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## **The Importance of Search Engine Optimisation in Website Design**

### Introduction

Search Engine Optimisation (henceforth SEO) is, simply put, the process of increasing traffic to a website by making specific modifications to that site to improve its ranking in the 'organic' (i.e. unpaid) or 'natural' results returned by search engines. All the major search engines - Google, Bing, Yahoo etc. - return a search results page (henceforth SERP) containing links to relevant web pages, images, videos etc. depending on the search criteria provided by the user. Typically, the higher the ranking on that results page the more visitors a site will receive. According to a 2013 study the top listing on Google's organic search results receives 33% of the traffic, the second 18%, and fifth receives just 6% (Lee, 2013). Ideally then you want your website to have the highest possible position in the natural listing, i.e. the main body of the SERP, for a range of specific keywords entered by users. SEO is the process by which this is achieved.

### Brief Background To Search Engines

Google.com has a very understandable explanation of how search works. They use software referred to as 'web crawlers', the most well known of which is 'Googlebot', to uncover public webpages. Those crawlers look at the pages and follow the links they contain. In going from link to link they bring data back to Google's servers about each webpage. The starting point of the process is web addresses from previous crawls and website sitemaps. Special attention is paid to new site adds, existing site changes, and dead links. Programs decide the sites to crawl, how frequently, and how many pages to fetch. Site owners can use Webmaster Tools and a 'robots.txt' file to either prevent Googlebot crawling a site entirely or to provide instructions for processing specific pages or directories. The results fed back to Google are analysed and indexed. Since, for a given query, thousands or even millions of webpages might have relevant information, Google applies algorithms (basically a programmatic set of rules) to filter the data and return the best possible results. Those algorithms now rely on more than 200 signals or 'clues' to create a ranking, including things like search term (or synonym) appearances in the webpage or the title, content freshness and originality, the geographic area you are in and 'PageRank'. Named after

Larry Page, one of Google's founders, PageRank, essentially a link analysis algorithm, counts the number and quality of links to a page to get an approximate idea of the importance of a given website. The obvious underlying assumption is that the more important the website the more links it will have received from other sites.

For those with a deeper curiosity as to how a search engine is birthed, the paper titled 'Hypertextual Web Search', written by Google's founders Sergey Brin and Lawrence Page while in the Computer Science Department at Stanford University, is available online ([Infolab.stanford.edu](http://Infolab.stanford.edu)), and includes an actual description of PageRank calculation.

## Optimising Your Site

The best place to go for practical instruction is to Google themselves who have an excellent downloadable PDF document titled 'Search Engine Optimisation Starter Guide' (2010). It's basically a best practices guide which outlines several, mostly small, modifications you can make which collectively will improve the user experience and can positively impact organic search performance. To summarise the recommendations:

- You should create accurate and distinct page titles using the HTML document's <title> tag that appears within the <head> tag. Recommended length is no more than 65 characters. Google actually recommend a unique title for each and every page. The tag contents normally appear on the first line of the results as in 'CIT - Cork Institute of Technology - CIT' in the snapshot below. It could contain your business name, a location or maybe a couple of key words or a brief phrase that instantly indicates what your business is about. Obviously if you use create separate titles for each page those titles should reflect that page's content.

**CIT - Cork Institute of Technology - CIT**  
[www.cit.ie/](http://www.cit.ie/) ▼  
CIT offers full-time, part-time, and specialist courses in Art, Business and Humanities, Computing and Information Technology, Engineering, Media, Music, ...  
4.4 ★★★★★ 16 Google reviews · [Write a review](#) · [Google+ page](#)

- The description meta tag, also placed within the <head> tag of your document, tells search engines what the web page is about. Recommended length is no more than 155 characters. It should accurately summarise a page's content and can be a sentence or two or a short paragraph. It is important as it can be used by Google as a snippet for your page so adding unique descriptions to each of your pages is good practice. Words in the snippet

are bolded in the returned results if they match words in the user's query as in 'CIT' at the start of the descriptor in the snapshot above.

