Assignment 01, Group M01, Mon 12-14 (English)

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29,5P

Exercise 1: 4,5

(1) The following are the six goals of usability-

A. **Effective to use** – A device or software should perform its prescribed objectives in full, with little to no error in the result, serve its original purpose and do so consistently. 0.5

For example- A thermally insulated water bottle with the objective to hold cold or hot water at a temperature and for a duration, should be able to do so accurately and consistently.

B. **Efficient to use -** The device or software should be able to do the most amount of work in the least possible time and with least amount of resources (e.g.- money).

0,25 not exactly: it refers to if the user can sustain a high productivity after learning

For example- A T-Shirt manufacturing company should be able to produce the maximum possible number of T-Shirts with their given machinery in the least possible time.

C. **Safe to use** –Any possible risks or faults in a product should be mitigated through proper design infrastructure and enable a safety mechanism to guide the user in case of an issue.

0,25 not exactly: the range of errors is as small as possible and if one occurs, the user can recover easily

For Example- A good elevator always has motion sensors, so that if someone is entering while the doors are closing, it will stop and open. The elevator should also have an emergency hotline in case the elevator isn't working right, and someone is stuck inside it.

D. **Have good utility-** The product should serve a real and useful purpose, that helps people accomplish a task or multiple tasks in the best way possible. 0.5

For example- The BOSE Bluetooth speakers easily connect to a smartphone and play good sound quality music without interruptions or errors.

E. **Easy to learn-** The product should be designed in a way that the user can intuitively learn the commands and operations of the product with relative ease and comfort. 0,5 (trial and error)

For Example- The DJI Phantom drone has an easy to learn design, in which any novice or newcomer can with time and little practice, learn to fly a drone.

F. **Easy to remember-** The product should provide an interface that allows the user to easily remember its purpose and functions and not overwhelm the user. 0,5

For example- The Fitbit HR health tracking watch is a great example of simplicity and easy to remember functions, where in things are placed logically and the user only uses one button to interact with the watch.

(2)

Efficient: 1

The touch sensitive button click wheel in the iPod Classic allowed the user to navigate through hundreds of songs and the GUI with relative ease and speed.

Easy to Learn: 1

The iPod Classic was an intuitive and minimalist design with only six buttons and a touch sensitive click wheel. All the controls were placed in a logical and natural design.

Effective: 1

The iPod Classic was an effective utility for any music lover to carry around, It was relatively small , lightweight and provided storage options from five to one hundred and sixty GB.

Exercise 2: 3

1. ~~**Manipulating-Navigating**~~ **and Conversing.** A touch screen panel with voice enabled services placed before the exit of the parking garage. The voice enabled services could be programmed to listen to 'YES' or 'NO' replies which would aid disabled people. 1

the maipulation part can be left out, conversing is sufficient (since you can not perform well in maipulating a small display)

2. **Manipulation and Navigation**

This is because of the instant feedback it would provide to the user and combined with some sort of AR device that overlays the sight, the feedback would work well. [1]

3. **Manipulating and Navigating.**

The digital device is acting as an object and pictures are acting as virtual objects, and here, Digital device is interacting with virtual objects (pictures). 0.5, description is missing some detail i.e. how does it interact

4. **Giving Instructions**. The mobile device is issuing instruction to racing game using an accelerometer where the accelerometer is acting as a keyboard. 0.5 , giving instructions is not really applicable, but your description is right, more applicable would be manipulation

Exercise 3: 22

3.1 Physical Interface: (Apple Watch Series 4) 6

Affordances: 0 this is not an affordance

The apple watch is smart watch enabling users track their electrocardiogram (ECG), steps, make and receive calls, use multimedia apps, set alarms and of course tell time. It is essentially is a mini computer on your wrist that allows to perform several functions.

Visibility: [1]

The apple watch series four is touch screen enabled, thus the user can directly interact with the GUI. The watch itself is designed with simplicity, placing the digital crown as it would be placed in a mechanical watch, thus acting as a control and when turned, performs several functions based on the application being used.

Feedback: [1]

The apple watch has digital crown place in the same way as a mechanical watch and is enabled with haptic feedback, giving the user a mechanical feeling while interacting with the GUI. The watch has inbuilt speakers giving the user notifications sounds. It also has a proprietary taptic engine that is utilized to give feedback to the user.

Mapping: 1

Just as a regular a mechanical watch, the apple smart watch has a clock dial face, with a crown and regular wrist strap. The familiarity of a regular watch makes it a little easier to transition to a complete smart watch. Its simplistic design coupled with a intuitive GUI and familiar physical special layout makes it easy to use.

