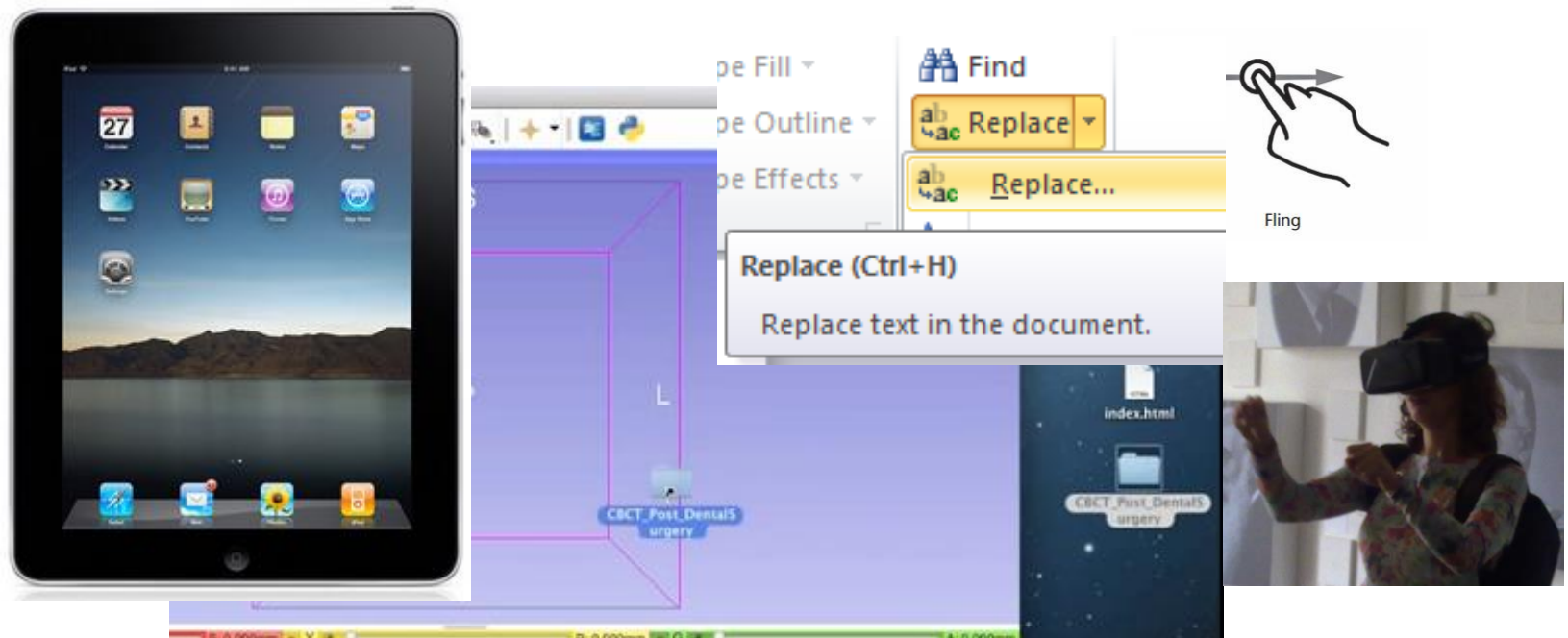




# Interaction styles



# Interaction Styles

“The concept of Interaction Styles refers to all the ways the user can communicate or otherwise interact with the computer system.”

Soegaard, Mads. Interaction Styles (Retrieved March 2020)

[http://www.interactiondesign.org/encyclopedia/interaction\\_styles.html](http://www.interactiondesign.org/encyclopedia/interaction_styles.html)

There are a lot of studies and design guidelines

# Shneiderman's Eight Golden Rules of Dialogue Design

---

1. Strive for consistency
2. Enable frequent users to use shortcuts
3. Offer informative feedback
4. Design dialogues to yield closure
5. Offer simple error handling
6. Permit easy reversal of actions
7. Support internal locus of control
8. Reduce short-term memory load

**These golden rules are paramount in the design process**

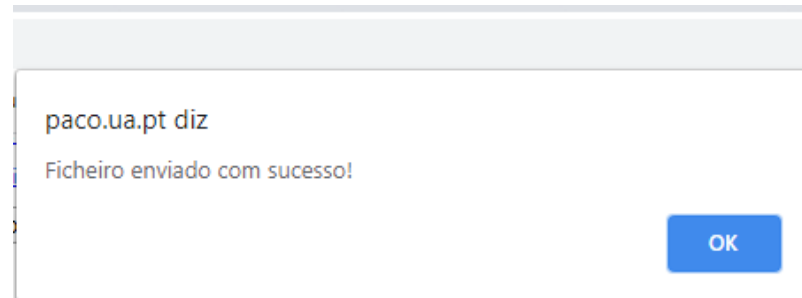
<https://www.interaction-design.org/literature/article/shneiderman-s-eight-golden-rules-will-help-you-design-better-interfaces>

## Support internal locus of control

- Allow users to be the initiators of actions
- Give users the sense that they are in control of events

## Design dialogue to yield closure

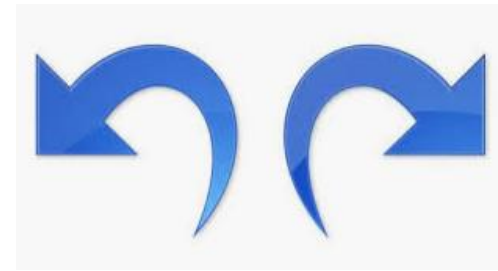
- Don't keep users guessing.
- Tell them what their action has led them to



## Allow easy reversal of actions

encouraging exploration of unfamiliar options

undo – CTRL z



## Allow frequent users to use shortcuts

Common examples:

save – CTRL s

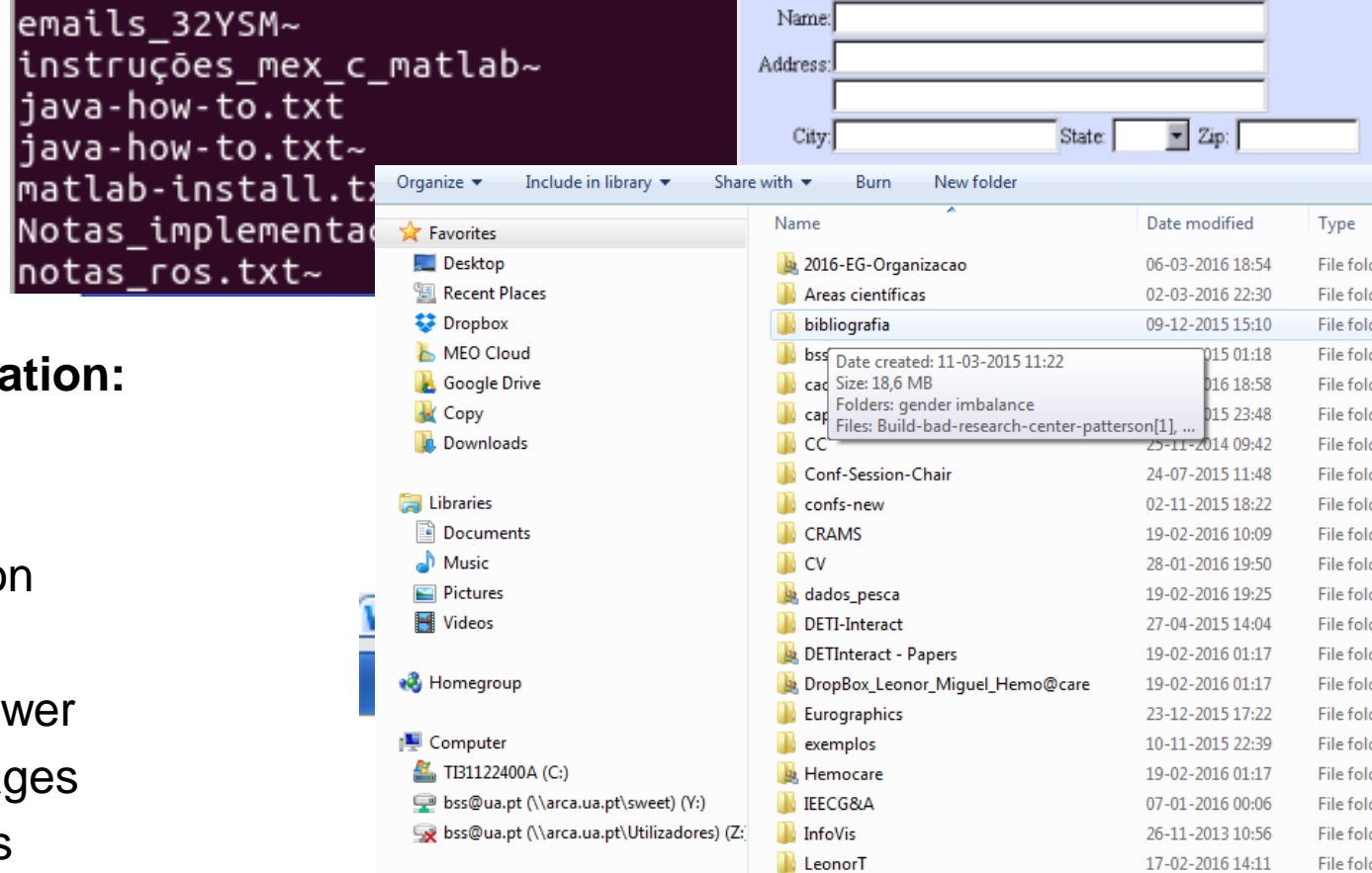
copy – CTRL c



# Interaction/ Dialog styles

## A possible classification:

- Menus
- Fill-in-forms
- Direct manipulation
- Function keys
- Question and answer
- Command languages
- Natural languages



