Amir Dirin

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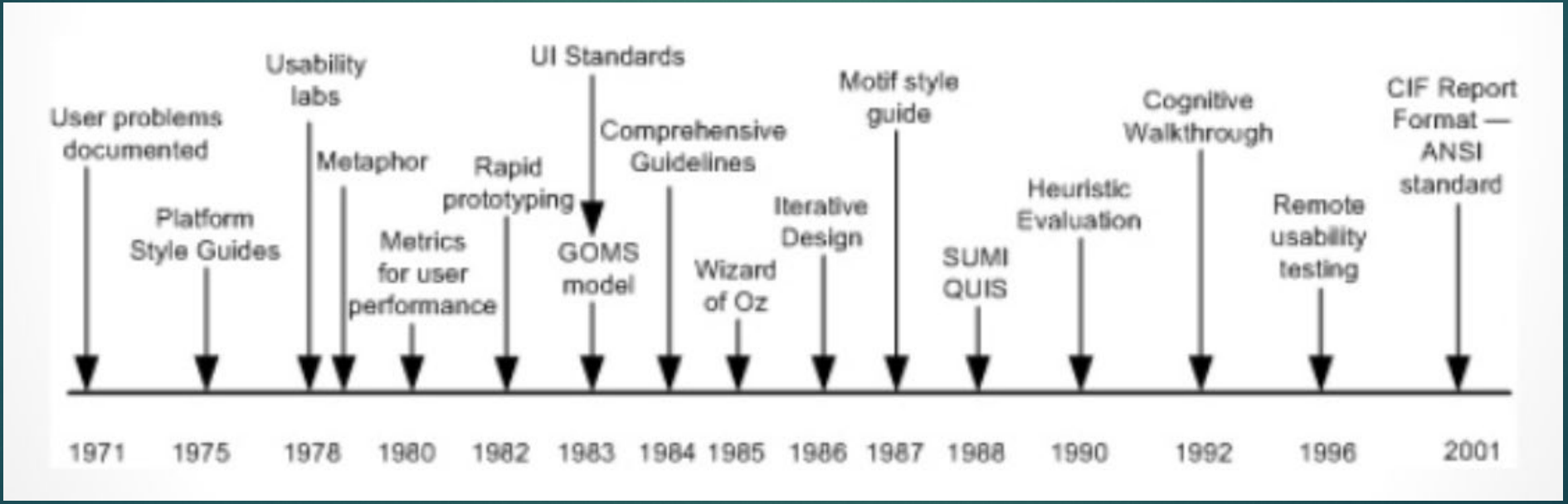
Usability and Evaluation

- Usability and evaluation are closely related concepts
- Usability means that the HCI design of the system supports the user's cognitive and ergonomic limitations and is easy to use and learn
- Evaluation means to assess the system for functionality as well as usability
- We explore how to compare, assess, and improve interfaces

Usability evaluation

User were first used as the source of usability
feedback but models have been also used for over 20 years.
Expert feedback was developed in heuristic reviews and cognitive walkthroughs and has been used
The early 90s.



Usability and Evaluation

- Mini-Case 1984 Olympic message system demonstrates:
  1. You will not get it right the first time
  2. You will get different answers when you use different methods of observation
  3. You will need to come up with integrative solutions to problems

Usability and Evaluation

Figure 7.2 Attitudes, use, performance, and satisfaction relationship

Usability and Evaluation

- ISO (International Standards Organization) defines usability as " a concept comprising the effectiveness, efficiency, and satisfaction with which specified users can achieve specified goals in a particular environment"

TYPES OF USABILITY TESTING

QUALITATIVE

Focuses on collecting insights, findings, anecdotes about how people use the product.

Best for discovering problems in UX

More common than quantitative

QUANTITATIVE

Focuses on collecting metrics that describe that user experience.

Two most common metrics are: task success & time on task.

Best for collecting benchmarks

INSPECTION

Testing and evaluation of the design layout of the software system is done by the experts like software developers, specialists, and professionals to real users.

It provides expert's views and opinions which are essential for development of various usability aspects of the software system.

INSPECTION

- Cognitive Walkthrough
- Heuristic Evaluation
- Pluralistic Walkthrough
- Perspective-based Instruction
- Action Analysis
- Consistency Inspection
- Standard Inspection
- Feature Inspection
- Formal Usability Inspection

Usability evaluation

1. Goal Achievement indicators
   - *success rate, failure rate, accuracy, effectiveness.*
2. Work rate indicators
   - *speed, completion rate, efficiency, productivity, productivity gain*
3. Operability indicators of the user's ability to make use of the system features
   - *error rate, problem rate, function usage*
4. Knowledge acquisition indicators of the user's ability and effort in learning to use the system
   - *learnability and learning*

Usability and Evaluation

1. Time to complete a task
2. Number of user commands to complete task
3. Fraction of task completed
4. Fraction of task completed in a given time
5. Number of errors
6. Time spent on errors
7. Frequency of online help used
8. Number of available commands not used
9. When task is repeated, ratio of successes to failures
10. Fraction of positive comments made by user
11. Fraction of good to bad features recalled by user
12. Number of expressions of frustration and satisfaction
13. Number of times user loses control over system
14. Number of times the user needs to devise a way of working around the problem/system.

