Module: Front End Web Development Basics
Qualification: Advanced Certificate In Web Development

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IU 02. Web Design Concepts

By the end of this session, you will be able to understand Web Design Concepts, Process, Laws & Acts etc.

Instructional Units in the Module

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IU #	IU Description	Required / Optional
01	**Web Design Concepts**	**Required**
02	HTML Basics	Required
03	Advanced HTML & Web Browsers	Required
04	Structuring & Styling with CSS	Required
05	Working with CSS : An Example	Required
06	Javascript Basics	Required
07	Advanced Javascript	Required
08	Basic interactivity with jQuery	Required
09	Advanced interactivity with jQuery	Required
10	HTML 5 and CSS3	Optional
11	Rich internet application Concepts	Required
12	Developing Rich Internet Applications	Optional
13	Rich Internet Application Case Study	Required
14	Web Standards	Required
15	Application Development Standards	Required
16	Testing Interactive websites	Required

IU 01. Web Design Concepts

IU Contents

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S. No.	Topic Description
01	Website Architecture
02	Technical Components
03	Web Server
04	Database Server
05	FTP Server
06	Functional Components
07	Web Design Principles
08	Graphic Design Concepts
09	Web Design Process
10	Web Design Process - Analyze
11	Web Design Process - Organize
12	Web Design Process - Develop
13	Web Design Process – Implement
14	Web Design Process - Maintain
15	Introduction to W3C
16	Website Laws

What is a web site?

- A website is an address (location) on the World Wide Web that contains web pages.

Why do you need a Website ?

- To provide information about your company, products or services.
- To Promote & Sell Products or Services
- To Provide Online Support
- To Generate Leads

How to get your Website Online

- **Step 1:** Get a domain name - This is your personal/private address on the Web.
- **Step 2:** Find a web hosting service- Here is where your website will reside.
- **Step 3:** Design, build and upload your website - The process of website creation.

Website Architecture
The Big Picture

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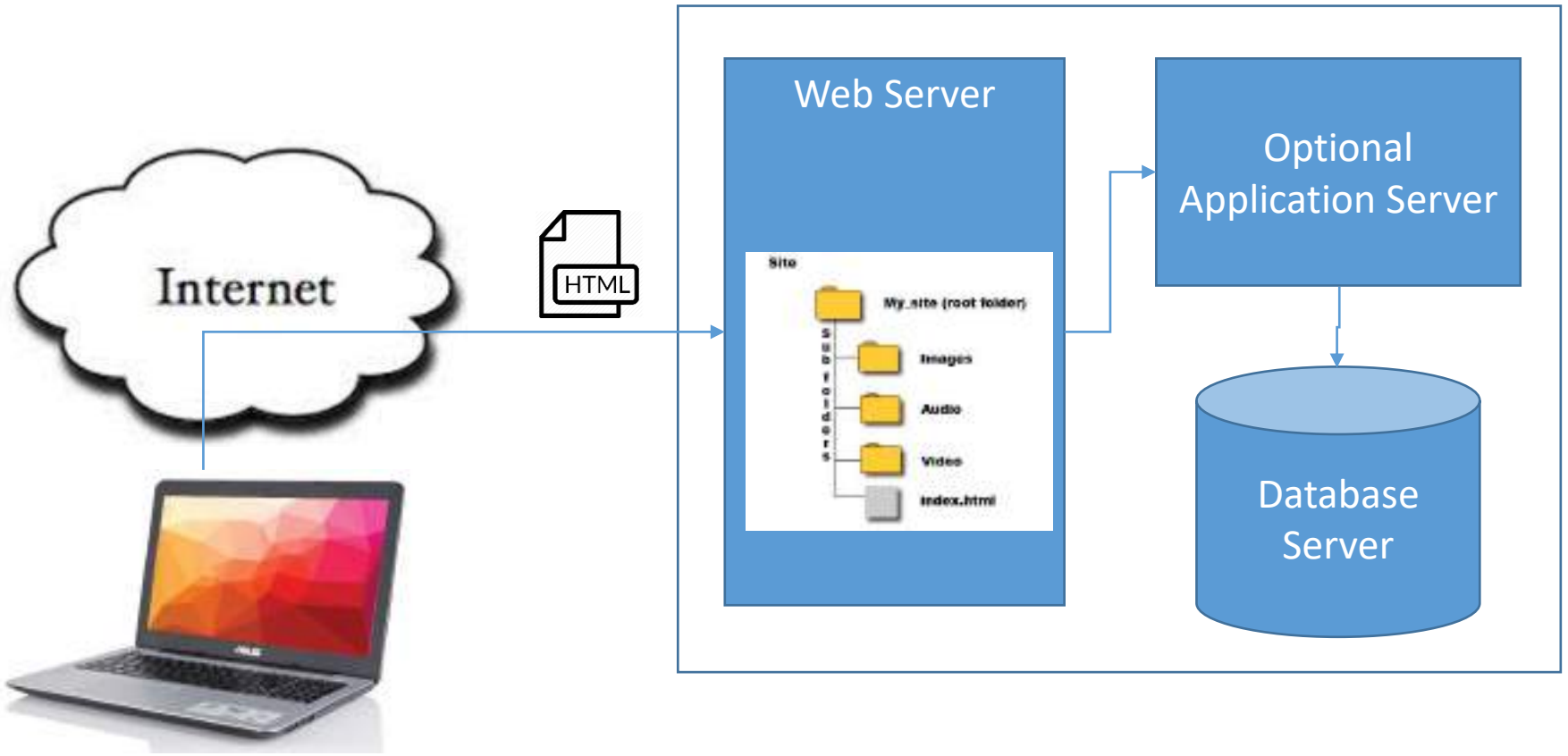
- Websites are hosted on a Server
- Content is Served from the Web Server
- Basic Block Diagram of a Website



- Technical Components
  - HTML Page
  - CSS
  - JS
  - Images like jpeg, gif etc
  - Video files like .mpeg, .fla etc
  - Audio files like .ram, .mp3, .wav etc
  - Server Side Scripting (Python, PHP, ASP.NET, J2EE)

- Servers
  - Web Server
  - Database Server
  - FTP Server
  - SMTP Server

Functional Components

- Common Elements
  - Header, Footer, Navigation (Menu, Bread Crumbs), Left Navigation, Right Navigation etc.
- Home Page
  - Common Elements, Hero Banner, Section Portlets
- Inner Page
  - Common Elements, Content Area
- Sitemaps

Technical Components – HTML Page

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❑ HTML

- stands for Hyper Text Markup Language
- describes the structure of Web pages using markup

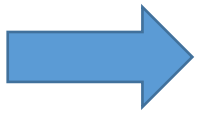
❑ HTML elements

- building blocks of HTML pages
- represented by tags

❑ HTML tags

- label pieces of content such as "heading", "paragraph", "table", and so on
- Browsers do not display the HTML tags, but use them to render the content of the page

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>
<h1>My First Heading</h1>
<p>My first paragraph.</p>
</body>
</html>
```



A Sample HTML Page

My First Heading

My first paragraph.

- **CSS** – Cascading Style Sheets
  - describes **how HTML elements are to be displayed on screen, paper, or in other media**
  - can control the layout of multiple web pages all at once
  - used to define styles for your web pages, including the design, layout and variations in display for different devices and screen sizes.
- External stylesheets are stored in **CSS files**

```
<!DOCTYPE html>
<html>
<head>
<style>
body {background-color: lightblue;}
</style>
</head>
<body>
<h1>Hello World!</h1>
</body>
</html>
```

- JavaScript
  - the programming language of HTML and the Web.
  - used to program the behaviour of web pages such as validating user inputs, provide navigation menus, add various kinds of interactivity etc..
- Example
  - if you click the button, the text changes to Hello JavaScript!

