NordiCHI 2014 Tutorial: Medical device and HCI

Exercise 1

LET’S EVALUATE

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Usability evaluation.

Experienced?

Not yet?
Summative Evaluation
Formative Evaluation
Those we’ve known since 90’s

- Approaches
  - *Perspective-based inspection*
Those we’ve known since 90’s

- Approaches
  - Perspective-based inspection
  - Cognitive walkthrough
Those we’ve known since 90’s

- Approaches
  - Perspective-based inspection
  - Cognitive walkthrough
  - Heuristic evaluation
Heuristic evaluation

- A team of evaluators
- An object and a set of tasks
- A set of heuristics/principles
Exercise 1 – The Device
http://bit.do/pumpsim
Nielsen 1990

- Simple and natural dialog
- Speak the user’s language
- Minimize user memory load
- Be consistent
- Provide feedback
- Provide clearly marked exits
- Provide shortcuts
- Good error messages
- Prevent errors
Nielsen 1994

- Visibility of system status
- Match between system and the real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help users recognize, diagnose, and recover from errors
- Help and documentation
Shneiderman 1998

- Strive for **consistency**
- Enable frequent users to use shortcuts
- Offer informative **feedback**
- Design dialog to yield closure
- Offer simple **error handling**
- Permit easy reversal of actions
- Support internal locus of **control**
- Reduce short-term memory load
Weinschenk & Barker 2000

- User control
- Human limitations
- Modal integrity
- Accommodation
- Linguistic clarity
- Aesthetic integrity
- Simplicity
- Predictability
- Interpretation
- Accuracy

- Technical clarity
- Flexibility
- Fulfillment
- Cultural propriety
- Suitable tempo
- Consistency
- User support
- Precision
- Forgiveness
- Responsiveness
Exercise 1 - The Heuristics

- Visibility of system status
- User control and freedom
- Consistency and standards
- Error prevention
- Accuracy
- Feedback
Exercise 1 – The Heuristics

Visibility of system status

- Users should always be informed about what is going on.
Exercise 1 – The Heuristics

- User control and freedom
  - Users should be able to leave the unwanted state without having to go through an extended dialogue.
  - Support undo and redo.
Exercise 1 – The Heuristics

- Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing.
Exercise 1 – The Heuristics

- Error prevention
  - Eliminate error-prone conditions
  - Check for them and present users with a confirmation option before they commit to the action.
Exercise 1 – The Heuristics

- Accuracy

  - The result of user actions correspond to their goals.
Exercise 1 – The Heuristics

- Feedback

For every operator action, there should be some system feedback.
- Modest for frequent and minor actions.
- Substantial for infrequent and major actions.
Alaris GP volumetric pump

VTBI: Volume To Be Infused

Time

Rate of infusion

VTBI = Rate × Time
3 Tasks before 11.00

- Adjust alarm volume to high
- Set VTBI over time
  - VTBI 100mL, duration 30 minutes
- Set Rate and VTBI
  - VTBI 1000mL, rate 125mL/hr
1 Tasks before 11.15

Share, Explain and Merge
1 Tasks before 11.30

Collect, Discuss and Compile