

Lecture 1 Introduction

Human Computer Interaction

Marking Scheme

Lecture (preference?)	2 hrs. per week
Discussion / Tutorials	1 hrs. per week

Total 100%

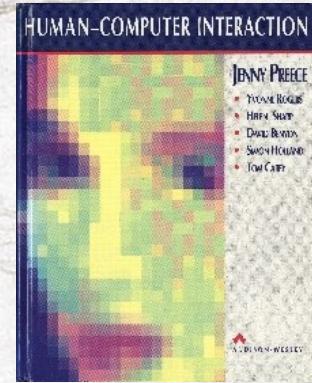
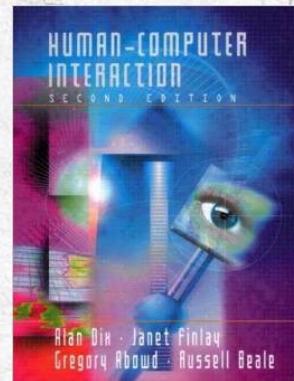
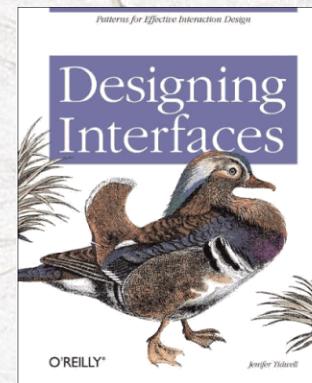
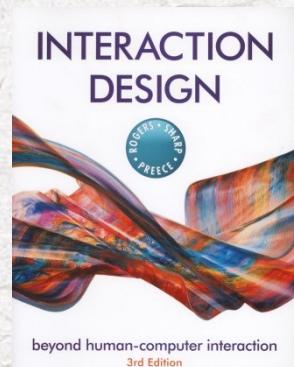
Assignment	30%
Final	70%

Quiz / Discussion (no mark) everyone needs to participate

Outline of Introduction lecture

- Understand about HCI.
- Why is it important?
- Some bad design sample
- Understand the word usability, user interface and accessibility
- Evolution of user interfaces

Book in use



What is this course about?

- Human issues
- Computer issues
- Interaction between human and computer
 - Specifying interaction
 - แยกแยะวิธีการปฏิสัมพันธ์
 - Choosing a suitable style of interaction
 - เลือกรูปแบบที่เหมาะสมในการใช้งาน
 - Designing a system for the interaction
 - ออกแบบการปฏิสัมพันธ์
 - Testing a system is effective in interaction or not
 - ทดสอบว่ารูปแบบการออกแบบมานั้นเหมาะสมแล้วหรือไม่

How to study this course

- Quite some reading to do
- Lecture notes are NOT enough
- Discussions among students are useful
- Case study exchanges are important

Why do need to study HCI?

- Computer, electronic devices, mobile etc. are one of the most important thing for human in the real world.
- The designing of those devices, some of them are hard to use, to learn and to train.
- For the computing and electronic people, it is important to understand users before designing any devices.
- The interaction and devices designing need to design to help user easy to use and learn, take less time to train.

What is HCI?

- HCI : Human Computer Interaction
- The study of interaction between people and computer-based systems
 - Computer, Mobile, keyboard etc.
- Concern with the physical, psychological and theoretical aspects [Dix et al. p3]
 - Vision, hearing, touch

