Human Computer Interaction

Lecture 1: Usability- Introduction

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Content
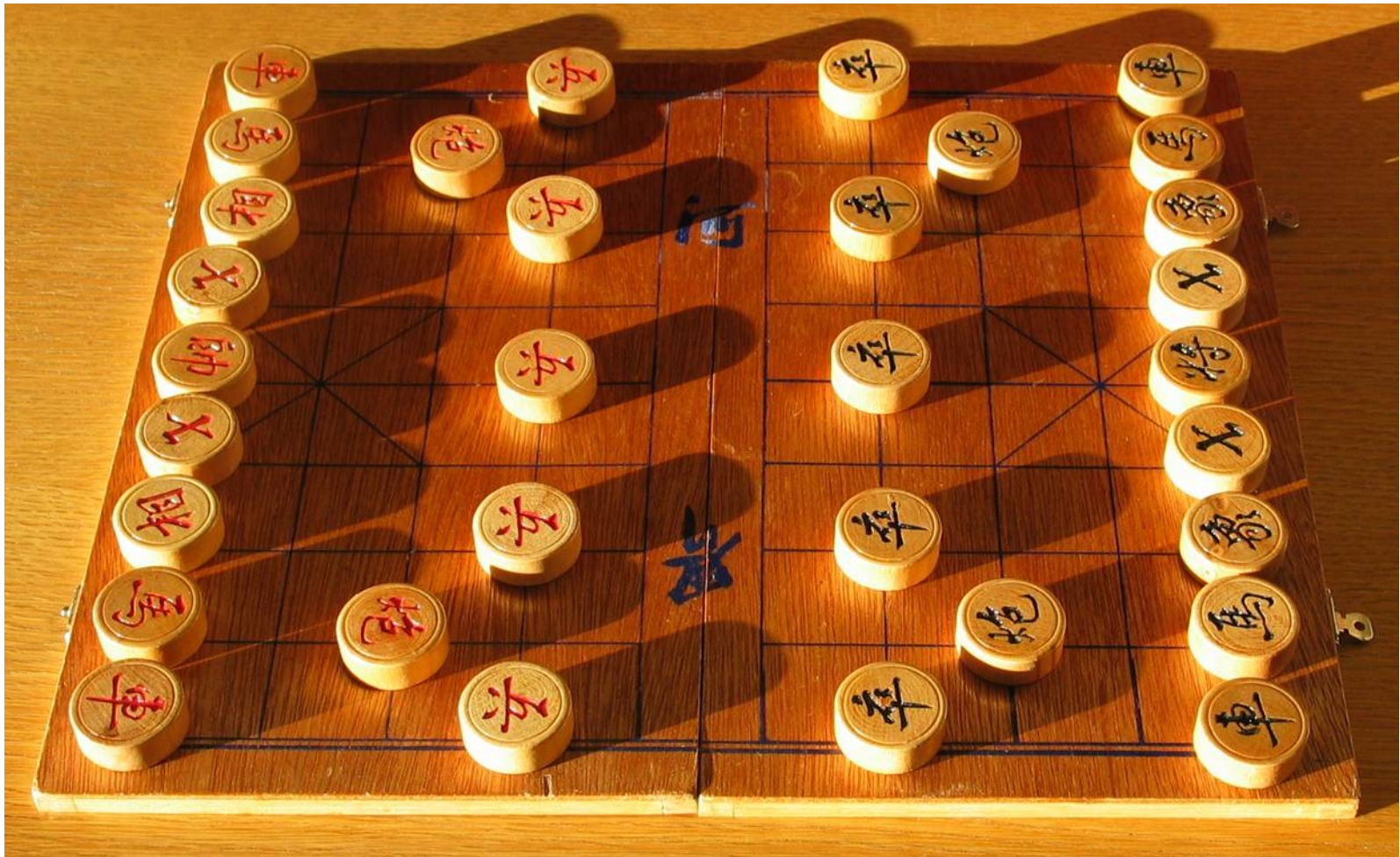
- What is usability?
- Why is it important?
- Users, User classes, Personas

