Fluid Navigation

- We now address design issues related to navigation,
- Navigation is defined as enabling users to know where they are and to steer themselves to their intended destination.
- Navigation is about getting work done or having fun through a series of actions,
- Navigation is key to successfully operating interactive applications, such as installing a mobile app,filling in a survey, or purchasing a train ticket (task - navigation).
- It is also the key to finding information on a website or browsing social media (web navigation) or to finding the action needed in a desktop application (command menu navigation).

- Navigation harnesses users' ability to rapidly skim choices, recognize what is relevant, and select what they need to realize their intentions.

- The goal for designers is to enable fluid navigation that allows users to gracefully and confidently get to where they want to go, explore novel possible routes, and backtrack when necessary.

- Navigation depends on recognition of landmarks that travelers use to guide their choices, which differs greatly from search, which requires users to describe what they want by typing keywords in a blank search box

- Navigation by Selection

- Graphical techniques are used to present choices while providing context to help users specify what they want.

- Menus is a representation of available choices, which designers use to present choices and guide users as they select what they want.

- Menus need to be organized in a meaningful structure, resulting in faster selection time and higher user satisfaction .

- Navigation may follow a linear sequence (e.g., in a wizard or survey), a hierarchical structure that is natural and comprehensible (e.g., an ebook split into chapters, a store into departments, or the animal kingdom into species), or a network structure when choices may be reachable by more than one path (e.g., websites).

- The simplest case of explicit menus is a ***binary menu*** for yes/no, true/false choices

- Another example of a simple menu is the **grid menu** that is popularly used in mobile devices, with a small set of icons and labels

- **Radio buttons** support single-item selection from a multiple-item menu,

- ***check boxes*** allow the selection of one or more items in a menu.

- A multiple-selection menu is a convenient method for handling multiple binary. choices, since the user is able to scan the full list of items while deciding . Unavailable choices can be grayed out

• Radio Button

Does anyone in your household currently smoke?

○ Yes, someone does
◉ No, no one does
○ Not sure

• Check Boxes

What treatment would you like to learn about?

☐ Surgery
☑ Physical therapy
☑ Medication
☐ Acupuncture (not available in your plan)

Menu bars, pop-up menus, toolbars, palettes, and ribbons

- Menu bars are typically found at the top of the each application or both at the top and on the side of the screen.

- Common items in desktop or tablet applications are File, Edit, View, and Help, and menus that follow this order will seem familiar to most users.

- Clicking on a menu title brings up a list of related items, and users can then make a selection by moving then pointing device over the items (which respond by highlighting) and clicking on the desired choice.

- Many rely on multiple menu bars, placing menus at the top but also on the side and bottom of the screen or webpage.

- When placed on the side, submenus can open in place using an *accordion menu* style expansion, or to the side.

- Accordion menus work well when the submenus have few items and do not force users to scroll too far to collapse the accordion, but accordions may also increase user disorientation when the indenting scheme is unclear or the menustructure is more than two or three levels deep. Large submenus are better expanded below or to the side

- The limited screen space of mobile devices leads designers to strive to limit the number of menu items.

- To leave more room for content, most or all menu items can be moved into a separate screen that is accessible from a main menu icon, sometimes called **the *hamburger menu* icon** for its shape and which can be placed on every screen

- **Toolbars**, *iconic menus*, and *palettes* can offer many actions that users can select with a click and apply to a displayed object
- A large number of toolbars can be overwhelming, so users need to be able to customize which toolbars

- **Pop-up menus** appear on the display in response to a click or tap with a pointing device.

- When the content of the pop-up menu depends on the cursor position, it is called a *context menu*.

- Since the pop-up menu covers a portion of the display, there is strong motivation to keep the menu text short (so that it does not cover the context of the menu).

- Pop-up menus can be hard to discover, so alternative access may need to be provided.

- Pop-up menus can also be organized in a circle to form *pie menus* also called *marking menus* .

- These menus have the advantage that the average distance to travel to select an item is smaller than linear menus, and with practice they can be used without visual attention if users memorize the direction of the item (which is easier with four to eight items).

- This is particularly useful in design applications that require constant menu selections

Ribbons

- Ribbons attempt to replace menus and toolbars by one-inch tabs grouping commands by task.

The approach is beneficial for new users, expert users face difficulties adapting to the reorganized menus and finding items they knew existed before, highlighting the challenge of versioning and menu reorganization in professional applications.

Ribbons also reduce the screen space for the document, which is a drawback for many users.

Shortcuts and Gestures for rapid Interaction

- For rapid selection, *keyboard shortcuts* (also sometime called *hotkeys*, such as Ctrl-C on PCs or -C on Macs for Copy) are essential for expert users using desktop computers

- Users can memorize the keystrokes for the menu items they use often and thus speed up the interaction considerably.

- The first letter of the command is often used for the shortcut to favor memorability, but caution is required to avoid collisions.

- If at all possible, shortcuts should be used consistently across applications; for example, Ctrl-S on a PC or -S on a Mac is usually used for Save and Ctrl-P or -P for

- Learning shortcuts is one of the useful paths to reaching expert performance but many users never even attempt to learn them

- Gestures often serve as a shortcut for rapid selection

- . First made widely available by the Apple iPhone, gestures have transformed navigation with tablets and smart phones.