Apple watch   Regular watch

Constraints: 1

The apple watch has minimalistic style with few buttons and very familiar layout. This allows the user to get a basic grasp of the control mechanism and functions with relative ease. The end user is not forced to remember multiple control purposes and their functions. The GUI interaction is limited to only touch screen gestures.

Consistency: 1

The apple watch uses the watchOS as its operating system. The applications, icons and functions have been transferred over from their main smartphone IOS. This allows for iPhone users to easily integrate with the apple watch and gives for good internal consistency.

iPhone IOS   watchOS

Metaphors: 0 this consistency here, no metaphor , the metaphor is like a mobile desk, where you can arrange your application

The apple watch uses the same default application name, icons and functions in the watchOS as in the iPhone IOS and the MacOS. Thus the someone using anyone of the device can easily integrate into the Apple ecosystem and switch between device's with relative easy. This leads to a positive interface metaphor development in the future.

Watch OS Icons

iPhone OS Icons
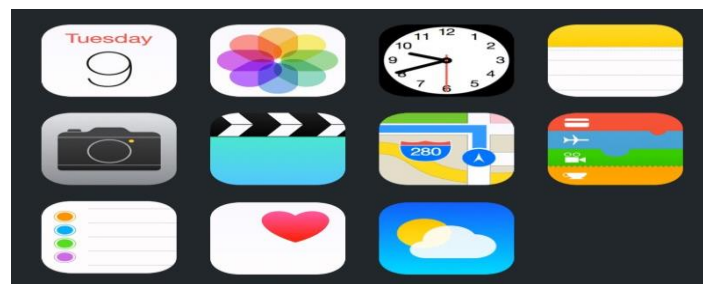
Mac OS Icons

Improvements based on the above principles- 1

The apple watchOS home page has a cluttered look to it, due to all the app icons being displayed in a flat expansive layout. A better and more user-friendly design would be to have the home page and the OS docking station coupled together, providing a more focused and "easy to scroll through" layout.

3.2 Physical Interface: (Gaming Controller, Joystick)   7

Affordance: 1

- The device has buttons for pressing/pushing to interact with the System.
- Analog sticks are for rotating & pushing and handles to hold the device with two hands.
- The touchpad is for advanced interaction or clicking on an additional button.

Visibility: 1

- Functions are highlighted on the buttons.
- The shape of the buttons on the left side imply to navigation.

Feedback: 1

- Analog sticks are used to move character/objects and the camera viewing angle.
- Action buttons are on the right side and special trigger enabled buttons on the backside.
- The Touch pad in the center enables the user to perform enhanced movements.

  (what is also don in here is the physical feedback via vibration)

OPTIONS button
touch pad
L2 button
R2 button
L1 button
R1 button
Directional buttons
⊚ button   ⊗ button
△ button   ⊚ button
Left Stick
Right Stick
L3 button (push the stick)
R3 button (push the stick)

0.5 **Mapping:** (since you wrote it in the answers before, you get half points. However, mapping in here is that the buttons are labeled and that the buttons are arranged logically (arrows))

- Buttons on the left side are to interact with the menu and buttons on the right side are

  the main buttons to perform actions in the game.

- The two joysticks enable the user to control the viewing angle and movement of the character in the game.
- Special buttons, such as 'select' and 'menu' are placed in the center next to the touch pad.

Constraints: 1

- Buttons are placed in comfortable reach for a person holding the controller with two hands.

- Physical Limit on the movement of the joy sticks allows for controlled movement of a character.

- Buttons can only be pressed.

Consistency: 1

- Joy Sticks, triggers, directional buttons and action buttons are standard features in almost all modern game controllers.

Metaphor: 0.5

The controller has been through decades worth of evolution but the fundamental and core design of the

controller has remained the same and thus quite familiar to the average user.

(like a remote device, where you can trigger functions by interacting with the device)

Improvements: 1

- The battery life is poor at around 30 hours and it is probably the part that is broken first.

- The buttons on the left side are used quite less in a game and so switching it with the left joy stick would be more convenient.

3.3 Virtual Interface: Google Map (Location Route)   3

Affordance: 0 , this is not affordance

Whether a mobile or a web application, Google Map is a free application supported by Google. One can find location and get direction with Google Map.

- The rectangle boxes are for the address.
- The Map is for showing destination.

Visibility: 1

- The function is highlighted with rectangle boxes. One is for current address and another one is for the destination address.

Feedback: 0.5 (visual feedback mostly and when used for navigation , then auditory too)

☐   When the car option is clicked/touched, it will show the route for the car.

☐   When the pedestrian option is clicked/touched, it will show the route for a walk.

☐   When the cycle option is clicked/touched, it will show the route for cycle.

