

This lesson illustrates how a *design process* is applied to the design of a website. This process however can be used in any design project, be it for a physical artefact or a *multimedia interface* such as RTE.ie.

The design process

Although designing is rarely a strictly linear process, it is helpful nevertheless to describe it in terms of an overall sequence of logical steps. These steps usually include the following:

- Analysing the brief
- Considering the issues, the factors involved
- Examination of previous or similar approaches or solutions
- Generating ideas; consulting colleagues
- Selecting and developing the best idea
- Planning the production
- Evaluating the product
- Producing the artefact.

In practice many of these steps proceed in parallel and may loop back to earlier steps.

Website design – initial steps

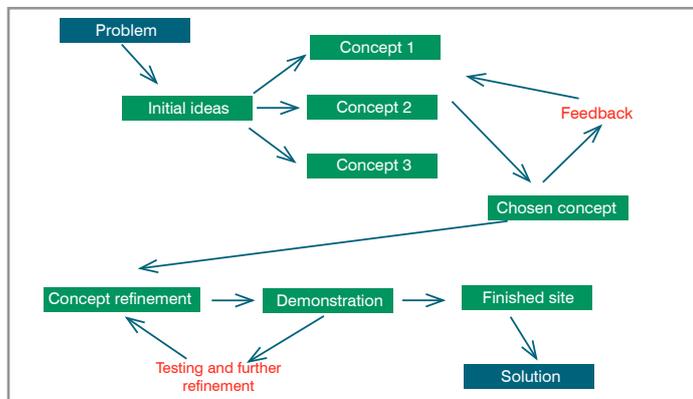


Fig. 1 Workflow chart

As with any initial design project, key questions need to be asked at the outset of a website design project in order to clarify the design brief and shape the overall direction of the project:

- Why are we doing this?
- What are the problems with the current product?
- What improvements can be made?
- What is it for and what will it do?
- How will it work and what is needed for it to function correctly?
- Who will use it?
- Where will it be used?

Development

The key stages of the web design process are:

- Design of initial concepts: this could take the form of anything from a sketch to a typed document
- *Wireframe* design
- Concept design (generally three different solutions are designed, however sometimes more concepts may be produced at this stage)
- Concept *refinement* and selection of preferred concept
- Development of the preferred concept.

The design is then tested and refined in response to testing such as user *feedback* or focus groups. This phase may involve revisiting the preferred design route and improving its features and *functionality*.

When looking at web design, key considerations during all stages of the project range from usability, functionality, *aesthetics* and design features to *hosting*, *back-end updating* and *content management*. Other important aspects are *rights* issues and the management of resources and budgets.

Sketches

Sketches are helpful in communicating ideas and in clarifying the overall concept. The most useful sketches are simple and include the minimum of detail. Because initial ideas are generally ‘fuzzy’, it is useful to represent them visually, e.g. as simple blocks or design elements. As the ideas become clearer the sketches progress with more detail and a more defined structure.



Fig. 2 An initial sketch concept

Wireframes

Simple box shapes can be used to assign space for various webpage elements such as headings, logos, menus, text, pictures, news and links to related sites. These boxes are referred to as ‘wireframes’. They give a visual impression of the general appearance of a page even though they show no content. It is common practice to use a box with diagonal lines to indicate the placement of *graphic objects*. Navigation and usability are key considerations when producing wireframes.

Drawing software is used to move the wire frame to the next stage and shows ultimately how the overall design and layout will look. This software is used to change colours, shapes and overall layout as the design changes and develops.

Team work

If you are working as part of a design team then the sketches and wireframes facilitate the sharing of ideas. Team members (e.g. web designer, project manager or programmer) will generally generate more design ideas than an individual working in isolation. However, feedback from others (e.g. stakeholders, end users) clarifies design concepts and helps maintain the focus of the group.

Web design tools

In the early days of web design (ca. 1990) a special set of commands, known as *HTML* (HTML: Hypertext Markup Language) was devised to

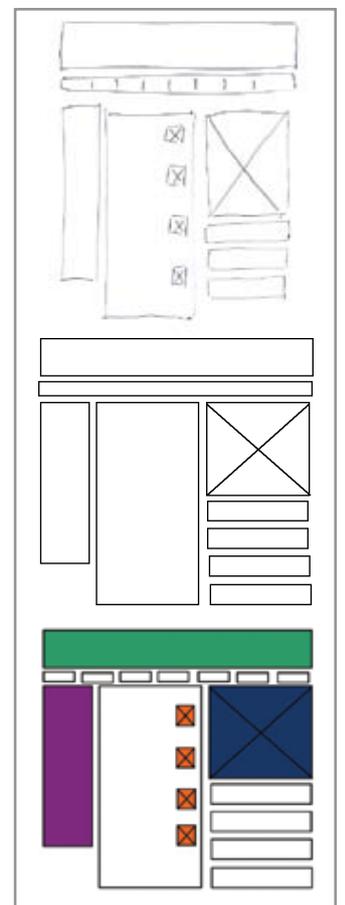


Fig. 3 Development of a wireframe

build web pages; its use required knowledge of HTML coding. Today, additional more advance software speeds up the overall design process and allows for the creation of more dynamic and visually appealing web designs. In the late 1990s *XHTML* (Extensible Hypertext Markup Language) and Java Script were devised; these combined with *CSS* (*Cascading Style Sheets*) and other programming languages allow for more flexible transfer of data between different systems and in turn more exciting designs.

