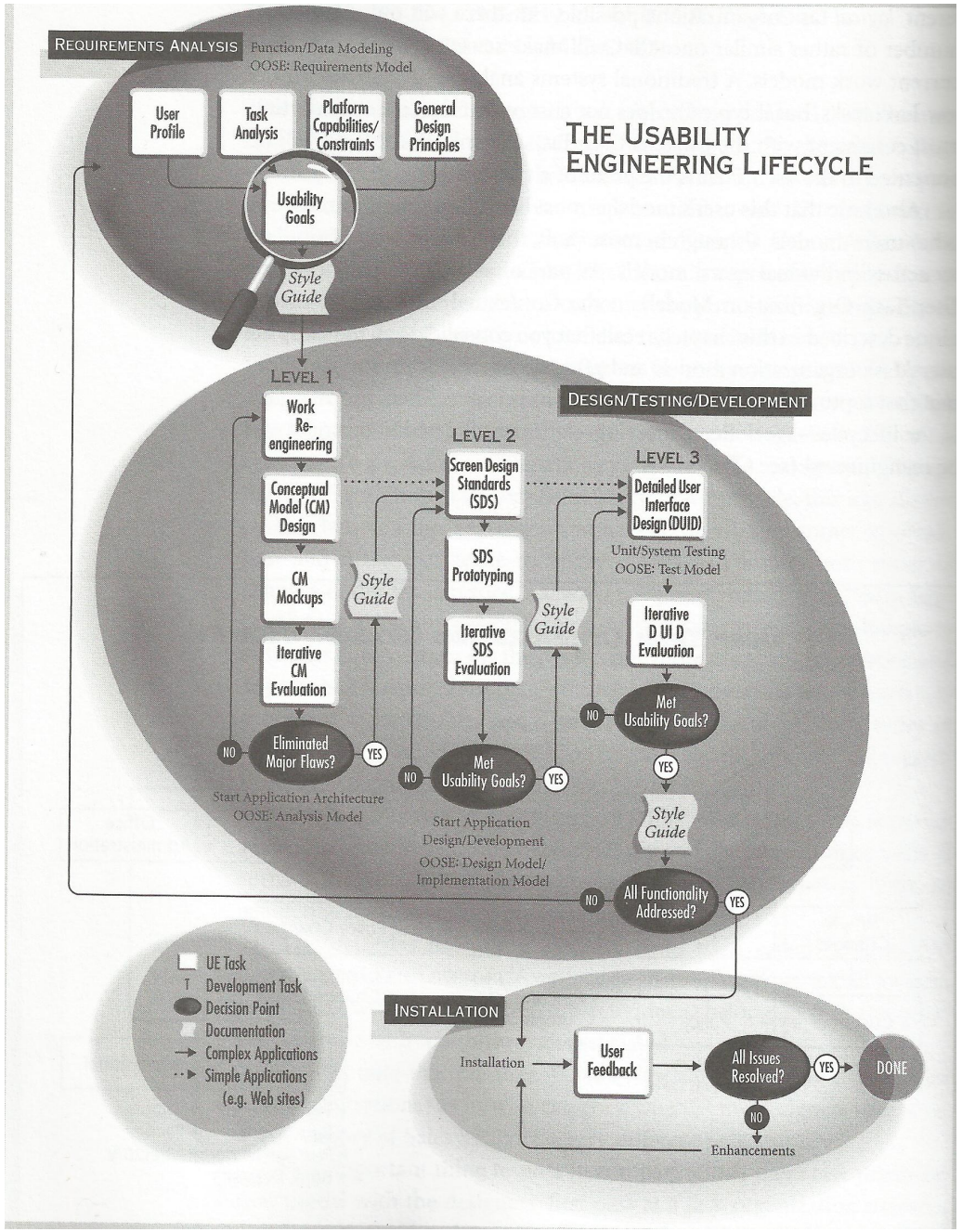
Usability Goal Setting


REQUIREMENTS ANALYSIS
Function/Data Modeling
OOSE: Requirements Model
User Profile
Task Analysis
Platform Capabilities/ Constraints
General Design Principles
Usability Goals
Style Guide
THE USABILITY ENGINEERING LIFECYCLE
LEVEL 1
DESIGN/TESTING/DEVELOPMENT
Work Re-engineering
Conceptual Model (CM) Design
CM Mockups
Iterative CM Evaluation
Eliminated Major Flaws?
NO
YES
Start Application Architecture
OOSE: Analysis Model
LEVEL 2
Screen Design Standards (SDS)
SDS Prototyping
Iterative SDS Evaluation
Met Usability Goals?
Start Application Design/Development
OOSE: Design Model/ Implementation Model
LEVEL 3
Detailed User Interface Design (DUID)
Unit/System Testing
OOSE: Test Model
Iterative D UI D Evaluation
Met Usability Goals?
All Functionality Addressed?
UE Task
Development Task
Decision Point
Documentation
Complex Applications
Simple Applications (e.g. Web sites)
INSTALLATION
Installation
User Feedback
All Issues Resolved?
DONE
Enhancements

Contextual Task Analysis: Task Summary

Task	Purpose	Description	Techniques	Work Products	Integration
Usability Goal Setting	Establish specific qualitative and quantitative usability goals that will drive UI design.	Extract qualitative usability goals from previous tasks and also from general business goals to drive UI design, and quantify a subset of high-priority goals to be used in usability testing as acceptance criteria.	Extract goals from User Profile and Contextual Task Analysis. Extract goals from general business goals. Establish benchmark data.	Documented qualitative usability goals. Documented quantitative usability goals.	Derived directly from the User Profile and Contextual Task Analysis tasks. Drives virtually all other tasks except Platform Capabilities/ Constraints

Two basic purposes

- First, specific usability goals help to focus UI design efforts by giving designers something concrete to aim for and something concrete to assess their design ideas against
- Second, to serve as acceptance criteria during usability evaluation, especially towards the end of the design process

Description

- Usability goals are based on the User Profile and the Contextual Task Analysis, as well as on general business goals.
- Can also be derived from marketing groups, competitive analysis, technical support groups, or just informed opinion.
- Two broad categories: Qualitative and Quantitative(ease-of-use , ease-of-learning)

Qualitative Usability Goals

