

chapter 1

Q1) define usability requirements?

Synonyms for “user friendly” in Microsoft Word 2002 are easy to use; accessible; comprehensible; intelligible; idiot proof; available; and ready

- But a “friend” also seeks to help and be valuable. A friend is not only understandable, but understands. A friend is reliable and doesn’t hurt. A friend is pleasant to be with.
- These measures are still subjective and vague, so a systematic process is necessary to develop usable systems for specific users in a specific context

The U.S. Human Engineering Design Criteria for Military Systems (1999) states these purposes:

- Achieve required performance by operator, control, and maintenance personnel
- Minimize skill and personnel requirements and training time
 - Achieve required reliability of personnel
 - equipment/software combinations
 - Foster design standardization within and among systems

•Should improving the user’s quality of life and the community also be objectives?

•Usability requires project management and careful attention to requirements analysis and testing for clearly defined objectives

Q2) How do we measure usability of a system?

Define the target user community and class of tasks associated with the interface

- Communities evolve and change (e.g. the interface to information services for the U.S. Library of Congress)
- 5 human factors central to community evaluation:
 - Time to learn How long does it take for typical members of the community to learn relevant task?
 - Speed of performance How long does it take to perform relevant benchmarks?
 - Rate of errors by users How many and what kinds of errors are made during benchmark tasks?
 - Retention over time Frequency of use and ease of learning help make for better user retention
 - Subjective satisfaction Allow for user feedback via interviews, free-form comments and satisfaction scales

Trade-offs in design options frequently occur.

- Changes to the interface in a new version may create consistency problems with the previous version, but the changes may improve the interface in other ways or introduce new needed functionality.
- Design alternatives can be evaluated by designers and users via mockups or high-fidelity prototypes.
 - The basic tradeoff is getting feedback early and perhaps less expensively in the development process versus having a more authentic interface evaluated

Q3) What's universal usability?

Physical abilities and physical workplaces

- Basic data about human dimensions comes from research in anthropometry
- There is no average user, either compromises must be made or multiple versions of a system must be created
- Physical measurement of human dimensions are not enough, take into account dynamic measures such as reach, strength or speed

- Screen-brightness preferences vary substantially; designers customarily provide a knob to enable user control
- Account for variances of the user population's sense perception
- Vision: depth, contrast, color blindness, and motion sensitivity
- Touch: keyboard and touchscreen sensitivity
- Hearing: audio clues must be distinct
- Workplace design can both help and hinder work performance
- The standard ANSI/HFES 100 - 2007 Human Factors Engineering of Computer Workstations (2007) lists these concerns:
 - Work-surface and display-support height
 - Clearance under work surface for legs
 - Work-surface width and depth
 - Adjustability of heights and angles for chairs and work surfaces
 - Posture -seating depth and angle; back-rest height and lumbar support
 - Availability of armrests, footrests, and palmrests

Cognitive and perceptual abilities

- The human ability to interpret sensory input rapidly and to initiate complex actions makes modern computer systems possible
- The journal Ergonomics Abstracts offers this classification of human cognitive processes:
 - Long-term and semantic memory
 - Short-term and working memory
 - Problem solving and reasoning
 - Decision making and risk assessment
 - Language communication and comprehension
 - Search, imagery, and sensory memory
 - Learning, skill development, knowledge acquisition, and concept attainment

and what are the factors we take care of in universal usability?

-They also suggest this set of factors affecting perceptual and motor performance:

- Arousal and vigilance
- Fatigue and sleep deprivation
- Perceptual (mental) load
- Knowledge of results and feedback
- Monotony and boredom
- Sensory deprivation
- Nutrition and diet
- Fear, anxiety, mood, and emotion
- Drugs, smoking, and alcohol
- Physiological rhythms

-But note, in any application, background experience and knowledge in the task domain and the interface domain play key roles in learning and performance

Chapter 2

Q1) What are the guidelines for navigating the interface?

