

Golden Rules of User Experience Design

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Golden Rules of User Experience Design

Presentation goals

learn about the rules,

but more

importantly –

appreciate their
history

understand the
“**why**” (rationale)
behind the rules

Golden Rules

“Universal” and
“timeless” design
principles

apply to all software and
web design, regardless of
OS, device, browser, media,
industry, users, tasks, etc.



Jacob Nielsen (1990)



“The **principles** are so basic that even futuristic dialogue designs such as 3-D interfaces with DataGlove input devices, gesture recognition, and live video images will always have to take them into account as long as they are based on the basic paradigm of dialogues and user commands.”

Luke Wroblewski (2009)



“**Design principles** are the guiding light for any software application. They define and communicate key characteristics of the product to a wide variety of stakeholders, including clients, colleagues, and team members. Design principles articulate the fundamental goals that all decisions can be measured against and thereby keep the pieces of a project moving toward an integrated whole.”

Golden Rules

Outline

History

Purpose

Psychology & HCI

Golden rules

- User in control
- Reduce users' memory load
- Make the experience consistent

Guidelines & checklists

Golden Rules

History

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Guidelines & checklists



Golden Rules History

W.J. Hansen (1971)

**“User Engineering Principles
for Interactive Systems”**

AFIPS FJCC Vol. 39

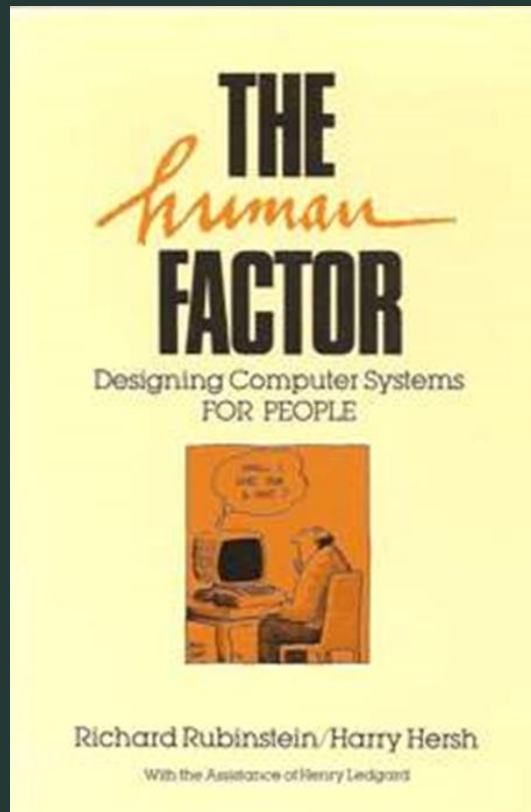
Hansen’s principles:

1. Know the user
2. Minimize memorization
3. Optimize operations
4. Engineer for errors

Golden Rules History

Rubinstein & Hersh (1984)

The Human Factor



Longest list, with 93 design principles:

1. Designers make myths
– users make conceptual models

...

...

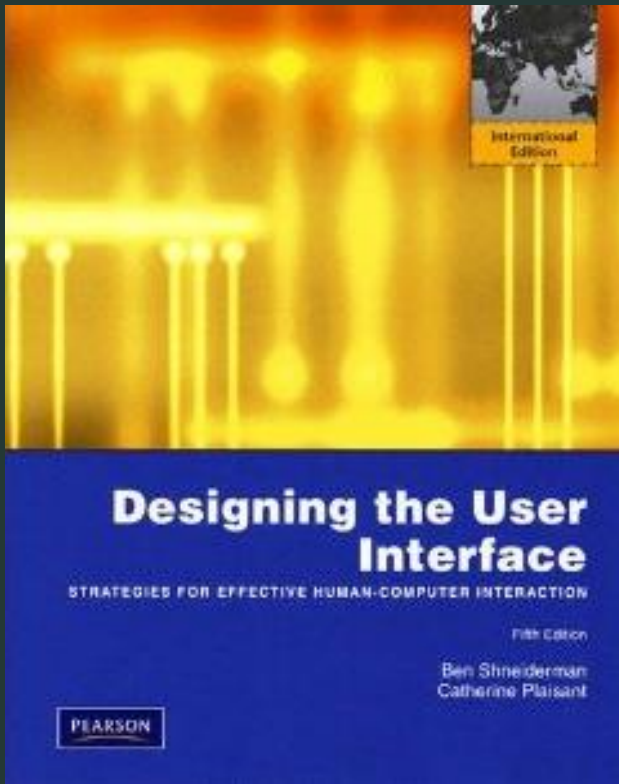
...

93. Videotape real users

Golden Rules History

Ben Shneiderman (1987)

Designing the User Interface
(1st edition, now 5th edition)



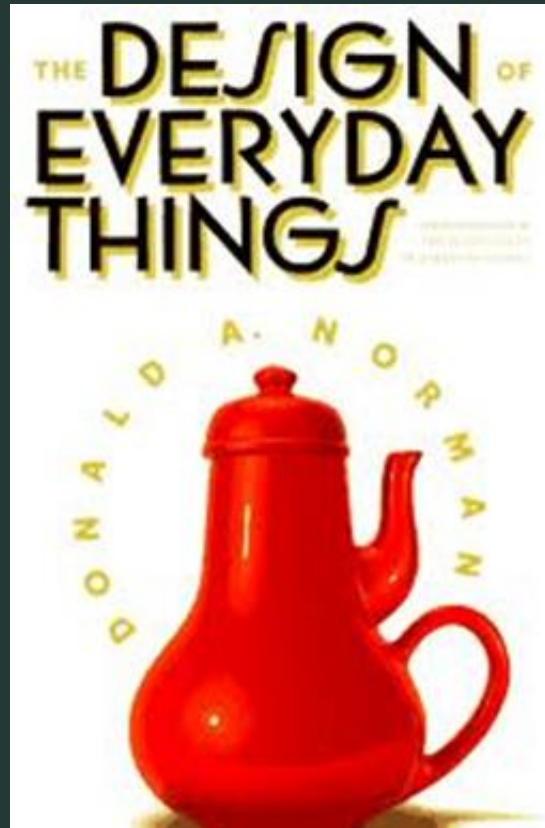
Defined the term
“Universal Usability”

1. Strive for consistency
2. Enable shortcuts
3. Informative feedback
4. Design to yield closure
5. Simple error handling
6. Easy reversal of actions
7. User in control
8. Reduce short-term memory load

Golden Rules History

Don Norman (1988)

The Design of Everyday Things



Six design principles:

1. Visibility
2. Feedback
3. Constraints
4. Mapping
5. Consistency
- 6. Affordance**









PUSH

PUSH

Golden Rules History

1990's – Golden Era of Mac
and PC Software Design



**Apple Human Interface
Guidelines** (Apple, 1992)

**Object-Oriented Interface
Design: IBM Common User
Access Guidelines** (IBM, 1992)

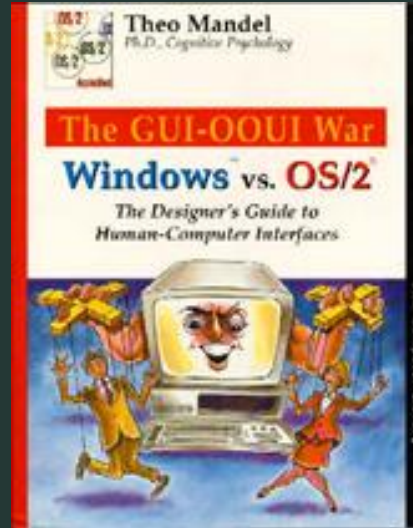
OSF/Motif Style Guide
(Open Software Foundation, 1992)

**Windows Interface
Guidelines for Software
Design** (Microsoft, 1995)

Golden Rules History

Mandel (1994)

Windows vs. OS/2:
The GUI-OOUI War
(Golden rules chapter)

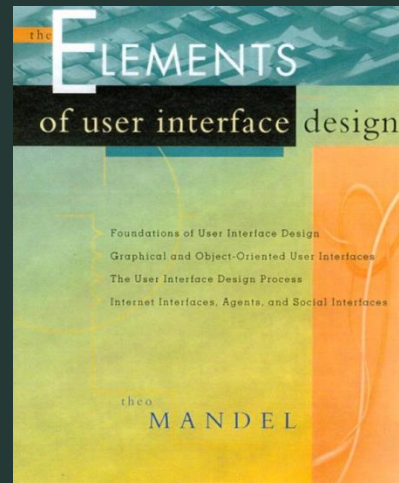


Overview & discussion
of golden rules in the
90's

Groundwork for this
presentation

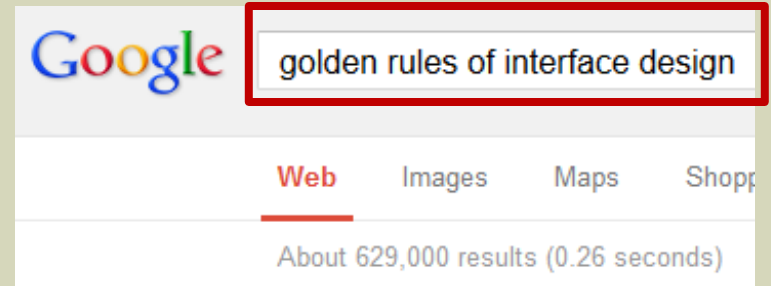
Mandel (1997)

The Elements of
User Interface Design
(Golden rules chapter)

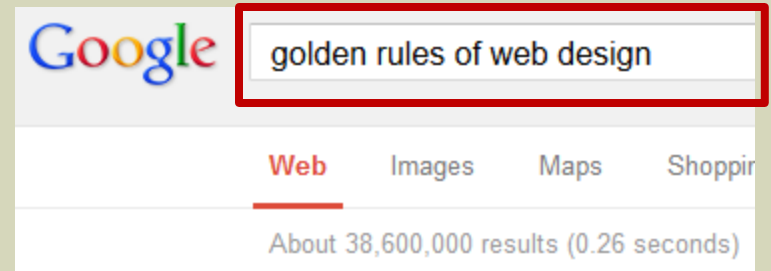


Golden Rules History

Looking for references
to golden rules today?



> 600,000 results



> 38.5 million results

Golden Rules

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Guidelines & checklists



Purpose of golden rules



Purpose of golden rules

Your users feel the pain when you break the rules (**poor design**)

People have basic life expectations and also expectations about the software and websites they use (**users' mental models**)

Purpose of golden rules

“Before you buy software, make sure it believes in the same things you do. Whether you realize it or not, software comes with a **set of beliefs built in.** Before you choose software, make sure **it shares yours.**”

PeopleSoft Advertisement (1996)

Golden Rules

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Psychology & HCI

The Psychology of Human-Computer Interaction

STUART K. CARD
THOMAS P. MORAN
ALLEN NEWELL

1986

 CRC Press
Taylor & Francis Group

Design principles are grounded in psychology and HCI:

cognition

memory

perception

attention

learning

social psychology

etc.

