traffic; it is the most important catalogue of companies in the Czech Republic. If a visitor comes from search page, following filter gets a keyword:

Filter Name:	Keywords from Firmy.cz	
Filter Type:	Custom filter – Advanced	
Field A -> Extract A:	Campaign Source	^firmy∖.cz
Field B -> Extract B:	Campaign Content	^/phr/(.*)\$
Output To -> Constructor:	Campaign Term	\$B1
Field B Required:	Yes	

5.3.3.8. Filters for products searches

Bellow see filters that rewrite accesses from product search engines under *product* medium:

Filter Name:	Set medium for produ	ct searches 1	
	•		
Filter Type:	Custom filter – Advanced		
Field A -> Extract A:	Campaign Source	akcni-	
<pre>cena\.cz b2bc\.cz bezvaceny\.cz cenyzbozi\.cz dobra-</pre>			
koupe\.cz elektrus\.cz eshop-katalog\.cz heureka\.cz hledam-			
<pre>zbozi\.cz hledejceny\.cz internet-</pre>			
<pre>obchody\.cz internetoveobchody\.com iobchody\.com koupis\.cz 1</pre>			
epsiceny\.cz levnenakupy\.cz			
Output To -> Constructor:		product	

Filter Name:	Set medium for product	searches 2	
Filter Type:	Custom filter – Advance	d	
Field A -> Extract A:	Campaign Source		
<pre>mojse\.cz naakup\.cz najdislevu\.cz nejlepsiceny\.cz nejna</pre>			
<pre>kup\.cz nizkeceny\.cz onlineshopy\.com seznamobchodu\.cz sezna</pre>			
<pre>mzbozi\.cz shopy\.cz srovname\.cz srovnanicen\.cz tipnanakup\.</pre>			
<pre>bezpecnyobchod\.cz usetrim\.cz zalevno\.cz zbozi\.centrum\.cz</pre>			
Output To -> Constructor:	Campaign Medium	product	

Filter Name:	Set medium for product searches	1
Filter Type:	Custom filter – Advanced	
Field A -> Extract A:	Campaign Source	
zbozi\.cz zbozi\.jyxo\.cz		
Output To -> Constructor:	Campaign Medium product	

It is necessary to have three filters for product searches because length of an input field for campaign source is limited.

5.3.3.9. Filter for image searches

This filter rewrites accesses from image searches under *image* medium:

```
Filter Name:Set medium for imagesFilter Type:Custom filter - AdvancedField A -> Extract A:Referral[.^](images\.google\.|obrazky\.cz)[/$]Output To -> Constructor:Campaign Medium image
```

5.4. Keyword analysis

The detail keyword analysis was done previous to the start of the new e-shop. The analysis was primary focused to category keywords. Occasionally, a revision of keywords is done, but only few minor changes has been made since the first analysis.

5.4.1. Landing pages

There are still some missing landing pages on the web. The quite important landing pages are for category and manufacturer keywords (such as "Maxi cosi car seat" – "autosedačka Maxi cosi" in Czech). Addition of those landing pages is planned to next redesign of e-shop (about July 2010).

There are many lateral²⁵ keywords that can be used for acquiring of new potential customers (for example "how to choose stroller", "car seat reviews" etc.). The new web advisory is planned to web redesign. There will be new pages focused on lateral, so far not used keywords. Relevant advisory pages will be linked from web categories and there will be links back to categories and to specific products in articles.

5.4.2. Product names

Product names are changed sometimes based on the keyword analysis. Due to the fact that people sometimes do not search for products by their official name. There are several reasons such as:

²⁵ Lateral keywords are the keywords that branch out laterally from assumed SEO target audience (61). Lateral keywords usually do not generate sales directly but they help with brand building and getting external links to website.

- Product is not well known and people do not know its exact name,
- name of the product is complicated,
- product is known under different name than official,
- people do search for the product with general keyword.

Non-official version can be searched more often than original name in some cases. The product is renamed for the more searched phrase in such situations. Product keyword analysis is done continuously because there are thousands of products in the e-shop.

5.5. Internal navigation

There are two main navigations in the e-shop – vertical and horizontal.

5.5.1. Vertical navigation

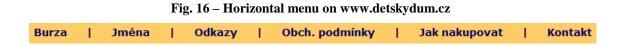
Vertical navigation is the main navigation schema in the e-commerce. It involves categories of goods, manufacturers and a few links to text pages (as contact information). There is no page reload needed when switching between categories and manufacturers as it is made with JavaScript. If a user has disabled Javascript, a reload of page is required. Application stores information about chosen menu type in cookie.

Fig. 15 – Vertical menu on www.detskydum.cz



5.5.2. Horizontal navigation

Vertical navigation is placed under website header and contains links to goods exchange, commercial terms, help, contact, and other less important pages. This menu will be probably changed after redesign, some links like "links" ("odkazy" in Czech) will be moved out and replaced by new ones (like "advisory").



5.5.3. Guidepost of website

In September 3, 2009, new guidepost was implemented to the homepage of website. It contains links to the most important e-shop categories. Only eight primary categories were chosen to ensure the readability for users.

Fig. 17 – Guidepost on the homepage of www.detskydum.cz

Kočárky

Hluboké | Kombinované | Sportovní | Do 13 kg | Do 18 kg | Do 36 kg | Golfky | pro dvojčata

<u>Bezpečnostní pomůcky</u> Zábrany | Ostatní

Kojenecké potřeby Kojenecke potreby Avent | Bryndáky | Ohřívačky | Sterilizátory a odsávačky

Vaky a nosiče Babyvaky a šátky | Klokanky | Krosny – Lehátka na krmení |

Autosedačky

<u>Příslušenství</u>

<u>Hračky</u> Pro nejmenší | Pro větší | Na doma i na ven

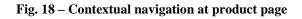
Ohrádky a postýlky Dřevěné ohrádky | Síťové ohrádky | Dřevěné postýlky | Cestovní postýlky

Židle a sedátka Sedátka závěsná | Vysoké židličky

Unfortunately, users often have problems with finding categories that are not in this guidepost. Therefore, more categories will be added in the future.

5.5.4. Contextual navigation

Contextual navigation is used at product pages. Each product can have defined as related to other goods (also called "Customers Who Bought This Item Also Bought") that is displayed at the bottom of product page.





