

# User Profiles

## Chapter 02

Usability Engineering Life Cycle by  
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# What is user profile?

- The process of establishing knowledge about the users
  - Find out who users are
    - Children, Elders, Professional, Scientist, Male, Female, Tech Experts, IT Illiterate
- What is the goal in using the product?
  - Withdraw cash, pay bills, find out movie time, online chat, gaming, research etc.
- What are the tasks involved?
  - (Observe existing work practices)
  - E.g. To apply for leave
    - Check schedule, Get Leave application form from admin, fill in the form, get it approved from Manager, inform colleagues and go on leave

# Why user profiling?

- System will fail if it
  - Does not do what the user needs
  - Is inappropriate to the users
- The System must match the user's tasks and must meet the requirements
- Why do user profiling, why not define "good" interfaces and just based your design on them?
  - infinite variety of tasks and users guidelines can be too vague to be generative

# WHO ARE THE USERS

- Identify attributes of users
  - Physical characteristics:
    - height; physical abilities or disabilities
  - Background:
    - education; social; religious
  - Skills:
    - task experience
  - Preferences:
    - efficiency

# HOW OFTEN ARE TASKS PERFORMED

- Frequent users remember more details
- Infrequent users may need more help even for simple operations
- Which function is performed
  - most frequently?
  - by which users?
- optimize system for these tasks will improve perception of good performance

# WHAT ARE THE TIME CONSTRAINTS

- What functions will users be in a hurry for?
  - Positioning of functions
- Which can wait?
  - Is there a timing relationship between tasks?
  - Time out

# DATA GATHERING TECHNIQUES

- Questionnaires
  - A series of questions designed to elicit specific information
  - Can give quantitative and qualitative data  
Administered at distance, no one to explain & help in answering  
**Advantages, disadvantages**
- Interviews
  - Involves asking someone a set of questions (often f2f)
  - Good for exploring issues, encourage people to respond  
**Advantages, disadvantages**

# Continue...

- Workshops or focus groups
  - Group interviews rather than one on one
  - Gain a consensus view and/or highlighting areas of conflicts
  - Facilitator is required to keep conversation on track
  - Has to be carefully structured, participants have to be carefully chosen

Advantages, disadvantages



# Continue...

- Naturalistic observation
    - Spend time with stakeholders in their day to day tasks, observing work as it happens
    - Good for understanding the nature and context of the tasks
    - Take notes, ask question (not too many)
  - Variation of this - 'Ethnography'
    - Observing from the 'inside' as a participant, full involvement
- Advantages, disadvantages

# PROBLEMS WITH DATA GATHERING

- Identifying and involving stakeholders
  - Availability of key people
- Communication between parties
  - Within development team (more technical)
  - With customer/user (less technical)
- Between users (different parts of an organisation use different terminology  
e.g. End of Module Report for APIIT vs Module Report for SU)

# 1. Data Gathering

The first step in user profiling

## QUESTIONNAIRE DESIGN

- Define categories in questionnaire
- Keep questions short
- Only ask a question if it contributes to design
- Use closed questions for ease of analysis
- Always pilot questionnaires/interview schedules

**(User Category Identifiers)**

1. Check the **job title** that best describes your current job:

☐ Clerical  
☐ Internal Claim Rep  
☐ External Claim Rep  
☐ Supervisor  
☐ Manager  
☐ Other (please describe) \_\_\_\_\_

2. In which **geographic area** is your main office located?

☐ Northeast  
☐ Southeast  
☐ Midwest  
☐ Southwest  
☐ Northwest  
☐ California

3. Please estimate **how many** people in your job title are working in your geographic area: \_\_\_\_\_

(If you have no idea, write "N/A.")

