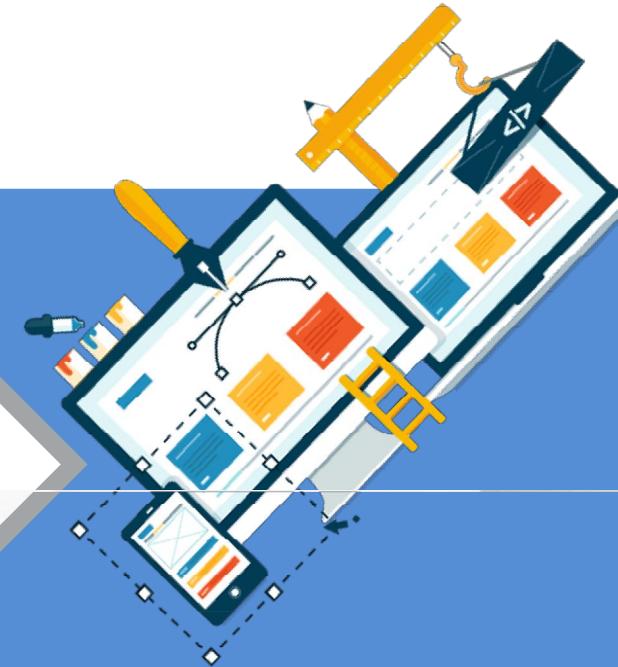


Unit 4.1

G

Golden Rules

User Interface Design



User Interface Design



What is User Interface Design?

The design of user interfaces for machines and software with the focus on maximizing **usability** and the **user experience**. The goal of user interface design is to make the user's interaction as **simple** and **efficient** as possible, in terms of accomplishing user goals.

A user interface is like a joke. If you have to explain it, it's not that good.

What should we do to make a good UI?



We should follow the
Three Golden Rules
coined by Mr. Theo
Mandel, Ph.D.

The basis for a set of UI
design principles that
guide this important
aspect of software
design.

Golden Rules of User Interface Design

Place the User in Control



Reduce the User's Memory Load



Make the Interface Consistent

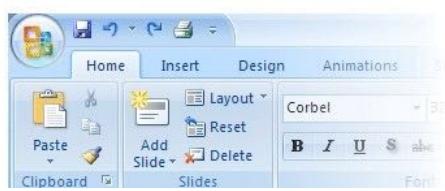
Microsoft Word



Microsoft Excel



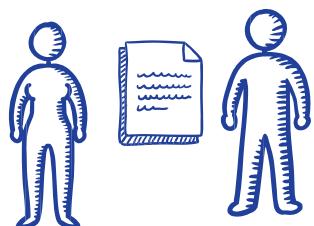
Microsoft Powerpoint



1. Place the user in control

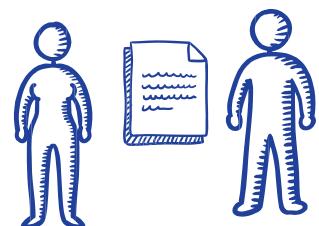
During a requirements-gathering session, key user was asked about the attributes of the window-oriented graphical interface.

"What I really would like," said the user solemnly, "is a system that reads my mind. It knows what I want to do before I need to do it and makes it very easy for me to get it done. That's all, just that." a



1. Place the user in control

Users want to control the computer but does not want to be controlled by the computer. So, user interface constraints specified by the designer **must simplify** the mode of user's interaction with the computer. User interface must not frustrate the user.