Often two or more styles are used simultaneously

## Less traditional user interfaces (UIs):

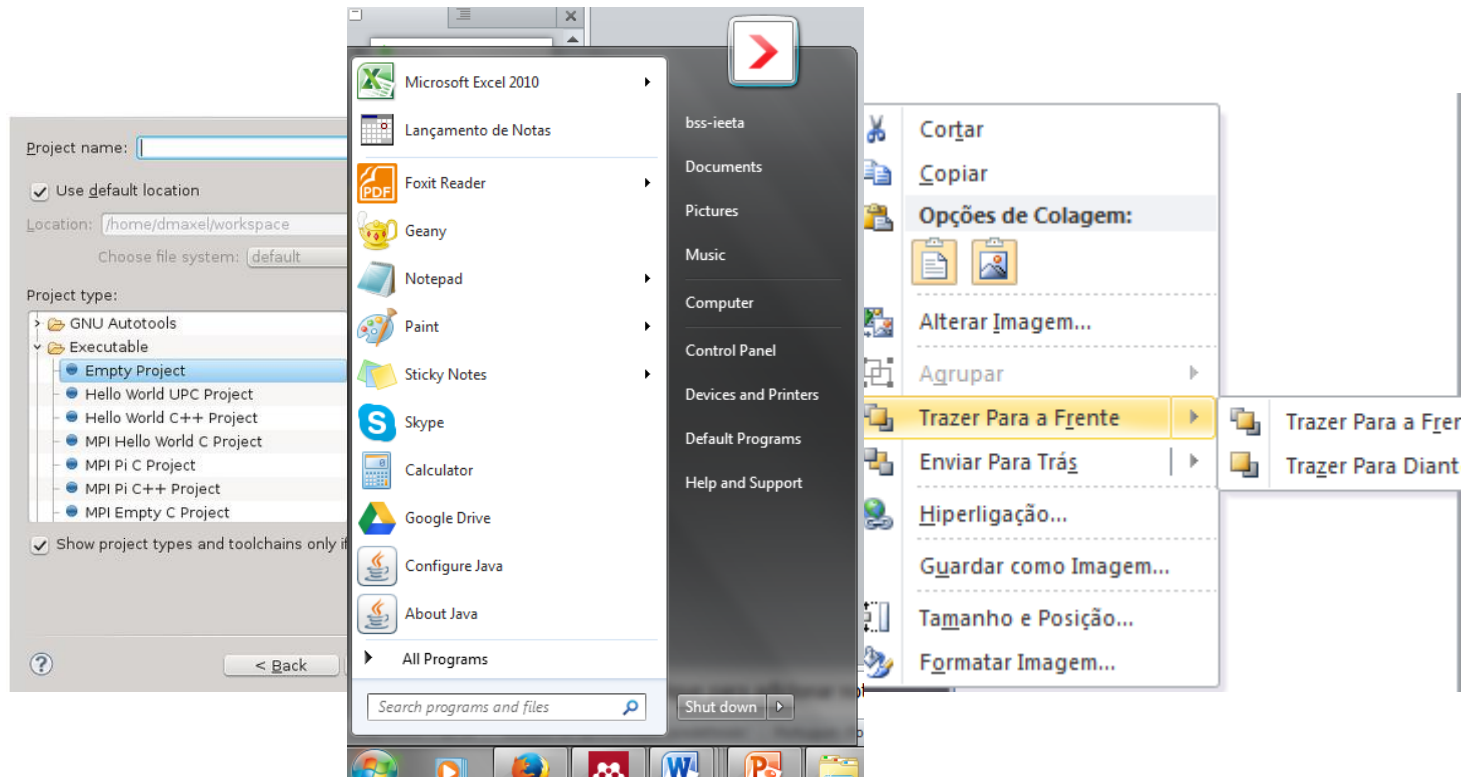
- 3D user interfaces
- Tangible user interfaces
- etc....





Universidade de Aveiro  
Departamento de Electrónica,  
Telecomunicações e Informática

# Menus





- The concept existed long before computers
- Selection of options
- There are **several types**

<b>PASTA DISHES</b>	
choice of Spaghetti, Linguine, Capellini or Ziti	
li, Garlic & Oil	\$8.95
li or Sausage	\$8.95
Sauce	\$7.95
ra Sauce or Fra Diavolo (Spicy)	\$8.50
Above served with a tossed salad	
<b>MERICAN ENTREES</b>	
Baked Homestyle Lasagna	\$8.95
Baked Ziti or Baked Ravioli (Cheese or Meat)	\$8.25
Baked Manicotti	\$8.95
Baked Stuffed Shells	\$8.95
Baked Stuffed Shells Florentine	\$9.50
Above served with a tossed salad	
<b>GRINDERS</b>	
(Toasting)	
Chicken Parmigiana	\$7.25
Meatball or Sausage Parmigiana	\$6.95
Vent Cutlet Parmigiana	\$7.95
Eggplant Parmigiana	\$6.95
Above served hot with tomato sauce & mozzarella cheese	
Extras on grinders: Cheese + \$1.00, Bacon or Ham + \$1.00, Mushrooms + \$1.00, Peppers or onions + .75	
<b>CALZONES</b>	
Plain (Stuffed with meat & mozzarella cheese)	\$8.95
Extra Item	\$2.00
Extras: Bacon, Broccoli, Eggplant, Garlic, Olives, Onions, Green Peppers, Meatball, Ham, Sausage, Salami, Sweet Meat, Peppermint, Mushrooms, Spinach, Tomatoes	