- You should improve the format of your URLs to better identify the underlying content. Long and cryptic URLs with few English words are not easily remembered and are unhelpful, especially to those who might wish to link to your pages. In addition people linking to you might use your URL as their anchor text. URLs also show up in Google's search results and, like snippets, words that match the user's original query are bolded. Use words in your URLs and to separate those words, making them easier to read, consider linking them with a '-' (dash). Never use a '\_' (underline) character. Avoid multiple URLs for a single document as it weakens content reputation - use 301 redirects if necessary to deprecate the non-preferred ones.
- Allow visitors to easily navigate your site by using breadcrumbs - root page to left - and set up two sitemaps - one to aid site users (HTML) and one for search engines (XML). The XML sitemap you create can be submitted to Google via their Webmaster Tools. The sitemap simplifies Google's discovery of your site's pages and lets you tell them which URL version you prefer. Google provide an open source sitemap generator to script the XML and there are plugins for certain content management systems that will create the XML also. Avoid complex layers of links - linking to every page from every other page for example - and use simple text links - rather than Flash for example - as they are preferred by search engines crawling your site.
- Have a useful 404 page so if users hit it by following a broken link or mistyping a URL they are redirected to a working page such as the root or home.
- Create fresh and unique content with readable and grammatically correct text. Break up large amounts of text with paragraphs, headings, subheadings etc. Avoid duplicating content. Do some keyword research using the Keyword Tool provided by Google AdWords. Use Google's Webmaster Tools to see which search queries your site appears for. However don't spoil the content by overusing unnecessary keywords. Don't hide text from users but display it to search engines.
- Anchor text should be concise and accurately describe the content being linked to, whether external or internal. Text should not contain excessive keyword references. Links should be formatted so that they are obvious as such to the user.
- Images should have alternate text specified via the alt attribute. This helps if the image cannot be displayed or if the user is, for example, using a screen reader rather than a browser. It also helps Google if you decide to use an image as a link to another page. Again

