2 Click Rule

- Any item should be accessible in "2 clicks"
- Problems
  - If there are many items, then the menu list gets VERY long!
  - If the tree is more structured, some items will get buried deeper
  - Can us dynamic structure (a la MS)
Modes

• *Modes* – the same action means some different depending on the “mode”
  – Many examples abound
• *Modes* are likely to be confusing

Modes

• Digital alarm clock: Time v Alarm
• Car stereo: Treble-Bass, Lt-Rt, Fr-Back
• Emacs
• Various finite state machines
• Computers
• Automobile controls
• Remote for TV-CD-VCR

Modes

• What *mode* am I in?
  – Should always be able to answer
• Maintain analogies (parallelisms)
  – Similar actions produce analogous functions in various modes
  – Examples ??
  – This is a kind of consistency, really

Smart (non-dumb!) Interfaces

• Who is the user?
  – Does the interface behave differently depending on the user?
  – Is it customizable?
  – Does it remember things?
• Does it comes up in unexpected modes?
Smart (non-dumb!) Interfaces

• Recall context from previous sessions?
  – Restore windows and pgms?
  – Allow easy return to “state”?

• Tactfully, alert against and resist nonsense inputs
  – Not allowed to do that ... maybe you want to do this...

Smart (non-dumb!) Interfaces

• Does it prompt? Anticipate?

• Does it annoy, get in the way, give unhelpful, distracting msg’s? (paperclip)

• The user’s efforts should be respected!
  – Offer typical choices?
  – Do a GOOD MS Paperclip!

Smart (non-dumb!) Interfaces

• Does it sense and react to the environment?
  – Dim lights when light is low?
  – “Talk” louder when environment is noisy.
  – Fast and slow digital counters, etc.
  – Generate resistance to mistakes
    – Avoiding multiple clicks... (my office phone)
    – Stuff like that...

Smart (non-dumb!) Interfaces

• Be responsive to inputs!
  – Departure date is AFTER arrv date, so advance it on input
  – Present a good choice for first guess.
    Today’s date, not 1 Jan, etc..
  – Other examples??
Smart (non-dumb!) Interfaces

- Good defaults
  - Nonsmoking hotel room
  - Aisle seat, when available
  - Table apart from noisy group
- Profiles, histories, data gathering
- “Having your usual, madam?”
  - Quick select, speed dialing,
  - Don’t require repeated input of same info

Smart (non-dumb!) Interfaces

- Assist with available “knowledge”
  - Spell checker, style checker
  - Color choices
  - Formats, templates, etc
  - Style critique
- Don’t be lazy; pamper the user.

Smart (non-dumb!) Interfaces

- Assist with “knowledge”
  - Pharmacy: patient drug interactions
  - Automobile guides: Neverlost
    - “Hey, my map says that this is a one-way.
      Achtung!” – Why doesn’t it do this?
  - Cannot lock key in ignition, etc.
  - Cannot leave car in Drive
- Others?

Smart (non-dumb!) Interfaces

- Narrow choices: Car Radio, eg
  - Scan for next
    - Jazz, Country, News, Sports, Spanish
  - Restaurants by locale, type, cost, etc
  - Movies by genre, and the like
    - Action, Drama, Documentary, Foreign, etc
Smart (non-dumb!) Interfaces

- UI should TRY to figure out problem, and try to solve it
  - Too easy to just complain, then
    - Core dump
    - Bail
    - Force user to start process over

Smart (non-dumb!) Interfaces

- UI should TRY to figure out problem, and try to solve it
  - It may know the problem, and be able to fix it, or guide the user to easily fix it
    - Matching parens, eg
    - It looks as though... May I fix this?
    - Use "back pointers" to maintain correctness.
      Filters and mailboxes in Eudora. Hey!