Psychology & HCI

Jeff Sauro

5 HCI laws for UX design (2013)

measuringusability.com

Miller's law of STM

Fitts' law

Hick-Hyman law

Power law of practice

Pareto principle

Zipf law

Psychology & HCI

Miller's law of STM

Fitts' law

Hick-Hyman law

Power law of practice

Pareto principle

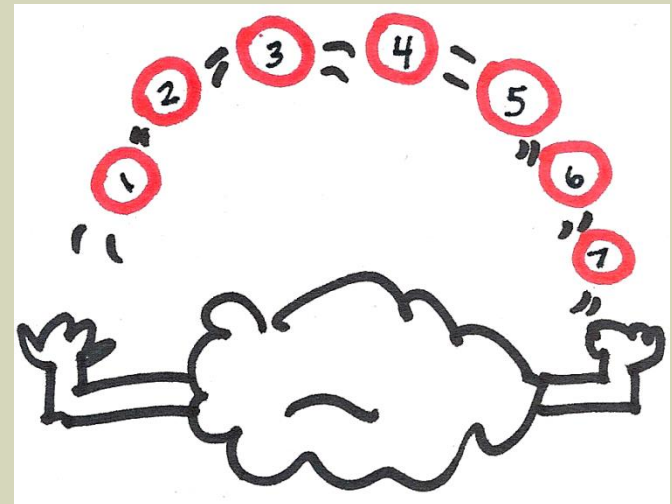
Zipf law

Magic Number 7+/- 2

Most people can hold approximately seven pieces of information in short term memory at once. For example, most people can remember a random 7-digit phone number.

More information can be stored by chunking information into meaningful groups. Also, to hold information in memory, you must focus on rehearsing it.

Often misused in UX design!!!



Psychology & HCI

Miller's law of STM

Fitts' law

Hick-Hyman law

Power law of practice

Pareto principle

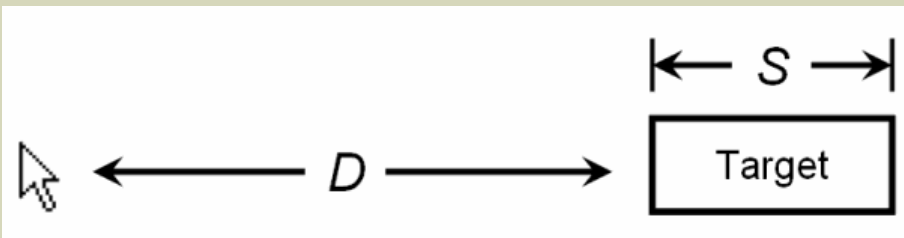
Zipf law

Rule of Target Size

Mathematically predicts how long it will take to "acquire" a target based on its distance and size.

It takes users longer to point to links and buttons on a screen if the objects are smaller in size or farther away from the home position. This also causes more selection errors.

The size of a button should be proportional to its expected frequency of use.



Psychology & HCI

Miller's law of STM

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Hick-Hyman law

Power law of practice

Pareto principle

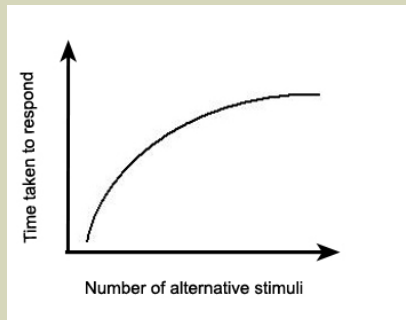
Zipf law

Rule of Large Menus

Time it takes to make a decision based on the number of choices available.

People subdivide a total collection of choices into categories, eliminating about half the remaining choices at each step, rather than considering each and every choice one-by-one (takes linear time).

Example – to find a given word in a randomly ordered word list (menu), scanning each word in the list is required, consuming linear time, so Hick's law does not apply. However, if the list is alphabetical and the user knows the name of the command, he or she may be able to use a subdividing strategy that works in logarithmic time.



Psychology & HCI

Miller's law of STM

Fitts' law

Hick-Hyman law

Power law of practice

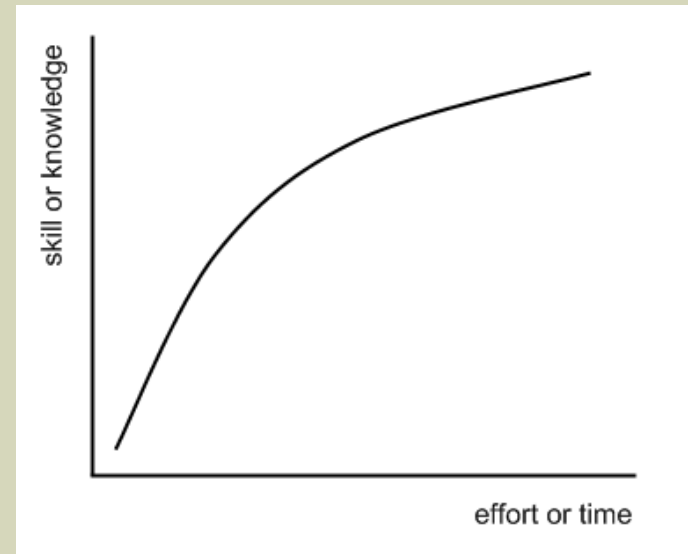
Pareto principle

Zipf law

Famous “Learning Curve”

Time to complete a task decreases linearly with the number of practice trials taken when both are expressed as logarithms.

If you know nothing about a topic, you can learn 50% of the information quickly. But when you have 50% less to learn, it takes more time to learn that final 50%.



Psychology & HCI

Miller's law of STM

Fitts' law

Hick-Hyman law

Power law of practice

Pareto principle

Zipf law

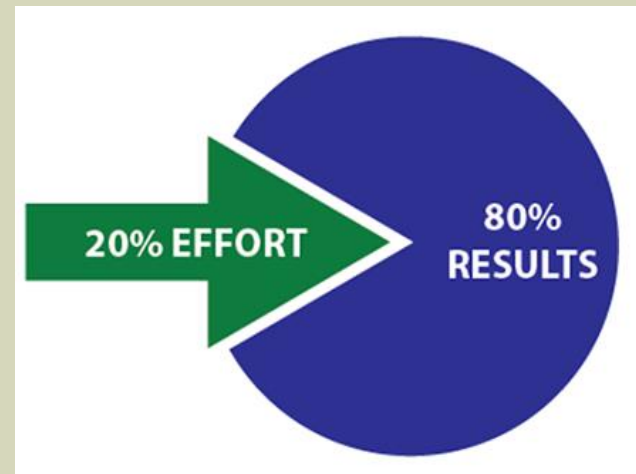
80/20 Rule

In 1906, the Italian economist observed that wealth was unequally distributed in Italy – 80% of land and wealth was owned by 20% of people.

Examples:

Microsoft noted that by fixing the top 20% of reported bugs, 80% of errors would be eliminated.

Also, 80% of Microsoft Office users typically only use 20% of the product functionality.



Psychology & HCI

Miller's law of STM

Fitts' law

Hick-Hyman law

Power law of practice

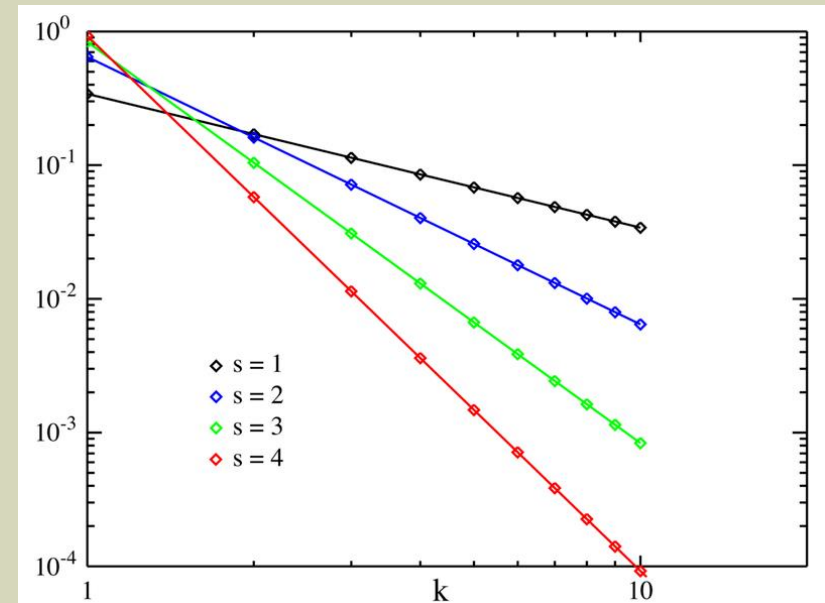
Pareto principle

Zipf law

Rule of Ranking Frequency

American linguist found the most frequent word will occur approximately twice as often as the second most frequent word, three times as often as the third most frequent word, and so on.

Also applies to many other rankings (population, income, corp. size, etc.)



Golden Rules

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Golden rules

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Golden rules – 3 major categories

Place users in control (10)

Reduce users' memory load (9)

Make the experience consistent (5)

Golden Rules

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- **Place users in control**
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Users in control

