Class 3: Requirements Gathering

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January 17, 2019

Contents

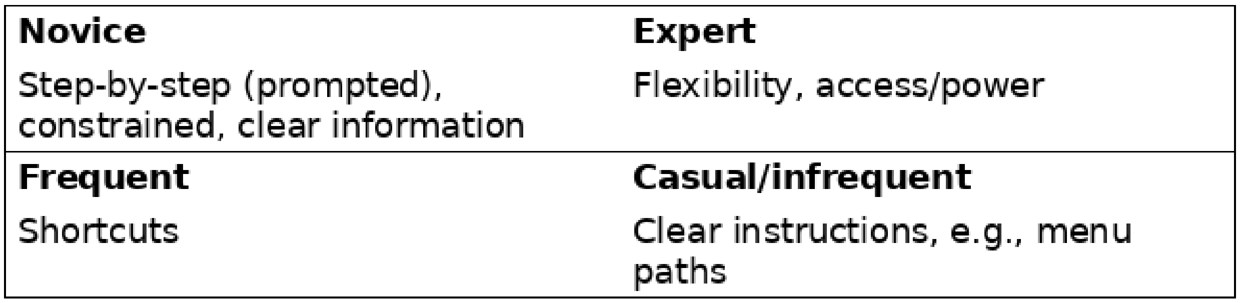
1 Requirements

- what does the user want?
  - ➢ users
  - ➢ tasks
  - ➢ context
    - ■ environment
    - ■ business constraints
- share requirements with stakeholders
- create a common understanding for the team
- work in progress
  - ➢ clarification
  - ➢ refining
  - ➢ re-scoping

2 Users

2.1 Who Are They?

- abilities
- background
- attitudes towards computers
- experience with the system
  - ➢ see Figure 2.1

