Part 5: Open Source Technology Model

- To understand best how **open source technology** is developed, we can compare it to traditional closed source software produced by companies such as Microsoft.
- **Open source software** is based around the idea that the user can not only view, but change the source code of an application.
- **Closed source software** is hidden to prevent the user either viewing or changing the code.
- **Open source software** is released to the development community and undergoes a secondary phase of evolution. It is scrutinised by thousands of professional developers across the globe who highlight potential flaws, bugs and security glitches. These suggestions and improvements are fed back to the developer who considers them for inclusion in his application.
- It is **open source technology** that has fuelled the growth of the Internet over the last six years with key applications such as Sendmail, Linux, Apache and WebStore, languages like Java and Perl, and mark-up languages such as HTML, WML and XML.

What are Web Applications?

- Web-based applications are computer programs that execute in a web browser environment. An example of such an application would be an online store accessed via Internet Explorer or Netscape Navigator.

- You are already familiar with **amazon.com**, which has developed a proprietary "Web Store" application to sell books and compact discs online.

- Built on the foundations of the World Wide Web, such applications can be run anywhere in the world at any time and are completely cross platform. In fact, without web applications to breathe life and provide user interaction, a web page is only boring, static electronic text.

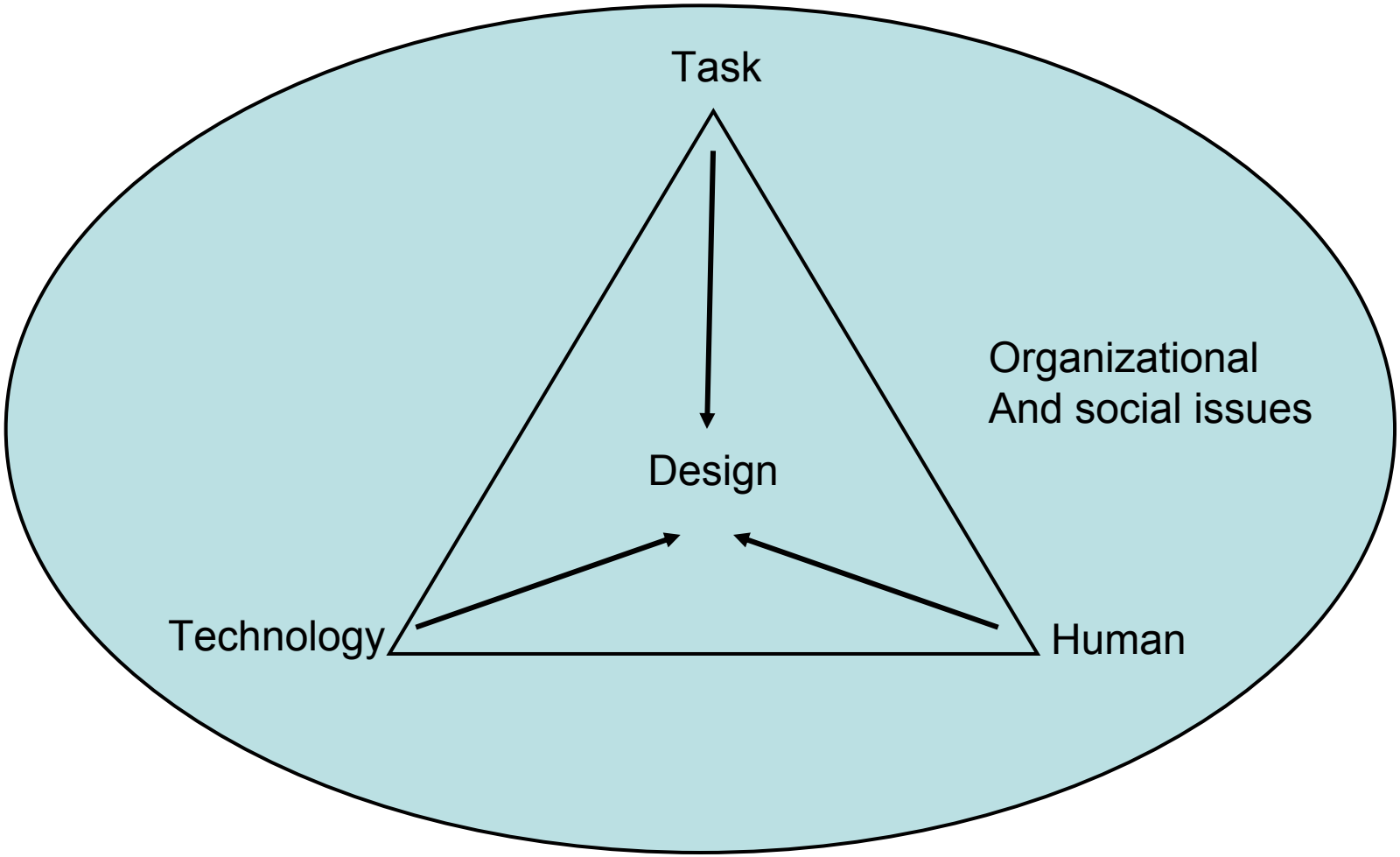
Website Usability

- In the academic environment usability lies within the remit of researchers working in the discipline of **h**uman-**c**omputer **i**nteraction (**HCI**), an area that has seem considerable growth within the last decade.
- **HCI** is the study, planning, and design of what happens when you and a computer work together. As its name implies, HCI consists of three parts: the user, the computer itself, and the ways they work together.
- Usability is all about making software intuitive to use, easy to learn and satisfying to use.
- Three approaches have been found particularly suitable for website usability evaluation:
  - Usability comparison tests at various resolutions, from 640 x 480, to 1024 x 728, and everything in between.
  - Expert / heuristic evaluation (http://www.useit.com)
  - User testing sessions (real users and models)
- **Visit** http://www.bcs-hci.org.uk and www.sitepoint.com for further information.

The Goals of HCI

- The goals of HCI are to produce usable and safe systems, as well as functional systems. In order to produce computer systems with good usability, developers must attempt to:
  - Understand the factors that determine how people use technology.
  - Develop tools and techniques to enable building suitable systems.
  - Achieve efficient, effective, and safe interaction.
- Underlying the theme of **HCI** is the belief that people using a computer system should come first. Their needs, capabilities and preferences for conducting various tasks should direct developers in the way that they design systems. People should not have to change the way that they use a system in order to fit in with it. However, the system should be designed to match their requirements.
- HCI involves the following topics: Computer simulation; Cognitive systems; Man machine systems; User interfaces; Human engineering; Software engineering; Computer aided analysis; Computer aided software engineering; Systems analysis; Computer hardware description languages; Formal languages.