- General unquantified goals that guide design. For example:
  - The design must support users working in a high-interrupt environment, with lots of context information on screen to remind users where they are when they get distracted.
  - The design must support very infrequent users of a very complex task. Thus, it must be self-explanatory and easy to learn and remember, incorporating as many business rules as possible and leading users by the hand through the task so they need not remember details of proper procedure between uses.
  - These examples of goals are drawn directly from user profiles & contextual task analysis.
- Extremely useful in guiding initial design efforts.

Quantitative Usability Goals

- Quantitative usability goals are objective, measurable, and can serve as acceptance criteria during usability evaluation. For example:
  - Experienced users (defined as users who have performed the transaction five times in a training session) should take no longer than two minutes on average to transcribe data from a certain paper form to a certain on-line data entry form.
    - Ease of use goal
  - Novice users (defined as first-time users) should take no longer than three minutes to fill in a certain on-line subscription form.
    - Ease of learning goal

Ease of use goals Vs. Ease of learning goals

- **Ease-of-use** goals focus on the use of the product by experienced users who have been trained on how to use the product (either through training programs or self-training on the job) and use it frequently enough to maintain expert performance.
  - **Generally defined as the potential speed, efficiency, and flexibility an interface offers to an experience user**
- **Ease-of-learning** goals focus on the use of the product by first-time users, users still in the learning process, or users who have been trained but use the product so infrequently that they may forget how to use it between uses.
  - **Roughly defined as the length and slope of the learning curve for users who have not yet reached expert levels of usage**

Absolute goals Vs. Relative goals

- **Absolute goals** are those that have an absolute quantification, for example, a specific number of seconds or minutes per task or a specific number of errors per task or transaction. (examples given in slide 7)
- **Relative goals** refer to users' experience on the product under design relative to their experience on some benchmark, such as a competitor's product, a previous release of a product, or the manual process for doing the same task.