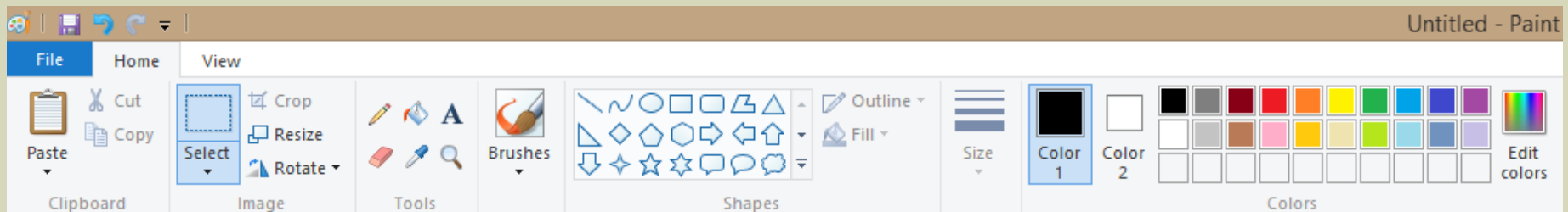
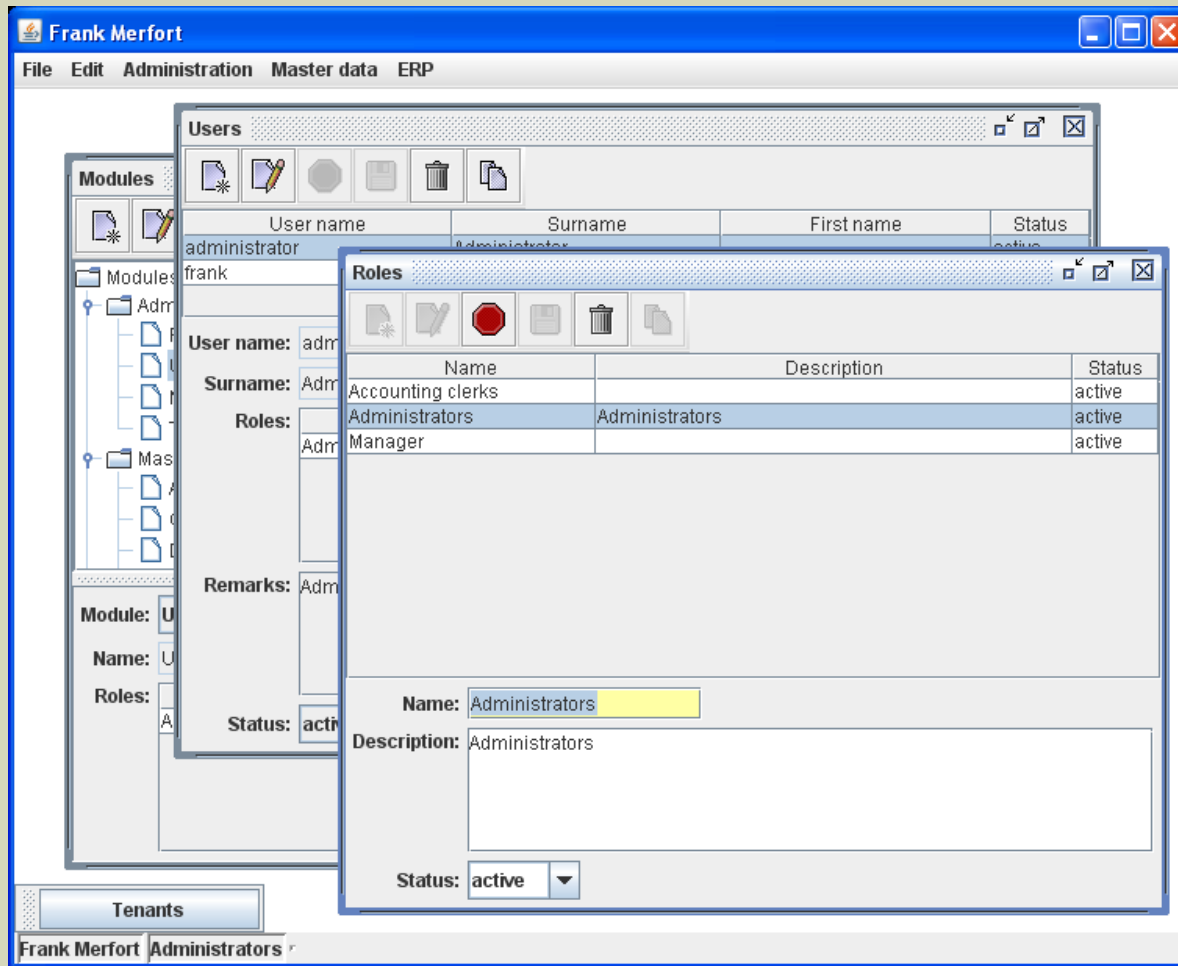
Most of the time, users would rather be in control
(**drive a car**)
than be a passenger
(**be on a plane**)

However, being in control may require a certain amount of skill and knowledge

Sometimes it is better to be a passenger (novice users, complex tasks, etc.)



Use modes judiciously (Modeless)



Use appropriate interaction techniques (Flexible)



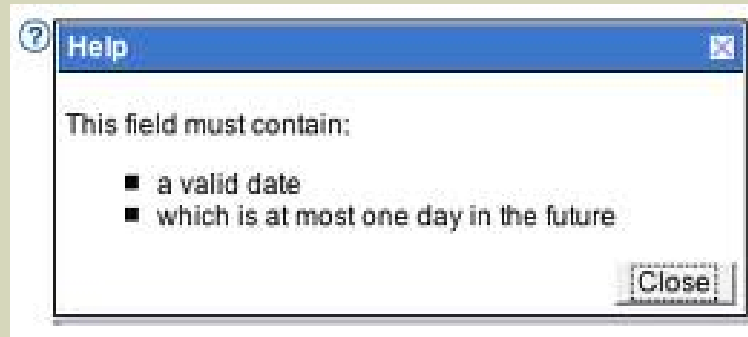
Use appropriate interaction techniques (Flexible)



Allow users to change focus (Interruptible)



Display descriptive information (Helpful)



Registration

Create your account to edit pages on this site.

Fields marked * are required

* First name

* Last name

* Wiki name

* Email address

* Your password

* Confirm password

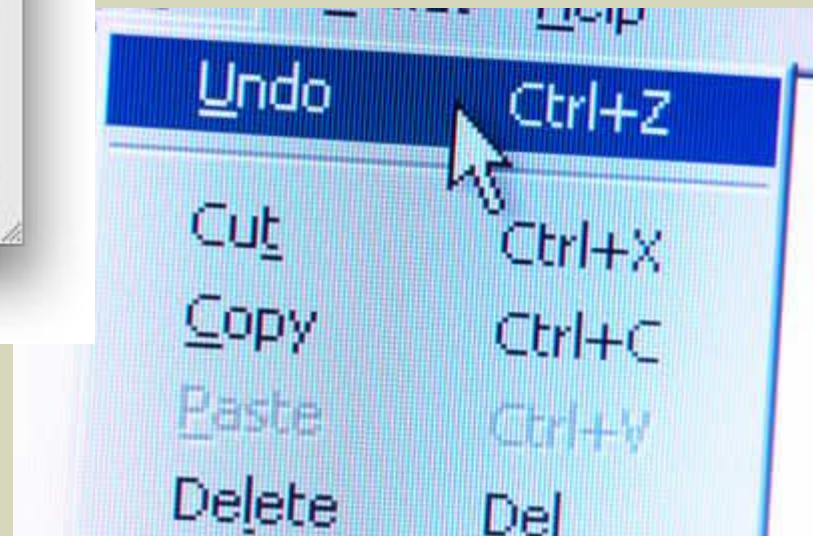
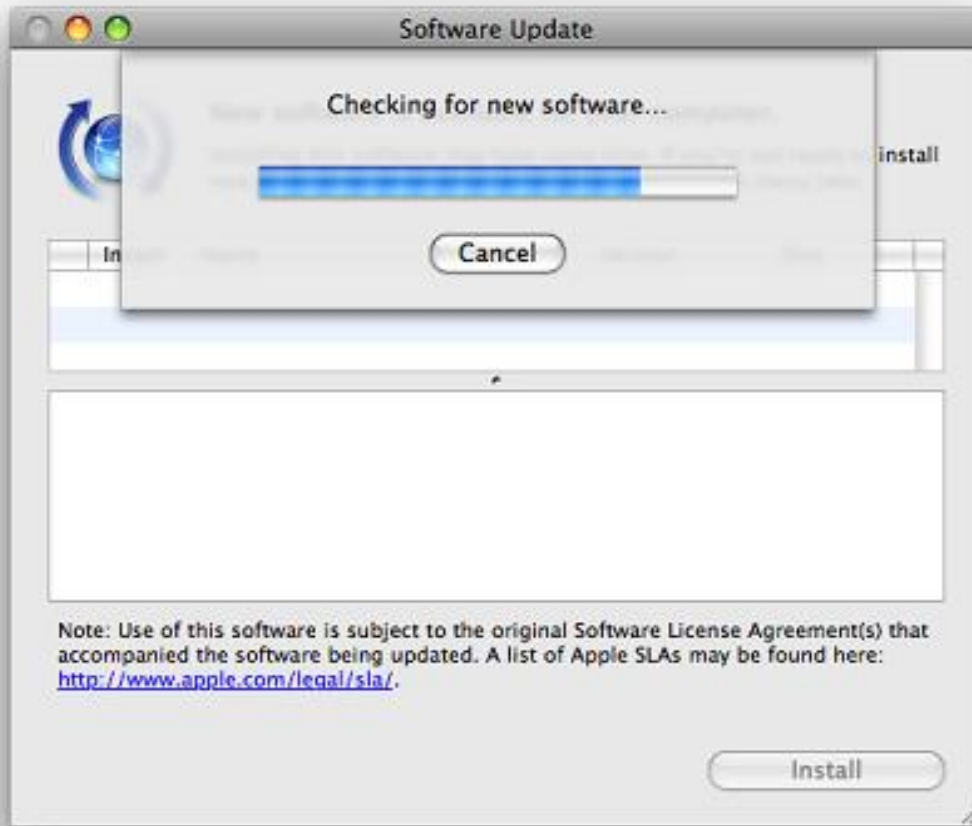
⊗ This Wiki name is already in use
Your name as displayed online. This must be a unique [Wiki name](#).

⊗ Please enter a valid email address
Your email address will be kept confidential.

⊗ Please confirm your password

Register

Provide immediate and reversible actions, and feedback (Forgiving)



Provide meaningful paths and exits (Navigable)

Christopher Alexander (UC Berkeley)

famous architect, noted for his design theories and for more than 200 building projects around the world.

Alexander is the father of “pattern language” (1977)

www.patternlanguage.com

“Users know more about the architecture they need than any architect could.”