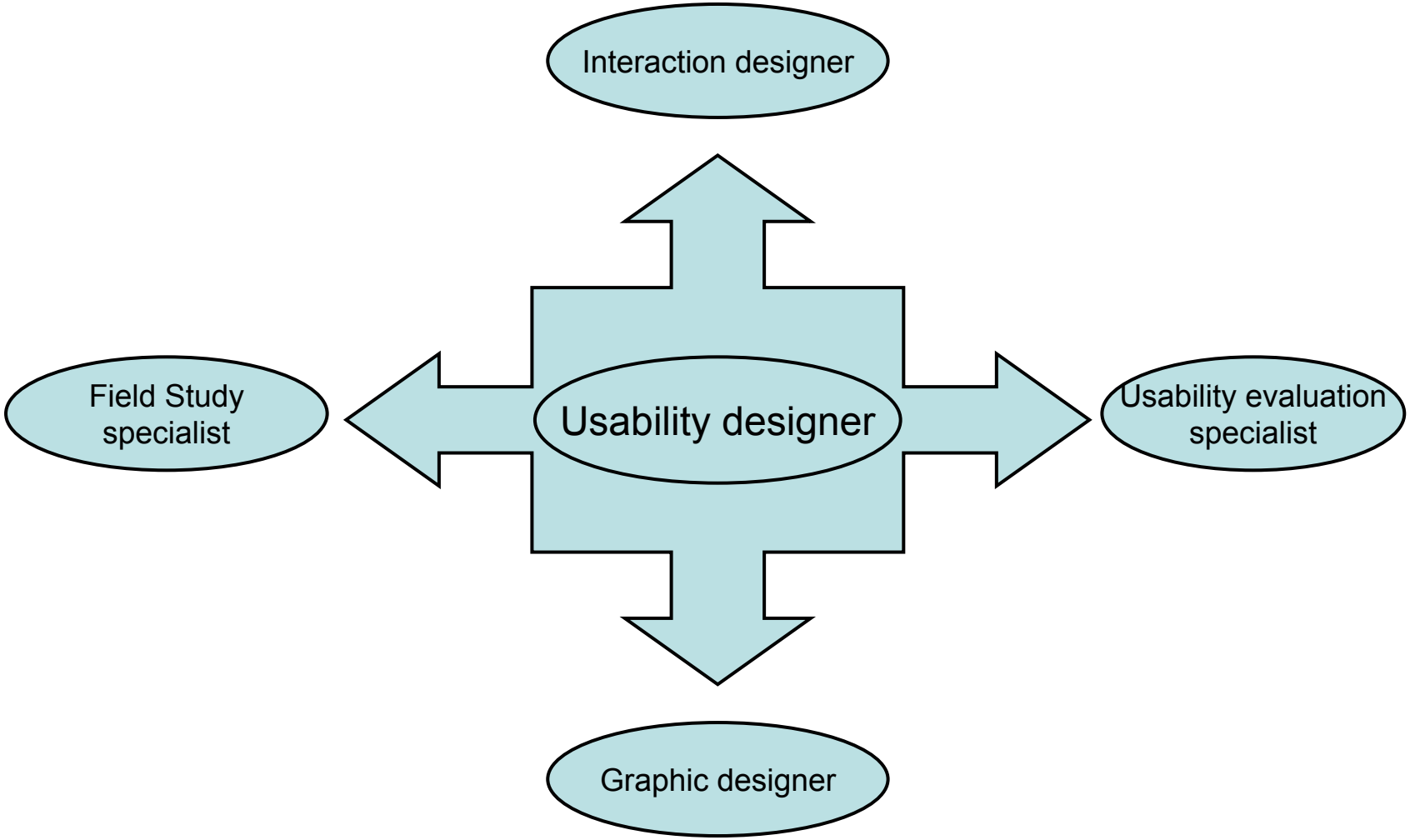
HCI


Task
Organizational
And social issues
Design
Technology
Human

Usability Design Discipline

- **Usability designer:** HCI expert with a background in computer science and/or behaviour sciences. The usability designer is responsible for planning and managing the activities in the usability design discipline.
- **Field study specialist:** This role should be experienced in using different usability methods and techniques for categorizing user groups and understanding user needs. A background in HCI is preferred.
- **Interaction designer:** The interaction designer is responsible for the conceptual, interaction, and detail design. This includes: creating the overall interaction scheme and layout; defining the dynamics of the user interaction and the navigation paths.
- **Graphic designer:** The role is responsible for the visual shaping of the user interface. A background in creative design is needed.
- **Usability evaluation specialist:** This role is responsible for planning, preparing, and executing usability evaluations. Background in HCI is required.

Roles in the Usability Design Discipline



PHP

- PHP is a is a server side scripting language that can be written into your HTML scripts and used to create dynamic web pages.
- It is widely-used open-source general-purpose scripting language that is especially suited for Web development and can be embedded into HTML.
- When you go onto your ISP (internet service provider) to check your e-mails, you have to type in your e-mail address and your password. Providing you get them right, the next page will say “welcome ‘your name’” and give you access to your e-mail account. This is a dynamic website and it has just used PHP to ‘personalise’ that page.
- PHP can be used on all major operating systems and supports most web server.
- PHP is used by inserting PHP code inside your web page's HTML code. When the page is called, your server automatically executes the code. What's more, your visitors don't need any special plug-ins for the code to run, as it will be displayed just like your HTML coding.
- As PHP is a server-side scripting language, although your visitors will not need to install any new software, PHP must be set up on your server.

- PHP has lots of great uses but one of its most powerful attributes is its ability to return information that is relative to what has been inputted. This may allow to build on-line forms, search engines, guest books, even graphics, and if you must, hit counters and many, many more things.
- www.deitel.com/PHP/index.html
- Read a simple tutorial about PHP at: http://ca.php.net/manual/en/tutorial.php
- More:
  - http://www.phpbuilder.com/
  - http://www.php-editors.com/
  - http://www.thescripts.com/serversidescripting/php/

PHP Scripts

- **Visit the following sites for more information:**
- http://tips-scripts.com
- http://www.the-best-cars.com Solution for a car sales website.