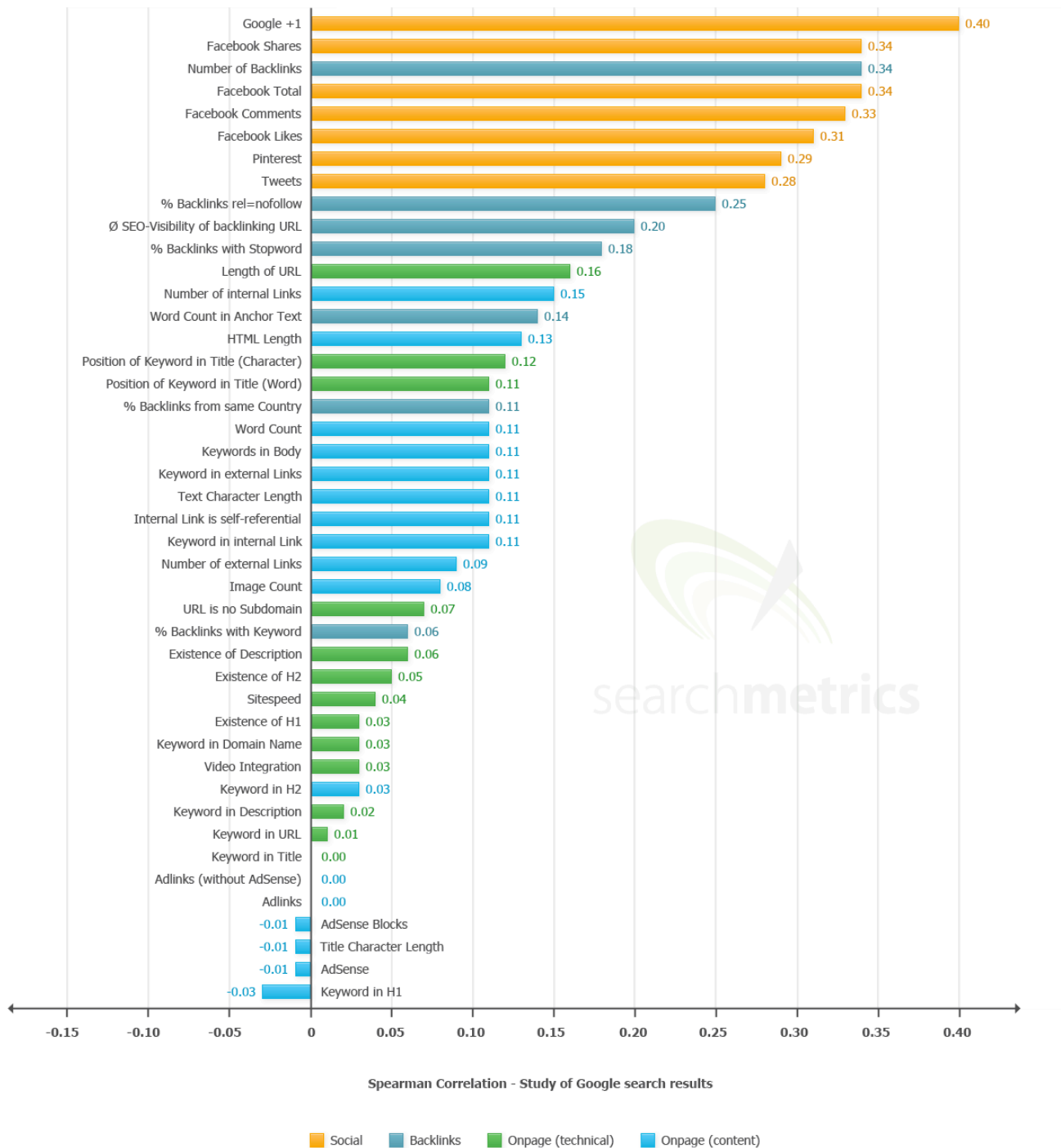
avoid excessive keyword usage in the alt text. Image filenames should be short and descriptive.

- Heading tags (<h1> the most important to <h6> the least) should be used to catch the user's eye and create a content hierarchy. They allow users to easily scan page content but should be used sparingly.
- Use the robots.txt file to tell search engines which parts of your site they can access. It should be in your root directory. Google Webmaster Tools will generate the file for you. More sensitive content should be password-protected or encrypted however.
- Use rel = "nofollow" inside of a link's anchor text to tell Google not to follow that link. This is primarily used to combat comment spam and often automatically applied to user comments by blogging software. Linking to 'spammy' sites can spoil your own site's reputation.
- Check that your mobile site is indexed by Google. To ensure Googlebot crawls your site submit a mobile sitemap to Google via their Webmaster Tools as you would have done for the standard Sitemap. Allow Google's mobile site crawler, 'Googlebot-Mobile', to access your site by properly configuring a User-agent setting. Googlebot-Mobile checks whether each URL it looks at is viewable on a mobile device and that the page is therefore eligible for the mobile search index.
- If you are running desktop and mobile versions of your site you can if necessary redirect a mobile user or crawler such as Googlebot-Mobile to the appropriate version using a redirect. The redirect should be to the equivalent page on the mobile side. Alternatively the same URL can be used for desktop and mobile content with the format presented being changed based on the User-agent. It's important the content seen by Googlebot is the same as a typical desktop user would see. The same for Googlebot-Mobile and mobile users. Anything else might be regarded as 'cloaking' (trying to artificially boost SERP ranking) and your site could disappear from Google's search results.