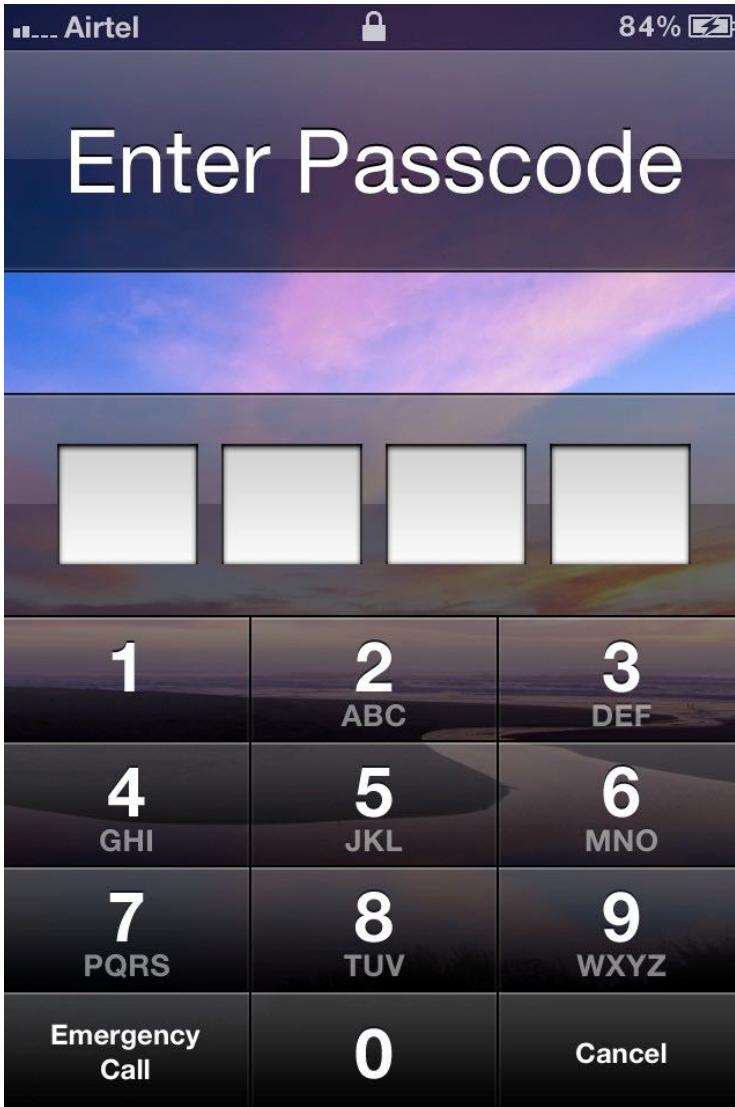


1. Place the user in control

1. Define interaction modes in a way that does not force a user into unnecessary or undesired actions.

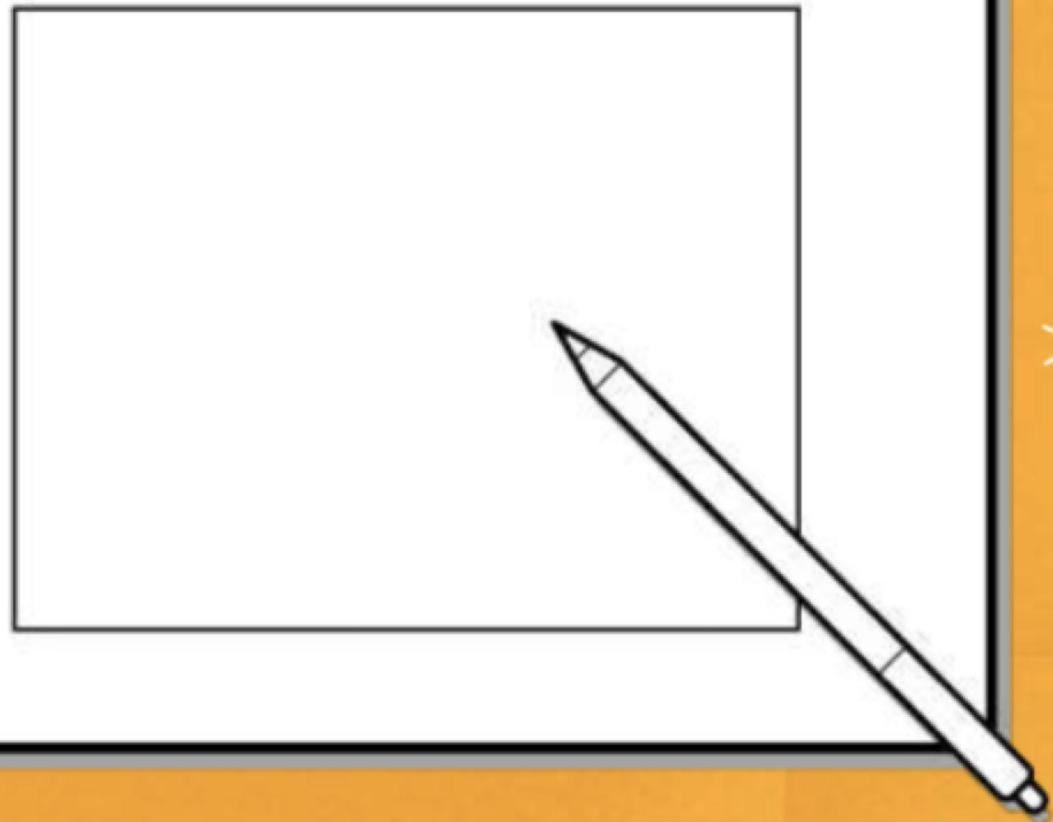


No Unnecessary Actions



There's no redundant OK button

1. Place the user in control
2. Provide for flexible interaction

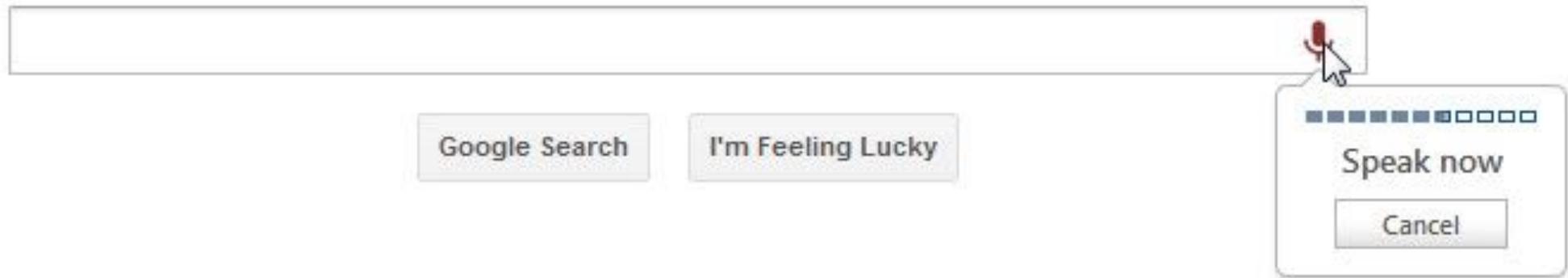


Different users have different interaction preferences, choices should be provided.



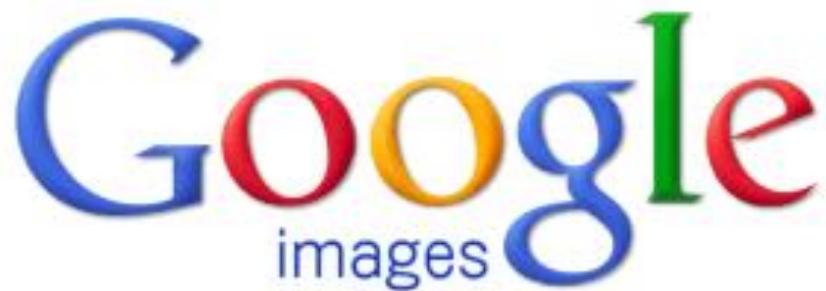
Drawing complex shapes via keyboard commands frustrates users but doing the same via mouse is simple.

Flexible Interaction



Speech Input. Google.com in Chrome

Flexible Interaction



Search by image



Search Google with an image instead of text.