```
<!DOCTYPE html>
<html>
<body>
<h1>What Can JavaScript Do?</h1>
<p id="demo">JavaScript can change HTML
content.</p>
<button type="button"
onclick='document.getElementById("demo").innerHT
ML = "Hello JavaScript!"'>Click Me!</button>
</body>
</html>
```

Technical Component – Image Files

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- **JPEG**
  - stands for Joint Photographic Experts Group
  - Most popular among the image formats used on the web
  - JPEG files are very 'lossy', i.e. considerable information is lost from the original image when you save it in a JPEG file.
- **GIF**
  - Stands for Graphics Interchange Format
  - Limited to the 8 bit palette with only 256 colors.
  - Still a popular image format on the internet because image size is relatively small compared to other image compression types.
- **BMP**
  - Stands for Windows Bitmap
  - These are image files within the Microsoft Windows operating system.
  - Large and uncompressed, but rich in color, high in quality, simple and compatible in all Windows OS and programs.
- **TIFF**
  - Popular among common users, but has gained recognition in the graphic design, publishing and photography industry.
  - Popular among Apple users.
- **PNG or (Portable Network Graphics)**
  - Stands for Portable Network Graphics
  - An image format specifically designed for the web.
  - A superior version of the GIF

Technical Component – Video Files

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- **AVI**
  - Developed by Microsoft and introduced to the public in November 1992 as part of its Video for Windows technology, the AVI format is one of the oldest video formats.
- **FLV**
  - Videos that are encoded by Adobe Flash software, usually with codecs following the Sorenson Spark or VP6 video compression formats.
- **WMV**
  - Developed by Microsoft, WMV was originally designed for web streaming applications.
- **MOV**
  - Developed by Apple. Inc, the QuickTime file format is a popular type of video sharing and viewing format amongst Macintosh users, and is often used on the Web, and for saving movie and video files.
- **MP4**
  - Abbreviated term for MPEG-4 Part 14, a standard developed by the Motion Pictures Expert Group and is commonly used for sharing video files on the Web.

Technical Component – Audio Files

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- **WAV**
  - WAV stands for Waveform Audio File Format (also called Audio for Windows at some point but not anymore). It's a standard that was developed by Microsoft and IBM back in 1991.
- **MP3**
  - MP3 stands for MPEG-1 Audio Layer 3. It was released back in 1993 and quickly exploded in popularity, eventually becoming the most popular audio format in the world for music files.
- **WMA**
  - **W**MA stands for Windows Media Audio. It was first released in 1999 and has gone through several evolutions since then, all while keeping the same WMA name and extension.
- **FLAC**
  - FLAC stands for Free Lossless Audio Codec. A bit on the nose maybe, but it has quickly become one of the most popular lossless formats available since its introduction in 2001.

Technical Components – Server Side Scripts

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Server Side Scripts

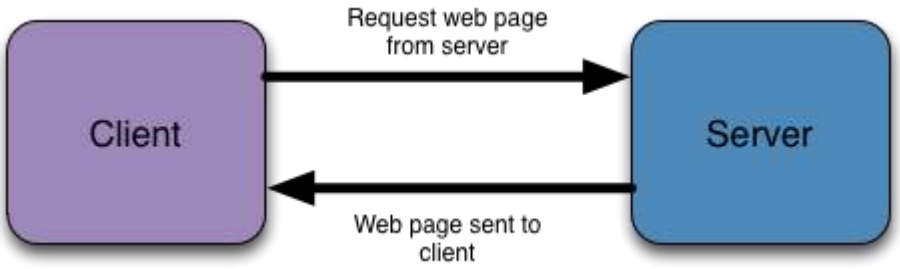
- Enable the generation and display of ***dynamic content*** on Web Pages
- Most websites on the Internet have ***dynamic*** content.

What is Dynamic Content?

- Content displayed to the user generated by selecting information from a database that resides on the server
- Not written directly into the HTML page Content, like Static Content
- You can create a single template page and then populate it with different information from the database depending on what page is requested.

How does the web work?

- The web works as a **client-server system**.
- A web browser residing on your computer acts as a ***client*** which can request web pages from a ***web server.***



Technical Components – Server Side Scripts

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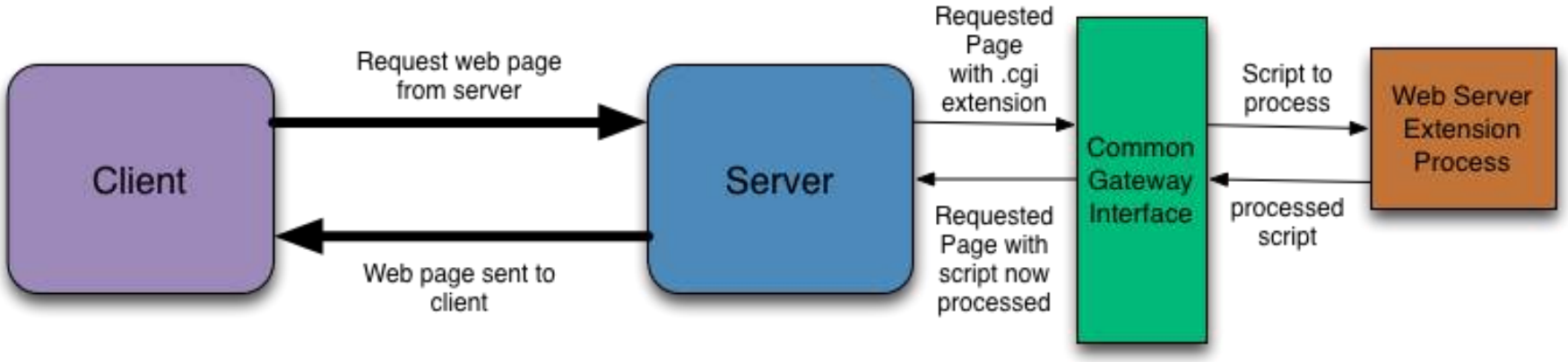
How Server Scripts generate and display Dynamic Content



- **Common Gateway Interface (CGI)**
  - Enables the web server to deliver dynamic content in response to client requests
- **Static Webpages have a .htm or .html extension**
  - e.g. http://mywebsite.com/index.html
- **Dynamic Web pages have extensions such as .cgi, .py or .php.**
  - e.g. http://mywebsite.com/index.php
  - If a request comes in with one of these extensions, the web server passes the request to the CGI which then interprets it correctly and executes the script in the particular scripting language.
  - After the script is executed, the output is passed back to the web server to be delivered as a response to the client request.

Servers - Web Server

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- **What is a Web Server?**
  - A computer or combination of computers, which is connected through internet or intranet to serve the clients requests, coming from their web browser.
  - Comprises of a large repository of web pages which transfer to the client in response to their request.
- **"Web server" can refer to hardware or software, or both of them working together**
  - On the hardware side, a web server is a computer that stores a website's component files (e.g. HTML documents, images, CSS stylesheets, and JavaScript files) and delivers them to the end-user's device.
  - On the software side, a web server includes several parts that control how web users access hosted files, at minimum an HTTP server.
  - An HTTP server is a piece of software that understands URLs (web addresses) and HTTP (the protocol your browser uses to view webpages).
- To publish a website, you need either a ***static*** or a ***dynamic*** web server.
- A **static web server**, or stack, consists of a computer (hardware) with an HTTP server (software).
  - "static" → the server sends its hosted files "as-is" to your browser

Servers - Web Server

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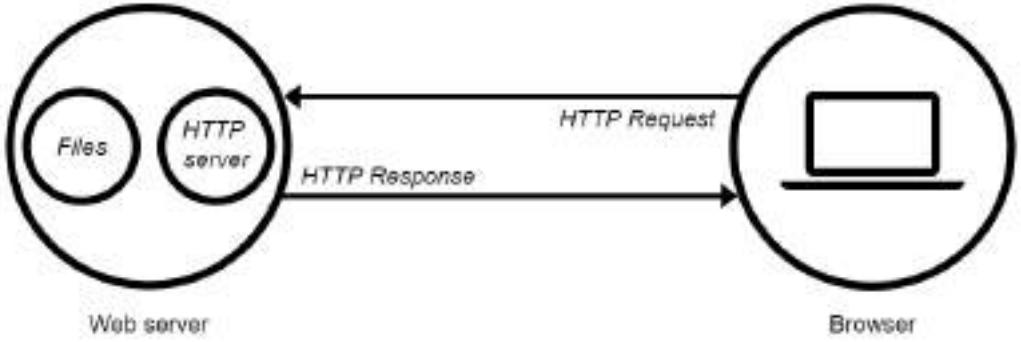
- A **dynamic web server** consists of a static web server plus additional software, usually an *application server* and a *database.*
  - "dynamic" → the application server process the server side script before sending them to your browser via the HTTP server.
  - A Web & Application server may be separate or be the same



Servers - Database Server

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- **RDBMS**
  - stands for Relational Database Management System.
  - Basis for SQL, and for all modern database systems such as MS SQL Server, IBM DB2, Oracle, MySQL, and Microsoft Access.
- **Data in RDBMS is stored in database objects called tables**
  - A table is a collection of related data entries and it consists of columns and rows.
- Server Side Scripts access and manipulate data stored in a Database Server.
- Database Server has Security features to allow users to allow or deny access

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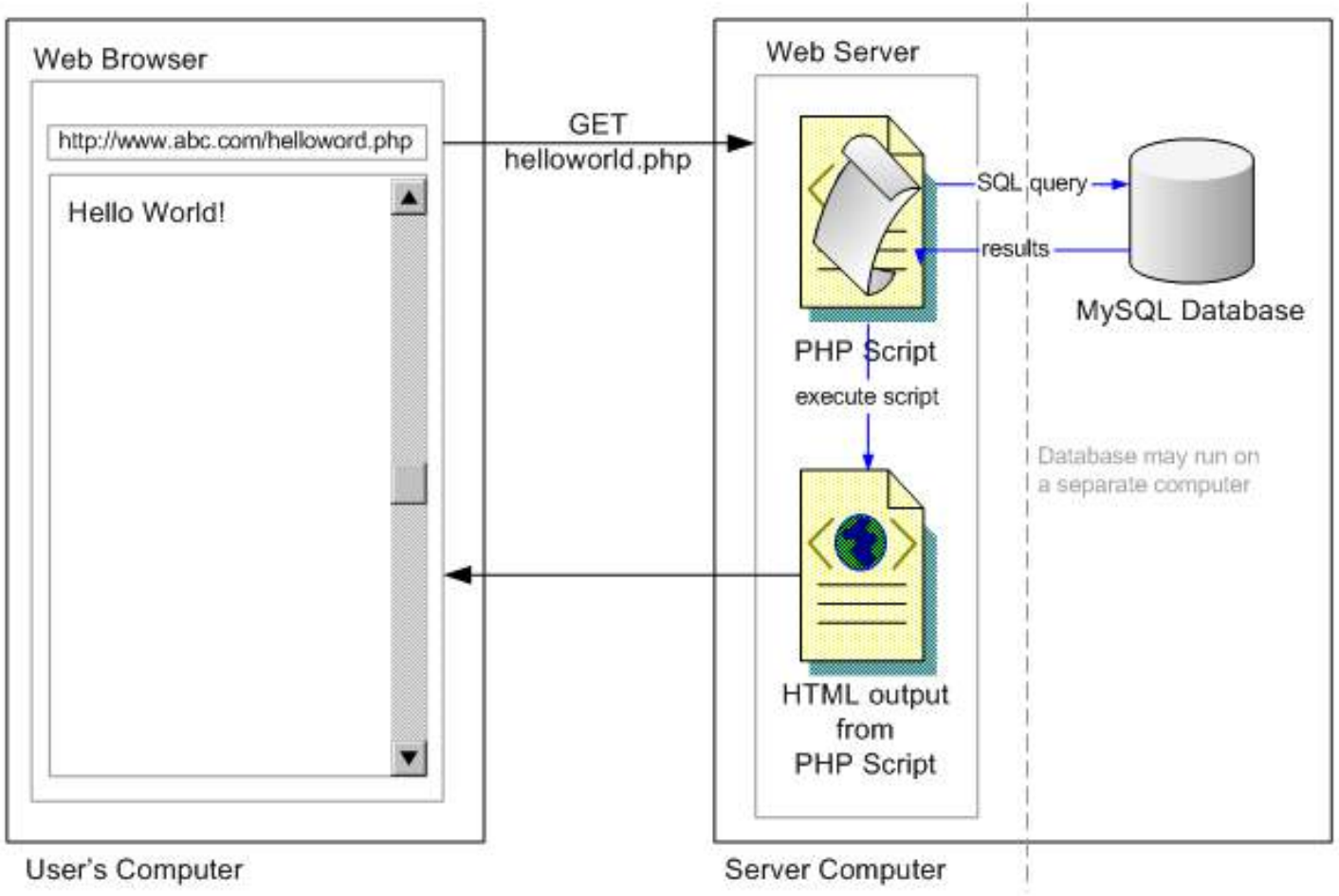
How data is accessed from a Database Server

- A Web Server runs a PHP script to create HTML Content on the fly
- The script accesses MySQL Database for retrieving data



Servers – FTP Server

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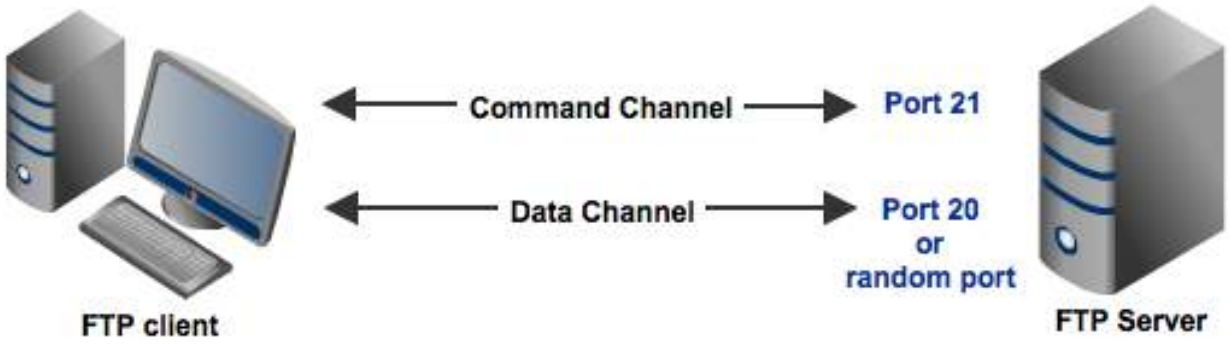
- **FTP** – File Transfer Protocol
  - prescribed method for the transfer of files between computers
  - easiest and most secure way to exchange files over the Internet.
- FTP is used for uploading various files to Web Servers
  - Files such as servers side scripts, images, javascript files, css files, video & audio files
- Most web hosting service providers provide FTP access to their customers to allow them to upload the contents of their web sites
- A popular FTP Server & Client: Filezilla



Functional Components – Home Page Layout

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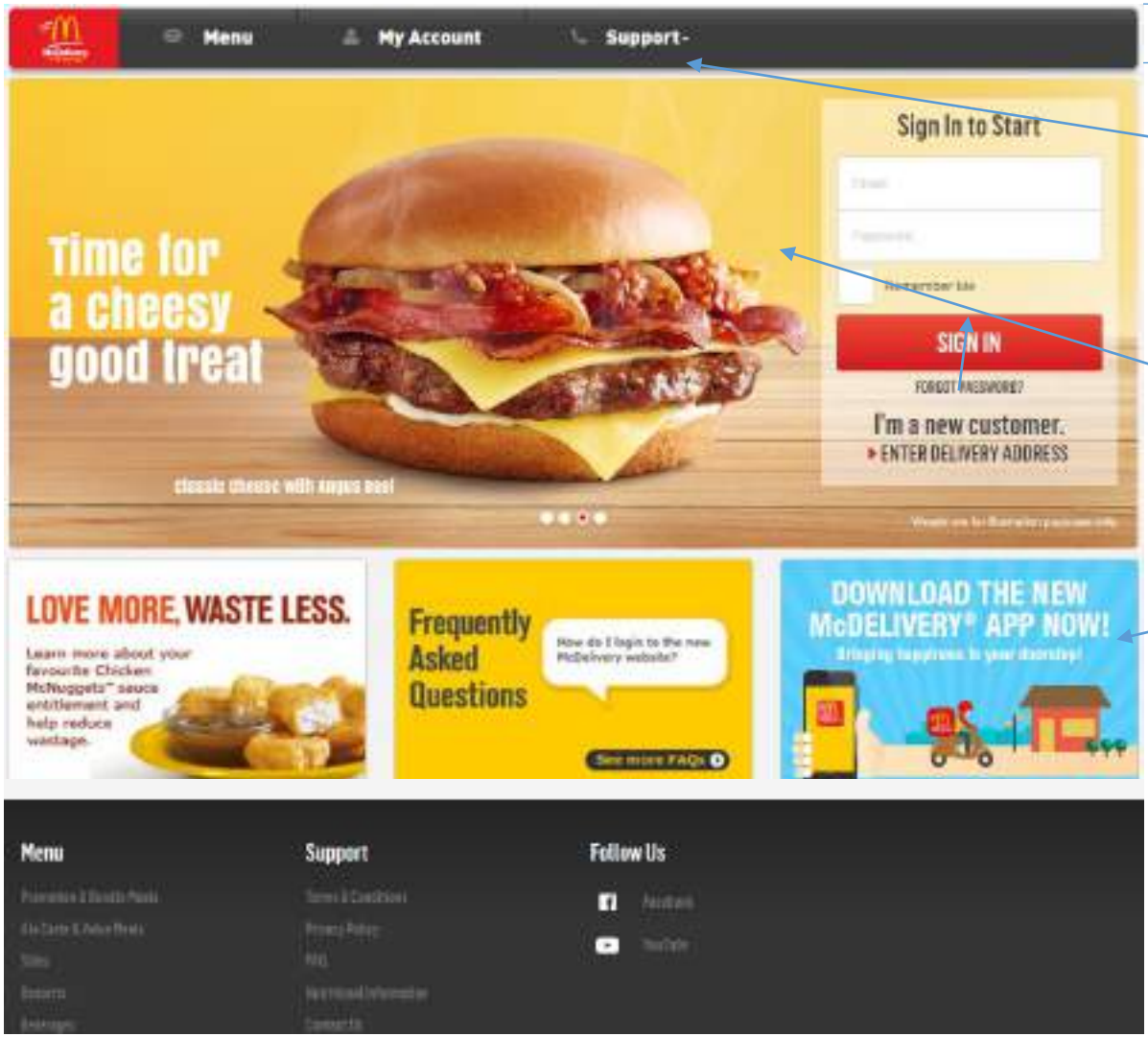
- Below is the Home Page of mcdelivery.com.sg



Header

Horizontal Navigation Menus

Hero Banner

Section Portlets

Footer

Functional Components – Inner Page Layout

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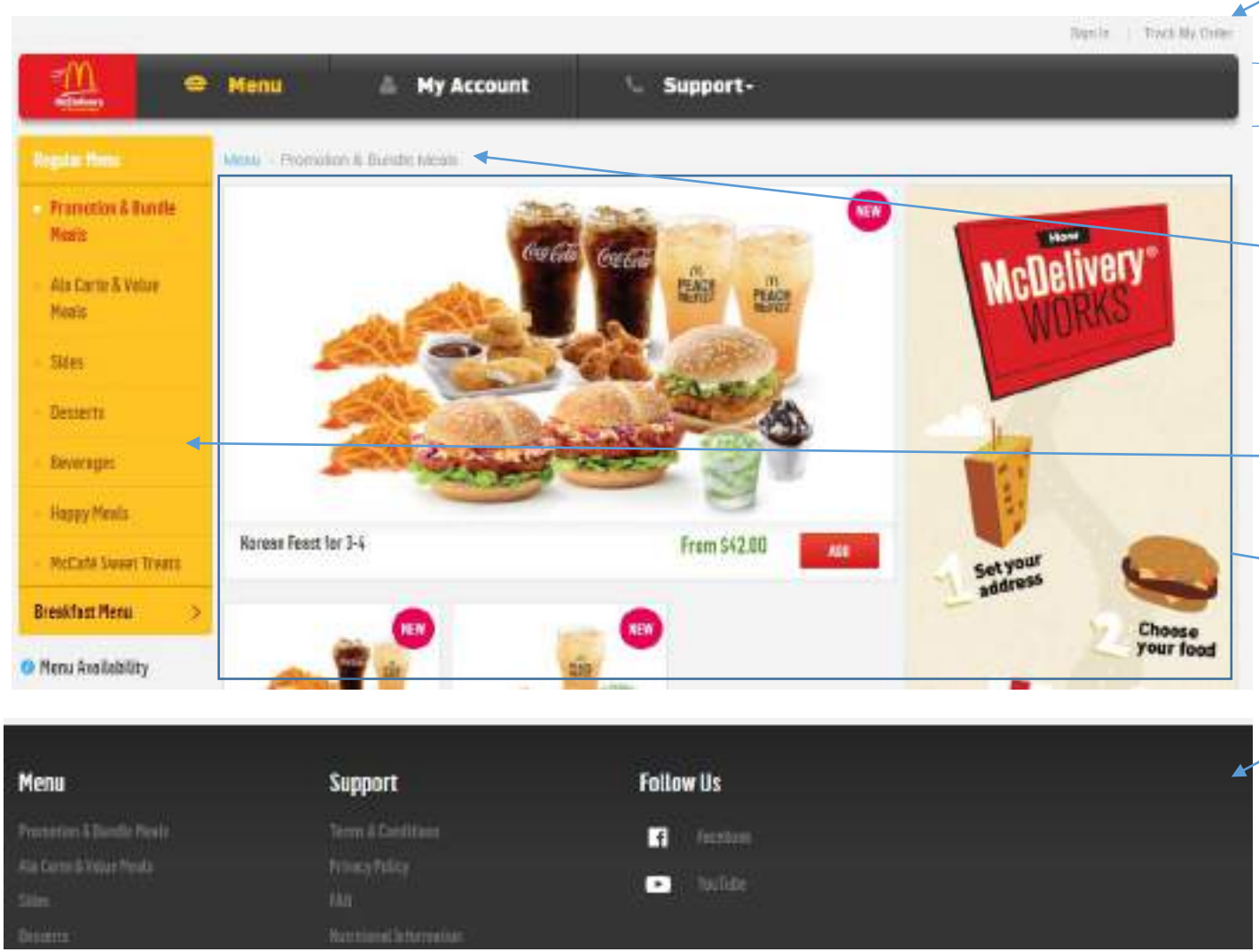
- Inner Page of mcdelivery.com.sg



Functional Components

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Header	▪ The strip across the top of a web page with a big heading and a logo ▪ Usually consists of common information about a website, such as site navigation and contact information.
Footer	▪ The strip across the bottom of a web page ▪ Generally contains fine print, copyright notices, quick access links and/or contact information or any common information to be displayed across the site
Left Navigation	▪ A Left Navigation menu is a user interface element within a webpage that contains links to other sections of the website ▪ Some Websites have Right Navigation as well for related Pages
Horizontal Navigation	▪ Similar to left navigation, but placed in the Header of the Web Site ▪ Most Websites either contain a Left Navigation or a Top Navigation
Hero Banner	▪ Usually a Homepage element; an Image or a video with some text ▪ Hero Banner sets the mood of the Website
Main Content	▪ This is in the inner pages. This is the main content area of an Inner Page.