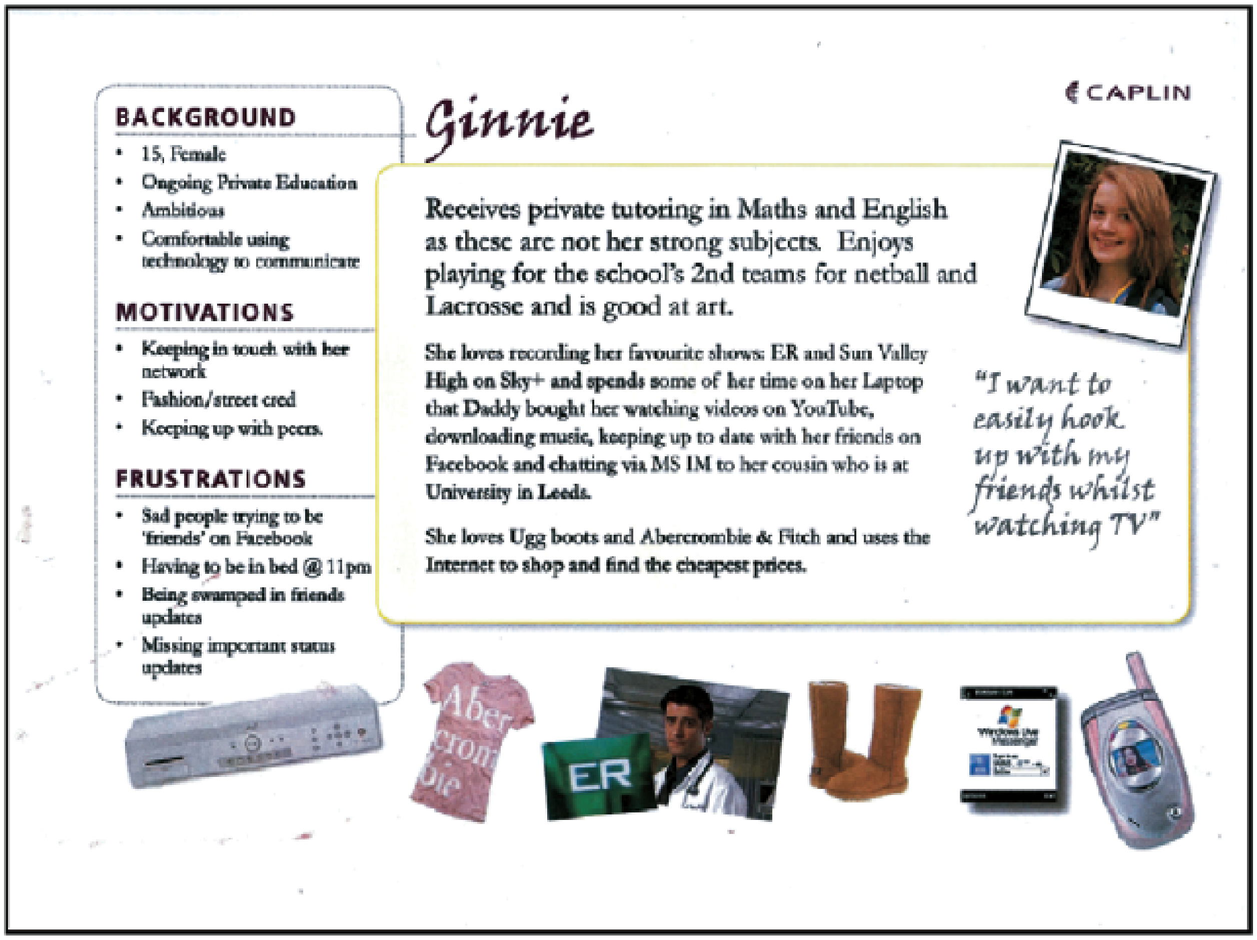


Novice Step-by-step (prompted), constrained, clear information	**Expert** Flexibility, access/power
Frequent Shortcuts	**Casual/infrequent** Clear instructions, e.g., menu paths

Figure 2.1: The types of user experience.

2.2 Personas

- predict someone's behavior by
  - ➢ **understanding their mental state**
- capture **user characteristics**
  - ➢ not real people
  - ➢ **synthesized** from **real characteristics**
- bring them to life
  - ➢ name
  - ➢ goal
  - ➢ background
- always develop **multiple personas**
- see Figure 2.2



CAPLIN

BACKGROUND

- 15, Female
- Ongoing Private Education
- Ambitious
- Comfortable using technology to communicate

MOTIVATIONS

- Keeping in touch with her network
- Fashion/street cred
- Keeping up with peers.

FRUSTRATIONS

- Sad people trying to be 'friends' on Facebook
- Having to be in bed @ 11pm
- Being swamped in friends updates
- Missing important status updates

Ginnie

Receives private tutoring in Maths and English as these are not her strong subjects. Enjoys playing for the school's 2nd teams for netball and Lacrosse and is good at art.

She loves recording her favourite shows: ER and Sun Valley High on Sky+ and spends some of her time on her Laptop that Daddy bought her watching videos on YouTube, downloading music, keeping up to date with her friends on Facebook and chatting via MS IM to her cousin who is at University in Leeds.

She loves Ugg boots and Abercrombie & Fitch and uses the Internet to shop and find the cheapest prices.

"I want to easily hook up with my friends whilst watching TV"

Figure 2.2: An example persona.

2.2.1 How to Create

- types of users
  - primary
    - frequent
    - hands on
  - secondary
    - occasional
    - through someone else
  - tertiary
    - affected by the product
      - doesn't use directly

```
determine usertypes

for usertype in usertypes:
  """
  data about:
              - goals
              - tasks
              - context
  """
  collect_data(usertype)

  # create a use profile
  create_user_profile(usertype)

for profile in profiles:
  # turn the profile into a believable character
  add_details(profile)
```

Listing 2.1: Algorithm to create a persona.