What is usability? (1)

- Efficiency
- Effectiveness
- Satisfaction
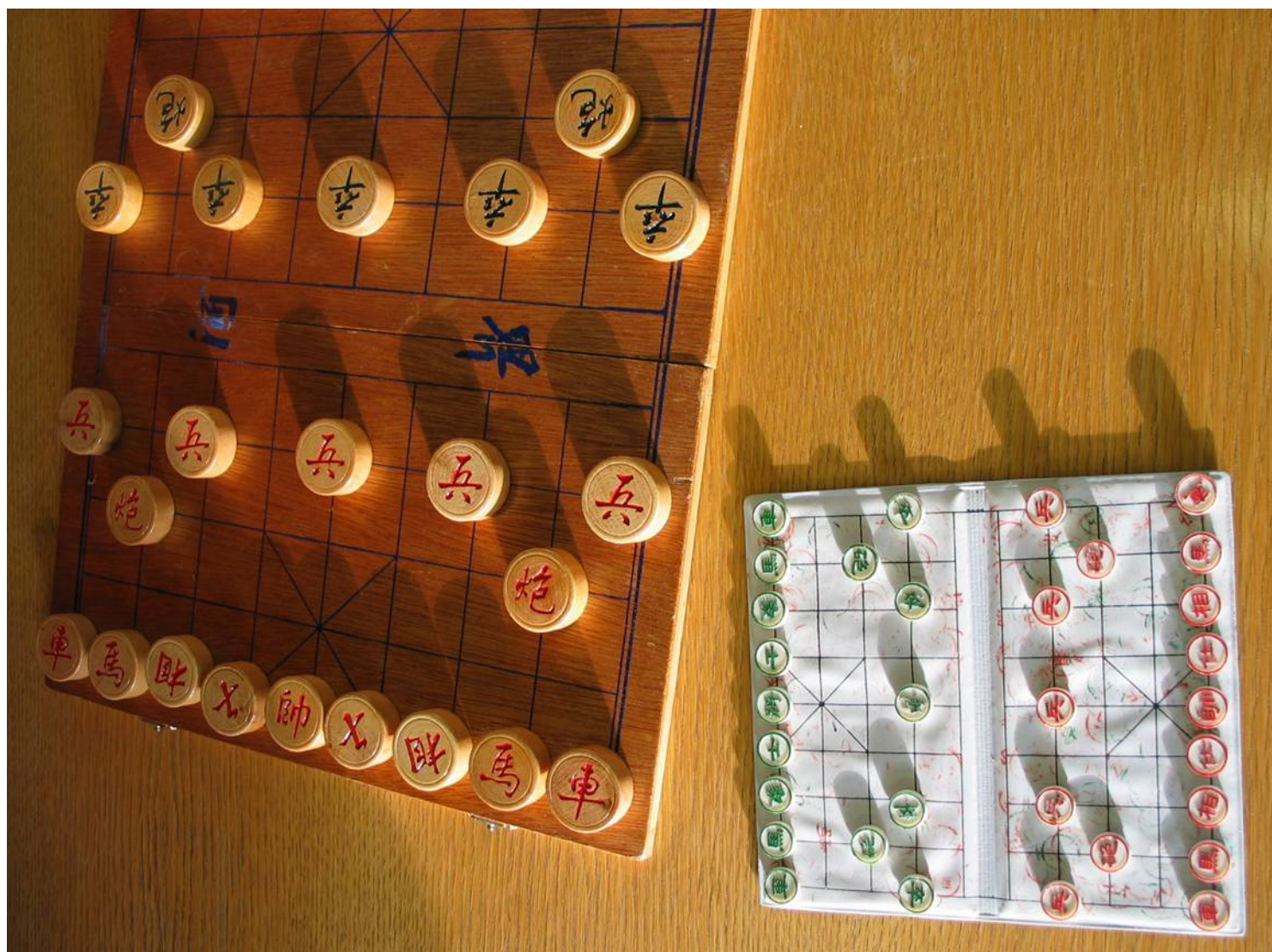