4. Describe the current **level of automation of your job title** in your office by checking one choice below:

**None** (No users in my job title have or use a computer)

## (Attitude and Motivation)

5. In general, **how do you feel** about working with computers?

- ☐ I **don't like** working with computers.
- ☐ I have **no strong like or dislike** for working with computers.
- ☐ I **like** working with computers.
- ☐ **Other** (please explain) \_\_\_\_\_

6. How have computers **affected your job**?

- ☐ Computers have made my job **easier**.
- ☐ Computers have not affected my job in any particular way.
- ☐ Computers have made my job **more difficult**.
- ☐ **Other** (please explain) \_\_\_\_\_

7. Is the amount of **time it takes to learn** new software applications usually **worth it**?

- ☐ **Yes**, it pays off because computer systems usually help me do my job better or faster.
- ☐ **Sometimes** it pays off, and sometimes it doesn't.
- ☐ **No**, computer systems are usually not useful enough to justify the training time.
- ☐ **Other** (please explain) \_\_\_\_\_

8. Do you **enjoy learning** how to use new software ; 9. In general, are you **interested in computers**?

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Yes</b>, it's usually challenging and interesti</li> <li><input type="checkbox"/> <b>Sometimes</b>, depending on the applicati</li> <li><input type="checkbox"/> <b>No</b>, it's usually tedious and frustrating.</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> I am <b>not interested</b> in computers and would avoid using them if I could.</li> <li><input type="checkbox"/> I am interested in computers but <b>only as a means</b> to help me do my job better and faster.</li> <li><input type="checkbox"/> I am <b>interested</b> in computers in general, and I enjoy using them.</li> <li><input type="checkbox"/> <b>Other</b> (please explain) _____</li> </ul> |
|---|---|

**(Knowledge and Experience)**

10. What is your level of **typing skill**?

- ☐ **"Hunt and peck"** typist (less than 15 words per minute)
- ☐ **Moderately skilled** touch typist (between 15 and 50 words per minute)
- ☐ **Highly skilled** touch typist (greater than 50 words per minute)

11. What is your **highest academic degree**?

- ☐ **no** degrees
- ☐ **High school** degree
- ☐ **Trade** or vocational school degree (beyond the high school level)
- ☐ **College** degree (for example, B.A., B.S., Associate College degree)
- ☐ **Graduate** degree (for example, M.A., M.S., Ph.D., Ed.D., M.D., R.N.)
- ☐ **Other** (please explain) \_\_\_\_\_

12. How would you describe your **experience level** in your current **job title**?

- ☐ **Novice** (less than 1 year)
- ☐ **Experienced** (1–3 years)
- ☐ **Expert** (more than 3 years)
- ☐ **Other** (please describe) \_\_\_\_\_

13. What is your **native language**?

- ☐ **English** (go to question 16)
- ☐ **Spanish**
- ☐ **Other** (please name) \_\_\_\_\_



**(Job and Task Characteristics)**

17. Please name all the **software applications** you currently use in your job, and indicate how long you have been using them. Under **"Business Applications"** (1-5), list any specialized applications built by or through MIS at XYZ Insurance Co. to service your business. Only list systems you personally use. Under **"Office Applications"** (A-E), list any general-purpose commercial packages such as word processors, spreadsheets, and so on that you use.

**Years/Months**

APPLICATION	EXPERIENCE
Business Applications:	
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
Office Applications:	
A. _____	_____
B. _____	_____
C. _____	_____
D. _____	_____
E. _____	_____

## (Physical Characteristics)

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GREGORY D. ABOWD, RUSSELL BEALE

# HUMAN-COMPUTER INTERACTION

THIRD EDITION

20. Are you:

\_\_\_\_\_ **Male**  
\_\_\_\_\_ **Female**

21. Are you:

\_\_\_\_\_ **Right-handed**  
\_\_\_\_\_ **Left-handed**  
\_\_\_\_\_ **Ambidextrous** (equally coordinated with both hands)

22. Are you **color blind** in any way?

\_\_\_\_\_ **No**  
\_\_\_\_\_ **Yes** (please describe) \_\_\_\_\_

23. **How old** are you?

\_\_\_\_\_ **18-25**  
\_\_\_\_\_ **26-40**  
\_\_\_\_\_ **41-55**  
\_\_\_\_\_ **over 55**

24. Do you wear **glasses or contact lenses**?

\_\_\_\_\_ **No**  
\_\_\_\_\_ **Yes** (Please describe your vision problem and correction method, for example, nearsighted, farsighted; bifocals, contact lenses.) \_\_\_\_\_

25. Do you have any **physical handicaps** other than vision deficiencies that computer technology would need to accommodate or support (for example, hard of hearing, arthritis in hands, wheelchair)?