Along with these developments, advances in multimedia technology have made it easier to integrate video and audio content into web pages.

Size of content

Data on web pages has many forms including text, still images, *animated graphics*, sound, video, links and even typical office applications such as word processors. The size of the corresponding data files varies greatly; a page of text is typically less than 5,000 *bytes* (5 *kilobytes*) while a one-minute video might be 5,000,000 bytes (5 *megabytes*), depending on the quality. A number of compression methods have been devised to reduce the size of graphics and sound files; these generally involve some loss of quality. As faster *broadband* becomes more widely available more media-rich content can be provided with shorter download times, by websites such as [RTÉ.ie](http://www.rte.ie).

Dynamic content

In the early days of web design, many websites were static in the sense that the content did not change. Dynamic content, which is increasingly the standard website content type, can change in response to the user or to other external conditions or changing circumstances. This can be achieved in two ways:

1. The web page contains a kind of computer programme known as a script that runs in the user's computer and changes the content of the displayed web page. This is called client-side scripting.
2. *Server-side scripting* runs in the host computer and changes the content of the page that is sent to the user depending on what is typed, clicked or otherwise indicated. The page content might also be linked to databases and incorporated into webpages dynamically. In effect the HTML or XHTML code is generated '*on-the-fly*' by software within the server's computer. This is often seen in forms such as those used in booking a flight or on Internet polls.

Maintenance

This aspect of websites is frequently neglected. Long before making a website available on the World Wide Web (www) consideration should be given to its maintenance, when looking at the overall design process. The time and expense involved in setting up and maintaining a website should be considered carefully at an early stage.

Hosting

In general, as soon as a website goes live, it is located on a computer that allows www access; such a computer, or set of computers, is called a server or web host. Many individuals and organisations use the services of companies that specialise in web hosting. For small sites, remote web space is often required and is available through an *Internet Service Provider* (*ISPs*). They offer varying amounts of space for smaller scale websites with options to expand it if required.



Radio Telefís Éireann (RTÉ) is Ireland's Public Service Broadcaster, a non-profit making organisation owned by the Irish people. RTÉ's vision is to 'grow the trust of the people of Ireland as it informs, inspires, reflects and enriches their lives'. RTÉ is Ireland's cross-media leader, providing comprehensive and cost-effective free-to-air television, radio and online services, which are of the highest quality and are impartial, in accordance with RTÉ's statutory obligations.

RTÉ operates two complementary television channels, RTÉ One and RTÉ Two and four radio stations, RTÉ Radio 1, RTÉ 2fm, RTÉ lyric fm and RTÉ Raidió na Gaeltachta.

RTÉ also publishes Ireland's best-selling magazine, the RTÉ Guide, operates Ireland's leading teletext service, RTÉ Aertel, and provides a mix of up-to-the-minute and live news and other programmes and information via Ireland's most visited media website, [RTÉ.ie](http://www.rte.ie).

RTÉ is also a major contributor to the arts and has five performing groups - the RTÉ National Symphony Orchestra, the RTÉ Concert Orchestra, the RTÉ Vanbrugh Quartet, the RTÉ Philharmonic Choir and RTÉ Cór na nÓg.

The RTÉ Transmission Network is a wholly owned subsidiary and operates the nationwide transmission network.

For further information see www.rte.ie or www.sta.ie

Best practice thinking for web design

- Clarify the purpose of the website
- Find out what users will want through research
- Use appropriate software design tools
- Produce a number of possible design concepts before deciding on a final layout
- Ensure that information is accurate and clearly expressed
- Before uploading your web pages ensure that all links work correctly
- Keep the website up-to-date; users quickly tire of websites that are not maintained
- Remember that navigation and usability are important considerations throughout the entire design process.

Syllabus References

The appropriate syllabus references are:

Leaving Certificate Technology

Core: A process of *design* (pp. 12-14)

- Design Brief: Identification and Analysis of Problems
- Recognition of Constraints
- Investigation and Research
- Generation of Ideas
- Presentation of Ideas
- Selection/ Development of Chosen Ideas
- Production Planning
- Making and Testing
- Evaluation.

Core: Information and Communication Technology (p. 19)

- *Computer Graphics*: use computer graphics software to develop and visually represent ideas
- *Modelling*: model ideas in easily worked materials and/or through the use of appropriate computer software
- *Presentation* of Information: use appropriate language and media to convey information in a concise and accurate form

Option: Information and Communication Technology (p. 31)

- *Multimedia* and Design: different image and sound formats; multimedia applications; create a multimedia project to incorporate text, images, sound and some interactivity.

