

# The Basic Principle and Applications of the Search Engine Optimization

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**Abstract.** This paper analyzes the search engine algorithms and ranking principle, we discussed the site structure, keywords, single-page optimization, and search engine penalties. In addition, search engine optimization techniques developed in recent years, which have a very important role in the corporate website ranking. In this paper, we use some search engine optimization technology applications to discuss this increasing technology.

**Keywords:** Basic principle, Application, Search engine optimization.

## 1 Introduction

The search engines are commonly used tools for access to information resources through the network. Retrieved by the search engines, customers can easily find the relevant data and information in the sorted list, which listed by the degree of attention. In order to improve the site's traffic, the site owners always use many methods for occupying a good position in the list. The Search Engine User Attitudes report was released in April 2004 by the search engine marketing service provider iProspect, showed 81.7% of users do not browse the search results which located after the third page, and 52.2% of users will only focus on the first page of search results returned from the search engine. In other words, the user usually cares only about the top of pages provided by the search engines. Figure 1 shows the flow diagram of search engine.

## 2 The Basic Principles of the Search Engine Optimization

Figure 2 shows the search engine optimization strategy implement block diagram. And later we will discuss the basic principles of search engine optimization.

### 2.1 The Source of Search Engine Optimization and Some of Basic Definitions

In recent years, more than 90% of website traffic and 55 percent of online transactions are dependent on search engines. There are much higher return on investment (ROI) relative to other online or traditional marketing, search engine would take your potential customers to your side, and also would increase your sales. The world famous Google search engine provides the 150 million queries a day. If some e-commerce sites in the Google search engine ranking top 10, which will give the

companies a lot of orders. Based on these advantages, Web site creation and maintenance personnel specialize search engine optimization, it will be imperative refers to e-commerce sites. SEO (Search Engine Optimization, referred to as SEO), SEP (Search Engine Positioning), and SER (Search Engine Ranking) are the same kind of the work. Specifically, the work including: By studying the various search engines access to the Internet page, how to build an index, and how to determine the ranking for a particular keyword search results, how to optimize the site pages in a targeted manner and increase the ranking in search engines results, and finally, you can get much more website click-through rate, and ultimately enhance the sale of the site technical or publicity.

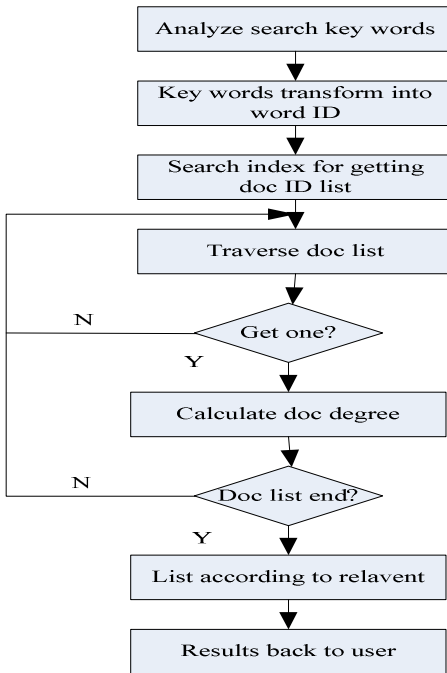


Fig. 1. The flow diagram of search engine

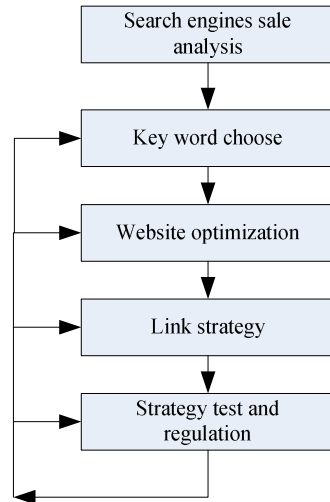


Fig. 2. The block diagram of SEO strategy

## 2.2 Summary The Core of Search Engine Optimization - Keyword Strategy

There are input statements call key words used by the potential customers and target users when they want to find the corresponding website in the search engines.

**The choose of Key words:** First make sure core key words, and then around the core key words to the permutation and combination, so they can generate key phrases or short sentences. For enterprises and businesses, the core key words are their business scope, such as product or service name, industry location, as well as enterprise name or the brand name. In addition, people will be standing in the point of view of the customer to learn their ideas in the process of search. Let key words expansion into a

series of phrase, and try to avoid using single words but a single vocabulary as the basis of expansion. Like this we may use the network marketing software to test for these key phrases and phrases, software function is to check your key words in other web pages for getting the frequency of using, and finally to choose the highest frequency one. In addition, it need to a multiple permutation and combination; Don't use the key word which meaning too broad; With their own brand as the key word; Can use the geographical position; As far as possible control the number of key words and so on, these all can effectively increase the retrieve probability, which has more important role to the optimization of the website.