5.6. Duplicate and similar content

The form and structure of products was a problem at the beginning when the concept of e-shop was planned. Each product usually has several variants – such as different color, type of construction etc. Owner of the e-commerce wanted to have a possibility to add price, images, description etc. to each variant of one product. Thus, the product was designed the way that each variant have had its own URL address and parameters. Links to other variants were located under description of actual variant:

Fig. 19 – Original links to variants on the product page

Možné barvy a provedení
(kliknutím na obrázek se vybraný design zobrazí v horní části obrazovky,
odkud ho pak můžete přidat do košíku).
Každá varianta může mít jinou dostupnost.Každá varianta může mít jinou dostupnost.Image: Comparison of the second secon

Several problems appeared after a few months of new website running. Some users were unable to find links to other variants which was considered to be a big problem for website usability²⁶.

Another thing was that e-shop administrators usually only copied the same description to each variant, thus a similar content problem was encountered. This problem was partially solved by *meta robots* tag that which was added to product variants. This tag is designed to prevent page indexing by search engines and it should be placed in the head part of HTML code:

```
<meta name="robots" content="noindex, follow" />
```

Value *noindex* prevents page from appearing in search engine results. However, search engines do not index page, they still follow links to other sites. Value *follow/nofollow* has meaning for Google. *Follow* (default optional value) means that Google counts rank for a page and pass it through links to other pages. If there is a *nofollow* value set in the

²⁶ Web usability is an approach to make web sites easy to use for users, without requiring her (or him) to undergo any specialized training. Web site should let users accomplish their intended tasks as easily and directly as possible (42).

meta robots tag, Google will not follow links on the page. In comparison with Google, Seznam.cz does not pass rank through links no matter on the value *follow/nofollow* (41).

The link canonical was added in February 2009 too. This tag was located in product variants with value of basic variant's URL address.

The product page was completely redesigned at the beginning of September 2009. All variants were merged to the only one product page:



Fig. 20 – New product page with all variants on one page

Product description, discussion, files (optional) and parameters were placed under the list of variants as Javascript tabs:

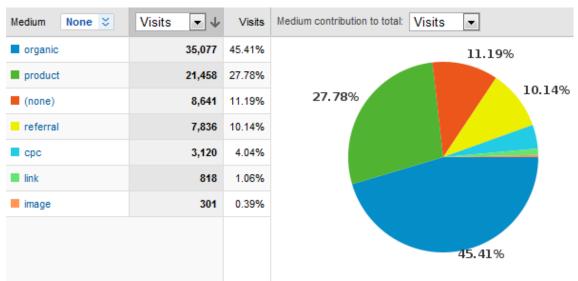
Fig. 21 – Javascript tabs at product page



These modifications should ensure better usability of e-commerce and no similar content on the web.

5.7. Product searches

Product searches are the second biggest traffic source for Dětský Dům. They have a share of about 27.5%:



Graph 2 – Proportion of traffic sources on Dětský Dům – monthly data

The old version of ecommerce had several product searches already registered – Zboží.cz, zbozi.jyxo.cz a several others non-important searches. Registration to other searches was made in this order:

- heureka.cz September 24, 2008
- srovnanicen.cz (under Heureka.cz now) September 25, 2008
- hledejceny.cz September 29, 2008
- zalevno.cz October 5, 2008

5.7.1. Zboží.cz

Zboží.cz is the most important product search engine; it has about 80% of market share from all products searches in the case of Dětský Dům e-shop.

Zboží.cz was used in the old version of e-commerce, but the XML feed was not optimized in any way (product names, using optional parameters). All possibly optional parameters were completed to feed in the new e-shop.

5.7.1.1. Administration of product

There is a special administration of products for Zboží.cz. It allows to create own name and description of product that is exported to XML feed which can be used for product optimization. Administrator can set whether product should be paid or not in two steps – product on or not on the stock. This is important feature as some products are not paired in aggregated results and in this case it is not effective to pay for click on this product.

5.7.1.2. New version of Zboží.cz

The completely new XML feed was created for new version of Zboží.cz. Because of "Zboží Standard" service activation requirement, this service was activated on 29 September 2009. This change caused immediate growth of user's access from Zboží.cz (point *1* in Graph 3).

Seznam.cz released new version of Zboží.cz on October 13, 2009, old XML feed was replaced to new one at the same time. Unfortunately, Seznam.cz encounters problems with new feeds that resulted to low visitors' accesses in next day (point 2 in Graph 3). On October 15, Zboží.cz inactivated e-shop XML feed. After this, XML was immediately replaced by its old version and Zboží.cz activated feed again. According to the information from Seznam.cz, new feed was tested again on October 25, but problems were still unresolved and old feed was reactivated on October 27 (point *3* in Graph 3).



New feed was finally activated on January 2, 2010. Since then, everything seems to be working properly, accesses from this source are increasing. Seznam.cz still pairs categories and goods, this progress is monitored and product parameters are modified according to Zboží.cz development. Overall accesses from Zboží.cz during the time period from March 2008 to February 2010, monthly aggregated represent Graph 4.



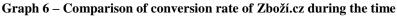
When we compare accesses form Zboží.cz in the intervals March 2008 - February 2009 and March 2009 - February 2010, the overall change in visits is about 24%:



Graph 5 - Comparison of accesses from Zboží.cz during the time

The conversion rate of Zboží.cz raised from 2.18% to 2.26% (change about 3.95%). The increase in conversion rate depends also on many factors and website changes that are out of range of this work.





5.7.2. Heureka.cz

Heureka.cz was registered in September 24, 2008. There were not many user accesses from this searcher at the beginning that was probably caused by low price for click and non-optimized XML feed. XML feed was corrected at the beginning of February 2009.

5.7.2.1. Shopping adviser

In the end of January 2009, Dětský Dům arranged cooperation with Heureka.cz as a shopping adviser for several categories:

- Strollers (<u>http://kocarky.heureka.cz/poradna/</u>)
- Car seats (<u>http://autosedacky.heureka.cz/poradna/</u>)
- Baby monitors (<u>http://chuvicky.heureka.cz/poradna/</u>)
- Cots (<u>http://postylky.heureka.cz/poradna/</u>)
- Walking chairs (<u>http://choditka.heureka.cz/poradna/</u>)
- Babies changing stations (<u>http://prebalovaci-pulty-a-podlozky.heureka.cz/poradna/</u>)

This partnership caused upsurge of traffic form Heureka.cz. Prices for clicks in categories was lowered after two months to their original level, which caused that traffic gets lower again but it was still twice more in average than in previous periods.



