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.