\_\_\_\_\_ **No**  
\_\_\_\_\_ **Yes** (Please describe) \_\_\_\_\_



## 2. Data Entry and Analyses

- Separate data entry and analyses should be done for each major user category, if relevant.
  - Clerical staff , Supervisors and Managers
- Enter raw data in tabular form for analyses

<b>XYZ Insurance Application—User Profile Data</b>				
Question	Answer	Tally	Sum	%
Q 8: Enjoy learning computers?	Yes	//	2	.67
	Sometimes	/	1	.33
	No		0	.00
Q 9: Interested in computers?	Not interested		0	.00
	Only as a means	//	2	.67
	Am interested	/	1	.33

### 3. Summarize Data

- Data is summarize in more readable way from the **Data Entry and Analyses Template** (From Phase:2)
- Each question from the original questionnaire is recorded on the form, using question numbers and abbreviated phrases for both questions and answers

# XYZ Insurance Application— User Profile Data Summary

Overall Business Organization: Individual Insurance

## User Category:

Job title:	Supervisors
Geographic area(s):	All
Total respondents:	43
% of total at geographic area:	33%
Level of automation:	High

## Attitude and Motivation:

### 5. Feel about computers

.13 don't like  
.48 neutral  
.39 like

### 6. Affected your job

.16 more difficult  
.56 neutral  
.28 easier

### 7. Learning pays off

.24 no  
.39 neutral  
.37 yes

### 8. Enjoy learning apps

.74 no  
.14 sometimes  
.12 yes

### 9. Interested in computers

.10 not interested  
.78 only as a means  
.12 interested

## Knowledge and Experience:

### 10. Typing skill

.91 < 15 wpm  
.06 15–50 wpm  
.03 > 50 wpm

### 11. Highest degree

.00 no  
.05 high school  
.00 trade  
.76 college  
.19 graduate

### 12. Job experience

.05 < 1 year  
.07 1–3 years  
.88 > 3 years  
.00 other

## 4. Analysis and Conclusions for each user category and Design implications

- User characteristics are drawn from the summary for each user category
  - Production workers, managers, engineers etc.
- User interface requirements/usability goals are revealed based on the conclusions

## Production Workers

### General Description

Production workers are hourly workers, including machine operators, assemblers, and hourly personnel other than skilled trades. They include people performing job functions as an integral part of the production process, such as an assembler on a final assembly line. Other production workers work as machine operators, responsible for the operation of one or more pieces of production equipment.

There are a total of 7,834 production workers, representing 10 percent of the total plant floor workforce, working in four cities all in the same city.

### User Characteristics

Among production workers, general *attitude* and *motivation* towards computers are fairly high, but not as high as most other user categories (e.g., clerical and QA). However, nearly 73 percent of these users do not perceive computers to be important to their jobs.

- *Educational level* is generally high school degree or less—lower than any other user category. By inference, reading skill would probably average around the eighth-grade level.
- *Job experience levels* are quite high, comparable to other user categories. *Turnover* is low, and generally lower than other categories.
- *Computer experience*, by contrast, is quite low, and considerably lower than other user categories. *Frequency of computer use* is quite low, and significantly lower than other user categories, and use is most often *discretionary*.
- These users get very little, and brief, *training* support for new systems—less than any other user category.

A majority have no *typing skills*, and only a small fraction are experienced typists, significantly less than in other user categories.

A majority of these users are *male*—a mix not terribly discrepant from other user categories. By inference, a little over 7 percent (599) have some form of color vision deficiency. A substantial majority (69 percent) wear *corrective lenses*, comparable to other user categories. Virtually 100 percent wear protective eyeglasses on the job.

This user category is currently about 67 percent over forty in age, comparable to other categories except engineers, who are generally younger.



# Usability Requirements

## Usability Requirements

Production workers have a high need for *ease of learning*, especially in the general *computer* (as opposed to job and task) aspects of usage, due to their lower educational levels, low computer experience, low frequency of use, discretionary use, minimal training support, and their perception that computers are currently not particularly important to their jobs.

However, they are very experienced on the *job*, their attitude and motivation regarding computer usage are high, and their turnover rate is low. This suggests that *power without complexity* (i.e., *simplicity*) is also important. That is, the power ought to be immediately perceivable, not hidden by a complex and difficult-to-learn user interface.

→ Very low typing skills suggest an interface with absolutely *minimal typing requirements*.

