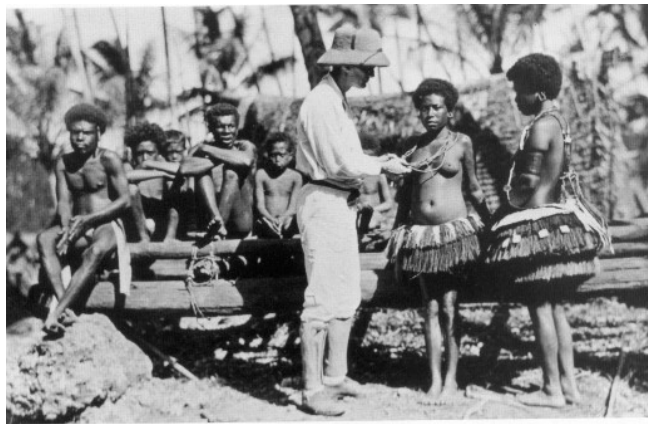
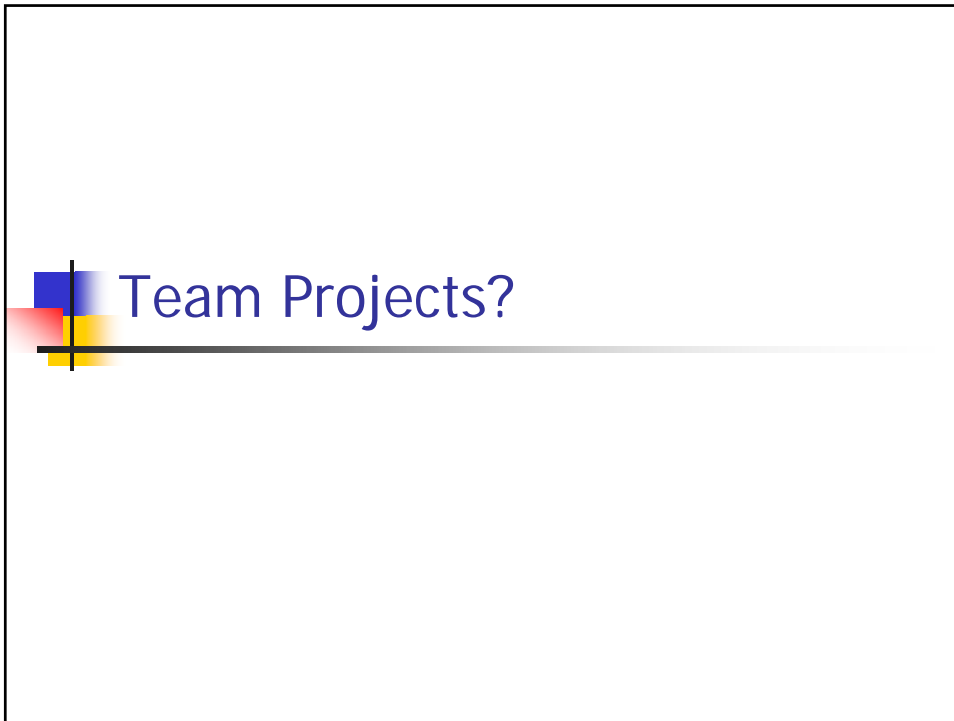


