Thiết kế giao diện

User Interface Design
Scenarios & Use cases

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1. Input & Output design

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    1. Introduction
    2. Some typical control types
    3. User Controls

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    1. ***Design process***
    2. ***Scenarios & Use cases***
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UI Design

"In this new computer age, the customer is not only right, the customer has rights" [Clare-Marie Karat].

- Perspective — If there is a problem, the system is the problem, not the user!
- Installation — Easy, no negative effects
- Compliance — Performs as promised
- Instruction — Readily available contextual help; clear error messages
- Control — User controls program, not the other way around
- Feedback — Clearly inform user as to what is happening
- Dependencies — Clearly inform user of all system requirements
- Scope — Clearly inform user of all limitations
- Assistance — Readily available tech support
- Usability — Natural, intuitive

→ **User–centered design**

User–centered Design (UCD)

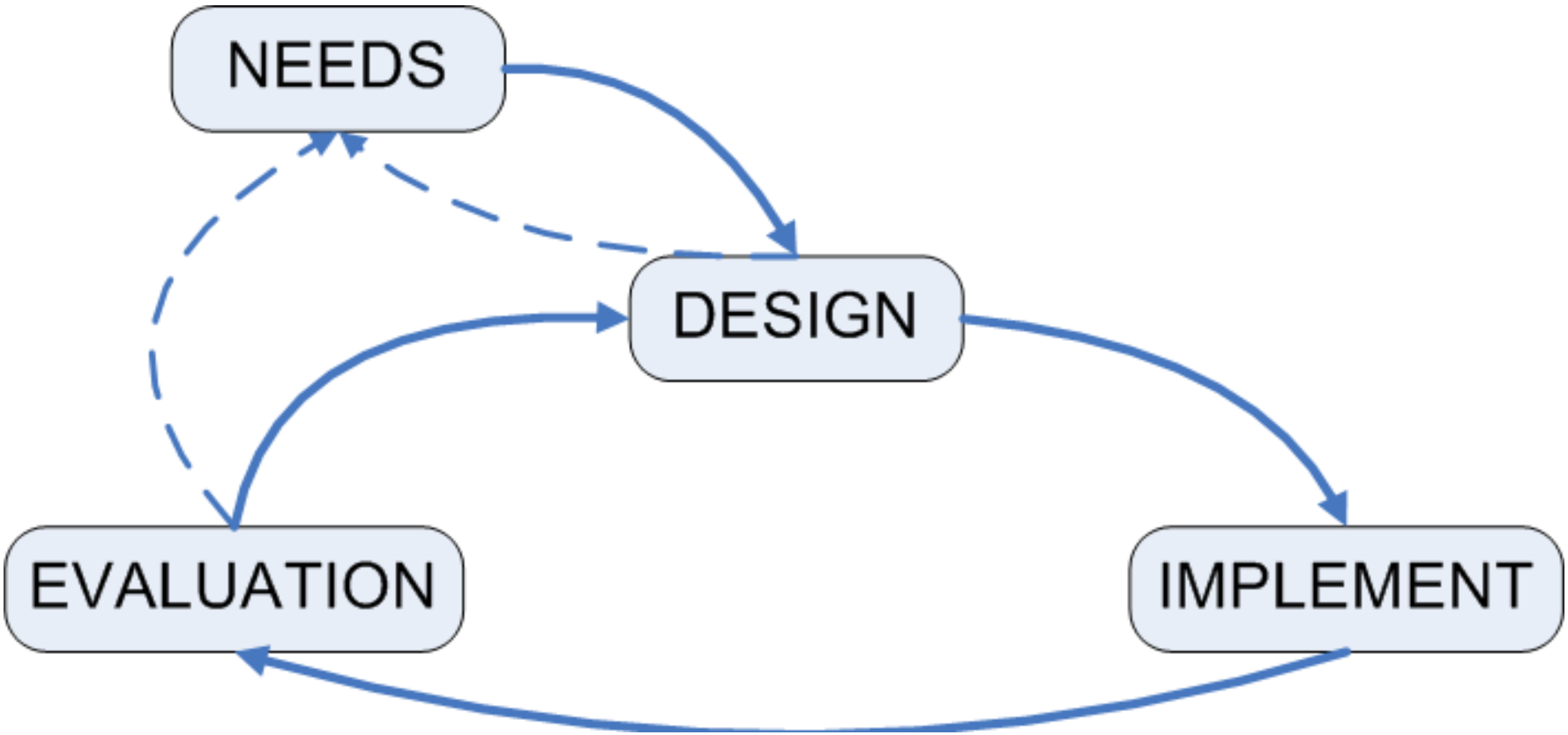
- User centered design: philosophy & process to design product of highest usability
  - Place users at center of all development phases
  - Focus on usability goals
  - Based on cognitive factors
- User-centered design is an approach to interactive system development that focuses specifically on making systems usable. It is a multidisciplinary activity.
- User-Centered Design cuts costs and increases user satisfaction and productivity

