
Understanding and Serving Users

Class 2

The User-Centered Design Process

What is user-centered anyway?

- 1. Define what is meant by being “user-centered”
- 2. Compare system-centered and user-centered philosophies
- 3. In what ways is information design different than other design contexts?
- How can we best learn what users need?

It is new but not totally so....

- “a knowledge of the requirements of the different users of scientific information and the uses to which they wish to put the information they secure should be the ultimate determining factor in the designing of methods of storage and retrieval.....
 - Bernal 1958 (see Wilson in readings)

Is information a 'need'?

- Wilson: information is a 'secondary order need which arose out of the desire to satisfy the primary needs' (e.g., sustenance, shelter)
- But consider also:
 - Sensory-deprivation studies
 - Maslow's Hierarchy of Needs

Mainstream origins?

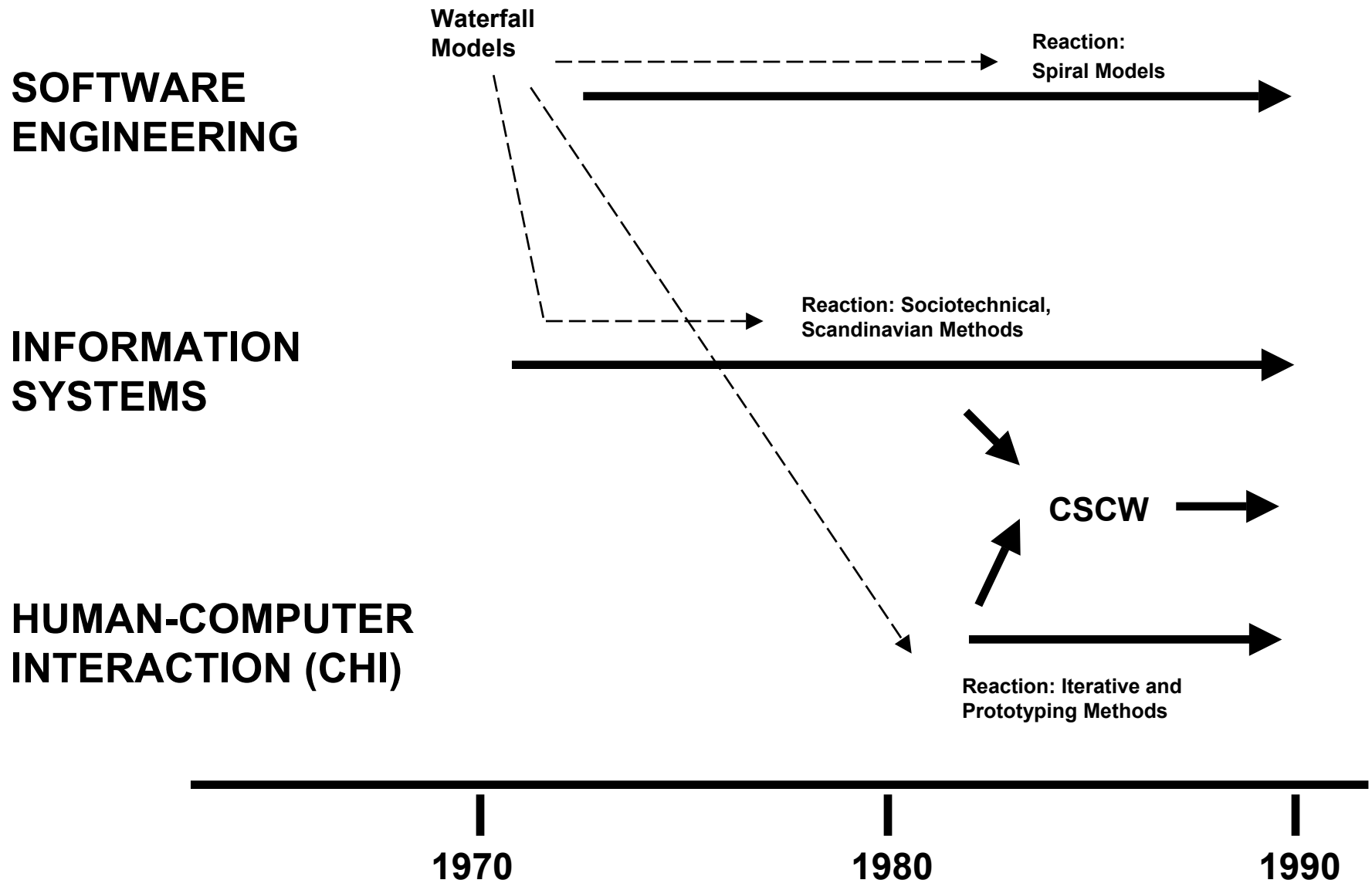
- “Since the 1980s there has been a shift towards a ‘person-centred’ approach rather than a ‘system-centred’ approach. This has been accompanied by a shift from quantitative methods to qualitative methods” Wilson, p51.
- Note- Wilson does not elaborate or explain these ‘shifts’ and is talking of a narrow range of tasks