- Standardize task sequences
- Ensure that embedded links are descriptive
- Use unique and descriptive headings
- Use check boxes for binary choices
- Develop pages that will print properly
- Use thumbnail images to preview larger images

Q2) What are the guidelines for getting the user attention?

- Intensity
- Marking
- Size
- Choice of fonts
- Inverse video
- Blinking
- Color
- Audio

Q3) List the five interaction styles? or Mention the advantages & disadvantages of it?

- Direct Manipulation
- Menu selection
- Form fillin
- Command language
- Natural language

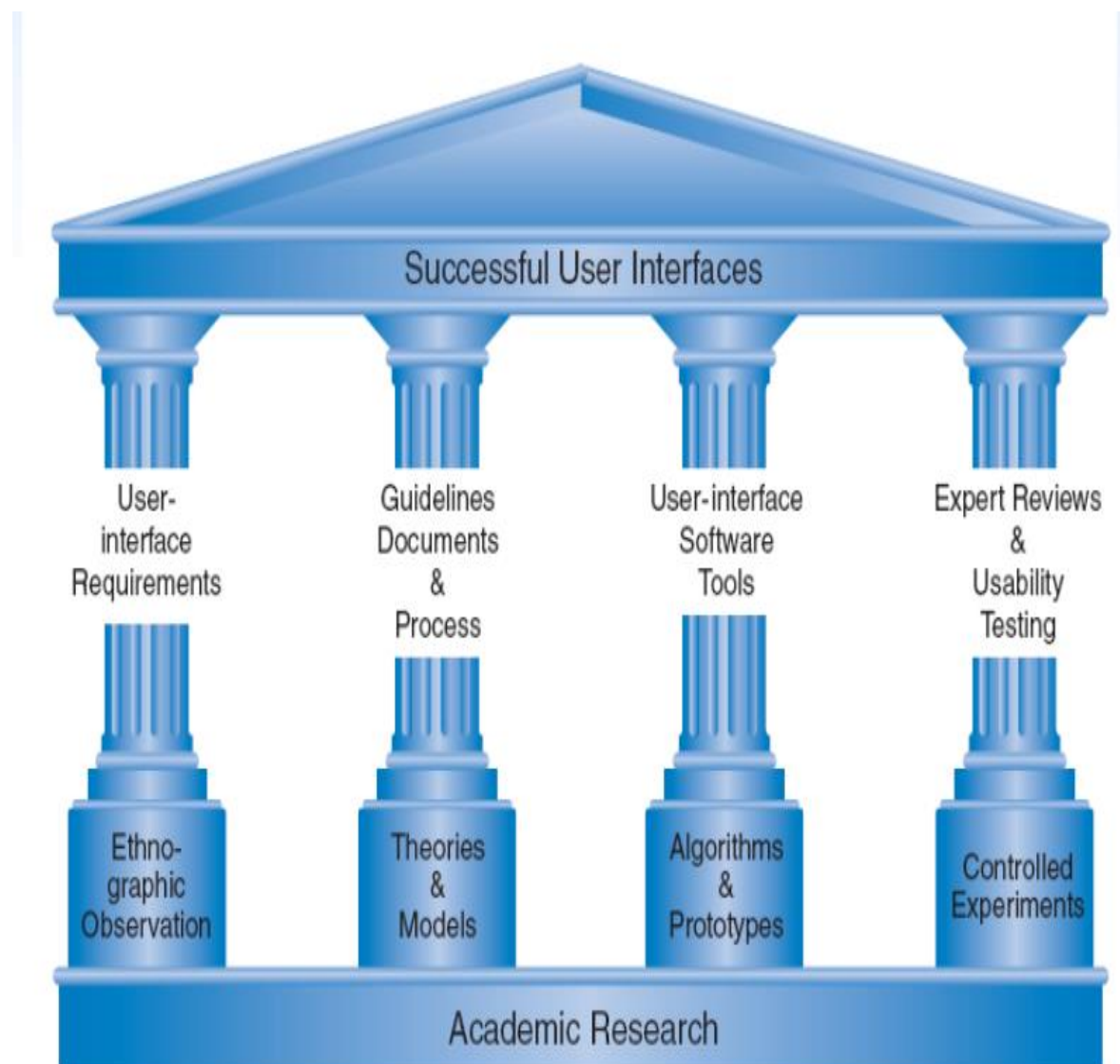
Advantages	Disadvantages
Direct manipulation Visually presents task concepts Allows easy learning Allows easy retention Allows errors to be avoided Encourages exploration Affords high subjective satisfaction	May be hard to program May require graphics display and pointing devices
Menu selection Shortens learning Reduces keystrokes Structures decision making Permits use of dialog-management tools Allows easy support of error handling	Presents danger of many menus May slow frequent users Consumes screen space Requires rapid display rate
Form fill-in Simplifies data entry Requires modest training Gives convenient assistance Permits use of form-management tools	Consumes screen space
Command language Flexible Appeals to "power" users Supports user initiative Allows convenient creation of user-defined macros	Poor error handling Requires substantial training and memorization
Natural language Relieves burden of learning syntax	Requires clarification dialog May not show context May require more keystrokes Unpredictable

