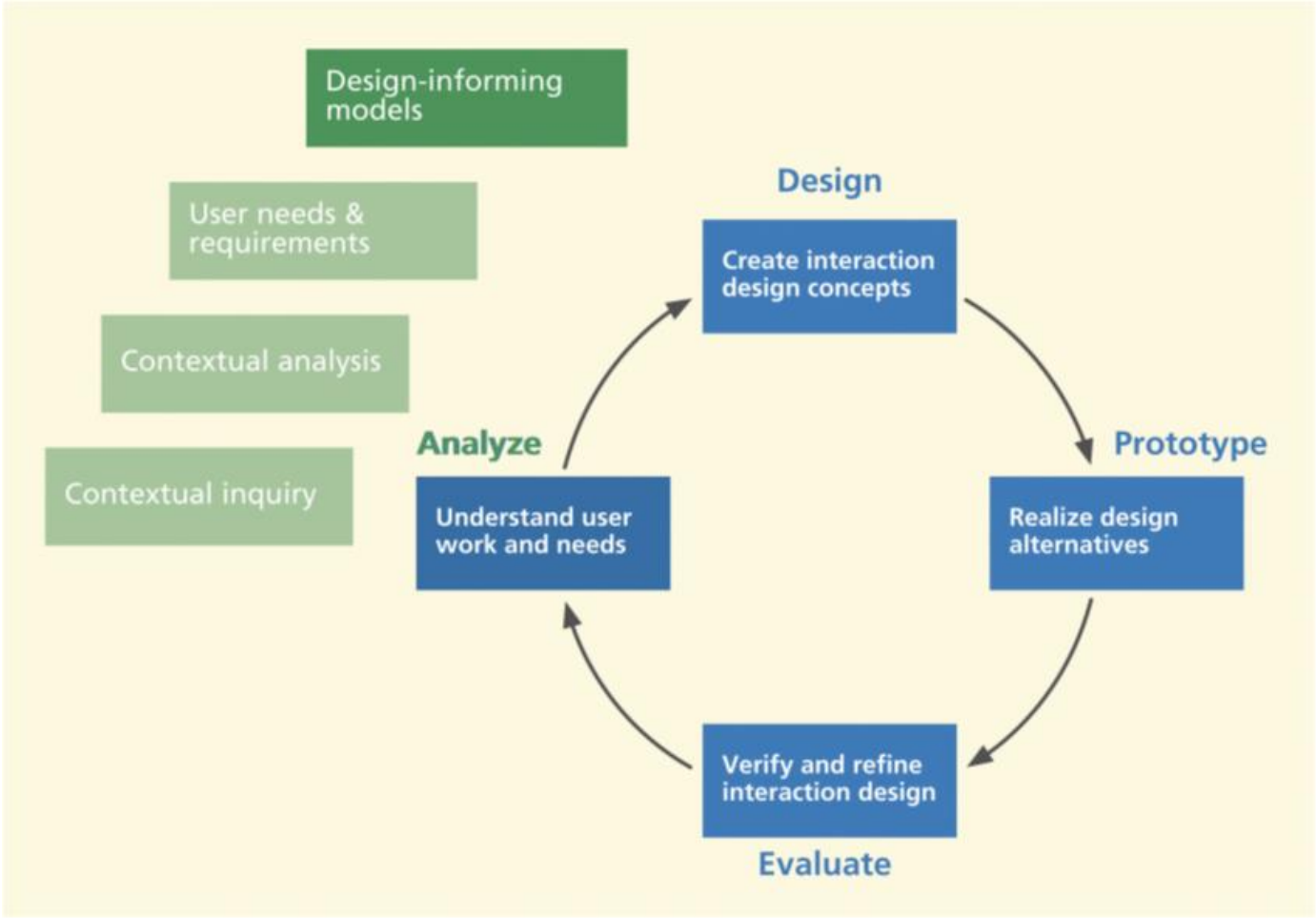
Design-Informing Models

SWEN-444

Selected material from *The UX Book*, Hartson & Pyla


Design-informing models
User needs & requirements
Contextual analysis
Contextual inquiry
Design
Create interaction design concepts
Prototype
Realize design alternatives
Evaluate
Verify and refine interaction design
Analyze
Understand user work and needs

Design-Informing Models

- Bridge analysis and design
- Models that drive and inspire design
- Design-oriented constructs, such as task descriptions, but not design elements per se
- Walk the WAAD as for (during) requirements extraction
  - Normal operation
  - Barriers to work practice – opportunities for improvement

Design-Informing Models

- User models
- Flow models
- Social models
- Task models (HTA)
- Usage scenarios