Quantitative v. qualitative

- Quantitative
 - Emphasis on measurement of issues and variable
 - E.G. time on task, scores on test etc.
- Qualitative
 - Emphasis on identification of variables
 - E.G., existence of differences between events
- Supposed major divide but firm lines hard to draw

Let's stand back: Where did UCSD come from?

- Broader perspective of information technologies
- Beyond Information Retrieval (IR) tasks
- Beyond information products?
 - See Norman on “Everyday Things”
- Is there a generic ‘user-centered’ approach we can study and learn?



System Development Lifecycle

- Multiple models
- Multiple stages
 - running from conception to maintenance
- Common form
- Common aim

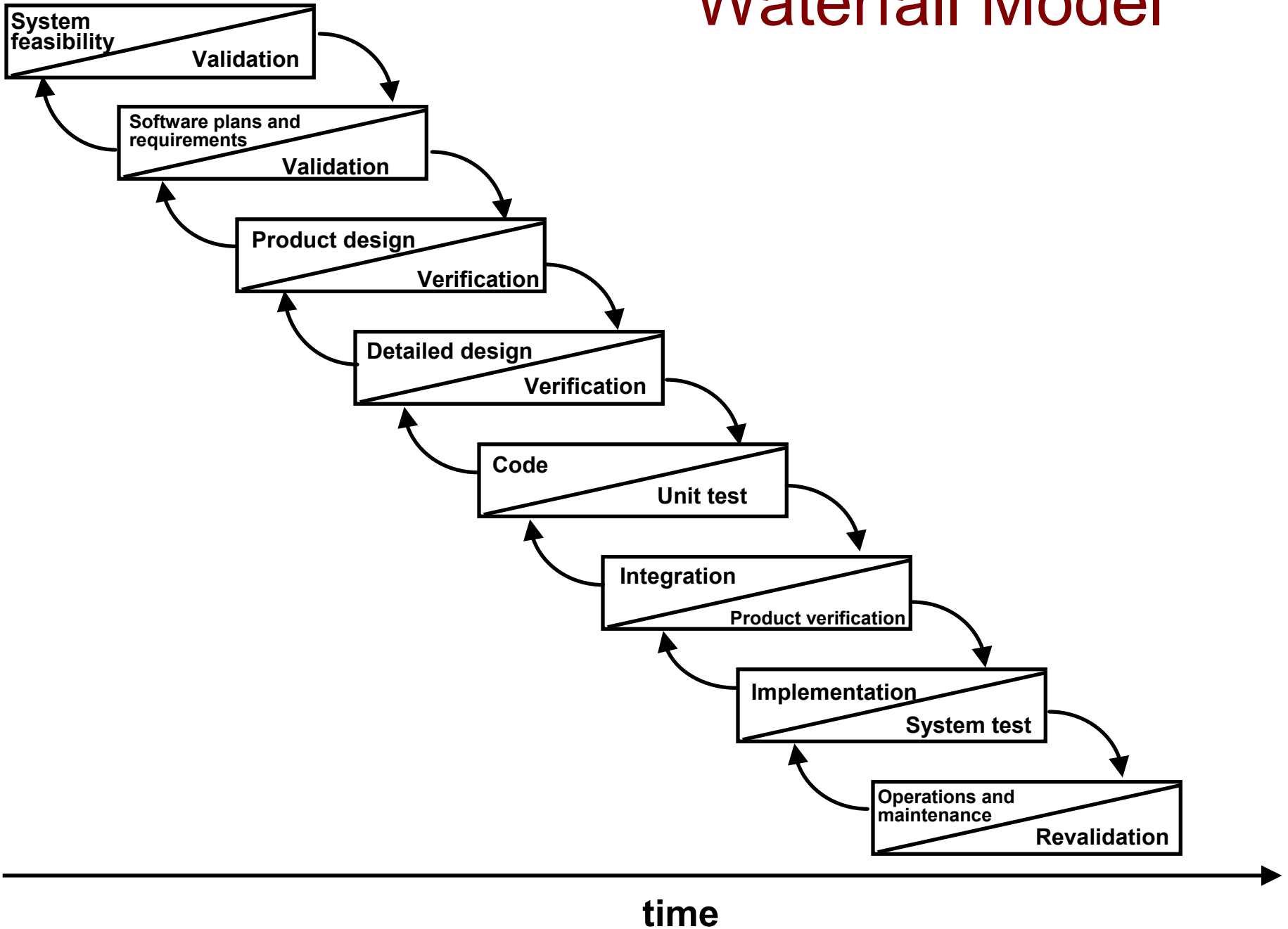
Preece 1993 on the stages of a design process

