COMP20030: Web Design

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Alternate Modules: MIS10040 Web Design & Analytics, IS30020 Web Publishing, IS40310 Weaving the Web, and others…

Contact/Timetable Information

- **Lecture Slots**
  - 2 lectures compulsory attendance per week for 12 weeks
  - When: Tuesday 11am - 12am, Thursday 12pm - 1pm
  - Where: B106, 1st Floor CS Main Building

- **Practical Sessions**
  - 2 hours compulsory attendance per week (starting 2nd week of term)
  - When: Wednesday 1pm - 3pm
  - Where: B106, 1st Floor CS Main Building

- **Module TA: Kevin Mahon**
  - Contact Kevin for all queries in relation to
    - practical work and submission
    - notification of absence, medical certs, timetabling etc.
  - Email: kevin.mahon@ucdconnect.ie

Communication and Resources

◆ **Lecture Notes and Announcements**

- Register online from https://csmoodle.ucd.ie/moodle/
- Enter enrolment key: **WD1718**
- CMS Administration Contact:
  - Paul Martin   Email: paul.martin@ucd.ie

◆ **Content Delivery Contacts**

- Lorraine McGinty   Email: lorraine.mcginty@ucd.ie
- Duncan Wallace   Email: duncan.wallace@ucdconnect.ie

◆ **Important Point to Note**

- Scheduled lecture and practical slots may be interchanged as the module progresses. **Attendance for all slots is mandatory** so this will not inconvenience any student.

Performance Assessment

- **Allocation of Final Marks**
    - MCQ Exam   10%   [Mid-term]
    - Continuous Assessment Practicals   20%   [Weekly]
    - Web Design Project   30%   [Semester end]
    - Written Paper   40%   [Summer exam]

- Students must demonstrate their abilities in **both** the written exam and practical components, or otherwise risk failing the unit.

- Quantitative assessment module components will employ the CS Grading scheme: see cs.ucd.ie/grading

Plagiarism & Computer Science

- **Plagiarism is a serious academic offence**
  - [Student Code, section 6.2] or [UCD Registry Plagiarism Policy] or [CS Plagiarism policy and procedures]

- Our staff and demonstrators are **proactive** in looking for possible plagiarism in all submitted work

- Suspected plagiarism is reported to the CS Plagiarism subcommittee for investigation
  - Usually includes an interview with student(s) involved
  - 1st offence: **usually** 0 or NG in the affected components
  - 2nd offence: referred to the **University disciplinary committee**

- Student who enables plagiarism is equally responsible
  http://www.ucd.ie/students/guide/academicregs.html
  http://libguides.ucd.ie/academicintegrity

Module Context

◆ Modern Web Design involves working with digital multi-media content, where the aim is to present that content in the most *effective* & *appropriate* way through the delivery medium of the World Wide Web.

   ■ Key Goals:
      – Effective delivery of online content and/or services.
      – Flexible interactivity for user benefit.
      – Extended reachability through varied delivery platforms:
         - Laptop/Desktop client, Mobile phone, other PDA, etc.

This Module Overview

- **Brief History of the Evolution of Web Design**

- **Software Requirements:**
  - Adobe Creative Suite 5 (CS5) which includes:
    - Adobe Fireworks
    - Adobe Photoshop
  - XampServer 7.2 which includes:
    - Apache 2.4
    - PHP 7.2

Module Descriptor:

www.ucd.ie/modules/comp20030

- **Web Design Topics**
  - HTML5
  - CSS
  - Client Side Scripting (JavaScript)
  - Web servers
  - Server Side Scripting (PHP)
  - Graphics & Image Processing
  - Page Layout & Visual Information Management
  - Responsive Web Design
  - Search Engine Optimisation

Trends Influencing Growth

Rapid movement toward smart media devices.

The Social Networking Revolution!