User–centered Design (UCD)

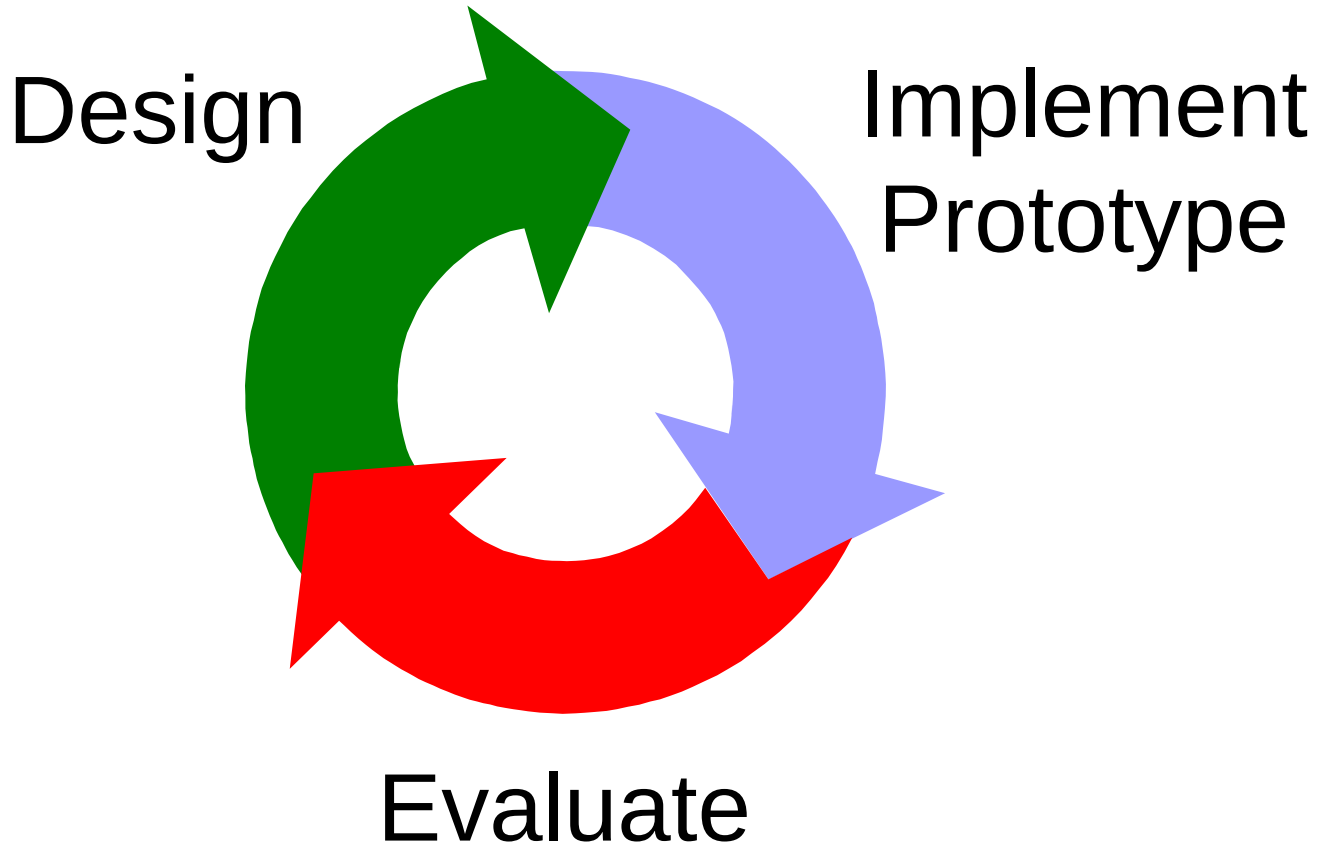
But notice:

- Hard to get a good pool of users (cost, reluctance)
- Users are not expert designers : don’t expect them to come up with design ideas from scratch
- The user is not always right : don’t expect them to know all what they want

UI Design process



UI Design process



Interaction Design process

1. **Identify needs & establishing requirements.**

2. Develop alternative designs that meet those requirements.

3. Building interactive versions of the designs.

4. Evaluating what is being built throughout the process.

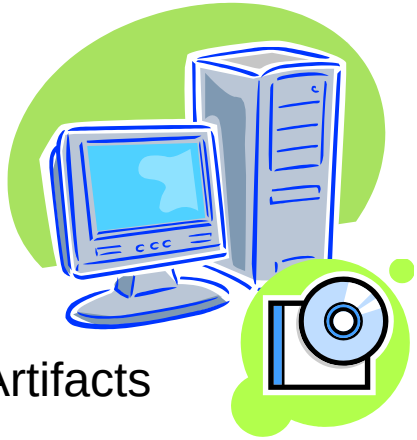
Identify needs & Establishing requirements

Activities

People

“users”

Social context



Artifacts

Identify needs & Establishing requirements

Identify users:

- Who purchase the product
- Who use the product directly
- Who receive outputs from the product
- Who use competitive products

Identify needs:

- What users need to do?
- How users do it **currently**?
- What users expect from the product?

→ ***Are there better ways to achieve users' goals*** ?

Identify needs & Establishing requirements

Identify needs by **data gathering:**

- Questionaires
- Interviews
- Observation

Investigate requirements

- Studying documentation
- Research similar products

Identify needs & Establishing requirements

- Observation
  - Watch what they do in **real** world
  - Passive vs Active:
    - Contextual inquiry (ask during)
    - Participatory analysis (ask after, with video…)
- Interviews
  - Structured or informal
- Questionnaires
  - Survey (demographics, skills, attitudes, utility, …)
  - Quantitative, statistical results

Identify needs & Establishing requirements

- While investigating: you are the Apprentice; the customer is the Master.

Being a good "apprentice":

- Be a keen observer
- Don't be afraid to ask questions
- Maintain an attitude of inquiry and learning
- Admire the Master as an expert in his/her work
- Aspire to see the World as they do

Identify needs & Establishing requirements

Avoid:

- Not being inquisitive/curious enough
- Overly disrupting the task
- Failing to respect your participants
- Failing to observe and take good notes
- Focusing on the wrong details
- Slipping into abstraction

Identify needs & Establishing requirements

Analyze *needs* to establish **requirements:**

- Functions
- Data
- Context of use
- Users

→ Requirements establishment is the stage where failure occurs most commonly.

Identify needs & Establishing requirements

Requirement description:

- Scenarios
- Use cases

Identify needs & Establishing requirements

Scenario:

- Informal narrtive story describes human activities
- No explicit mention of technology
- Natural user language
- Allow exploration of requirements & contexts

Identify needs & Establishing requirements

Scenario - Example

“Say I want to find a book by George Jeffries. I don't remember the title, but I know it was published before 1995. I go to the catalogue and enter my user password. I don't understand why I have to do this, since I can't get into the library to use the catalogue withouth passing through security gates. However, once my password has been confirmed, I am given a choice of searching by author or by date, but not the combination of author and date.

→ [next slide]

Identify needs & Establishing requirements

Requirement description: Scenario - Example (cont’)

→ [continue]

I tend to choose the author option because the date search usually identifies too many entries. After about 30 secs the catalogue returns saying that there are no entries for George Jeffries and showing me the list of entries closest to the one I've sought. When I see the list, I realise that in fact I got the author's first name wrong and it's Gregory, not George. I choose the entry I want and the system displays the location to tell me where to find the book.”