Graph 7 – Accesses from Heureka.cz – weekly data

5.7.2.2. Ověřeno zákazníky ("verified by customers")

Service *Ověřeno zákazníky* ("verified by customers") was implemented in January 2010 (point 1 on Graph 8). After few days (user gets e-mail with question mark ten days after the purchase), traffic from Heureka.cz had raised. In March 5, 2010, ecommerce gets the certificate *Ověřeno zákazníky* (point 2 on Graph 8). This caused further grow of accesses from Heureka.cz, probably also because of the better and more positions at search pages. It is too soon to evaluate in the long-term, but there is a hypothesis of continuous grows in the future (based on the given data and experience from another projects).



Graph 8 – Accesses from Heureka.cz after certificate implementation – weekly data

The bonus of this service is an opportunity for the customers to write a review and experience with purchase which is very good feedback for e-shop. There is up to 200 of reviews in two months from implementation.

5.7.2.3. Guarantee of purchase

Guarantee of purchase has not been implemented yet. This service should be started in approximately two months. There is not Pay Sec service implemented in the e-shop, therefore guarantee of purchase will be set up only for registered users from Heureka.cz.

5.8. Micro-sites

A micro-site generally refers to a small website are supposed to work as an auxiliary supplement to a primary website. It is considered as a separate entity and it may present different information and even have a different URL. Micro-site should never be implemented as a doorway page to main site, or a site that has substantially the same content as is published on the main site. Micro-sites can be considered only if owner is willing to invest in putting rich original content on the site and if he is willing to invest the time to promote the site as an independent site (3).

When should be a micro-site considered? (3)

- When you own a specific keyword search query domain,
- when you plan to sell the domains in the second-hand market,
- if you are a major brand building a secret or buzz-worthy micro-site.

However, there are reasons for not using a micro-site as well:

- A search algorithms favor large, authoritative domains,
- multiple sites split the benefits of links,
- time, money and energy are split into several websites.

5.8.1. Concept of micro-sites

The basic idea of micro-sites is to make a small website about chosen product (topic), which persuade user to purchase on the main website - <u>http://www.detskydum.cz/</u>. Product micro-sites have relatively simple concept with several pages:

5.8.1.1. Homepage

There should be a brief description of product (topic) with basic advantage mentioned. Each advantage should be a link to more detailed description on other page if it is possible. There should be an image of product too, because people really like images. This image can have a button link to main website, which is very good call-to action.

5.8.1.2. Advantages of product

This is page with detailed description of product advantages. There should be good marketing text, because there is very good chance to convictive user to purchase.

5.8.1.3. Videos

There should be several videos of product if it is possible, such as official promo video of product for example. It is very hard to find videos in Czech langue, so there usually are English videos. Other possibility is to make own video of product, but this is very time-consuming and it can be relatively expansive too.

5.8.1.4. Other pages

There can be other pages on micro-site too. It is depended on a specific product and on number of data we have about it (images, content etc.).

5.8.1.5. General things

On each page of satellite web should be several important things:

- It is very good to put link to e-shop (main page) at the bottom of site,
- somewhere in the layout of site (usually in the right column) should be positive comments on propagated product,

- the more images on page are the better,
- in layout can be link to contact form,
- there should be links to main site in the text content too.

5.8.2. Micro-sites for Dětský Dům

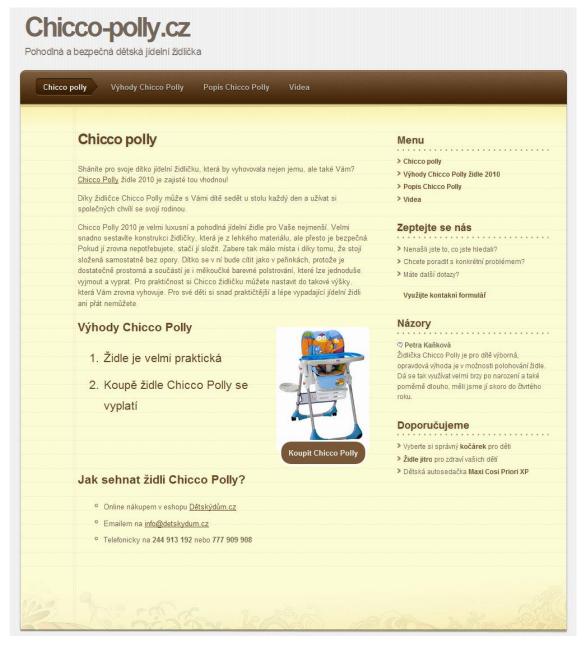
There were four micro-sites made for Dětský Dům. One satellite web is focused on the general topic (how to choose right stroller – kocarky.net), others three are focused on one specific product:

- chicco-polly.cz
- kocarky.net
- jitro-zidle.cz
- maxi-cosi-priori-xp.cz

5.8.2.1. chicco-polly.cz

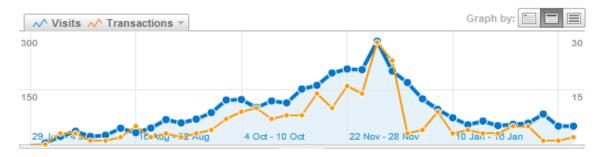
Website <u>http://www.chicco-polly.cz/</u> was launched in July 2009. Web supports *Chicco Polly* baby chair - <u>http://www.detskydum.cz/detail/chicco-polly-idle-2009-281001/</u>. Website contains four pages – homepage, product's advantages, detail description and videos. There was new product line (2010) started in January 2010 so more new images will be added to satellite web in the near future.

Fig. 22 - Home page of <u>http://www.chicco-polly.cz/</u>



The important keywords for this site are following: *chicco polly*, *chicco*, *chicco polly* 2009 (2010). There has been link building made focused on product name with some link purchases and link exchanges. Website has very good positions on product names in Seznam.cz, positions in Google are slightly worse. Manufacturer's name keyword

has not good results, there are much more competitors. The biggest traffic source is Seznam.cz, Google brought about 5 times less visitors.