# Human-Computer Interaction IS4300



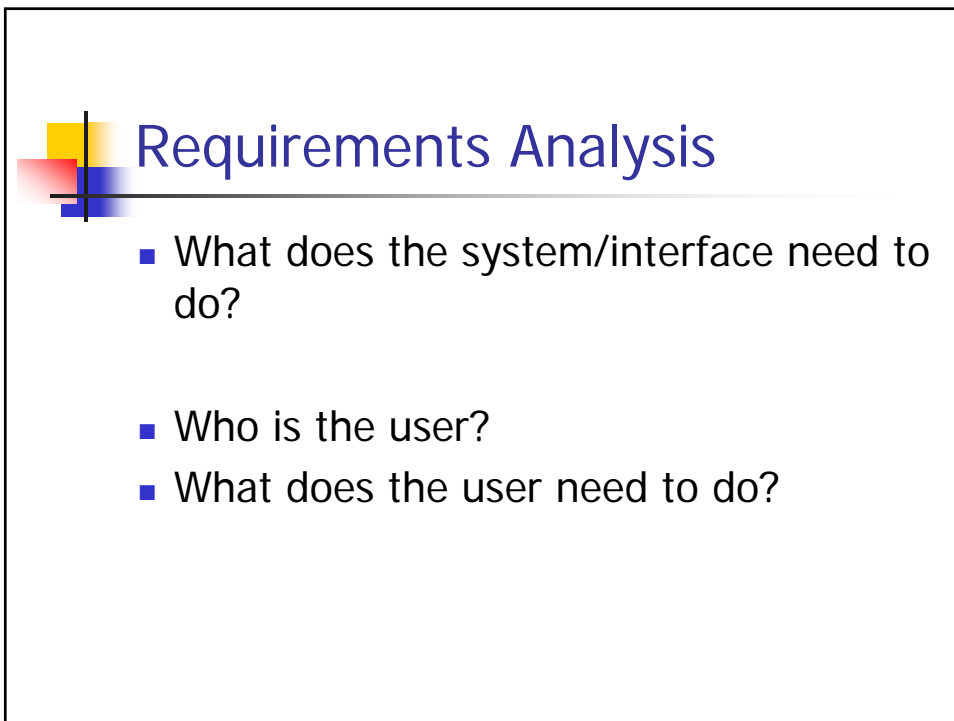
## Ethnography Homework 13





## Team Projects?

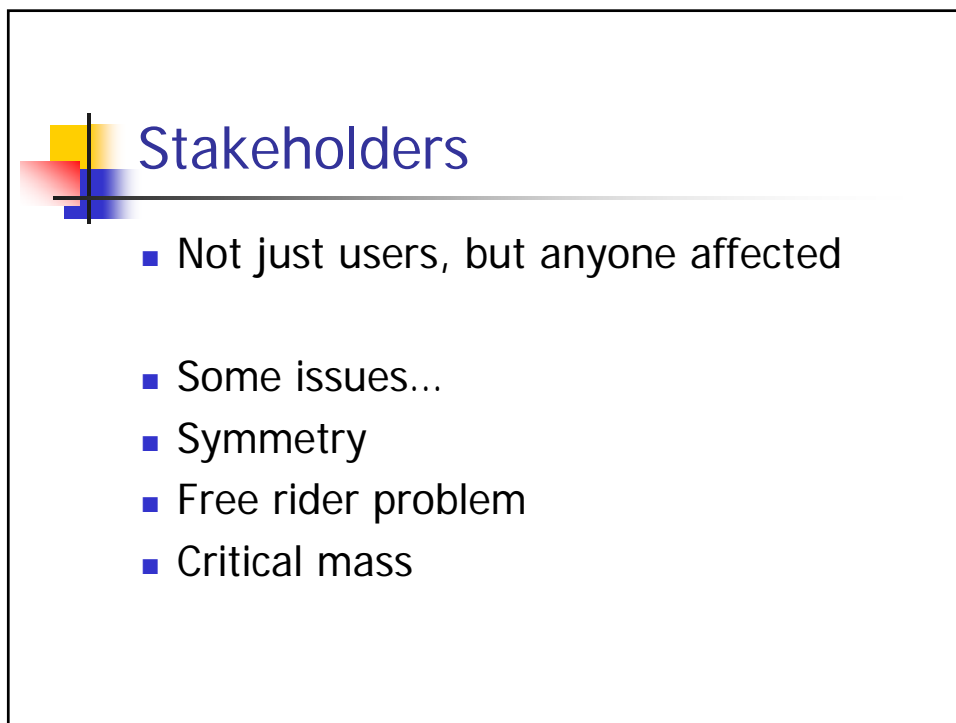
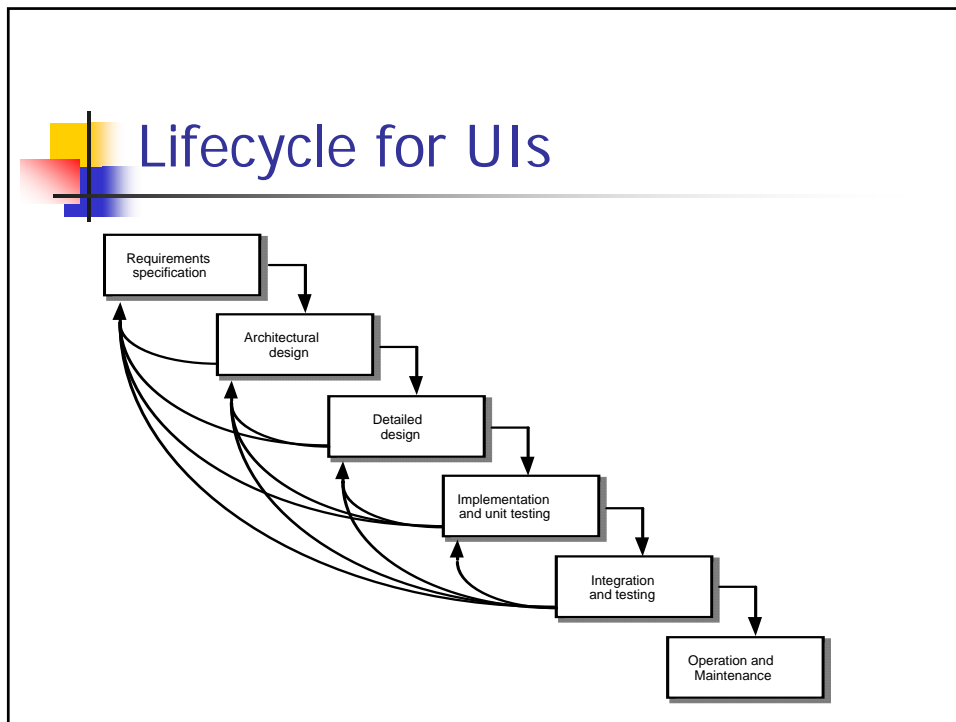
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## Requirements Analysis