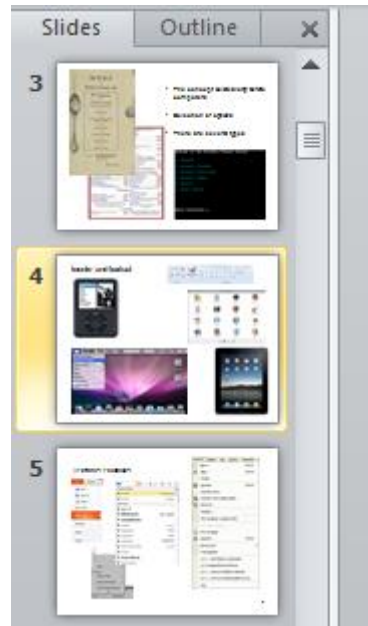
Welcome to the Viridian Finance System

1. Payroll
2. Accounts Payable
3. Accounts Receivable
4. General Ledger
5. Reports
6. Write Checks

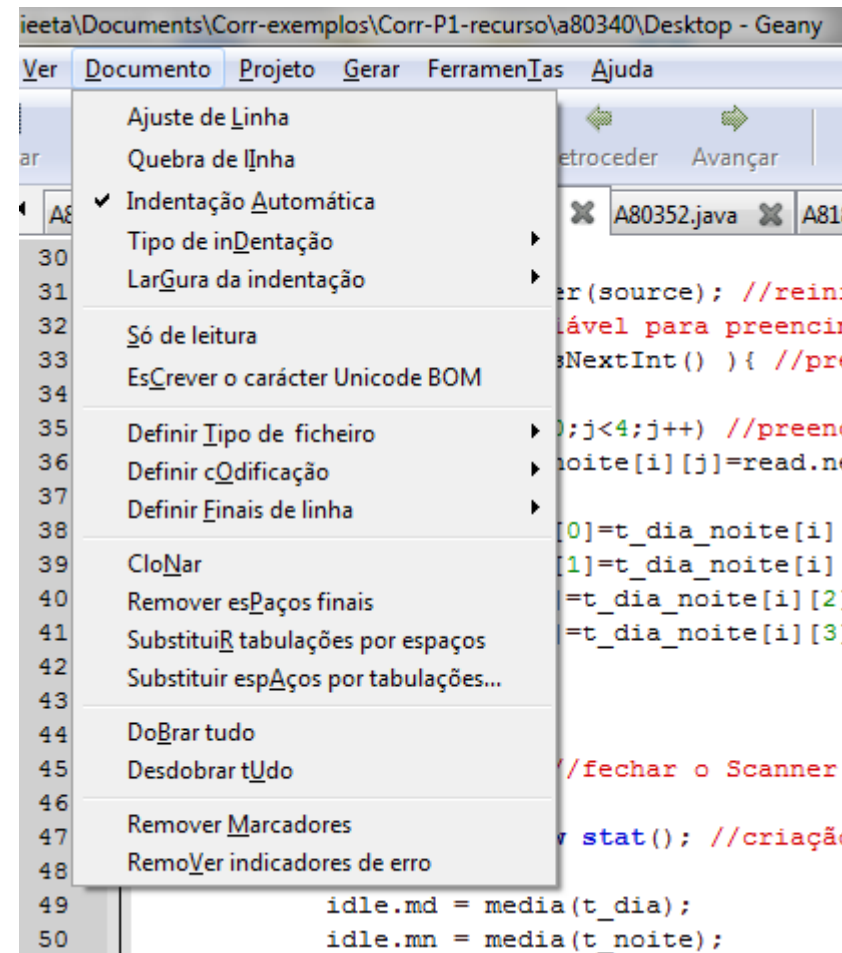
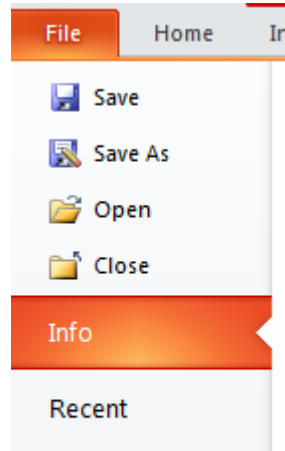
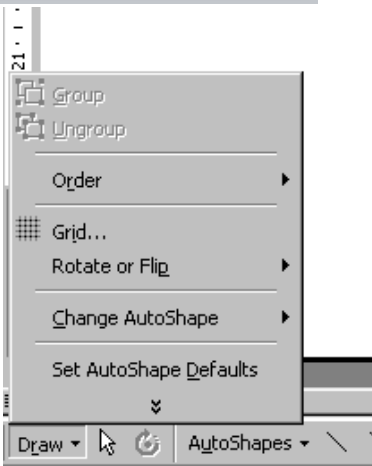
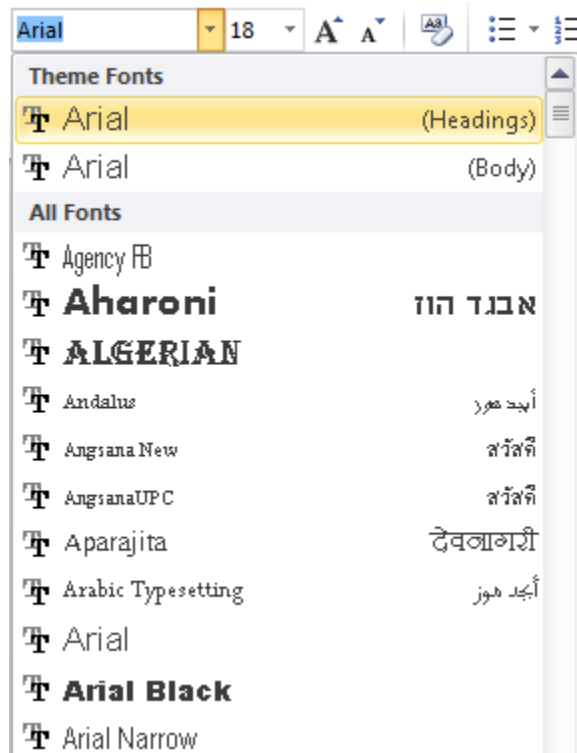
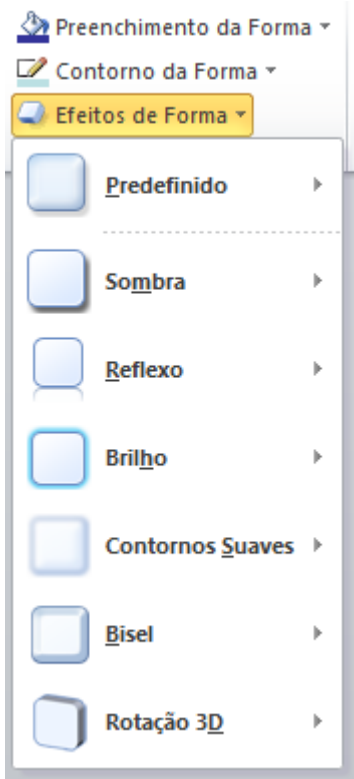
Enter Selection: \_



# Iconic

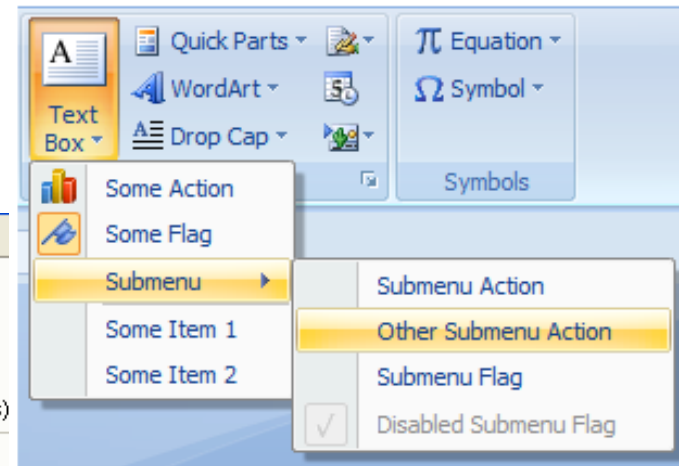
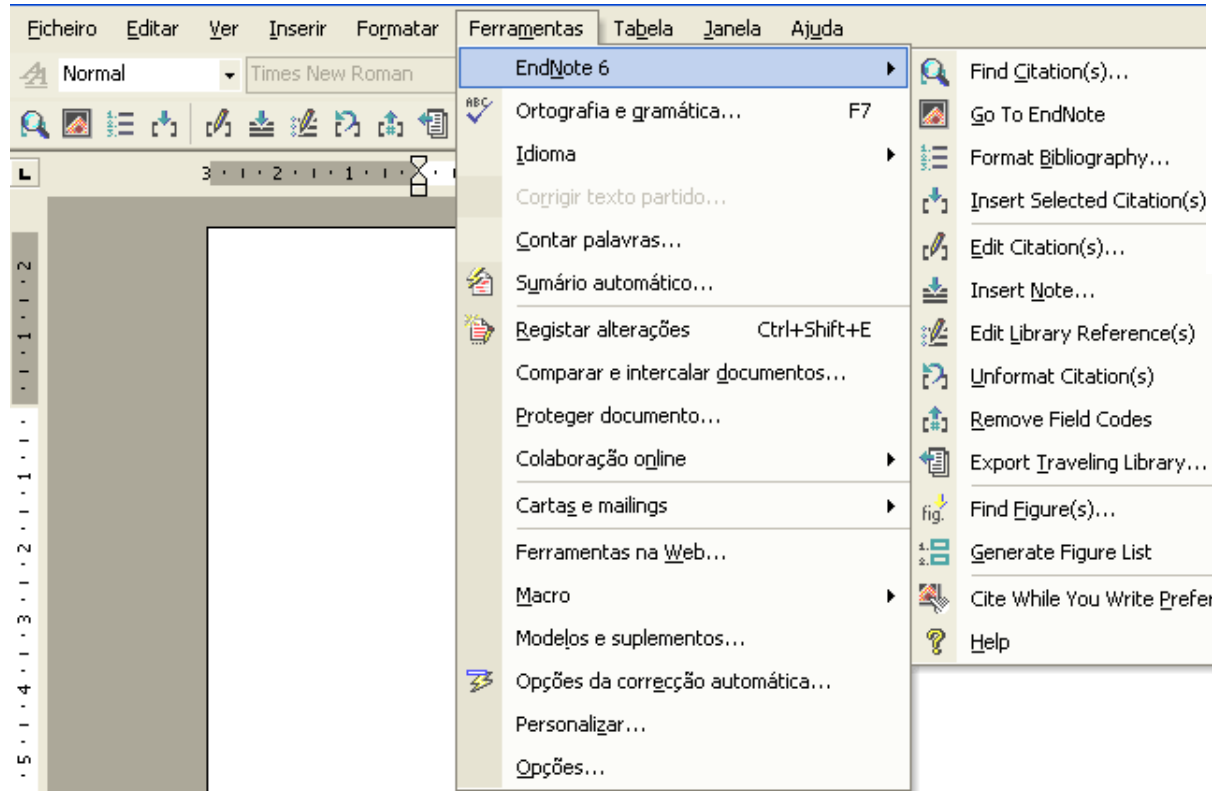


# Textual



Pull-down/ pull-up menus

# Cascading menus



## Main Heading

Menu 1

Menu 2

Menu 3

Item 1

Item 2 ...

