

# Swot analysis of 4 open-source web technologies in improving the functioning of the business firms

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**Abstract:** 4 important and current open source web technologies (Strong DC++, Google, LAMP, NetBeans IDE) have been taken and SWOT analysis has been done on them. The subject for the SWOT analysis is to “assess the potential of open source web technologies in transforming the business organization”. Detailed strengths, weaknesses, opportunities and threats of the open source web technologies have been discussed. Then, in great length, the Strength-Opportunity (SO), Weakness-Opportunity (WO), Strength-Threat (ST) and Weakness-Threat (WT) strategies have been given. Sources of information for this method have been secondary data collected from various internet sources and published books. 4 important and current open source web technologies (Strong DC++, Google, LAMP, NetBeans IDE) have been taken and SWOT analysis has been done on them. The SWOT analysis has been done using a template. The subject for the SWOT analysis is to “assess the potential of respective open source web technologies in transforming the business organization”. Sources of information for this method have been secondary data collected from various internet sources, published books and the information extracted from the above open source web technologies after installing them in the computer.

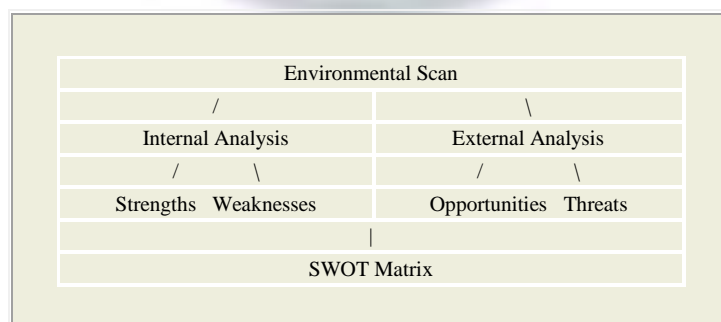
**Keywords :** open source, web technology, improve, business firm.

## Introduction to SWOT Analysis

A SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis is a useful tool to identify areas where business (or an individual) will need help and determine skills that business (or an individual) may want to acquire. A scan of the internal and external environment of the business (or an individual) is an important part of the strategic planning process. Environmental factors internal to the business firm usually can be classified as strengths (S) or weaknesses (W), and those external to the business firm can be classified as opportunities (O) or threats (T). Such an analysis of the strategic environment is referred to as a SWOT analysis. The SWOT analysis provides information that is helpful in matching the firm's resources and capabilities to the competitive environment in which it operates. As such, it is instrumental in strategy formulation and selection.  
 (Source - <http://www.quickmba.com/strategy/swot/>)

### SWOT Analysis Framework

The following diagram shows how a SWOT analysis fits into an environmental scan-



### The SWOT Matrix

A firm should not necessarily pursue the more lucrative opportunities. Rather, it may have a better chance at developing a competitive advantage by identifying a fit between the firm's strengths and upcoming opportunities. In some cases, the firm can overcome a weakness in order to prepare itself to pursue a compelling opportunity.

To develop strategies that take into account the SWOT profile, a matrix of these factors can be constructed. The SWOT matrix (also known as a TOWS Matrix) is shown below-

	Strengths	Weaknesses
Opportunities	S-O strategies	W-O strategies
Threats	S-T strategies	W-T strategies

- ✓ S-O strategies pursue opportunities that are a good fit to the company's strengths.
- ✓ W-O strategies overcome weaknesses to pursue opportunities.
- ✓ S-T strategies identify ways that the firm can use its strengths to reduce its vulnerability to external threats.
- ✓ W-T strategies establish a defensive plan to prevent the firm's weaknesses from making it highly susceptible to external threats.

### SWOT analysis method and examples, with SWOT template

Here are some examples of what a SWOT analysis can be used to assess-

- ✓ A company (its position in the market, commercial viability, et cetera)
- ✓ A method of sales distribution
- ✓ A product or brand
- ✓ A business idea
- ✓ A strategic option, such as entering a new market or launching a new product
- ✓ An opportunity to make an acquisition
- ✓ A potential partnership
- ✓ changing a supplier
- ✓ outsourcing a service, activity or resource
- ✓ An investment opportunity

Be sure to describe the subject for the SWOT analysis clearly so that people contribute to the analysis, and those seeing the finished SWOT analysis, properly understand the purpose of the SWOT assessment and implications.

### SWOT analysis template

Subject of SWOT analysis- (define the subject of the analysis here)

Strengths	Weaknesses
Advantages of proposition?	Disadvantages of proposition?
Capabilities?	Gaps in capabilities?
Competitive advantages?	Lack of competitive strength?
USP's (unique selling points)?	Reputation, presence and reach?
Resources, Assets, People?	Financials?
Experience, knowledge, data?	Own known vulnerabilities?
Financial reserves, likely returns?	Timescales, deadlines and pressures?
Marketing - reach, distribution, awareness?	Cash flow, start-up cash-drain?
Innovative aspects?	Continuity, supply chain robustness?
Location and geographical?	Effects on core activities, distraction?
Price, value, quality?	Reliability of data, plan predictability?
Accreditations, qualifications, certifications?	Morale, commitment, leadership?
Processes, systems, IT, communications?	Accreditations, et cetera?
Cultural, attitudinal, behavioural?	Processes and systems, et cetera?
Management cover, succession?	Management cover, succession?

<b>Opportunities</b>	<b>Threats</b>
Market developments?	Political effects?
Competitors' vulnerabilities?	Legislative effects?
Industry or lifestyle trends?	Environmental effects?
Technology development and innovation?	IT developments?
Global influences?	Competitor intentions - various?
New markets, vertical, horizontal?	Market demand?
Niche target markets?	New technologies, services, ideas?
Geographical, export, import?	Vital contracts and partners?
New USP's?	Sustaining internal capabilities?
Tactics - surprise, major contracts, et cetera?	Obstacles faced?
Business and product development?	Insurmountable weaknesses?
Information and research?	Loss of key staff?
Partnerships, agencies, distribution?	Sustainable financial backing?
Volumes, production, economies?	Economy - home, abroad?
Seasonal, weather, fashion influences?	Seasonality, weather effects?

#### **Four Open Source Technologies considered for SWOT analysis**

We will study 4 Open Source web technologies for SWOT analysis. For each technology under study, we will give a brief introduction and conduct SWOT analysis using a template.

##### **1. StrongDC++**

Strong DC++ is ultimate P2P (peer-to-peer) sharing application for all internet users around the world. One can easily find whatever he/ she needs in few seconds here. Strong DC++ is a client for sharing files in Direct Connect network. It is modification of program DC++ and it brings many new features. Since DC++ is developed under GNU/GPL, one can download the source and modify it.