Bread Crumb	▪ Locates the current webpage in the context of a navigation path or a Hierarchy ▪ Allows the user to move up the Hierarchy from the current page. ▪ The first link is usually the Home link.
Section Portlets	▪ A series of boxes with header and content, placed in a row in home page ▪ Can also be placed right hand side in inner pages to link the users to related section

- **Two important factors that affect the usability of a website**
  - Form (how good it looks),
  - Function (how easy is it to use)

- **Factors influencing Web Design**
  - Purpose
  - Communication
  - Typefaces
  - Colours
  - Images
  - Navigation
  - Grid Based Layouts
  - F Pattern Design
  - Load Time
  - Mobile Friendly

Top 10 Website Design Tips

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- ❑ Know your audience
- ❑ Keep web pages short
- ❑ Limit the amount of text
- ❑ Avoid large images
- ❑ Use web safe colours
- ❑ Clearly identify all links
- ❑ Check spelling
- ❑ Use a site map or directory page
- ❑ Update and check all links
- ❑ Include contact information

Graphic Design for websites

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- Process of creating the web site in an attractive and logical manner to achieve the following:
  - attract attention of desired audience
  - add value to a message – branding or marketing etc
  - enhances readership and readability
  - simplifies, organizes and provides selective emphasis

Good Design

Bad Design

Form & Usability

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- Form follows function
  - Design Theory is the missing link for many un-trained but otherwise talented designers.
  - Photoshop is just a tool, much like a paint brush to a traditional artist. You need to step away from it for a while and learn about design theory, not just spend all your time learning what filters and blending modes do.
- Usability and the utility, not the visual design, determine the success or failure of a web-site
  - Since the visitor is the only person who clicks the mouse and therefore decides everything, user-centric design has become a standard approach for successful and profit-oriented web design. If users can't use a feature, it might as well not exist.

Keep it Simple

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- Users are rarely on a site to enjoy the design. In most cases they are looking for the information despite the design.
- Economize: Do the most with the least amount of cues and visual elements. Four major points to be considered:
  - Simplicity — only the elements that are most important for communication.
  - Clarity — all components should be designed so their meaning is not ambiguous.
  - Distinctiveness — the important properties of the necessary elements should be distinguishable.
  - Emphasis — the most important elements should be easily perceived.

Audience

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- Different demographics of users use the web in different ways. Design with your target market in mind.

- The Web is different from print, — adjust the writing style to users' preferences and browsing habits.
  - Promotional writing won't be read.
  - Long text blocks without images and keywords marked in bold or italics will be skipped.
  - Exaggerated language will be ignored.
- Talk business.
  - Avoid cute or clever names, marketing-induced names, company specific names, and unfamiliar technical names.

Format - Grids

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- Provides solid visual and structural balance for website
- Enables user to scan, read and understand a page quickly
- You can have more than one grid.
  - Your front page could be based on a five column grid while inside pages with ads on a six column. There is no one right way.
- Think about the grid not only vertically but horizontally, too.
- Build in white space.
  - Adding just a little more space in alleys/gutters and between stories will add emphasis to the story, and improve readability

A page without a grid is a usability nightmare

Grids in Use

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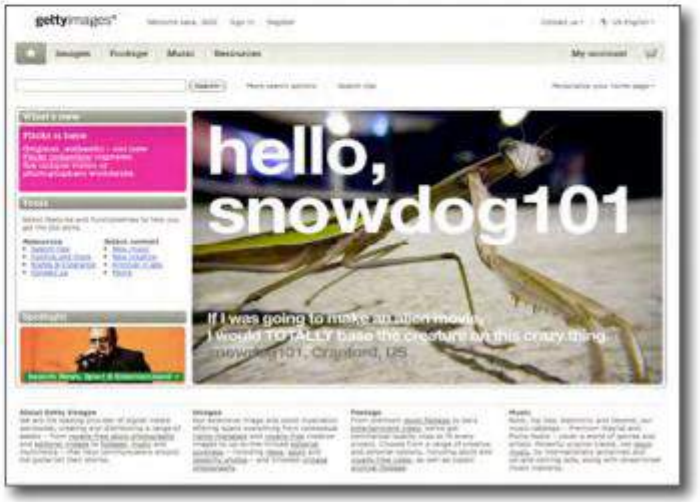

Whitespace

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- White space (the absence of text and graphics) is vital to graphic design.
- The key is to add just enough white space so the eye knows where to go and can rest a bit when it gets there.
- You can control white space in the following locations:
  - margins
  - paragraph spacing
  - spacing between lines of text
  - gutters (the space between columns)
  - and surrounding text and graphics

Typography

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- Don’t underestimate its importance.
- The best ideas, the most beautiful imagery, the most harmonious color combinations will be blighted by inferior typography.
- Good typography depends on the visual contrast between one font and another, and the contrast between text blocks and the surrounding empty space.
- Don’t set body text below 10 or 12px and, if possible, make it bigger.
  - What is legible on your HD monitor might not be so on a 15” laptop. If in doubt, make it bigger.
- Limit the number of different fonts you use

Typography Hierarchy

- Varying type size is one of the best ways to differentiate content.
- Colors and pretty boxes might help, but different sizes of type, used consistently throughout your pages, will signal loud and clear to your readers the relative importance of your pages elements.
  - It also means that if your readers are in a hurry, they can quickly pick out the important bits and that could mean that they stay longer and read on.
- Hierarchy can be achieved in other ways too. – we can also use different styles:
  - all-caps
  - using italic for sub-headings
  - serif and sans serif faces can also be mixed to good effect

Typography
Tips for the Web

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- Limit the number of fonts you use
- Add extra space between lines.
- Tweak letter, word, and line spacing in your headlines
- Serif font for headlines and sans serif for body copy
- Use proper characters
  - Stop using straight quotation marks, straight apostrophes
  - Use a dash instead of two hyphens
  - Use a proper ellipsis instead of three periods

Color

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- With colors you can set a mood, attract attention, or make a statement. You can use color to energize, or to cool down.
- By selecting the right color scheme, you can create an ambiance of elegance, warmth or tranquillity, or you can convey an image of playful youthfulness.

Color Psychology

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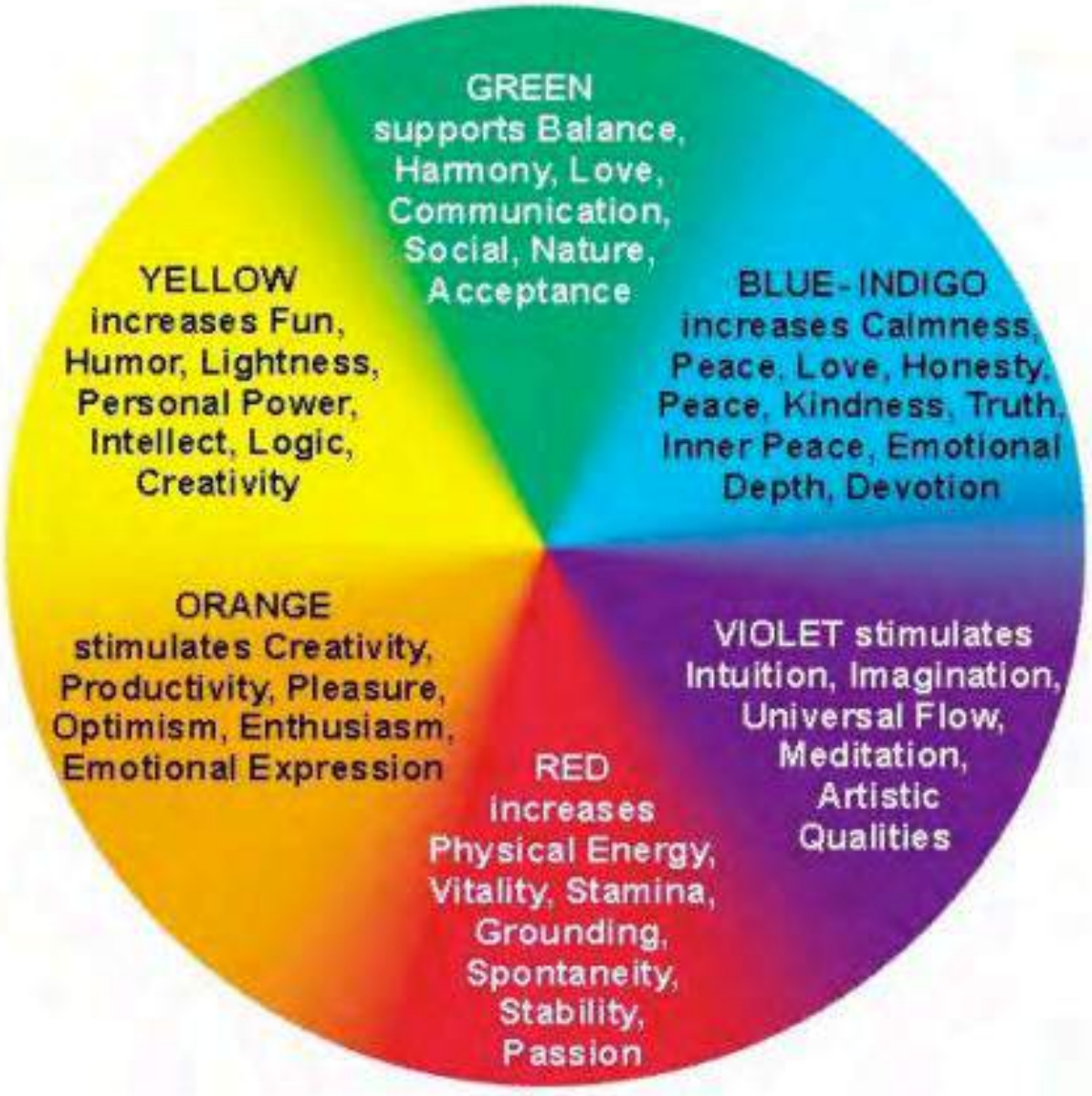

North American Main Stream Culture

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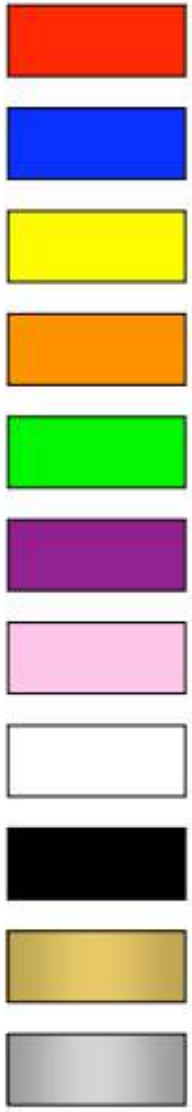

excitement, strength, sex, passion, speed, danger

trust, reliability, belonging, coolness

warmth, sunshine, cheer, happiness

playfulness, warmth, vibrant

nature, fresh, cool, growth, abundance

royal, spirituality, dignity

soft, sweet, nurture, security

pure, virginal, clean, youthful, mild.

sophistication, elegant, seductive, mystery

prestige, expensive

prestige, cold, scientific

Color Psychology in Marketing

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- Market researchers have also determined that color affects shopping habits.
  - Impulse shoppers respond best to red-orange, black and royal blue.
  - Shoppers who plan and stick to budgets respond best to pink, teal, light blue and navy.
  - Traditionalists respond to pastels - pink, rose, sky blue.
- Color Tools

http://www.colorcombos.com/

http://www.colorschemer.com/

Add & Manipulate Graphics

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- Look at well designed sites often
- Emulate
- Keep it simple, less is more
- Be consistent
- Design is not about decoration, it’s about communication and functionality
  - If something is not furthering the message or the function, it should not exist
- innovate only when you know you really have a better idea, and take advantage of conventions when you don’t.

Refine & Retune

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- ❑ When you think you are finished designing, step away.
- ❑ Come back to it fresh and refine it, step away.
- ❑ Proof for typos, alignment, spacing, sizing, color, consistency, etc.
- ❑ Proof it again

Website Design Process

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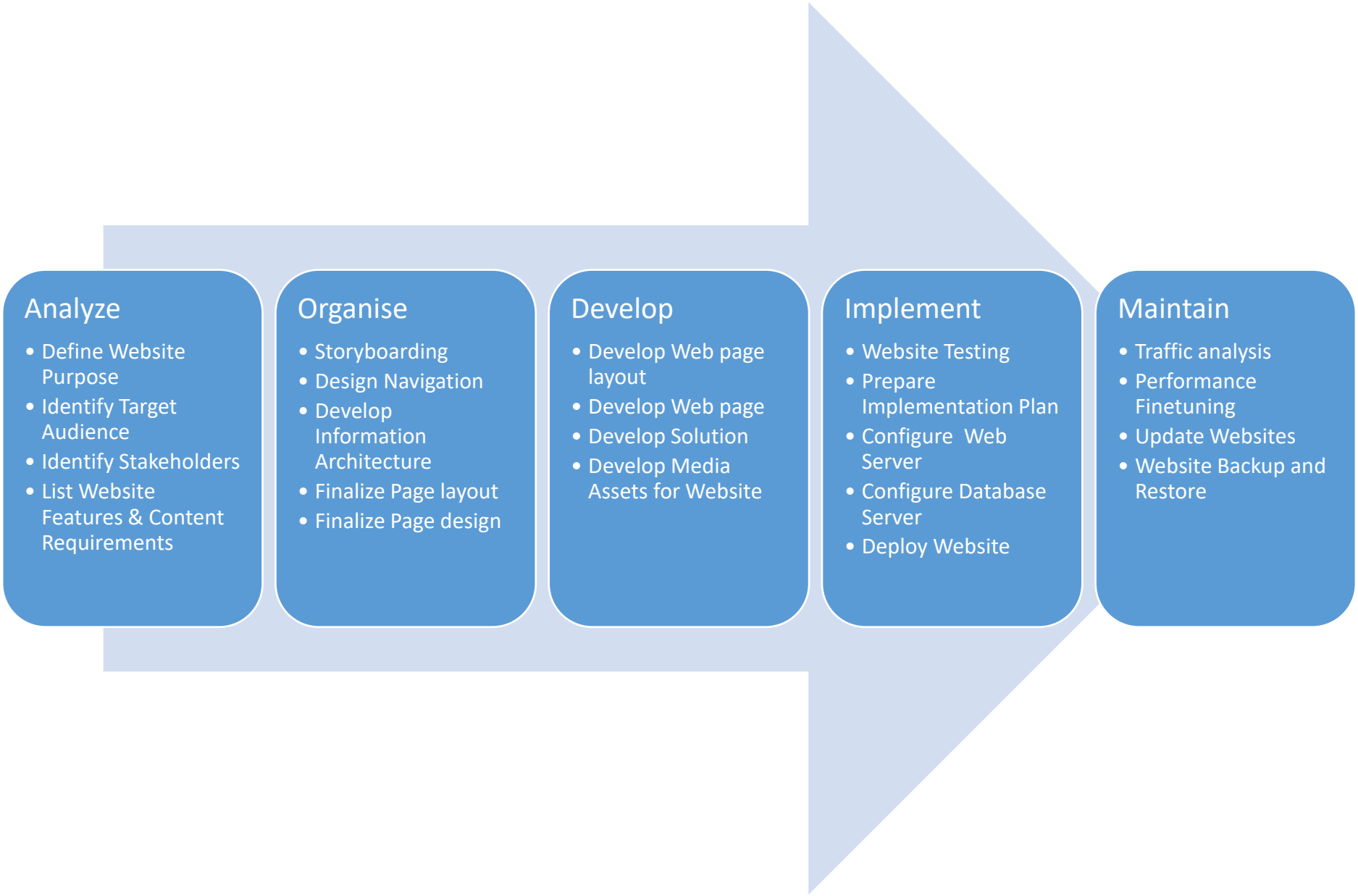

- Promote your ideas, hobbies, or beliefs
- To advertise your company or product
- Make loads of money really fast
- Provide customer services and support
- To keep your customer base informed
- Give or sell information
- Create an 'Extended Business Card' for your company
- Provide internal information and services for your company

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Audience analysis

- Audience analysis is the starting point for any project. You need to figure out your audience's demographics:
  - how old they are ?
  - where they work ?
  - what they earn ?
  - where they live, anything that's appropriate

- Before your work will ever reach the end users you are designing for, there is another audience: stakeholders. You need to partner effectively with product owners, engineers, executives and other key stakeholders.