Provide meaningful paths and exits (Navigable)



Provide meaningful paths and exits (Navigable)



Provide meaningful paths and exits (Navigable)



Provide meaningful paths and exits (Navigable)



Provide meaningful paths and exits (Navigable)



Provide meaningful paths and exits (Navigable)



Paths

Exits



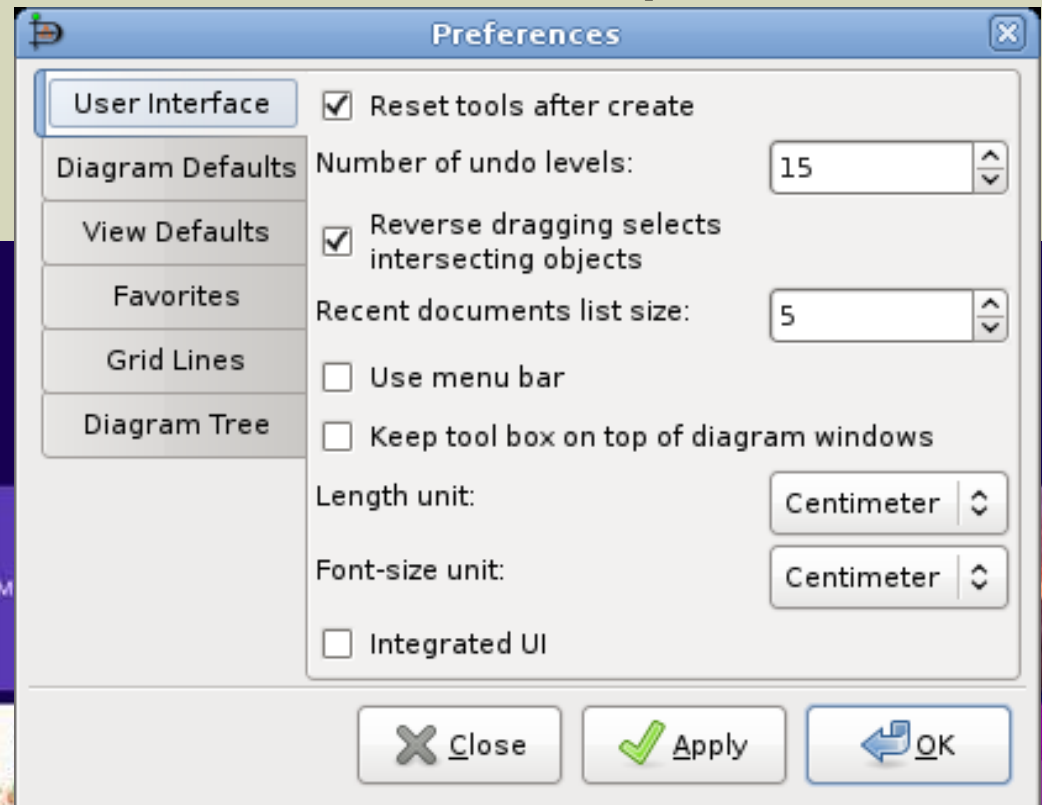
Accommodate different skill levels (Accessible)



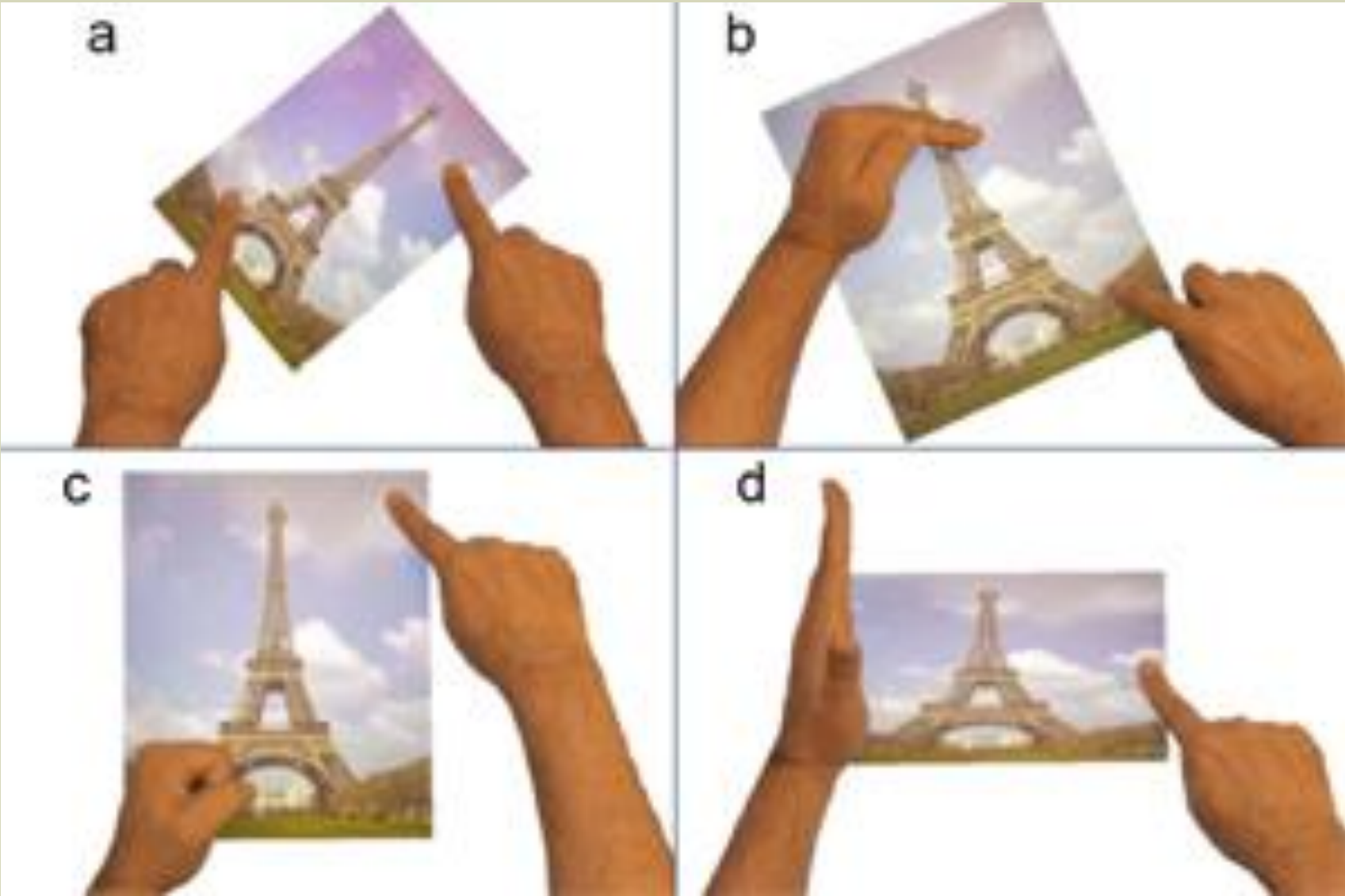
Make the interface transparent (Facilitative)



Allow users to customize the interface (Preferences)



Allow objects to be directly manipulated (Interactive)



Golden Rules

History

Purpose

Psychology & HCI

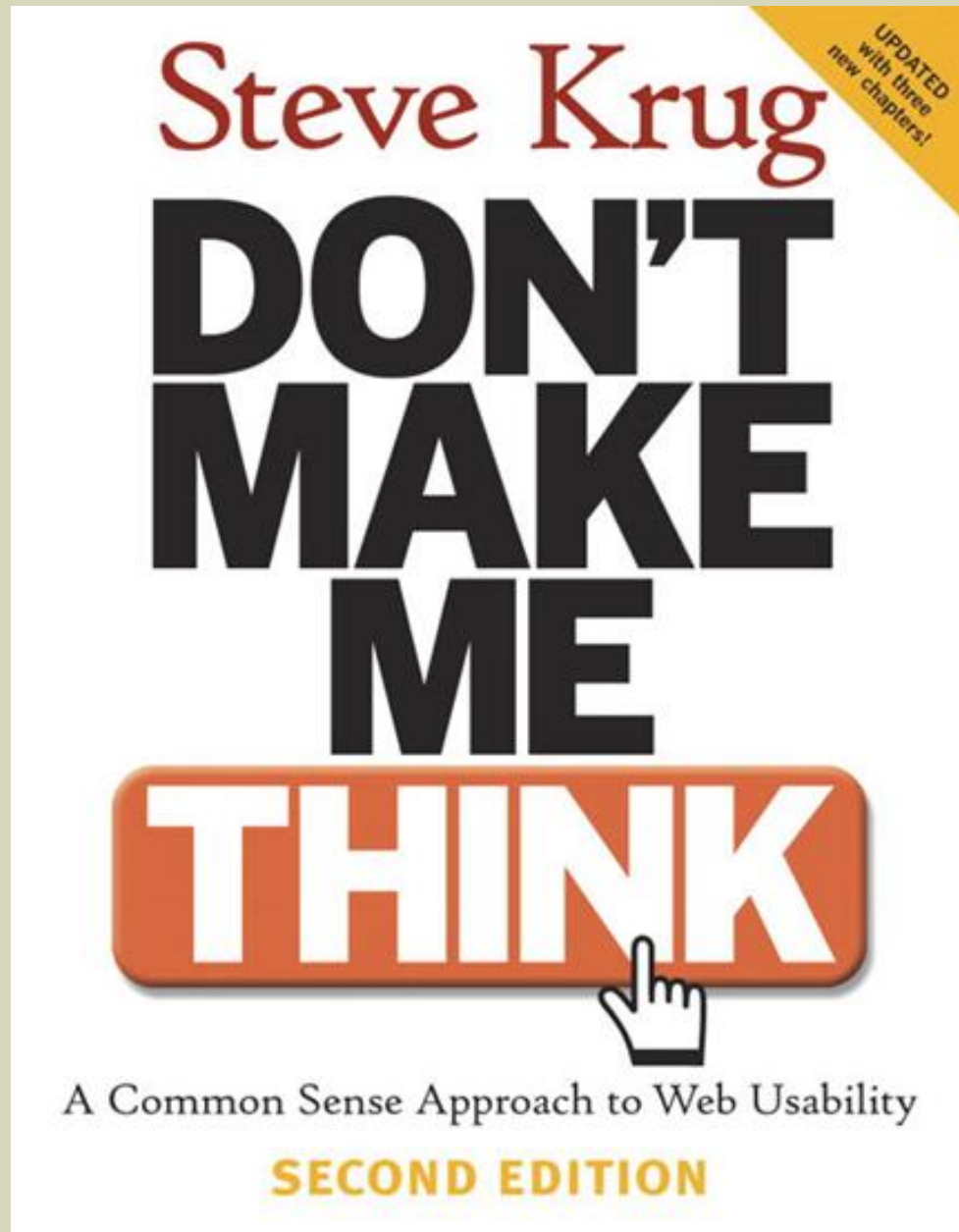
Golden rules

- Place users in control
- **Reduce users' memory load**
- Make the experience consistent

Guidelines & checklists



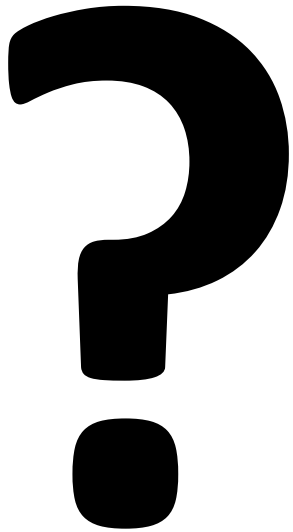
Reduce users' memory load



Relieve short-term memory (Remember)

<u>U</u> ndo	Ctrl+Z
Cu <u>t</u>	Ctrl+X
<u>C</u> opy	Ctrl+C
<u>P</u> aste	Ctrl+V
De <u>l</u> ete	Del
<u>F</u> ind...	Ctrl+F
Find <u>N</u> ext	F3
<u>R</u> eplace...	Ctrl+H
<u>G</u> o To...	Ctrl+G
Select <u>A</u> ll	Ctrl+A
Time/ <u>D</u> ate	F5

Relieve short-term memory (Remember)



Relieve short-term memory (Remember)

<u>U</u> ndo	Ctrl+Z
C <u>u</u> t	Ctrl+X
<u>C</u> opy	Ctrl+C
<u>P</u> aste	Ctrl+V
D <u>e</u> lete	Del
<u>F</u> ind...	Ctrl+F
Find <u>N</u> ext	F3
<u>R</u> eplace...	Ctrl+H
<u>G</u> o To...	Ctrl+G
Select <u>A</u> ll	Ctrl+A
Time/ <u>D</u> ate	F5



<u>U</u> ndo	Ctrl+Z
C <u>u</u> t	Ctrl+X
<u>C</u> opy	Ctrl+C
<u>P</u> aste	Ctrl+V
D <u>e</u> lete	Del
<u>F</u> ind...	Ctrl+F
Find <u>N</u> ext	F3
<u>R</u> eplace...	Ctrl+H
<u>G</u> o To...	Ctrl+G
Select <u>A</u> ll	Ctrl+A
Time/ <u>D</u> ate	F5

Relieve short-term memory (Remember)

Your order is not finished until you click on 'REVIEW ORDER' at the bottom of this page.