User Models

- Work (user) roles – direct "primary" users
  - Indirect ("secondary") roles – affected by the system in some way
  - Example – ATM
    - Direct roles – customer, service person
    - Indirect role – bank security officer

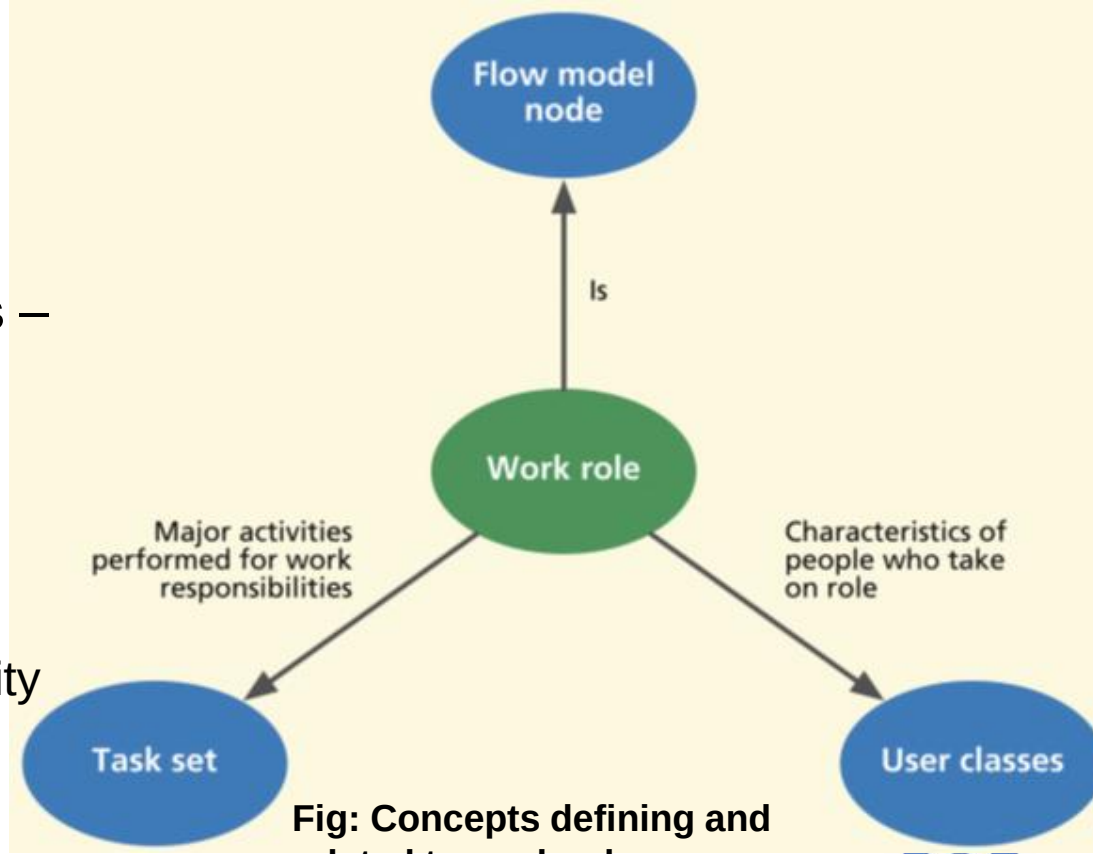


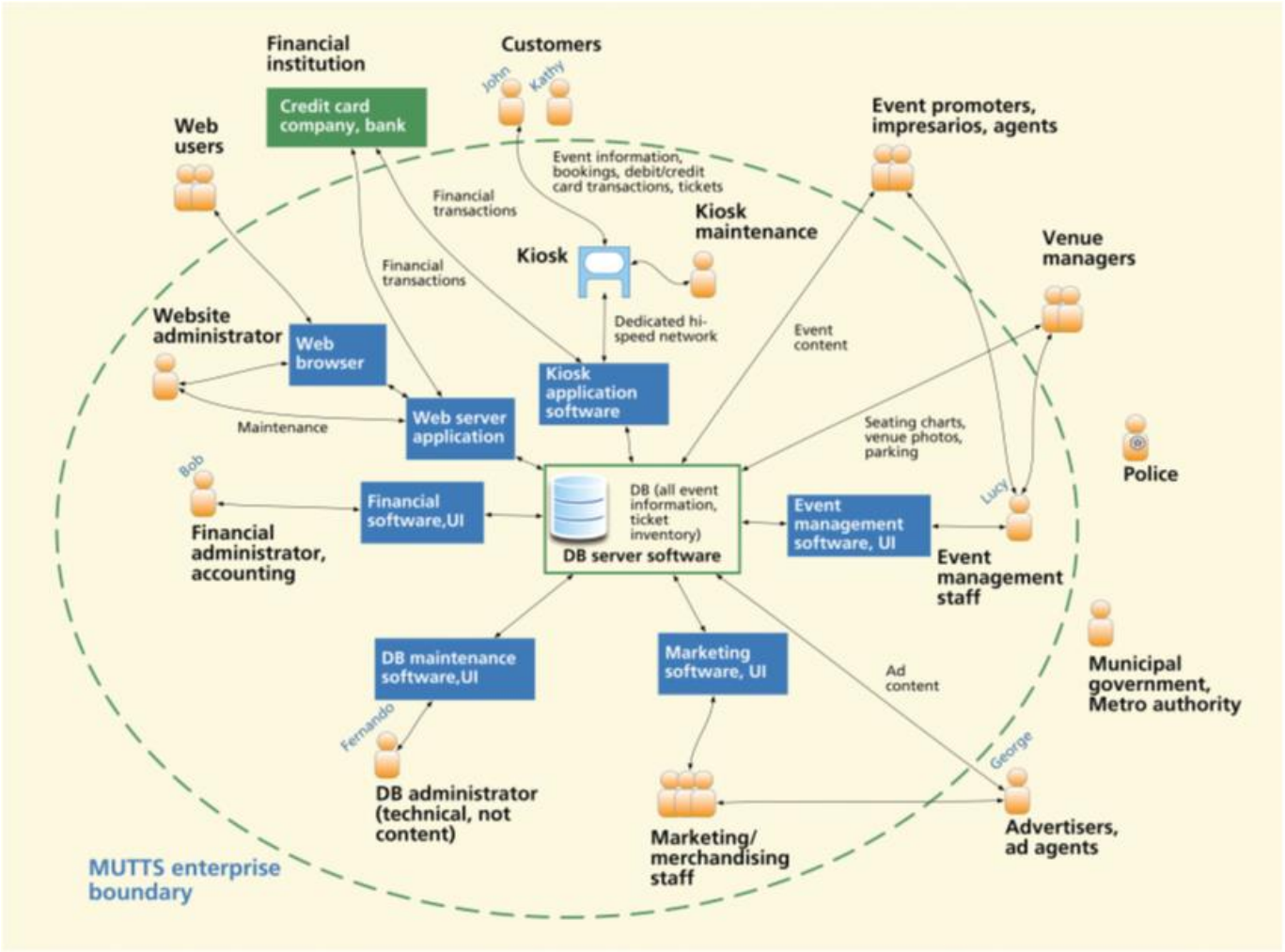
Fig: Concepts defining and related to work roles

User Classes

- User profile – general characteristics of people who perform the work role
- Knowledge, skills, education required to perform the job
- Physical and cognitive abilities and disabilities
- Personal data – age range, locale, ethnicity, …
- Experience level – novice, intermediate, expert
  - Who do you design for?

Flow Models

- Continue to develop the flow model
  - Scope is entire work practice and workflow
  - Nodes for active entities
  - Arcs for flow of work, information
  - Include non-human entities
  - Example, central database and non-computer communication flow such as via email, telephone


Financial institution
Credit card company, bank
Customers
John
Kathy
Web users
Event information, bookings, debit/credit card transactions, tickets
Financial transactions
Financial transactions
Kiosk
Kiosk maintenance
Event promoters, impresarios, agents
Venue managers
Website administrator
Web browser
Dedicated hi-speed network
Event content
Kiosk application software
Maintenance
Web server application
Seating charts, venue photos, parking
Police
Bob
Financial software,UI
DB (all event information, ticket inventory)
DB server software
Event management software, UI
Lucy
Financial administrator, accounting
Event management staff
DB maintenance software,UI
Marketing software, UI
Ad content
Municipal government, Metro authority
Fernando
George
DB administrator (technical, not content)
Marketing/ merchandising staff
Advertisers, ad agents
MUTTS enterprise boundary