- One of the hardest things in UX is not the work, but working well with stakeholders who say:
  - "We don't need UX right now… we'll let you know when."
    "I'm not a designer, but could you make the logo bigger and the site more like this one…"
    "I'm the target audience – and I don't like it."
- **Who is a Stakeholder**

A stakeholder can be formally defined as person with an interest in a project or provides some level of approval in a process. Most stakeholders tend to be either the actual Decision Makers or Key Influencers in a process.

Analyze
Audience

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- Understand the motivations, behaviours and needs of your audience. That first audience is the people you need collaborate with to make something.
- Nothing will get into the hands of users you are trying to delight unless it is developed in partnership with the stakeholders first.
- The secret to efficient planning is to include those with authority in the process. If you spring architecture and content on stakeholders late in the process, expect far-reaching changes that require backtracking.
- Get architecture, content and deliverables approved before moving on to the next steps.
- Modern CMS' have templates that can accommodate a wide variety of content, and this might make it seem as though content organization and architecture aren't your problem, but they are!
- If you write the CSS and programming without understanding what exactly you're building, you will be forced either to backtrack or to fit content into a template that isn't ready for it. Content comes first.

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- **Your content has to have a goal**
  - To have a well-defined audience at the end of the process.
  - The only good audience definition is a specific target definition.
  - The better you can pigeon-hole or niche your audience, the more likely your site will succeed.
- **Determine the following before deciding the content**
  - Who your target audience is ?
  - What age group are your users?
  - What is their skill level with the Internet?
  - How can I communicate effectively?
  - You also need to determine the purpose of your site. What is the site for?
- Once you have determined these factors you can start to plan the content your site will have.

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- **Who are my target audience?**
  What type of visitors do I want my site to attract? What will be their age, sex and education? Will they search for my site because we share a hobby, like the same television shows or are they looking for specific information?
- **How can I communicate effectively?**
  Now that I know who the audience will be, what is the best way to communicate with them?
- **What information do I need?**
  If you are designing a site for a client, you will need to know the answers to the preceding questions as well as what their vision is for this site. Do they have a logo they want you to use, do they have specific colors in mind, do they want to include phone and fax numbers on their pages? If this is your own business site, these are questions you should answer also.

Analyze
Research Websites

LITHAN

- Spend time looking at other internet sites, particularly your competitors
- See if you can get any ideas you can use and improve on
- Don't be mistaken that the flashiest & coolest looking web site is the best.
- Sites with lots of animation are not always the best.
- Remember that not everyone has a fast Internet connection.

Analyze
Feature & Content Requirements

LITHAN

- ❑ Frequently updated information
- ❑ Product and Company articles
- ❑ Question and answers
- ❑ Online purchasing of products
- ❑ Guest book that guests to your site can sign and add their own comments
- ❑ Web site forum or chat room to generate conversation between your web site users
- ❑ Web site search ? very useful for larger sites
- ❑ Weekly poll, to poll your visitors on a particular question
- ❑ Quizzes and sweep stakes, with prizes to promote your products
- ❑ Free offers
- ❑ News
- ❑ Unique information
- ❑ Location maps
- ❑ Contact and Booking forms

Analyze
Website Journal

LITHAN

- It is a good idea that you maintain some sort of journal for your website. Don't confuse a site journal with a site outline.
- Your journal is a collection of your ideas, your thoughts and whatever you want to remember, jot down ideas when they pop into your head.
- For starters pick out a website that impresses you and examine it.
- What is the color scheme and layout?
- How is navigation accomplished?
- What is the content?
- How is the content presented?
- Write down anything that you believe makes this website good and any ideas that you might want to use yourself.

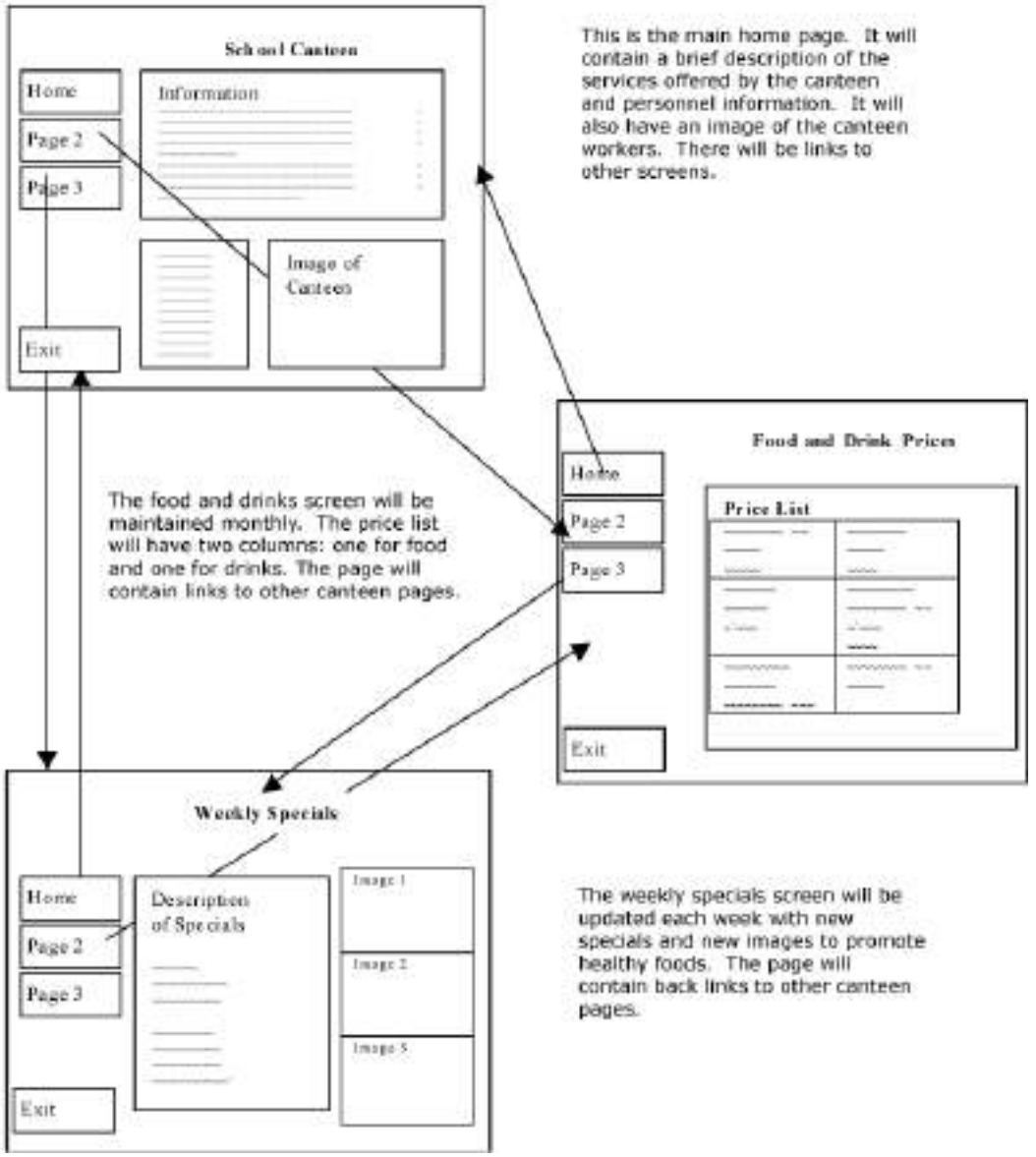
LITHAN

- Clients need feedback. They need to see where you are heading with the project.
- Many potentially great websites were derailed because the designer did not effectively explain what was happening to the client.
- No matter how much head-nodding you see, if you only tell your clients what you will do, they'll be confused later.
- Don't format content too much. Keep it simple.
- Some people start pushing pixels right after planning. Others start working on interface wireframes.
- empower yourself or your designers to make primary decisions about font, color and layout.
- If your content wireframe or diagram is too elaborate, it will impinge on the design.
- Let the decision-makers focus on the content, navigation and what-goes-where, rather than muddying the process with filler graphics.

Organize
Story Boards

LITHAN

- What is Storyboard ?
  - A blueprint for a **website**
  - a simple, flexible tool used to display the elements such as images, banners, navigation, graphic elements and text on a single **Web** page
  - an excellent tool for presenting a project to clients
  - A diagram of the pages and layouts with lines that show the linkage between the pages.
  - Helps you visualize the site.
  - Taken from the film industry.



- Purpose of a Storyboard
  - serves as an outline of the design approach.
  - defines the elements that need to go on each page.
  - represents the navigational architecture and information flow
  - demonstrates how the web pages are to work together to provide the user's interactive experience
- A storyboard illustration ideally includes the following:
  - A flowchart depicting the opening screen and the major sections of the Web site.
  - A description of the text that will be placed on each major page of the Web site.
  - A description of graphic images that belong on each page.
  - The navigational tools and their location.
  - The cross-links to all of the information contained on the Web site.
  - The external links to other Web sites.
  - The color scheme of the Web site.

LITHAN

- Storyboarding is the process of creating a rough outline and sketch of what your Web site will look like before you actually write any pages.
- Storyboarding helps you to visualize the entire Web site and how it will look when it is complete, including:
  - Which topics go on which pages
  - The primary links
  - Types of graphics and where they will go

Organize
Storyboarding Process

LITHAN

- Collect the information that you want to include on the Web site. This includes text as well as images.
- Sort the information into topics. Topics should start at the broadest and work toward the narrowest.
- For each page of the Web site, determine page title, headings, sub headings and content.
- Plan the structure of the information and how the pages will link. This needs to be logical. It can be linear, hierarchical or a branch design, in the form of a web.
- Layout the menu structure.
- Layout your template page. This should be the interior page of the Web site.
- Test the layout. Imagine that you are a visitor to the Web site. You can enter on any page. Does it work? If not, start again.

Organize
Navigation

LITHAN

- The website's navigation system is like a road map to all the different areas and information contained within the website.
- Help audience find the information and the answers to their questions
- Minimal clicking to get to where the visitor wants to get to

- How the user navigates around your Web site can make or break your site.
- If the site is too difficult to navigate, the user is not going to enjoy the time spent on website and may not return to it another time.
- The key characteristics of a good navigation system are **clarity, consistency and efficiency**.
- Keep your navigation controls:
  - Obvious
  - Simple
  - Consistent-Keep the colour and location consistent so the user always knows where to find them.
  - Navigation controls can be text or images

- Navigation should remain consistent throughout the site
- Consistent in appearance and in availability.
- Present the navigation options the same way each time. For example:
  - If the home page button appears in blue at the top, right-hand corner of one page, do not put it at the bottom, in red, on another page.
- If you offer a toolbar, keep the toolbar selections in the same order on every page.

LITHAN

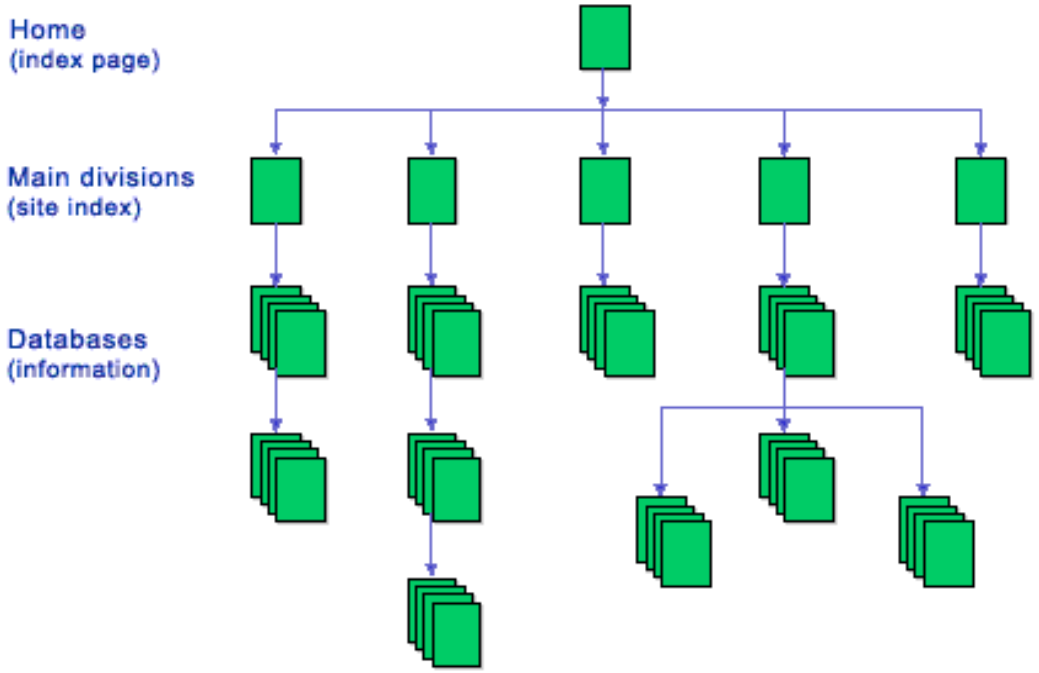
- **There are three different navigation types.**
  - Linear navigation - Moving in a straight line.