Learning Outcomes

On completion of this lesson students will be able to:

- Appreciate that general design principles may be applied to website design
- Appreciate the value of sketching and wireframing in clarifying design concepts
- Appreciate the differences between the various kinds of web content
- Understand what is meant by hosting
- Understand the difference between static and dynamic web pages.

General Learning Points

- Although designing is rarely a strictly linear process it is helpful to represent the stages of design as a series of logical steps.
- Understand the role of sketching is in general applied to website design.
- The initial steps in designing a website are greatly helped by the use of sketches and wireframes.

- Wireframe computer drawings are readily modified and allow easy experimentation with the size, colour and the placement of various content items.
- Web pages can contain many forms of content: text, images, audio, video, links etc.
- Rich media such as audio and video require much greater bandwidth than text and so are not very practical without broadband communication.
- Websites need to be maintained; this should be anticipated and costed.

Student Activities

- Examine a few different homepages and identify the one which is the most visually interesting. Make a wire frame version of the selected page on paper. Next draw the wireframe version with the aid of drawing software; alternatively you could use coloured paper rectangles to represent the parts of the webpage.
- Try a few different arrangements of the wireframes. Choose the modification you like best.
- Add some content to the design – a special interest, a topic on your course, a topical item, a class blog or a site of local interest.

True/False Questions

- A wireframe is a basic visual guide used to suggest the layout of fundamental elements in the interface. T F
- The first page of a website is called the splash page. T F
- Plug-ins are often needed for complex media like animation or videos. T F
- Each web page within a website is a Java file that has its own URL. T F
- Client-side scripting changes the content of the page sent to the user depending on what was typed. T F
- Server-side scripting does not change the content on the web page displayed. T F
- A website's components are classified as the front-end and back-end. T F
- The size of a one-minute digital audio file is typically about five kilobytes. T F
- Media-rich content requires less bandwidth. T F
- Wireframe design is the first step in website design T F
- A box with diagonal lines indicates the placement of text. T F

Check your answers to these questions on www.sta.ie

Examination questions

Sample questions (based on the content of the Leaving Certificate Technology syllabus)

- The Internet is hardware and the World Wide Web is software. Explain.
- What is meant by a 'search engine'?
- There are many different formats for digital images; some use raw data while others are compressed. Explain.
- Outline some of the ways in which digital images can be modified (e.g. size, colours, resolution, etc.)
- One of the common sound file formats is known as MP3. How does an MP3 file differ from an analogue audio recording?

For further examples of past questions check www.sta.ie

- Each web page within a website is a HTML file that has its own URL. These web pages are then linked together using a navigation menu composed of hyperlinks.
- A website's components are classified as the front-end and back-end. The observable content such as the page layout, text, audio and the graphics are known as the front-end whereas the back-end is made up of the organisation and efficiency of the source code, invisible scripted functions and the server-side components.
- Displaying complex media such as videos, sound and animations usually requires plug-ins such as Quicktime and Java. These plug-ins are also embedded in the webpage using HTML or XHTML tags.
- The first website was published by Tim Berners-Lee in August 1991. Berners-Lee was the first to combine the internet and hypertext.

Did You Know?

- The first page of a website is called the home page or index. A splash page usually contains an image and maybe a simple welcome message and disclaimer; its main function is to focus interest while the home page is loading.
- RTÉ.ie was launched in 1996.
- During 2007, RTÉ.ie had some 36 million page impressions and 1.6 million unique users per month.
- During the four-day 2007 General Election and results period there were over 10 million hits to RTÉ.ie.

Biographical Notes

Timothy Berners-Lee (1955 –)

The basic software units that underlie the operation of the World Wide Web were developed almost single-handedly by Timothy Berners-Lee. In 1980, while he was working at CERN (European Organization for Nuclear Research) in Geneva, he developed a closed hyperlinked database system which he called ENQUIRE. It was user-friendly and allowed the uploading and downloading of documents.



On 12 November 1990, along with Robert Cailliau, he proposed the establishment of the World Wide Web. Within two months he had created the necessary software for a working system: web server, web editor and browser. On 6 August 1991 Berners-Lee released a summary of his work on a newsgroup (a kind of electronic notice board) and thus the Internet was born.



RTÉ.ie homepage

Revise the Terms

Can you remember what the following words mean?

aesthetics, animated graphics, back-end, broadband, byte, cascading style sheets (CSS), client-side scripting, content management, design process, feedback, front-end, FTP, functionality, graphic object, hosting, HTML, interface, Internet service provider (ISP), kilobyte, logo, megabytes, multimedia, on-the-fly, plug-in, refinement, rights, server-side scripting, splash page, web host, wireframe, WWW, XHTML.

Check the Glossary of Terms for this lesson at www.sta.ie