Social Models

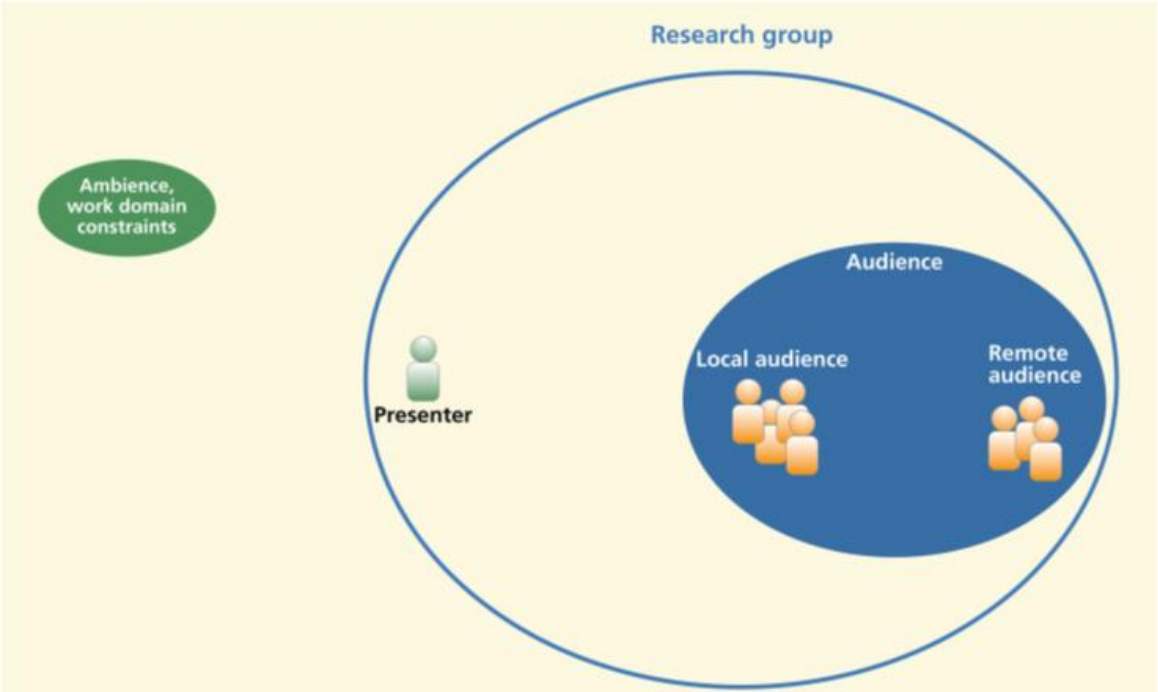
- Communal aspects of the work environment …
- Work role related concerns and perspectives;
  - Norms of behavior, influences, barriers, and pressures
  - Philosophy, mind-sets, feelings (emotions), attitudes
  - Environmental factors and ambiance

Social Model Diagram

- Nodes – work roles and any outside actors (human and non-human) that interact with work roles
  - Group as appropriate (analogous to an organization chart)
  - Represent role related concerns and perspectives as node attributes
- Workplace ambiance – the “culture” of how work gets done
- Constraints and influences on work practice
- To diagram: start by drawing a circle for each of the above entities, label, and group

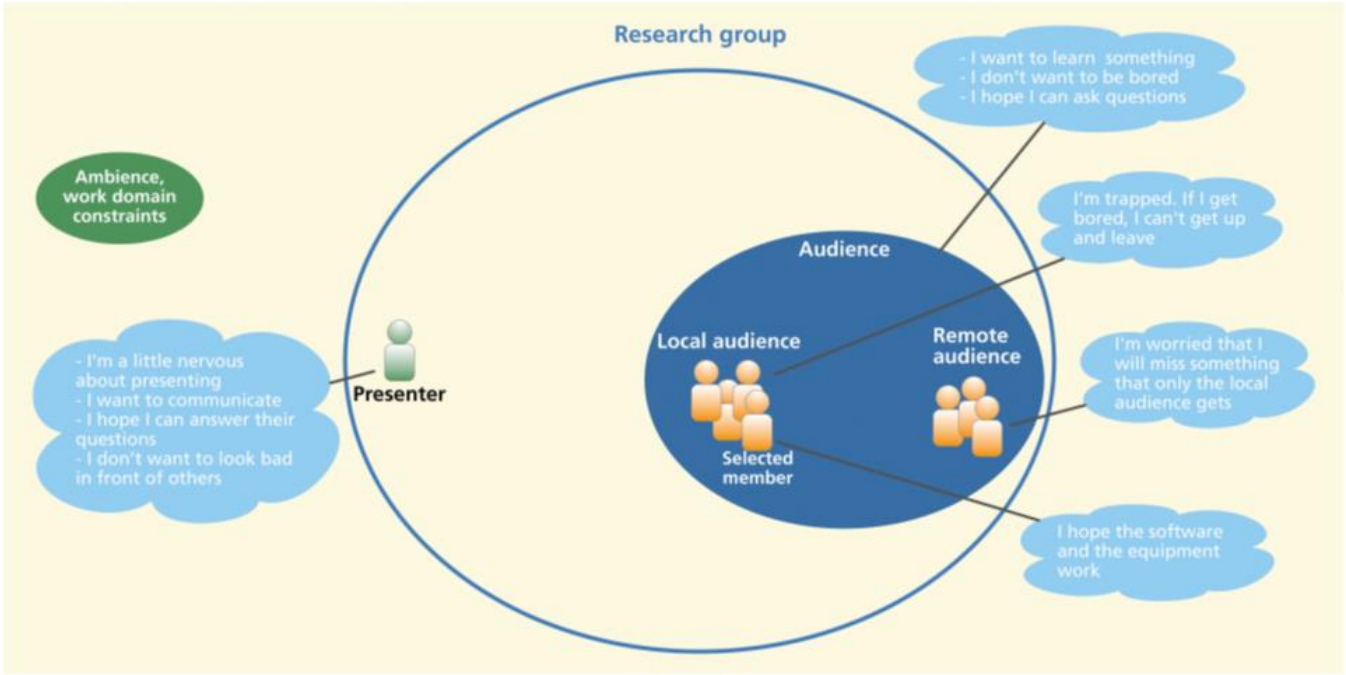
Example: Social model of the *Slideshow Commander*