Q4) What are the 8 golden roles of interface design?

- 1.Strive for consistency
- 2.Cater to universal usability
- 3.Offer informative feedback
- 4.Design dialogs to yield closure
- 5.Prevent errors
- 6.Permit easy reversal of actions
- 7.Support internal locus of control
- 8.Reduce short term memory load

chapter 3

Q1) What are the four pillars of design and explain them briefly?



1

•**User Interface Requirements**

- Soliciting and clearly specifying user requirements is a major key to success in any development activity
- Laying out the user interface requirements is part of the overall requirements development and management process
- User interface requirements describe system behavior

•**Ethnographic Observation**

- Identifying and observing the user community in action
- Discussed later

2

•**Guidelines documents and processes**

Each project has different needs, but guidelines should be considered for:

•**Words, icons, and graphics**

- Terminology (objects and actions), abbreviations, and capitalization
- Character set, fonts, font sizes, and styles (bold, italic, underline)
- Icons, graphics, line thickness, and
- Use of color, backgrounds, highlighting, and blinking

3

Screen-layout issues

- Menu selection, form fill-in, and dialog box formats
- Wording of prompts, feedback, and error messages
- Justification, white space, and margins
- Data entry and display formats for items and lists
- Use and contents of headers and footers

•**Input and output devices**

- Keyboard, display, cursor control, and pointing devices
- Audible sounds, voice feedback, touch input, and other special devices
- Response time for a variety of tasks

4

•**Action sequences**

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Direct-manipulation clicking, dragging, dropping, and gestures

- Command syntax, semantics, and sequences
- Programmed function keys
- Error handling and recovery procedures

•**Training**

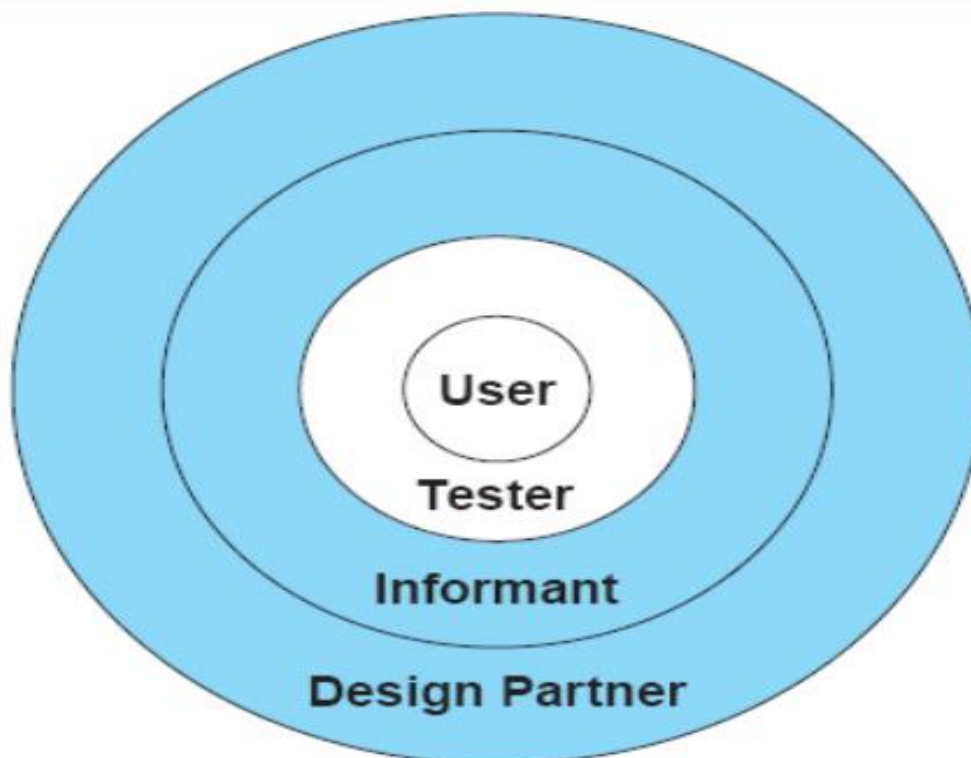
- Online help and tutorials
- Training and reference materials
- Command syntax, semantics, and sequences