Credit Card Billing Address

* Required Fields

* First Name :

* Last Name :

Company Name :

* Address 1 :

Address 2 :

Suite :

* City :

* Country : ▼

* State/Province : ▼

* Zip Code :

* Phone : ?

* E-Mail Address : ?

Shipping Address

Ship to my billing address
 Ship to a different address

* First Name :

* Last Name :

Company Name :

* Address 1 :

Address 2 :

Suite :

* City :

* Country : ▼

* State/Province : ▼

* Zip Code :

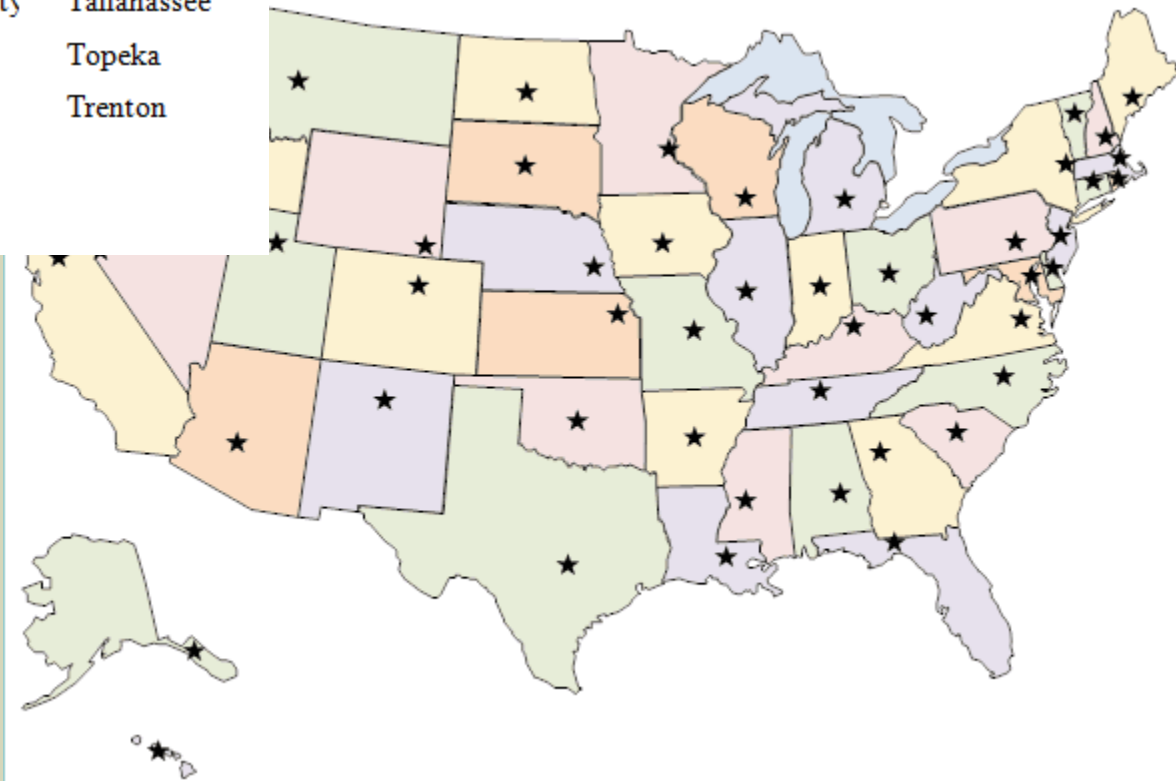
* Phone :

* E-Mail Address :

Rely on recognition, not recall (Recognition)

Albany	Columbus	Juneau	Raleigh
Annapolis	Concord	Lansing	Richmond
Atlanta	Denver	Lincoln	Sacramento
Augusta	Des Moines	Little Rock	Salem
Austin	Dover	Madison	Salt Lake City
Baton Rouge	Frankfort	Montgomery	Santa Fe
Bismarck	Harrisburg	Montpelier	Springfield
Boise	Hartford	Nashville	St. Paul
Boston	Helena	Oklahoma City	Tallahassee
Carson City	Honolulu	Olympia	Topeka
Charleston	Indianapolis	Phoenix	Trenton
Cheyenne	Jackson	Pierre	
Columbia	Jefferson City	Providence	

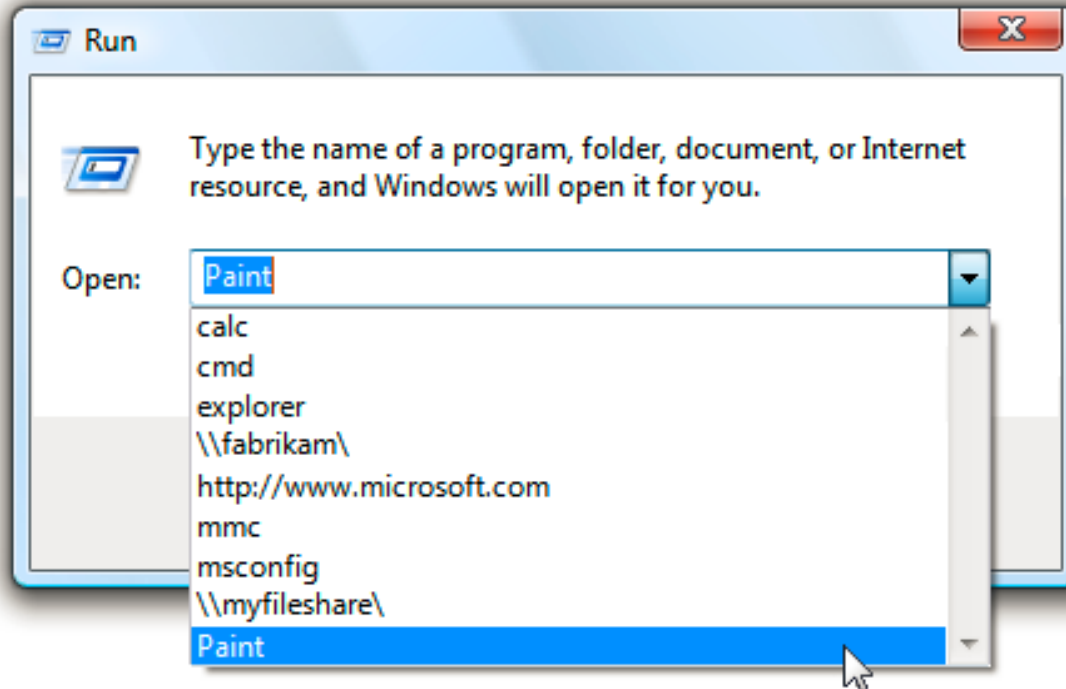
Recognition



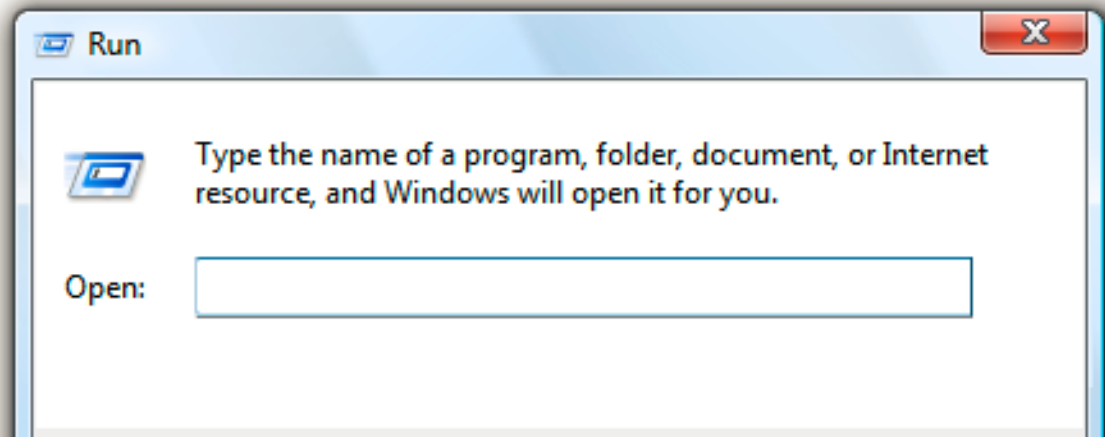
Recall

Rely on recognition, not recall (Recognition)

Recognition



Recall



Provide visual cues (Inform)

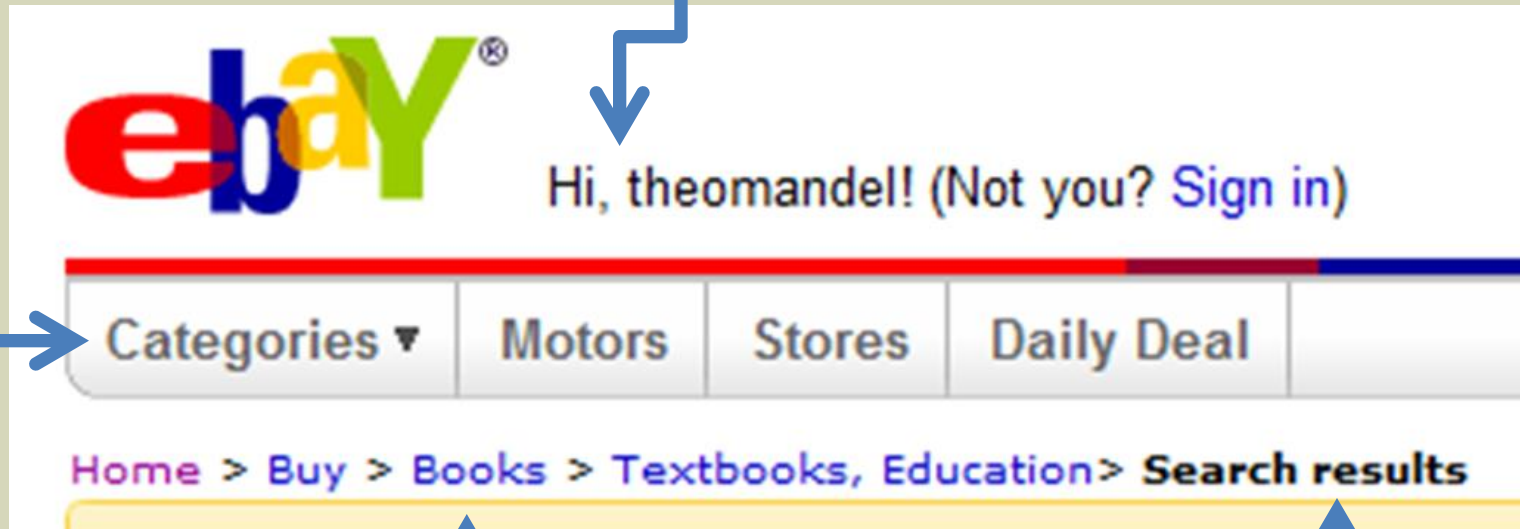


Provide visual cues (Inform)