Step 1/3: Identify the entities. We also added "Ambiance" as a nonhuman entity.



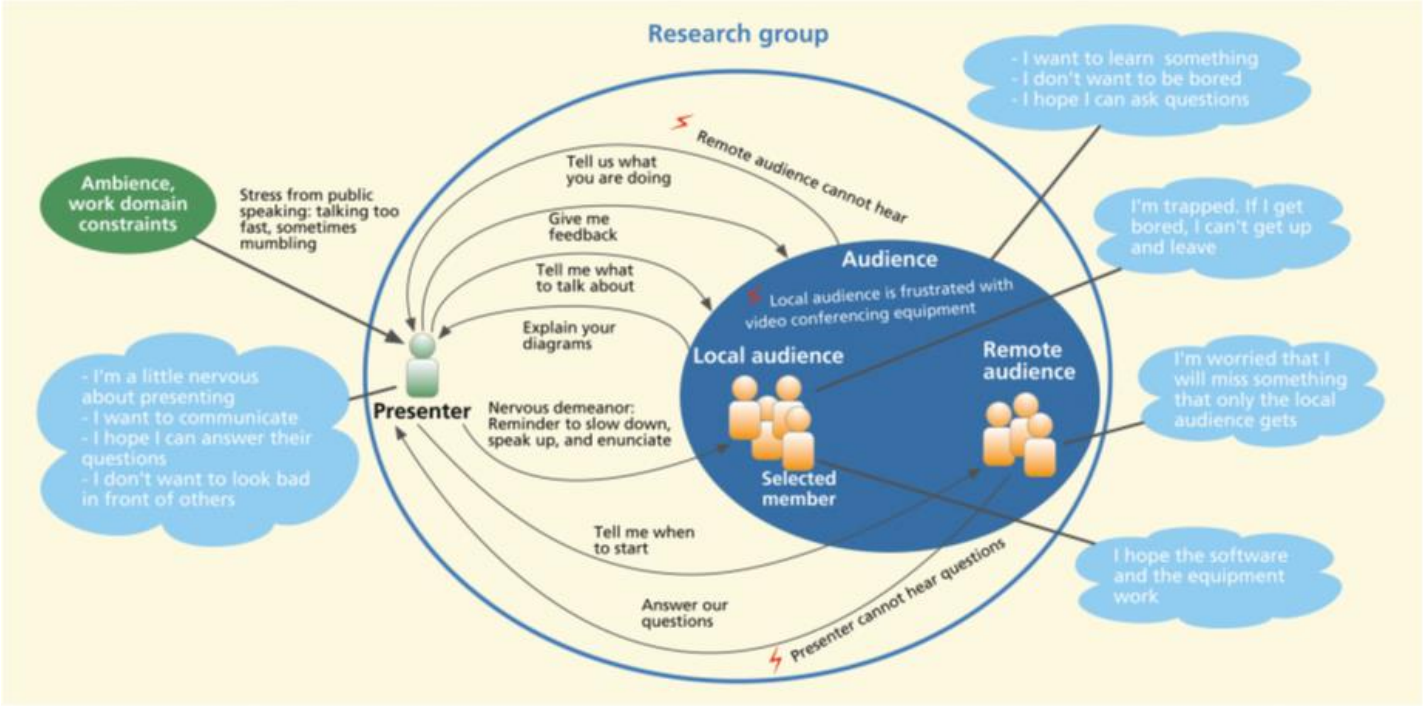
Example: Social model of the *Slideshow Commander*

Step 2/3: Add concerns and perspectives as node attributes.



Example: Social model of the *Slideshow Commander*

Step 3/3: Add inter-node influences.