Google also note several ways to promote your website business such as adding relevant business information to Google Places which will help possible customers reach you via Google Maps. We would recommend the use of social media to link to your website content. It is also relatively straightforward on a content management system such as WordPress to add Facebook, Twitter and other widgets to your website to quickly show content from those platforms.

The 'US Google Ranking Factors - Rank Correlation 2013' study by search and social analytics company Searchmetrics makes for interesting reading. The article ([Searchmetrics.com](http://Searchmetrics.com), 2013) discussing the findings and highlights the following:

- Social signals such as Twitter tweets, Facebook likes and shares, and Google plus ones closely correlate with Google rankings.
- Quality of content is an important ranking factor, with a positive correlation noted between Google rankings and pages with more images and text. An upper useful limit of 10,000 characters is noted for text.
- Keywords in domain names and URLs or web addresses have lost relevance. This is attributed to Google updates such as those to the Penguin algorithm.
- The number of backlinks (also known as incoming or inbound links), i.e. links from other sites, to a web page is still very important and closely connected to how that page ranks. However the backlinks need to be of quality, i.e. naturally and not artificially created, and those from high visibility, high-ranking pages are more valuable.



It should be understood that the highlighted factors simply correlate with a high Google ranking i.e. higher-ranking pages have that feature or more of that feature. The study does not claim that those factors cause or influence that ranking. A note of caution is also added about underestimating certain factors with a low correlation. On-page factors (those controllable by the webmaster or web designer) such as the presence of H1 headings and keywords in the meta description tend to have a low correlation because they are present on almost all of the top search result pages.

In a recent article on The Next Web site (Tolentino, 2014) a list of thirteen SEO mistakes or misconceptions are provided. Some of them jump out:

- Expecting immediate improvements for SEO changes - a site's history is also factored in.
- Falling for quick and cheap SEO solutions that use 'black hat' tactics such as keyword stuffing, hidden text and link buying.
- Thinking about SEO at the completion of a website design rather than at the planning stage.
- Forgetting keywords and adding them in haphazardly at the last minute - we suggest using some or all of the keyword research tools available such as Google AdWords Keyword Planner or Übersuggest.
- Not addressing duplicate content.
- Adding too many PDFs or not optimising those that are necessary - optimising means using plain text instead of words in the form of images, assigning a title in the document properties, making the file size small for fast download and using SEO-friendly URLs (with '-' between each word).
- Ignoring social media elements.
- Neglecting content - it needs to be well-written and all images should have descriptive alt tags applied.
- Incorrect use of redirects - a 301 redirect is proper when moving from an old site to a new site for example.

Search Engine Land has an innovative method of explaining the various SEO factors in organic search success (Search Engine Land, 2014). Using the notion of a periodic table they start with three major groups - on-the-page SEO, off-the-page-SEO and violations - and then break those down further into sub-groups that they explain in significant detail. Under on-the-page the sub-groups are content, HTML and architecture; under off-the-page are links, trust, social and personal. Violations (tagged with V), i.e. 'black hat' tactics intended to deceive or manipulate the search engine with respect to a site's relevancy, span multiple sub-groups. Each factor listed has a weighting from one to three that is based on what search engines have reported, SEO community surveys and their own experience. Search Engine Land doesn't claim it is perfect and it may not be complete but it does appear to be a useful reference. Even if you don't read the various chapters in detail in the guide provided the infographic (snapshot follows) makes for a worthwhile read since it includes a lot of the questions a webmaster or web developer should be asking.