Identify needs & Establishing requirements

Use case

- Describe user – system interaction
- Use case diagram: present functional requirements
- Use case step (for each use case): record paths from start to end (both successful and failed paths)
- Do not specify interface design
- Do not specify implementation detail
- Use case **diagrams** do not present ***order*** of actions

Identify needs & Establishing requirements

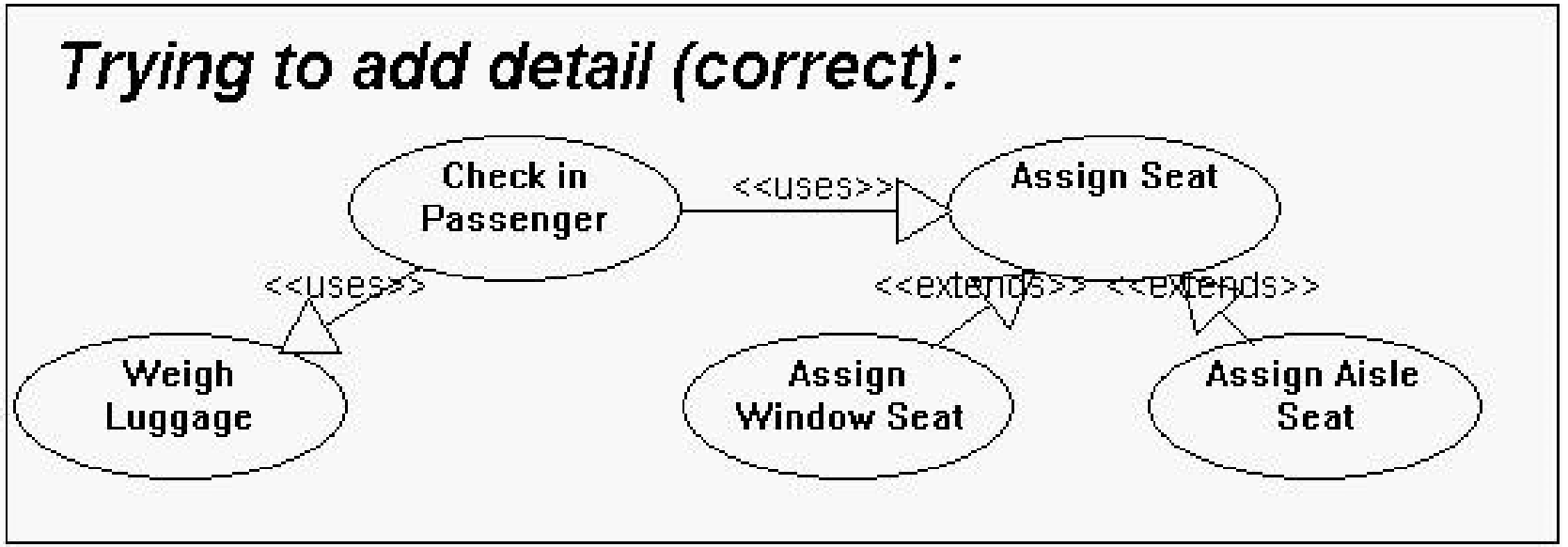
Use case

- Actor: interact with the system
  - Users: different category
  - Other system
- System boundary: a “black box” determine what system does
- Use case: a function of system
  - Use case diagram
  - Use case step & Essential use case