Examples of relative goals

- Experienced users (defined as users who have performed the transaction five times in a training session) should take less time on average transcribing data from a certain paper form to a certain on-line data entry form on release 2 as compared to release 1.
- Novice users (defined as first-time users) should fill in a certain online subscription form faster and with fewer errors on application X than on any of the top five competitors' applications.

Performance goals

- **Performance goals** quantify actual user performance while using a product to perform a task.
  - **usuall measures are time (to complete a task or learn a task) and errors (both number and type)**
- **All the preceding examples of quantitative goals are performance goals, and all employ the performance measure of task (or transaction) time.**

Preference goals and Satisfaction goals

- Both are quantifiable.
- **Preference goals** aim at a clear user preference among alternative interfaces based on some level of experience with them
- **Satisfaction goals** aim at a certain level of satisfaction with a particular interface.
- Objective measures of performance and preference/satisfaction do not always correlate
- Preference is quantifiable – user makes a choice.
- Satisfaction can be measured along multi point scale.

Example of satisfaction goal

- Novice users (after first-time use with no prior training) must rate their satisfaction with the ease of learning of the interface as a 4 (“Very satisfied”) on average, given a 5 point scale where 1 is “Not at all satisfied” and 5 is “Extremely satisfied”
  - Besides being a satisfaction goal, is also a quantitative goal, an ease-of-learning goal, and an absolute goal
- On average, novice users (after first-time use with no prior training on both applications) must give a higher satisfaction rating to this application interface, based on ease of learning, relative to the interface of our key competitor’s comparable application.
  - Besides being a satisfaction goal, is also a quantitative goal, an ease-of-learning goal, and a relative goal

Common measures used in quantified usability goals

- Average *expert time* to perform a benchmark task or set of tasks
- Average number of *expert errors* in performing a benchmark task or set of tasks
- Average number of *expert keystrokes* to perform a benchmark task or set of tasks
- Average *novice time* to learn a benchmark task or set of tasks
- Average *novice trials* to learn a benchmark task or set of tasks
- Average number of *novice errors* in learning a benchmark task or set of tasks
- Average *novice satisfaction rating* for ease of learning
- Average *expert satisfaction rating* for ease of use

Scope and Priority of Goals

- Quantitative goals should not be so lenient as to be meaningless and so ambitious as to be unrealistic
- Usability Goal Setting should be highly collaborative effort involving all project stakeholders
- Once usability goals are formed they must be prioritized.
- Lower-priority goals can be identified and achieved but only if they don't overshadow high-priority goals or add excessive time and cost.
- Too many quantitative goals can make testing too complex and/or time consuming and thus impractical, and so again the number of quantitative goals should be limited. There is no limit to qualitative goals.
- A good rule of thumb is that on a given project, quantitative goals should be formulated from a small subset of high-priority qualitative goals.

Priority classification example

- 1 = Required for release
- 2 = Important if not excessively expensive or time consuming to achieve
- 3 = Desirable but only if low cost