Paste image URL  | Upload an image

Search

1. Place the user in control

3. Allow user interaction to be interruptible and undoable.



A Web Page

http://

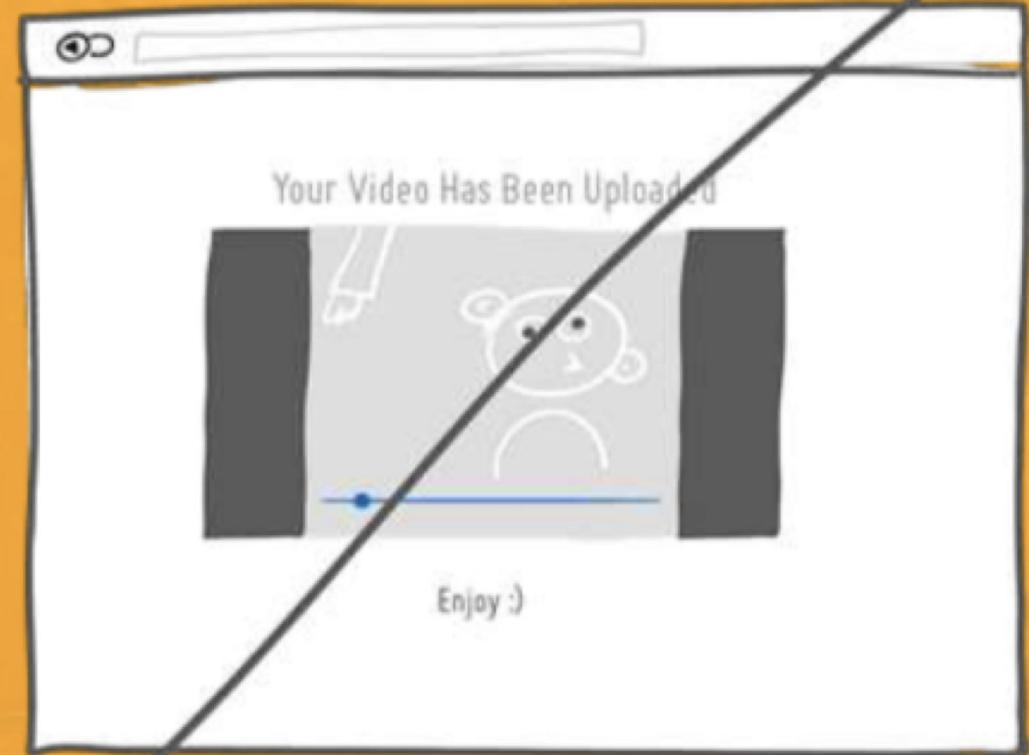
◀ ▶ X ⌂

6 handwritten lines with empty boxes to their right.

Save for later Submit



User should be able to interrupt even when in a sequence of actions but without losing any progress. Also, any user action must be undoable.

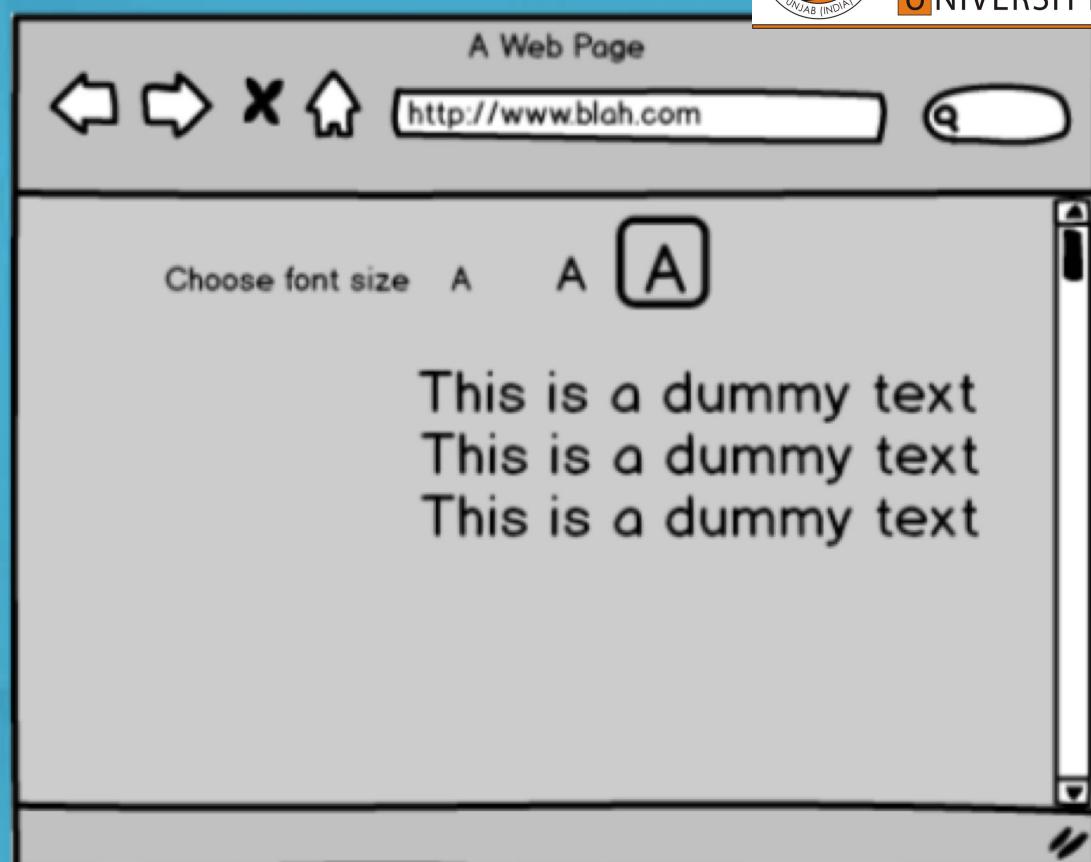
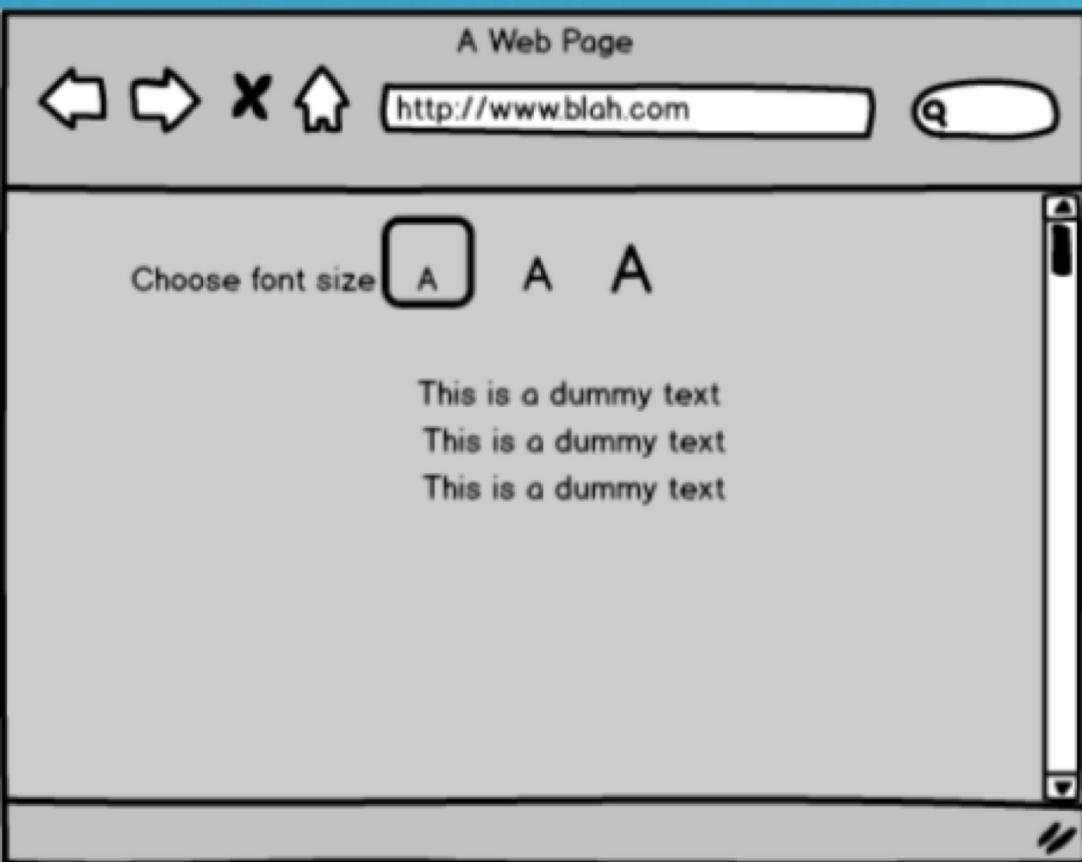


- 💡 User should be able to interrupt even when in a sequence of actions but without losing any progress. Also, any user action must be undoable.