(Source – <http://dcplusplus.sourceforge.net/>)

Strong DC++ is simple and maybe one of the best DC++ clones. When you set it up, one can download unlimited number of files of any kind. This is the best way to find free Mp3 songs and videos online. Many users don't know how to set it up, so one can visit DC++ Guide to find more useful information and steps how to properly configure this little magic tool. This P2P application is way better than other similar applications like LimeWire, Shareaza and others. One can find almost anything one is interested in within minutes and download them on ones computer from other users who are sharing stuffs just like you! In many cases downloads are really fast. If one hasn't tried it yet, it is definitely recommended to try it. One can download and install it anytime as, it's completely free! StrongDC++ has been designed to share legal material! Program developer isn't responsible for activities which the users use this software for.

##### **Main benefits of Strong DC++**

- ✓ **Safe segmented downloading**  
Download one file from more users simultaneously without corruption! This way of downloading dramatically improves download speed, especially for fast connections, and it's safer than classical downloading.

- ✓ **Partial file sharing**  
Allows downloading and uploading of parts of file which is being currently downloaded by you or other users. This increases the download speed and file expansion over network.
- ✓ **Download/ Upload speed limiter**  
Avoids a full line usage and leaves some speed for web browsing. It realizes that download speed limit is dependent on upload speed limit which is dependent on amount of opened hubs.
- ✓ **Automatic slow downloads disconnected**  
Disconnects sources if, speed is under certain value for certain time. If download speed during segmented downloading goes too low, the source is disconnected to avoid unnecessary hub usage.
- ✓ **Customization**  
One can set sounds according to situation, change colour scheme or icons, show popup balloons, see emoticons and many more...

Direct connect is a peer-to-peer file-sharing protocol. Direct connect clients, connect to a central hub so that; clients can directly download files from one another. Hubs feature a list of clients or users connected to them. Users can search for files and download them from other clients, as well as chat with other users.

### SWOT analysis of Strong DC++

Subject of SWOT analysis- Assessing the potential of **Strong DC++** in transforming the business organization

Strengths	Weaknesses
Advantages of proposition? Sharing large files, videos in terabytes in few minutes between internet users all around the world. ONLY technology available in the world right now which can search and download such large shared files of other users in few minutes through internet.	Disadvantages of proposition? One can get ADDICTED to DC++. This weakness is not just of DC++ in particular but, of the entire computer industry in general.
Capabilities? Safe segmented downloading, Partial file sharing, Download/ Upload speed limiter, Automatic slow downloads getting disconnected, Customization (of sound & appearance) , Filter of search results, Chat emoticons, the original seeders need to send out only one copy of the file for all the clients to receive a copy.	Gaps in capabilities? Movies, games, sexual materials, TV programs, software of size several TB's (Terabytes) can be downloaded in 4-5 minutes. All these material are not very helpful in personal and professional growth.
Competitive advantages? Best client to client file sharing application in the world.	Lack of competitive strength? None.
USP's (unique selling points)? Free of cost, downloaded and installed in 4-5 minutes, able to get large files and videos in 4-5 minutes.	Reputation, presence and reach? No weakness present as highest reputation as file sharing system. Has already reached millions and capability to reach many more.
Resources, Assets, People? With only internet connection and desktop PC required one can get connected to all the internet users in the world. All the files a user makes available for sharing in the hard drives and removable drives will be accessible to the other users.	Financials? No weakness present as costs nothing to the user.
Experience, knowledge, data? No experience necessary to run the application. Anyone can use it with few minutes training.	Own known vulnerabilities? As various materials are available through DC++, this slowly becomes a daily habit and the person starts living and entertaining himself/ herself in this virtual world to escape from the harsh realities of life. One can get so much engaged and addicted that, he/she does not even do daily regular work.
Financial reserves, likely returns? No investment required except for a desktop PC and internet connection; thousands of very large files/ videos worth lot of money can be freely downloaded.	Timescales, deadlines and pressures? None.
Marketing - reach, distribution, awareness? Primarily through internet and word-of-mouth. Student community of many universities using DC++ are most effective word-of-mouth marketers.	Cash outflow, start-up cash-drain? None.
Innovative aspects? Thousands of very large files/ videos worth lot of money can be freely downloaded in 4-5 minutes. Online chat with users can also take place. Recent hubs or favourite users can be stored.	Continuity, supply chain robustness? No weakness present as the ONLY technology in the world by which terabytes of data can be transferred between users connected with internet. Hence, a highly innovative tool for exchange of information between supply chain partners.

Location and geographical? Can be used anywhere in the world, not restricted to any one geographical location.	Effects on core activities, distraction? No weakness present as effective medium for sharing of large files on hard disk drives and removable drives (greater than 100 MB) through internet.
Price, value, quality? Free of cost, highest quality software in client to client sharing.	Reliability of data, plan predictability? No weakness present as helps in getting accurate data.
Accreditations, qualifications, certifications? Has 90% market share of the Direct Connect community.	Morale, commitment, leadership? No weakness present as helps in maintaining online communications with team members through chat sessions.
Processes, systems, IT, communications? Regarded as best technology in peer to peer file sharing in the world with filtering of search results feature available.	Accreditations, et cetera? No weakness present as best technology in its category.
Cultural, attitudinal, behavioural? Allows access to files of millions of users around the world. Access to files of a user can give idea about cultural background, attitude and behaviour of that user.	
Management cover, succession? Since it is open source software, all modifications made by any user would get added to the original source code. With the source code made available to everyone, the software can be regularly modified and updated.	

<b>Opportunities</b>	<b>Threats</b>
Market developments? Demand for large file sharing will increase with time.	Political effects? None
Competitors' vulnerabilities? Software is open source. Hence no competitors as such. Other competitive software takes more time to download and upload files.	Legislative effects? Ban on use of DC++ will force firms to look for other avenues for file transfer.
Technology development and innovation? With 90% of world market share, continuous updation is done by the user community.	Environmental effects? None
Global influences? Users from all over the world can contribute towards development of DC++ at no cost.	IT developments/ New technologies, services, ideas? Technology is increasing 200% every 18 months. Hence, very high possibility of double efficient technology coming.
New markets, vertical, horizontal? Can be used in various industries having need for large file transfer. For instance, cinema, medical, research et cetera	Market demand? No threat as market demand will always be there.
New USP's? Any file can be searched. Filter the search and download the needed file in minutes.	Sustaining internal capabilities? Can be affected by addiction.
Tactics - surprise, major contracts, et cetera? DC++ should be only used for business files. Ban on using DC++ for anything else like movies/ sexual material.	Insurmountable weaknesses? None
Information and research? Continuous research to improve DC++ is possible by millions of users.	Loss of key staff? Addiction to DC++ can cause decrease in productivity of employees.
Partnerships, agencies, distribution? Communication with partners can increase tremendously especially in cases of sharing of files greater than 10 MB.	Sustainable financial backing? Can be affected by addiction.
Volumes, production, economies? Huge information exchange of large files can be done in just few minutes. Productivity will thus, increase across the organization.	Economy - home, abroad? Can be affected by addiction.
Seasonal, weather, fashion influences? None.	Obstacles faced or Lifestyle trends? Addiction to DC++ can make a person sit before the computer for several hours continuously. This can create a lot of physical body problems like weight increase, decrease in eyesight, immobility of fingers, spinal cord pain, neck pain et cetera. People, who get addicted, find it very difficult to close an ongoing game/ movie/ chat session et cetera and complete the activities of real life. They find DC++ as an avenue to ESCAPE from the difficulties of real life.