Usability and Evaluation

- Methods of usability assessments include:
  - Thinking aloud (protocol analysis)
  - Observation
  - Interviews
  - Focus groups
  - Automatic logs
  - Questionnaires

Usability and Evaluation

Cognitive Walkthrough (Polson et al, 1992)

* Task description from the first-time user's viewpoint. Include any special assumptions about the state of the system assumed when the user begins work.

* Action sequence: Make a numbered list of the atomic actions that the user should perform to accomplish the task.

* Anticipated users: Briefly describe the class of users who will use this system. Note what experience they are expected to have with similar or previous versions.

* User's initial goals: List the goals the user is likely to form when starting the task. If there are other likely goals list them, and estimate for each what percentage of user are likely to have them.

INQUIRY

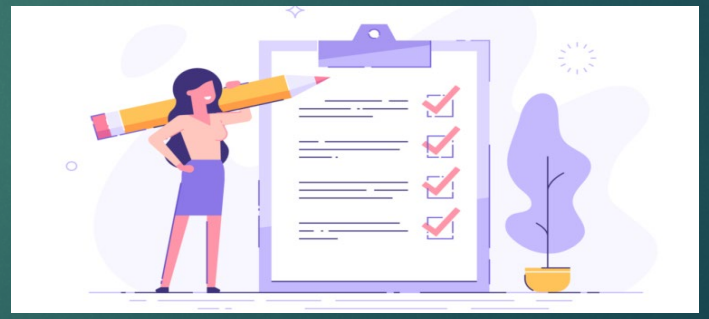
Evaluators obtain information about users' likes, dislikes, needs and understand by talking to them, observing users using the system in real life, letting users answer questions verbally or in written form.

INQUIRY

- Field Observation
- Contextual Inquiry
- Focus Groups
- Survey/Questionnaires
- Journaled Sessions
- Screen Snapchats
- Self-reporting Logs

Focus Groups / Survey / Questionnaire

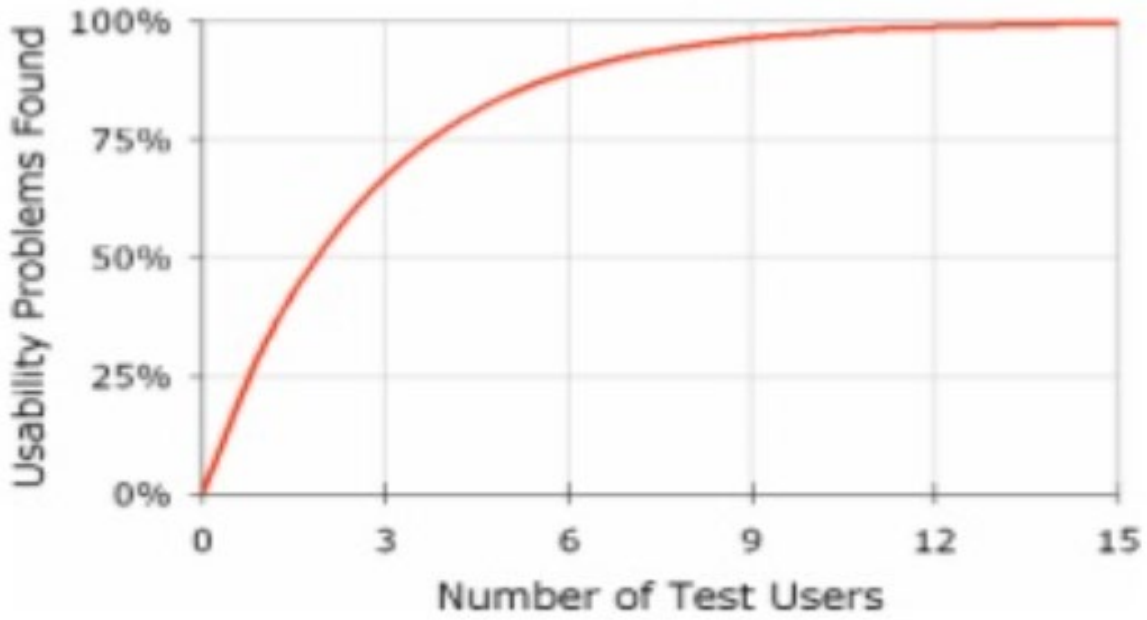
- Focus Groups
  - Formal, structured interactive events with users, asking users about their opinions and experiences regarding the product
- Survey / Questionnaires
  - Surveys are recorded interactive interviews with users, not structured like contextual inquiries or formally organized like focus groups.
  - Questionnaires are written lists of questions distributed to users. Used to identify usability issues after the product has been released



Usability and Evaluation

- Ben Shneiderman's Questionnaire for user satisfaction

Number of users



Evaluators VS Problem found – report Nielsen's