Item 3

Item 4

Subitem 1

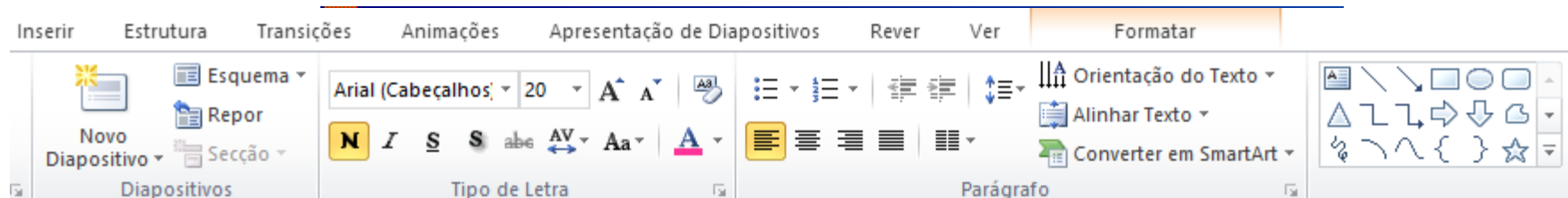
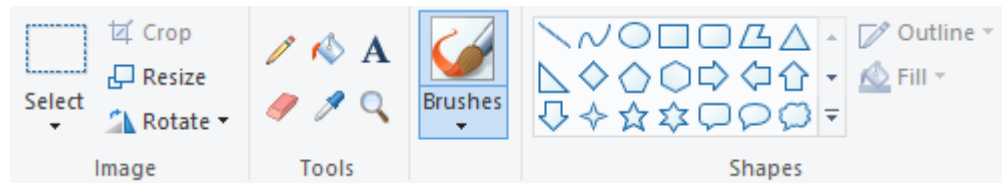
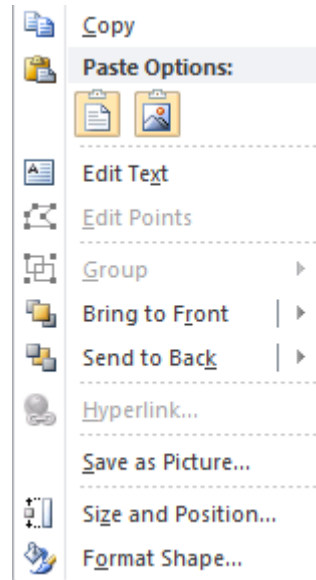
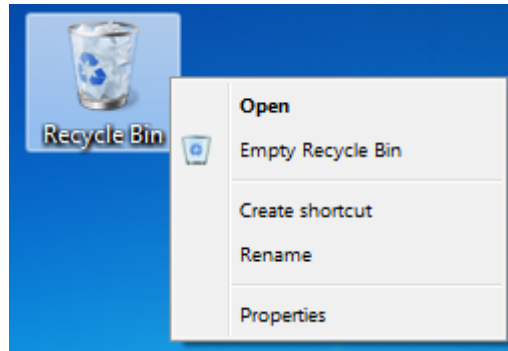
Subitem 2

Subitem 3

Subitem 4

Subitem 5

# Always visible / Pop-ups



# Menus: main advantages and disadvantages

## Advantages (potential, i.e. **if properly designed**)

- Auto-explanatory
- Do not load memory (recognition rather than recall)
- Prevent syntactic errors
- Visible improvements

## Disadvantages

- Not efficient
- Not flexible
- Not practical for many options

## **User profile to whom menus are adequate:**

Knowledge and experience:

- Low system and task experience
- Frequent usage of other systems
- Low computational literacy

Work and task:

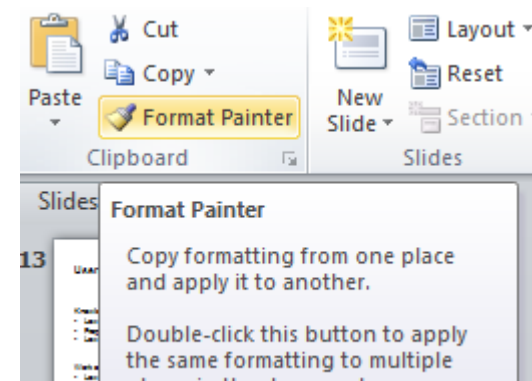
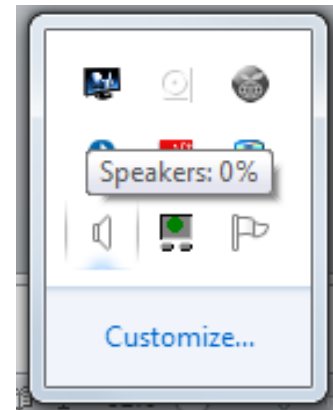
- Low frequency of use
- No training
- Optional usage
- Highly structured tasks

# Menu design: relevant aspects

- Menu structure
- Option ordering
- Option selection
- Menu invocation
- Navigation

# Menu design: guidelines

- Adequate the menu structure to the task structure
- Minimize depth increasing breadth (within reasonable limits)
- Use an adequate ordering method
- Be coherent (design, option names, etc.)
- Give selection feedback to the user
- Include tooltips if names or icons are not auto-explanatory
- Indicate currently unavailable options
- ...
- Etc. etc.





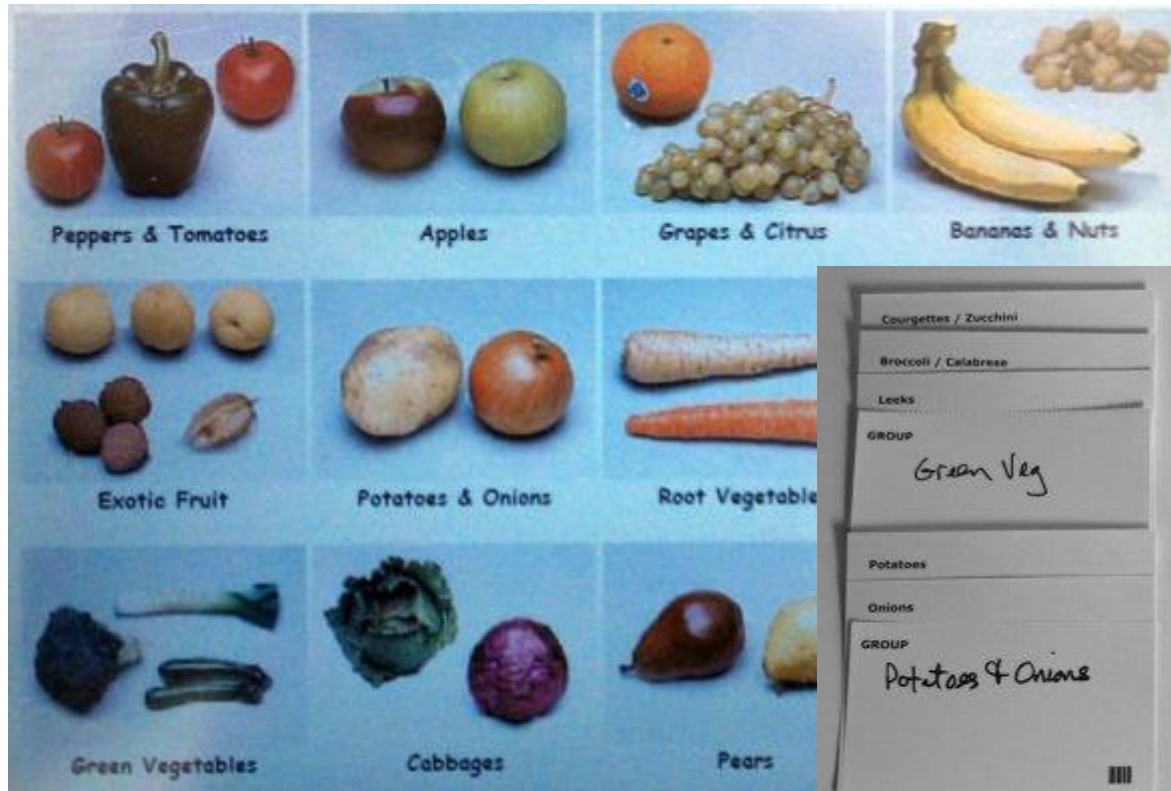
# Menu design: guidelines

- Find the adequate structure using card sorting:  
a low-cost method that helps understanding how users expect to find content or functionality



- Card sorting (usually performed by potential users of an interactive solution) provides information on:
  - Terminology (what people call things)
  - Relationships (proximity, similarity)
  - Categories (groups and their names)
- that can be used to decide upon:
  - which items should be grouped together in displays
  - how menu contents should be organized and labeled
  - what words should be employed to describe the objects of our users' attention

Card sorting example: think about how to sort the fruits and vegetables sold in a supermarket (may be it is not as easy as it seems...)



[http://www.interaction-design.org/encyclopedia/card\\_sorting.html](http://www.interaction-design.org/encyclopedia/card_sorting.html)