- Learnability
- Memorability

Is this Chinese Chess set easy to use?
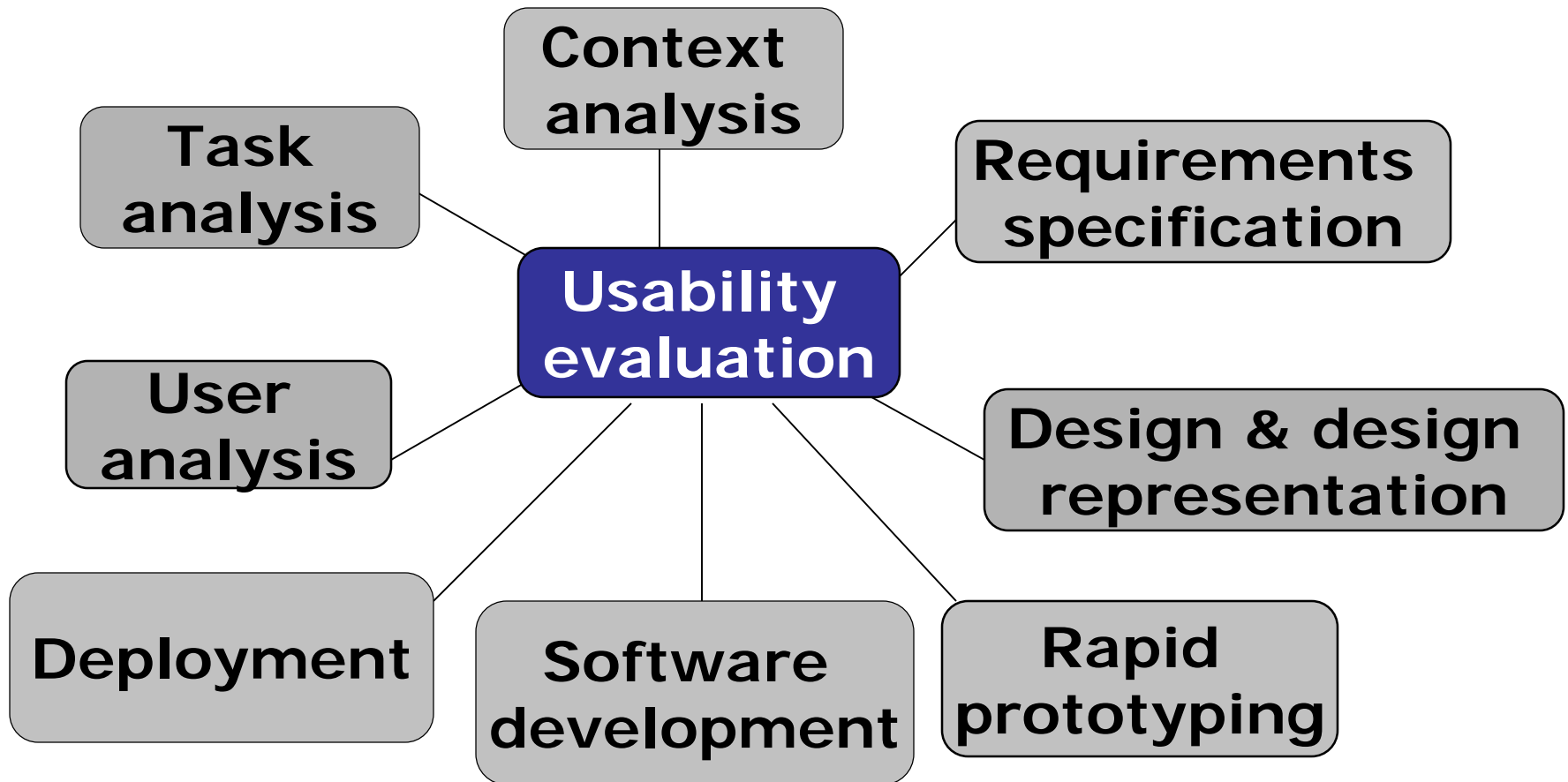
Which one is more usable?