Trends Influencing Growth

The "early adopter movement"!
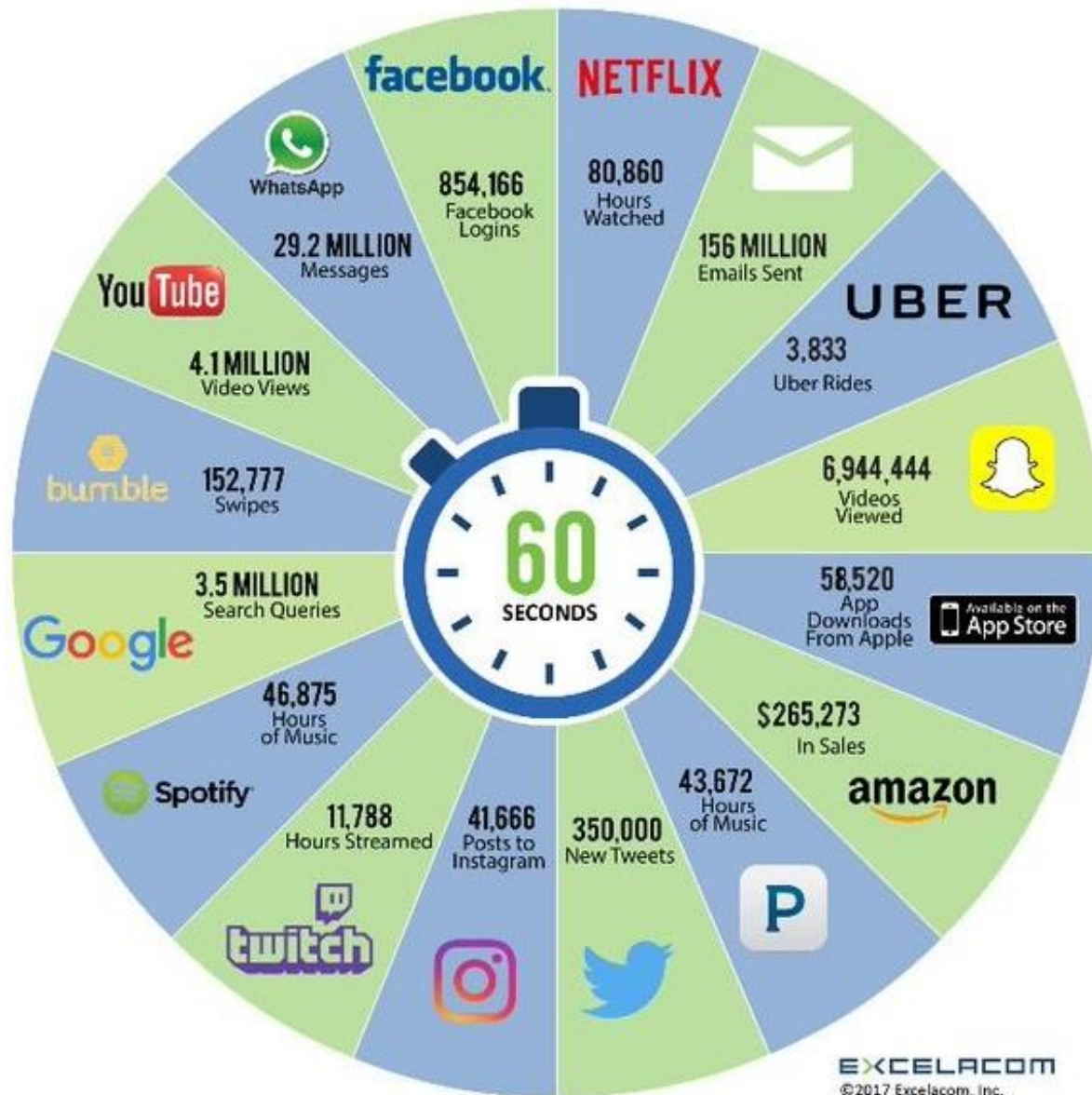
Trends Influencing Growth

Accessibility, Availability & Convenience

Trends Influencing Growth

Convergence of Technology to Meet User Demand

2017 What happens in an INTERNET MINUTE?

facebook
854,166 Facebook Logins

WhatsApp
29.2 MILLION Messages

NETFLIX
80,860 Hours Watched

156 MILLION Emails Sent

UBER
3,833 Uber Rides

You Tube
4.1 MILLION Video Views

6,944,444 Videos Viewed (Snapchat)

bumble
152,777 Swipes

58,520 App Downloads From Apple — Available on the App Store

Google
3.5 MILLION Search Queries

46,875 Hours of Music

$265,273 In Sales

Spotify

11,788 Hours Streamed

41,666 Posts to Instagram

350,000 New Tweets

43,672 Hours of Music

amazon

twitch

60 SECONDS

A Constantly Evolving Field with a Broad Coverage…

The Internet

- ◆ Intercommunication between different networks
  - − Each network is made up of many computers.
  - − Each node has a unique IP address.