Graph 9 – Visits and transactions from chicco-polly.cz

There are data from jitro-zidle.cz (March 18, 2010):

- 3 427 visits,
- 226 transactions,
- 6.6% conversion rate,
- 179 672 CZK revenue

5.8.2.2. kocarky.net

Kocarky.net is a site focused on more general topic – the problematic of "How to choose a stroller". Website was launched during November 2009. This satellite web is wider than others are; there are about ten pages. Each page is focused on one stroller's category. There is a description of type of strollers with links to top best selling products on Dětský Dům.

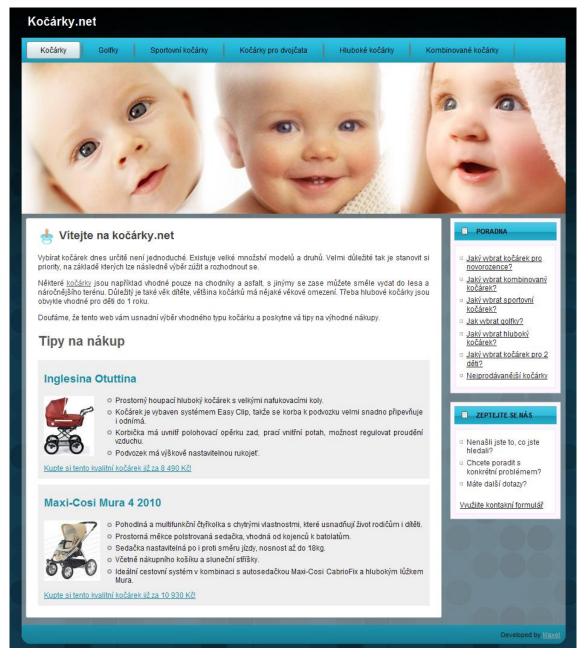


Fig. 23 - Home page of micro-site http://www.kocarky.net/

Keyword analysis was focused on many phrases such as *jak vybrat kočárek* (how to choose stroller), *jak vybrat kočárek pro novorozence* (how to choose stroller for newborn), *kočárky* (strollers) and many more. Important part of analysis was long-tail keywords too.

The biggest traffic source for web is organic search from Google with almost two times more accesses than Seznam.cz. Website has relatively good positions on big number of keywords – users have come through more than 800 keywords from search engines since start of the website.



Graph 10 - Visits and transactions from kocarky.net

There are data from kocarky.net (March 19, 2010):

- 1 775 visits,
- 5 transactions,
- 0.28% conversion rate,
- 45 083 CZK revenue

5.8.2.3. jitro-zidle.cz

Website <u>http://www.jitro-zidle.cz/</u> was launched in the beginning of December 2009. It is focused on *dětská rostoucí Jitro židle* (Jitro baby chair) product - <u>http://www.detskydum.cz/detail/jitro-dtsk-rostouc-idle-700801/</u>. Micro-site contains only two pages, because there is not enough content and no videos for this product. There will be added new page with images in the near future and it is planned to add new and edit currently content pages too.

Fig. 24 – Home page of micro-site http://www.jitro-zidle.cz/



The important keywords for this site are following: *židle jitro, jitro židle, rostouci židle jitro*. Basic link building focused on product name were made for this web, mostly link exchange with other satellite webs. Website has first position for first two phrases (*židle*

jitro, jitro židle) on Seznam.cz and 13th position on Google. The last keyword has not good results; micro-site is on third page of search engine result page in both searches. According to these positions, the biggest traffic source for web is Seznam.cz (organic search), Google on the second position brings about three times less visitors.



Graph 11 – Visits and transactions from jitro-zidle.cz

There are data from jitro-zidle.cz (March 17, 2010):

- 473 visits,
- 62 transactions,
- 13.11% conversion rate,
- 168 708 CZK revenue

5.8.2.4. maxi-cosi-priori-xp.cz

This is the newest satellite web for Dětský Dům, which was launched in the end of February 2010. It is product's micro-site focused on support of car seat *Maxi Cosi Priori XP* (<u>http://www.detskydum.cz/detail/maxi-cosi-priori-xp-189901/</u>). Web contains four pages – homepage, product's advantages, detail description and videos. There will be added product pictures page in the future.

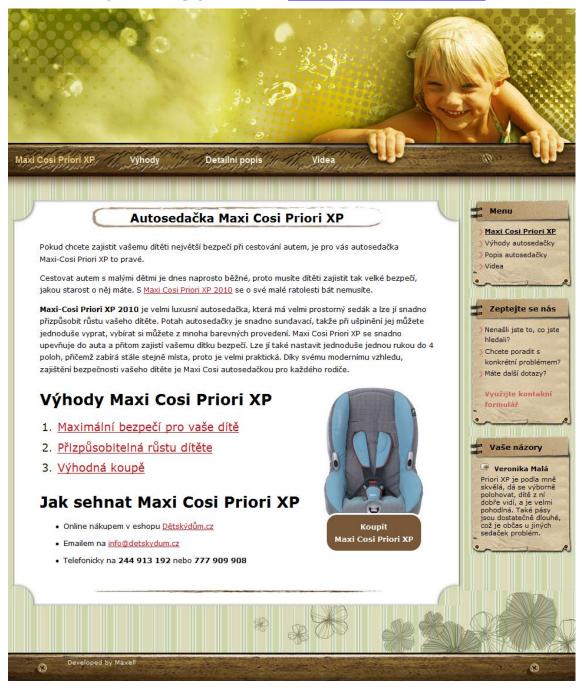


Fig. 25 – Home page of micro-site http://www.maxi-cosi-priori-xp.cz/

The important keywords for website especially are following: *maxi cosi priori xp, maxi cosi priori, maxi cosi xp, maxi cosi priori xp 2010, priori xp, maxi cosi, autosedačka maxi cosi* (car seat maxi cosi), *autosedačka maxi cosi priori* (car seat maxi cosi priori).

Link building has not been made yet, because website is relative new. Link building propagation is planned to March or May 2010. This is reason that web has no positions in search engines and nearly zero traffic too.

6. Conclusions

The diploma thesis introduced advanced methods of search engine optimization. First part of the theoretical chapter was focused on news and trends in search engines and the information related to search engine optimization. News in Seznam.cz and Google searches were described there as those are the most frequently used engines in the Czech Republic. In addition, there is a description of the two most important product searches in the Czech Republic – Zboží.cz and Heureka.cz. The last part of this chapter deals with the mobile web content and it describes two methods of implementation of website mobile version.