**The density of Key words:** After determining the key word, the present frequency of key words in your web page is keyword density. That is, on one page, accounting for the proportion of the total text in the page, this index has played an important role in search engine optimization. Code label in HTML is excluded from the page content during calculating the keyword density. Usually, there will be thousands of words on the page, the search engine identify the important words to describe the site y the keyword density. The website will get good rankings if the key words have been set within the allowable range. Studies have shown that the keyword density within 2% -8% is considered to be useful to improve the website ranking. On the contrary, excessive use of keywords will result in a pile of keyword stuffing. Although the excessive using of keywords could trigger the search engines filter, the more serious problem is the potential loss caused by traffic due to difficult to read. A viable approach is to search optimized keyword in the search engines, and then with the help of keyword density query tools to get the keyword density in the top few sites, with reference to its value to set the critical density of your pages.

**Density distribution:** Keyword distribution principle is to place keywords in the appropriate position. According to keyword density may get the number of keywords, and then consider how the keywords are placed in a prominent position on the page. Highlight the keyword is one of the most important factor to attract search engine attention. The search engine spiders will focus on a specific part of the contents of Web pages, in the words of this concern part is much more important than other parts of the word. Is usually placed in the key: <Title>, and <meta> labels, titles (headings), hyperlink text, URL text and the top of the page of the texts. Table 1 shows an example of key words analysis.

**Table 1.** The example of key words analysis

Key words	density	Baidu Index	Google Index
A	0.26%	6010	7608
B	0.26%	4531	4690
C	0.39%	203	301

### 2.3 Search Engine Optimization Focus – Linking Strategy

Link is a connection from a page to point to another target, this target can be a web page, can be different locations of the same page, and can also be a picture and e-mail address or file, or even an application. User get rich website content through

hyperlinks, and search engines is also tracking the layers along a website link to the page depth, to complete the site's information capture. When the search engines determine the ranking of a website, not only analyze the page content and structure but also analyze links around the site. Critical factors affecting website ranking is to get as much high-quality external links, also known as incoming links. Overall, access to hundreds of poor quality site links is less worth than a high-quality sites link.

## 2.4 Optimization of a Single Page

**Name the Website:** You can use keywords in the directory name and file name, if there are key phrases you need with a separator to separate them. We used a hyphen for separated, such as Welcome-To-Beijing.html.

**Website title:** Title length should be controlled within 40-60 letters, and highlight the theme by locating keywords in title. However, don't use irrelevant keywords as title.

**Website description:** This Meta value is only recognized by all search engines, within 40 words, each page should have a unique description.

**Subject of the Website:** To express the theme of the prominent pages of important sections in bold, large print, etc. Using keywords to describe HTML text, in the case does not affect the significance of Website theme.

**External connections:** The external connection is the most important factors that affect search engine rankings in addition to the page title and subject, best able to enhance the ranking of connection from a higher PR value of site's home page connection. In addition, this text should be correlated to title and subject key words in subject website.

**<H1> label:** The search engines are interested in such information <h1> <h2>, and will increase the right weight so the most important information should be logo out with <h1> </h1>, and minor important information should be logo out with <h2> </h2>.

**<b> <strong> :** Label will also be well noted by the search engine. Although the weight is not better than <h1> <h2> can be used flexibly.

## 2.5 The Meaning of Search Engine Optimization

Through the search engines to find information and resources are the primary means of today's Internet users. There are many reasons to promote the implementation of search engine optimization, following the investigation report fully illustrates this point: First, the search engine marketing firm iCrossing done the survey found that: prior to online shopping, search engines are the most popular tools used to search for products and services, 74% of users search for products, while 54% of users to find the can shopping sites. Second, the Chinese search engine market research annual report noted that: the end of 2007, the market will reach 2.93 billion Yuan, has an increase of 76.5%, Q1 Chinese search engine market size reached 929 million Yuan in 2008, declined slightly to 4.7%, but the annual doubled year on year increase of 108.3%. For this reason, how to make your own website record by major search engines, and then get a higher rank to become the issue of Web site builders. Figure 2 shows the SEO process and techniques.

## 2.6 Search Engine Optimization Cheating and Punishment

Technology-based search engine site ranking process is completely done automatically by the spider, not human intervention, which provides the likelihood of success for those who deceive spiders means for ranking.