  - Database navigation - Many branches from your main page.
  - Hierarchical navigation - A completely connected website.

- Used for a web site where visitor go from one step to another in a particular order.
- Usually used within a web site but seldom as a stand alone design.
- Visitor follows the pages in a predefined order or sequence that is determined.
- Useful for tutorials.
- Straight line or sequential links

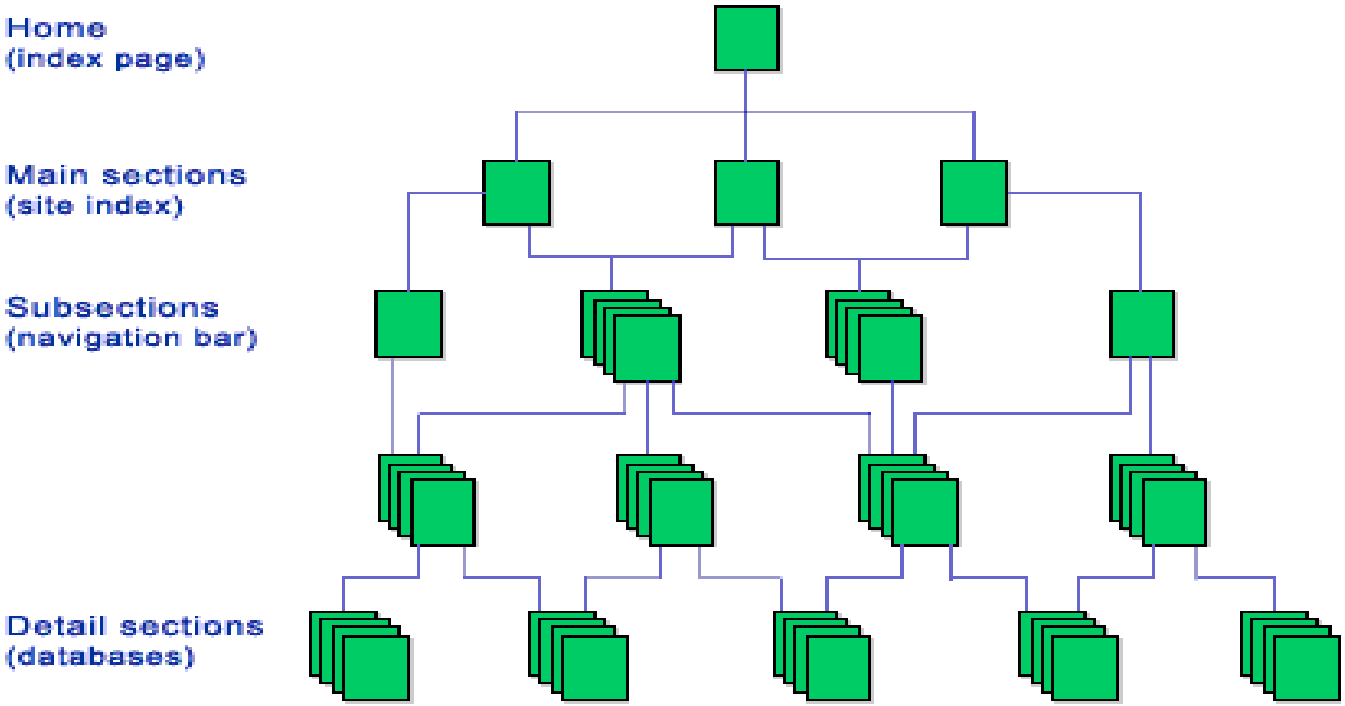
- Arrange links so that they only permit movement in a straight line from one page to another.
- Setup your links in such a way as to compel the visitor to start at one end and continue to a conclusion.

- Allows the visitor to move back and forth between a series of pages.
- Setup links with a start page an end page and links tying the pages together that lie between them.

- Database or grid design is made up of multiple divisions and each division has its own structure.
- Used effectively when large amounts of data are required in the web site design.



- Goes from the general to the specific
- from a home page to divisions to subdivisions.
- A visitor could easily go from the home page to other areas of the web site and back again.



LITHAN

Text Links

- Text links are words (text) which are surrounded by the anchor set of tags to create clickable text which takes the visitor to another web page within your website, a downloadable document from your website, or to another website on the Internet.

Breadcrumbs

- Breadcrumb navigation shows the website visitor the path within your website to the page they are currently on.

Navigation Bar

- A navigation bar is the collection of website navigation links all grouped together. A navigation bar can be horizontal or vertical.

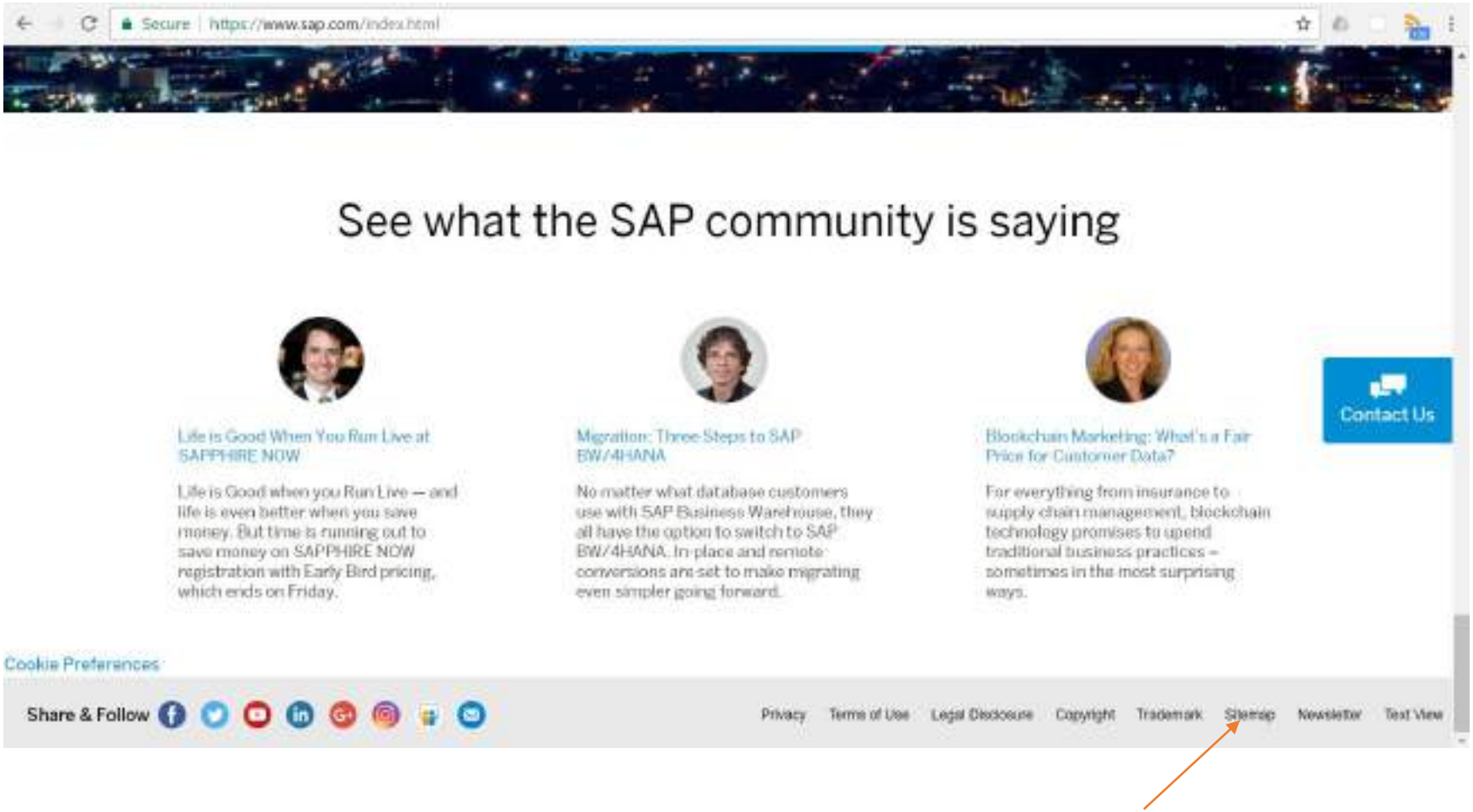
Tab Navigation

- Tab navigation is where the website navigations links appear as tabs, similar to the tabs you use in a binder to divide the contents into sections.

❑ Sitemap

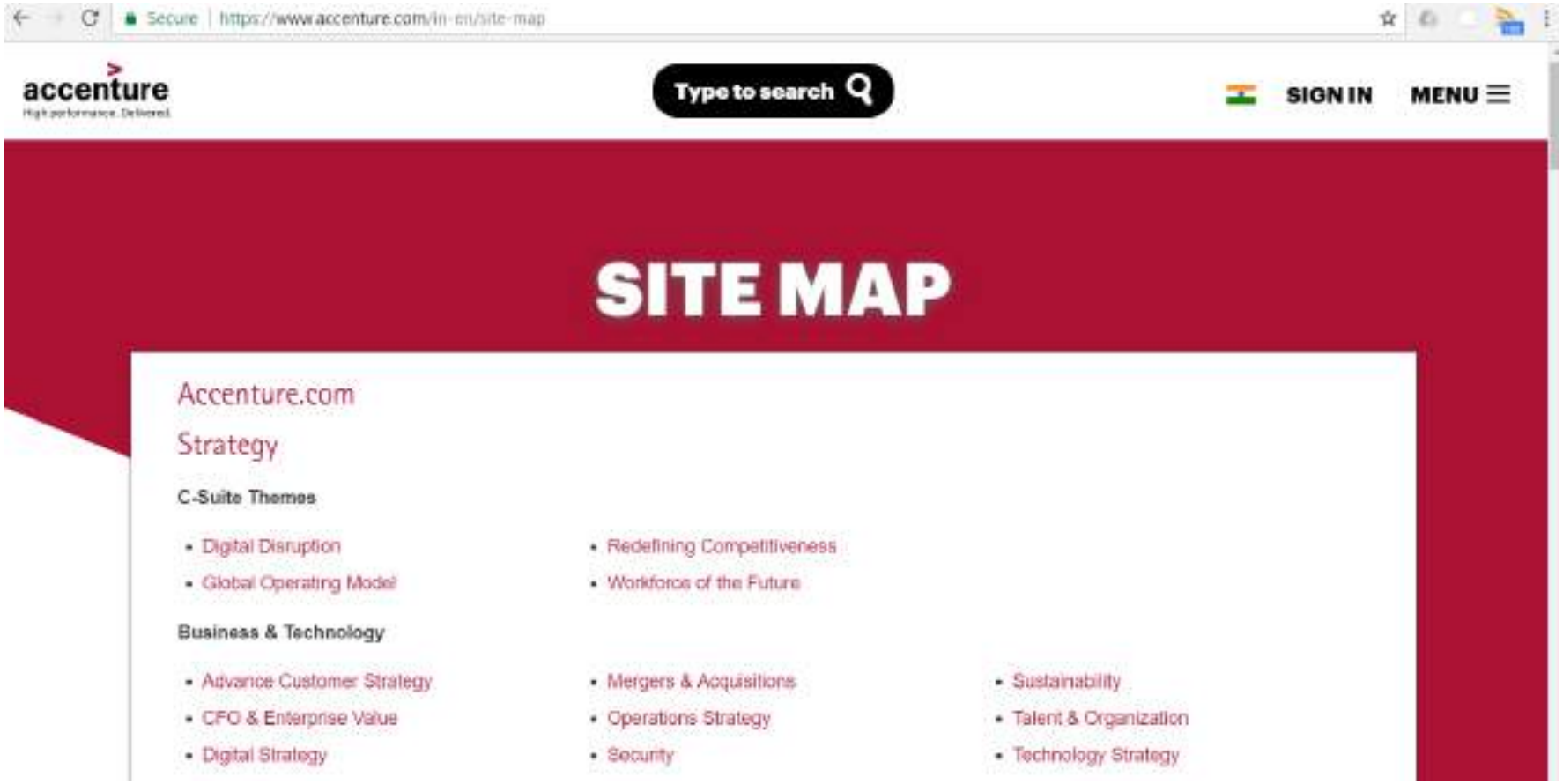
- a page within your website that lists all the sections and web pages (if you don't have too many) that are contained within the website.
- provides navigation for your website visitors should they get lost
- a shorter path to the different areas of the website for those who know what exactly they are looking for
- a means for the search engines to find all the pages within your website.

- Position of Sitemap link in a home page



- **Example 1 (**https://www.sap.com/site-map.html)

- **Example 1 (https://www.accenture.com/in-en/site-map)**



Dropdown Menu

- is a style of website navigation where when the visitor places their mouse over a menu item, another menu is exposed.
- can include a flyout menu (see next item).
- A dropdown menu system can create accessibility issues and a problem as far as the search engines not being able to read the links in the menu, but if constructed properly, these issues can be overcome.

Flyout Menu

- is constructed similar to the dropdown menu.
- When the visitor places their mouse over a link, another menu “flys out”, usually to the right, from the link where the mouse is placed.
- face the same challenges as dropdown menus but if constructed properly, they can be accessible by the search engines.

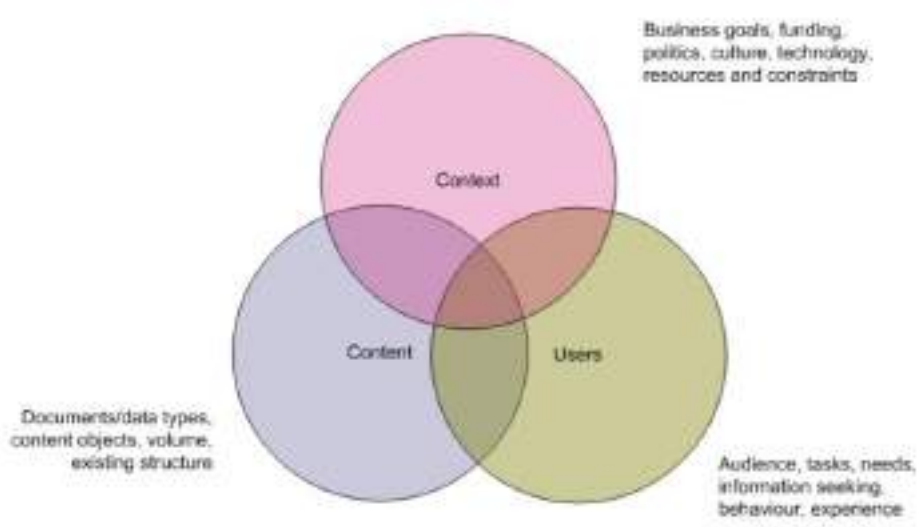
Named Anchors

- Named anchors are the type of links that take you directly to a spot on the current page or on another web page.

- What is Information Architecture ?
  - Information architecture (IA) is the organisation of a website's structure and content by:
    - labelling and categorising information
    - designing navigation and search systems
    - identifying and using language and vocabulary schemata
    - designing the website layout
- IA brings together design concepts and tools that assist users in finding the information they are looking for and completing tasks efficiently and effectively.
- It focuses on providing multiple pathways to information whilst retaining an understanding of the context and purpose for the information being accessed.

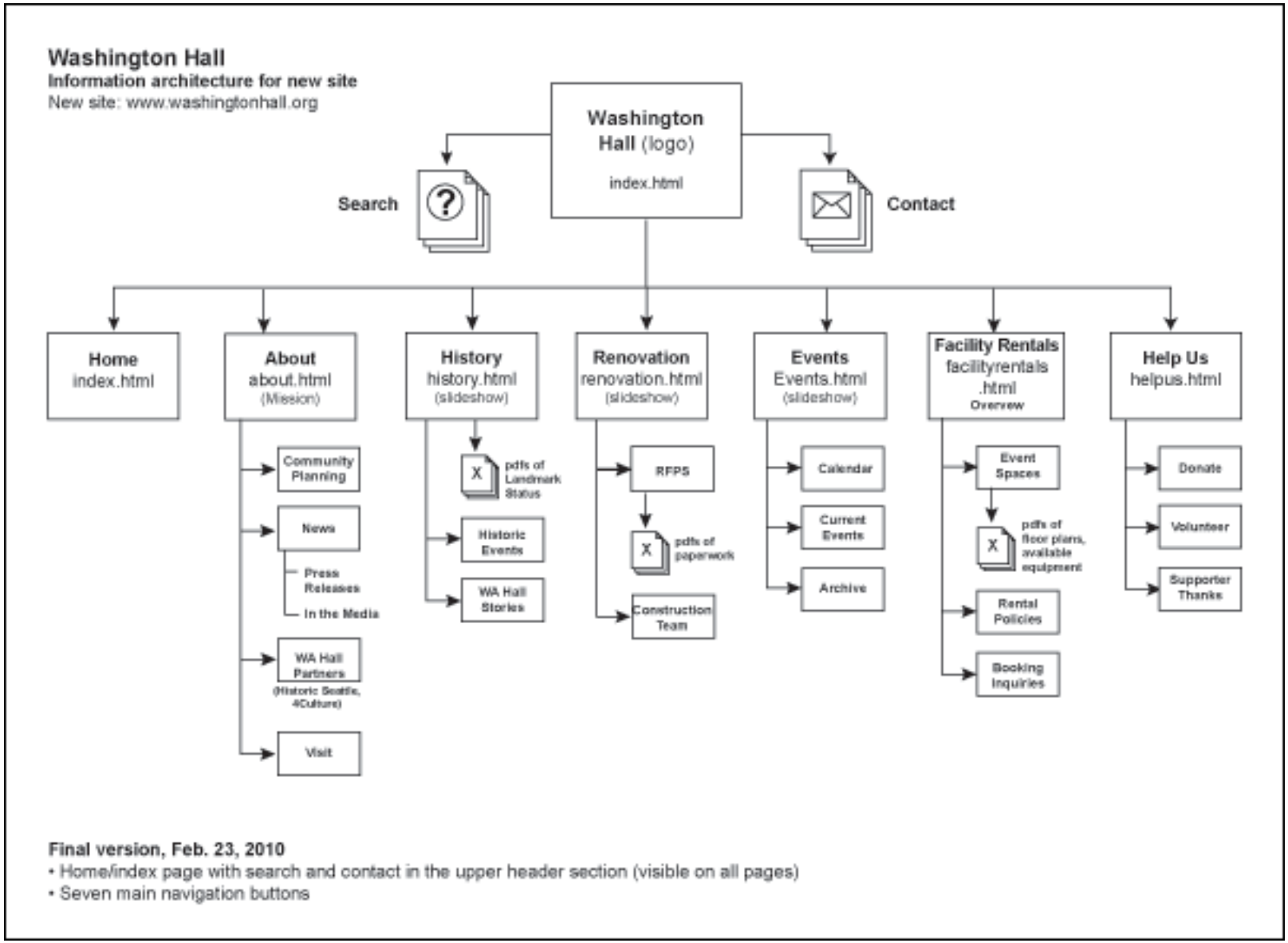
What does information architecture include?

- balancing of audience characteristics and needs with the content and business context (see Figure 1)
- provision of discovery methods that are available to internal and external users of the site including search and browse, search engine optimisation and portal integration
- presentation, labelling and format of content on the website
- categorisation and description of information
- underpinning business and data rules which support the discovery and delivery of information, e.g. organisation-specific metadata requirements.



Organize
Develop Information Architecture : Example

LITHAN



- Documenting an information architecture (IA) is a critical part of developing and managing a website.
  - provides a link between the IA and visual design and development
  - blueprint of what the information architecture should be now and into the future.
- **What is an information architecture strategy?**
  - an accurate description of the website portfolio
  - the justification for the website portfolio
  - the benefits of each website and the portfolio as a whole
  - the alignment between the website portfolio and business objectives and strategies
  - the governance structure, including quality control and whole of organisation change management
  - consistency in user experience and message across the portfolio
  - commonality in language and structure
  - IA principles for the website portfolio
  - standards compliance

- lessons learnt
- recommendations for the forward direction of the website portfolio.

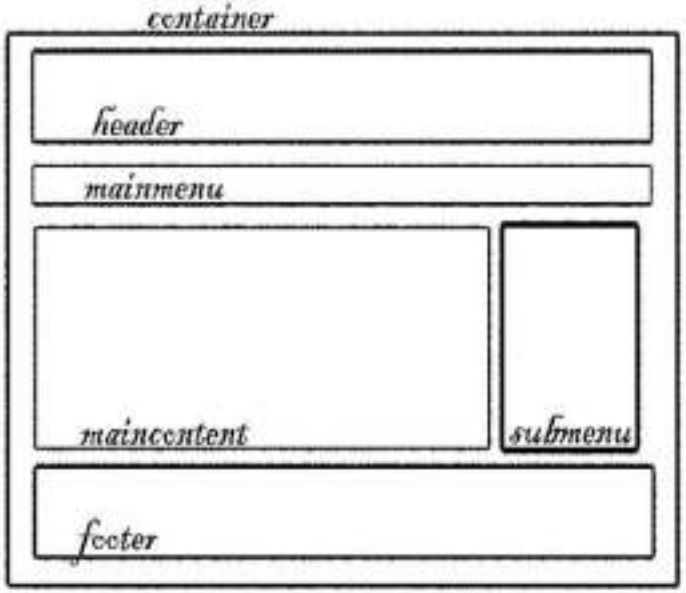
❑ What is an information architecture plan?

- is a living document that identifies the major components of the IA, including the design, management, maintenance, governance and review processes.
- provides an opportunity to highlight areas that require further analysis or improvement and to document any anticipated actions.
- captures information for use in planning and managing audience needs, facilitating an ongoing, efficient discovery experience for users.

- Low-fidelity visual representation, may be called a skeleton or blueprint
  - Some debate how polished wireframe should be
- Includes basic page layout
- Includes navigation
- May include:
  - headers, footers, content areas, sidebars
  - dynamic widgets, search box, graphics, links

- Wireframes Make Design Changes More Efficient
  - Client can view overall layout
- Wireframes Make Site Navigation Designs Better
  - Can test and refine without having to reprogram
- Wireframes Can Improve Content
  - No large blocks of undifferentiated text
- Wireframes Can Improve User Interface Copy
  - What label should be used for the call to action button?
- Wireframes give web developers a clear path

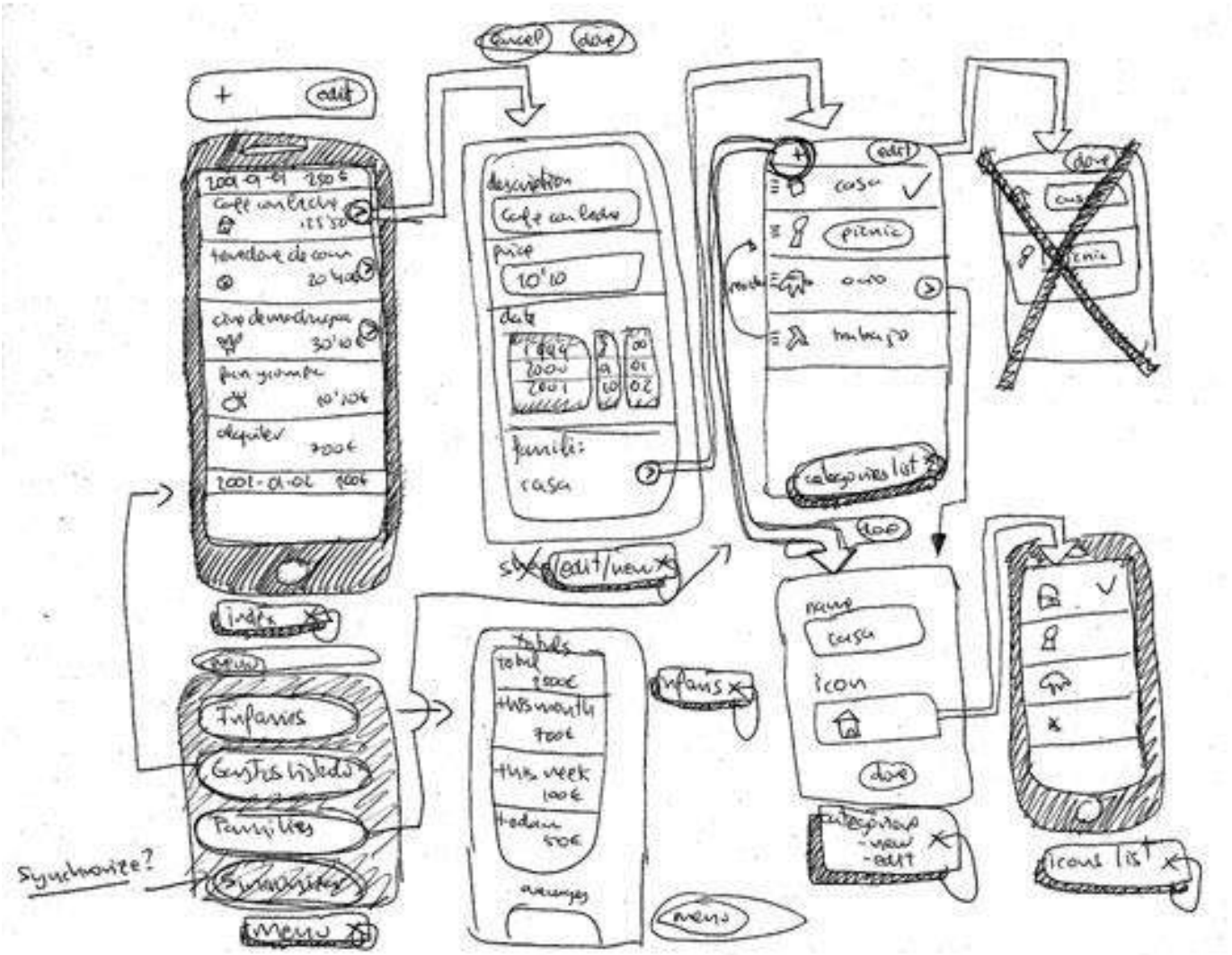
- Developing wireframe is a smart way to demonstrate plans to collaborators.
- great visual tool and very expressive.
- keep things simple! If you over-design your wireframes, your client will focus more on cosmetics than substance.



- In the Next Instructional Units we will be creating Wireframes using various tools.

Organize
Rough Sketch

LITHAN



- the first step in design is to create a set of website mockups to lay out the look and feel of your site
- mockups are simply images we create that show what the website will look like without needing to dive straight into coding
- mockups are just flat images that cannot be interacted with, but look like a screenshot of a website page
- use these mockups as a way to communicate design ideas back and forth with stakeholders

Organize
Purpose of Mockup

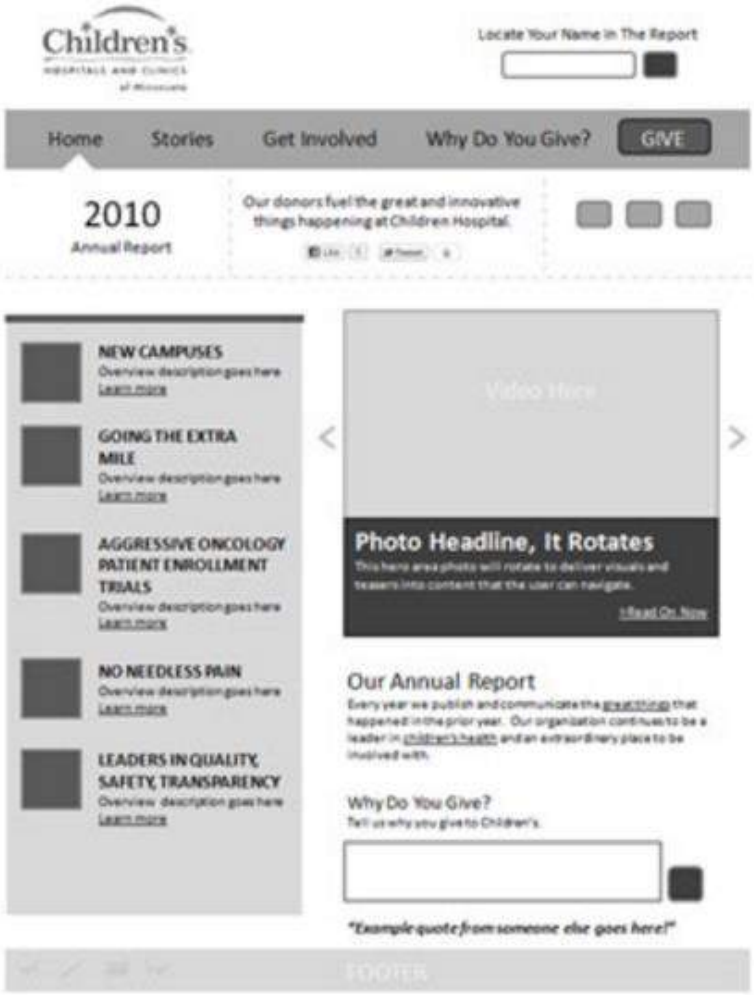
LITHAN

- The process of laying out a mockup is much faster than coding a webpage.
- Creating this image mockup allows us to try out different design elements, layouts, colors, and fonts quickly so we can get a better idea of what design we want to go with before devoting to code.
- designer has a chance to organize their thoughts so there is a clear-cut plan for the design and development of the website.
- The mockup can be easily shown to the client for feedback, and making changes are quick and easy
- Client's can also use mockups to show friends / family / colleagues their potential website for feedback before giving us the thumbs up on the design
- If we started out just coding a website without mockups, it would take a very long time before the client is able to see our vision.
- It would also be much more difficult to make changes to things like layout and colors once the site is already in the development stages.

Organize
Mockup Example

LITHAN

WIREFRAME



FINAL DESIGN

- series of screen sketches
- storyboard, i.e.
- cartoon-like series of scenes
- Power point slide show
- video simulating the use of a system
- cardboard mock-up
- piece of software with limited functionality written in the target language or in another language

- Evaluation and feedback are central to interaction design
- Stakeholders can see, hold, interact with a prototype more easily than a document or a drawing
- Team members can communicate effectively
- You can test out ideas for yourself
- It encourages reflection: very important aspect of design