Enumeration of tremendous benefits and SWOT analysis of the above technology (Strong DC++) has been done. The “weakness” points out any ill-effects of the above technology on human beings. Despite innumerable advantages of DC++ mentioned above, it has some shortcomings. Most of the human beings are undergoing a lot of stress now-a-days. Performance much higher than their body capacity is expected from most of the human beings.

When some humans fail to deliver they try to seek solace and comfort from their stress by getting hooked on to various technologies like TV, games, chat, movies, internet browsing, sexual material et cetera. This is a false illusion as the various technologies do not communicate back to the individuals. It is always a ONE way communication from the technology to the individual and, not the other way around. DC++ is one such tool which makes VERY EASILY available various technologies like TV, games, chat, movies, sexual material et cetera on one's computer. Movies, games, software of size several GB's (GigaBytes) can be downloaded in 4-5 minutes from any computer in the world connected on internet. An individual can also chat to any user on DC++.

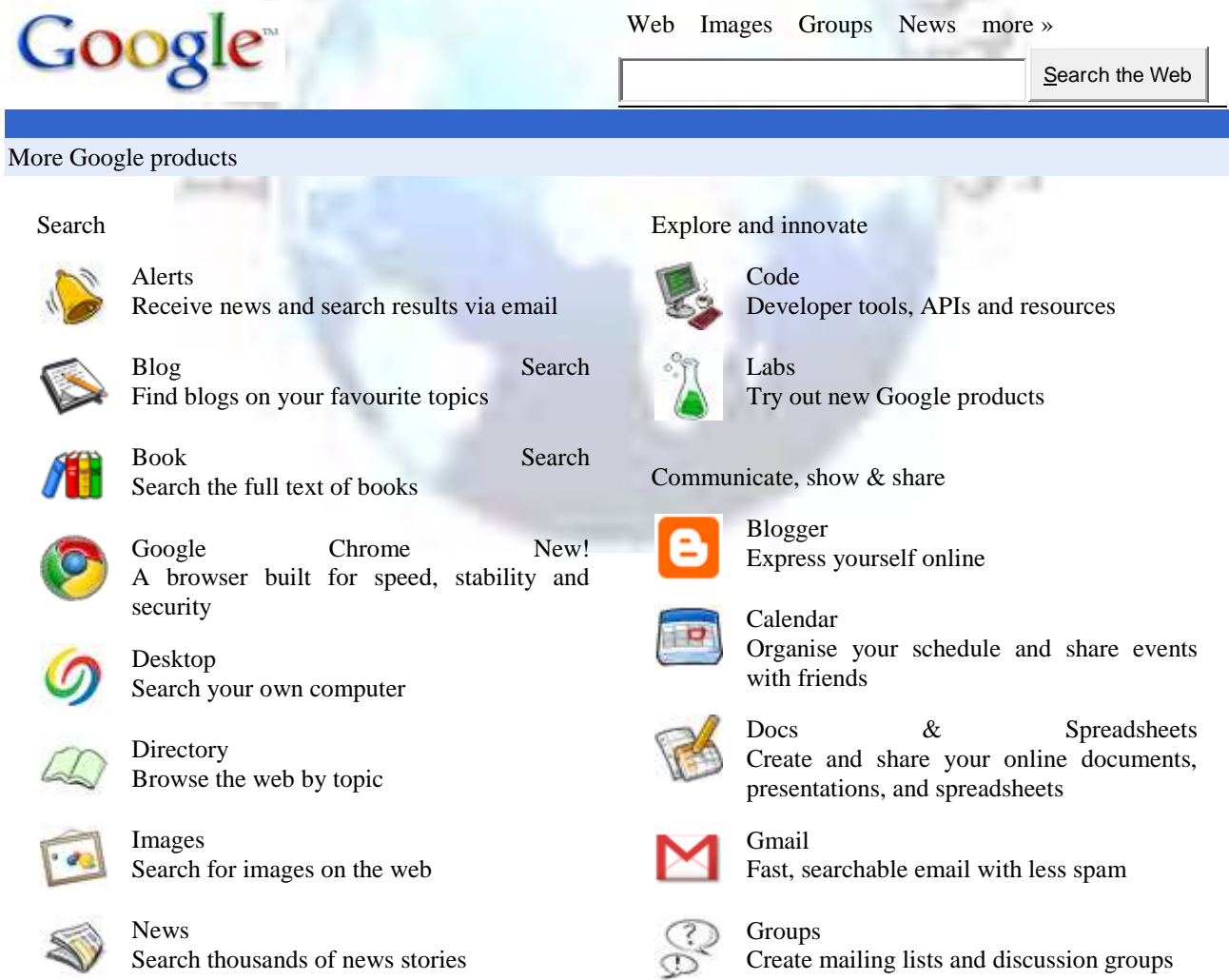
It has been observed by me that, several bright students in top institutions of India and employees in companies get ADDICTED to DC++. Whenever students feel frustrated, depressed and want to have some entertainment, they open DC++ and start blindly viewing various materials available over there. This slowly becomes a daily habit and the person starts living and entertaining him/ her in this virtual world to escape from the harsh realities of life. Some of the students and employees can get so much engaged and addicted that, they do not even attend regular classes and regular work respectively. They find it very difficult to close an ongoing game/ movie/ chat session et cetera and complete the activities of real life. They find DC++ as an avenue to ESCAPE from difficulties of real life.

Apart from seeing the negative psychological effects, it can take a physical toll on the body too. Addiction to DC++ makes a person sit before the computer for several hours continuously. This creates a lot of physical body problems like weight increase, decrease in eyesight, immobility of fingers, spinal cord pain, neck pain et cetera. DC++ like any other technology, despite its several benefits has the potential to have harmful effects on the computer savvy people of this world.
















## 2. Google Technologies

















(Source – www.google.com)

Various open source technologies of Google are shown below -



The image shows a screenshot of the Google homepage. At the top, the Google logo is on the left, and navigation links for 'Web', 'Images', 'Groups', 'News', and 'more »' are on the right. Below the logo is a search bar with a 'Search the Web' button. A blue banner below the search bar reads 'More Google products'. The page is divided into two columns of product links, each with an icon and a 'Search' button.