Users should always know four things:

Who I am (Login info)

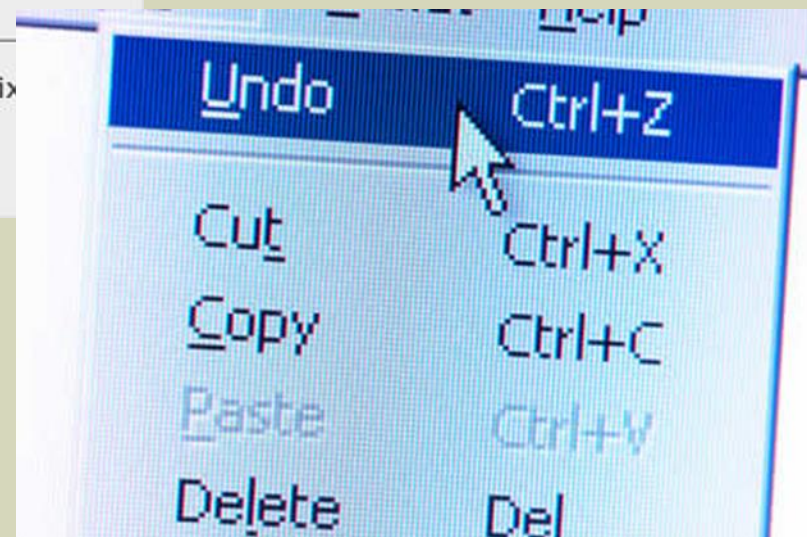
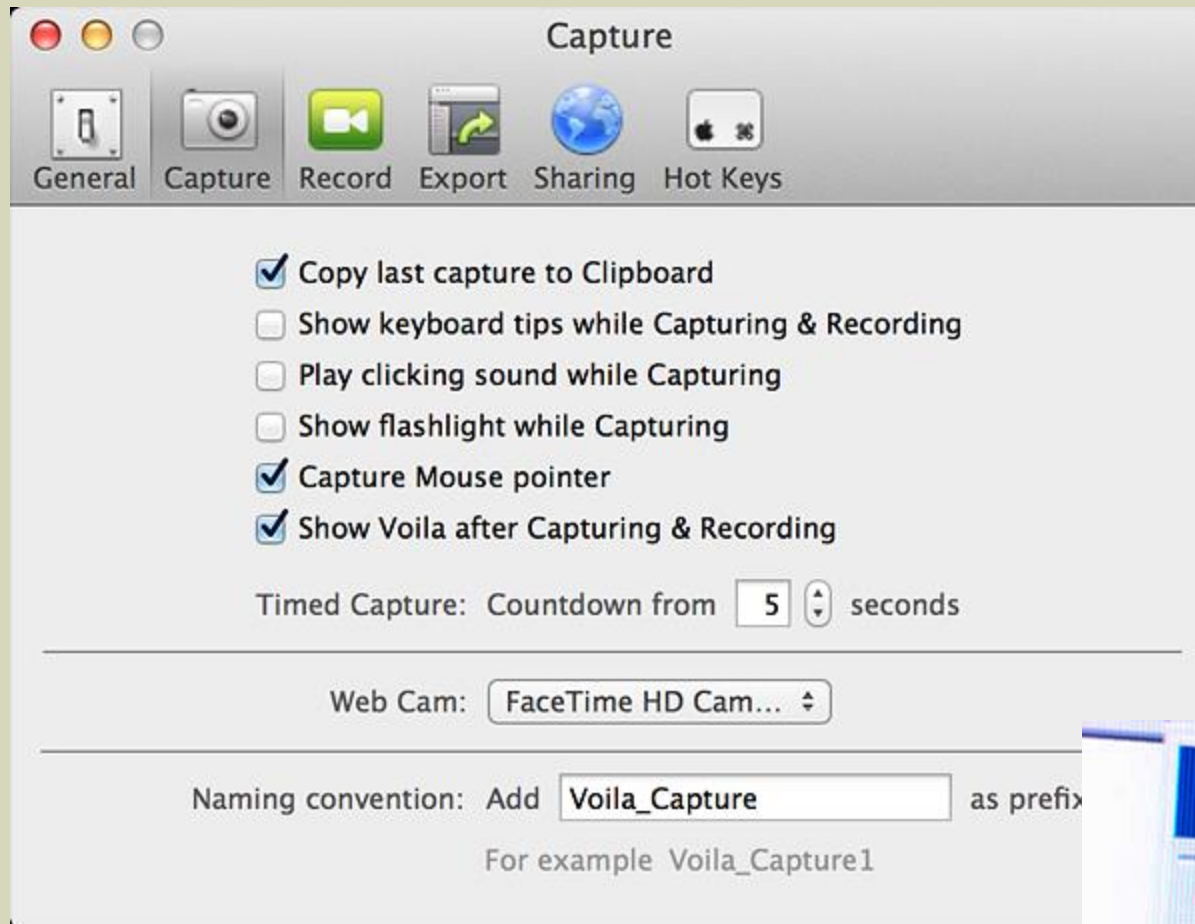
Where I can go



Where I've been

Where I am

Provide defaults, undo and redo (Forgiving)



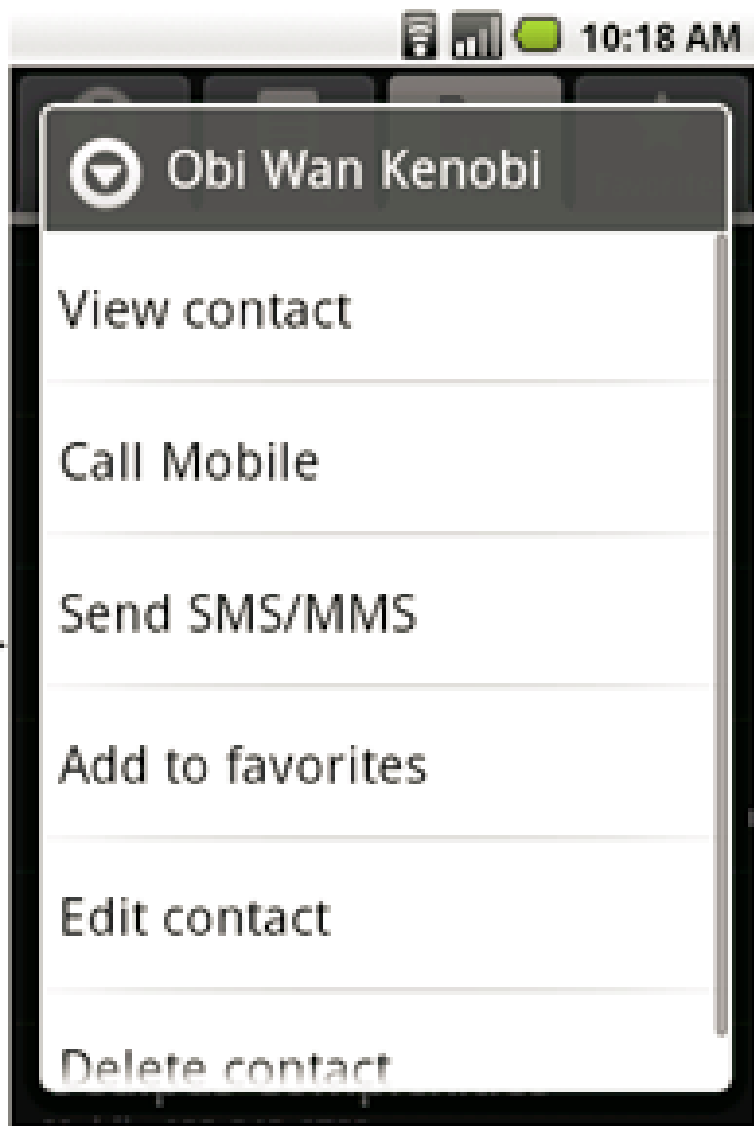
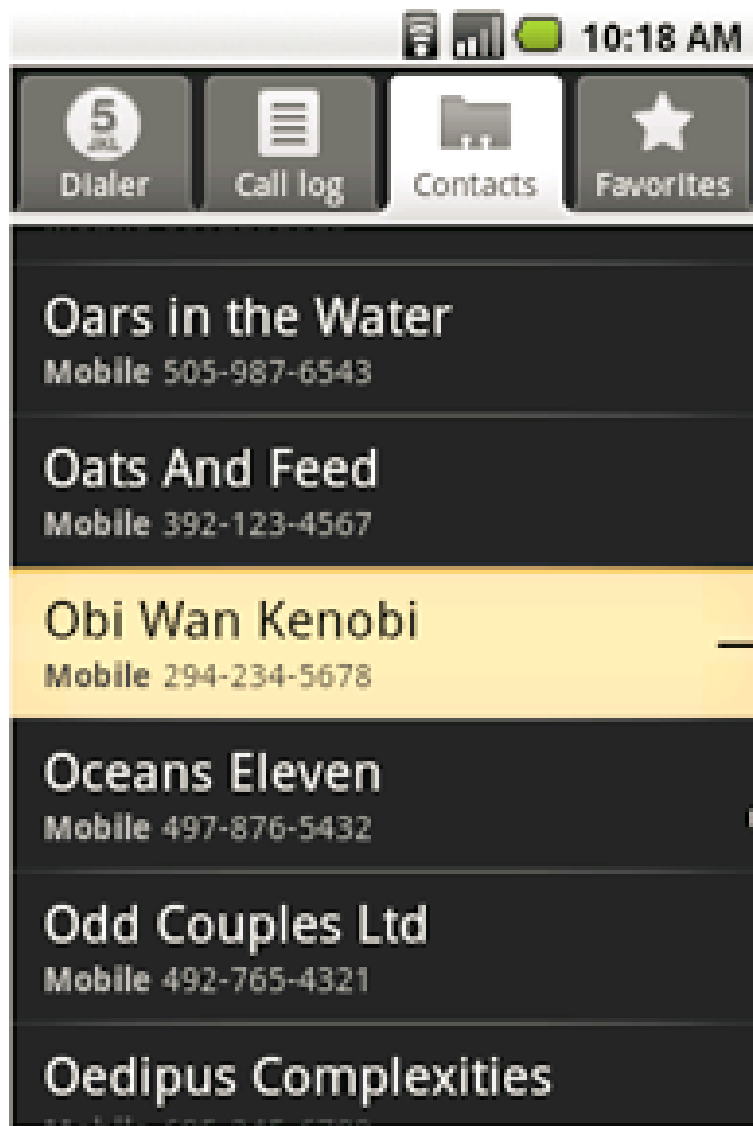
Provide interface shortcuts (Frequency)