2.2.2 Problems

- characters not believable
  - not based on data
  - no clear relationship to data
- not communicated well
  - resume-like posters
- no understanding of **how to use** characters
  - must be applicable to **all stages** of development cycle
- little high-level support

3 Data Gathering for Requirements

3.1 Data Gathering Techniques

1. documentation
2. contextual inquiry
3. observation
   - direct

    - indirect
4. interviews
5. questionnaires
6. research similar products
    - good for prompting requirements

3.1.1 Documentation

- study existing documentation
    - procedures, rules
    - regulations
        - business constraints
    - steps involved in activity
- don't use only documentation
    - use another technique too
- **no stakeholder time**

3.1.2 Contextual Inquiry

- ethnographic study
    - user is the expert
    - designer is apprentice
- interview with user
    - at user's workstation
    - 2-3 hours long
- four principles
    - context
    - partnership
    - interpretation
    - focus

3.1.3 Observation

- direct
    - observe stakeholders' tasks
    - understand nature and context of the tasks
    - lots of time spent by design team
    - lots of data
- indirect
    - not often used
    - good for logging tasks

3.1.4 Interviews

- good for exploring issues
    - great for the beginning
- time consuming
    - possibly to the point of being unfeasible
- props to elicit responses
- focus groups
    - group interview
    - get a consensus or highlight conflict
    - some individuals may dominate the group

3.1.5 Questionnaires

- often used with other techniques
- quantitative **or** qualitative data
- good for large groups answering specific questions

3.2 Problems

- availability of **real users** for study
  - ➢ especially in specialized populations
- communication
  - ➢ different discourse communities
- domain knowledge implicit
  - ➢ knowledge articulation
    - ▪ describe how you walk or breathe
    - ▪ difficult to do
- balancing functionality and usability
- economic/business changes

3.3 Guidelines

- use a combination of techniques
- use props when possible
- involve all stakeholder groups
- run a pilot session with friends/family
- think about how to record data
- sensible compromises in data collection/analysis

4 Task Descriptions

- task descriptions
  - ➢ envision **new** systems/devices
  - ➢ scenarios
  - ➢ use cases
- task analysis
  - ➢ investigate an **existing** situation/system
  - ➢ most popular: **hierarchical task analysis**

4.1 Hierarchical Task Analysis

- steps
  1. start with a goal and identify main tasks
  2. recursively break each task down into subtasks
  3. group as plans
     - ➢ how to perform the task in practice?
- physical and observable actions
  - ➢ including actions not related to software

4.1.1 HTA Example

See Figure 4.1 for a graphical example.

0. in order to buy a DVD
1. locate DVD
2. add DVD to shopping cart

3. enter payment details
4. complete address
5. confirm order

- new user: 1 2 3 4 5
- regular user 1 2 5 (skip 3 and 4)