Identify needs & Establishing requirements

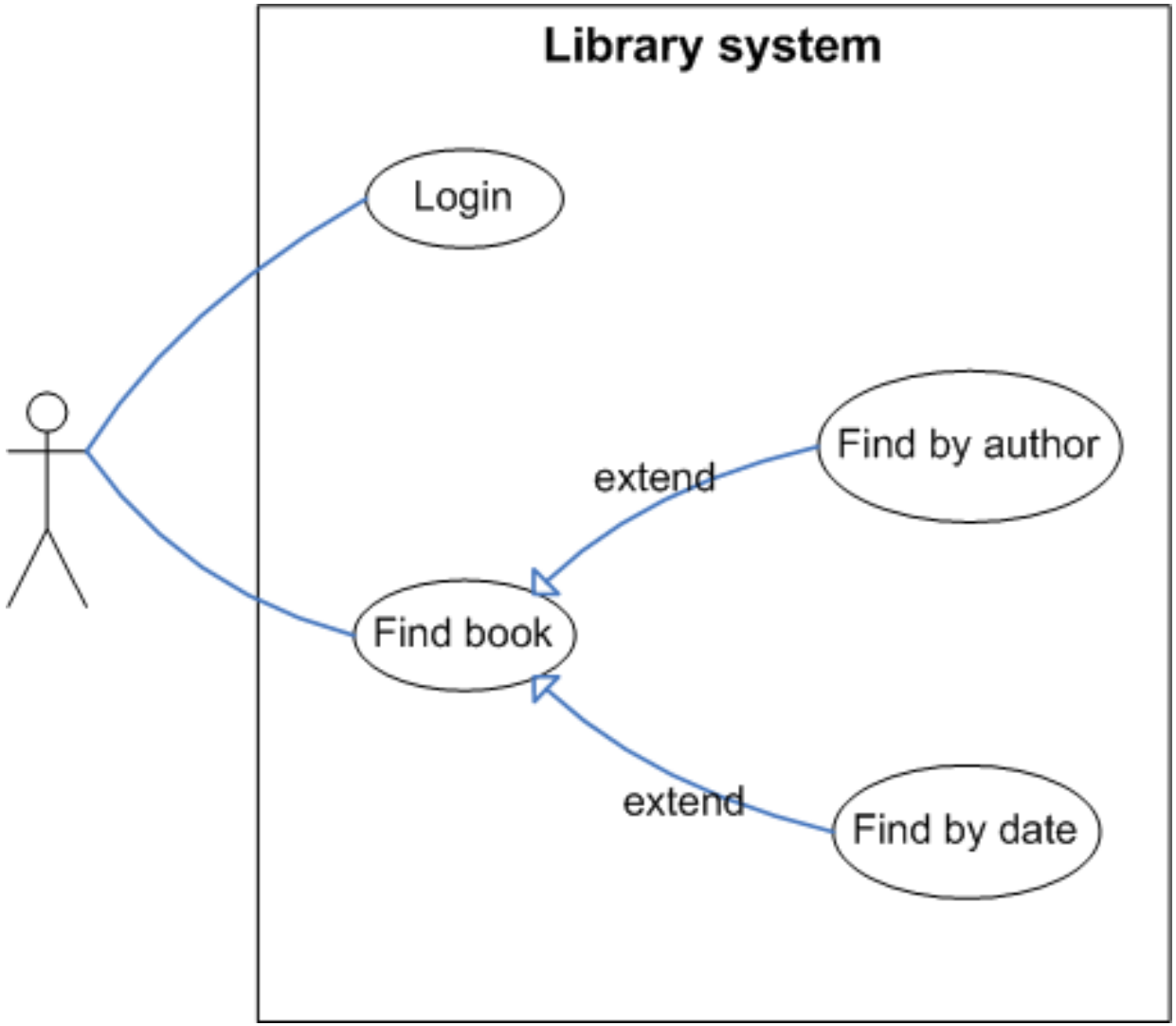
Use case

- "Use" arrow: *X uses Y* : Complete X then Y is completed at least once.
- "Extend" arrow: *X extends Y* : X is same type as Y, but X is more specific case



Identify needs & Establishing requirements

Use case - Example



Identify needs & Establishing requirements

Use case step – Example

[→ Next slide]

Name: Find book by author

Description: find location of a book by entering author

Pre-condition: users logined into the system

Post-condition: location of a book is displayed to users if they input right author.

Basic course:

1. Users enter the author's name

2. System finds books by author's name & displays results

3. Users choose one entry in the results

4. System show detailed info of the selected entry

Alternative couse A:

A.1. System finds no data matched author's name

A.2. System finds books by similar author's name & display results

A.3. Back to step 3 of basic course

Identify needs & Establishing requirements

Use case step – Essential use case

Find book by author

USER INTENTION	SYSTEM RESPONSIBILITY
enter author name	
	find books by author name and display results
select the wanted entry in the result	
	display detailed info of the selected book

Identify needs & Establishing requirements

- Getting requirements right is **crucial**
- Needs are identified by data garthering
- Data colectting methods: questionaires, interview, **observation**, studying documentation, and researching similar products
- Requirements are established by needs analysis
- Requirement description as scenarios, and use cases

→ Prototyping based on scenarios & use cases …

Reference

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- http://www.andrew.cmu.edu/course/90-754/umlucdfaq.html
- http://www.gatherspace.com/static/use_case_example.html
- http://www.agilemodeling.com/artifacts/systemUseCase.htm
- **http://ucs.ist.psu.edu/**

- Vietnamese example from last year projects