- Prototypes answer questions, and support designers in choosing between alternatives
- In the next module we will be developing prototypes using Axure

LITHAN

- If you're planning online, email everyone when you can. If you plan on paper, print multiple copies in the hopes that more stakeholders will see the plan before you move on.
- Get clear, direct approval of major steps in writing. If your client is hesitant, they may be hiding that they've failed to get approval from higher-ups.
- Asking for an email or signature forces the issue.
- It may sound confrontational, but most clients will understand and appreciate your thoroughness.
- Ask for meetings.
- Most creative people hate them, but a successful project requires collaboration.
- You would be surprised what comes out of a 10-minute phone call.

- Clients change their minds. It's in their genes to be indecisive and difficult.
- Our job is to turn their mess into perfection. Despite the mess, budget and timeline, your work will be judged on its own merit. You either got it right or you didn't, and there's no passing the buck.
- What you need is a workflow that embraces change rather than resists it.
- Make sure your planning method is not tedious. If updating a simple page title in PowerPoint takes you 10 minutes, rethink your method.
- Follow the order of the steps. Starting on later steps before previous steps are approved is tempting. Don't!
- Bundle revisions. You'll kill your budget if you make individual changes as they come.
- Encourage your client to take time in the planning stage. No matter how close the deadline, this is the one part you shouldn't skimp on.

Develop
Overview

LITHAN

- Now that approval has been given on the visual aesthetics for the project, it's time to slice up the mockup, break out the design elements, and develop code.
- Many core tasks are involved here such as
  - Tech Stack choice
  - Out of the box solutions
  - building the site structure
  - developing code
  - constructing the templates
  - importing data
  - publishing content
  - creating news stories and events, etc.

❑ Bootstrap

- Developers load up the project into a source controlled repository and get the CMS or custom development framework in place.
- entire team can access and work with the code.

❑ Chrome & Skeleton

- Interface designers slice and dice the final creative design and start using it in code.
- A job well done here will show in the web browser the site's brand, navigational elements, header and footer, and any other site-wide elements
- complete site structure with all pages created and accessible in the CMS

❑ Build Templates

- Each unique section and layout needs a template built.
- do this by using HTML/CSS, JavaScript, and the tools within the CMS (if applicable).
- This includes the home page, main landing pages, and tertiary content pages.

❑ Special Features

- Features unique to the site require special attention when building.
- these features are custom built according to project requirements.
- All sorts of features fall into this category such as Advanced Search, Map/GPS Based Searching, Data Exporting, Reporting, On Demand PDF Creation to name a few.
- Once a feature is complete it then gets placed on its respective page(s) of the site.

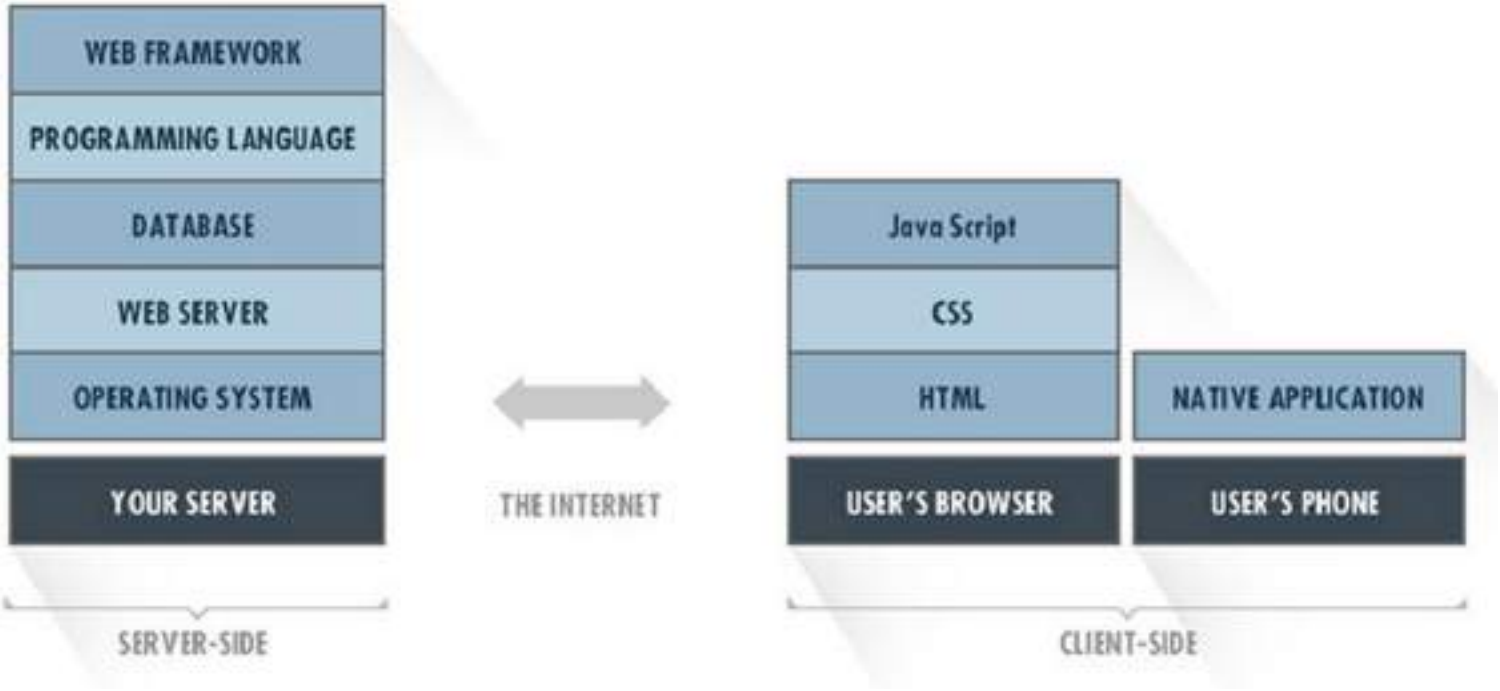
- Choosing the right software for your business can be a daunting task.
- A great deal of time and money is spent learning to use and implementing software that will be used by your company.
- A lot of time and consideration needs to be put into choosing the right software.
- One of the first points to consider when picking software is whether to buy out-of-the-box software or have a developer build software to fit your business's specific needs.
- In some cases, out-of-the-box software can be a better fit while in others, custom development is the best option.

Develop
Custom Solutions

LITHAN

- Developing, or having someone develop, your own custom software can greatly help your business.
- It can be made to perform your business processes exactly how you want them done, and can be customized to included exactly what you want or need out of that software.
- Custom developers can build with your business and employees in mind, not just the general software user.
- This feature also highlights the need to have carefully considered and laid out requirements for any development project.
- Be sure your requirements have been clearly laid out and understood by the developer before the project begins, because errors will cost time, and time is money.

- A tech stack is a combination of software products and programming languages used to create a web or mobile application
- Applications have two software components: client-side and server-side, also known as front-end and back-end
- Each layer of the application builds on the features of the one below it, creating a stack



- The back-end contains the business logic that works behind the scenes to drive your application.
- Users will never directly engage with the back-end, all information is passed back and forth through the front-end.
- The most well known example of a back-end tech stack is the LAMP stack (**L**inux, **A**pache, **M**ySQL, **P**HP).
- More recent variations of this stack include Ruby or Python as the programming language instead of PHP.
- A programming language is selected along with a web framework written in that language.
- Frameworks are incredibly useful because they provide developers with vetted implementations of common web application features like user authentication and data access, saving them from re-inventing the wheel.

- Some popular frameworks and its associated languages

FRAMEWORK	LANGUAGE
Ruby on Rails	Ruby
Django	Python
Node.js	Javascript
Laravel	PHP
.NET	C#

- The front-end is the visual part of your application that users will see and interact with.
- When building for the web, the front-end tech stack is made up of:
  - HTML (Markup Language)
  - CSS (Style Sheet Language)
  - JavaScript (Scripting Language)
- JavaScript frameworks include tools for building rich, interactive web experiences. *Recommended: AngularJS, Backbone.js, ReactJS*
- Presentation frameworks provide a standardized format for creating responsive web pages with clean aesthetics. *Recommended: Bootstrap*

WordPress

- Easily the most accessible and possibly the most commonly used, the strength of WordPress is in its quick installation and the massive user and developer community that results in a vast array of plugins and enhancements for the platform.

Joomla

- millions of websites are running on the software, and the reason for this is simple – it is extremely customizable, suitable for pretty much any purpose.

Drupal

- A popular free and open source CMS, **Drupal** is often one of the first choices when building a new website. Like many of the other tools listed here.
- Drupal can be scaled for personal blogs or enterprise mega-sites, and like WordPress there are thousands of modules that can be added to increase functionality.

- What is a Page Template ?
  - Page templates are used to change the look and feel of a page in a CMS.
  - A page template can be applied to a single page, a page section, or a class of pages.
  - Page templates generally have a high level of specificity, targeting an individual page or group of pages. For example, a page template named page-about.php is more specific than the template files page.php or index.php as it will only affect a page with the slug of “about.”
  - If a page template has a template name, WordPress users editing the page have control over what template will be used to render the page.
- We will discuss in more details about page template in IU 11.

Develop
Developing The System

LITHAN

- After you have finalized your platform, database or off the shelf software, begin development of your solution
- Develop your solution using appropriate development tools and programming languages
- Analyse & Design your database if needed
- Base your development on the Wireframes, Mockups and Prototypes you earlier developed.
- For out of the box solutions, consult with the manual for various features
- For custom development develop your own solution.

- A Media asset is a content file - textual, graphical, or otherwise - with the potential to be used in the website
- Typically Photos, MPEG-4 videos etc
- Use Stock Photo website such as www.gettyimages.com to source for your photography needs
- Develop and compress videos and organize it as part of your media assets

Implement
Website Testing

LITHAN

- Site content correct
  - Accuracy
  - Completeness
  - Consistency
  - Spelling
- Functional site
  - Functional Testing
  - Easy Navigation (Usability Testing)
  - Load time (Performance Testing)
  - Security Testing
- Multi-browser support
  - Firefox, Internet Explorer, and others
  - Browser Version
- Information easily readable
  - Font
  - Size
  - Color

- Content should be logical and easy to understand.
- Check for spelling errors.
- Usage of dark colours annoys the users and should not be used in the site theme.
- You can follow some standard colours that are used for web page and content building.
- Content should be meaningful.
- Images should be placed properly with proper sizes.

❑ Test Links

- Test the outgoing links from all the pages to specific domain under test.