1. Place the user in control

4.

Streamline interaction as skill levels advance and allow the interaction to be customized.



Users may be normal people or computer experts.
Users of different skill levels should be able to interact with a program at different levels.

1. Place the user in control

5. Hide technical internals from the casual user.

Hide Technical Details

JavaDoc Declaration Console LogCat Progress

Saved Filters + -

All messages (no filters) com.scribble.shrikanth (Session)

Search for messages. Accepts Java regexes. Prefix with pid:, app:, tag: or text: to limit scope. verbose

L...	Time	PID	Application	Tag	Text
I	03-27 18:04:1...	58	system_process	ActivityMa...	Start proc android.process.acore for content provider com.android.provid...
D	03-27 18:04:1...	119	com.android.phone	PhoneApp	onCreate: mProximityWakeLock: null
W	03-27 18:04:1...	58	system_process	ActivityMa...	Unable to start service Intent { act=com.android.ussd.IExtendedNetworkSe...
D	03-27 18:04:1...	119	com.android.phone	PhoneApp	Resetting audio state/mode: IDLE
D	03-27 18:04:1...	58	system_process	AlarmManag...	Kernel timezone updated to -330 minutes west of GMT
I	03-27 18:04:1...	58	system_process	ActivityMa...	Start proc com.android.alarmclock for broadcast com.android.alarmclock/....
W	03-27 18:04:1...	119	com.android.phone	SystemClock	Unable to set rtc to 1332851656: Invalid argument
I	03-27 18:04:1...	156	android.process...	ActivityTh...	Publishing provider com.android.social: com.android.providers.contacts.S...
D	03-27 18:04:1...	119	com.android.phone	SystemClock	Setting time of day to sec=1332851656
I	03-27 18:04:1...	156	android.process...	ActivityTh...	Publishing provider applications: com.android.providers.applications.App...
D	03-27 18:04:1...	58	system_process	dalvikvm	GC_EXPLICIT freed 843 objects / 37496 bytes in 427ms
D	03-27 18:04:1...	58	system_process	MobileData...	default Received state= DISCONNECTED, old= DISCONNECTED, reason= radioTu...
D	03-27 18:04:1...	58	system_process	MobileData...	default Received state= DISCONNECTED, old= DISCONNECTED, reason= gprsDet...
D	03-27 18:04:1...	58	system_process	dalvikvm	GREF has increased to 201
I	03-27 18:04:1...	162	com.android.alarm...	ActivityTh...	Publishing provider com.android.alarmclock: com.android.alarmclock.Alarm...
I	03-27 18:04:1...	156	android.process...	ActivityTh...	Publishing provider contacts:com.android.contacts: com.android.providers...
D	03-27 18:04:1...	119	com.android.phone	dalvikvm	GC_FOR_MALLOC freed 3634 objects / 220944 bytes in 846ms
D	03-27 18:04:2...	58	system_process	MobileData...	default Received state= DISCONNECTED, old= DISCONNECTED, reason= (unspec...
D	03-27 18:04:2...	119	com.android.phone	MccTable	updateMccMncConfiguration: mcc=310, mnc=260
D	03-27 18:04:2...	119	com.android.phone	MccTable	locale set to en_us
D	03-27 18:04:2...	119	com.android.phone	MccTable	WIFI_NUM_ALLOWED_CHANNELS set to 11
I	03-27 18:04:2...	58	system_process	WifiService	WifiService trying to setNumAllowed to 11 with persist set to true
I	03-27 18:04:2...	58	system_process	ActivityMa...	Config changed: { scale=1.0 imsi=310/260 loc=en_US touch=3 keys=2/1/2 na...
I	03-27 18:04:2...	58	system_process	UsageStats	Unexpected resume of com.android.launcher while already resumed in com.a...
I	03-27 18:04:2...	58	system_process	ActivityMa...	Start proc com.android.music for broadcast com.android.music/.MediaAppWi...
W	03-27 18:04:2...	58	system_process	ActivityMa...	Activity idle timeout for HistoryRecord{4501f5f0 com.android.launcher/co...
D	03-27 18:04:2...	58	system_process	PowerManag...	bootCompleted
D	03-27 18:04:2...	119	com.android.phone	TelephonyP...	Setting numeric '310260' to be the current operator

Android SDK Content Loader

User Info

Email

someemail.com@

Alert

Email does not pass the
Regex (Regular Expression)