The second part of the theoretical section deals with the most common mistakes on websites. Four general and common problems were described there – duplicate and similar content, missing landing pages and related keyword research, internal navigation and finally the issue of web analytics with a brief description of Google Analytics.

The practical part of this diploma thesis includes an example of search engine optimization of Dětský Dům e-shop. Firstly, there is a brief description of e-shop history and website redesign. A significant part of the practical analysis deals with detailed Google Analytics settings. To reach proper measurement and possibility of detail campaign evaluation, some modifications and additional settings had to be done.

Next chapters are focused on the keyword analysis and problems in internal navigation. Duplicate and similar content of variants of a product have been big problem of the e-shop when administrators only copied the same text to all variants of the product. The problem had been partially solved by adding *meta robots* and *canonical* tags, but it still was not the ideal solution. The product page has been completely redesigned at the beginning of September 2009. All variants were merged in a single product page, which definitely solved this problem.

Product searches are a topic of the next section. They are the second biggest traffic source of e-shop visitors with portion of about 27.5%. The most important product search engine is Zboží.cz that has about 80% of the market share.

A special XML feed optimization for Zboží.cz was done – all possible optional parameters were completed and separate administration of products was created. The administration was used for continuous product optimization (name, description, payment for clicks).

Seznam.cz encountered some problems with the new version of Zboží.cz (launched in October 2009) which was illustrated and commented on the base of graphs of accesses from Google Analytics. Those problems were finally solved at the beginning of February 2010 by the activation of new XML feed. The overall optimization process has brought about 24% increase of visitors from Zboží.cz in the comparison with the previous year.

The second described product searcher is Heureka.cz. Dětský Dům arranged cooperation with Heureka.cz as a shopping adviser for six categories, which resulted in a double increase of the traffic from this source. E-shop has implemented "verified by customers" service in January 2010 and that seems to cause a step change in the number of visitors. Unfortunately, there are not enough data available for a long-term evaluation of this service.

The last chapter of the thesis deals with micro-sites. General concept of product micro-site is proposed in the first part of this section. Three products and one general satellite web for Dětský Dům were introduced and described in the second part of the chapter. Two product micro-sites (chicco-polly.cz and jitro-zidle.cz) have brought in total transactions for 170 000 CZK each, measured until March 2010 (the first web has been running since July 2009, second since December 2009). These websites have very good positions in Seznam.cz search engine (which is the biggest traffic source for them), in Google they are mostly in the end of the first or at the beginning of the second

site of search engine result page on the most important keywords. The conversion rate of these webs is very high – about 6.5% and 13%. The last product micro-site (maxi-cosi-priori-xp.cz) was launched at the end of February 2010 and thus there are no data for evaluation of this web available.

The general micro-site (kocarky.net) brings more visitors than product ones but its economic value is not very high. This site has brought only five transactions since November 2009. Kocarky.net has good positions in Google to a large number of queries, which has brought crucially more visitors than Seznam.cz. The conversion rate is low, about 0.3%. On the other hand, products from this website are more expensive than products on other micro-sites and are able to generate a higher profit from each order.

7. Bibliography

1. **Kubíček, M.** *Velký průvodce SEO.* 1. ed. Brno : Computer Press, 2008. p. 320. ISBN: 978-80-251-2195-5.

2. Grappone, J. and Coouzin, G. SEO Search Engine Optimization. 1. ed. Brno : Zoner Press, 2007. p. 328. ISBN 978-80-86815-85-5.

3. Enge, Eric, et al. *The Art of SEO*. 1st ed. Sebastopol : O'Reilly Media, Inc., 2009. p. 574. ISBN: 978-0-596-51886-8.

4. **Tichý, Jan.** Jan Tichý » Jaké jsou skutečné podíly vyhledávačů? *Jan Tichý*. [Online] 1 29, 2010. [Cited: 1 29, 2010.] http://www.jantichy.cz/blog/podily-vyhledavacu.

5. **TOPlist.** TOPlist - Historie. *TOPlist*. [Online] 11 27, 2009. [Cited: 11 27, 2009.] http://www.toplist.cz/stat/?a=history&type=4.

6. **Internet Info.** NAVRCHOLU.cz: Podíly vyhledávačů zůstaly v roce 2009 stabilní - Internet Info. *Internet Info*. [Online] 1 26, 2010. [Cited: 1 29, 2010.]

http://www.iinfo.cz/tiskove-centrum/tiskove-zpravy/navrcholu-vyhledavace-2009/.

7. Škrob, Štěpán and Hassman, Martin. Štěpán Škrob: Horkým kandidátem byl WebKit, ale vybrali jsme Gecko - Zdroják. *Zdroják*. [Online] 2 25, 2009. [Cited: 11 27, 2009.] http://zdrojak.root.cz/clanky/stepan-skrob-kandidat-webkit-vybrali-jsme-gecko/.

8. **Kupke, Joachim and Ohye, Maile.** Official Google Webmaster Central Blog: Specify your canonical. *Official Google Webmaster Central Blog.* [Online] 2 12, 2009. [Cited: 11 27, 2009.] http://googlewebmastercentral.blogspot.com/2009/02/specifyyour-canonical.html.

9. Fidler, Petr. NaH1 » Řešení duplicitního obsahu pomocí canonical tagu. *NaH1*. [Online] 4 17, 2009. [Cited: 11 27, 2009.] http://blog.h1.cz/canonical/.

10. **digri.** Nová zbraň pro boj s duplicitním obsahem - Seznam Fulltext Blog. *Seznam Fulltext Blog.* [Online] 2 17, 2009. [Cited: 11 27, 2009.] http://fulltext.sblog.cz/2009/02/17/29.

Janovský, Dušan. Twitter / Dušan Janovský: Soumrak patičkářů. *Twitter*. [Online]
 2, 2009. [Cited: 11 29, 2009.] http://twitter.com/janovsky/status/2008918596.
 Seznam.cz. Čeho se při optimalizaci vyvarovat - Seznam Nápověda. *Seznam Nápověda*. [Online] 2009. [Cited: 11 29, 2009.] http://napoveda.seznam.cz/cz/ceho-se-

pri-optimalizaci-vyvarovat.html.

13. **Škrob, Štěpán.** Nová verze už běží… v čem je jiná? - Seznam Fulltext Blog. Seznam Fulltext Blog. [Online] 11 4, 2009. [Cited: 1 29, 2010.] http://fulltext.sblog.cz/2009/11/04/41.