Activity

Go through your WAAD and any other work activity notes and:

- Review and refine as necessary the major user **work roles** and machine roles (e.g., central database) in the work domain.
- Define 2-3 **user class** (profile) for your most important work roles. A user class description for a given work role captures the relevant characteristics of people who might take on that work role.
- Develop the **envisioned** work **flow model**.
- Construct the social model diagram

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Task Models

- Tasks vs. functions
  - Task: something a user does
  - Function: something system does
  - Example, information is displayed (system); viewed (user)

Hierarchical Task Analysis (HTA)

- Break work down into tasks, subtasks, activities
- Descriptions and/or graphical representation
- Overall task inventory
- Individual task analysis

The HTA Approach

- Iterative decomposition:
  - Goal: the user's desired work objective
  - Task: how the goal can be fulfilled.
  - Hierarchy of sub-tasks to accomplish the task
  - Actions: what the user does to perform the sub-tasks. This is the lowest level description of the user's actions.
  - Plans: various flow scenarios to describe what conditions that a sub-task and/or action shall be performed

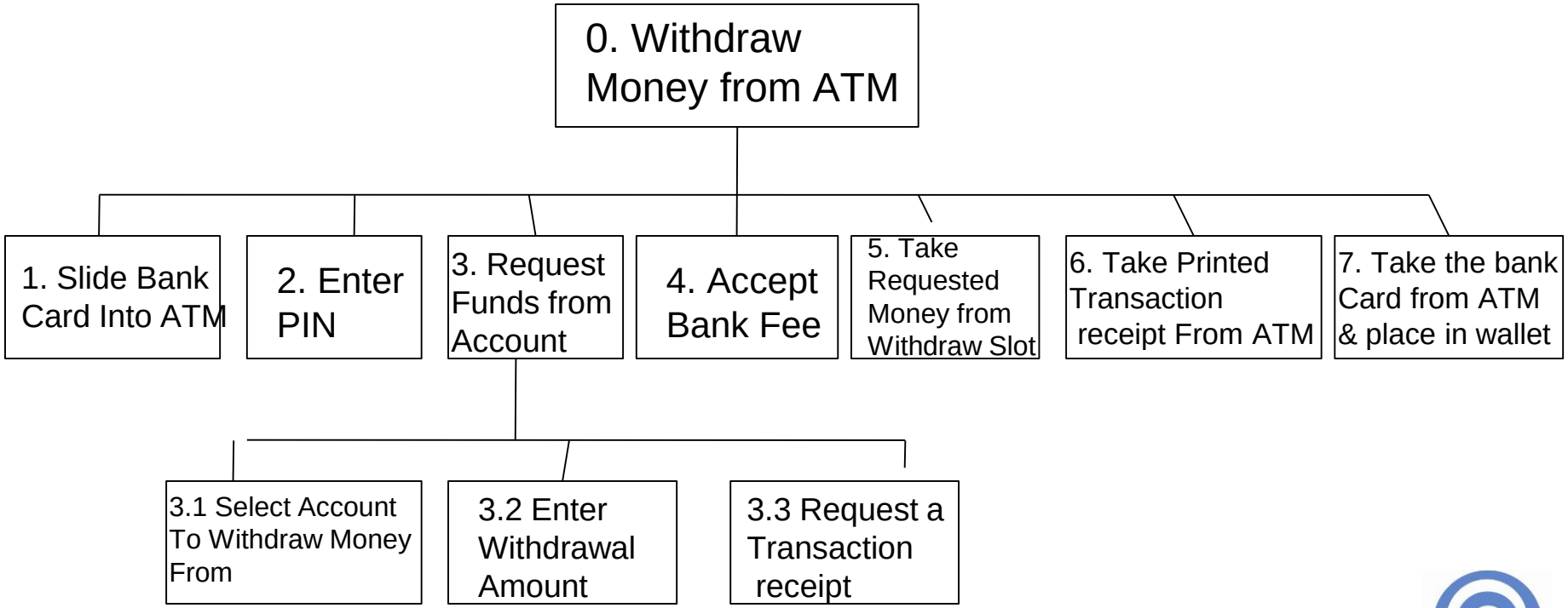
Ex. Withdrawing Money from ATM

0. Withdraw Money from ATM
    1. Slide bank card into ATM
    2. Enter PIN
    3. Request Funds from Account
        3.1 select account to withdraw money from
        3.2 enter amount of money requested for withdraw
        3-3 request a transaction receipt
    4. Accept bank fee
    5. Take requested money from the withdraw slot
    6. Take the printed copy of the transaction receipt from the ATM
    7. Take the bank card from the ATM and place back in wallet

Plan 0: do 1-2-3-4 in that order; 5-7 in any order. When the transaction receipt is requested do 6..

Plan 3: do 3.1-3.2 in that order. When a transaction receipt is desired do 3.3 after 3.2.