Ok

Submit



User Info

Email

someemail.com@

Alert

Please provide a valid email
address

Ok

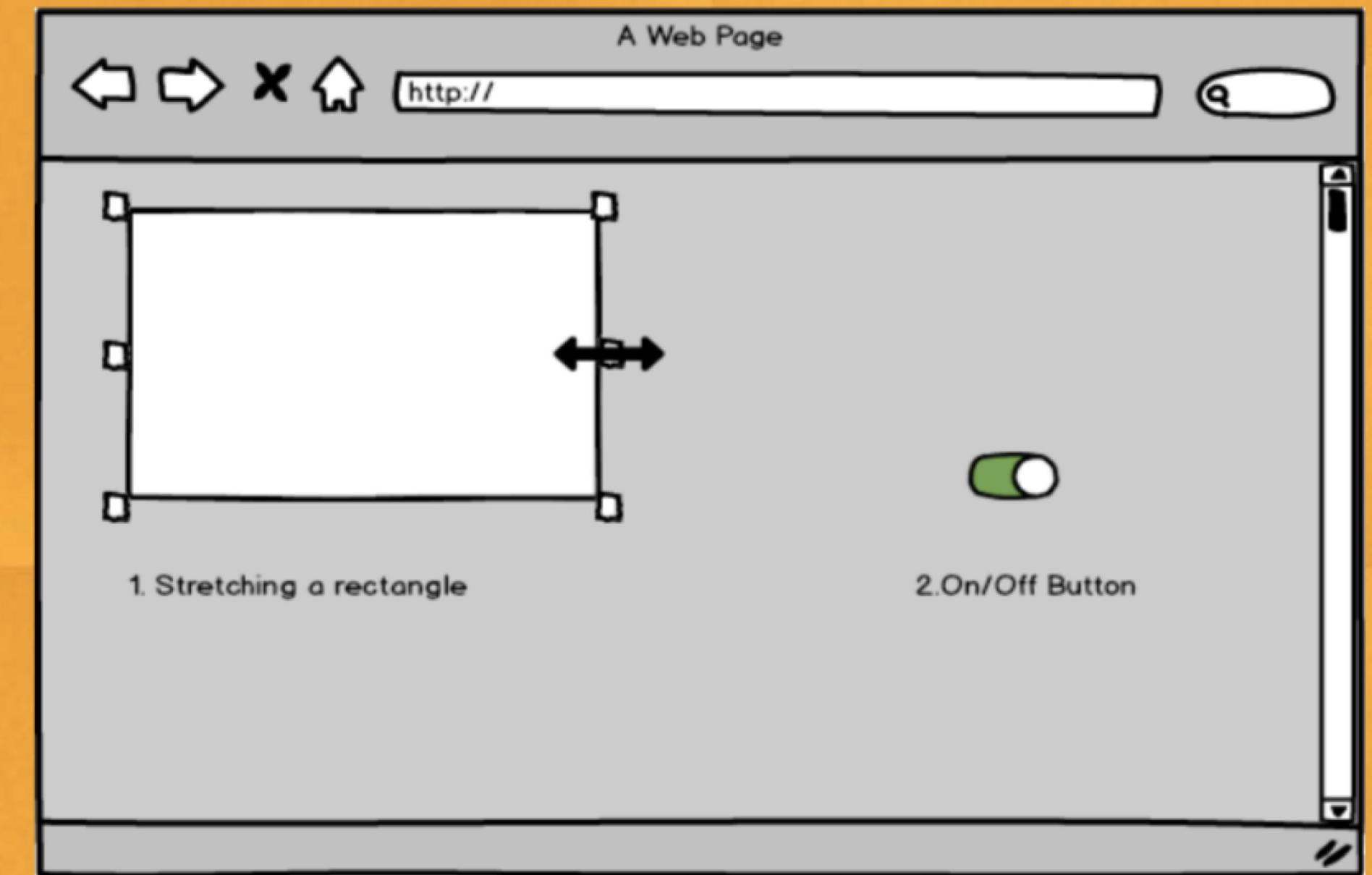
Submit



The user should not be aware of the operating system, file management functions, or other arcane computing technology.

1. Place the user in control

6. Design for direct interaction with objects that appear on the screen.



The user feels a sense of control when able to manipulate the objects that are necessary to perform a task in a manner similar to what would occur if the object were a physical thing.

Reduce the user's memory load

2. Reduce the User's Memory Load

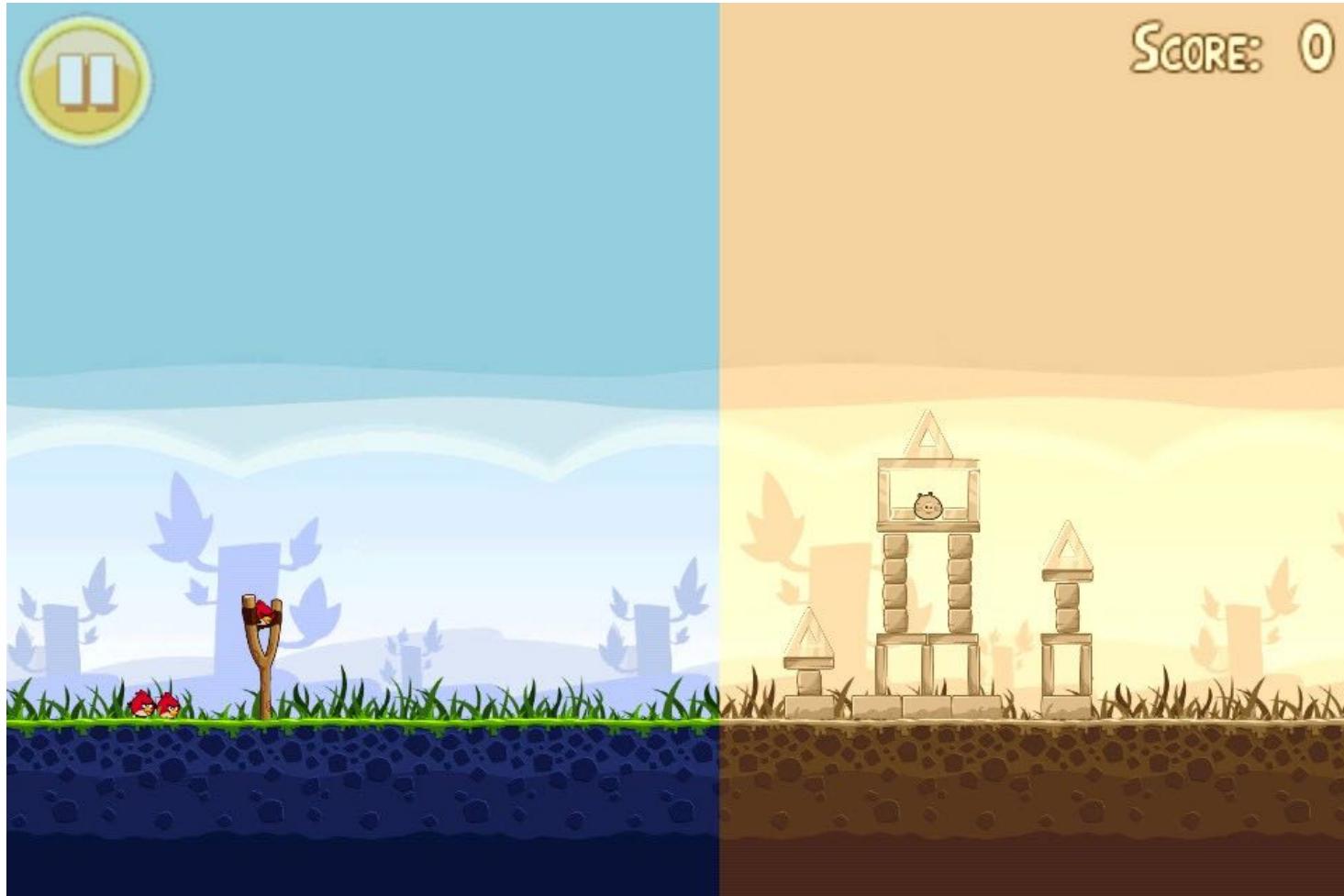
A software must not force a user to memorize anything. On the other hand, it should provide recall feature to provide data when it is needed storing it in its memory.