- Test all internal links.
- Test links jumping on the same pages.
- Test links used to send email to admin or other users from web pages.
- Test to check if there are any orphan pages.
- Finally link checking includes, check for broken links in all above-mentioned links.

❑ Test forms in Web Pages

- First check all the validations on each field.
- Check for default values of the fields.
- Wrong inputs in the forms to the fields in the forms.
- Options to create forms if any, form delete, view or modify the forms.

❑ Cookie testing

- Cookies are small files stored on the user machine.
- These are basically used to maintain the session- mainly the login sessions.
- Test the application by enabling or disabling the cookies in your browser options.

❑ Validate your HTML/CSS:

- If you are optimizing your site for Search engines then HTML/CSS validation is the most important one.
- Mainly validate the site for HTML syntax errors. Check if the site is crawlable to different search engines.

❑ Database testing:

- Data consistency is also very important in web application.
- Check for data integrity and errors while you edit, delete, modify the forms or do any DB related functionality.
- Check if all the database queries are executing correctly, data is retrieved and also updated correctly.

- Navigation means how an user surfs the web pages,
- different controls like buttons, boxes or how the user uses the links on the pages to surf different pages.
- Usability testing includes the following:
  - Website should be easy to use and navigate.
  - Check if the instructions provided are perfect to satisfy its purpose.
  - Main menu should be provided on each page.
  - It should be consistent across pages.

- Web application should sustain to heavy load. Web performance testing should include:
  - Web Load Testing
  - Web Stress Testing
- **Web Load Testing**
  - You need to test if many users are accessing or requesting the same page.
  - Can system sustain in peak load times?
  - Site should handle
    - many simultaneous user requests
    - large input data from users
    - simultaneous connection to DB
    - heavy load on specific pages etc.
- **Web Stress testing:**
  - Generally stress means stretching the system beyond its specified limits.
  - Web stress testing is performed to break the site by giving stress and its checked as how the system reacts to stress and how it recovers from crashes.
  - Stress is generally given on input fields, login and sign up areas.

- Compatibility of your website is a very important testing aspect. See which compatibility test to be executed:
  - Browser compatibility
  - Operating system compatibility
  - Mobile browsing
  - Printing options
- **Browser compatibility**
  - Some applications are very dependent on browsers.
  - Different browsers have different configurations and settings that your web page should be compatible with.
  - Your website coding should be a cross browser platform compatible.
  - If you are using java scripts or AJAX calls for UI functionality, performing security checks or validations then give more stress on browser compatibility testing of your web application.
  - Test web application on different browsers like Internet explorer, Firefox, Netscape navigator, AOL, Safari, Opera browsers with different versions.

Operating System Compatibility

- Some functionality in your web application is that it may not be compatible with all operating systems.
- All new technologies used in web development like graphic designs, interface calls like different API's may not be available in all Operating Systems.
- Hence test your web application on different operating systems like Windows, Unix, MAC, Linux, Solaris with different OS flavors.

Mobile Compatibility

- Test your web pages on mobile browsers. Compatibility issues may be there on mobile devices as well.
- Use Responsive Web Design to achieve mobile compatibility

Implement
Security Testing

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- Test by pasting internal URL directly onto the browser address bar without login. Internal pages should not open.
- If you are logged in using username and password and browsing internal pages then try changing URL options directly. I.e. If you are checking some publisher site statistics with publisher site ID= 123. Try directly changing the URL site ID parameter to different site ID which is not related to the logged in user. Access should be denied for this user to view others stats.
- Try some invalid inputs in input fields like login username, password, input text boxes etc. Check the systems reaction on all invalid inputs.
- Web directories or files should not be accessible directly unless they are given download option.
- Test the CAPTCHA for automates script logins.
- Test if SSL is used for security measures. If used proper message should get displayed when user switch from non-secure http:// pages to secure https:// pages and vice versa.
- All transactions, error messages, security breach attempts should get logged in log files somewhere on the web server.

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- The Implementation Plan describes how the information system will be deployed, installed and transitioned into an operational system.
- The plan contains
  - an overview of the system
  - a brief description of the major tasks involved in the implementation
  - the overall resources needed to support the implementation effort (such as hardware, software. facilities, materials, and personnel)
  - any site-specific implementation requirements.
- The plan is developed during the Design Phase and is updated during the Development Phase.
- the final version is provided in the Integration and Test Phase and is used for guidance during the Implementation Phase.

- Different Web Servers have different deployment method following are the list of pointers
  - Ensure you have FTP, SCP or other way of access to the Web Server
  - Ensure you have a user name and password to deploy the files
  - If it is WebSphere or other J2EE container, ensure you have access to the Administration tool to deploy the war file
  - If it is IIS and ASP.NET ensure the folder is configured as a web application
  - Ensure the folder you upload to is configured properly to serve the pages from the Web Server
  - Ensure the uploaded files are given proper access rights for security reasons
  - Ensure the Webserver logging is in place to catch the error and access information.

- Preparation of Database Server differ among Database Servers such as SQL Server, My SQL Server, Oracle Server, DB2 Server etc. Basic items to look for are below
  - Create a database or schema in the database server which can be used by application which is deployed
  - Prepare User Name & Password for access to the concerned database
  - Deploy the Schema in to the created database
  - User capable of creating schema using DDL commands need special rights (check with your database administrator)
  - Ensure the given User has at the minimum DML rights to be used by your application
  - Test the database connectivity from your application by deploying test scripts to web server.

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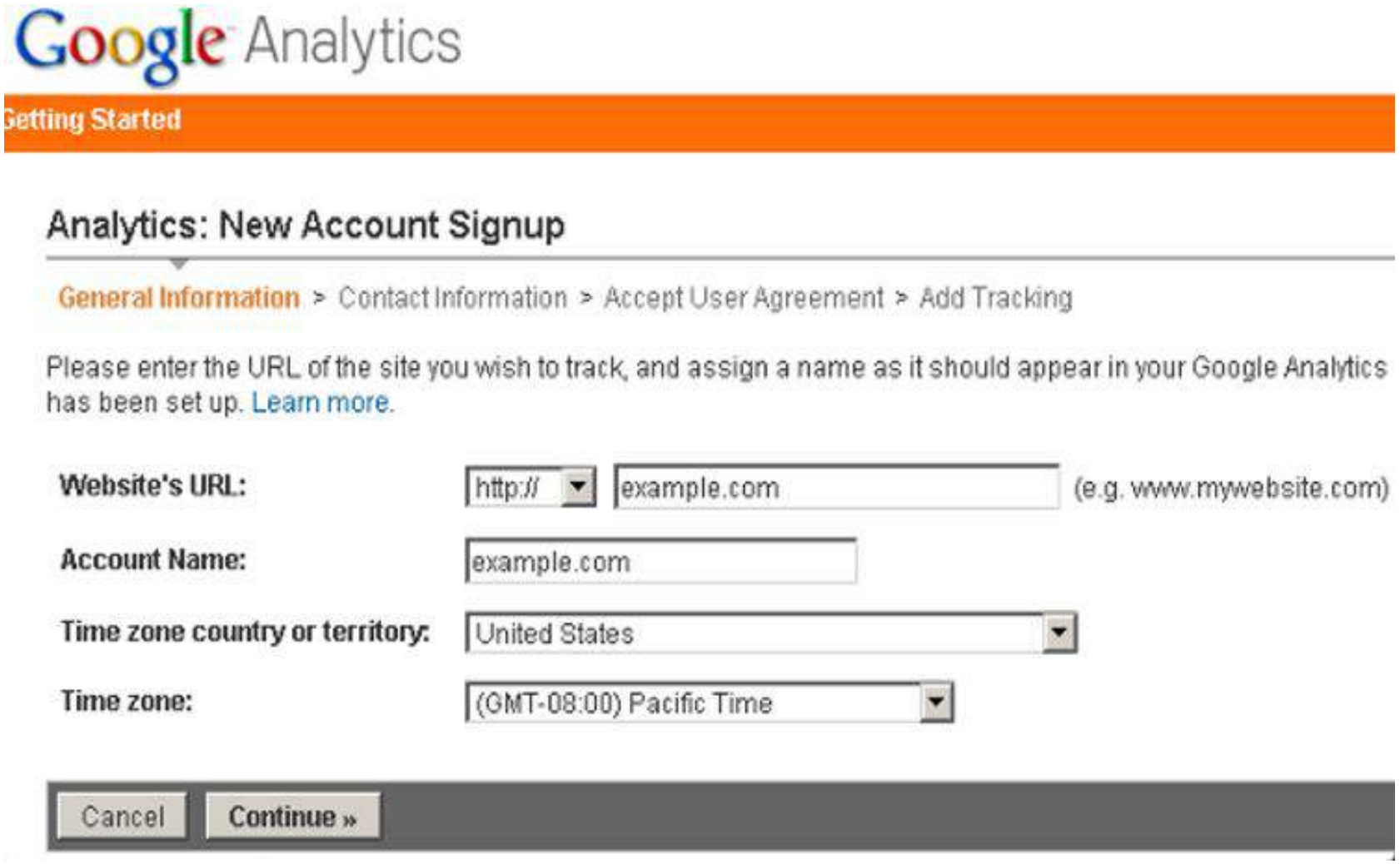
- Deploy the Web Application files to the web server
- Deploy the Schema to Database Server
- Check connectivity from Web to Database Server
- Ensure proper folder access rights are given to folders where you upload files to as part of the application (Such as uploading images, import files etc)
- Ensure anonymous users have only read and script execute access for folders and files
- Test the Web application after deployment

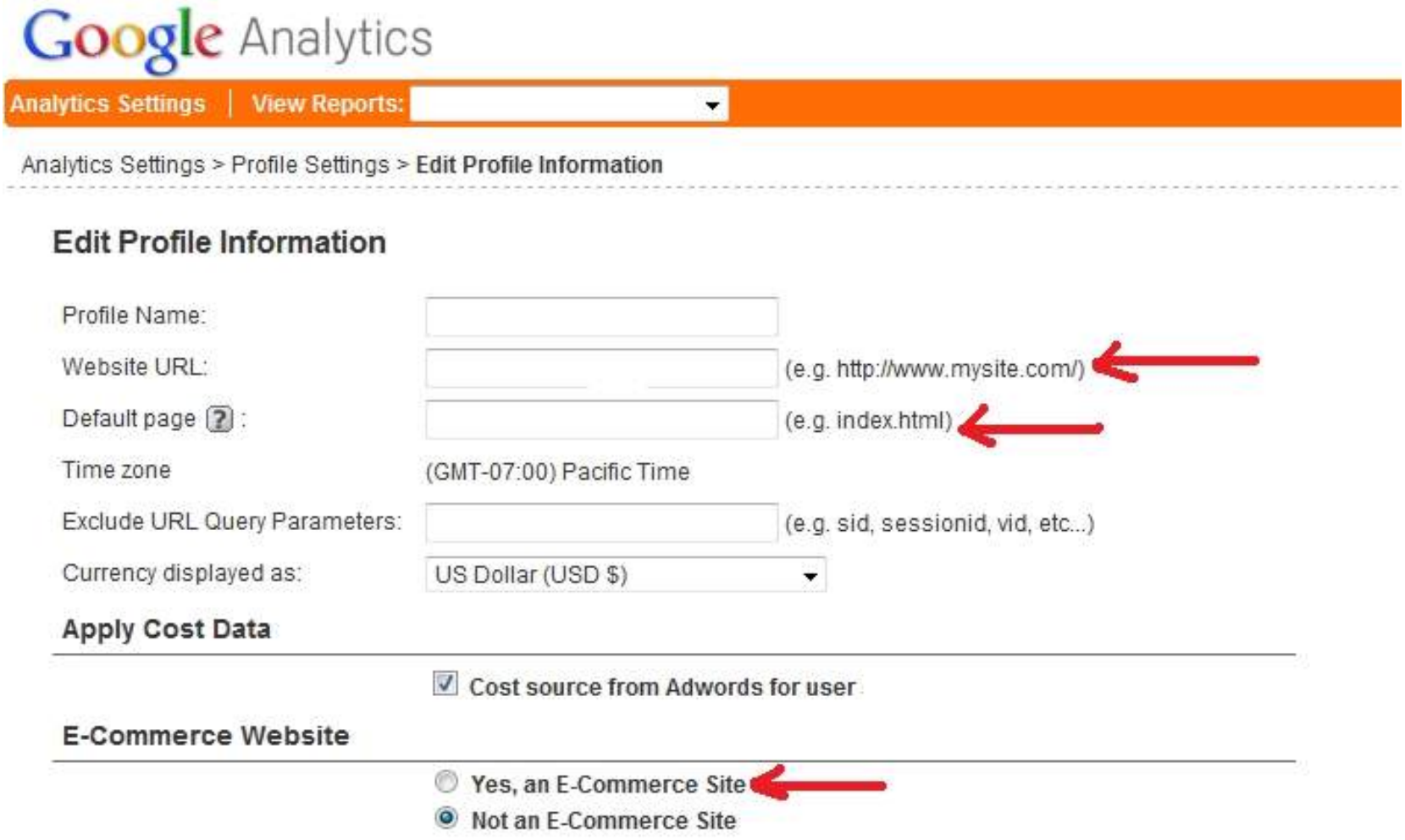
- What is Web Analytics ?
  - **Web analytics** is the measurement, collection, analysis and reporting of internet data for purposes of understanding and optimizing web usage.
- What are the different choices in web analytics?

1. Setting up a Google Account – search “Google Account”
2. Navigate to Google.com/analytics

- Enter general **website** information



- Enter website **profile** information



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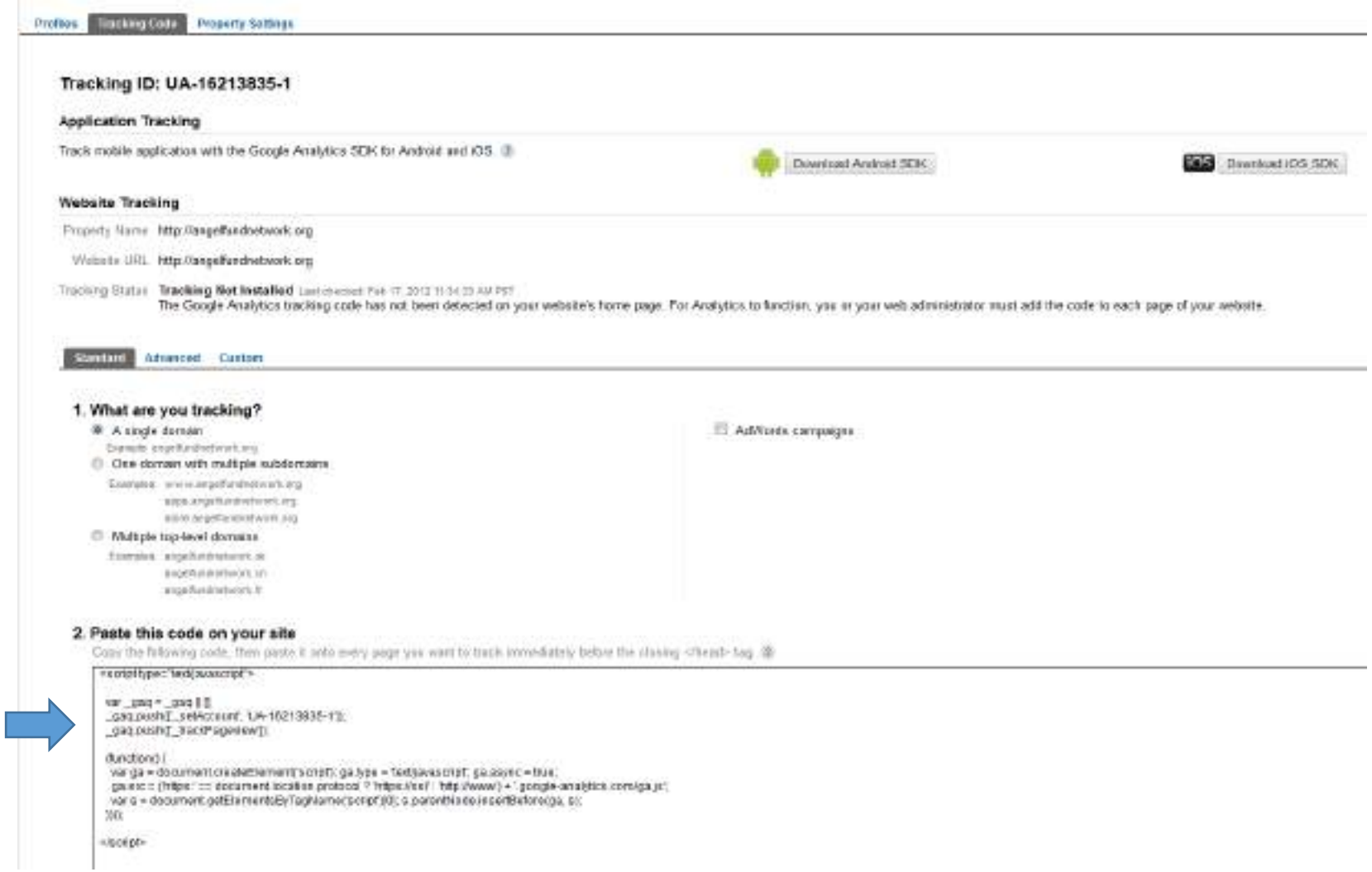
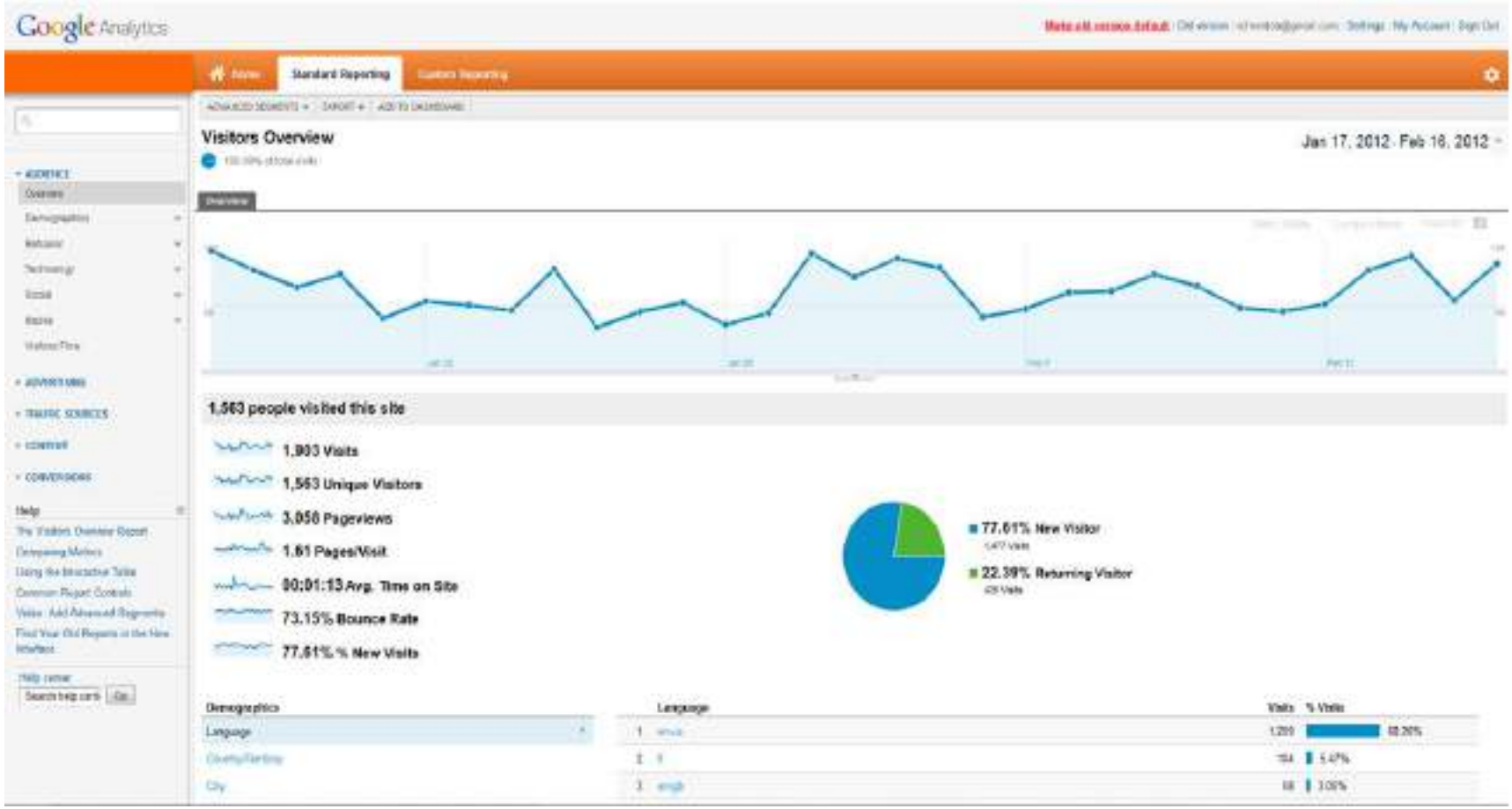
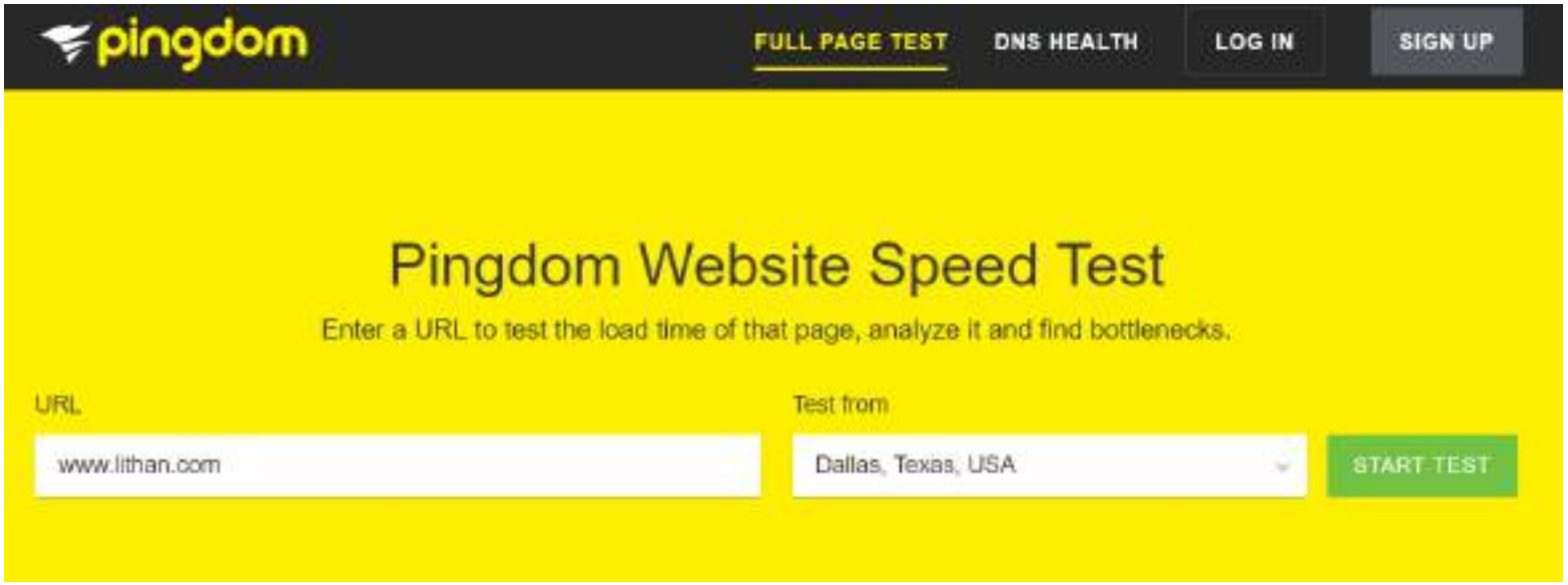
- Copy and Install Tracking Codes:



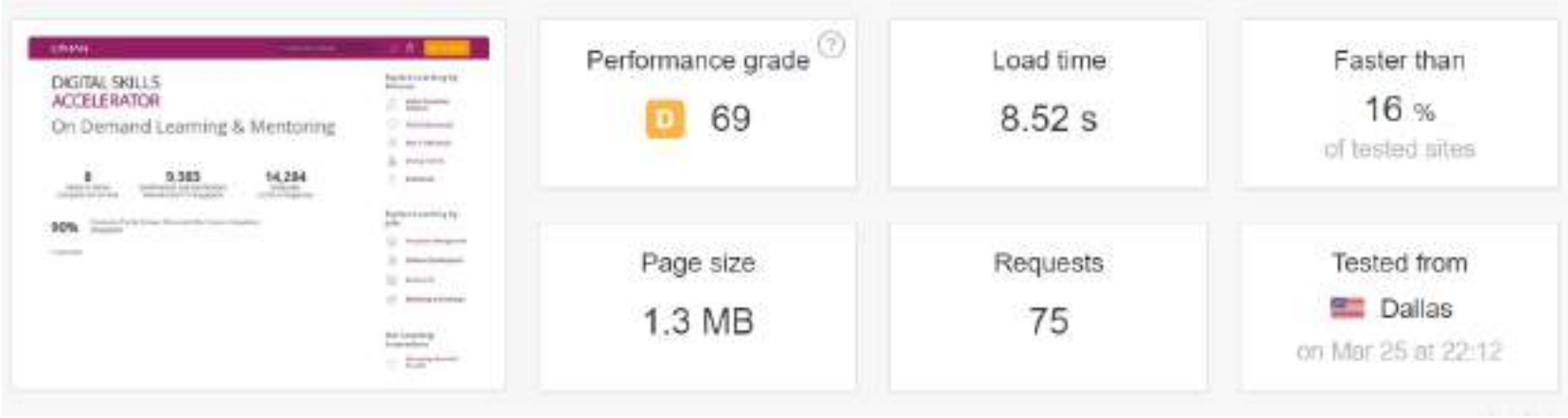
- Start using Analytics



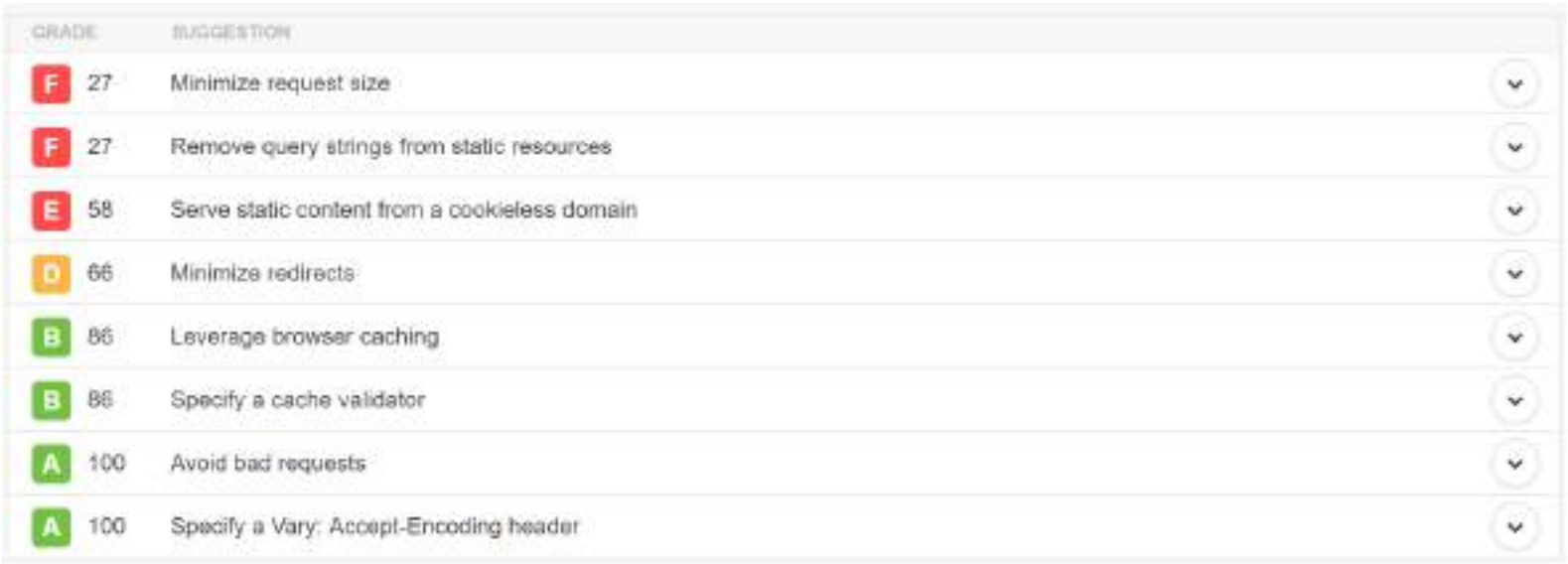
- Test your website for performance such as
  - Page Load Time
  - Images & Scripts Count
  - Images & Scripts Load Time
  - Download time based on location etc.
  - Use the metrics to fix various issues
- You can use a tool such as http://tools.pingdom.com



❑ View Sample Results



❑ Performance Insights



- Various other metrics

Content size by content type

CONTENT TYPE	PERCENT	SIZE
Image	47.9 %	644.57 KB
Script	37.4 %	502.60 KB
{ } CSS	8.0 %	107.55 KB
Other	4.6 %	62.38 KB
HTML	2.1 %	28.39 KB
Total	100.00 %	1.31 MB

Requests by content type

CONTENT TYPE	PERCENT	REQUESTS
Image	47.1 %	33
Script	27.1 %	19
{ } CSS	15.7 %	11
Other	7.1 %	5
HTML	2.9 %	2
Total	100.00 %	70

Content size by domain

DOMAIN	PERCENT	SIZE
www.lithan.com	69.4 %	934.08 KB
v2.zopim.com	17.5 %	234.98 KB
fonts.gstatic.com	4.6 %	61.96 KB
connect.facebook.net	4.6 %	61.69 KB