Align	▶
Convert	▶
Move Selection	▶
Shift Left	⌘[
Shift Right	⌘]
Indent Line	⌘⌘[
Edit Each Line in Selection	⌘⌘A
Reformat Paragraph	^Q
Reformat and Justify	^J
Unwrap Paragraph	^⌘Q
Execute Line Inserting Result	^R
Filter Through Command...	⌘⌘R



ADDING SCREENS	SHORTCUT
Adding Elements	
Quick Add in Place (Default Size)	⌘+Click
Quick Add in Place (Size to Drawn Box)	⌘+Drag
Positioning Elements	
Override Layout Snapping Suggestions (Freehand)	Drag+⌘
Resize Proportionally/Snap to Axes or Angles	Drag + ⌘
Bring to Front/Send to Back	⌘⌘Up/Down

Promote an object-action syntax (Intuitive)



Use real-world metaphors (Transfer)



Utilize progressive disclosure (Context)

My Favorite Wife
★★★★☆
Not Interested

After a man's wife has gone seven years missing at sea (and is long believed dead), she suddenly shows up on the very day he's about to marry wife No. 2! Cary Grant stars as the beleaguered husband, ... [More](#)

Add	In a Lonely Place (1950)	NR	★★★★☆
Add	In Which We Serve (1942)	UR	★★★★☆
Add	The Last of the Mohicans (1920)		
Add	Laurence Olivier Hamlet (1948)	Hamlet	
Add	The Lavender Hill Mob (1951)		
Add	A Letter to Three Wives (1949)		
Add	Mame (1974)		
Add	Moulin Rouge (2001)		
Add	Murder, My Sweet (1944)		
Add	My Favorite Wife (1940)		
Add	Pygmalion (1938)		

The Lavender Hill Mob (1951)

Mr. Holland (Alec Guinness) has supervised his bank's bullion run for years. He's fussy and unnecessarily overprotective, but everyone knows he's absolutely trustworthy. And so, on the day the bullion truck is robbed, he's the last person to be suspected. But there's another side to Mr. Holland – he's also "Dutch," the leader of the titular mob. Ealing Studios writer T.E.B. Clarke won an Oscar for Best Screenplay. Stanley Holloway co-stars.

Starring: Alec Guinness, Stanley Holloway
Director: Charles Crichton
Genre: Classics
MPAA: NR

★★★★★ **4.0** Our best guess for Jane
★★★☆☆ **3.7** Customer Average

★ Recommended based on 32 ratings



Utilize progressive disclosure (Context)

Yahoo! Sports - Tennis News

- ▶ [APNewsBreak: US Open tennis prizes to \\$50M by '17 \(Yahoo! Sports\)](#)
- ▶ [Sharapova wants to stay on winning path at Sony \(Yahoo! Sports\)](#)
- ▶ [Nadal and Sharapova win Indian Wells titles \(Yahoo! Sports\)](#)

Yahoo! Sports - Tennis News

- ▶ [APNewsBreak: US Open tennis prizes to \\$50M by '17 \(Yahoo! Sports\)](#)
- ▼ [Sharapova wants to stay on winning path at Sony \(Yahoo! Sports\)](#)



KEY BISCAWAYNE, Fla. (AP) -- Third-seeded Maria Sharapova is hoping she can keep her winning ways intact from the BNP Paribas Open last week to the Sony Open this week.

+1 0

- ▶ [Nadal and Sharapova win Indian Wells titles \(Yahoo! Sports\)](#)

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Sharapova wants to stay on winning path at Sony

The Associated Press -- 7 hours ago

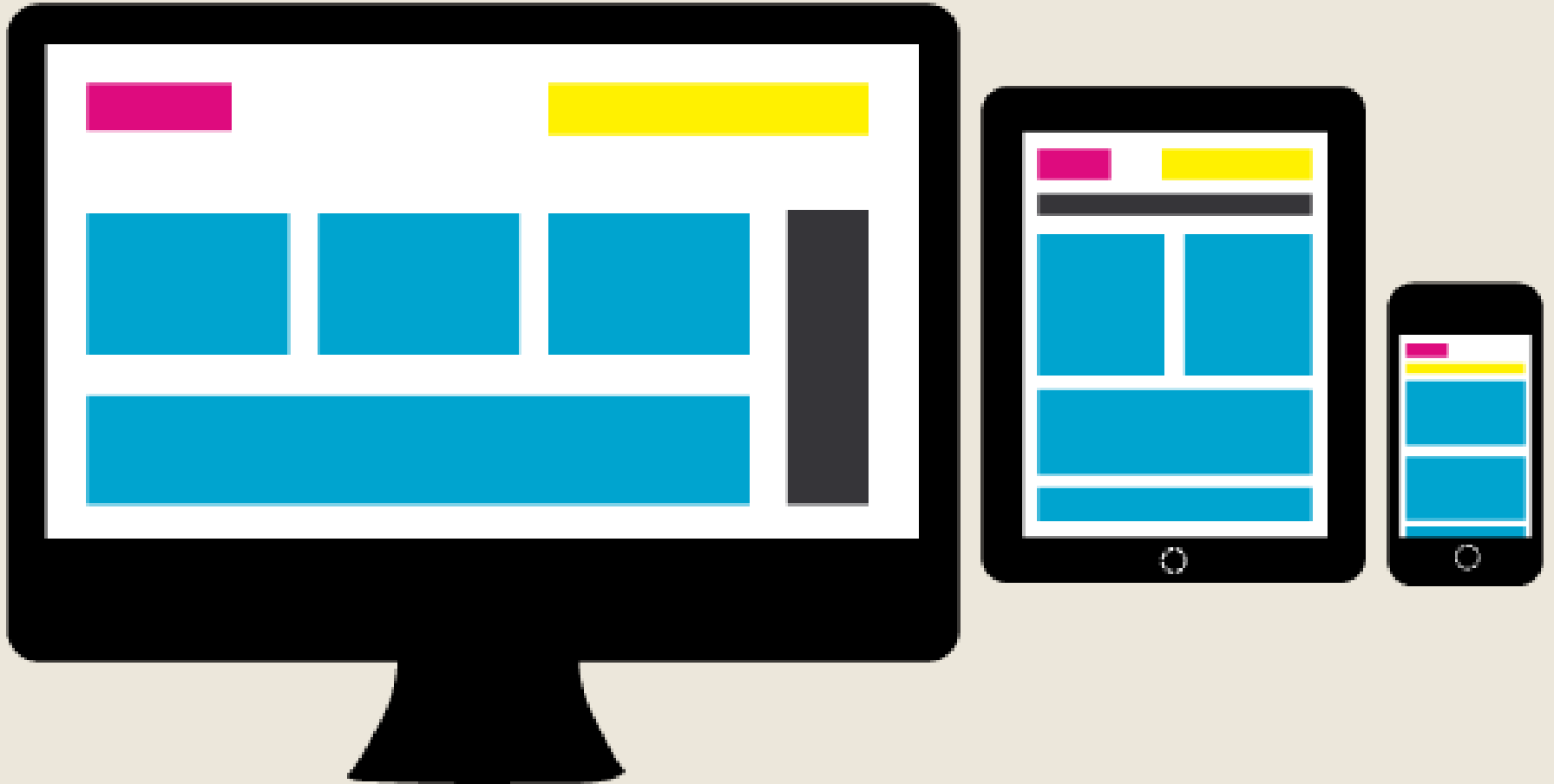
Email Recommend 2 Tweet 16 +1 0

RELATED CONTENT



KEY BISCAWAYNE, Fla. (AP) -- Third-seeded Maria Sharapova is hoping she can keep her winning ways intact from the BNP Paribas Open last week to the Sony Open this week.

Promote visual clarity (Organize)



Golden Rules

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Guidelines & checklists



Consistency

Users organize and get meaning from interface patterns

Perceptual and psychological principles:

Pattern recognition

Signal detection theory

Information processing

“Gestalt” – wholeness

Visual Thinking

Complete the patterns in the problems below. Circle the letter for the shape that comes next in the pattern. Follow the sample below.

1. a b c d

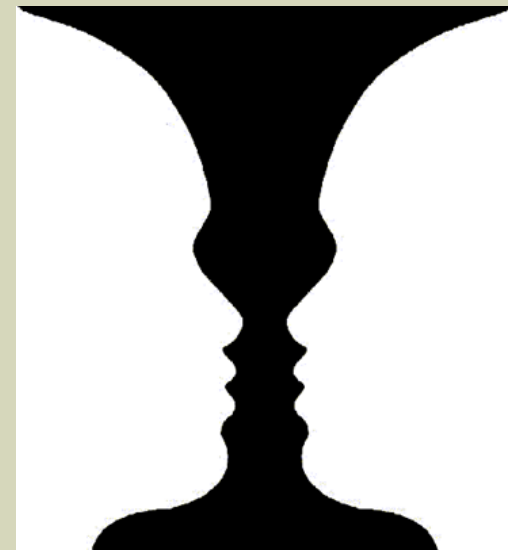
2. a b c d

3. a b c d

4. a b c d

5. a b c d

6. a b c d

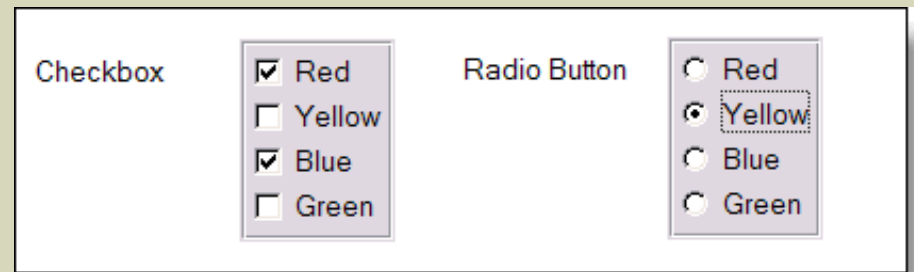


Consistency

Double-edged sword –
use it wisely!

