

# Appreciation for Usability



**SWEN-261**  
**Introduction to Software**  
**Engineering**

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# Usability is a quality attribute that assesses how easy it is for a user to use the interface.

- *Usability (ISO 9241) is the extent to which a product can be:*
  1. *used by specified users*
  2. *to achieve specified goals*
  3. *with effectiveness, efficiency and satisfaction*
  4. *in a specified context of use.*
  
- **Users**
  - *Users → people who use a software system*
  - *Developers/Designers → people who create the system*
  - *It is important to understand that*  
*Developers/Designers ≠ Users*
  - *You must make an effort to know the user*

# When designing user interfaces always ask what tasks the user wants to accomplish.

- A “task” is something someone wants to do. It is typically high level and expresses some state that the user wants to achieve.
  - *Determine if I need to buy groceries from the store.*
  - *Spend an hour playing not-too-challenging games*
  - *Play the song I just thought of.*
- A subtask is a smaller task that must be completed to complete the larger task
  - *What was the name of the song?*
  - *Which music service is likely to have it?*
  - *There are two versions, which one do I want to play?*

# You should consider usability quality attributes when designing the system to be easy to use.

- Learnability
  - *How easy is it for users to accomplish basic tasks the first time they encounter the design?*
- Errors
  - *How many errors do users make? How severe are these errors? How easily can they recover from the errors?*
- Satisfaction
  - *How pleasant is it to use the design?*
- Efficiency
  - *Once users have learned the design, how quickly can they perform tasks?*
- Memorability
  - *When users return to the design after a period of not using it, how easily can they reestablish proficiency?*

# There are several techniques that you will use when designing for usability.

- Early focus will be on the users and the tasks they need the system to do.
  - *Research users, profile, and model them*
  - *Research tasks, analyze, and model them*
- Move to empirical measurement using quantitative or qualitative measures
  - *Conduct usability studies to collect the measurements*
    - ◆ Questionnaires to measure user satisfaction
    - ◆ Task performance (time on task) to measure efficiency
  - *Analyze data using descriptive and inferential statistics*
- Use an iterative process improving the design of the user interface each time.



# There are several best practices you should follow for designing an easy to use interface.

- Simplicity
  - *Given two otherwise equivalent designs, the simplest is best (Occam's Razor)*
  - *Effective and simple is a challenging design objective*
  - *80/20 rule – 20% of the functionality gets used 80% of the time*
- Consistency
  - *Do similar things in different places the same way*
  - *Label similar things the same*
  - *A custom design style book can help*
- Conventional UI elements
  - *Layout*
  - *Navigation*
  - *Presentation*

# Where is the return on investment for the effort to enhance the usability of a system?

- The average user takes 50 milliseconds to form an opinion about an online product.
- Those judgments will shape perceptions and ultimately impact the buy-in you need from prospective clients and customers.
- A well-designed application will have increased traffic, conversions, and transactions.
- The key benefits of usability are:
  - *Higher revenues through increased sales*
  - *Increased user efficiency*
  - *Reduced development costs*
  - *Reduced support costs*
- Bottom line: you can't afford to develop applications *without* considering usability.

# Accessibility

- “Accessibility defines users’ ability to use products/services, but not the extent to which they can attain goals (usability).”

*- Interaction Design Foundation*

- In many countries, accessibility standards are a legal requirement
- Areas of consideration
  - *Navigation - shortcuts, visual or audio feedback*
  - *Visual – configurable graphical elements that support resizing, highlighting, optional animations*
  - *Audio – configurable frequency and volume or visual alternatives*
  - *Timing – adjustable time for content to be ingested or the user to react*