### ON-THE-PAGE FACTORS

These elements are in the direct control of the publisher

CONTENT		
<b>Cq</b>	QUALITY	Are pages well written & have substantial quality content?
<b>Cr</b>	RESEARCH	Have you researched the keywords people may use to find your content?
<b>Cw</b>	WORDS	Do pages use words & phrases you hope they'll be found for?
<b>Ce</b>	ENGAGE	Do visitors spend time reading or "bounce" away quickly?
<b>Cf</b>	FRESH	Are pages fresh & about "hot" topics?
<b>Vt</b>	THIN	Is content "thin" or "shallow" & lacking substance?
<b>Va</b>	ADS	Is your content ad-heavy, especially "above the fold"?
HTML		
<b>Ht</b>	TITLES	Do HTML title tags contain keywords relevant to page topics?
<b>Hd</b>	DESCRIPTION	Do meta description tags describe what pages are about?
<b>Hh</b>	HEADERS	Do headlines & subheads use header tags with relevant keywords?
<b>Hs</b>	STRUCTURE	Do pages use structured data to enhance listings?
<b>Vs</b>	STUFFING	Do you excessively use words you want pages to be found for?
<b>Vh</b>	HIDDEN	Do colors or design "hide" words you want pages to be found for?
ARCHITECTURE		
<b>Ac</b>	CRAWL	Can search engines easily "crawl" pages on site?
<b>Ad</b>	DUPLICATE	Does site manage duplicate content issues well?
<b>As</b>	SPEED	Does site load quickly?
<b>Au</b>	URLS	Are URLs short & contain meaningful keywords to page topics?
<b>Am</b>	MOBILE	Does your site work well for mobile visitors, on smartphones and tablets?
<b>Vc</b>	CLOAKING	Do you show search engines different pages than humans?

## THE PERIODIC TABLE OF SEO SUCCESS FACTORS

Search engine optimization — SEO — seems like alchemy to the uninitiated. But there's a science to it. Below are some important "ranking factors" and best practices that can lead to success with both search engines and searchers.

ON-THE-PAGE SEO

CONTENT	HTML	ARCHITECTURE
<b>Cq</b> <sup>+3</sup> Quality	<b>Ht</b> <sup>+3</sup> Titles	<b>Ac</b> <sup>+3</sup> Crawl
<b>Cr</b> <sup>+3</sup> Research	<b>Hd</b> <sup>+2</sup> Description	<b>Ad</b> <sup>+2</sup> Duplicate
<b>Cw</b> <sup>+2</sup> Words	<b>Hh</b> <sup>+1</sup> Headers	<b>As</b> <sup>+1</sup> Speed
<b>Ce</b> <sup>+2</sup> Engage	<b>Hs</b> <sup>+1</sup> Structure	<b>Au</b> <sup>+1</sup> URLs
<b>Cf</b> <sup>+2</sup> Fresh	<b>Vs</b> <sup>-1</sup> Stuffing	<b>Am</b> <sup>+1</sup> Mobile
<b>Vt</b> <sup>-2</sup> Thin	<b>Vh</b> <sup>-1</sup> Hidden	<b>Vc</b> <sup>-3</sup> Cloaking
<b>Va</b> <sup>-1</sup> Ads		

OFF-THE-PAGE SEO

LINKS	TRUST	SOCIAL	PERSONAL
<b>Lq</b> <sup>+3</sup> Quality	<b>Ta</b> <sup>+3</sup> Authority	<b>Sr</b> <sup>+2</sup> Reputation	<b>Pc</b> <sup>+3</sup> Country
<b>Lt</b> <sup>+2</sup> Text	<b>Th</b> <sup>+1</sup> History	<b>Ss</b> <sup>+1</sup> Shares	<b>PI</b> <sup>+3</sup> Locality
<b>Ln</b> <sup>+1</sup> Numbers	<b>Ti</b> <sup>+1</sup> Identity		<b>Ph</b> <sup>+3</sup> History
<b>Vp</b> <sup>-3</sup> Paid	<b>Vd</b> <sup>-1</sup> Piracy		<b>Ps</b> <sup>+2</sup> Social
<b>VI</b> <sup>-2</sup> Spam			

**FACTORS WORK TOGETHER**

All factors on the table are important, but those marked 3 carry more weight than 1 or 2. No single factor guarantees top rankings or success, but having several favorable ones increases the odds. Negative "violation" factors shown in red harm your chances.