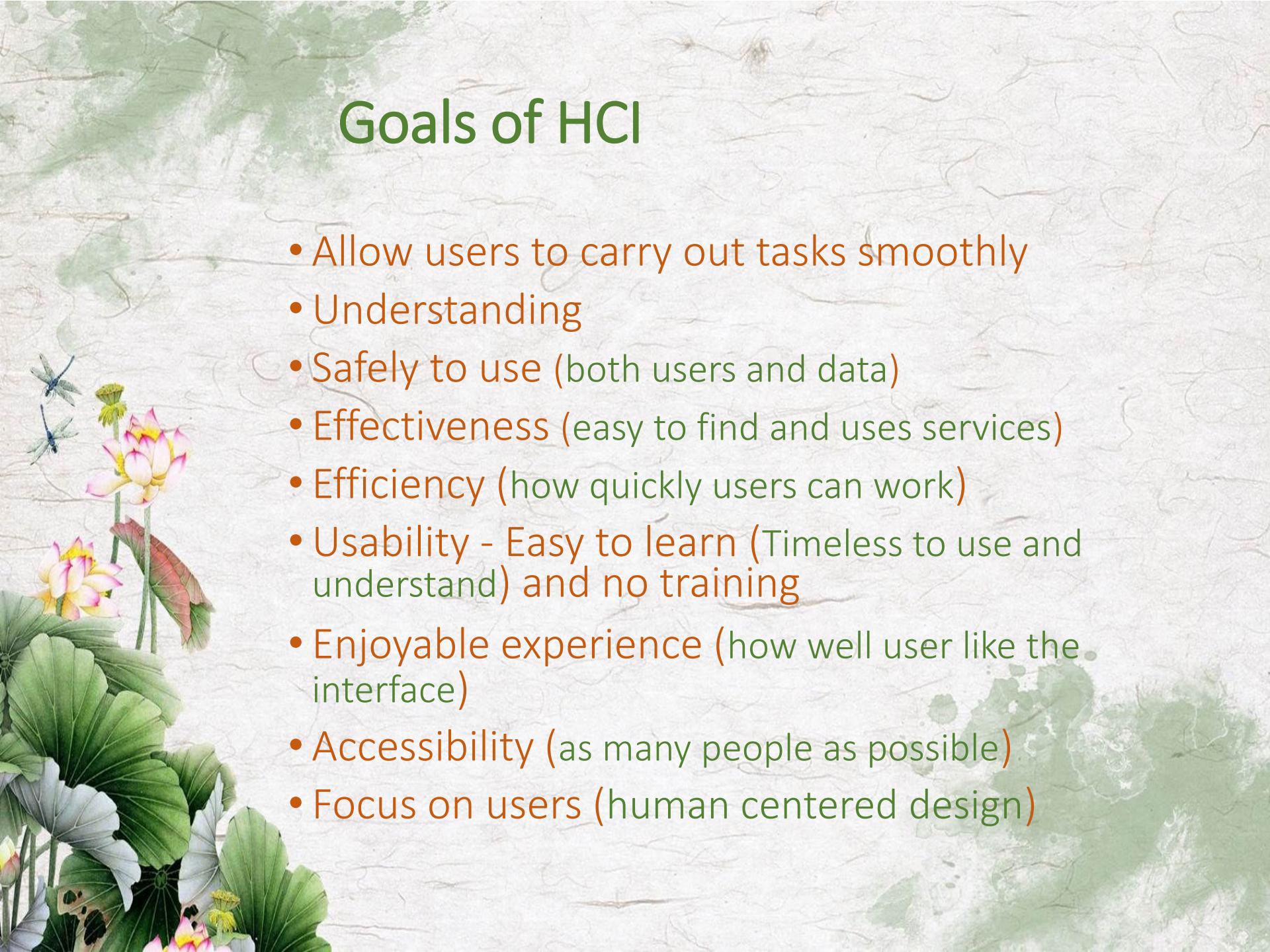
Where does it come from?





Why do HCI important?

- To enable us to design interactive products to support people in their everyday and working lives. [Rogers et al, preface, V]
- There is a lot of devices/processing design that can cause problem for users such as ATM process.
- Good design involves understanding how users interact with computers, and enabling them to do so effectively
- The designer can develop usable products (Goal of HCIs)



Goals of HCI

- Allow users to carry out tasks smoothly
- Understanding
- Safely to use (both users and data)
- Effectiveness (easy to find and uses services)
- Efficiency (how quickly users can work)
- Usability - Easy to learn (Timeless to use and understand) and no training
- Enjoyable experience (how well user like the interface)
- Accessibility (as many people as possible)
- Focus on users (human centered design)