- ◆ TCP/IP Protocol governs data transmission
  - − TCP/IP is a pair of communication protocols.
  - − **IP** - is responsible for moving packet of data from node to node. IP forwards each packet based on a four byte destination address (the IP number). The Internet authorities assign ranges of numbers to different organizations. The organizations assign groups of their numbers to departments.
  - − **TCP** - is responsible for verifying the correct delivery of data from client to server.

Uniform Resource Locator

◆ Each file on the Internet has a unique URL. The first part of the URL is called the **scheme**. It tells the browser how to deal with the file that it is about to open. A scheme is generally followed by a colon & 2 forward slashes.

- `http://`………

◆ Examples of common schemes:

- HTTP, or Hypertext Transfer Protocol.
    - Used to access Web pages.
- FTP or File Transfer Protocol
    - For downloading and transferring files.
- Mailto
    - For sending electronic mail.

Uniform Resource Locator

◆ The second part of a URL is the name of the server where the file is located, followed by the path that leads to the file and the file's name itself.

  ▪ Sometimes, a URL ends in a trailing forward slash with no filename given. In this case the URL refers to the default file in the last directory in the path, often called the *index.html*

  ▪ E.g., http://www.ucd.ie/

Background

Let's Take the Rapid Tour Through the **History** Behind Web Design and **Standardisation** of Web Content…

The Browser Wars!

- In 1994, Netscape put up the first *fences* on the Web in the so-called *browser* *wars*.
  - Created a set of extensions to HTML that only Netscape could handle.
  - For example, web surfers using Netscape could view pages with coloured text, photographs, and other improvements. Surfers with other browsers would get errors, funny looking results, or nothing

- The Resulting Effect
  - People liked these extensions a lot and converted to Netscape.
  - By 1996, it had become the most popular computer application in the world.
  - Microsoft started fencing their own chunk of the web…their own way…

The Push for Standards

◆ The World-Wide Web Consortium

- Often abbreviated as W3C.

- Directed by the Web's inventor Tim-Berners Lee.

- Its aim is to convince the Web community of the importance of **universality** when designing web pages by attempting to stanardise the extensions.

- They wanted to take down the fences!

Stanardisation Begins…

◆ **HTML 3.2** **[1997]**
  ▪ Key Focus: Browser Compatibility.

◆ **HTML 4 and CSS** **[1999]**
  ▪ Key Focus: Simplicity and Power.

◆ **XML and XHTML** **[2000]**
  ▪ Key Focus: Strengthening the Building Platform.

HTML 3.2

◆ Key Focus: Improved Browser Compatibility.

- Includes some of the official specifications and removes others altogether.

- Encourages brower manufacturers to support the official HTML specifications as closely as possible, so that a Web page written in this version of HTML would look the same across all browsers.

HTML 4 and CSS

◆ Key Focus: Simplicity and Power

- Previously, HTML joined content, structure, and formatting instructions in a single document - simple but not very powerful.

- The W3C envisioned a new system where formatting instructions could be saved separately from the content and structure and thus could be applied not just to a single paragraph or Web page, but to an entire site, if so desired.

- ACTION TAKEN: Mark all formating elements as deprecated, and discourage their future use.

- At the same time, they created the new system for formatting instructions called **Cascading Style Sheets** (CSS), which could not only recreate HTML's formatting but also make professional looking layouts.

XML

◆ Key Focus: Building a stronger platform for building onto.

◆ Extensible Markup Language (XML)
- Looks like HTML, complete with tags, attributes and values.
- But rather than serving as a langage for creating Web pages, XML is a language that allows you to custom your own markup language.
- Tags describe the data they contain. Thus, the data becomes available for other tasks.
  - For instance, a software program could be designed to extract just the information that it needs, perhaps join it with other data from another source and finally output the resulting combination in another form, for another purpose.

XHTML

- ◆ **XML's power comes at a price**…
  - ▪ Already there are billions of Web pages already written in HTML and millions of servers and browsers that already know how to read them.

- ◆ **The W3C Solution….XHTML**
  - ▪ Rewrite HTML in XML. Requires web page authors to apply consistent syntax rules. This new language has all of the features of HTML and thus can be understood by every browser.

- ◆ **Big Issue…**
  - ▪ Strict syntax & developers were forced to write "well-formed" code.

Open but Not Equal!

- ◆ While HTML is open to all, that doesn't mean that everyone experiences it in the same way.
  - ■ Some variations due to:
    - – the type of operating system,
    - – the screen size/resolution,
    - – the speed of the Internet connection,
    - – the hardware they use to access the browser
      - ◆ e.g., traditional desktop, laptop/notebook, mobile phone (android or iphone issues), PDA, internet kiosk, iPad, airline seat-back TV!, etc.