14. **Velička, Jakub.** NaH1 » Zboží.cz brzy v novém. *NaH1*. [Online] 9 8, 2009. [Cited: 11 29, 2009.] http://blog.h1.cz/zbozi-cz-brzy-v-novem/.

15. **Seznam.cz.** Produktový list, ceník - Seznam Nápověda. *Seznam Nápověda*. [Online] 4 1, 2008. [Cited: 11 29, 2009.] http://napoveda.seznam.cz/cz/produktovy-list-cenik.html.

16. **MITON MEDIA, a. s.** Jak to funguje? - Garance nákupu - Heureka.cz. *Garance nákupu - Heureka.cz.* [Online] [Cited: 3 16, 2010.]

http://www.garancenakupu.cz/garance/.

17. **Miton Media, a.s.** Služby obchodům - Heureka.cz. *Heureka.cz*. [Online] [Cited: 3 16, 2010.] http://sluzby.heureka.cz/.

18. **Mukai, Jun.** Official Google Webmaster Central Blog: Running desktop and mobile versions of your site. *Official Google Webmaster Central Blog.* [Online] 11 18, 2009. [Cited: 1 30, 2010.]

http://googlewebmastercentral.blogspot.com/2009/11/running-desktop-and-mobile-versions-of.html.

19. **Wikipedia.** User agent - Wikipedia, the free encyclopedia. *Wikipedia, the free encyclopedia.* [Online] 1 20, 2010. [Cited: 1 31, 2010.] http://en.wikipedia.org/wiki/User_agent.

20. **Google.** Cloaking, sneaky Javascript redirects, and doorway pages - Webmaster Tools Help. *Webmaster Tools Help.* [Online] 10 6, 2009. [Cited: 1 31, 2010.] http://www.google.com/support/webmasters/bin/answer.py?answer=66355.

21. Ledford, Jerri L. Search Engine Optimization Bible. s.l. : Wiley; Pap/Onl edition, 2007. p. 408. ISBN-13 978-0470175002.

22. **Fishkin, Rand.** SEOmoz | The Illustrated Guide to Duplicate Content in the Search Engines. *SEOmoz.* [Online] 4 12, 2007. [Cited: 1 31, 2010.]

http://www.seomoz.org/blog/the-illustrated-guide-to-duplicate-content-in-the-search-engines.

23. **Wikipedia.** Landing page - Wikipedia, the free encyclopedia. *Wikipedia, the free encyclopedia.* [Online] 1 2, 2010. [Cited: 2 3, 2010.]

http://en.wikipedia.org/wiki/Landing_page.

24. Langville, A., Meyer, N. and Carl, D. *Google*'s PageRank and Beyond: The Science of Search Engine Rankings. s.l. : Princeton University Press, 2006. p. 234. ISBN-13 978-0691122021.

25. **Prokop, Marek.** NaH1 » Jak vrátit počty hledání do Našeptávače Seznamu . *NaH1*. [Online] 6 12, 2007. [Cited: 2 4, 2010.] http://blog.h1.cz/cisla-v-naseptavaci/.

26. **Brádler, Petr.** Našeptávači, ukaž se! - munio weblog. *munio weblog*. [Online] 1 15, 2007. [Cited: 2 4, 2010.] http://munio.cz/weblog/naseptavaci-ukaz-se/.

27. **Kneoteric, Saurav.** SEOmoz | YOUmoz - How Not to Judge Keyword Competition. *SEOmoz | YOUmoz*. [Online] 6 11, 2009. [Cited: 2 4, 2010.] http://www.seomoz.org/ugc/how-not-to-judge-keyword-competition.

28. **Nielsen, Jakob.** Breadcrumb Navigation Increasingly Useful (Jakob Nielsen's Alertbox). *Jakob Nielsen's Alertbox*. [Online] 4 10, 2007. [Cited: 3 7, 2010.] http://www.useit.com/alertbox/breadcrumbs.html.

29. **Lennartz, Sven.** Footers In Modern Web Design: Creative Examples and Ideas -Smashing Magazine. *Smashing Magazine*. [Online] 4 8, 2008. [Cited: 3 9, 2010.] http://www.smashingmagazine.com/2008/04/08/footers-in-modern-web-designcreative-examples-and-ideas/#comments.

30. **Apple Inc.** Apple - MacBook Pro - Design - The breakthrough aluminum unibody. *Apple.* [Online] [Cited: 3 10, 2010.] http://www.apple.com/macbookpro/design.html.

31. **Friedman, Vitaly.** Tag Clouds Gallery: Examples And Good Practices - Smashing Magazine. *Smashing Magazine*. [Online] 11 7, 2007. [Cited: 3 10, 2010.] http://www.smashingmagazine.com/2007/11/07/tag-clouds-gallery-examples-and-good-practices/.

32. **Web Analytics Association.** About Web Analytics Association - Web Analytics Association, About Us. *Web Analytics Association*. [Online] [Cited: 2 5, 2010.] http://www.webanalyticsassociation.org/aboutus/.

33. **Clifton, Brian.** *Advanced Web Metrics with Google Analytics.* 1. ed. s.l. : Sybex, 2008. p. 384. ISBN-10: 0470253126.

34. **W3Techs.** Traffic Analysis Tools - Web Technology Survey - W3Techs. *Web Technology Survey - W3Techs.* [Online] 2 5, 2010. [Cited: 2 5, 2010.] http://w3techs.com/technologies/overview/traffic_analysis/all.

35. **Google.** How does Google Analytics work? - Analytics Help. *Analytics Help.* [Online] [Cited: 27, 2010.]

http://www.google.com/support/googleanalytics/bin/answer.py?hl=en&answer=55539. 36. **Google.** What is a goal and funnel? - Analytics Help. *Analytics Help.* [Online] [Cited: 3 17, 2010.]

http://www.google.com/support/googleanalytics/bin/answer.py?hl=en&answer=55580. 37. **Google.** Ecommerce Tracking - Google Analytics - Google Code. *Google Analytics* - *Google Code*. [Online] [Cited: 2 23, 2010.]

http://code.google.com/intl/cs/apis/analytics/docs/tracking/gaTrackingEcommerce.html. 38. **Google.** What is Site Search and how can it help me? - Analytics Help. *Analytics Help.* [Online] [Cited: 2 23, 2010.]

http://www.google.com/support/googleanalytics/bin/answer.py?hl=en&answer=75969. 39. **Appeltauer, Roman.** NaH1 » Vyhněte se duplicitám při měření kampaní . *NaH1*. [Online] 12 20, 2007. [Cited: 2 23, 2010.] http://blog.h1.cz/duplicity-pri-merenikampani/.

