




## CHAPTER 3:

### Managing Design Processes



# Organizational Design and Support Usability

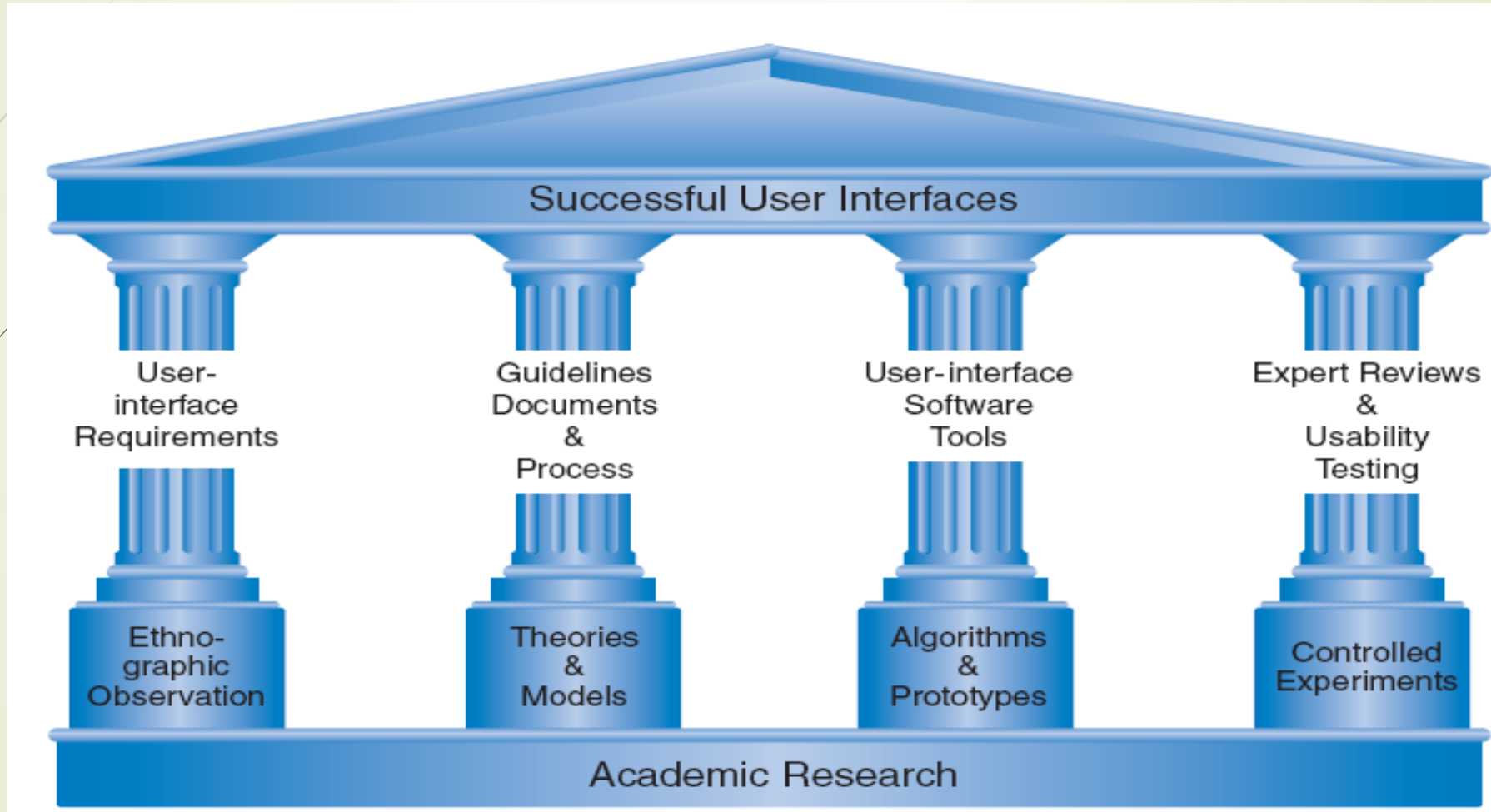
- Design is inherently creative and unpredictable. Interactive system designers must blend knowledge of technical feasibility with a mystical esthetic sense of what attracts users.
- Carroll and Rosson design characterization:
  - Design is a process, not a state.
  - The design process is *nonhierarchical*.
  - The process is *radically transformational*.
  - Design intrinsically involves the *discovery of new goals*.