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- What does the system/interface need to do?
- Who is the user?
- What does the user need to do?



## Classes of Stakeholders

- Primary
  - End users
- Secondary
  - Receive output or provide input
- Tertiary
  - Directly affected by success or failure
- Facilitating
  - Involved with design, development, maintenance



**Example: EMR**

## Example

- Identify stakeholders for airline booking system.



## Participatory Design

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- Include users throughout design process
  - Brainstorming
  - Storyboarding
  - Pencil and Paper Exercises (paper prototyping)



## Personas

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- A precise description of a user and what he or she wants when using a system
- A concrete person in the designer's mind



## Example

- Jane Doe
- Age 23
- Northeastern Freshman IS Major
- *Mary is very sociable and a sports fanatic. When she's not studying or going to games she loves touring Boston and taking pictures...*
- *She goes to MyNEU primarily to check the sporting events...*

## One way of determining what features to include...

- Identify each class of user
- Write a persona for each class
- Identify the features each personal wants
- Analyze the numbers/types of personas that want each feature
  - E.g., include those features that the most want



## Exercise

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- Create personas for primary and secondary stakeholders in airline ticketing system.



## T2-1 User Analysis

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- Practically speaking (for the homework)
  - Age, gender, ethnicity
  - Education
  - Physical abilities
  - General computer experience
  - Skills (typing? Reading?)
  - Domain experience
  - Application experience
  - Work environment and other social context
  - Relationships and communication patterns
- Identify major kinds/classes of users
- By interview, observation & questionnaire



## Task Analysis

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- Analysis of how people do their jobs
- Identifying Tasks
- Task Scenarios
- Task decomposition
- Knowledge-based Techniques
- Entity-relation-based Analysis