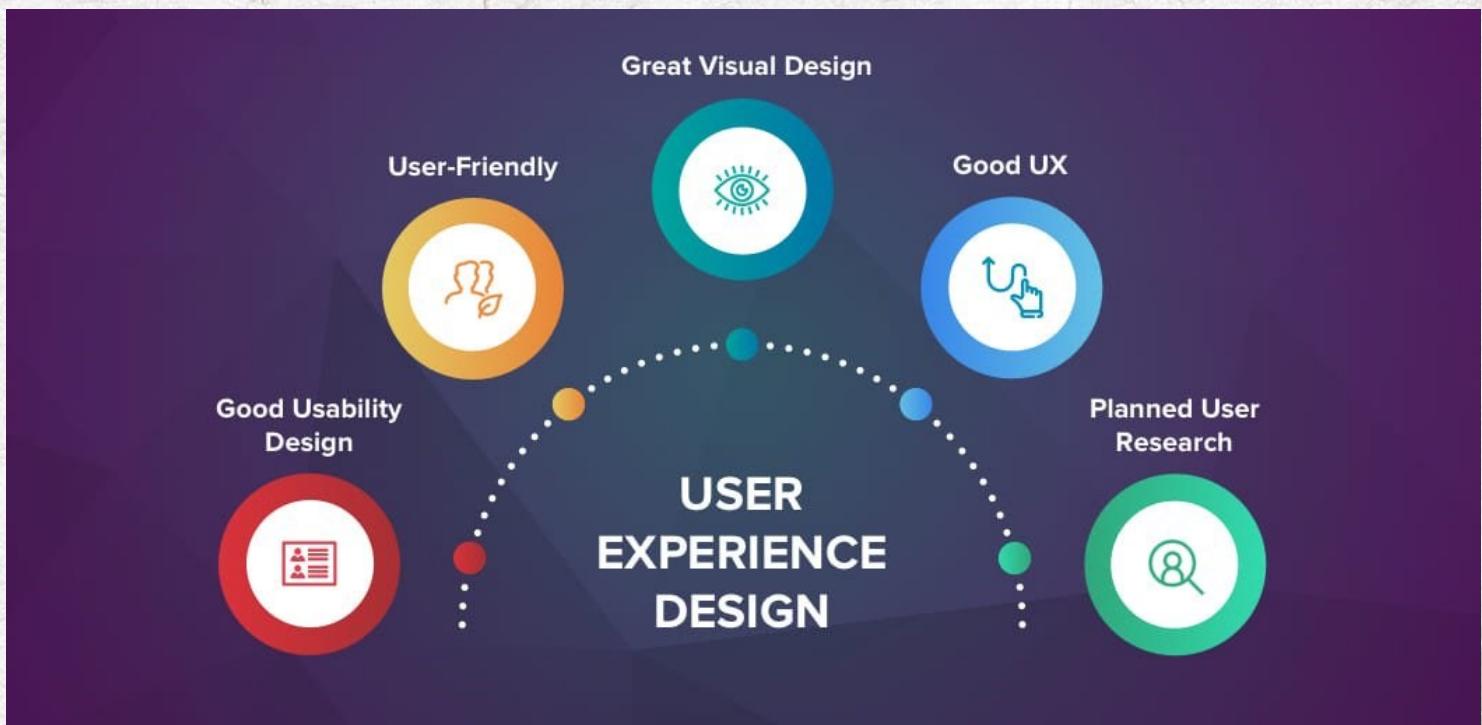
What is human-centered design



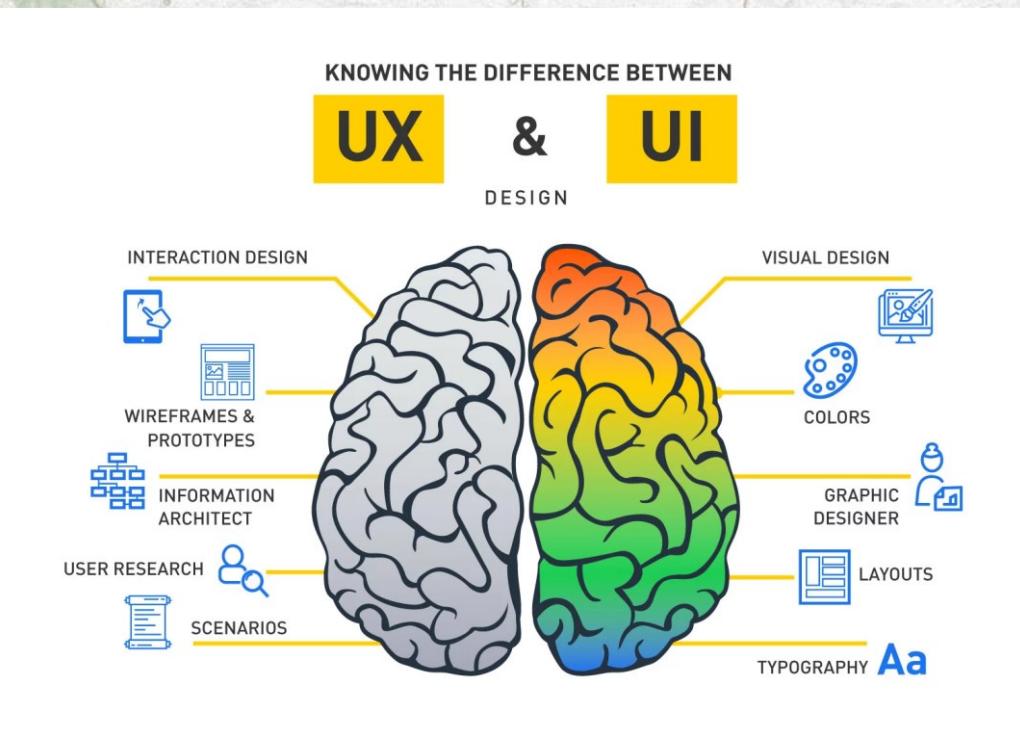
User Interface (UI)

- is everything designed into the device with which people can interact. [Magaret Rouse]
- is everything where user will interact with a computer or machine to complete task.
- UI designer will often use visualization software before it is build in code.
- UI design is the largest part of the production.