User Interface must be designed such that visual cues are provided to the user which helps him/her in reusing previous results etc.

Reduce short term memory load



Angry Birds – Zoom

2. Reduce the User's Memory Load

2. Establish meaningful defaults.

We guessed a few things to save you time.
Please double check them:

Street Address
123 Some Avenue ✓

State
Ohio ✓

Country
USA ✓

Please fill out the fields below:

Street Address

State
Choose ▾

Country
Choose ▾



The default values of such properties must be meaningful i.e. generally used.

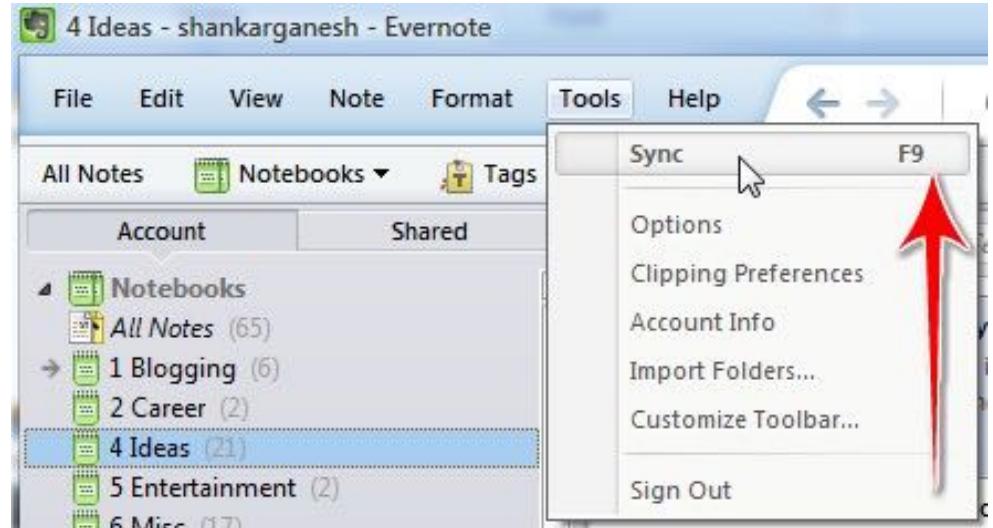
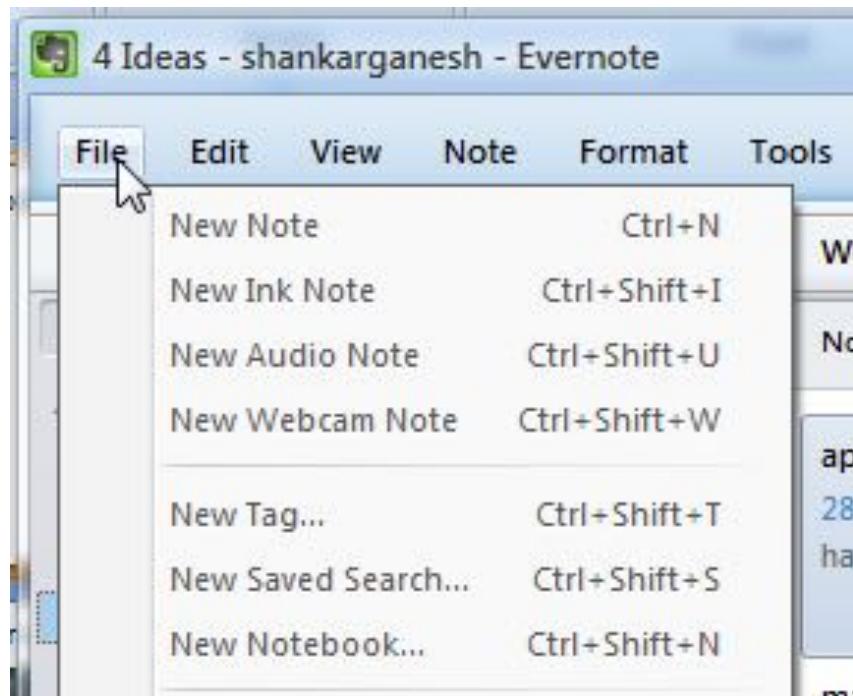


The user must be able to change the properties if he/she wants to. Also, user must be able to reset the properties to their default values.

2. Reduce the User's Memory Load

3. Define shortcuts that are intuitive.

Intuitive Shortcuts



Natural: Ctrl+S
Plain ridiculous: Fg

2. Reduce the User's Memory Load

4. The visual layout of the interface should be based on a real-world metaphor.



Real-world metaphor enables the user to rely on well-understood visual cues, rather than memorizing an arcane interaction sequence.



2. Reduce the User's Memory Load

4. Disclose information in a progressive fashion.



The Home Questionnaire

What type of home do you own?

House Apartment I sleep on the beach ✓

Great. Do you also like stargazing?

No Yes, of course

The Home Questionnaire

What type of home do you own?

House Apartment I sleep on the beach ✓

What are the exterior walls made of?

Brick Stone Hay

How many rooms do you have?

1 2 3

What is your address?



According to this principle, user interface must be such that general underline must be shown at low levels of abstractions and users can go to higher levels of abstraction by a mouse click etc.,.

Make the interface consistent

3. Make the Interface Consistent

This includes organization of visual information according to design rules common to all types of screens, defining and implementing mechanisms for navigation from task to task consistently etc.,.

3. Make the Interface Consistent

1. Allow the user to put the current task into a meaningful context.

[Home](#) > [User Info](#) > [Personal](#)[Log Out](#)

Came from

Where he is

Personal Information

Personal

Education

Relative

Other details

[Save](#)[Next](#)