→ Low reading skill and the prevalence of corrective lenses suggest that *icons and visual displays* (rather than verbal ones) will be useful. Any text that is displayed should be written at about the fifth-grade reading level. The prevalence of corrective lenses and the general older age of these users also suggest that *text and symbols should be adequately large*.

The fact that most production workers are male suggests that the use of *color* must take into consideration a significant (8 percent) incidence of color blindness.

## Engineers

### General Description

Engineers are trained, salaried employees who design, purchase, install, and support production processes and equipment. They include process engineers, plant engineers, controls engineers, and other professions that support plant processes at

There are a total of 972 eng workforce, working in four dif

### User Characteristics

Among engineers, *attitude* and *motivation* towards computers are generally high, higher than among production workers, comparable to skilled tradespeople and managers, but not as high as among clerical and QA users. Of these users, 82 percent perceive computers to be important to their jobs.

*Educational level* is very high, with 96 percent possessing at least one college degree. This is significantly higher than any other category. By inference, reading skill would conservatively average between tenth- and twelfth-grade level.

*Job and task experience levels* are moderate to high, with 54 percent possessing eleven years or more experience, although this percentage is significantly less than any other user category. A significant portion of the total category (35 percent) possess three years or less experience in their current job. As compared with other categories, engineers have the highest *turnover* rate, with 21 percent turnover per year.

*Computer experience* is moderate to high, generally a bit higher than most of the other nonhourly categories, and considerably higher than the hourly categories. *Frequency of computer use* is moderate, higher than production workers and skilled tradespeople but lower than other categories. This category is second only to supervisors in the percentage of members using four or more different computer applications (66 percent). Use is most often *discretionary*.

## Usability Requirements

Engineers are very experienced on the *job*, and their frequency of use is relatively high, their educational levels are high, their computer experience is moderate to high, their training support is moderate, and their perception is that computers are important to their jobs. This suggests that *ease of use* and *power* are important.

High levels of typing skills suggest that *typing requirements* will not be a problem.

High educational and reading skill levels suggest that icons and visual displays are not as important as to other user categories. The prevalence of corrective lenses suggests that *text and symbols should be adequately large*.

The fact that most engineers are male suggests that the use of color must take into consideration a significant (7 percent) incidence of *color blindness*.



## 5. Usability Requirements Summary

### Usability Requirements Summary

The following table summarizes the important usability requirements according to user category.

Key: blank = not important, x = important, xx = very important

	Ease of Learning	Ease of Use	Simplicity	Visuals/ Icons	Minimal Typing	Color Vision Deficit	Other Vision Deficit
Production	xx	x	x	x	xx	x	x
Engineering		x				x	x
Clerical		xx					x
QA	x		x		x	x	x
Supervisor	x		x	x	x	x	x
Skilled	xx	x	x	x	xx	x	x
Manager		x	x		x	x	x

Usability requirements named in the table are defined below.

**Ease of learning:** How easily and quickly can users learn to use new computer systems, with or without training? This is important for infrequent users and/or users who may not have access to formal training. It is also important for users with negative attitudes and low motivation regarding computers and their jobs, and/or with low computer literacy.

**Ease of use/power:** How quickly, easily, and efficiently can users accomplish tasks once they have been learned, and what range of tasks can be easily accomplished? This is important for users with high experience levels, high frequency of use, positive attitudes, high motivational levels, and a need for efficiency and speed.

**Simplicity:** Is there a need for a low level of complexity in order to accomplish tasks? This includes *conceptual* complexity (minimizing new concepts required to perform additional tasks) and the complexity of actually *performing* human-computer interactions (minimizing the actions required to communicate with the system).

**Use visuals/icons:** Should information be presented as icons and in other visual, graphical formats, as opposed to text and numbers? This includes the use of visual cues such as color, reverse video, bold, and so

# Level Of Effort

<u>Usability/Development Time</u>	
<u>Step</u>	<u>Hrs</u>
Needs finding	24
Draft questionnaire	12
Management feedback	2
Revise questionnaire	6
Pilot questionnaire	8
Revise questionnaire	6
Select user sample	4
Distribute questionnaire	6
Data analysis	24
Data interpretation/presentation	24
Document User Profiles	24
Total	140

# Reference

- The Usability Engineering Lifecycle by Deborah J. Mayhew, Chapter 02



End of the Lecture