Search	Explore and innovate
 Alerts Receive news and search results via email	 Code Developer tools, APIs and resources
 Blog Find blogs on your favourite topics	 Labs Try out new Google products
 Book Search the full text of books	<b>Communicate, show &amp; share</b>
 Google Chrome A browser built for speed, stability and security	 Blogger Express yourself online
 Desktop Search your own computer	 Calendar Organise your schedule and share events with friends
 Directory Browse the web by topic	 Docs & Spreadsheets Create and share your online documents, presentations, and spreadsheets
 Images Search for images on the web	 Gmail Fast, searchable email with less spam
 News Search thousands of news stories	 Groups Create mailing lists and discussion groups

	<b>NotebookNew!</b> Clip and collect information as you surf the web			<b>Orkut</b> Meet new people and stay in touch with friends
	<b>Scholar</b> Search scholarly papers			<b>Picasa</b> Find, edit and share your photos
	<b>Specialized</b> Search within specific topics	<b>Searches</b>		<b>Talk</b> IM and call your friends through your computer
	<b>Toolbar</b> Add a search box to your browser			<b>Translate</b> View web pages in other languages
	<b>University</b> Search a specific school's website	<b>Search</b>		<b>YouTube</b> Watch, upload and share videos
	<b>Web</b> Search over 8 billion web pages	<b>Search</b>		
	<b>Web Search</b> Do more with search	<b>Features</b>		<b>Go mobile</b>
				<b>Mobile</b> Use Google on your mobile phone
				<b>SMS</b> Use text messaging for quick info
				<b>New!</b>
				<b>Make your computer work better</b>
				<b>Pack</b> A free collection of essential software

**SWOT analysis of Google Technologies**

Subject of SWOT analysis- Assessing the potential of **Google Technologies** in transforming the business organization

<b>Strengths</b>	<b>Weaknesses</b>
Advantages of proposition? Almost everything done on computer, can be done for free through Google technologies	Disadvantages of proposition? One can become addicted to internet browsing, blogging, online chat, email checking, social websites like 'orkut'/ 'googlegroups' et cetera. One can get attacked by email "scammers" or get intruded into the computer by "hackers" via email virus or websites containing virus.
Capabilities? Get alerts, shop, blog, get books, get journals, get images, get maps, get travel directions, get weather, get code, get calendar, join groups, get videos, get software, edit photos, get browser, get mail, get translation, get calculator, get voice and video calls, track package, get stocks, get mobile phone services, get earth satellite images ... and many more.	Gaps in capabilities? None.
Competitive advantages? Myriad of services offered for free by Google are unique in the world. Services of such kind and quality are not offered by any other company.	Lack of competitive strength? None.
USP's (unique selling points)? All services offered by Google for free, are its USP's. Google spearheaded the Open source movement.	Reputation, presence and reach? No weakness present as Google technologies have the highest reputation and reach all around the world.
Resources, Assets, People? Google is one of the biggest computer technology companies in the world. Almost every computer user in the world has used Google in one way or the other. Best computer people want to work for Google.	Financials? No weakness present as Google technologies backed by Google, one of the most powerful computer companies in the world. Hence, any firm using Google technologies should be sure of using them for free without any hassles for the next

	decade.
Experience, knowledge, data? Most advanced computer technologies are used by Google. They are all primarily open source.	Own known vulnerabilities? None.
Financial reserves, likely returns? Even though, it offers almost all its services for free, one of the most profitable companies in the world. By using Google free services, any firm will save a lot of money.	Timescales, deadlines and pressures? None. A firm can start using Google technologies whenever it feels like.
Marketing - reach, distribution, awareness? Through internet, television, print media and word-of-mouth, Google has become a household name across the globe.	Cash flow, start-up cash-drain? None, as Google technologies have zero cost.
Innovative aspects? Almost everything offered by Google has been an innovation, never offered before by any other company.	Continuity, supply chain robustness? No weakness present as with Google technologies like Gmail, Skype, Google Mobile, Google Groups, Google Docs, eBlogger, software Google Pack (including Open Office), Package Tracking et cetera one can remain connected to the supply chain partners at all times with zero cost.
Location and geographical? Though headquartered in USA, Google services can be accessed anywhere in the world at no cost.	Effects on core activities, distraction? No weakness present as Google technologies will increase the efficiency of employees tremendously. However, precaution to avoid any type of addiction should be taken.
Price, value, quality? Highest quality, unique and unparallel services are given by Google at NO cost.	Reliability of data, plan predictability? No weakness present as with Google technologies data will always remain safe. Any documents saved in Google technologies like Gmail, Google Groups, Google Docs ... can be accessed from anywhere in the world. There is no need ever to delete them as sufficient storage is provided by Google.
Accreditations, qualifications, certifications? Google services are regarded as one of the best in the world.	Morale, commitment, leadership? No weakness present as employees of firms using Google technologies will have a lot of pride that, they are learning and working in the best computer technologies of the world. This knowledge will help them a lot in their professional career development.
Processes, systems, IT, communications? Google services employ best computer technologies. They are often leaders in introducing a new computer technology.	Management cover, succession? Management has to take due care that, no one falls into any of the computer addictions described earlier.
Cultural, attitudinal, behavioural? Strong belief in sharing resources for free. Users on receiving free Google services, tend to become more philanthropic in their lives. Taking cue from Google, employees in many firms have started enjoying their work and helping others and giving things for free.	
Management cover, succession? Management of all the firms across the globe have firm faith in Google technologies. As long as, Google continues to come up with innovative free services, firms around the world will continue to use them.	