analytics.sambaash.com	1.6 %	21.96 KB
other	2.3 %	30.82 KB
Total	100.00 %	1.31 MB

Requests by domain

DOMAIN	PERCENT	REQUESTS
www.lithan.com	78.6 %	55
fonts.gstatic.com	4.3 %	3
analytics.sambaash.com	4.3 %	3
v2.zopim.com	2.9 %	2
connect.facebook.net	1.4 %	1
other	8.6 %	6
Total	100.00 %	70

- Following are the list of items which need to be backed up for best Disaster Recovery & Business Continuity (DRBC)
  - Web Files
  - Application Files
  - Application Configurations
  - Databases
- **Files Backup**
  - use a tool like backup4all to backup your web files, application files and configuration files
- **Database Backup**
  - Use features available in database MS Sql Server such as Scheduled Tasks, Maintenance Plan to create a schedule of backup.
  - For MySQL use mysql dump tool to backup. Schedule the backup to occur at interval you specify using Windows Scheduler
  - Use Transaction Logs to do incremental backup
- Remember to move the backups of files and database to another server to guard against server crashes

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- Restore
  - For Files
    - Restore the files and configuration from backup
    - Restart the Server if needed
  - For Database
    - Restore Database from backups
    - Apply Transaction logs up to point of failure
- Keep a standby server always ready for emergencies

Introduction to W3C Standards

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- W3C
  - Stands for World Wide Web Consortium
  - Founded in 1994 by Sir Tim Berners-Lee (inventor of the Web)
- W3C is the home of the Web and Semantic Web
  - (http://www.w3.org)
- 400+ members (SMEs, users,...)
  - (http://www.w3.org/Consortium/Member/List)
- 65 groups doing the work
  - (http://www.w3.org/Consortium/activities)
- 18 world offices all over the world
  - (http://www.w3.org/Consortium/Offices)
- A team of ~55 individuals - working and living distributed around the globe - coordinated by 3 hosts
  - MIT (US), ERCIM (Europe), Keio University (Japan)
- 4Mio hits/day on http://www.w3.org/

Introduction to W3C Standards

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- W3C Mission
  - "to lead the Web to its full potential"

- Sir Tim Berners-Lee, Inventor of the Web and Founder of W3C
  - "The social value of the Web is that it enables human communication, commerce, and opportunities to share knowledge [and] to make these benefits available to all people, whatever their hardware, software, network infrastructure, native language, culture, geographical location, or physical or mental ability."

- Goals of W3C
  - **Web for Everyone** → enable human communication, commerce and knowledge sharing to all people independently of infrastructure, physical or mental abilities
  - **Web on Everything** → facilitate Web access from any kind of device
  - **Knowledge Base** → support diverse user communities in the resolution of hard problems
  - **Trust and Confidence** → promote technologies that support collaborative developments in secure transactions with trusted agents

Introduction to W3C Standards

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- Objectives of W3C
  - prevent the Web from breaking apart
  - grant interoperability
  - make sure that the web is a creative space
  - maintain extensibility
  - lead the web to its full potential

- W3 Standards
  - More than 100 Standards & specifications
  - HTML, XHTML, XML, XML Schema, XPath, XQuery, XSLT, RDF, RDF Schema Language, SPARQL, OWL, among others
  - W3C Standards are called W3C Recommendations

W3C Technology Stack

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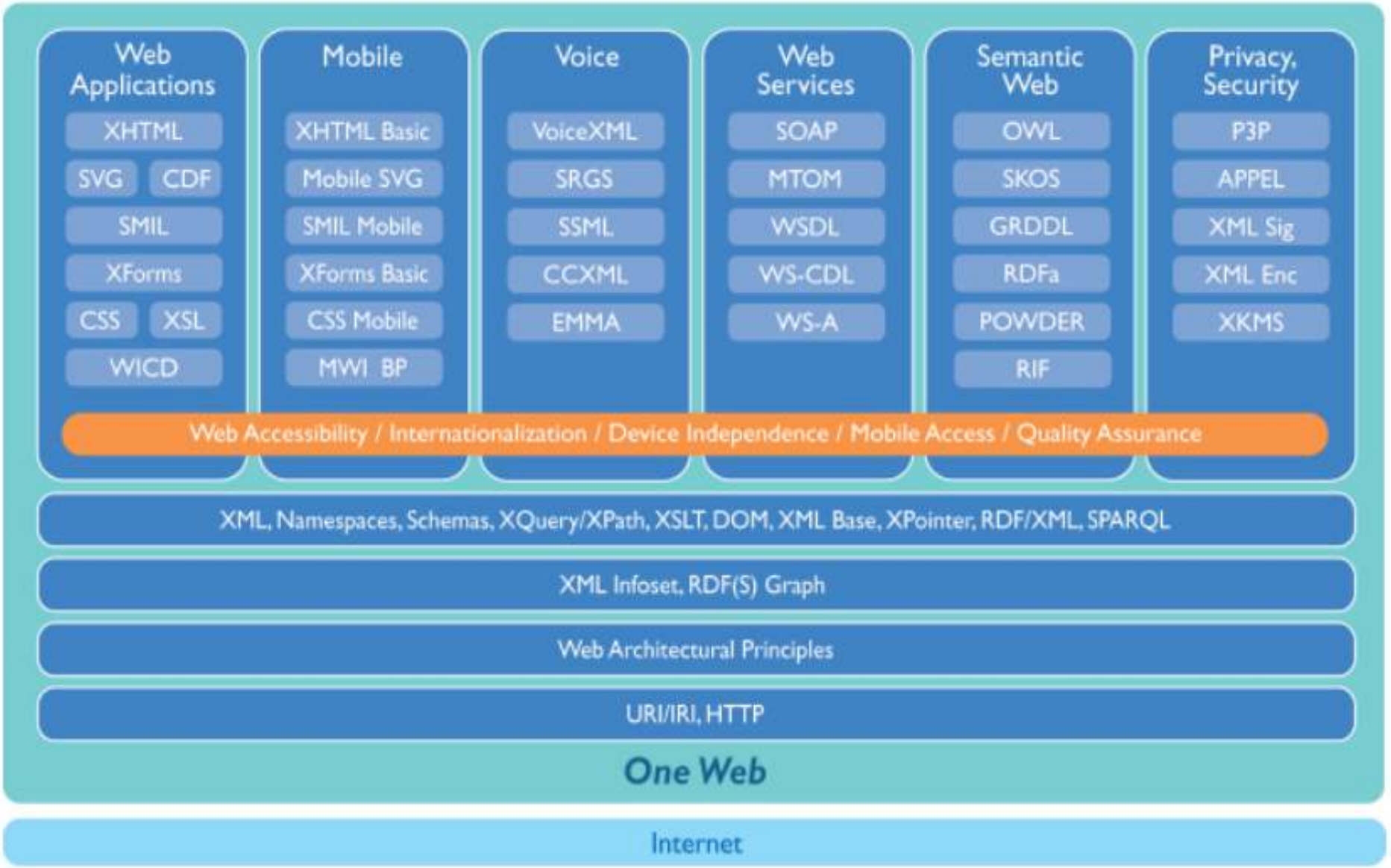

Website Laws
Overview

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- **Important Laws concerned with website design and development**
  - Data Protection Act, Disability Discrimination Act, eCommerce Regulation Act, Intellectual Property Rights
- **Data Protection Act**
  - A law to protect the data related to individuals and companies
  - A website should protect the data related to customers, vendors, visitors etc. related to the online business
- **Disability Discrimination Act**
  - A law to ensure that the disabled have equal opportunity to use the services / products offered
  - A website should consider the accessibility requirements of the disabled
- **eCommerce Regulation Act**
  - A law to regulate the operations of online e-commerce business operates – how products and services can be sold, tax obligations etc.
  - A website, which facilitates buying and selling products and / or services should comply with all provisions of this act
- **Intellectual Property Rights**
  - Concerned with protecting the intellectual property of individuals or enterprises
  - A website, including its design, content, media assets etc should not violate the IP rights of any company or individual

Website Laws
Data Protection Act

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- What is Personal data
  - Data held electronically or in certain manual files
  - Identifying living individuals
- Data controller
  - Decides how and why to process personal data
  - Legal entity
- Exemptions
  - Domestic affairs
- **Eight principles of the Data Protection Act**, to make sure that personal information is
  - Fairly and lawfully processed
  - Processed for limited purposes
  - Adequate, relevant and not excessive
  - Accurate and up to date
  - Not kept for longer than is necessary
  - Processed in line with your rights
  - Secure
  - Not transferred to other countries without adequate protection

Website Laws
Data Protection Act Summary

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- Tell people what you are doing with their data
- Make sure your staff are adequately trained
- Use strong passwords
- Encrypt all portable devices
- Only keep people's information as long as necessary
- Appropriate technical and organisational security measures
- Technical measures
  - Use/encryption of portable devices
  - Passwords
- Organisational measures
  - Training staff and volunteers
  - Policies
- Disclosures to data processors (more later)

Website Laws
Disability Discrimination Act

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- Makes it unlawful for a service provider to discriminate against a disabled person by refusing to provide any service which it provides to members of the public.
- A service provider has to take reasonable steps to change a practice which makes it unreasonably difficult for disabled people to make use of its services.
- For people with visual impairments, the range of auxiliary aids or services which it might be reasonable to provide to ensure that services are accessible should include … accessible websites.
- For people with hearing disabilities, the range of auxiliary aids or services which it might be reasonable to provide to ensure that services are accessible should include … accessible websites.

- Basics for Contract Law
  - Offer
  - Acceptance
  - Consideration
  - Intention to Create legal relation
- The website provider will want to structure its site as an invitation to treat (not capable of acceptance) and ensure user is the party making an offer.

Website Laws
eCommerce Regulation Act Info Requirements

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- Makes available to visitors “in a form and manner which is easily, directly and permanently accessible”:
  - Name of service provider (e.g. Lithan Limited), place of registration, registered number and registered address
  - Geographical address – where Lithan Limited is established
  - Details of service provider, including email address (for rapid, direct and effective communication)
  - GST number (if subject to GST)
  - If referring to prices – indicate clearly and unambiguously, and state whether inclusive of tax and delivery costs.

Website Laws
eCommerce Regulation Act Requirements

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- **Prior to order** In a "clear, comprehensible and unambiguous manner":
  - What technical steps are required to conclude the contract (e.g. crumb trail)
  - Will concluded contract be filed and accessible?
  - How consumers can identify and correct input errors prior to placing order.
  - Failure to provide an "appropriate, effective and accessible means" to do this means a consumer can rescind their contract.
  - Languages offered for contract
  - Terms and conditions – users must be able to store and reproduce them (e.g. send by email)
  - Any codes of conduct to which we subscribe
- must acknowledge the receipt of an offer "without undue delay and by electronic means"
- Take care this acknowledgement of an offer is not "acceptance" – this can be done later

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Intellectual Property (IP)

- a property that arises from the human intellect

Two forms of IP

- Literary & Artistic Works
- Industrial Property

Literary & Artistic Works

- books, paintings, musical compositions, plays, movies, radio/tv programs, performances, & other artistic works.
- Protected by Copyright Laws

Industrial Property

- Describes physical matter that is the product of an idea or concept for commercial purposes
- Protected by
  - Patented objects
  - Trademarks
  - Industrial Designs
  - Trade Secrets
  - Layout-designs
  - Geographical Indications

THANK YOU