## Task Scenarios

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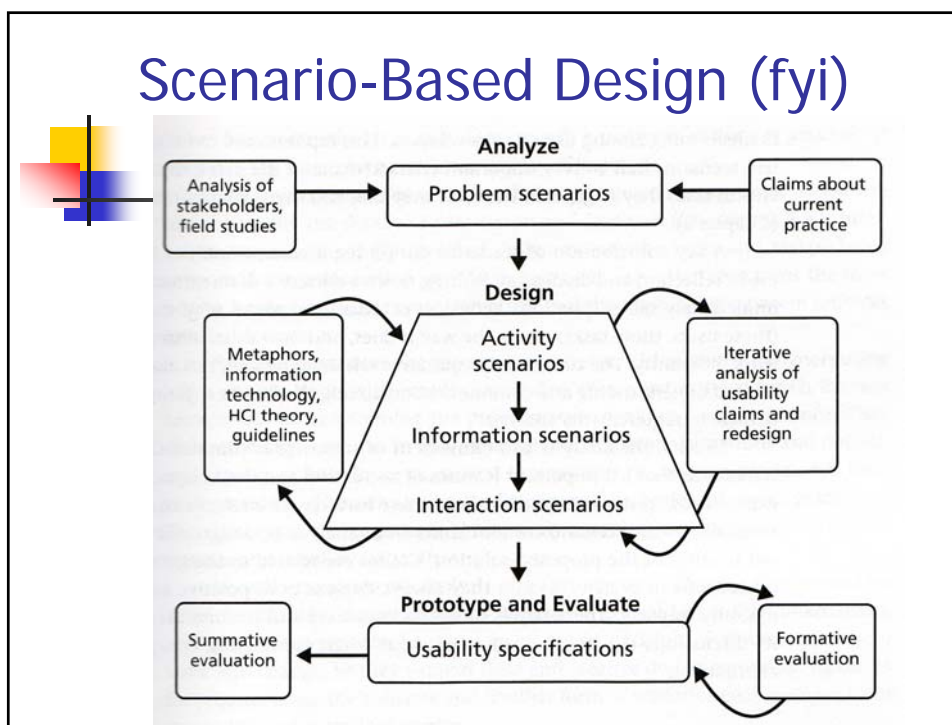
- Narratives of activities in the current situation (prior to technology introduction) that reflect needs and opportunities for redesign.
- Tells a story of a current practice.
- Carefully constructed to reveal aspects of the stakeholders & activities that have implications for design. (*fictional!*)

## Example Task Scenario

Sally Harris is a high school sophomore who has been researching black holes for the past 3 months...

She is a bit worried about the space and materials provided to everyone... This year she has explored some new methods-for example, an Authorware simulation that illustrates her theory of black hole formation. ...

As she studies her simulation, Sally thinks of a way to turn the lack of computer support into a "feature": She will create a sequence of visualizations that can be flipped like a deck of cards to show the animation. ...



## Concrete Use Case

- Abstracted from task scenario
- Not personalized

User action	System response
User inserts credit card into the slot.	System requests PIN.
User types in 4-digit PIN number using the keypad.	System verifies user's identity. System requests foreign currency required, to be selected using menu keys.
User presses the key corresponding to the required currency.	System displays the exchange rate. System requests the user to enter the amount of foreign currency required using the keypad. The unit of currency is also displayed, as the system only deals with banknotes.
User enters amount required using the keypad.	System returns the credit card via the slot. System dispenses the currency via the currency delivery slot. System delivers a printout of the transaction via the receipt slot.