What is usability? (2)

In the context of

- Users

- Tasks

- Context of use

Usability engineering methodology

Why should you care about HCI?

- There are jobs specifically in this area

Human Factors & Usability Consultants

We have FOUR separate R&D clients around the Cambridge & Hertfordshire areas looking for **Human Factors,** Usability & Ergonomics specialists.

Salary: £40k - £75k pa + excellent benefits package
Location: Cambridgeshire
Date Posted: 14-Jan-2017   **Job Type:** Permanent

275 Human Factors UK jobs on LinkedIn in Jan 2017; 404 UX Designer

- Companies care ("Design interfaces to improve user experience" part of mobile app developer jobs)

- Vital when setting up your own company

- Skills learned are needed in degree project

Why bother with usability? (1)

Why bother with usability? (2)

- Selling point, retain customers
- Expensive to support a bad user interface
- Inexpensive way to improve systems before they are implemented
- Reduce human error
- Maybe required by law

Usability as a unique selling point

- Usability is key to Apple's success

"A big thing Steve Jobs did for the world was to insist that computers could be usable rather than totally infuriating"

Sir Tim Berners-Lee
(Inventor of the world wide web)

Usability to get rich?

Book "How to build a billion dollar app",
George Berkowski (Hailo and other apps), 2014 :

- "User experience is key to keeping users happy"

- "Understanding your target users is critical"

- Hailo: "this focus on building an app that drivers loved would allow Hailo to get incredible initial traction"

- WhatsApp successful because "simple, fast and useful"

Usability not to loose 'business'

Acording to the Online Marketing Institute:
"

- "85% abandon a site due to poor design
- 62% gave up looking for an item while shopping online
- 85% leave a site because it takes too many clicks to get what they want
- 50% of sales are lost because visitors can't find content
- 40% never return to a site because the content was hard to use

"

Usability to improve 'business'

- Breastcancer.org had their website redesigned for usability and got a 117% increase in traffic (visitors), a 41% increase in new memberships, a 53% reduction in time taken to register, and a 69% reduction in monthly help desk costs.

Cost Savings via Usability
(list from Sun Microsystems) (1)

- Usability engineering has demonstrated reductions in the product-development cycle by over 33-50% (Bosert 1991).

- 63% of all software projects overrun their budgetary estimates, with the top 4 reasons all related to unforeseen usability problems (Lederer and Prassad 1992).

Cost Savings via Usability
(list from Sun Microsystems) (2)

- Ricoh found that 95% of the respondents to a survey never used three key features deliberately added to the product to make it more appealing. Customers either didn't know these features existed, didn't know how to use them, or didn't understand them (Nussbaum and Neff 1991).

Cost Savings via Usability
(list from Sun Microsystems) (3)

- 80% of maintenance is due to unmet or unforeseen user requirements; only 20% is due to bugs or reliability problems (Martin and McClure 1993; Pressman 1992)

- Design changes due to usability work at IBM resulted in an average reduction of 9.6 minutes per task, with projected internal savings at IBM of $6.8 Million in 1991 alone (Karat 1990).