Q2) What's participatory design and what's its advantages?

Controversial

•More user involvement brings:

- more accurate information about tasks
- more opportunity for users to influence design decisions
- a sense of participation that builds users' ego investment in successful implementation
- potential for increased user acceptance of final system



Q3) what are the legal Issues that we can face in interface design and how we can face them?

Potential Controversies

- What material is eligible for copyright?
- Are copyrights or patents more appropriate for user interfaces?
- What constitutes copyright infringement?
- Should user interfaces be copyrighted?
- Evolving public policies related to:
 - Privacy
 - Liability related to system safety/reliability
 - Freedom of speech

Chapter 4

Q1) What are expert's reviews & what are the major expert reviews techniques?

- While informal demos to colleagues or customers can provide some useful feedback, more formal expert reviews have proven to be effective
- Expert reviews entail one half day to one week effort, although a lengthy training period may sometimes be required to explain the task domain or operational procedures
- There are a variety of expert review methods to chose from:
 - Heuristic evaluation
 - Guidelines review
 - Consistency inspection
 - Cognitive walkthrough
 - Metaphors of human thinking
 - Formal usability inspection
- Expert reviews can be scheduled at several points in the development process when experts are available and when the design team is ready for feedback.

- Different experts tend to find different problems in an interface, so 3-5 expert reviewers can be highly productive, as can complementary usability testing.
- The dangers with expert reviews are that the experts may not have an adequate understanding of the task domain or user communities.
- Even experienced expert reviewers have great difficulty knowing how typical users, especially first time users will really behave.

Q2) What are surveys? and how it's carried out?

Online surveys avoid the cost of printing and the extra effort needed for distribution and collection of paper forms.

- Many people prefer to answer a brief survey displayed on a screen, instead of filling in and returning a printed form,
 - although there is a potential bias in the sample.
- A survey example is the Questionnaire for User Interaction Satisfaction (QUIS).

Experienced surveyors know that care is also needed during design, administration, and data analysis

Q3) What are controlled psychological oriented experiments? and why this experiments carried out?

Scientific and engineering progress is often stimulated by improved techniques for precise measurement.

- Rapid progress in the designs of interfaces will be stimulated as researchers and practitioners evolve suitable human
 - performance measures and techniques.
- The outline of the scientific method as applied to human
- computer interaction might comprise these tasks:
 - Deal with a practical problem and consider the theoretical framework
 - State a lucid and testable hypothesis
 - Identify a small number of independent variables that are to be manipulated
 - Carefully choose the dependent variables that will be measured
 - Judiciously select subjects and carefully or randomly assign

subjects to groups

- Control for biasing factors (non-representative sample of subjects or selection of tasks, inconsistent testing procedures)
- Apply statistical methods to data analysis
- Resolve the practical problem, refine the theory, and give advice to future researchers