User Experience (UX)



The different between UX and UI



How to make the Great HCI



Usability

+



Graphic design

+



Accessibility



What is Accessibility?

- Access for all, usable by as many people as possible.
- Including elderly and people with disabilities.
- Disabilities is the group of people who has visual, hearing, cognitive and motor impairment. [www.adobe.com]

Accessibility Is Not Enough

A strict focus on accessibility as a scorecard item doesn't help users with disabilities. To help these users accomplish critical tasks, *you must adopt a usability perspective.*

nngroup.com

NN/g

What is USABILITY?

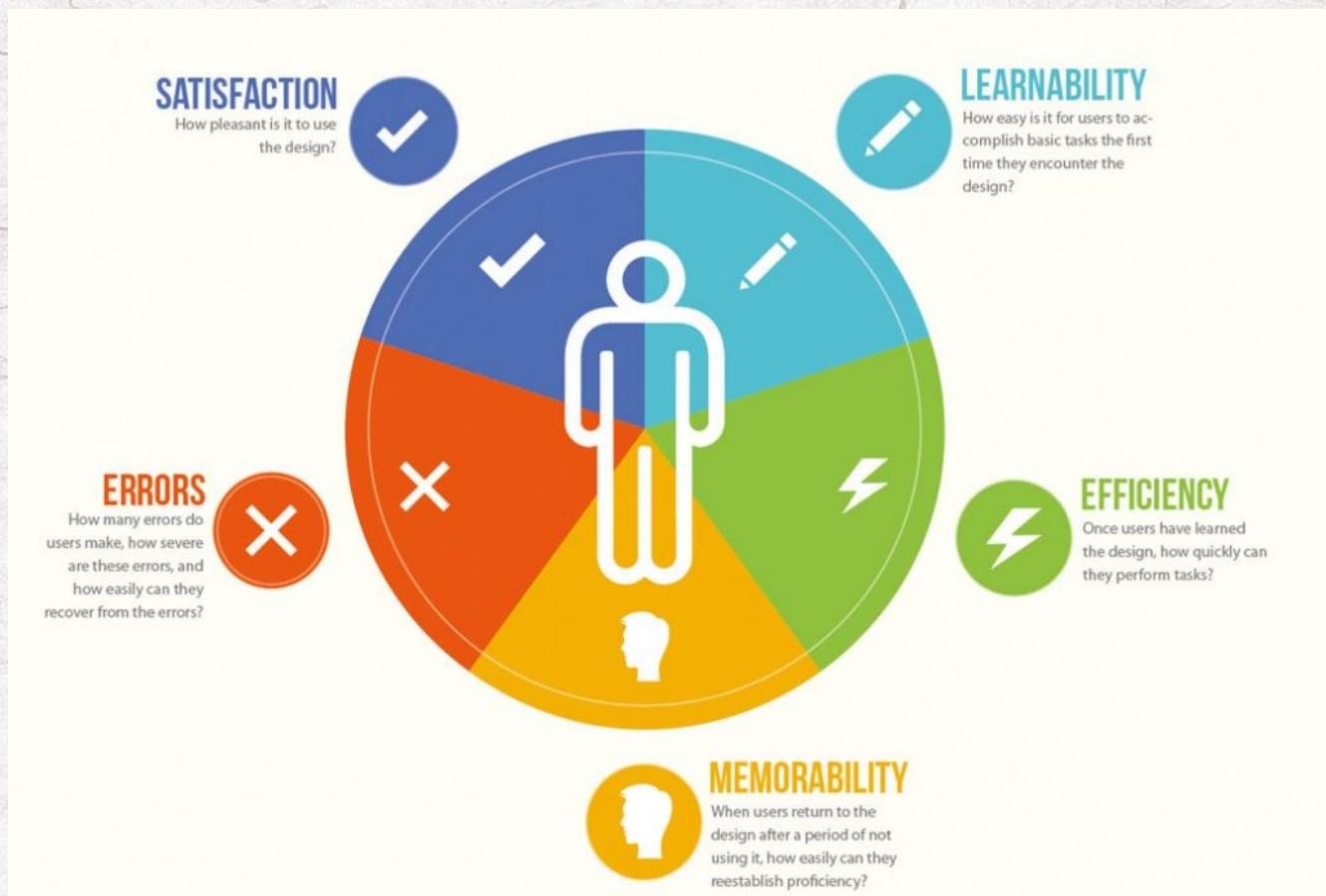
- Usability means making products and systems easier to use and learnability , and closely to user needs and requirements
- Describes the effectiveness, efficiency and satisfaction with which users achieve their goals.
- It is important because:
 - Good interface design makes people more productive
 - Bad interface design can lead to disaster

How to improve Usability?