<b>Opportunities</b>	<b>Threats</b>
Market developments? Google is foraying into new areas every year with innovations like Mobile services, Voice and video calls, free software, earth images, internet browser, translations, journal searches et cetera. Employees in firms are using Google in all the new areas. Any company which is using these new services can extend the same to its customers and supply chain partners as well.	Political effects/ Legislative effects? Any country can impose a wrongful ban on free Google technologies. However, just the reverse has been true. As discussed in detail in this thesis, many countries like UK, Germany, Austria, US Govt, and India are implementing free open source web technologies including Google technologies in a big way.
Competitors' vulnerabilities? No company in the world comes even close to offering so many free services like Google on the internet. In fact, free services revolution has been greatly spearheaded by Google. Any firm which embraces Google technologies thus, stays ahead of all its competitors.	Environmental effects? No threat as anyone who cannot afford expensive software like Microsoft products, SAP ... can go for Google's much better free open source software. Thus, millions of people have got access to best quality software at no cost.
Industry or lifestyle trends? Using Google technologies, the	IT developments? No threat as Google is leading,



employees learn the latest technologies. The productivity of employees becomes the highest in the industry by using the most high-tech Google technologies.	most of the developments in the IT field. Thus, any firm which uses Google is working with the most cutting-edge technology.
Technology development and innovation? Google technologies continuously innovate themselves every year with the most advanced information technologies. Thus, employees in firms using them also remain equipped with latest information knowhow and innovate continuously.	Competitor intentions - various? No threat as proprietary closed code companies like Microsoft have also realized the importance of open source technologies (e.g. Google) and trying to join the bandwagon.
Global influences/ Geographical, export, import? New products from Google have a global impact and following. Any firm using Google services will also have acceptability with customers and supply chain partners all around the world.	Market demand? No threat as any company using Google technologies in customer service will have great acceptability from the customer. Because, the customer also wants to learn and interact in the latest technology.
New markets, vertical, horizontal/ New USP's/ Niche target markets? As new technologies arrive, new markets will open up. For instance, customer services can be started on mobile phones using Free Google Mobile services.	New technologies, services, ideas? No threat as Google continuously comes with new technologies, services, and ideas. Any firm using Google technologies will automatically use new technologies, services, and ideas introduced by Google.
Tactics - surprise, major contracts, et cetera? Google can collaborate with open source companies to bring new products. Or, any firm can develop a new product on its own from the current source code.	Sustaining internal capabilities? No threat as using free Google technologies will save a lot of money. This money can be used in R&D, company's development to strengthen the company's internal capabilities.
Information and research? Being the leader in using most advanced information technologies, Google spends a lot of money on R&D. Any firm using Google services will also get benefited from Google's R&D effort. If the firm wants. It can collaborate with Google in developing a new information technology product as well.	Obstacles faced? No weakness present as by increasing the awareness about utility of Google technologies to the firm employees, this obstacle can be removed.
Partnerships, agencies, distribution? Google partners' with various open source web technology companies like Sun Microsystems et cetera to bring new technologies.	Insurmountable weaknesses? None.
Volumes, production, economies? Employees in manufacturing firms or service firms using Google technologies will have highest productivity. Thus, production in manufacturing firms or service volumes in service firms should increase.	Loss of key staff? Threat can be minimized by ensuring that, no staffs gets addicted to any addictions described earlier.
Seasonal, weather, fashion influences? None	Sustainable financial backing? No threat as money saved by using Google technologies will help in keeping the company financially healthy.
	Economy - home, abroad? No threat as whether the economy is bad or good, Google technologies will help the firm tremendously in all possible scenarios.

Enumeration of tremendous benefits and SWOT analysis of the above technology (Google) has been done. The "weakness" points out any ill-effects of the above technology on human beings. Despite numerous benefits of Google technologies, there are some negative side-effects of these as well. To free oneself from some stress and get some entertainment, an individual can become addicted to internet browsing or blogging. Or one can keep on checking emails several times in a day. One may find himself/ herself getting engaged in online chat by their 'contacts' which would be hard to refuse. Regular visit to social sites like 'orkut', 'googlegroups' can take away a lot of ones productive time. There is always the lurking danger of getting harmed by 'scammers' on the internet via email, chat, blogs, messages et cetera. Various 'hackers' can gain access to ones computer by attaching undetected malicious software ('malware') when one visits some websites, opens an email containing virus et cetera.

### 3. LAMP

(Source - Open Source Web Development with LAMP: Using Linux, Apache, MySQL, Perl, and PHP by James Lee, Brent Ware)

LAMP (Linux – operating system, Apache – web server, MySQL - database, and PHP/Perl/Python – web page development language) is an excellent website application development framework. LAMP websites are cross-platform across Linux, Windows, UNIX, and other servers, as well as, across clients including Windows, Mac, Linux and others. Strength of LAMP approach is its cost, cross-platform capability and ease of development. With LAMP, capacity to

handle traffic of a website increases tremendously. Linux, Apache, Perl/ PHP/ Python are market leaders in their respective areas.

Linux is the simplest, cheapest, best and most reliable operating system. Apache is used by 80% of the websites of the world. MySQL is the #2 database in the world after Oracle. PHP is the most used web development language. Thus, LAMP is one of the best website application development tools. LAMP is low-cost, open-source, “geeky” and open source community-supported. LAMP is recommended for most web sites because of its cost, PHP’s simple web integration, and Apache’s security.

## The Web Explained

The World Wide Web may seem like magic, until you understand how it works. A brief introduction of what happens when one clicks a link, enters a URL into the location box, or otherwise requests a web page is given. This description is necessary to understand how the different components of the Web fit together and how the tools presented, fit into the Web’s framework.

## How It Works

To give you a clear picture of how the parts discussed interrelate, Figure LAMP.1 shows a pictorial overview of the Web. The Web is usually accessed through a browser, the best known of which are Mozilla Firefox and Internet Explorer. There are many alternative browsers, including Google Chrome, Galeon, Konquerer, OmniWeb, and Opera, and also text-based options such as Lynx, links, and w3g.

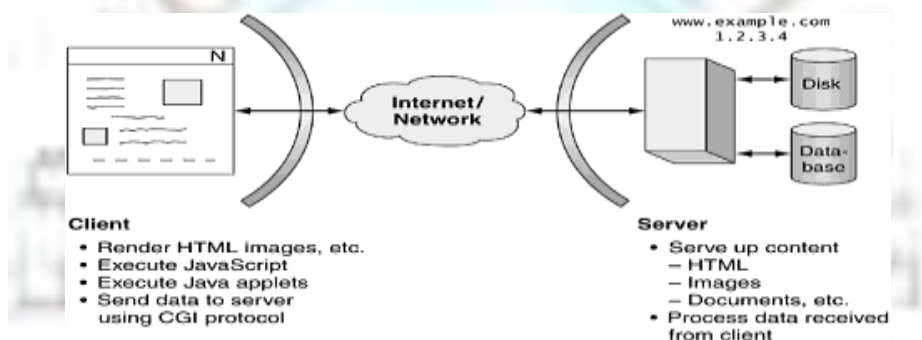


Figure - How the Web works

(Source - Open Source Web Development with LAMP: Using Linux, Apache, MySQL, Perl, and PHP by James Lee, Brent Ware)

When one clicks a link or types a URL into the location box (for instance, www.example.com), the browser makes a socket connection (also known as a network connection) to the server www.example.com. The name www.example.com maps to an Internet address, which is a number in the form 1.2.3.4—an IP, or dotted quad. The browser connects to www.example.com using port 80, the port that the server operating system opens for such HTTP requests. This port is standardized. Other ports are used for other Internet connections- 22 for SSH, 23 for Telnet, and so on. It should be made clear that IP port numbers are not related to the physical ports of the machine (COM1 and COM2, USB, Firewire, parallel printer port, et cetera.).

