What is Usability? - Efficient, Engaging, Easy to Learn, Error Tolerant, Effective
- Quality, Learn ability, Efficiency(Productivity), Memorability(Little "re-learning" required), Errors, Satisfaction(Pleasurable).

User Experience -Emotion, Heritage, Fun, Style, Art, Branding, Reputation, Political, Social Personal Connections, Beyond just the device itself-"Service Design"
- Interaction Design, Information Architecture, Visual Design, Functionality, Usability Typography, User Interface, Content Strategy

Jakob Nielson -Usability Goals - Learn ability, Memorability, Efficiency, Satisfaction, Errors(Reducing and reporting)

Don Norman - Design Principles - Visibility, Feedback, Constraints, Mapping, Consistency, Affordance.

Affordance - Perceived and actual properties of the thing, primarily those fundamental properties that determine how the thing could possibly be used.

Conceptual Model - Designer can help user foster an appropriate conceptual model in Appearance, instructions, behavior.

Visibility - When capabilities are visible, it does not require memory of how to use.

Mapping - Relationship between two objects, between control and action/result.

Feedback - letting know what just occured.

Constraints - Limitations on what can be done.

Contextual Inquiry - A kind of Ethnographic or participatory design.

Ethnographic - relating to the scientific description of peoples and cultures with their customs, habits, and mutual differences.

Context - The interrelated conditions within which something occurs or exists.

CI How to record? What the user says-in quotes what the user does - plain text Your interpretation - in parentheses

CI Defining tasks - User decides task. Designer decide the focus.

CI Test tasks: Representative of "real" tasks difficulty and coverage, tasks not frivilous or humorous or offensive, progressively harder. Remember not asking their opinions.

Graphical Models –> Affinity Diagram–>Models–> Flow Model, Social/Cultural Model, Artifact Model, Physical Model, Sequence/Step-by-step Model.

Flow Model: - Circles and/or icons = people or groups by role - Boxes = things (artifacts), places, files, etc. - Arrows = flow - Red lightening bolts = breakdowns - Times refer to time codes in video - Could also refer to lines of a transcript - "(A)" = Assumption = interpretation Note: not for team-member's opinions about the UI - Instead (A) is for assumptions about what user did Note: you (interviewer) are never in any model

Social Model: - Ovals for "Influencers": individuals or groups, internal or external - Thought bubbles for feelings/concerns that they actually expressed - Arrows for direction of influence - Labels for samples of dialog showing type of influence and attitudes -Worded as commands - Also show "pushback" – influence in other direction - Breakdowns - In relationships among people - No need to repeat previously shown problems NOTE: Not allowed to make stuff up!: Just what you actually have data to support!

User data drives innovation - Solve problems (breakdowns) identified in models - Grounded brainstorming Flow model: Eliminate flows, roles, redundant data entry Social / Cultural model: Increase communication, reinforce positive values Artifact model: Guide requirements, metaphors, remove screen problems Physical model: Depend only on what is available, reduce motion, improve flow of artifacts Sequence model: Eliminate, automate steps

Usability Engineering - coined by John Bennett Steps 1. Study the users and their tasks 2. Study the competition 3. Set usability goals 4. Participatory Design 5. Coordinating the Total Interface for Consistency

Include documentation, help, etc. 6. Guidelines and Heuristic Evaluation Evaluate your interface according to the guidelines. 7. Make prototypes of the system early and quickly 8. Empirical testing 9. Iterative design with usability analysis 10. Collect feedback from field use

Fitts's Law - $t = a + blog_2(2\frac{D}{W})$ • time is the amount of time required to complete the movement • a is the human reaction time and b is the time needed by human nervous system to process a bit of information • distance is a measurement from the starting point to the end point (target object) • width is the width of the target object

Weber's Law: $\frac{\Delta I}{I} = K$