User Testing

- Ask the users to perform **representative tasks** with the design.
- **Observe** what the users do, where they succeed, and where they have difficulties with the user interface. Shut up and let the users do the talking.
- It's important to test users individually and let them solve any problems on their own.
- Let the users do talking

USABILITY components



When to work on Usability?

- Before starting the new design, check on the old design and test
- Check on your competitors design
- Conduct a field study to see how users behave
- Make paper prototypes of one or more new design ideas
- Test all the new design
- Refine the design ideas
- Implement the final design



Design of Beauty

Design of Usability























GUNSHOT DOORNOB

PULL THE TRIGGER & SHOOT THE DOOR













Some problematic designs

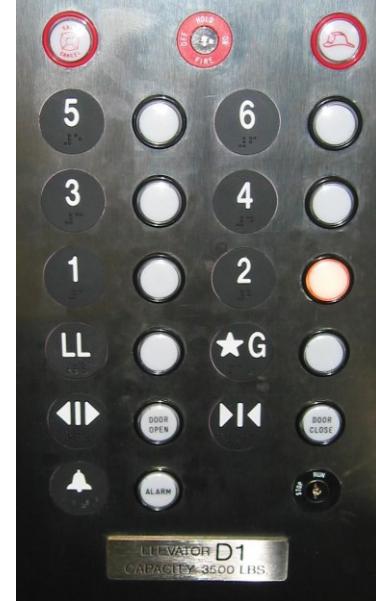
- How fast am I going?



[www.baddesigns.co]

Some problematic designs

- How Do I get out of this lift?



[www.baddesigns.com]

[<http://uxdesign.cc>]

อะไรคือการออกแบบที่ผิดพลาดของหน้าเกมส์นี้





นีกถึงถ้าเราต้องการกดเงินที่ตู้ ATM จำนวนเงิน 500 บาท

- จงอธิบายขั้นตอนการกดเงินอย่างละเอียด
- คิดว่าการออกแบบขั้นตอนการกดเงินนั้น ดีหรือไม่ดี อย่างไร ถ้าดีแล้ว ข้อดีคืออะไร ถ้าไม่ดี ข้อเสียคืออะไร

อธิบาย 3 สิ่งที่เห็นนี้ คืออะไร อธิบายการใช้งาน



อะไรคือปัญหาของภาพที่เห็นในข้อนี้

Evolution of User Interface

Evolution of User Interface

• Early days (Up to 1960s)

- Isolated computer centres with mainframe computers
 - Punched card input
 - line-printer output
 - Batch processing (even the command)



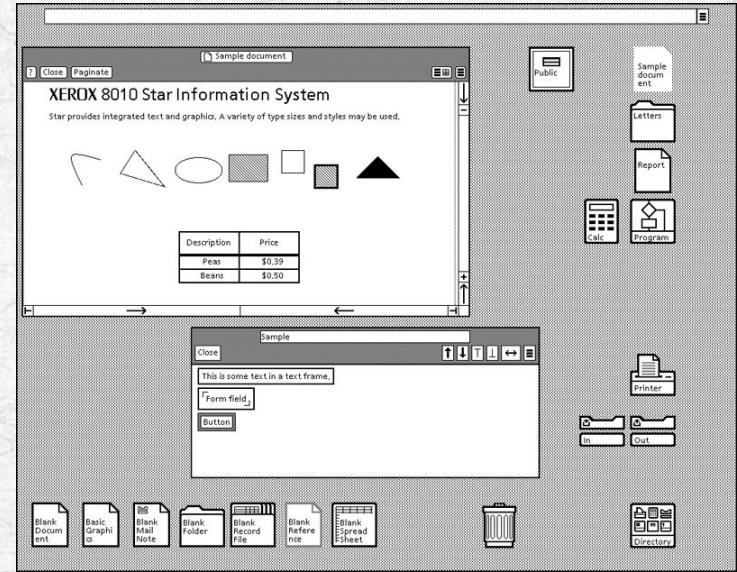
Evolution of User Interface

- Start of interaction (Mid 1960s - early 1980s)
 - Mechanical or 'glass' teletype alphanumeric displays
 - Users interact via command line or menu-driven interfaces through terminal stations