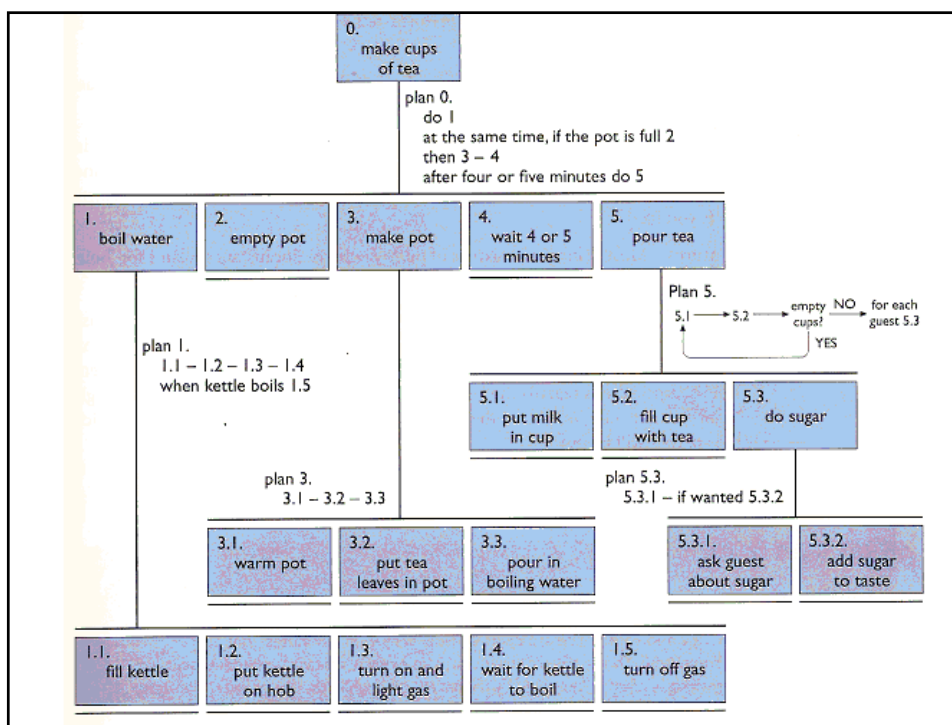
## Essential Use Case

- Further abstracted
- No assumptions about UI

Get foreign currency	
User's purpose	System responsibility
Identify self.	Validate user's identity. Display currencies available.
Select currency required.	Display exchange rate.
Enter amount of foreign currency required.	Calculate amount multiplied by exchange rate.
Confirm amount.	Request initiation of payment. Obtain authorization for amount. Give money.
Take money and go.	

## Hierarchical Task Analysis

- Hierarchy of tasks & subtasks
  - +
- Plans
  - Express partial ordering on subtasks (possible parallelism)
  - Conditions on subtasks
  - Temporal constraints on subtasks
  - Cycles





## Question

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- How is a Hierarchical Task Analysis related to an Essential Use Case?



## Exercise

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- Do a task analysis for “brushing teeth”

## Knowledge-Based Analysis

fyi

- Goal: understand knowledge needed to perform a task
- Taxonomies
  - Ask the expert
  - Card sorting
  - Use for objects & tasks
  - Usually many different ways to do
    - Addressed by task descriptive hierarchy (AND/OR/XOR)

## Entity-Relationship Analysis

fyi

- Objects
  - Concrete, Actors (roles), Composites
  - Attributes
- Actions
  - Agent, Patient (changes state), Instrument
- Events
  - Performing of an action, spontaneous
- Relationships
  - Object-object, Action-patient, Action-instrument
- Use HTA (e.g.) to describe sequencing



## T2-2 Task Analysis

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- Practically speaking (for the homework)
  - Hierarchical task decomposition
    - Task = Goal (what, not how)
    - Top-level = problem you're solving
    - Decompose into subtasks/subgoals
  - For each task
    - Goal – “Why do you do this?”
    - Preconditions (other tasks, information)
    - Decompose if nontrivial – “How do you do it?”



## T2-2 Task Analysis

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- Other information about tasks that may be useful
  - Where is the task performed?
  - How often is the task performed?
  - What are its time or resource constraints?
  - How is the task learned?
  - What can go wrong? (errors, exceptions)
  - Who else is involved in the task?



## T2 - Team Project

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- Perform User Analysis & Task Analysis
  
- Write up
  - Description of users / user classes / personas
  - Task Analysis
    - Six or more tasks
    - Task scenarios
    - Hierarchical analysis
  - Usability Requirements (next class)



## Exercise

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- User & Task analysis for optometrist web site



## To Do

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- Read
  - Requirements Analysis (Stone Ch 5-7)
- Project
  - T2 – Task analysis – due in 1 week
- Homework
  - I3 – Ethnography – due in 1 week