Based on what the client requests, the server serves up, or delivers, information to the client. The type of data the server serves up includes plain text (this includes HTML), images, Java applets, various types of documents, PDFs, et cetera. This content that the server delivers can be generated by the server in one of the several ways- static, dynamic, or embedded. Each of these is discussed later.

The client's job is to receive from the server a stream of text, images, Java applets, documents, and so on and render, or appropriately display, them. The client also executes any JavaScript code and Java applets that are served up. JavaScript should not be confused with Java; they are two different things. JavaScript, originally called LiveScript, is a language created by Netscape (www.netscape.com) that executes within the browser to do clever things like pop up new windows, image rollovers, and other nifty client-side things. Java is a platform-independent programming language created by Sun Microsystems (www.sun.com) that is often used to create applets that are downloaded and executed within the browser. The client can send form data to the server using the Common Gateway Interface (CGI) protocol. The server can then process this data in whatever way it chooses. There are two sides to the processing that goes on - the client side and the server side. These two terms mean pretty much exactly what they seem to mean. The cool thing about this, as with many other things Web, is that once protocols are established, what happens on the client side or the

server side is independent. If the client wants to block pop-up ads, there isn't much the server can do about it. If someone develops a new server-side application or improves an old one, the client doesn't care, as long as protocols are adhered to.

### SWOT analysis of LAMP

Subject of SWOT analysis - Assessing the potential of LAMP in transforming the business organization.

Strengths	Weaknesses
<p>Advantages of proposition? LAMP (Linux – operating system, Apache – web server, MySQL - database, and PHP/Perl/Python – web page development language) is an excellent framework for website application development. LAMP websites are cross-platform across Linux, Windows, UNIX, Mac and others. Strength of LAMP approach is its nil cost, cross-platform capability and ease of development. With LAMP, capacity to handle traffic of a website increases tremendously. Linux, Apache, Perl/ PHP/ Python are market leaders in their respective areas.</p> <p>Any firm which uses LAMP tool to build its website will save a lot of money compared to building website from proprietary software. Also the website made from LAMP will be more robust than the one built from proprietary software.</p>	<p>Disadvantages of proposition? This technology can make it possible to have very high quality websites for free. This can lead to proliferation of websites on the internet. This could promote internet browsing and usage to a great extent.</p> <p>Almost everything from buying groceries, purchasing travel tickets to booking hotels et cetera could be done through internet. This could reduce the mobility of humans to a great extent.</p>
<p>Capabilities/ Competitive advantages/ USP's (unique selling points)? Linux is the simplest, cheapest, best and most reliable operating system. Apache is used by 80% of the websites of the world. MySQL is the #2 database in the world after Oracle. PHP is the most used web development language. Thus, LAMP is one of the best website application development tools. LAMP is low-cost, open-source, “geeky” and open source community-supported. LAMP is recommended for most web sites because of its cost, PHP’s simple web integration, and Apache’s security.</p>	<p>Gaps in capabilities? LAMP applications need to become more robust for very large enterprise-level websites handling millions of transactions every day.</p>
<p>Experience, knowledge, data/ Resources, Assets, People/ Innovative aspects/ Accreditations, qualifications, certifications? The entire open source community in the world comprising of several big firms like Sun Microsystems, Google et cetera and millions of software engineers will be continuously adding highest technology features to the existing LAMP tools in the future.</p> <p>Thus, firms using LAMP framework can be assured that, they will always be working with the most cutting edge of software technology.</p>	<p>Lack of competitive strength? None.</p>
<p>Financial reserves, likely returns? Any firm using highly reliable LAMP website is likely to get very high returns on investment.</p>	<p>Reputation, presence and reach? No weaknesses as LAMP websites have the highest reputation for quality. LAMP websites are being used by Governments and companies all around the globe.</p>
<p>Marketing - reach, distribution, awareness? Using robust LAMP website would be one of the best ways to give great service to millions of customers.</p> <p>Since, LAMP is open source; the website can be improved for better customer service very easily, without any hassles and costs.</p>	<p>Continuity, supply chain robustness? No weakness present as supply chain robustness will be very high with LAMP tools.</p>
<p>Location and geographical? LAMP is open source and available for free on the internet. The LAMP resources can be obtained and updated from anywhere in the world.</p> <p>Thus, a LAMP website is not restricted to any geographical location.</p>	<p>Effects on core activities, distraction? Precaution should be taken to avoid falling into the trap of internet addiction.</p>
<p>Price, value, quality? LAMP websites will be of highest quality with least or no price.</p>	<p>Reliability of data, plan predictability? No weakness present as LAMP websites have the technology to have highest data integrity, accuracy and reliability.</p>
<p>Processes, systems, IT, communications? LAMP tool has the most advanced web building technologies in the world.</p>	<p>Morale, commitment, leadership? No weakness present as working with LAMP, one of the best web technologies in the world will instil in the people a lot of satisfaction and pride. They will be highly motivated to perform very well.</p>
<p>Cultural, attitudinal, behavioural? People working with LAMP will be highly satisfied. This will show in their increased output.</p>	
<p>Management cover, succession? Management of all companies will support LAMP web building technology.</p>	

Opportunities	Threats
Market developments/ New markets, vertical, horizontal/ Niche target markets? Robust LAMP websites will have a lot of extra top quality features for great customer service. This will help the firms attract more customers. Customers will get attracted to those websites which are simple to use but, offer very good features.	Political effects/ Legislative effects? No perceptible threat as the possibility of Governments imposing ban on websites developed from LAMP is very bleak. Many Governments like China, USA, Africa, India, UK, Germany, Austria ... have adopted open source technologies and websites developed from LAMP on a very large scale.
Competitors' vulnerabilities? The WISA (Windows, Internet Information Server, SQL, and ASP) framework for web application development is highly costly as compared to LAMP. WISA is proprietary software and not open source as LAMP.	Environmental effects? No threat as there are no ill-effects of LAMP technology on the environment.
Industry or lifestyle trends/ Global influences/ Geographical, export, import? Since, LAMP websites have best quality and least cost input, most of the companies around the world are now using open source LAMP framework.	Obstacles faced/ Loss of key staff/ Sustaining internal capabilities? Precaution has to be taken that employees do not get addicted to internet browsing and usage. Sitting before computer for hours will reduce the mobility of people as well.
Technology development and innovation/ Information and research? The entire open source community will continue to improve the LAMP tools in the future. All LAMP users can be assured of working with the latest computer technology.	Insurmountable weaknesses? None.
Tactics - surprise, major contracts, et cetera? Many companies like Google, Sun Microsystems aggressively support open source movement. These and other millions of open source programmers can always collaborate to thwart any threat to open source software.	Sustainable financial backing? No threat as highly robust websites developed from LAMP at hardly any cost will save a lot of expenses for any firm.
Partnerships, agencies, distribution/ Business and product development? Firms using robust LAMP websites can do B2B and B2C e-commerce with their supply chain partners and customers respectively.	Economy - home, abroad? No threat as websites developed from LAMP hardly incur any cost. Thus, these websites will not get affected by the downturn in the global or the domestic economy.
Volumes, production, economies? Productivity and efficiency of firms will increase if they use robust, top quality, error-free LAMP websites.	
Seasonal, weather, fashion influences? None.	