1. Project definition
2. Feasibility study
3. System Analysis
4. Requirements Analysis
5. System Design
6. Detailed Design
7. Implementation
8. Testing
9. Maintenance

Generic model of the process:

- Requirements
- Design
- Implementation
- Testing
- Maintenance

Waterfall Model

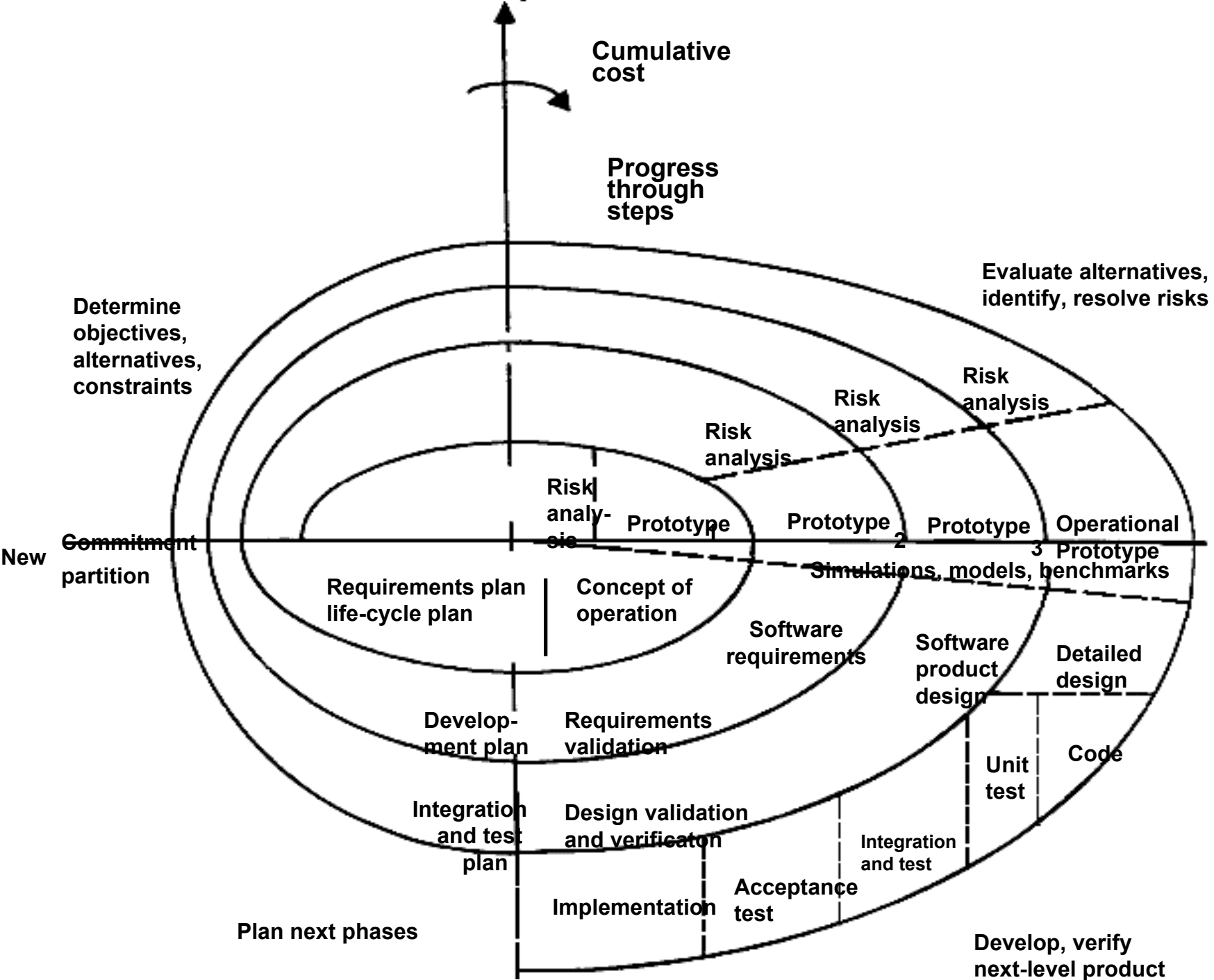


Problems with Waterfall model

- Assumes logical development of ideas
- Prevents re-visiting of earlier ideas
- Discourages communication
- User testing too late
- No ideal for interactive systems
 - emphasizes detailed specification prior to design

Reaction: Boehm's Spiral Model

- A valid model must:
 - Be risk driven
 - Incorporate existing methods
 - Accommodate evolutionary changes
 - Include maintenance as primary activity



Boehm's Top 10 Risks

- Personnel shortfall
- Unrealistic schedules
- Develop wrong functions
- **Develop wrong user interface**
- **Gold plating**
- **Continuous stream of requirements**
- Shortfall in external components
- Shortfalls in external tasks
- Performance shortfall
- **Strains computer science**

User Centered Design

- What is it?
- Where did it come from?
- How do you do it?
- Problems!

What is UCSD?

An approach to design based on social and cognitive analyses of human activities

In practice UCSD is more philosophy than method but other methods are considered too management oriented

Related terms

- Design for usability
 - User performance with system is our primary concern
- Participatory design
 - Engaging user in the process
 - Users have co-ownership of development process
- Human-centered design
 - Holistic approach to complementing human skills

Human-Centered Systems (HCS)

~~(Kling and Star, see readings)~~

- The question of what is and is not HCS can be divided into 4:
 - What do we mean by human?
 - What is a system?
 - What are the goals of a human-centered system?
 - What are the processes associated with HCS?

Human=User?

- Does the term ‘user’ deprive us of understanding subtle aspects of the quality of use?
 - Obsession with Task analysis?
 - See task models in Tuominen, Wilson et al
- Does the concept of ‘user’ objectify humans as ‘monologic subjects’ (see Tuominen, 1997 in readings)

What is a HCS?

- Complementary to human skills
- Recognizes the structure of social relationships