Car Option

Route forcar
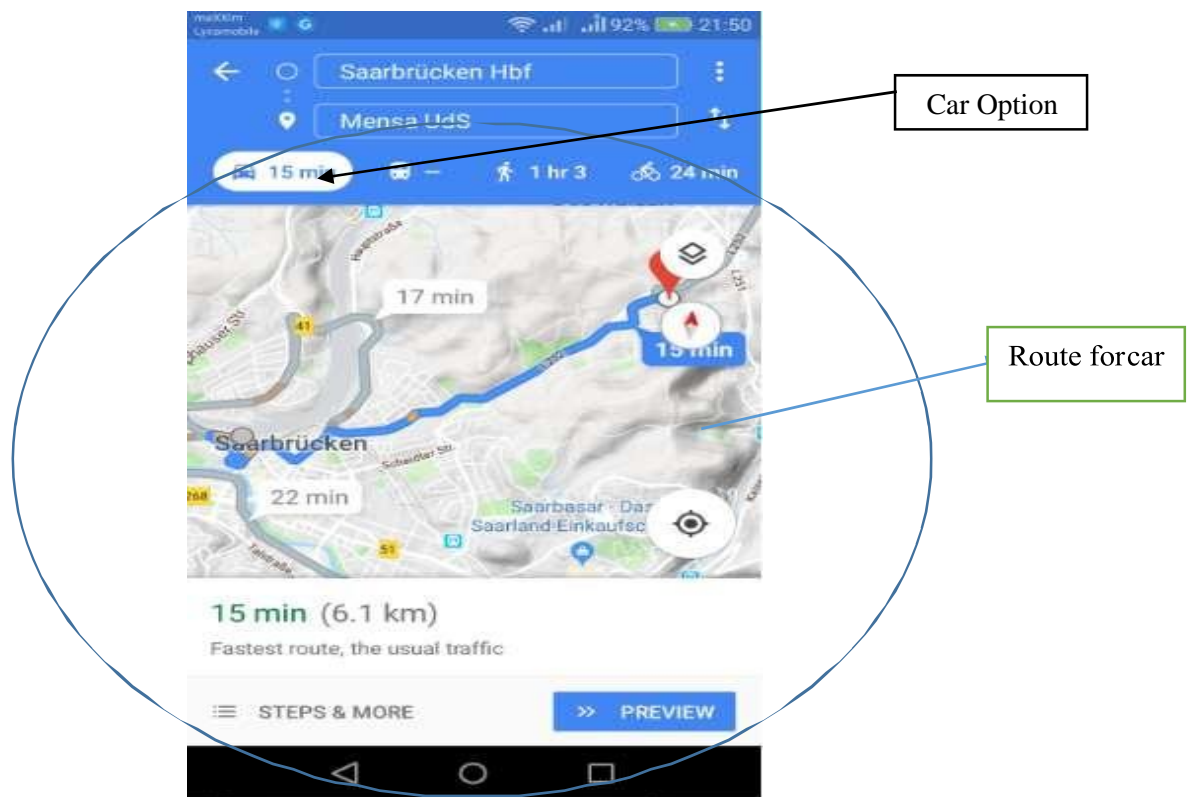
Mapping: 0 this is not mapping, here the essential functions are grouped together

The user can easily bookmark his/her address and share it with

others.

Constraints: 0.5 (first one is right, but not cultural., the second one is not a constraint, it is a property. a constraint would be the suggestion of places to prevent wrong input)

- Cultural: Google saves your all searches and can sell them to the second party.

- Physical: It consumes more RAM.

Consistency: 0 not consistency: external c. : every navigation system has same functionality and almost same interface (start and destionation)

The system is easier to use because the user just needs to type his/her address and

destination address to find the proper route.

Metaphor: 0 the clear metaphor is here interacting with a physical map

Preview button is metaphorical, as it shows the larger map with the highlighted

direction line. **Improvement:** 1

- In performance, google maps trend to crash on the some of the older versions of the Android OS when someone tries to search a location on the map.

- An addition of the public (train, bus) vehicle number and accurate timmings.

3.4 Human Computer Interface: DB Bahnhof Ticket Vending Machine

i correct the 3.5, since it is exactly the same but with the missing parts therefore for 3.4 0 P

Affordance: 0 this is not affordance

- The larger display is for issuing a ticket.

- The keyboard for the transaction.

Visibility: 1

- The system has two slots, one is for insert money and another one is for insert debit/credit card. (which are highlighted)

- The system has a keyboard to enter pin code for a debit/credit card.

- ~~Performance, google maps trend to be crashed on the lower level of Android OS when someone tries to search on the map.~~

Can add the public (train, bus) vehicle number and timing accurately.