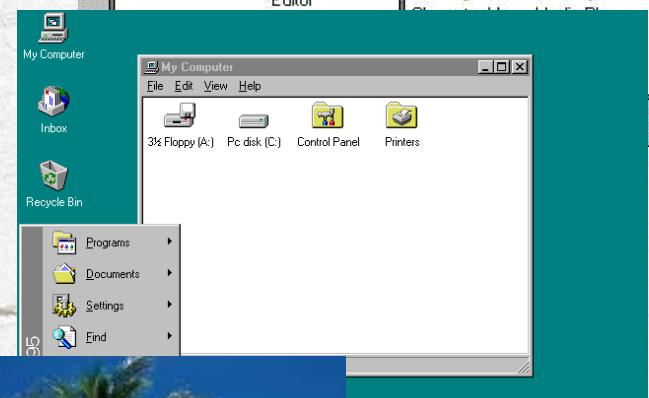
Evolution of User Interface

- Age of Personal Computers
(Early 1980s - mid 1990s)
 - A lot of interaction required
 - Graphical user interfaces (GUI) based on windows, icons, menus and pointing devices (WIMP)
 - Users manipulate graphical representations of objects *directly* on the screen



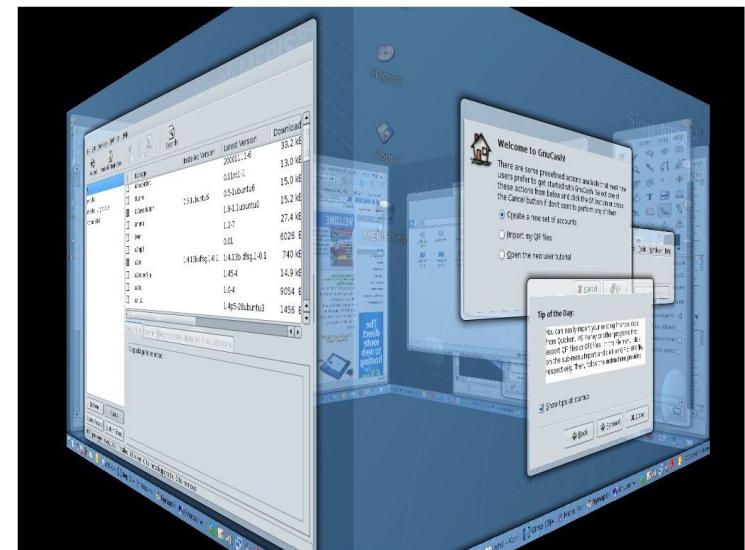
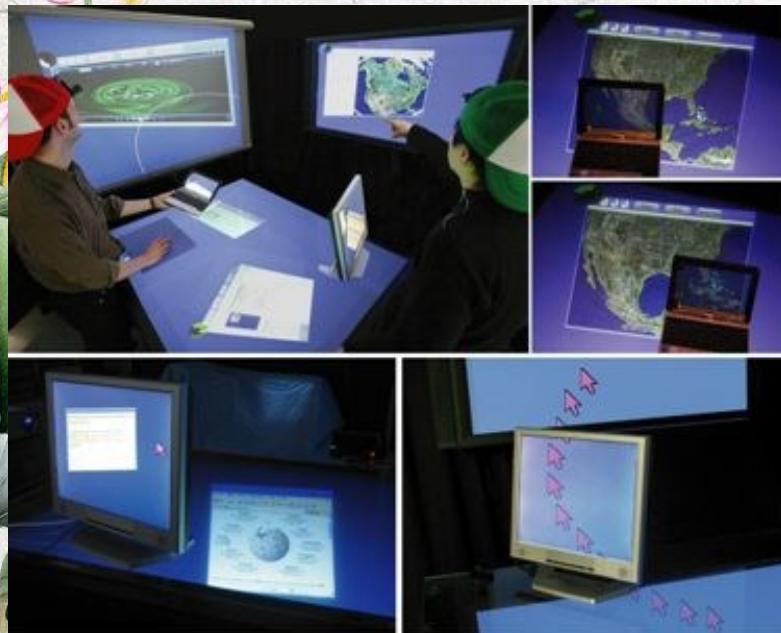
Evolution of User Interface

- Use of Graphics (Mid 1990s - early 2000s)
 - Multimedia machines with animation, sound, moving image and voice input
 - Interaction still limited
 - GUI improvement with rich colour and realistic icons and desktop
 - Start of adaptive interface