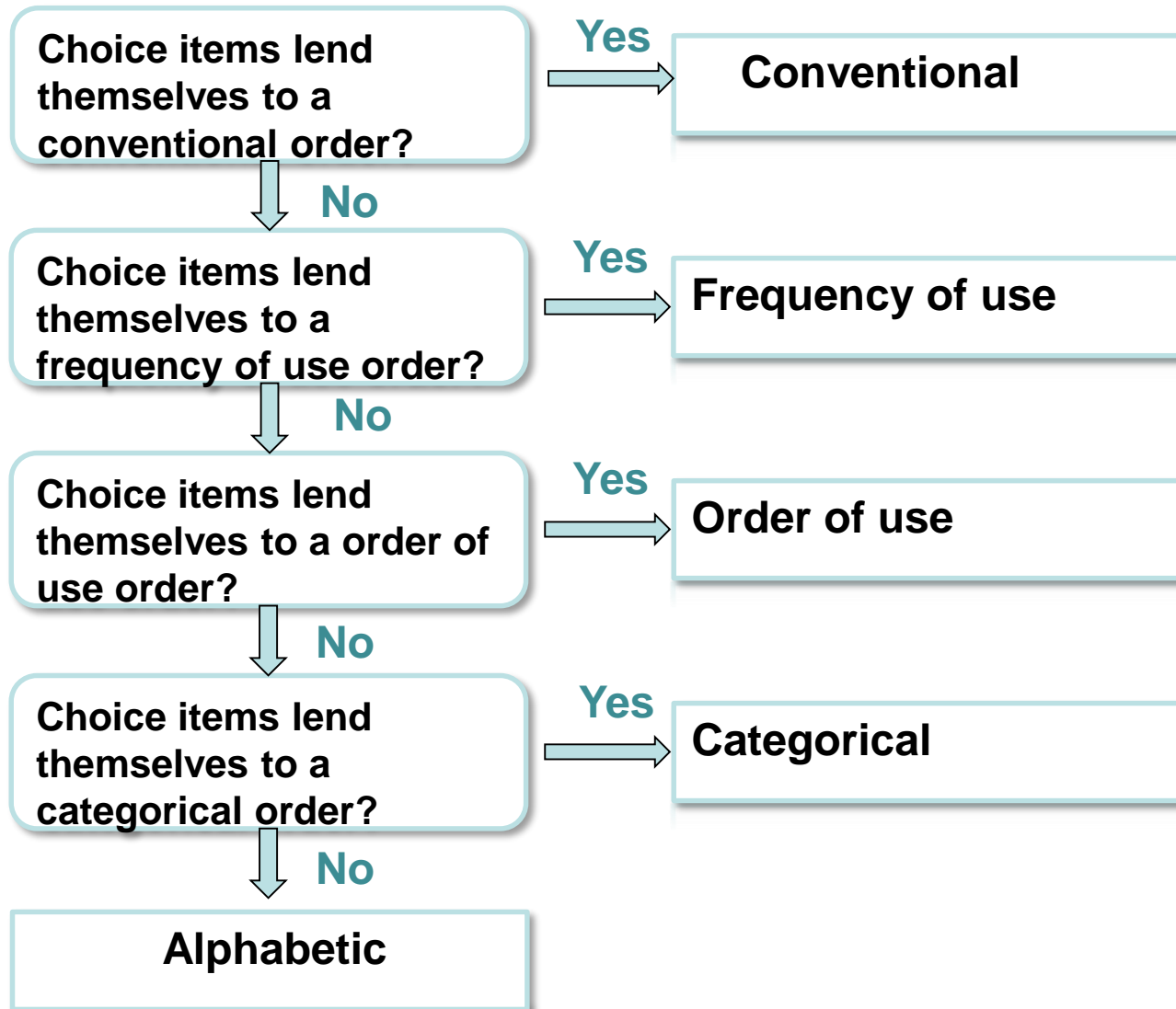
## Select adequate option ordering

**Which ordering scheme would you select?**



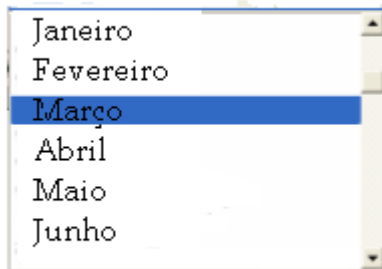
**Why?**

## Select adequate option ordering

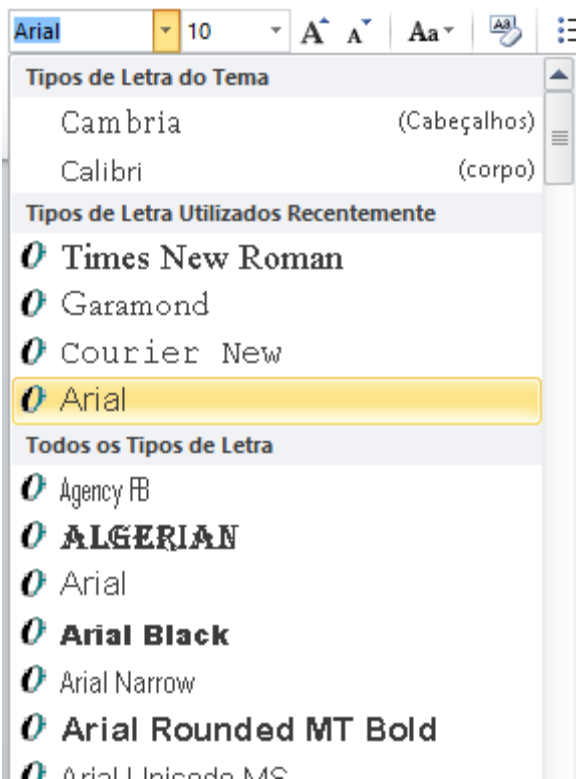


# Option ordering

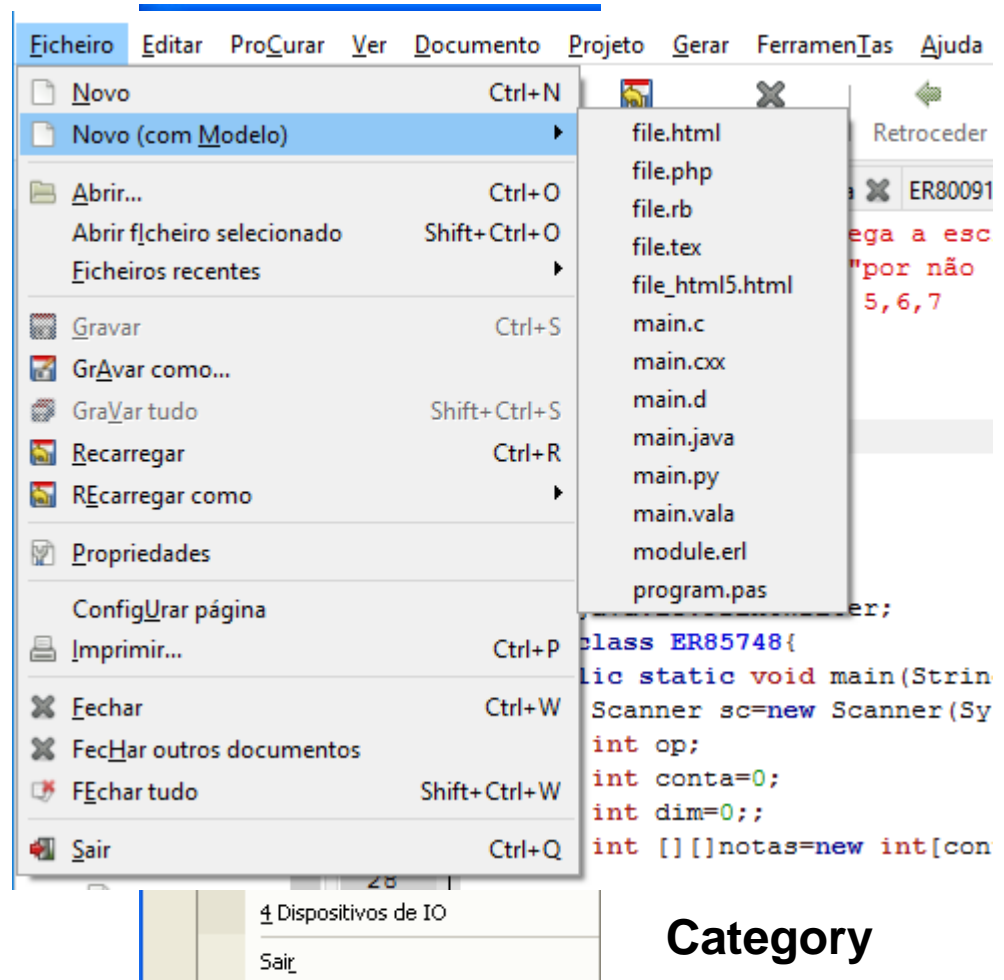
## Conventional



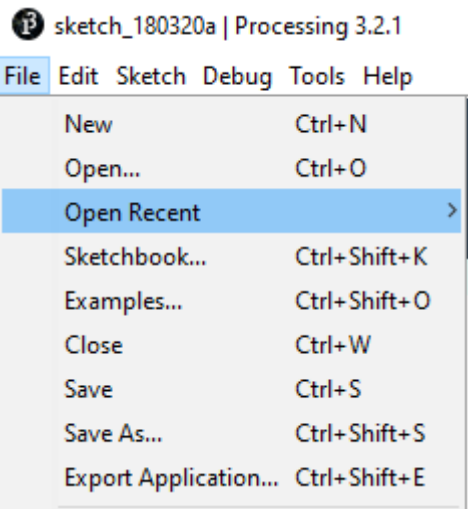
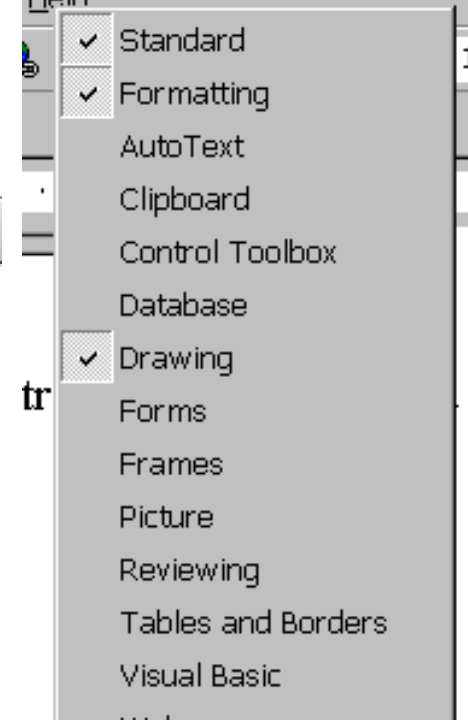
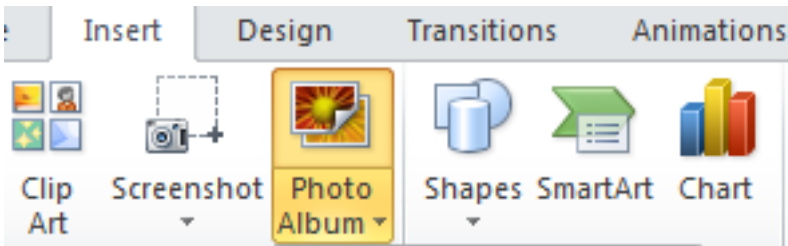
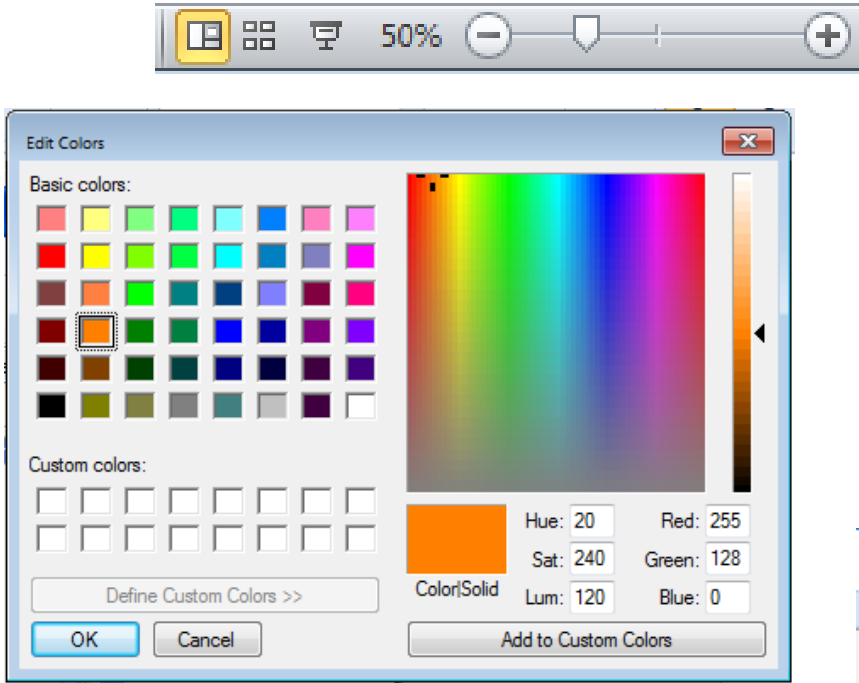