SEO cheating ways:

Keyword Superimposition and accumulation:

- a) Keywords in any position of the page source code, deliberately by adding relevant keywords to the page content, and intentionally a lot of repetition of certain keywords.
- b) Hidden text: The search engine can identify the web page but the user can not see the hidden text. Include using the text and background color, the small font text, text hidden layer, or abuse of the image ALT and other methods.
- c) Cover up: The same Web site, search engine and user access to different content pages, including the use of redirection behavior.
- d) Promotion of illegal operation of the site external

The illegal operation include: first, to repeatedly submit your site to search engines. Second, blog contamination. The comments of the blog site can be frequently posts, which buried connection to reach your site, this approach attempts to pollution blog to increase the number of connection to their site. Third, connect the farms. Refers to the pages of worthless information, this page addition to the list of a connection point to the websites of others, almost nothing else, the entire site is purely a switched connection, no matter is not related to the theme. Cheating is a complete departure from the original intention, the principle of favorable to the user, of the search engine ranking search results, which destroy the normal search results and impact on the quality and reputation of the search engines, and also clear out the loopholes in search engine technology, so once they are the detection of cheating will give different degrees of punishment depend on the seriousness of the case. For example, in March 2005, Google cleaning up some spam search results is the typical punishment cases.

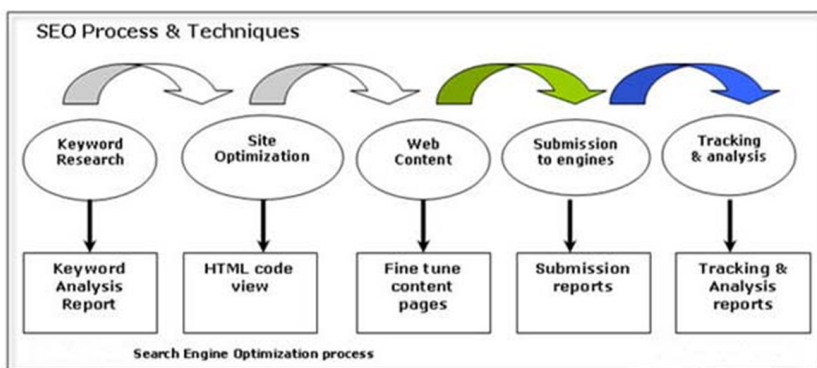


Fig. 2. The Search engine optimization process and techniques

### 3 Applications of the Search Engine Optimization

Dell China the site [www.dell.com.cn](http://www.dell.com.cn) Home titled "Dell China - computers, laptops, desktops, printers, workstations, servers, storage, electronic products and accessories,". Dell Home title not only covers the most important company information, but also includes the company's main products. This is the core keywords, with notebook computers, desktop computers. These keywords in Google search Dell's pages are ranked in the first few positions in the first screen. Google's ranking algorithm and organizational details are trade secrets, and well known is that the PageRank algorithm. It is an important content of the Google algorithm, which awarded as a U.S. patent in September 2001. The author is one of the Google founders Larry Page. Measure the value of the site based on the quantity and quality of the site's external and internal links. Behind the Page Rank concept is that each page to link to this page are the first ballot, is linked more, it means that other websites to vote more. This is the so-called "link popularity". Google's Page Rank score from 0 to 10; the Page Rank of 10 is the best, but very rare, similar to the Richter scale, the Page Rank level is not linear, but in accordance with an exponential scale. This is a strange mathematical terms, the mean PageRank4 not level and may be 6-7 times better than PageRank3. PageRank algorithm formula is very complicated. Simply, the value of Pagerank is subject to the following factors. The more number of pages crawled by Google, the more Pagerank higher the value. Google usually does not take the initiative to crawl all the pages, especially in the dynamic link to the URL with "?". The better approach is to produce a static HTML pages, often referred to as the "Site Map" or "Site Map", it contains all the URLs you want to add static pages and then submit to Google. Google's Pagerank system on the portal network directories such as DMOZ, Yahoo and Looksmart are particularly high regard. On Google's Pagerank, DMOZ links to a site, like a piece of gold as precious. PageRank is only part of the Google algorithm, so deliberately to pursue PageRank would not guarantee high ranking.

### 4 Conclusion

The successful search engine optimization strategy should be beginning of the construction site, and from the choice of the domain name to the web page source code written. But the current status is that the site has been completed, and to do search engines optimization before you submit your site. Then do the optimization in fact, has been quite passive. Therefore, it is recommended that the beginning of the construction site, the site planners submitted to the web designers, application developers and content editors a website building memorandum, used for search engine ranking.

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