- “HCS should be cognizant of the possibility (of outcomes) via analysis of systems’ use in some very realistic contexts” (see Kling and Star in readings)

Note

- Many authors here are strong on philosophy and criticisms of existing methods but short on details of how their alternative works
- UCSD comes across as a ‘call to arms’ for improving the process but does it help a designer?

IBM on UCSD

- User-Centered Design is a **method** for designing ease of use into the total user experience with products. It enables organizations to consistently develop **engaging products** that are easy to buy, easy to set up, easy to learn, easy to use, and easy to upgrade. It calls for a **multidisciplinary team** to design **everything the user sees and touches** and to gather **user input and feedback** during **each stage** of the development process.
- It's like 'good hygiene'

The IBM User-Centered Design Principles

- **Set business goals.** Determining the target market, intended users, and primary competition is central to all design and user participation.
- **Understand users.** A commitment to understand and involve the intended user is essential to the design process. If you want a user to understand your product, you must first understand the user.
- **Assess competitiveness.** Superior design requires ongoing awareness of the competition and its customers. Once you understand your users' tasks, you must test those same tasks against competitive alternatives and compare their results with yours.
- **Design the total user experience.** Everything a user sees and touches is designed together by a multidisciplinary team. This includes the way a product is advertised, ordered, bought, packaged, maintained, installed, administered, documented, upgraded and supported.
- **Evaluate designs.** User feedback is gathered early and often, using prototypes of widely ranging fidelity, and this feedback drives product design and development.
- **Manage by continual user observation.** Throughout the life of the product, continue to monitor and listen to your users, and let their feedback inform your responses to market changes and competitive activity.

Quote:

- “For each principle, the goal is to involve users -- to ask the right people the right questions. Putting yourself in their shoes is a sure way to put your product at the front of the pack.”