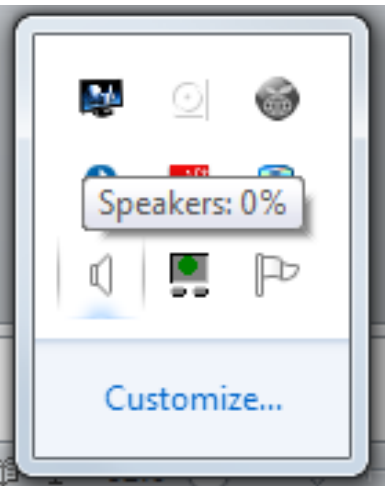
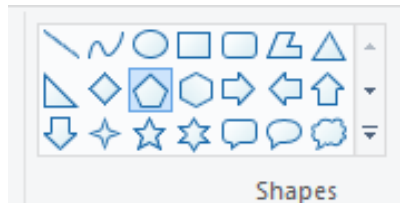
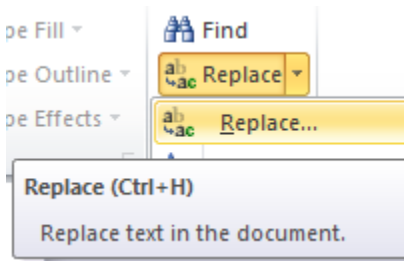
## Alphabetic + frequency



## Order of use



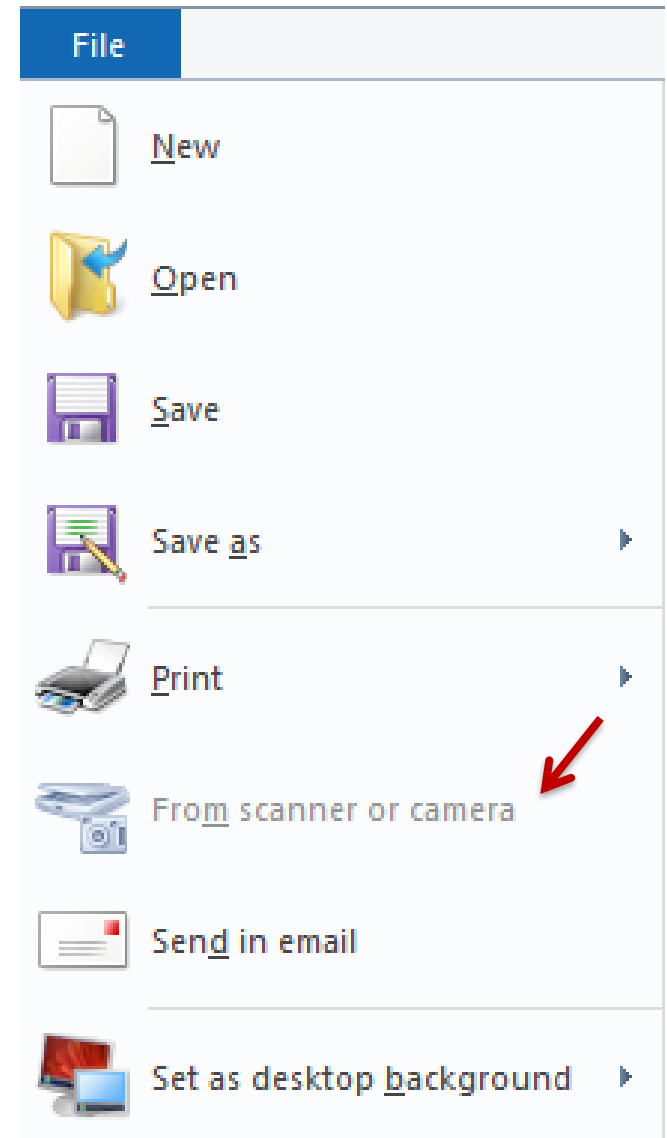
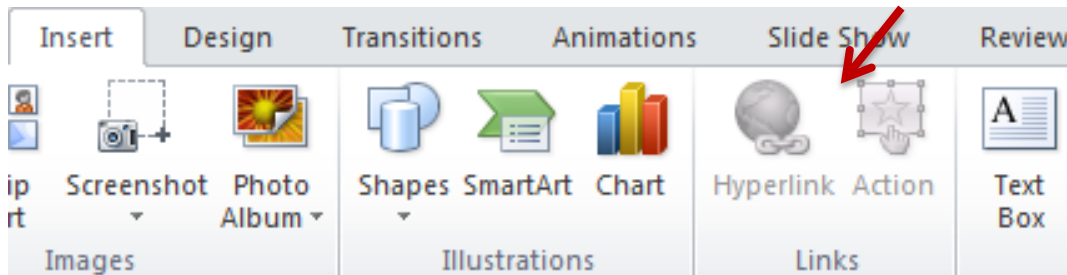
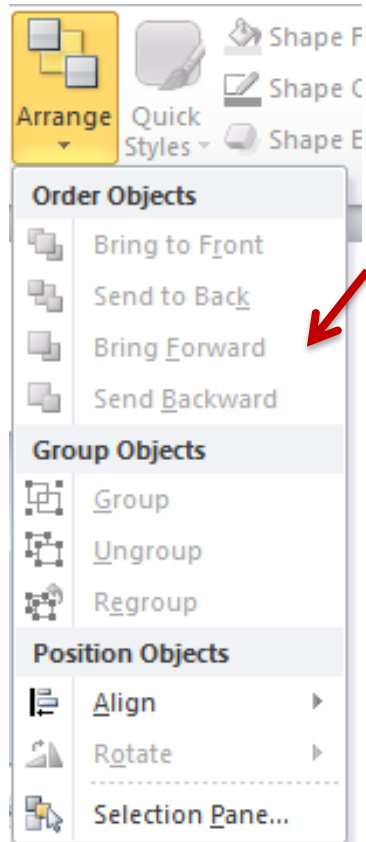
# Give selection feedback



# Indicate currently unavailable options

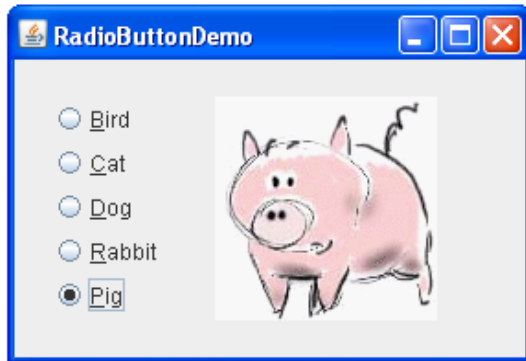
In grey to let users know they exist, but are unavailable