- They can be hard to discover and learn and have few or no affordances

Examples of Common Gestures and Their Effects

- **Tap**: select
- **Long press:** varied, from magnified cursor (iOS) to
- showing a tooltip (Windows 8)
- **Double tap**: varied (e.g., zoom [iOS])
- **Small swipe**: varied (e.g., move location or order of
- objects, reveal a delete button)
- **Large swipe**: usually scroll
- **Rapid swipe or fling**: fast scroll with inertia
- **Pinch and spread**: zoom in and out
- **Variation with two or more fingers: varied effects**

Long lists

- Sometimes the list of menu items may be longer than the 30 to 40 lines that can reasonably fit on a display.

- One common solution is to create a tree-structured menu but sometimes the desire to limit the interface to one conceptual menu is strong—for example, when users must select a state from the 50 states in the United States or a country from an extensive list of possibilities.

- Typical lists are alphabetically ordered, but categorical lists may be useful. The principles of menu-list sequencing apply

Scrolling menus, combo boxes, and fisheye menus

- **Scrolling menus** display the first portion of the menu and an additional menu item, typically an arrow that leads to the next set of items in the menu sequence.

- The scrolling (or paging) menu might continue with dozens or thousands of items. Allowing users to type the letter "*M*" to scroll directly to the first word starting with the letter "*M*" will reduce manual scrolling, but this feature is not always discovered.

- Similarly, typing *M* twice can move to the second word starting with "*M*".

- *Combo boxes* make this option more evident by combining a scrolling menu with a text-entry field

- Another alternative is the *fisheye menu*, which displays all of the menu items on the screen at once but shows only items near the cursor at full size; items further away are displayed at a smaller size.

- Fisheye menus have been made popular by Apple's Mac OS X and are attractive for menus of 10 to 20 items where the zoom ratio remains small and all items are readable at all times.

- When the number of items is such that smaller items become unreadable, fisheye menus have the potential to improve speed over scrolling menus,

Sliders and alphasliders

- Slider is used to allow the selection of a single value When the available choices are continuous numerical values,

- . Ranges of values can also be selected with double-sided (range) sliders.

- Users select values by using a finger or pointing device to drag the slider thumb (scroll box) along the scale .

- When greater precision is needed, the slider thumb can be adjusted incrementally by clicking on arrows located at each end of the slider.

- A similar technique that allows users to select a name or category among even large numbers of ordered items is an *alphaslider*

- Because of their compactness, sliders, range sliders, and alphasliders are often used in the control panels of interactive visualization systems

- When results are available in real time, a sweep of the slider thumb allows rapid comparisons between the results of dozens of choices within seconds (without having to even look at the slider).

- This is very tedious with a standard menu that requires users to start the selection process again for each new value

Two-dimensional mega menus

- Two-dimensional mega menus give users a good overview of the choices, reduce the number of required actions, and allow rapid - selection.

Linear versus simultaneous presentation

- A sequence of interdependent menus can be used to guide users through a series of choices.

- For example, a pizza-ordering interface might include a linear sequence of menus in which users

- choose the size (small, medium, or large), thickness (thick, normal, or thin crust), and finally toppings.

- Other familiar examples are online examinations that have sequences of multiple-choice test items, each made up as a menu, or *wizards* (a Microsoft term) that steer users through software installation by presenting a sequence of menu options.

- Linear sequences guide users by presenting one decision at a time and are effective for novice users performing simple tasks. They may be the only possible option for a small display.

- Simultaneous menus present multiple active menus (also called filters) on a screen at the same time and allow users to enter choices in any order. T

- They require more display space; however, experienced users performing complex tasks benefit from simultaneous menus.

- *Faceted search menus* are a very powerful application of simultaneous menus now used extensively in online shopping, library catalogs, and other database searches

Small Displays

- While most designs adapt fairly easily from desktop displays to the larger tablets (once the design has been reviewed for touchability),small displays make most desktop designs impractical, and dumbeddown

- designs are very likely to fail. Small displays require a radical rethinking of what functionalities should be included and often lead to novel interface and menu designs specifically adapted to particular devices and applications

- The smaller the screen, the more temporal the interface becomes (all the way to entirely linear audio interfaces when no display is available).

- For example, linear sequences of menus are possible, while simultaneous menus are much harder to fit in. On tiny devices (such as watches or fitness wearables), a *deck of card menu* can be used, where each single tap advances to the next choice and a long press or two-finger press may select the item to access more information.

- Animated attention-catching *ticker menus* have also been used. Users don't need to manually scroll or page through the menu items, and with a single touch they can stop the scrolling and select

- an item in view.

Design considerations for small displays

- Simplify: Less is more.

- Strive to reduce or eliminate data entry.

- Learnability is key.

- Consider use frequency and importance.

- Plan for interruptions.

- Use of contextual information.

- Make clear what is selectable and what is not.

- Leave room for scroll and swipe gestures to avoid inadvertent actions.

- Consider relegating less important functions to other platforms.