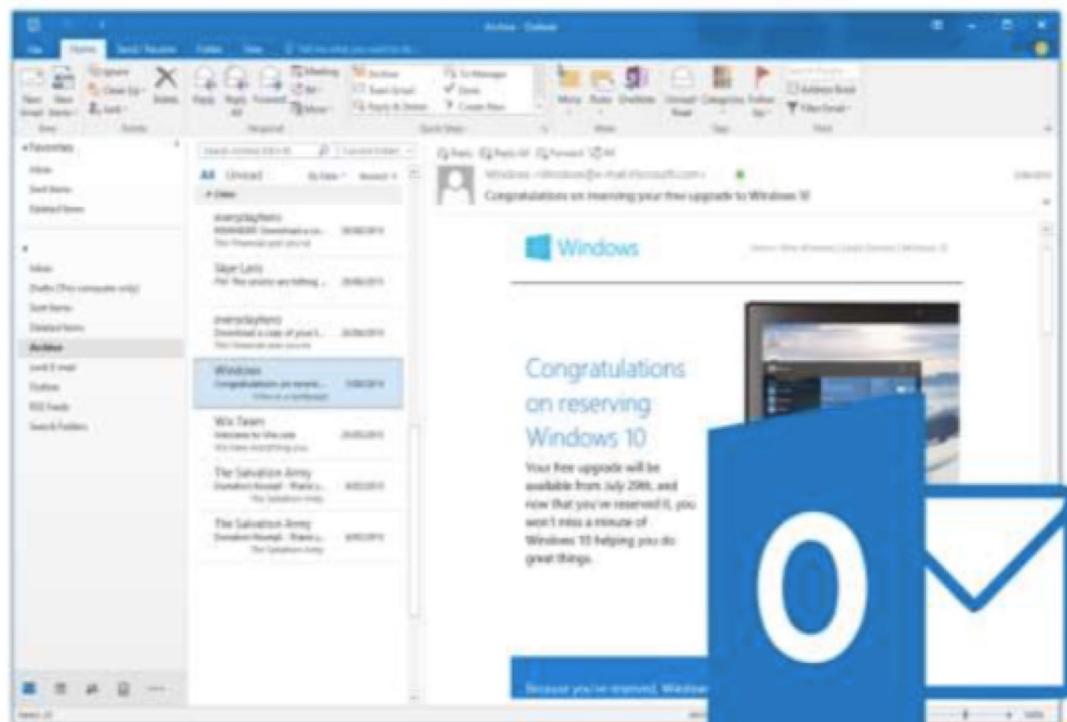
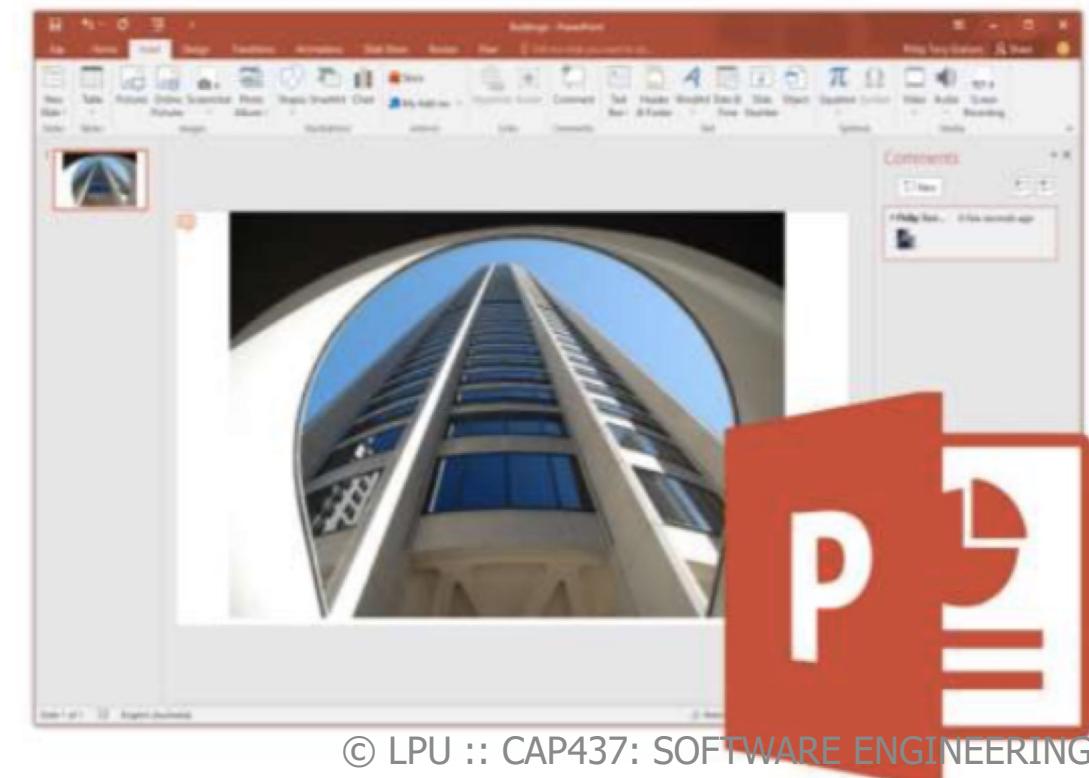
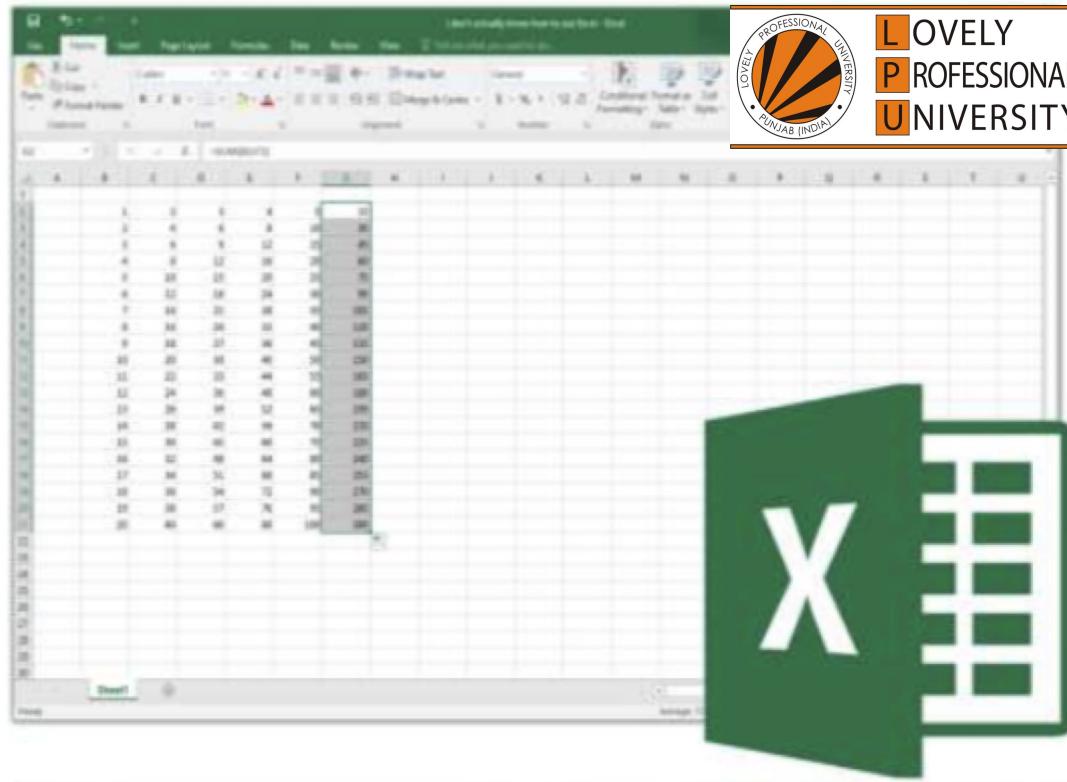
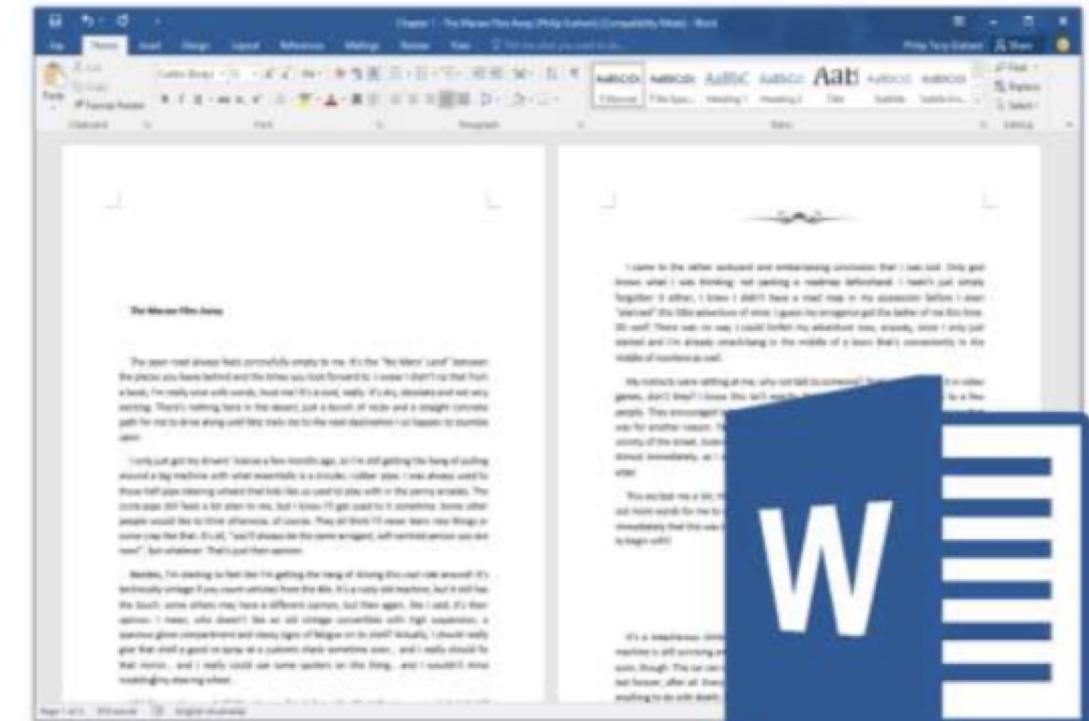
Can go to