Consistency implies something
(**item A**) is consistent with
something else (**item B**)

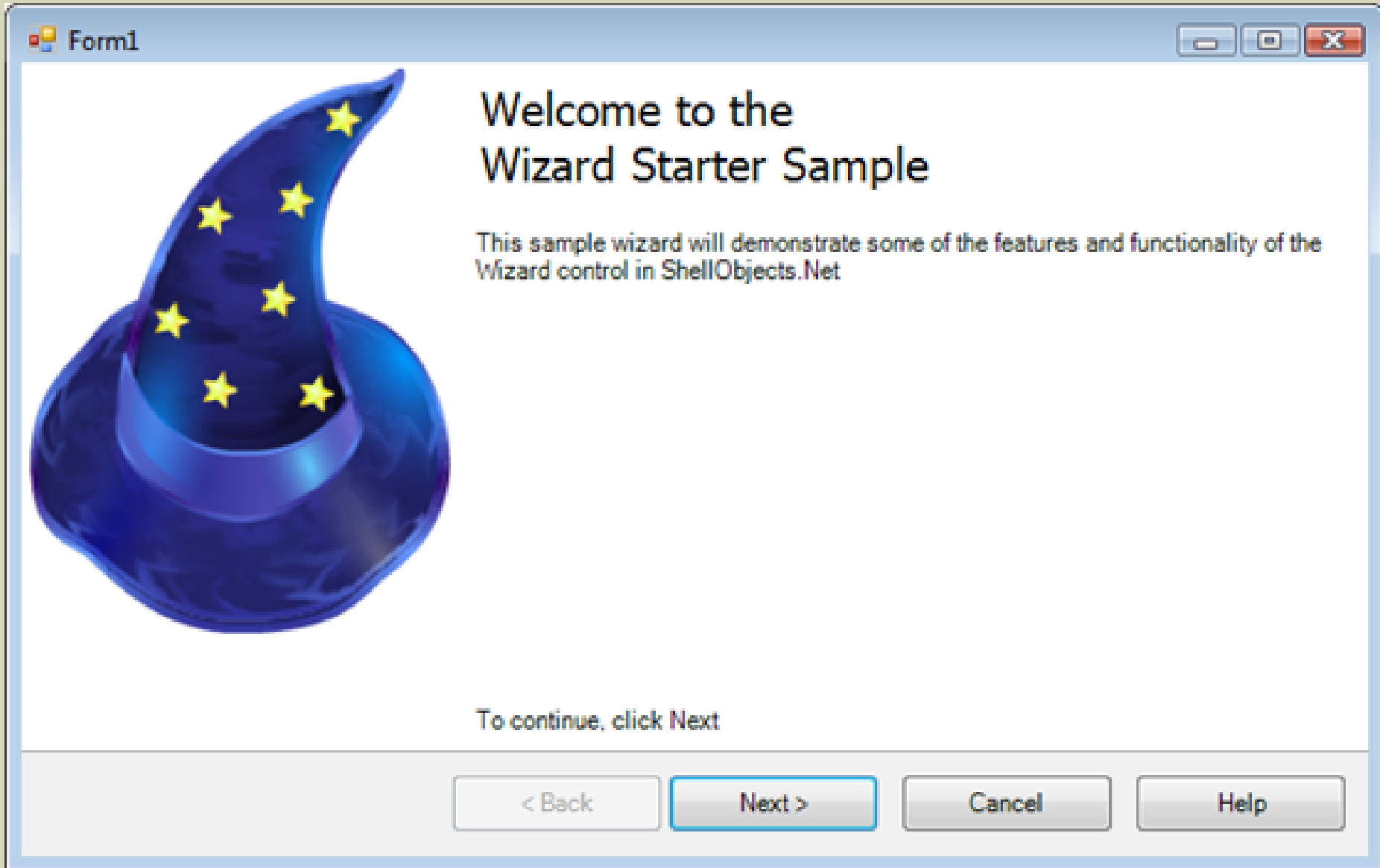
However, if the element isn't
designed correctly at first, then
what you have is a **consistently
poor design!**



Golden rule:

First design things well and
make them usable, then
follow it consistently!

Sustain context of users' tasks (Continuity)



Be consistent within & across products (Experience)



Keep interaction results the same (Expectation)

**Make things work like they look
(consistent interaction)**

**and look like they work
(consistent appearance)**

Keep interaction results the same (Expectation)

Links = Navigation
(does not perform an action)

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Buttons = Function
(performs an action)

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Add to Baby Registry

Tell a friend

Provide aesthetic appeal and integrity (Attitude)

The screenshot displays the ITV Player website interface for Coronation Street Series 1. At the top, the navigation bar includes the ITV logo, links for TV Shows, TV Guide, and ITV Player, along with News and Sport sections and a search bar. The main header features the 'itv Player' logo and navigation options like 'Editorial 1', 'Editorial 2', 'Manage my viewing', and 'Now playing: Coronation Street'. The content area is titled 'Coronation Street - Series 1 (3 free/10 episodes)' with a 'Buy Full Series' button and a 'Currently viewing: Series 1' dropdown. The 'Latest Episode' section features a central image with a 'Play now' button, flanked by 'Previous episode' and 'Preview next episode' sections, each with a thumbnail and episode details (20 June 2011, 19:30:00, Episode 4 and Episode 5). Below this, the 'Collections featuring this episode' section includes tabs for Drama, Crime, and History. The 'The Crime Collection' is highlighted, with a description and a 'Buy Crime Collection' button. A carousel of episode thumbnails is shown, with the second episode (Series 2, Episode 2) selected and highlighted by a mouse cursor. The interface is clean and modern, with a dark blue and black color scheme.

Encourage exploration (Predictable)



Golden Rules

History

Purpose

Psychology & HCI

Golden rules

- Place users in control
- Reduce users' memory load
- Make the experience consistent

Guidelines & checklists



Guidelines



Not all rules are created equal!

Know which rules and guidelines are more important when making design tradeoffs

In specific design situations, some design principles may be in conflict with each other or at odds with product design goals and objectives

Principles are not meant to be followed blindly – they are meant as guidance for sensible interface design

Guidelines



Company, suite, product and device guidelines

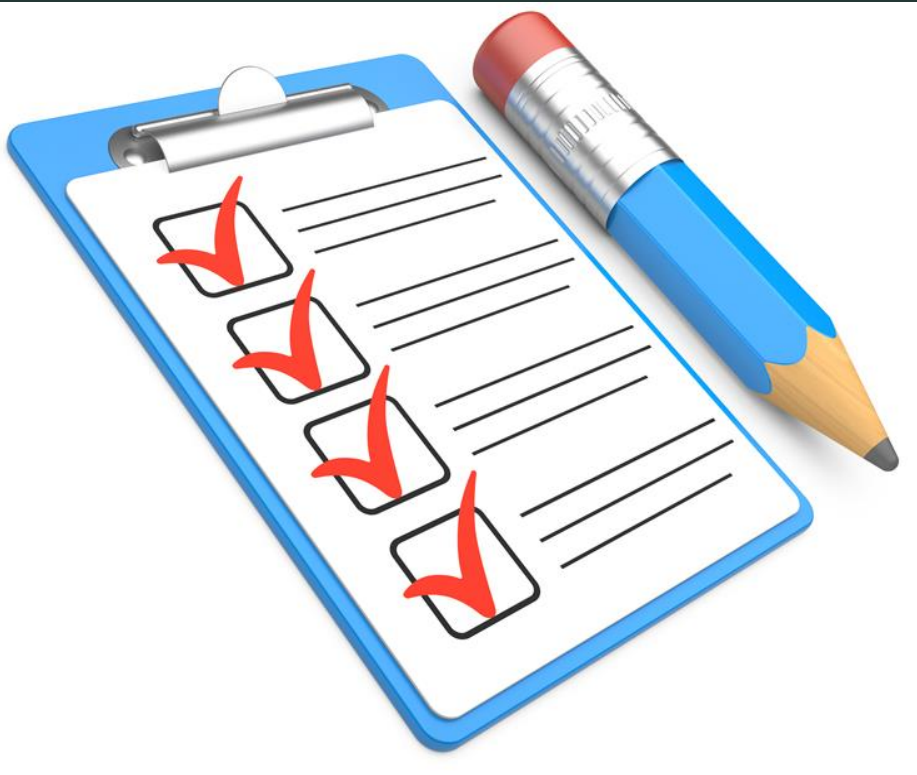
How many of you create or follow style guides?

A list of Style Guides and UI Guidelines

The UX, March 26, 2013

blog.the-UX.com

Golden Rules Checklists



Place users in control

Modeless

Flexible

Interruptible

Helpful

Forgiving

Navigable

Accessible

Facilitative

Preferences

Interactive

Golden Rules Checklists



Reduce users' memory load

Remember

Recognition

Inform

Forgiving

Frequency

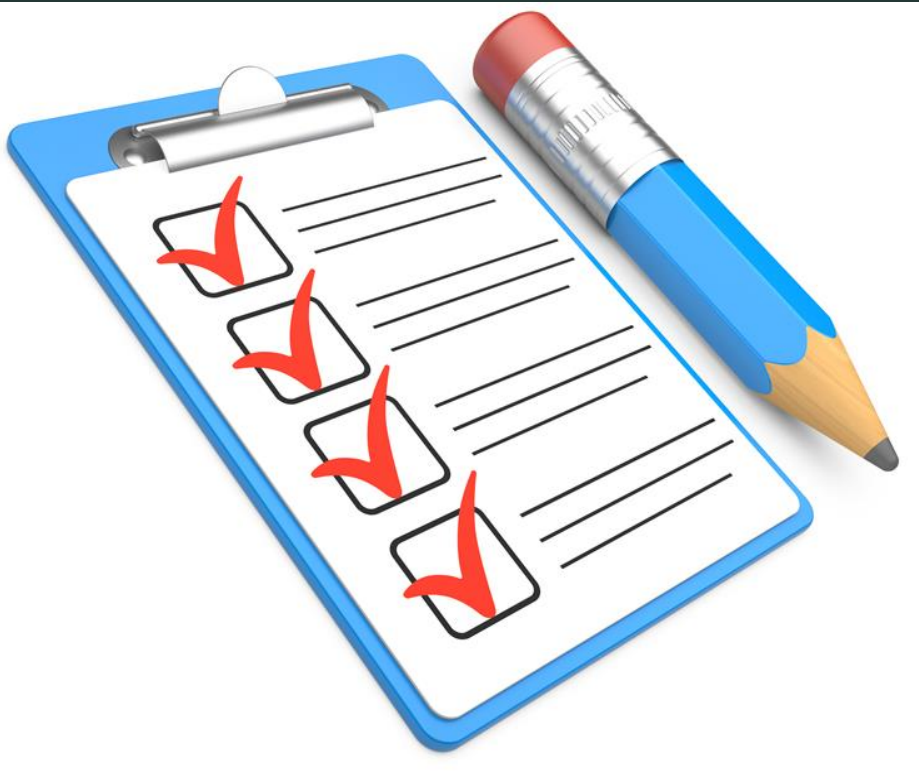
Intuitive

Transfer

Context

Organize

Golden Rules Checklists



Make the experience consistent

Continuity

Experience

Expectation

Attitude

Predictable

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