Smart (non-dumb!) Interfaces

- Guide user through tasks
  - What next?
  - Where am I in the grand scheme?
    - Does questionnaire tell you how much left?
    - Should I quickly finish, or break here?
  - Offer good defaults
  - Give stats on choices
    - 90% of users do this -

Smart (non-dumb!) Interfaces

- Example – 4 wheel steering
  - Slow behavior (radical turns)
  - Fast behavior (gentle turns)
  - Forward v. Backward ??
- Automatic trans, another example
  - Using context for smart, autonomous behavior
- Anti-skid, anti-lock, etc.
  - Takes control, and does what is needed
4 wheel steering

- 2-wheel steering
- 4-wheel
  - Low speed
- 4-wheel
  - High speed

Smart (non-dumb!) Interfaces

- Security
  - When to help with password?
  - Providing info to wrong user?
- How prudent, how circumspect is appropriate?
  - Video game, medical records, replace passport, info on grades, etc.

Smart (non-dumb!) Interfaces

- UI should act as an assistant, or even an associate
  - Know the user: I like coffee in the morning
  - Watch activities, learn, remember
  - Help out: special terms, abbrev’s, etc
  - Guard against mistakes: force feed-back
  - Offer comfortable advice and assistance
    - “Think along. Know the art of helping!”

Smart (non-dumb!) Interfaces

- UI should act as an assistant
  - Think along, understand what is going on
  - Be friendly, not demeaning
  - Communicate in effective, straightforward terms, not “geekspeak”
  - Unobtrusively refer to explanations (clickable, etc) for technical items, background
Smart (non-dumb!) Interfaces

- Beaucoup sensors
  - Temp, pressure, cameras, gaze, etc., etc.,
- Beaucoup processors
  - Ids, DBs, agents, ...
- Continuous, immersive involvement

Smart (non-dumb!) Interfaces

- Speech input
  - Talk to UI
  - UI talks to User
  - Shneiderman doubts its potential, however
- Gestures

Gestures Studies

Following Gesture material from:

Hand Centered Studies of Human Movement Project, School of Kinesiology, Simon Fraser University, February 1996

- Praying (two flat hands up together)
- Begging (flat hand)
- Expressing anger (raising a fist)
- Derogation (middle finger up)
- Accusation (index pointing)
- Live or die decisions in the Roman amphitheater (thumb up/down)
Gestures-2

- Hitch hiking (thumb up, hand moving sideways)
- Legal and business transactions (handshake, judge hammering)
- Waving and saluting
- Counting (fingers and/or hand)
- Pointing to real and abstract objects and concepts (index, hand)

Gestures-3

- Conducting of an orchestra (variety of both gestures with arms and body)
- Traffic control of cars and airplanes (hands flat pointing or moving)
- Shaping of imagined objects (hands tracing out curves and shapes)
- Martial arts, fighting (variety of movements of arms and body)

Gestures-4

- Dance (Balinese dancing)
- Gesturing by singers (hand and body movements)
- Stock exchange operations (various hand shapes)
- Affective gestures (hand touching)
- Rejective (index up moving left & right) / appreciative (hand clapping) gestures

Gestures-5

- Game playing (hand signs to communicate with partner in card games)
- Game scoring (cricket, basketball, soccer, rugby, football)
- Dinnertable actions (commanding waiter to refill wine glass)
- Positioning of real (remote or close Control panel operations (mousing, steering a vehicle)
Gestures-6

- Moving, touching and interacting with objects
- Silent and non-verbal communication (shrugging, holding one’s own earlobe, scratching)
- “Italianate” gestures (two hands open shaking)

Gestures-7

- Mimicry and pantomime (actions and objects are depicted with hand/body movements)
- Sign language (a complete linguistic communication system)
- Mimicry and pantomime (actions and objects are depicted with hand/body movements)

Gestures-7

- Sign language (a complete linguistic communication system)
- Aircraft carrier landings
- Dog training

Smart (non-dumb!) Interfaces

- Eliminate the 3-handed interface
  - Keyboard + mouse (impossible situation, really)
  - 2 hands plus voice?
- Another kind of input?
Topics for Future

- Ergonomics
- Psychological aspect,
- Smart interfaces / AI
- Building interfaces
  - Designing interfaces
  - Testing
  - Throwing out inadequate ones

Conclusions

- This ain’t so hard to figure out
- This IS hard to do
  - Take much work, actually
  - UI is expensive, labor intensive
- Have not begun to talk about real AI, just “HI”!

End

This Ain’t Rocket Science…