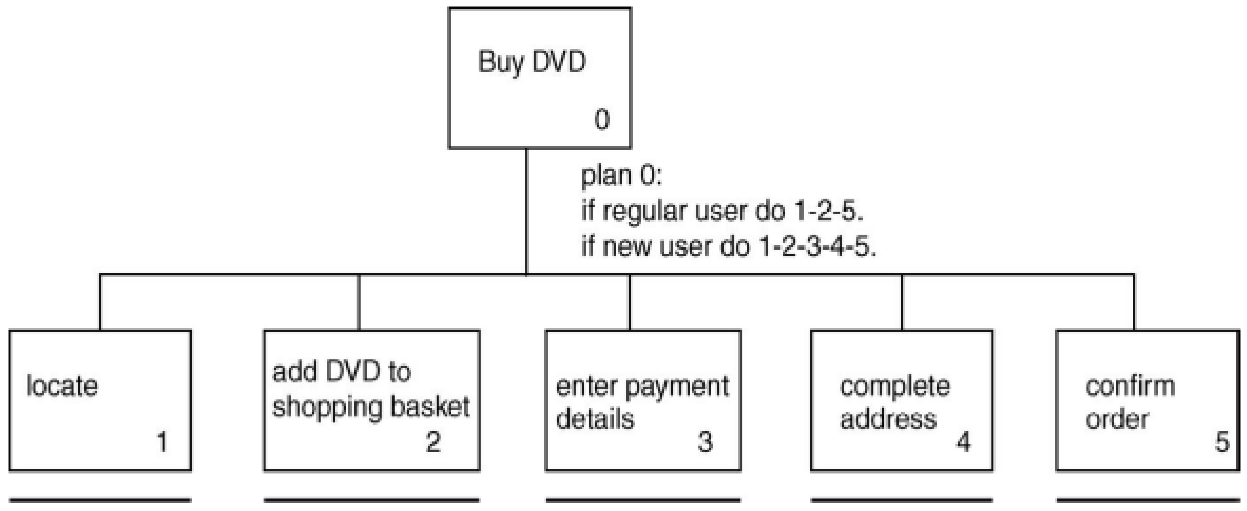

Buy DVD
0
plan 0:
if regular user do 1-2-5.
if new user do 1-2-3-4-5.
locate
1
add DVD to shopping basket
2
enter payment details
3
complete address
4
confirm order
5

Figure 4.1: Graphical representation of HTA on the DVD example.

4.2 Scenarios

- concise description or story
  - ➢ someone using a product to achieve a goal
  - ➢ setting
  - ➢ situation state
  - ➢ actors
    - ▪ motivations
    - ▪ knowledge
    - ▪ capabilities
  - ➢ tools/objects
- stakeholders participate in definition
  - ➢ use their language
- create shared understanding for design team
- goal oriented, focus on needs of users
- encourage reflection, raise questions