- ◆ Key Point:
  - ■ People access Web pages from vastly different set-ups

Relevant Stats & Current Trends

- **Operating System**
  - Windows 7 and Windows 10 are the most popular operating systems. The windows familiy still counts for over 77%.

Year	Win 10	Win8	Win7	Vista	NT*	WinXP	Linux	Mac	Mobile
Dec 2017	41.0%	8.3%	26.7%	0.1%	0%	0.5%	5.5%	9.8%	7.9%
Dec 2016	30.9%	11.1%	34.6%	0.2%	0%	1.0%	5.6%	9.8%	6.4%
Dec 2015	15.5%	16.3%	44.5%	0.4%	0.1%	2.3%	5.6%	9.9%	5.3%
Dec 2014		20.8%	53.8%	0.8%	0.2%	4.9%	5.4%	9.5%	4.8%
Dec 2013		8.2%	55.9%	1.5%	3.1%	11.6%	4.8%	9.2%	3.8%
Dec 2012		2.5%	55.6%	2.8%	1.8%	21.1%	4.7%	8.7%	2.2%
Dec 2011			46.1%	5.0%	0.7%	32.6%	4.9%	8.5%	1.2%

- Platforms that count for less than 0.1% are not listed.
- * NT includes all Windows Server operating systems (like Windows 2000, Windows Server 2003 and 2008)

Relevant Stats & Current Trends

◆ **Browsers:**

Year	Internet Explorer	Firefox	Chrome	Safari	Opera	Mozilla	Netscape
Dec 2017	3.9%	12.4 %	77.0 %	3.3 %	1.6 %		
Nov 2016	4.8%	15.5%	73.7%	3.5%	1.1%		
Nov 2015	6.3%	19.1%	68.0%	3.7%	1.5%		
Nov 2014	9.8%	23.4%	60.1%	3.7%	1.6%		
Nov 2013	10.5%	26.8%	54.8%	4.0%	1.8%		
Nov 2012	15.1%	31.2%	46.3%	4.4%	2.1%		
Nov 2011	21.2%	38.1%	33.4%	4.2%	2.4%		
Nov 2010	28.6%	44.0%	20.5%	4.0%	2.3%		
Nov 2009	37.7%	47.0%	8.5%	3.8%	2.3%		
Nov 2008	47.0%	44.2%	3.1%	2.7%	2.3%		
Nov 2007	56.0%	36.3%		1.8%	1.6%	1.2%	
Nov 2006	60.6%	29.9%			1.5%	2.5%	0.2%
Nov 2005	68.9%	23.6%			1.5%	2.8%	0.4%

Relevant Stats & Current Trends

◆ **Mobile Devices:**

Year	Total	IOS*	Android	Windows	Others
Dec 2017	7.94 %	1.33 %	6.40 %	0.17 %	0.04 %
Dec 2016	6.38%	1.23%	4.73%	0.30%	0.12%
Dec 2015	5.32%	1.31%	3.47%	0.34%	0.20%
Dec 2014	4.81%	1.18%	2.73%	0.49%	0.41%
Dec 2013	3.80%	1.13%	1.76%		0.91%
Dec 2012	2.19%	1.05%	0.90%		0.24%

*iOS is the operating system for Apple mobile devices (like iPhone, iPad and iPod).