## Organizational Design and Support Usability

- “Usability engineering” has evolved into a recognized discipline with maturing practices and a growing set of standards
- Usability engineers and user-interface architects, sometimes called the user experience (UX) team are gaining experience in organizational change
- The Usability Professional's Association (UPA) holds annual meetings called the “World Usability Day”

# The Four Pillars of Design



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## ➤ 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  
eg: performance requirements, functional requirements, interface requirements

## use Ethnographic Observation

- Identifying and observing the user community in action



## ➤ 2. Guidelines documents and processes

Guidelines creation should be a social process within an organization to help it gain visibility and build support.

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



## ■ **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
- Alternatives for users with special disabilities



# The Four Pillars of Design

## ➤ **Action sequences**

- 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





# Recommendations for guidelines documents

- Provides a social process for developers
- Records decisions for all parties to see
- Promotes consistency and completeness
- Facilitates automation of design
- Allows multiple levels:
  - Rigid standards
  - Accepted practices
  - Flexible guidelines
- Announces policies for:
  - Education: How to get it?
  - Enforcement: Who reviews?
  - Exemption: Who decides?
  - Enhancement: How often?



### ➤ **3. User interface software tools**

Prototype representation – Power point presentations  
Flash, Visual studio, c# , .NET frameworks  
Sun's JDK

### **4. Expert Reviews and usability testing**

along with expert review methods  
-- use tests with intended users, surveys, automated analysis tools

Procedures vary depending on  
the goal of the usability study,  
number of expected users,  
danger of errors,  
level of investment

# Developmental Methodologies

IBM's Ease of Use development methodology specifies activities by roles and phases

Role/Phase Matrix	All Phases	Business Opportunity	Understanding Users	Initial Design	Development	Deployment	Life Cycle
All Roles							
User Experience Leadership		User Engineering Plan-Initial	User Engineering Plan-Final	Execution of the User Engineering Plan	Satisfaction of Established Metrics	Project Assessment	Satisfaction Survey
Market Planning		Business and Market Requirements	Appropriate User Requirements	Draft Marketing Collateral	Detail Marketing Collateral	Final Marketing Collateral	
User Research			User Requirements	Appropriate Design			
User Experience Design			Design Direction	Conceptual Design, Low-Fidelity Prototypes	Detail Design, High-Fidelity Prototypes	Design Issue Resolution	
Visual & Industrial Design			Appearance Direction	Appearance Guidelines	Appearance Specification		
User Experience Evaluation			Competitive Evaluation	Conceptual Design Evaluation	Detail Design Evaluations	User Feedback and Benchmark	Usage Issue Report

# Rapid Contextual Design - steps

Contextual inquiry

Interpretation sessions and work modeling

Model consolidation and affinity diagram building

Personas

Visioning

Storyboarding

User environment design

Paper prototypes and mock-up interviews

**Plan for, prepare conduct field interviews – to observe and understand work tasks**

Team discussions-based on contextual inquiry, understand work flow process,, cultural and policy impacts on work performed

Present work modelling to larger target audience to gain insight and concurrence. Consolidate work models

Develop fictitious characters to rep different user types

Defines how the system will streamline and transform the work of the users

Detailed redesign of tasks using pictures and graphs to describe concepts, business rules, illustrates the “to be built” assumptions

UED – coherent rep of users and work to be performed

Interviews and evaluations with actual users  
This ensures system will meet end user requirements

# Ethnographic Observation

goal : to obtain necessary data to influence interface design by following a validated ethnographic process



## ► Preparation

- Understand organization policies and work culture.
- Familiarize yourself with the system and its history.
- Set initial goals and prepare questions.
- Gain access and permission to observe/interview.