- http://www.the-best-real-estate.com Solution for a real estate website.
- http://www.vbulletin.com/?AID=10294050&PID=1420579 Community solution for all medium-to-large sites.
- http://beginnersphp.co.uk/
- http://www.shop-script.com/products.html for open-source shoping cart software.
- http://www.devarticles.com/c/a/MySQL/Building-A-Persistent-Shopping-Cart-With-PHP-and-MySQL/ for building a shopping cart.
- http://www.internetadsales.com/modules/news/

Databases and SQL

- A database is an integrated collection of data.
- A database management system (DBMS) involves the data itself and the software that controls the storage and retrieval of data.
- DBMS provides mechanisms for storing and organizing data in a manner that facilitates satisfying sophisticated queries and manipulations of the data.
- The most popular database systems in use are relational databases. This is a database organized using rows and columns of data that are collectively called tables.
- A language called Structured Query Language (**SQL**-pronounced “squel”) is universally used with relational database to make queries.
- SQL is a non-procedural language used to define, manipulate and retrieve data.
- So, ***SQL*** is the code that is used to build the database content and query the data (content) in the database.
- Some popular relational database systems used in industry include Microsoft SQL Server, Oracle, DB2 and Informix.

What is MySQL

- **MySQL** is an open source relational database management system (RDBMS) that uses structured query language (SQL).
- **MySQL** is a small, compact database server-side program, ideal for small - and not so small - applications.
- **MySQL** is, of course, also an open source solution.
- To be able to do the exercises in this guide, you will need an access to a **MySQL** server. Your interface to **MySQL** will be phpMyAdmin, a PHP application running on a PHP-enabled Web server.
- **MySQL** has increased in popularity primarily as a result of its integration with PHP4. By default, PHP4 came with **MySQL** enabled, allowing web developers to very easily create database driven Websites using the open source PHP and MySQL combination. See the **MySQL** official site at http://www.mysql.com/
- Visit: www.simdynasty.com: SimDynasty is a baseball simulation that challenges people in the team ownership and manager aspects of baseball. It uses open source technologies being developed, particularly Java and **MySQL**.

PHP and MySQL

- MySQL can be used to hold the data that PHP will fetch and display ‘dynamically’ to the user. Going back to the e-mails example, it was PHP that shows you the “welcome ‘your name’ part but where did it get your name from? You got it, dynamically from a MySQL database.
- Using PHP and MySQL together may be a very powerful tool and could revolutionize your web site if you have the time, patience, and motivation to learn it (or at least parts of it).