- Preventing errors
- And showing existing options (functionality)





## Make clear the difference between choices of only one or several



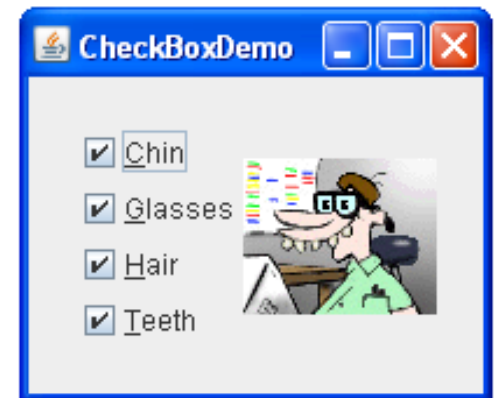
**“Radio button”:**  
Only a single option can be selected from several mutually exclusive options

[https://en.wikipedia.org/wiki/Radio\\_button](https://en.wikipedia.org/wiki/Radio_button)

### Effects

- |  |  |
|--|--|
| <input checked="" type="radio"/> No strikethrough      | <input checked="" type="radio"/> No effect |
| <input type="radio"/> Strikethrough                    | <input type="radio"/> Shadow or outline    |
| <input type="radio"/> Double strikethrough             | <input type="checkbox"/> Shadow            |
|  | <input type="checkbox"/> Outline           |
| <input checked="" type="radio"/> No super or subscript | <input type="radio"/> Emboss               |
| <input type="radio"/> Superscript                      | <input type="radio"/> Engrave              |
| <input type="radio"/> Subscript                        |  |

**“Check box”:**  
Permits to make a binary choice.  
A series of checkboxes may be presented  
The user may select several of the choices





Select only one alternative:

	Service	From	To
<input type="radio"/>	AP No. 180	06:21	08:22
<input checked="" type="radio"/>	AP No. 130	07:21	09:22
<input type="radio"/>	IC No. 520	07:31	09:52

Possible to select more than one alternative:

☒ Additional seat options

☐ Special needs seat 

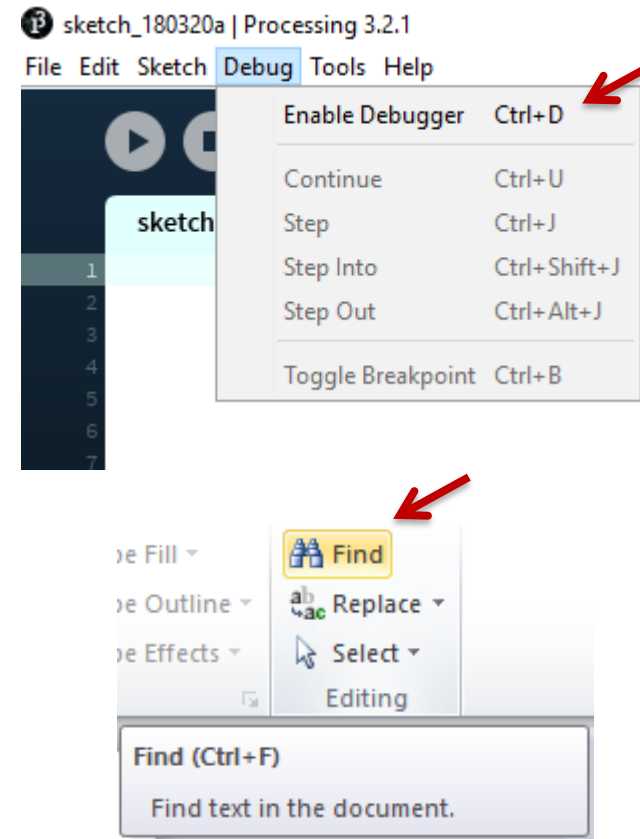
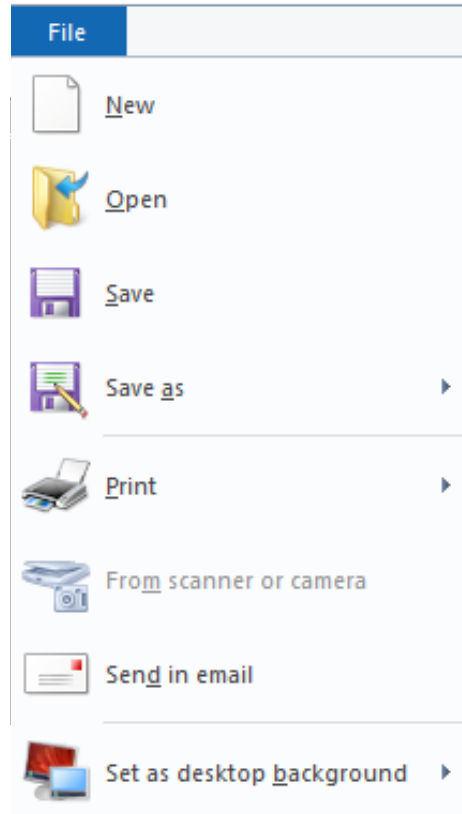
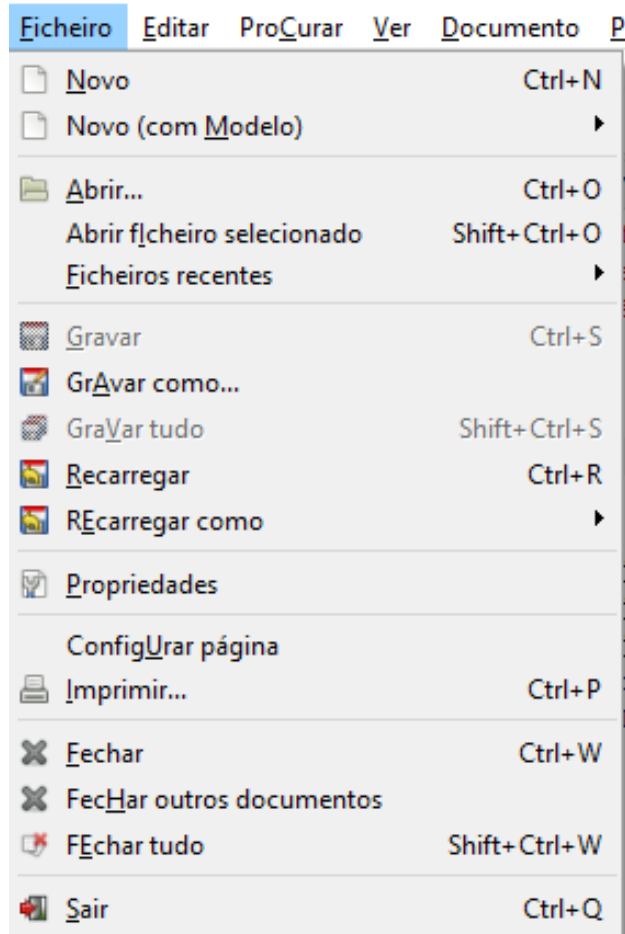
☐ Bikes 

May we send you updates using e-mail?

☐ Yes, please use e-mail to send me information about other offerings.