Enumeration of tremendous benefits and SWOT analysis of the above technology (LAMP) has been done. The “weakness” points out any ill-effects of the above technology on human beings.

This technology can make it possible to have very high quality websites for almost free. This can lead to proliferation of websites on the internet. This could promote internet browsing and usage to a great extent. Almost everything from buying groceries, purchasing travel tickets to booking hotels et cetera could be done through internet. This could reduce the mobility of humans to a great extent.

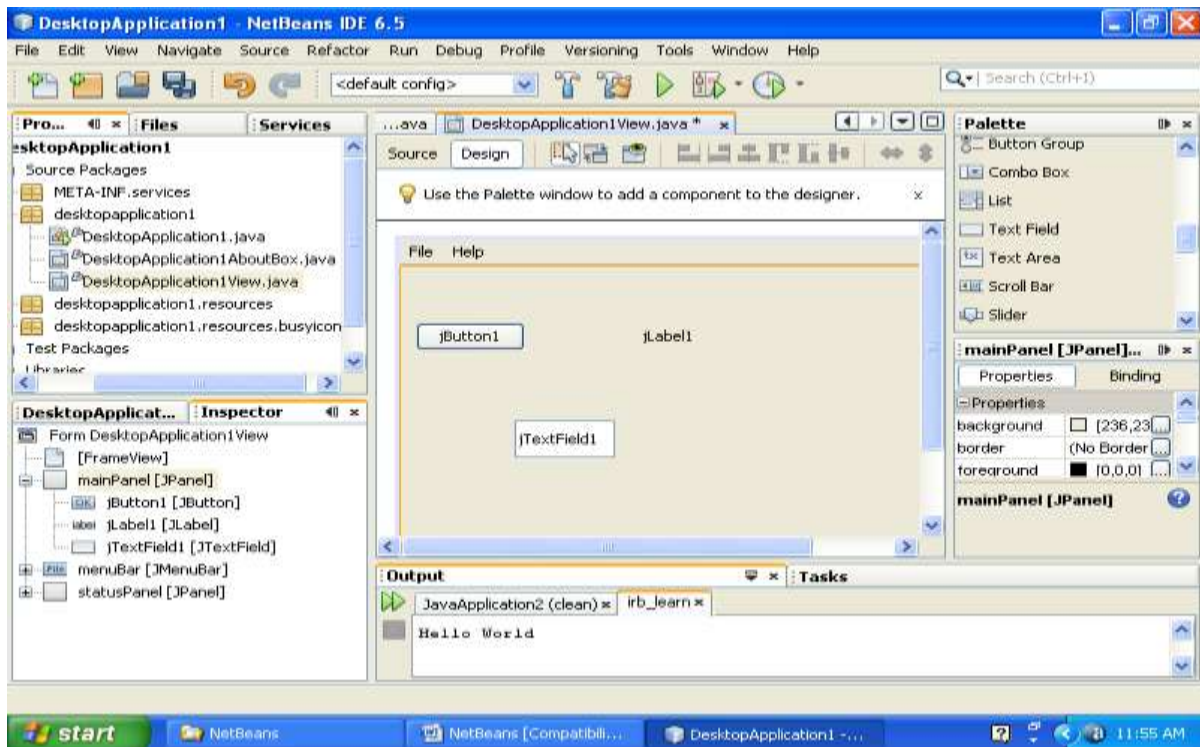
#### 4. NetBeans IDE

(Source – www.netbeans.org and NetBeans IDE)

Through NetBeans Integrated Development Environment we can build desktop PC applications, web applications, mobile phone applications, games, plug-ins (like Google search toolbar), ruby applications, PHP applications and so forth. This technology makes it possible to develop for free very high quality websites, mobile applications, games, desktop applications and plug-ins very easily. The websites and applications will have much more features like web services, SOA et cetera. This can lead to proliferation of websites on the internet and more games for people to get addicted to. NetBeans IDE is based on software from netbeans.org, which has been dual licensed under the Common Development and Distribution License (CDDL) and the GNU General Public License version 2 with Classpath exception. NetBeans IDE has been developed by Sun Microsystems.

#### About the GUI Builder

In Java applications, the components that comprise a GUI (Graphical User Interfaces) are stored in containers called forms. The Java language provides a set of user interface components from which GUI forms can be built. The IDE's GUI Builder assists the user in designing and building Java forms by providing a series of tools that simplify the process.



F4.9 – NetBeans IDE (Source – www.netbeans.org and NetBeans IDE)

### The IDE's Java GUI Tools

The IDE provides several tools to simplify the process of building GUI's including-

- ✓ GUI Builder. The primary workspace within which GUI design takes place in the IDE. The GUI Builder enables the user to lay out forms by placing components where you want them and by providing visual feedback in the form of guidelines.
- ✓ Inspector window. Displays a tree hierarchy of all components contained in the currently opened form. Displayed items include visual components and containers, such as buttons, labels, menus, and panels, as well as non-visual components such as timers and data sources.
- ✓ Palette window. A list containing all of the components available for adding to forms. You can customize the Palette window to display its contents as icons only or as icons with component names.
- ✓ Properties window. Displays the editable settings for the currently selected component.
- ✓ Connection wizard. Assists in setting events between components in a form without the need of writing code manually.
- ✓ Palette Manager. Enables you to add, remove, and organize Palette window components such as Swing components, AWT components, Layouts, and beans.