## 3.5 Human Computer Interface: DB Bahnhof Ticket Vending Machine 6

Affordance: 0 see above

  The larger display is for issuing a ticket.

  The keyboard is used for the monetary transaction.

Visibility: 1 see above

  The system has two slots, one is for inserting the money and another one is for inserting debit or credit card.

  The system has a keyboard to enter pin code for the debit/credit card.

The larger display is touch screen enabled and provides some options to book the ticket.

Larger display

Keyboard for pin

Insert debit/credit card
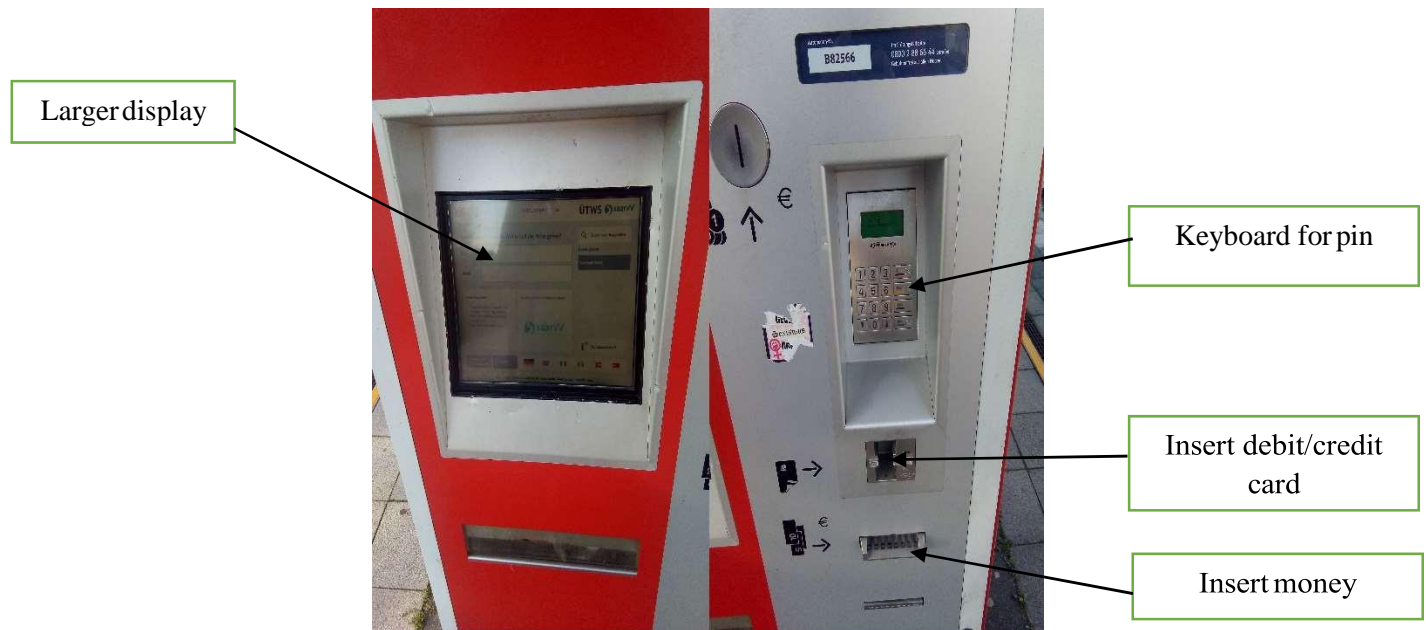
Insert money

Feedback: 1

☐ When destination place is entered visually, it shows the option for the different category to book the ticket in.

☐ When the money or debit/credit card is inserted physically to book the ticket, it shows the message "Transaction is being made and collect your ticket".

Mapping: 1

Ticket booking display and transaction keyboard are next to each other so that user can access the system with ease.

Constraints: 0.5 a constraint here would be that it is clearly indicated how to put money in, and logical constraints will prevent the users from selecting wrong options during buying a ticket.

- The machine cannot receive less than 50 cents.
- ~~The translation option (larger display) are not good enough to understand.~~
- ~~Sometimes machine hangs at random interval.~~

Consistency: 1

- The machine is designed similar to an ATM, so one can simply understand the function of this machine.

Metaphor: 0.5 (they are not representing the system, here a metapor is like a vending machine for a train ticket)

Enter and Cancel button from the keyboard are metaphorical. One is for submit the pin of a debit/credit card, another one is for cancel the wrong pin.

Improvement: 1

- Improve the translation part of the display, so that foreigner can understand the system perfectly.
- Add some short keyword button for district train, so that one can book a district ticket by a touch only.

why are there 3 empty pages at the end?