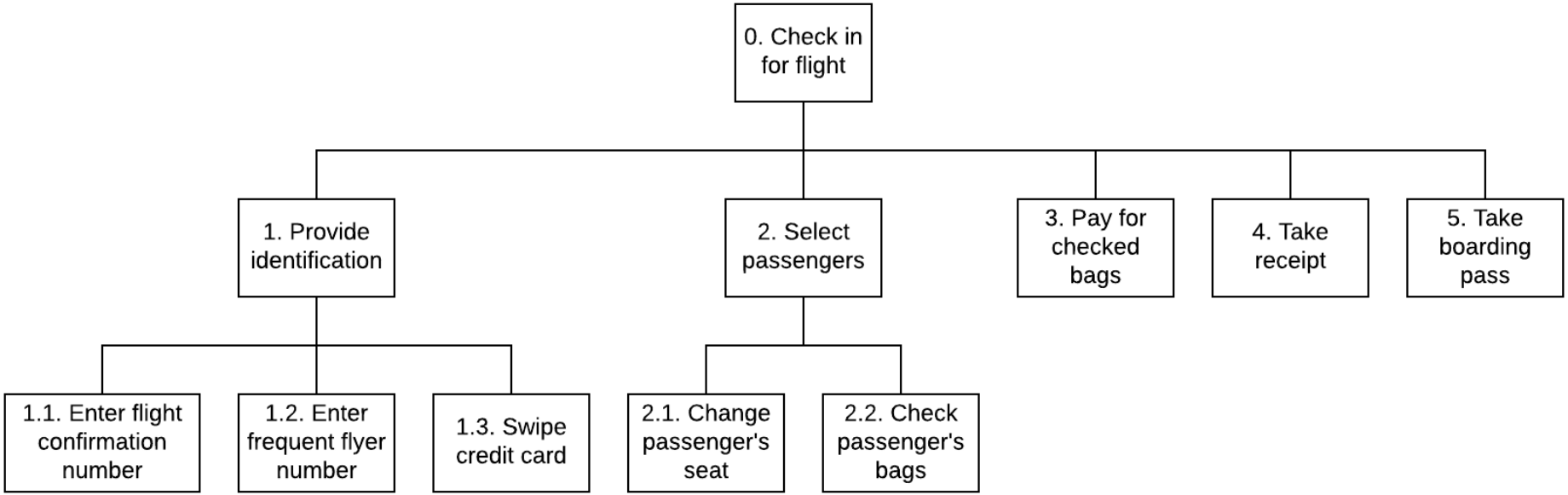
Graphical Version



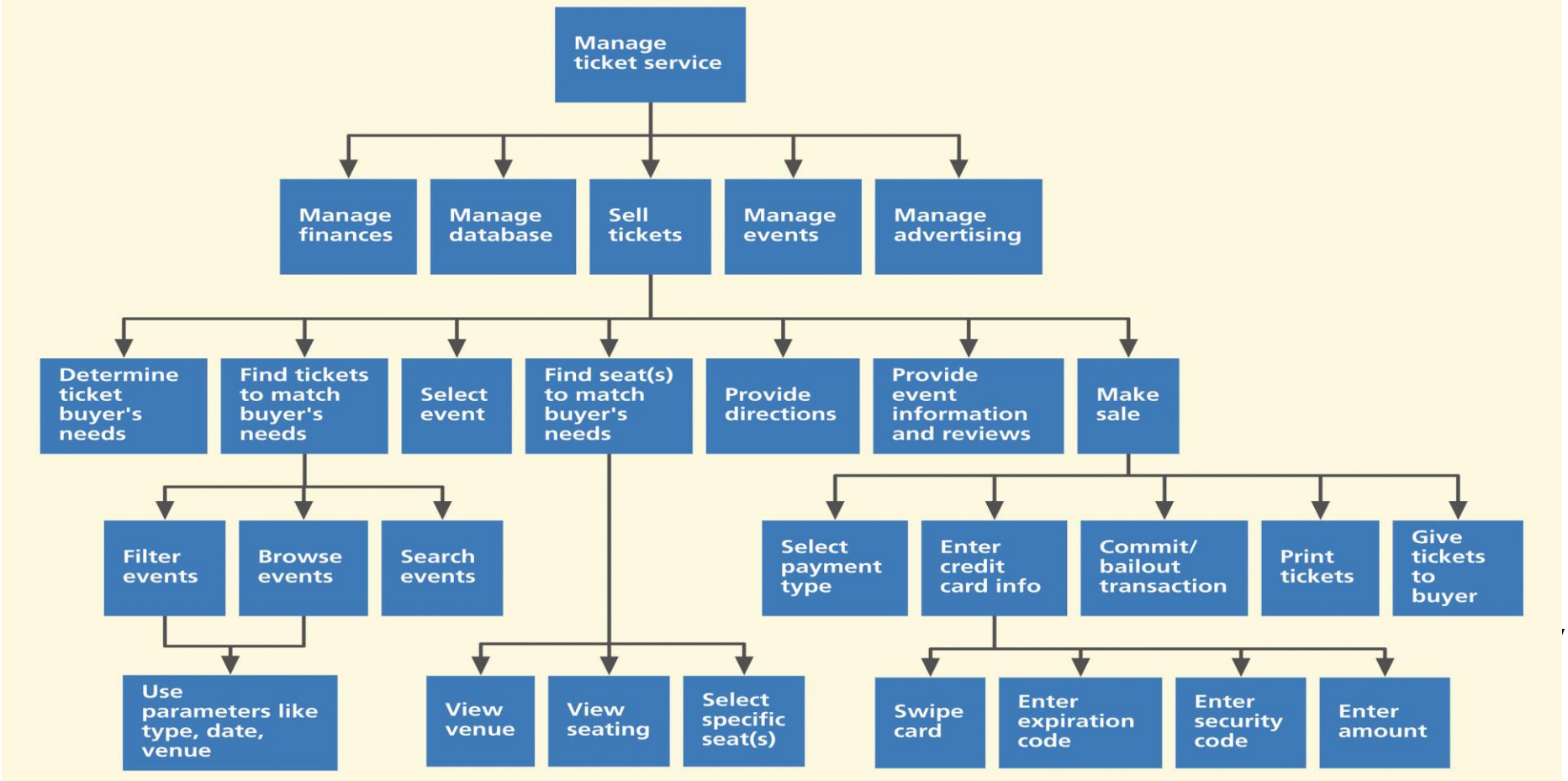
Practice – Create HTA for Check-in for a Flight