### OFF-THE-PAGE FACTORS

Elements influenced by readers, visitors & other publishers

LINKS		
<b>Lq</b>	QUALITY	Are links from trusted, quality or respected web sites?
<b>Lt</b>	TEXT	Do links pointing at pages use words you hope they'll be found for?
<b>Ln</b>	NUMBER	Do many links point at your web pages?
<b>Vp</b>	PAID	Have you purchased links in hopes of better rankings?
<b>VI</b>	SPAM	Have you created many links by spamming blogs, forums or other places?
TRUST		
<b>Ta</b>	AUTHORITY	Do links, shares & other factors make site a trusted authority?
<b>Th</b>	HISTORY	Has site or its domain been around a long time, operating in same way?
<b>Ti</b>	IDENTITY	Does site use means to verify its identity & that of authors?
<b>Vd</b>	PIRACY	Has site been flagged for hosting pirated content?
SOCIAL		
<b>Sr</b>	REPUTATION	Do those respected on social networks share your content?
<b>Ss</b>	SHARES	Do many share your content on social networks?
PERSONAL		
<b>Pc</b>	COUNTRY	What country is someone located in?
<b>PI</b>	LOCALITY	What city or local area is someone located in?
<b>Ph</b>	HISTORY	Has someone regularly visited your site or socially favored it?
<b>Ps</b>	SOCIAL	Have your friends socially favored the site?

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## Notes On Optimising WordPress

There are a number of content management systems on the market but by far the most popular is WordPress that is used by 23.3% of all websites (W3techs.com, 2014). It is therefore worth noting a few SEO items that are WordPress-specific.

Search Engine Watch, in an article titled 'SEO Friendly WordPress in 12 Steps' (Morgan, 2013), state that WordPress is free and easy to install but, out of the box, not as SEO friendly as one might think. The article goes on to talk about privacy settings during development, configuring search engine friendly URLs via permalink settings and renaming the 'Uncategorized' category for blog posts. Of the plugins available to customise the title and tags - page title, meta description, meta keywords - they prefer the All In One SEO Pack. That plugin has a number of other options related to keywords and indexing which they explain in detail. Several other plugins are mentioned which reduce 404 errors; remove unnecessary links to images; provide crawlers or bots access to HTML and XML sitemaps; and add Google Analytics. The article encourages use of 'responsive' design through the selection of an appropriate theme. Responsive means the layout is automatically adjusted to render well on desktops, laptops, tablets and smartphones. You will get



an SERP boost but SEO aside it's simply good design and improves the user experience. Search Engine Watch go on to discuss a tool for analysing the theme code for optimisation errors; optimising the .htaccess file to force the www or non-www version of your URL (using a 301 redirect) or force a trailing slash on URLs, both of which mediate the Google duplicate content penalty; and optimising the robots.txt file to point crawlers to sitemaps and block certain pages and directories from the search index.

Digital Marketer (Russ, 2014), in an article titled 'How to Do On-Page SEO in WordPress', prefer the Yoast SEO plugin for optimising five on-page SEO factors - slug, body text, images, title tag and meta description - and also for allowing sitemap creation, breadcrumb navigation, robots.txt file editing, setting of NOINDEX pages etc.

## Conclusion

There are a myriad of books and website articles which will suggest how you can best optimise your site for search engines and improve your current ranking with design improvements. Some are well researched and very readable; some are out-dated or overly technical. A quick search on Google for the terms SEO or Search Engine Optimisation will return free and paid results for firms who, for a fee, claim to guarantee improved search rankings. However webmasters, web developers or even site owners with a basic knowledge of website internals can apply some or all of the desired improvements as outlined above. SEO should be high on the list of items to address during the planning phase of any website design (or redesign). Ranking high in organic search results is a guarantee of increased traffic to your site and, by extension, increased business for your company. Alternatively you can choose to pay for placed ads or remain anonymous.

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