The interface must be in a way that enables the users to know the context of the current task. So, there should be some indicators which say from which task did the user come here and to which task he/she can go from here.

3. Make the Interface Consistent

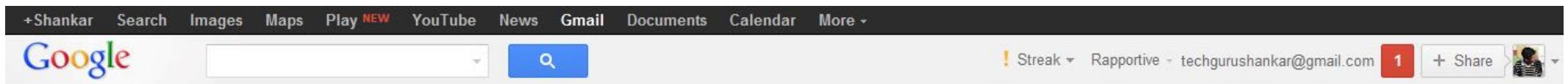
2. Maintain consistency across a complete product line.



3. Make the Interface Consistent

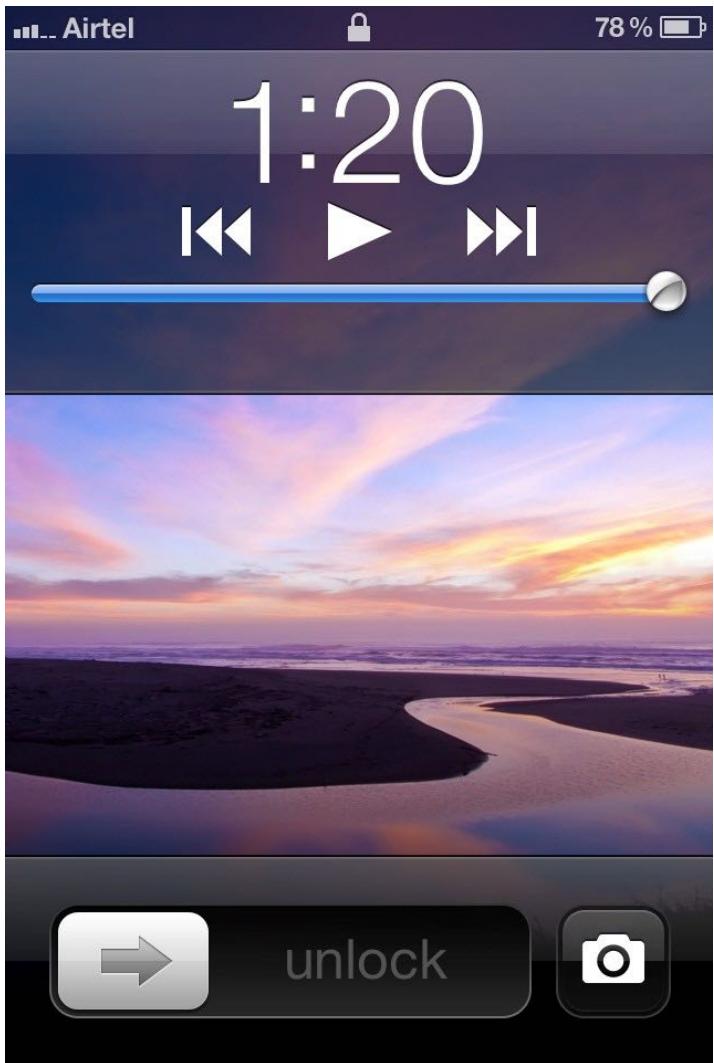
3. If past interactive models have created user expectations, do not make changes unless there is a compelling reason to do so.

Consistent Interface



Quick and easy access across all Google services

Changing Past User Expectations



iOS 5.0.1

(tap camera)

© LPU :: CAP437: SOFTWARE ENGINEERING PRACTICES : Ashwani Kumar Tewari



iOS 5.1

(swipe up camera)