A passenger walks up to an airline kiosk at the airport to check-in for her flight. After selecting the check-in option the passenger must identify herself and the flight. The system offers the user the option of entering either their flight confirmation code, frequent flier number, or to swipe their credit card. After finding the user's flight record the system asks the passenger to select the passengers for the flight. For each selected passenger the user is offered the options to change seats and to check bags. For each passenger the user may select a new available seat and/or enter the number of checked bags. After all selections and changes have been completed, the system requests the user to pay the checked bag fee with a credit card. The system prints the baggage fee receipt, and then prints the boarding passes. The passengers are checked in.

Graphical HTA for Check-in for a Flight



Example HTA (inventory) for MUTTS



Usage Scenarios

- Narrative task interaction models
- Stories about
  - Specific people with work goals
  - Performing work activities
  - Within a specific work environment
  - User actions, system responses
  - Barriers encountered
  - As if it was a transcript of a real usage occurrence

Example: Usage Scenario for Mutts

On cellphone and email over a day or two, Priya and a group of her friends plan an evening out together on the coming weekend. They agree to meet at the MUTTS ticket window on Friday afternoon. Some walk to MUTTS, while others take the bus.

With the work week behind them, the group is in a festive mood, looking for entertainment over the weekend. They decide to check out events for Saturday night. After waiting in line, Priya asks the ticket seller what kinds of events have tickets available for Saturday night. The agent looks through her computer listings of movies, concerts, plays, fairs, carnivals, and special events and tells the group about their options. After talking among themselves, they decide they want to go to a concert. The agent asks, "Which kind, classical or pop?" They choose to go with a pop concert. Again, she tells them their options. They finally decide on a concert playing at The Presidium.

There is some unease within the group, though, because they feel that the agent did not give them enough information to make the best choice ( ) and they felt some pressure to decide in a hurry ( ), as the agent was standing there and waiting.

They ask about what seats are available and the agent goes back to her computer and brings up a graphical seating map of the hall. However, the tickets the agent has on hand are for only a subset of the seats actually available, forcing the group to pick from these, knowing they had not seen all the real options ( ). They choose their seats based on price and seat location and the agent requests an option to buy the tickets, locking out others until the transaction is either completed or given up. The group agrees on the purchase and then discusses the matter of paying. They decide to give Priya cash and she will pay on her credit card, so Priya swipes her credit card through the slot on the counter. The transaction is authorized by the credit card company, the sale is committed, and the agent gives them the tickets. The group is happy, but they leave with a nagging feeling that there must be a better way to buy tickets.

Activity – Individual

Go through your WAAD and any other work activity notes and:

- For one of the work roles write **one** usage scenario
- Create a descriptive **hierarchical task analysis** model for the usage scenario, and

- Submit to myCourses: “HTA and Usage Scenario”