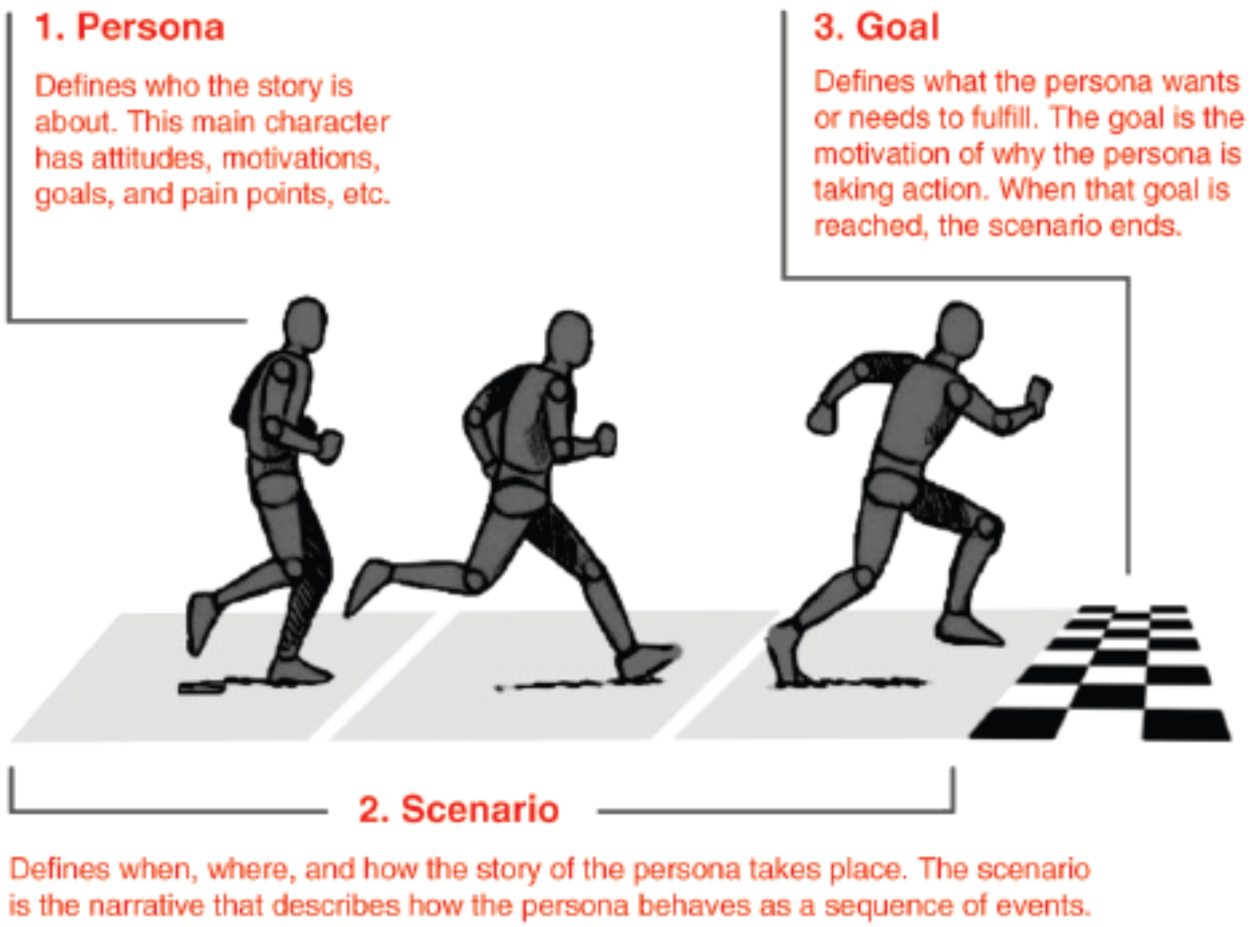

1. Persona
Defines who the story is about. This main character has attitudes, motivations, goals, and pain points, etc.
3. Goal
Defines what the persona wants or needs to fulfill. The goal is the motivation of why the persona is taking action. When that goal is reached, the scenario ends.
2. Scenario
Defines when, where, and how the story of the persona takes place. The scenario is the narrative that describes how the persona behaves as a sequence of events.

Figure 4.2: Scenarios vs personas comparison.

4.3 Use Cases

- related sequences of transactions
  - ➢ in a dialog with the system
- system **interacts with** actors
- initiated by **actor** or **system event**
- helps elicit functional requirements
  - ➢ good for development/testing

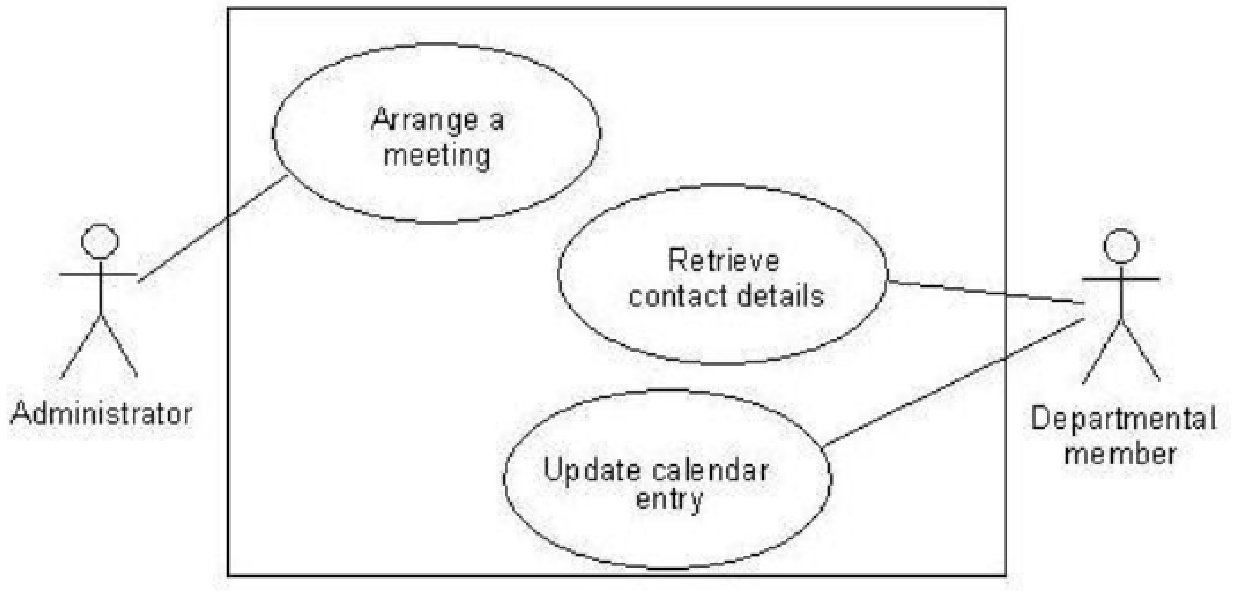


Figure 4.3: A UML use case diagram.