40. **Google.** Conversion University Help. *Conversion University Help*. [Online] [Cited: 2 14, 2010.] http://www.google.com/support/conversionuniversity/?hl=en.

41. **Fidler, Petr.** NaH1 » Zakazujeme indexaci stránek. *NaH1*. [Online] 7 20, 2009. [Cited: 3 14, 2010.] http://blog.h1.cz/zakaz-indexace/.

42. **Krug, S.** *Webdesign: nenut'te uživatele přemýšlet!* 2. ed. Brno : Computer Press, 2006. p. 134.

43. Nielsen, J. and Tahir, M. *Použitelnost domovských stránek*. 1. ed. Brno : Zoner Press, 2005. p. 323. ISBN 80-86815-18-8.

44. **Ramos, A. and Cota, S.** *Insider Seo & Ppc: Get Your Website to the Top of the Search Engines.* s.l. : Jain Publishing Company, 2006. p. 256. ISBN-13978-0875730882.

45. **Sirovich, J. and Darie, C.** *SEO v PHP*. 1. ed. Brno : Computer Press, 2008. p. 384. ISBN: 978-80-251-2083-5.

46. **Špinar, D.** *Tvoříme přístupné webové stránky.* 1. ed. Brno : Zoner Press, 2004. p. 360. ISBN 80-86815-11-0.

47. **Seznam.cz.** Nová verze už běží... v čem je jiná? - Seznam Fulltext Blog. Seznam Fulltext Blog. [Online] 11 4, 2009. [Cited: 1 29, 2010.]

http://fulltext.sblog.cz/2009/11/04/41.

48. **Wikipedia.** Conversion rate - Wikipedia, the free encyclopedia. *Wikipedia, the free encyclopedia.* [Online] 1 4, 2010. [Cited: 2 4, 2010.]

http://en.wikipedia.org/wiki/Conversion_rate.

49. **Wikipedia.** Bounce rate - Wikipedia, the free encyclopedia. *Wikipedia, the free encyclopedia.* [Online] 12 17, 2009. [Cited: 2 5, 2010.]

http://en.wikipedia.org/wiki/Bounce_rate.

50. **Microsoft.** Description of Cookies. *Microsoft support*. [Online] 1 27, 2007. [Cited: 27, 2010.] http://support.microsoft.com/?scid=kb%3Ben-us%3B260971&x=11&y=13. 51. **Wikipedia.** HTML element - Wikipedia, the free encyclopedia. *Wikipedia, the free encyclopedia.* [Online] 2 4, 2010. [Cited: 2 9, 2010.]

http://en.wikipedia.org/wiki/HTML_element.

52. **The PHP Group.** PHP: Hypertext Preprocessor. *PHP: Hypertext Preprocessor*. [Online] 2 11, 2010. [Cited: 2 11, 2010.] http://php.net/.

53. **Wikipedia.** MySQL - Wikipedia, the free encyclopedia. *Wikipedia, the free encyclopedia.* [Online] 2 9, 2010. [Cited: 2 11, 2010.]

http://en.wikipedia.org/wiki/Mysql.

54. **New Digital Group.** Smarty : Why Use Smarty. *Smarty*. [Online] [Cited: 2 11, 2010.] http://www.smarty.net/rightforme.php.

55. **Parr, Terence John.** *Enforcing strict model-view separation in template engines.* 2004. ISBN 1-58113-844-X.

56. **Wikipedia.** JavaScript - Wikipedia, the free encyclopedia. *Wikipedia, the free encyclopedia*. [Online] 2 11, 2010. [Cited: 2 12, 2010.]

http://en.wikipedia.org/wiki/Javascript.

57. **The jQuery Project.** jQuery: The Write Less, Do More, JavaScript Library. *jQuery*. [Online] [Cited: 2 12, 2010.] http://jquery.com/.

58. **Comer, Douglas.** *Internetworking with TCP/IP:Principles, Protocols, and Architectures.* Upper Saddle River : Prentice Hall, 2000. ISBN 0-13-018380-6. http://www.cs.purdue.edu/homes/dec/netbooks.html.

59. **Wikipedia.** .htaccess - Wikipedia, the free encyclopedia. *Wikipedia, the free encyclopedia.* [Online] 2 18, 2010. [Cited: 2 24, 2010.]

http://en.wikipedia.org/wiki/Htaccess.

60. **The Apache Software Foundation.** About the Apache HTTP Server Project - The Apache HTTP Server Project. *The Apache HTTP Server Project*. [Online] [Cited: 2 24, 2010.] http://httpd.apache.org/ABOUT_APACHE.html.

61. Murnahan, Mark Aaron. SEO Lateral Keywords. SEO and Social Media

Marketing Blog. [Online] 1 12, 2009. [Cited: 3 11, 2010.] http://www.awebguy.com/2009/01/seo-lateral-keywords/.

62. **Wikipedia.** HTTP cookie - Wikipedia, the free encyclopedia. *Wikipedia, the free encyclopedia.* [Online] 2 7, 2010. [Cited: 2 7, 2010.]

http://en.wikipedia.org/wiki/HTTP_cookie.

63. **Wikipedia.** Mind map - Wikipedia, the free encyclopedia. *Wikipedia, the free encyclopedia.* [Online] 2 1, 2010. [Cited: 2 5, 2010.] http://en.wikipedia.org/wiki/Mind_map.

64. **Google.** What is a goal and funnel? - Analytics Help. *Analytics Help.* [Online] [Cited: 2 14, 2010.]

http://www.google.com/support/googleanalytics/bin/answer.py?hl=en&answer=55580.