### SWOT analysis of NetBeans IDE

Subject of SWOT analysis- Assessing the potential of **NetBeans IDE** in transforming the business organization

Strengths	Weaknesses
<p>Advantages of proposition? Through NetBeans Integrated Development Environment any firm can build desktop PC applications, web applications, mobile phone applications, games, plug-ins (like Google search toolbar), ruby applications, and PHP applications for free.</p> <p>Thus, saving millions of dollars for the firm and delivering highest quality computer applications.</p>	<p>Disadvantages of proposition? This technology makes it possible to develop very easily for free, very high quality websites, mobile applications, games, desktop applications and plug-ins. This can lead to proliferation of websites on the internet and more games for people to get addicted to. To add more to the problems, through NetBeans IDE, Mobile web applications can be built very easily. Thus, the entire internet and games can be accessed from the mobile phone/ cell phone itself. There will be no need to have a computer for it. This will lead to internet usage and games addiction to very high unprecedented levels.</p>
<p>Capabilities? Applications, plug-ins and games for desktop PC, mobile and the web can be made by any firm.</p>	<p>Gaps in capabilities? None.</p>

Competitive advantages/ USP's (unique selling points)/ Accreditations, qualifications, certifications? Applications, plug-ins and games for desktop PC, mobile and web can be made very easily using GUI (graphical user interface) in free NetBeans IDE. Currently, NetBeans IDE is one of the BEST technologies in the world to make applications, plug-ins and games.	Lack of competitive strength? None.
Resources, Assets, People? NetBeans can be freely downloaded and installed on the PC or the laptop. Even a college student can work on NetBeans and contribute a lot by building his/ her own applications.	Reputation, presence and reach? No weakness present as highest reputation and ability to reach every nook and corner of the world.
Experience, knowledge, data? NetBeans IDE is one of the BEST technologies in the world to make applications, plug-ins and games. It has been developed by Sun Microsystems, one of the leading companies of the world for last 15 years. All the experience and knowledge of Sun Microsystems has gone into making NetBeans IDE.	Own known vulnerabilities? None.
Financial reserves, likely returns? Any company which uses NetBeans IDE is going to make the world's best quality applications for free. Customers, supply chain partners and employees using these world class applications would be greatly satisfied. Thus, returns would be very high.	Continuity, supply chain robustness? No weakness because if the firms entire supply chain starts using same NetBeans applications via internet, then communication and productivity of the supply chain will increase tremendously.
Marketing - reach, distribution, awareness? With NetBeans IDE applications, one would be able to reach the prospective customers through internet as well as mobile phones.	Effects on core activities, distraction? No weakness present as the core business activities will get highly streamlined and efficient with the use of highest technology NetBeans applications.
Innovative aspects? As true with any open source software, the huge user community of NetBeans IDE and Sun Microsystems will continue to add better and more features to NetBeans IDE with the passage of time. Thus, any firm using NetBeans IDE will continue to innovate.	Reliability of data, plan predictability? No weakness present as data in NetBeans will always remain safe with highest possible standards of security.
Location and geographical? By using NetBeans IDE applications, all constraints of geographical locations will be removed. Firms can have communication using internet and mobile phones.	Morale, commitment, leadership? No weakness present as people working with highest technology NetBeans applications will have a very high morale and satisfaction level. This will lead to high level of commitment and productivity.
Price, value, quality? NetBeans IDE applications are of the highest quality and have least or no cost.	
Processes, systems, IT, communications? NetBeans IDE is made from best, highly robust and proven computer technology. Methodology of making highest quality applications is the easiest in NetBeans IDE. Thus, all NetBeans applications have sound processes and systems.	
Cultural, attitudinal, behavioural? People making and using world class NetBeans applications will have positive self-esteem and be highly satisfied with their lives.	
Management cover, succession? Management of all the companies will approve and support usage of free NetBeans IDE technology developed by Sun Microsystems, the leading software company of the world. 100% of Fortune 500 companies are now using free software.	

<b>Opportunities</b>	<b>Threats</b>
Market developments? As awareness about NetBeans IDE utility will increase, more people will start using it. Thus, firms using NetBeans IDE will find more acceptability in the market.	Political effects/ Legislative effects? Regulations can come from Government to not use NetBeans IDE. However, the reverse is true. Most of the Governments have started using open source technologies to escape from the costs of proprietary software technologies.
Competitors' vulnerabilities? Very few technologies are there which can match the cost and performance of NetBeans IDE. Thus, the firms using NetBeans will have a distinct advantage over those firms which do not use NetBeans IDE.	Environmental effects? No threats as there are no harmful effects of open source technologies on the environment.
Industry or lifestyle trends? Governments of most of the countries have started using open source technologies like NetBeans IDE to escape from the cost of proprietary software. 100% of Fortune 500 companies are now using free software. 10 years ago that was barely 10%. Firms using NetBeans IDE will be at a distinct advantage.	New technologies, services, ideas/ IT developments? No threats as Sun Microsystems and the huge open source user community will always ensure that NetBeans IDE is employing cutting-edge software technology. Thus, all the firms using NetBeans IDE will always be

	using latest computer technology.
Technology development and innovation/ Business and product development/ Information and research? Huge user community of NetBeans IDE and Sun Microsystems continue to add better and more features to NetBeans IDE with the passage of time. Thus, any firm using NetBeans IDE will continue to develop and innovate technologically.	Sustaining internal capabilities/ Obstacles faced/ Loss of key staff? Precaution should be taken that employees do not fall into the addiction trap of internet browsing and playing games on computer or mobile phones.
Global influences/ Geographical, export, import? Firms using world class NetBeans IDE will find acceptability all around the globe.	Insurmountable weaknesses? None.
New markets, vertical, horizontal/ Niche target markets/ Niche target markets/ New USP's? All firms that wanted to use IT earlier but, could not due to costs are potential markets. Because, now these firms can use IT due to availability of free open source web technologies.	Economy - home, abroad? No threats as all around the globe firms using NetBeans IDE will be at a tremendous advantage due to tremendous cost saving. This will not be affected much by the fact whether the economy is doing good or bad.
Tactics - surprise, major contracts .../ Partnerships, agencies, distribution? A firm using NetBeans IDE can easily collaborate with other firms using applications made from NetBeans IDE. The entire supply chain can be connected using NetBeans IDE.	
Volumes, production, economies? Using NetBeans IDE high quality applications, the work output can be the highest at the least possible costs. This will result in great increase in efficiency of the firm.	
Seasonal, weather, fashion influences? None.	

Enumeration of tremendous benefits and SWOT analysis of the above technology (NetBeans IDE) has been done. The “weakness” points out any ill-effects of the above technology on human beings. This technology makes it possible to develop for free very high quality websites, mobile applications, games, desktop applications and plug-ins very easily. The websites and applications will have much more features like web services, SOA et cetera. This can lead to proliferation of websites on the internet and more games for people to get addicted to.

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### Conclusions of SWOT Analysis

The verdict after the SWOT analysis is very clear. The **future is OPEN SOURCE WEB TECHNOLOGIES**. Open source is more mature, more stable, more robust and better supported than closed code proprietary technologies. The entire world including major Governments and Fortune 500 companies have recognized open source web technologies as the most advanced computer technology and adopted them. The adoption of open source web technologies is at 80-85% less expenditure than incurred on closed code proprietary software. Open source web technologies are more reliable, more durable, more advanced and at a much lesser cost than closed source proprietary technologies.