1. The user chooses the option to arrange a meeting.
2. The system prompts user for the names of attendees.
3. The user types in a list of names.
4. The system checks that the list is valid.
   - if the list of people is invalid
     - ➢ display error
     - ➢ return to step 2
5. The system prompts the user for meeting constraints.
6. The user types in meeting constraints.
7. The system searches the calendars for a date that satisfies the constraints.
8. The system displays a list of potential dates.
   - if no potential dates found
     - ➢ display a message
     - ➢ return to step 5
9. The user chooses one of the dates.
10. The system writes the meeting into the calendar.
11. The system emails all the meeting participants informing them of them appointment

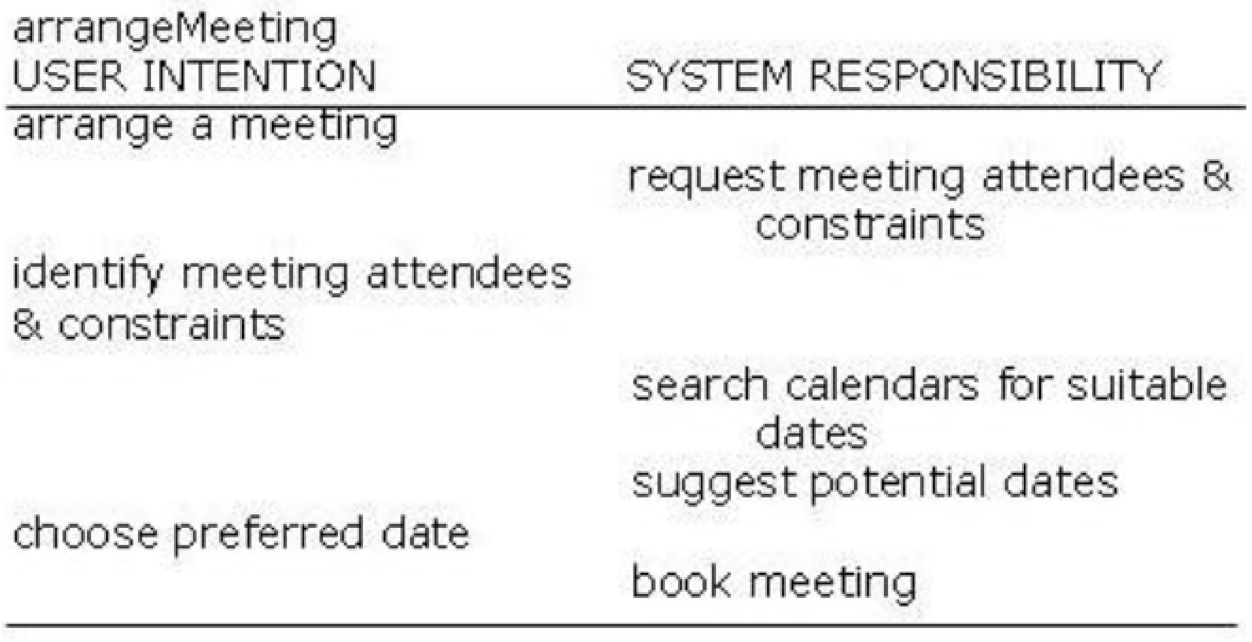
4.4 Essential Use Cases (Task Cases)

- simplified, generalized use case
  - ➢ one complete and useful interaction with a system
  - ➢ understood from the perspective of users

- technology free
- identifies
  - ➢ user intentions
  - ➢ system responsibilities
- used for UI development

4.4.1 How It Works

- user intentions
  - ➢ what user does and why
- system responsibility
  - ➢ obligations of the system
  - ➢ **what** needs to be done, **not how**



arrangeMeeting

USER INTENTION	SYSTEM RESPONSIBILITY
arrange a meeting	
	request meeting attendees & constraints
identify meeting attendees & constraints	
	search calendars for suitable dates
	suggest potential dates
choose preferred date	
	book meeting

Figure 4.4: An example of an essential use case.