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10. Supplements

```
Supplement 1 – Modified Google Analytics code
```

```
if(typeof( gat)=='undefined') {
   document.write(unescape('%3Cscript
src="http'+(document.location.protocol=='https: '?'s: //ssl':
': //www')+'.google-analytics.com/ga.js"
type="text/javascript"%3E%3C/script%3E'))
}
var _ga=new Object();
_ga._getTracker=function(a,b) {
  if(!b) {
    b='auto'
  }
   var c=_gat._getTracker(a);
   c. setDomainName(b);
   c._setAllowAnchor(true);
   c. clearOrganic();
   c._addOrganic('seznam.cz','q');
   c. addOrganic('seznam.cz','w');
   c._addOrganic('atlas.cz','q');
   c._addOrganic('atlas.centrum.cz','q');
   c._addOrganic('centrum.cz','q');
   c._addOrganic('volny.cz','search');
   c._addOrganic('zlatestranky.cz','search');
   c._addOrganic('jyxo.1188.cz','q');
   c._addOrganic('1188.cz','q');
   c. addOrganic('jyxo.cz','q');
   c._addOrganic('tiscali.cz','query');
   c._addOrganic('zoohoo.cz','q');
   c._addOrganic('mapy.cz','ssq');
   c. addOrganic('1.cz','q');
   c._addOrganic('takeit.cz','q');
   c._addOrganic('akcni-cena.cz','search');
   c. addOrganic('b2bc.cz','XSearching');
   c. addOrganic('cenyzbozi.cz','q');
   c._addOrganic('dobra-koupe.cz','searchtext');
   c._addOrganic('elektro.cz','w');
   c. addOrganic('eshop-katalog.cz', 'hledej');
```

```
c._addOrganic('heureka.cz','h[fraze]');
c. addOrganic('hledam-zbozi.cz','q');
c. addOrganic('hledejceny.cz','search');
c. addOrganic('koupis.cz','q');
c. addOrganic('lepsiceny.cz','q');
c. addOrganic('levnenakupy.cz','searchword');
c. addOrganic('mojse.cz','search_text');
c._addOrganic('monitor.cz','qw');
c. addOrganic('naakup.cz','hledat');
c. addOrganic('najdicenu.cz','ss');
c. addOrganic('nejlepsiceny.cz','t'
                                   );
c._addOrganic('nejlepsinakupy','q');
c._addOrganic('nejnakup.cz','q');
c._addOrganic('seznamobchodu.cz','search');
c._addOrganic('seznamzbozi.cz','st');
c._addOrganic('shopy.cz','s');
c. addOrganic('srovname.cz','hledat');
c._addOrganic('srovnanicen','q');
c._addOrganic('zalevno.cz','q');
c. addOrganic('zbozi.cz','q');
c._addOrganic('zbozi.eshop-katalog.cz','hledej');
c. addOrganic('zoznam.sk','s');
c._addOrganic('atlas.sk','phrase');
c. addOrganic('centrum.sk','q');
c._addOrganic('morfeo.sk','q');
c._addOrganic('szm.sk','ws');
c._addOrganic('azet.sk','q');
c._addOrganic('azet.sk','sq');
c._addOrganic('zoohoo.sk','q');
c._addOrganic('surf.sk','kw');
c._addOrganic('google','q');
c._addOrganic('google','as_q');
c._addOrganic('google','as_oq');
c._addOrganic('google','as_epq');
c._addOrganic('google','as_lq');
c._addOrganic('google','as_rq');
c. addOrganic('about.com','terms');
c._addOrganic('alice.it','qs');
c._addOrganic('alltheweb.com','q');
c._addOrganic('altavista.com','q');
c. addOrganic('ananzi.co.za','qt');
c. addOrganic('anzwers.com.au','search');
c._addOrganic('aol.co.uk','query');
```

c._addOrganic('aol.com','encquery'); c. addOrganic('aol.com','q'); c._addOrganic('aol.com','query'); c._addOrganic('aol.fr','q'); c. addOrganic('araby.com','q'); c. addOrganic('ask.com','q'); c. addOrganic('baidu.com','wd'); c. addOrganic('bbc.co.uk','q'); c. addOrganic('bing.com','q'); c. addOrganic('britishinformation.com','search'); c._addOrganic('club-internet.fr','q'); c._addOrganic('cnn.com','query'); c. addOrganic('elmundo.es','q'); c._addOrganic('eniro.se','geo_area'); c. addOrganic('eniro.se','search word'); c._addOrganic('excite.co.uk','q'); c. addOrganic('excite.com','q'); c._addOrganic('ezilon.com','q'); c. addOrganic('gigablast.com','q'); c._addOrganic('google.interia.pl','q'); c._addOrganic('hotbot.co.uk','query'); c._addOrganic('hotbot.com','query'); c. addOrganic('iafrica.funnel.co.za','q'); c._addOrganic('icq.com','q'); c._addOrganic('kelkoo','contextKeywords'); c. addOrganic('live.com','q'); c. addOrganic('looksmart.com','qt'); c. addOrganic('lycos.co.uk','query'); c._addOrganic('lycos.com','query'); c. addOrganic('maktoob.com','q'); c. addOrganic('mama.com','query'); c._addOrganic('mamma.com','query'); c. addOrganic('msn.co.uk','q'); c._addOrganic('msn.com','q'); c. addOrganic('myway.com','searchfor'); c._addOrganic('mywebsearch.com','searchfor'); c. addOrganic('najdi.si','q'); c._addOrganic('naver.com','query'); c._addOrganic('netscape.com','query');

```
c._addOrganic('netsprint.pl','q');
   c. addOrganic('onet.pl','qt');
   c._addOrganic('orange.co.uk','q');
   c._addOrganic('pchome.com.tw','q');
   c. addOrganic('rambler.ru','query');
   c._addOrganic('search.com','q');
   c._addOrganic('searcheurope.com','query');
   c._addOrganic('searchy.co.uk','search_term');
   c._addOrganic('sky.com','term');
   c. addOrganic('suche.web.de','su');
   c._addOrganic('szukacz.pl','q');
   c._addOrganic('tesco.net','q');
   c._addOrganic('tiscali.co.uk','query');
   c._addOrganic('virgilio.it','qs');
   c._addOrganic('virginmedia.com','q');
   c._addOrganic('voila.fr','rdata');
   c. addOrganic('wolframalpha.com','i');
   c._addOrganic('wp.pl','szukaj');
   c._addOrganic('yahoo.com','p');
   c. addOrganic('yandex.ru','text');
   c._addOrganic('zinza.com','query');
   return c
};
_ga._trackPageview=function(a,b,c) {
   var d= ga. getTracker(a,b);
   d._trackPageview(c);
   return d
};
```