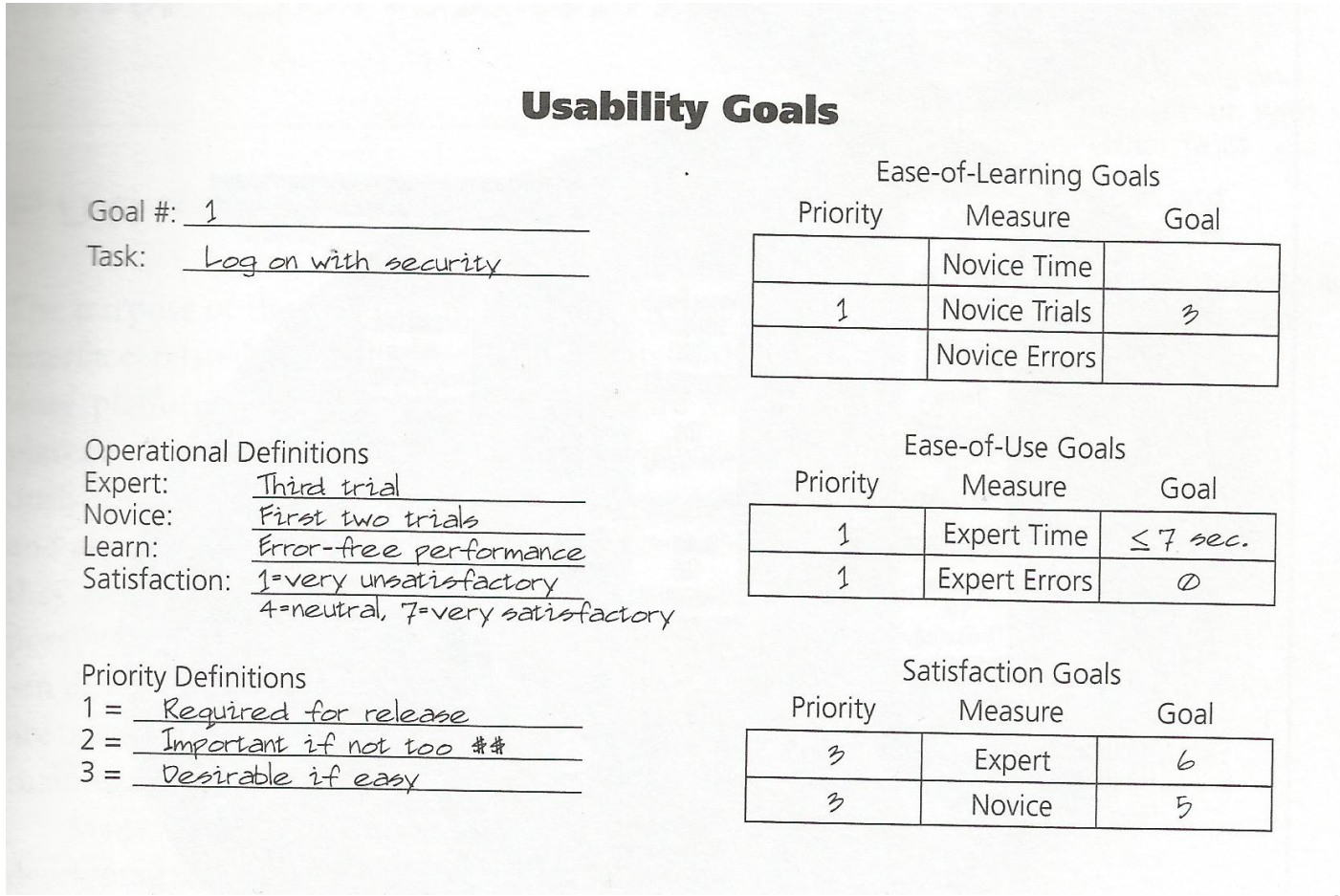
Usability Goal Setting: Roles and Resources

- **Task Leader:** A Usability Engineer
- **Other resources:** A User Interface Designer should participate heavily in identifying, quantifying and prioritizing usability goals. Involvement by other team members is highly desirable. Input and final endorsement by project and user management is crucial.

Sample Technique: A step-by-step procedure

- Refer to the User Profile
- Refer to the Contextual Task Analysis(goals related to work environment & job context)
- Research business goals
- Identify and draft qualitative usability goals
- Prioritize usability goals
- Formulate quantitative usability goals
- Document prioritized usability goals
- Conduct user/management review
- Establish benchmark data for relative quantitative goals

Quantitative Goals Template – With Sample Data



Usability Goals

Goal #: 1

Task: Log on with security

Operational Definitions

Expert: Third trial

Novice: First two trials

Learn: Error-free performance

Satisfaction: 1=very unsatisfactory
4=neutral, 7=very satisfactory

Priority Definitions

1 = Required for release

2 = Important if not too ##

3 = Desirable if easy

Ease-of-Learning Goals

Priority	Measure	Goal
	Novice Time	
1	Novice Trials	3
	Novice Errors	

Ease-of-Use Goals

Priority	Measure	Goal
1	Expert Time	≤ 7 sec.
1	Expert Errors	∅

Satisfaction Goals

Priority	Measure	Goal
3	Expert	6
3	Novice	5

Reference

- Chapters 4, “The Usability Engineering Lifecycle” by Deborah J. Mayhew