## ► Field Study

- Establish rapport with managers and users.
- Observe/interview users in their workplace and collect subjective/objective quantitative/qualitative data.
- Follow any leads that emerge from the visits.



## ➤ **Analysis**

- Compile the collected data in numerical, textual, and multimedia databases.
- Quantify data and compile statistics.
- Reduce and interpret the data.
- Refine the goals and the process used.

## ➤ **Reporting**

- Consider multiple audiences and goals.
- Prepare a report and present the findings.

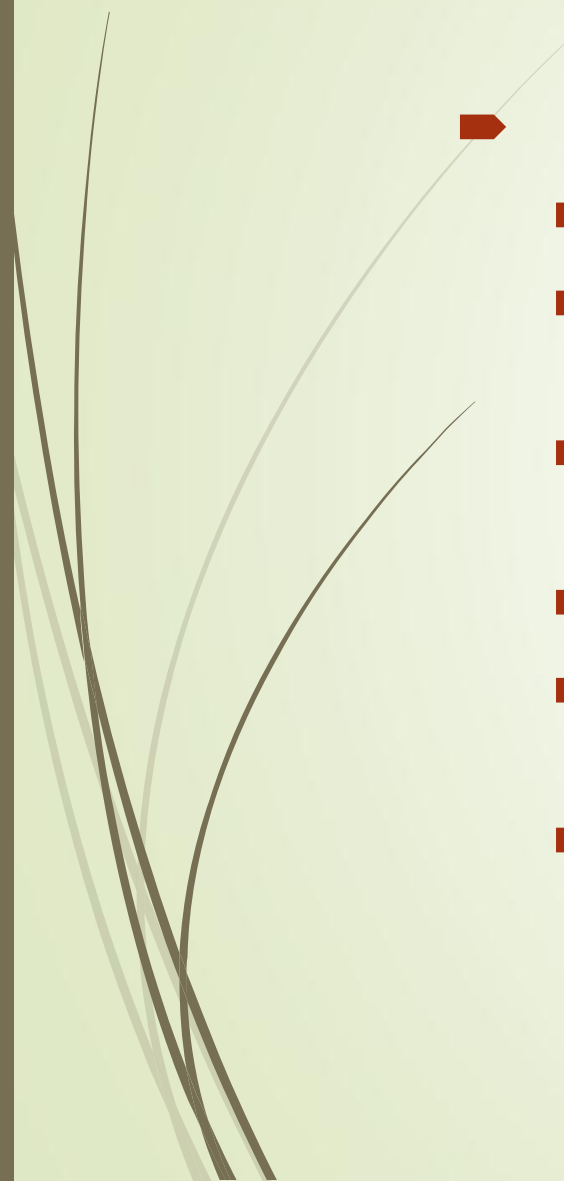
## ➤ **Advantages**

- Increases trustworthiness and credibility
- Personal presence allow designers to develop working relationships with several end users to discuss ideas

