

清华大学计算机学院  
数字媒体与网络技术

## Human Computer Interaction

### Usability Goals

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### Core characteristics of interaction design

- Users should be involved through the whole development of the product
- Specific usability and user experience *goals* need to be identified, clearly documented and agreed at the beginning of the project
- *Iteration* is needed throughout the core activities

### What is involved in the process of interaction design?

1. Identify needs and establish requirements
2. Develop alternative designs
3. Build interactive prototypes that can be communicated and assessed
4. Evaluate what is being built throughout the process

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### Goals of Interaction Design: Recap

- Allow users to carry out tasks safely, effectively, efficiently, and enjoyably.

### Usability Goals

- Effective to use (**effectiveness**)
- Efficient to use (**efficiency**)
- Safe to use (**safety**)
- Have a good utility (**utility**)
- Easy to learn (**learnability**)
- Easy to remember how to use (**memorability**)

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### Usability Goals

**Accuracy**

**Completeness**

- Effective to use (Effectiveness)
  - a very general goal
  - how well does the system do its job
  - Q: Is the system capable of allowing people to
    - learn well,
    - carry out their work efficiently,
    - access the information they need,
    - buy the goods they want,
    - ...

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## Usability Goals

- Efficient to use (Efficiency)
  - the way a system supports user in carrying out their tasks
  - an example of efficiency mechanism: e-tailing
  - Amazon.com : one-click option
  - Laptop's power system
  - Q: Once users have learned how to use a system to carry out their tasks, can they sustain a high level of productivity?

## Usability Goals

- Efficient to use (Efficiency)

**1-Click ordering** is automatically enabled on your account when you place your first order on Amazon.com and enter a payment method and shipping address. If you click the **Buy now with 1-Click** button on any product page, your order will be automatically charged to the default payment method on your account and shipped to the default address--you skip the shopping cart. To learn more about 1-Click ordering, click on specific topics in the "Related Links" section below.

## Usability Goals

- Efficient to use (Efficiency)

### 1-Click Default Address

A list of shipping addresses you use frequently will appear beneath the **Buy now with 1-Click** button on every product information page. Each address is associated with the payment method used for the last order sent to that address. The address at the top of the list is your 1-Click default address. If you wish to change the default, simply access your 1-Click settings.

## Usability Goals

- Safe to use (saftey)
  - protecting the user from dangerous conditions and undesirable situations
  - e.g. x-ray machine: remote control
    - computer: 1) prevent users pressing wrong buttons (save/copy/quit/delete)
    - 2) recovery? **Recycle-bin**
  - Q: Does the system prevent users from making serious errors and, if they do make an error, does it permit them to recover easily? **Recycle-bin**

## Usability Goals

- Have a good utility (utility)
  - does it provide the right kind of functions?
  - E.g. accounting software package providing a powerful computational tool that accountants can use to work out tax returns
    - a software drawing tool that does allow users to draw free hand but forces them to use a mouse to create their drawing, using only polygon shapes.
  - Q: Does the system provide an appropriate set of functions that enable users to carry out all their tasks in the way they want to do them?

## Usability Goals

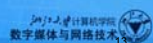
- Easy to learn (learnability)
  - how easy a system is to learn to use
    - People want to get started straight away and become competent at carrying out tasks without too much effort.
  - Key concern: determining how much time users are prepared to spend learning a system.
    - interactive products intended for everyday use and those used only infrequently
    - more complex systems that provide a wider range of functionality
  - Q: How easy is it and how long does it take
    - to get started using a system to perform core tasks, and
    - to learn the range of operations to perform a wider set of tasks?

**Nelson's ten-minute rule**

## Usability Goals

- Memorability
  - how easy a system is to remember how to use, once learned.
    - especially for those used only infrequently
    - Use meaning icons, command names, and menu options
    - Structing options and icons so they are placed in relevant categories of options
  - Q: What kinds of interface support have been provided to help users remember how to carry out tasks, especially for systems and operations that are used infrequently?

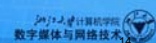
Augmented Reality



## User Experience Goals

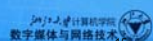
- Satisfying
- Enjoyable
- Fun
- Entertaining
- Helpful
- Motivating
- Rewarding
- Compelling—which may mean it is not necessarily easy to learn. Instead, the user can gain satisfaction from learning e.g. medical image analysis workstation for use by radiologists.

引人注目的;  
令人信服的;  
非常强烈的;  
不可抗拒的



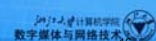
## Usability Goals vs User Experience Goals

- Usability goals are central to interaction design and are operationalized through specific criteria.
- User experience goals are more subjective and less clearly defined.



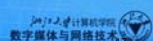
## Class Discussion – Usability

- How long do you think it *should* take to learn how to use the following interactive products?
  - Use a video player to play a blue-ray DVD
  - Use an authoring tool like Maya to construct a building ?
- How long do you think it *does* take to learn them?
- How memorable are they?



## Activity Break—smart phone usability testing

- Get together with a partner next to you who has a different smart phone to yours
- Swap smart phones
- One person (A) does the tasks on B's smart phone while B times and makes notes
- The other person (B) does the tasks on A's smart phone while A times and makes notes



Thank you.