Legal Requirements

- Council Directive 90/270/EEC

- Disability Discrimination Act 1995

- Human Rights Act 1998

Council Directive 90/270/EEC

Employers need to ensure that

- Software is suitable for the task
- Software is easy to use
- Software displays information in a format and at a pace which are adapted to operators
- The principles of software ergonomics have been applied

Disability Discrimination Act 1995

- Unlawful for a provider of services to discriminate against a disabled person
- Unlawful to make it impossible or unreasonably difficult for a disabled person to make use of a service
- Irrelevant whether the user is paying or not
- Examples services communication, information, entertainment

Darn these hooves! I hit the wrong switch again!
Who designs these instrument panels, raccoons?

Users, user classes, and personas

- Identify your users
- Identify relevant characteristics
- Identify user classes
- Draw out implications of user characteristics
- Represent key users as personas

Identifying users

- End-users vs managers/sponsors/purchasers/IT people
- Direct vs indirect users
- Users of current manual or desktop system
- Identified from marketing surveys & focus groups
- Can you meet them? Observe them? Find out how they feel about their job, computers, the Web, smart phones, and whatever else is relevant
- Can you read the marketing department's ideas or read transcripts of focus groups?

User characteristics

"The remarkable diversity of human abilities, backgrounds, cognitive styles and personalities challenges the interaction designer. A pre-schooler playing a graphic computer game is a long way from a reference librarian doing bibliographical searches for anxious and hurried patrons. Similarly a professional programmer using a new operating system is a long way from a highly trained and experienced air traffic controller. Finally, a student learning a computer-assisted instruction session is a long way from a hotel reservations clerk serving customers for many hours per day."

Ben Shneiderman, Designing the User Interface

User characteristics

What are the specific distinctions you can unpack from Shneiderman's neatly designed pairs of users?

User characteristics

- Age
- Domain experience
- Computer experience
- Degree of pressure
- Frequency of use
- Freedom of choice in system use
- Direct vs indirect use…

Can you identify user classes?

" a sub-set of the total population of end-users who are similar in terms of their system usage and relevant personal characteristics"

For **child's storybook**, infant school teachers and parents probably form a single user class, but for a **lesson planner system** they would be quite distinct.

Example: Sustainable Journey Planning Apps (1)

- Segmentation on Mobility Purpose

- Segmentation on main transport mode

- Segmentation on other characteristics

Example: Sustainable Journey Planning Apps (2)

- Segmentation on mobility attitudes

Devoted Driver; Image Improver; Malcontented Driver

Active Aspirer;   Practical Traveler   OR

Car contemplators;   Public Transport Dependents;   Car Free Choosers

User classes: Why bother?

They may need
- different sets of functions,
- different interface style,
- different help material...

User classes for e-flight system

- Business traveller
- Holiday traveller
- Travel agent

Implications of user characteristics

Characteristic	*For this user*	*Implication*
Age		
Direct/indirect		
Education/literacy skills		
Language skills		
Domain knowledge		
Discretionary/mandatory		
Training?		

When will this information be used?

- Defining user requirements
- Designing the user-interface
- Evaluating the interface/system
- Designing help/manuals

Personas:
Making sure the user isn't forgotten

- Pin them to the wall, in the form of **personas**

- For **core user classes**, describe a specific individual who might be **central** to that class

- Define - gender, age, personality, background, hobbies, work role, attitude and so on.

- Assign name and graphic - cartoon, photo, magazine cut-out

- During design process, refer to the persona(s)

- Continue this into evaluation stage

Personas for e-flights system

Helen Beatty - Scottish, age 50, has worked as ward sister for 25 yrs, works really hard for a small pay, tends to fly to visit family abroad, has used a computer as part of her job but only for patient records..

Mr Cholmondley-Smythe, bank manager, never has time for a holiday but travels a lot for business, tries never to touch computers…

Other personas

What you should be able to do

Given an application in a domain you know

- Why is usability important in this case?

- What are the users of this application like?

- Develop some personas

Course Organisation

- Lectures
- Practicals
- Assessment:
  - Coursework (25%), Exam (75%)
  - Coursework normally group-based, unless with permission and a very good reason
- For information, see MyAberdeen!