7.1 User Centred Design

• Software development should focus on the needs of users
  • Understand your users
  • Design software based on an understanding of the users’ tasks
  • Ensure users are involved in decision making processes
  • Design the user interface following guidelines for good usability
  • Have users work with and give their feedback about prototypes, on-line help and draft user manuals
The importance of focusing on users

- Reduced training and support costs
- Reduced time to learn the system
- Greater efficiency of use
- Reduced costs by only developing features that are needed
- Reduced costs associated with changing the system later
- Better prioritizing of work for iterative development
- Greater attractiveness of the system, so users will be more willing to buy and use it
7.2 Characteristics of Users

• Software engineers must develop an understanding of the users
  • Goals for using the system
  • Potential patterns of use
  • Demographics
  • Knowledge of the domain and of computers
  • Physical ability
  • Psychological traits and emotional feelings
7.3 Basics of User Interface Design

• User interface design should be done in conjunction with other software engineering activities.

• Do use case analysis to help define the tasks that the UI must help the user perform.

• Do iterative UI prototyping to address the use cases.

• Results of prototyping will enable you to finalize the requirements.
Usability vs. Utility

• Does the system provide the raw capabilities to allow the user to achieve their goal?
  • This is utility.

• Does the system allow the user to learn and to use the raw capabilities easily?
  • This is usability.

• Both utility and usability are essential
  • They must be measured in the context of particular types of users.
Aspects of usability

• Usability can be divided into separate aspects:
  • Learnability
    • The speed with which a new user can become proficient with the system.
  • Efficiency of use
    • How speed with which an expert user can do their work.
  • Error handling
    • The extent to which it prevents the user from making errors, detects errors, and helps to correct errors.
  • Acceptability.
    • The extent to which users like the system.
7.7 Difficulties and Risks in UI Design

- **Users differ widely**
  - Account for differences among users when you design the system.
  - Design it for internationalization.
  - When you perform usability studies, try the system with many different types of users.

- **User interface implementation technology changes rapidly**
  - Stick to simpler UI frameworks widely used by others.
  - Avoid fancy and unusual UI designs involving specialized controls that will be hard to change.
Difficulties and Risks in UI Design

- **User interface design and implementation can often take the majority of work in an application:**
  - Make UI design an integral part of the software engineering process.
  - Allocate time for many iterations of prototyping and evaluation.
- **Developers often underestimate the weaknesses of a GUI**
  - Ensure all software engineers have training in UI development.
  - Always test with users.
  - Study the UIs of other software.