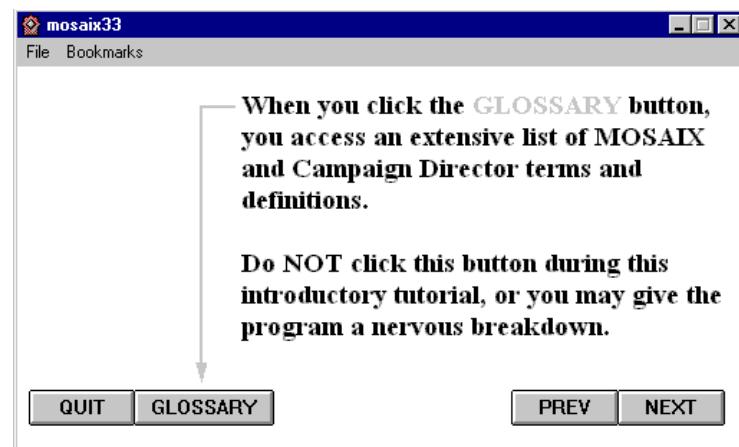
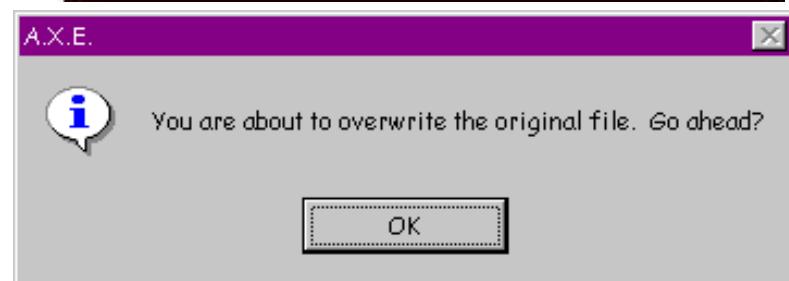
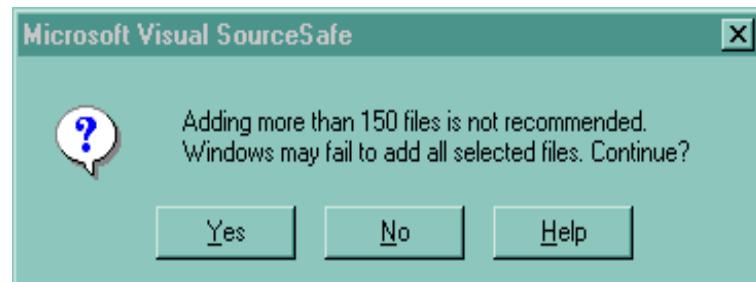
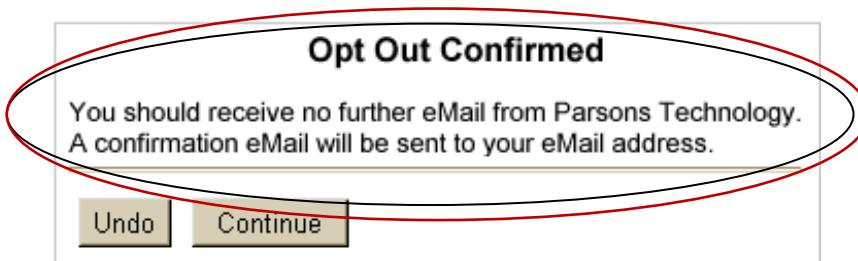


Evolution of User Interface

- Next Generation
 - Multimodal interfaces will exploit different user senses and different types of human interaction
 - Virtual reality?
 - Full range of user interaction will be opened up



When Things Go Wrong: Error Messages



When Things Go Wrong: Iran Air 655

3 July 1988: IR655 shot down,
290 passengers including 66
children dead

U.S. government claimed the
aircraft was mistakenly
identified as an attacking F-14.



Summary

គឺសំណង់ដើម្បីសម្រេច នរោតា
action បានចាំបាច់ ដែលសំរាប់នឹងការងារ
ទាំងអស់វិវិត (interact)

Define the basic concepts of:

- User interface
- Human-computer interaction (HCI)
- Usability
- Accessibility

Explain why they are important and give examples of:

- The benefits of good design
- The risks of bad design

Further reading and revision:

- Dix et al, Introduction, pp. 1- 8

គិតជាការ

នៃវិធានក្នុងសំណង់ ទាំង user ក្នុង
Computer ទិន្នន័យនឹងការងារ
ទាំងអស់ នៅក្នុង នៅក្នុង user