# Participatory Design

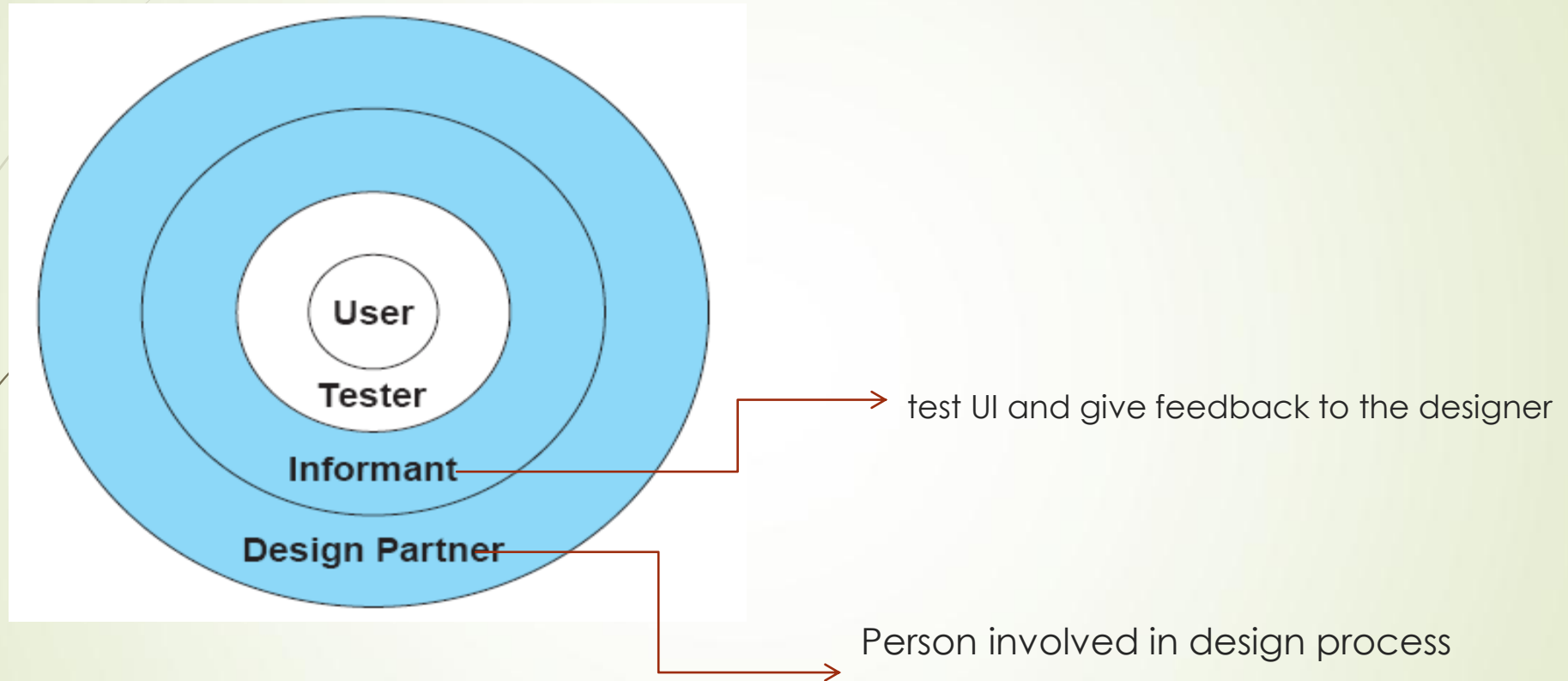
## **concept is Controversial**

- 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

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- On the negative side, extensive user involvement may:
    - be more costly and lengthen the implementation period
    - build antagonism with people not involved or whose suggestions were rejected
    - force designers to compromise their design to satisfy incompetent participants
    - build opposition to implementation
    - exacerbate personality conflicts between design-team members and users
    - show that organizational politics and preferences of certain individuals are more important than technical issues



# Darwin's model of the four levels of Participatory Design






# Scenario Development

## **Day-in-the-life scenarios:**

- characterize what happens when users perform typical tasks
- can be acted out as a form of walkthrough
- may be used as basis for videotape
- useful tools
  - table of user communities across top, tasks listed down the side
  - table of task sequences
  - flowchart or transition diagram



Social Impact Statement for Early Design Review includes the sections :

## **1. Describe the new system and its benefits**

- Convey the high level goals of the new system.
- Identify the stakeholders.
- Identify specific benefits

## 2. Address concerns and potential barriers

- Anticipate changes in job functions and potential layoffs(dismiss temporarily)
- Address security and privacy issues.
- Discuss accountability and responsibility for system misuse and failure.
- Avoid potential biases – favouring one or another instead being neutral
- Weigh individual rights vs. societal benefits.
- Assess trade-offs between centralization and decentralization.
- Preserve democratic principles.
- Ensure diverse access.
- promote simplicity and preserve what works.



### 3. Outline the development process

- Present and estimated project schedule.
- Propose process for making decisions.
- Discuss expectations of how stakeholders will be involved.
- Recognize needs for more staff, training, and hardware.
- Propose plan for backups of data and equipment.
- Outline plan for migrating to the new system.
- Describe a plan for measuring the success of the new system



# Legal Issues

## 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