Factors Affecting Stats

- Regional Variations (June 2015)
  - Internet Explorer (IE) is most popular in Japan. Safari in Greenland. Firefox in Germany
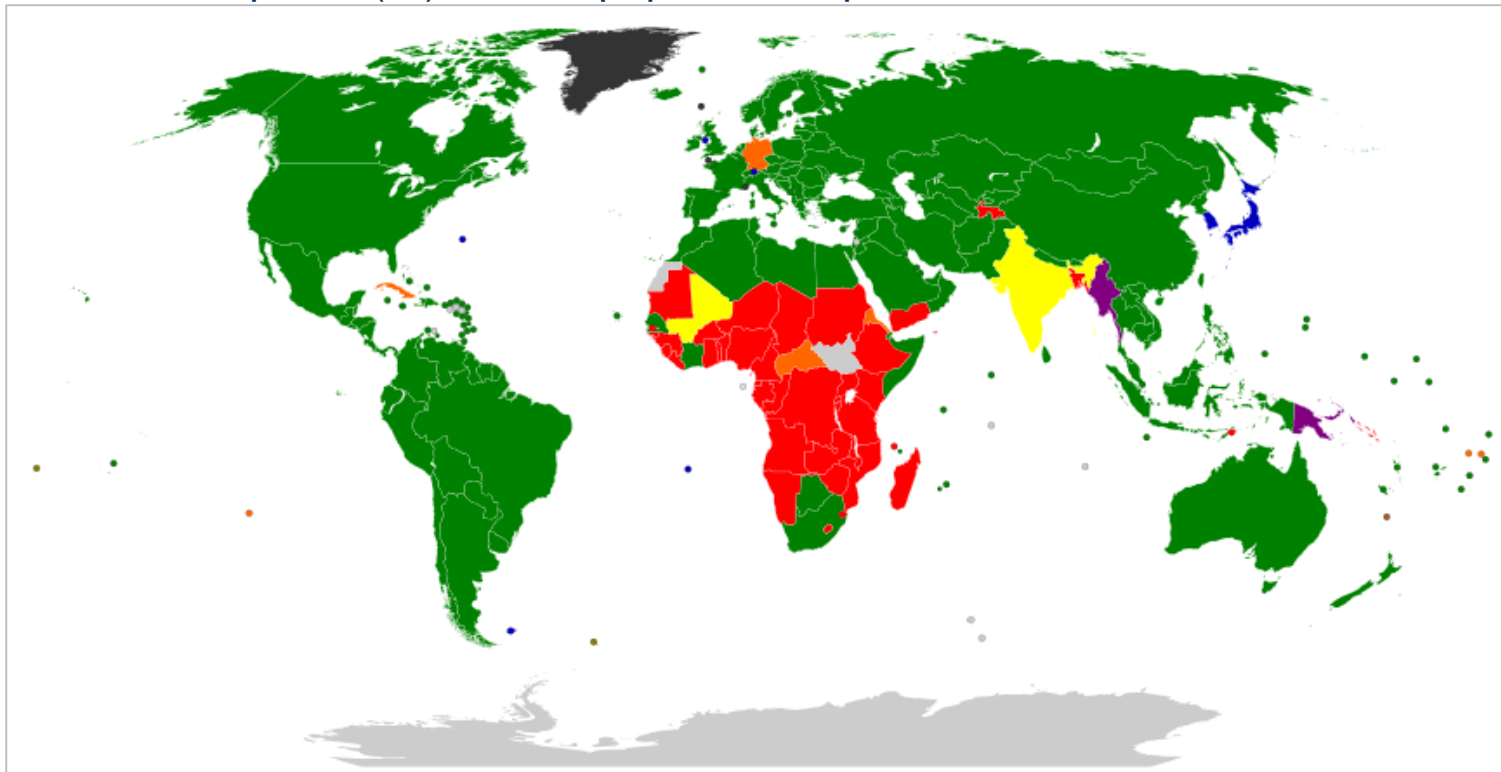
Most used web browser by country as of June 2015, before the launch of Microsoft Edge.[1] ▉ Google Chrome ▉ Firefox ▉ Safari ▉ UC Browser ▉ Iron ▉
▉ Internet Explorer ▉ Opera ▉ Android Browser ▉ Phantom ▉ No info

Note: Factors Affecting Stats

- Variations on Measurement Across Services
  - *New Market Share* and *W3Counter* use unique visitors
  - *Statcounter* statistics are derived from hits (not unique visitors) across 3 million sites.

Source	Chrome	IE	Firefox	Safari	Edge	Others
Net Market Share	56.43%	20.84%	12.22%	3.47%	5.33%	1.7%
Statcounter	62.66%	9.86%	14.95%	5.1%	3.37%	4.06%
W3Counter	56.6%	7.7%	11.1%	14.5%	2%	8.1%

Usage share of desktop browsers 2016

Source	Chrome	Safari	UC Browser	Firefox	Opera	IE	Samsung Internet	Android	Edge	Other
Statcounter	51.06%	14.02%	8.61%	6.72%	5.16%	4.44%	3.16%	3.11%	1.61%	2.11%

Usage share of ALL browsers 2016

HTML

- **HTML or _Hypertext Markup Language_ has two essential features:**
  - Hypertext
    - Means you can create a link in a Web page that leads any visitor to any other Web page or to practically anything else on the Internet. Thus, the information on the Web can be accessed from many different directions.

  - Universality
    - Means that because HTML documents are saved as Text Only files, virtually any computer can read a Web page. Irrespective of web page visitors having Mac or Windows machines, whether they use a Unix box or even a hand-held device like an iPhone, Samsung tablet. Put simply, the Web is open to all.