



# User Profiles

**Chapter 02** 

Usability Engineering Life Cycle by Deborah J. Mayhew





## 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

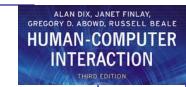




## Why user profiling?

- 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

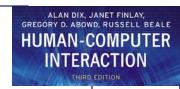
#### Questionnaires

- 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)



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.		job title that I	best desc	cribes you	ur curr	ent Job		4
		Clerical	16. 25					
		Internal Clain	n Rep					25 10
£0		External Clair					, '	š
		Supervisor						
		Manager	3		, 196			
		Other (please	describe	)				
		Other (picase)		15	1	*******************		
+		- 2630						
-		eographic are	a is you	r main o	ffice lo	cated?		3.
۷.	in which g	eographic are	a is you	i main o	ince ic			
		Northeast	224					,
		Southeast	. D. R	100			40	3
		Midwest		* 1.1				
		Southwest		T	0.5			1
		Northwest				7		
		California						
							41,000	
3	Please esti	mate how ma	ny peop	le in you	r job t	itle are	worki	ng in
٠.	VOUR GROOM	raphic area:						
	your geog	e no idea, writ	e "N/A."	)	2		-	
10	(it you hav	e no idea, with		<b>'</b>	5		700	
				4:		:-1	41414	in wou
4.	Describe th	ne current leve	or au	omatio	n or y	our Jos	title	in you
	office by cl	hecking one ch	oice bel	ow:		,		
	- 10 m	None (No user	s in my i	ob title h	nave o	r use a	compu	ıter

GREGORY D. ABOWD, RUSSELL BEALE
HUMAN-COMPUTER
INTERACTION



#### (Attitude and Motivation)

5.	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.	ow 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.	the amount of time it takes to learn new software applications ually 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.	you enjoy learning how to use new software in general, are you interested in computers?  Yes, it's usually challenging and interesti  Sometimes, depending on the applicati  No, it's usually tedious and frustrating.  I am interested in computers but only as a means to help me do my job better and faster.  I am interested in computers but only as a means to help me do my job better and faster.  I am interested in computers but only as a means to help me do my job better and faster.  Other (please explain)	:o ·

#### (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.	Vhat 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)
	Other (please explain)
12.	low would you describe your experience level in your current
	ob 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)

THIRD EDITION

#### (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:	
Α	
В	
C	
D	
E	

# GREGORY D. ABOWD, RUSSELL BEALE HUMAN-COMPUTER INTERACTION

THIRD EDITION

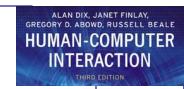
## (Physical Characteristics)

20.	Are you:	Male Female
21	A = 0 1/01/11	
۷1.	Are you:	Right-handed Left-handed Ambidextrous (equally coordinated with both hands)
22.	Are you c	olor blind in any way?
		No
		Yes (please describe)
23.	How old	are you? 18–25 26–40 41–55 over 55
24.	Do you w	ear glasses or contact lenses?
	· · · · · · · · · · · · · · · · · · ·	Yes (Please describe your vision problem and correction method, for example, nearsighted, farsighted; bifocals, contact lenses.)
25.	that comp (for exam	ave any <b>physical handicaps</b> other than vision deficiencies outer technology would need to accommodate or support ple, hard of hearing, arthritis in hands, wheelchair)? <b>No Yes</b> (Please describe)
		,

# GREGORY D. ABOWD, RUSSELL BEALE HUMAN-COMPUTER INTERACTION

THIRD EDITION



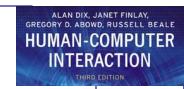


## 2. Data Entry and Analyses

- 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

XYZ Insurance Application—User Profile Data							
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		Ø	.00			
	Only as a means	11	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**

ALAN DIX, JANET FINLAY, **HUMAN-COMPUTER** INTERACTION

Overall Business Organization: Individual Insurance

User Category:

Job title:

Geographic area(s):

Total respondents:

% of total at geographic area: Level of automation:

43 33%

ΑII

High

Supervisors

#### Attitude and Motivation:

don't like .

neutral <u>.48</u> .39 like

.16 more difficult .56 neutral

.28 easier

5. Feel about computers 6. Affected your job 7. Learning pays off

> .24 no .39 neutral

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

<u>.91</u> < 15 wpm .06 15-50 wpm

.03 > 50 wpm 11. Highest degree

.00 no high school

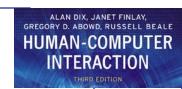
.00 trade .76

college. graduate 2. Job experience

<u>.05</u> < 1 year <u>.07</u>

1-3 years <u>.88</u> > 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

#### ABC Factory Applications—User Profile Conclusions

## GREGORY D. ABOWD, RUSSELL BEALE HUMAN-COMPUTER INTERACTION

#### **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, repricent of the total plant floor workforce, working in for 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.

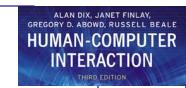
The fact that most production workers are male suggests that the use of color must take into consideration a significant (8 percent) incidence of color blindness.

#### 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 as

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 tenthand 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/ tcons	Minimal Typing	Color Vision Deficit	O Vi De
Production	· xx	. x	×	x	XX .	x	
Engineering		x				X	
Clerical .		XX ·					
QA	x .	1 7	X		. x	x	
Supervisor	× .		X	Χ .	X	х	
killed	XX ·	×	x	x	XX	x	
Manager		x	×	7.*	×	×	-

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

Usability/Development Time	
Step	Hrs .
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