គឺគុណភាពរាយការ: ដើម្បី
user ទិន្នន័យ នៅក្នុងការងារ
ដើម្បីការងារ ក្នុងការងារ

នៃការងារទិន្នន័យ

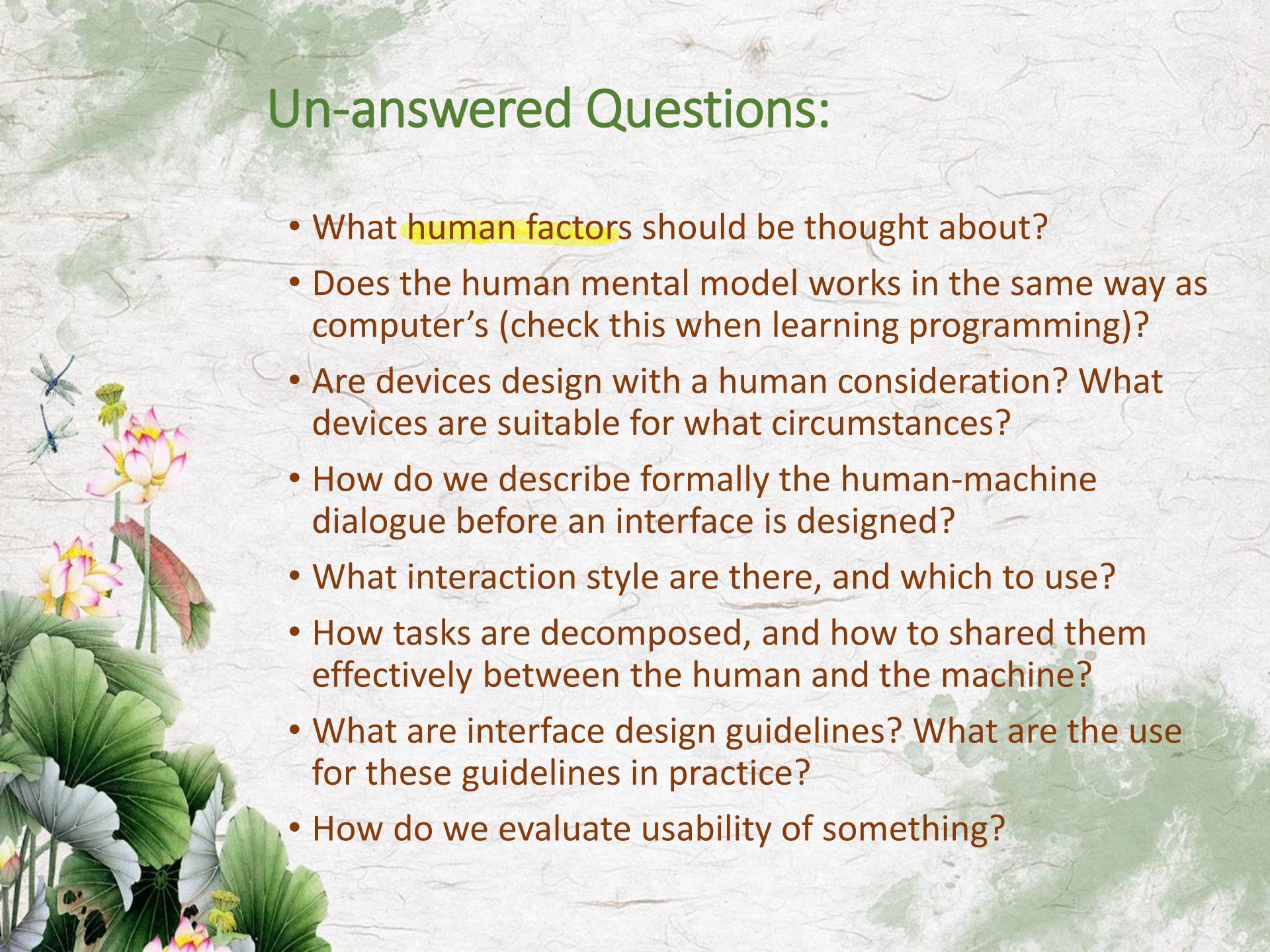
កំណត់លទ្ធផល និងការងារដែលត្រូវការងារ

ឱ្យការងារ

នៃការងារ

ការងារទិន្នន័យ
កំណត់លទ្ធផល

កំណត់លទ្ធផល



Un-answered Questions:

- What **human factors** should be thought about?
- Does the human mental model works in the same way as computer's (check this when learning programming)?
- Are devices design with a human consideration? What devices are suitable for what circumstances?
- How do we describe formally the human-machine dialogue before an interface is designed?
- What interaction style are there, and which to use?
- How tasks are decomposed, and how to shared them effectively between the human and the machine?
- What are interface design guidelines? What are the use for these guidelines in practice?
- How do we evaluate usability of something?

Prepare for Next week

Human

- Memory
- Vision
- Eyes
- Fingers

Senses

- Sight
- Hearing
- Touch