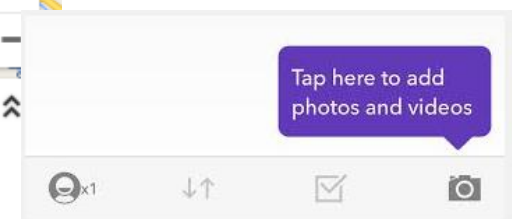
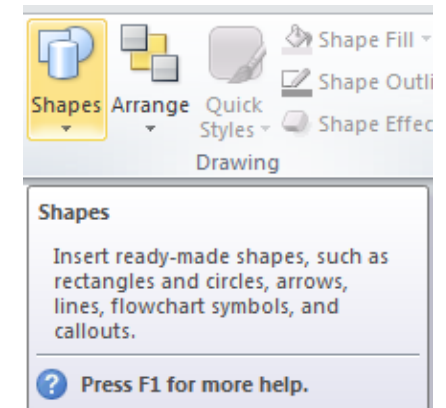
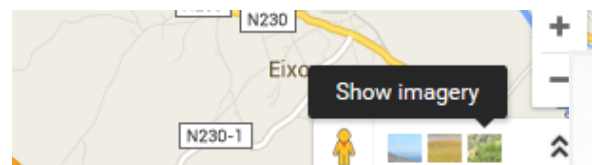
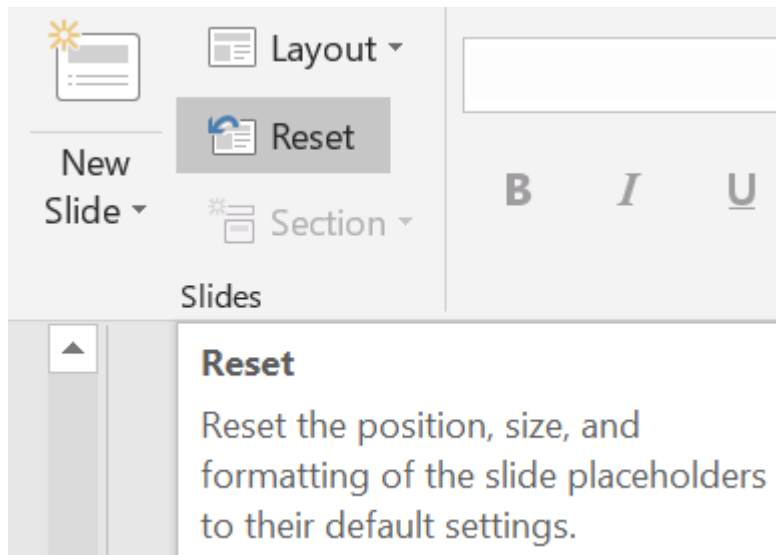
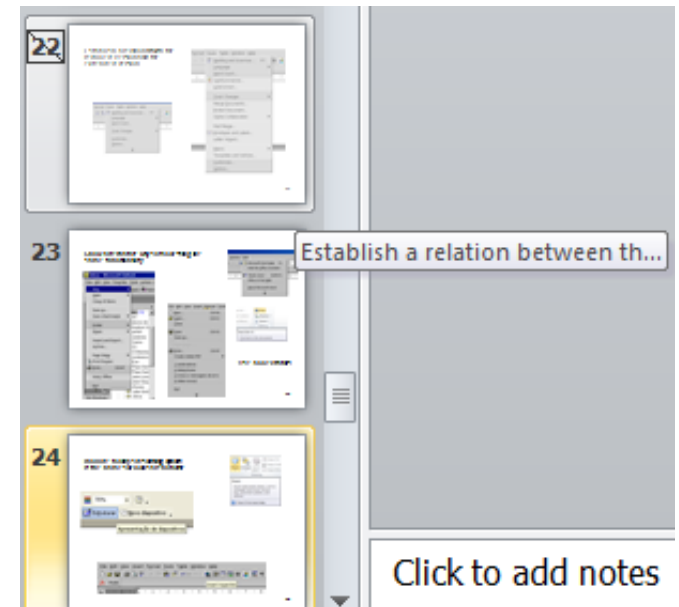
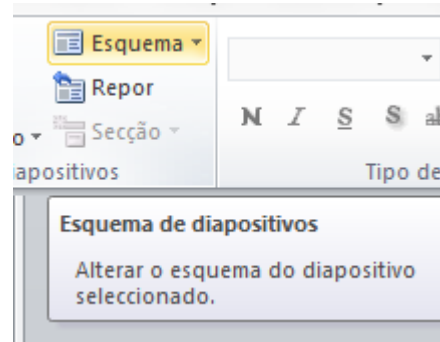
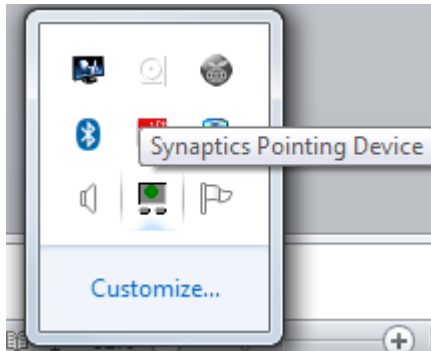
<https://www.nngroup.com/articles/checkboxes-vs-radio-buttons/>

## Show alternative ways of accessing the same functionality

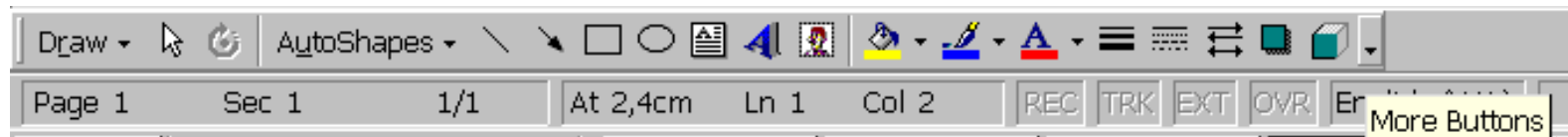
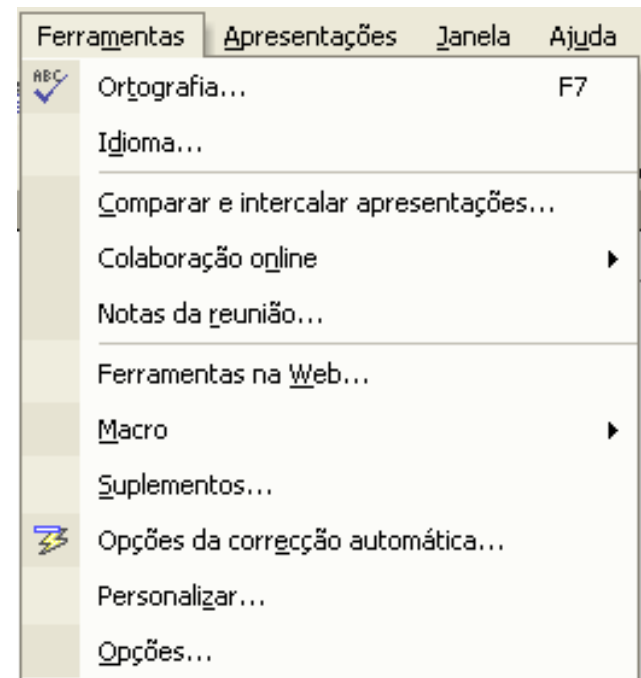
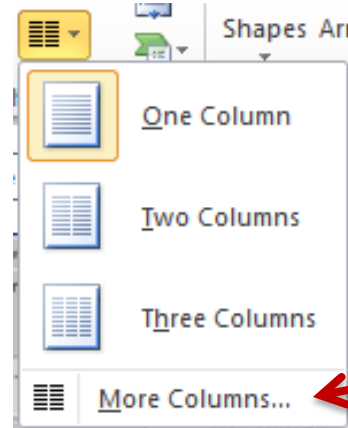
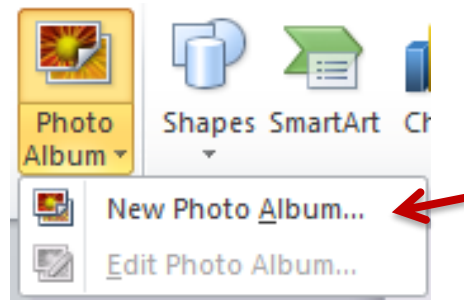
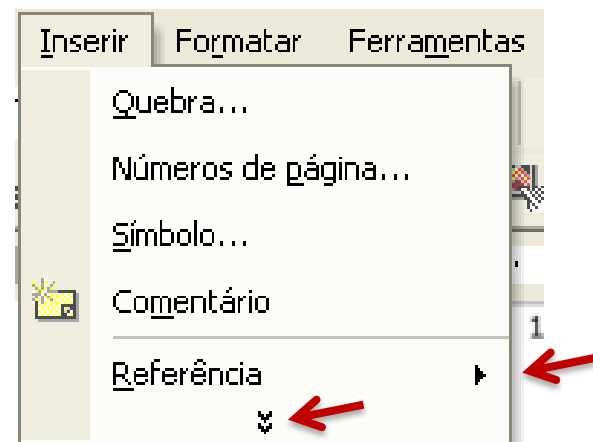
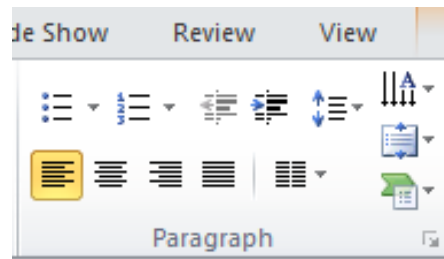
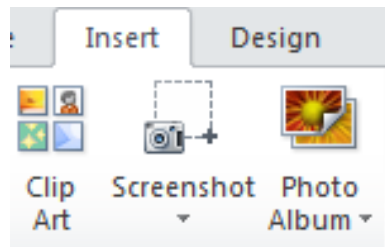


**Use accelerators**  
(Flexibility and efficiency of use)

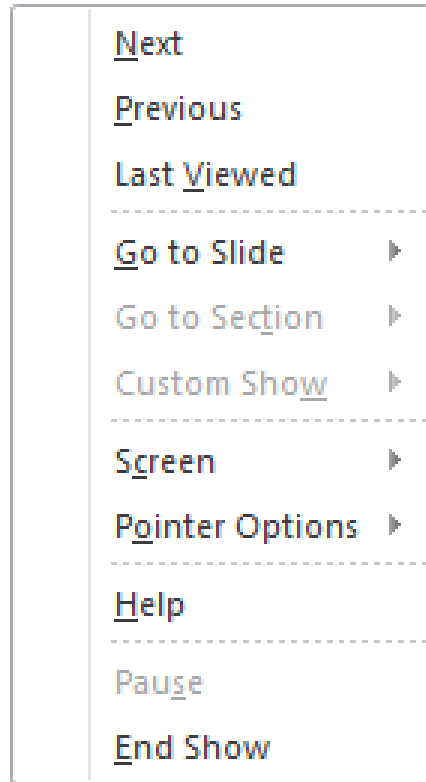
**Include tooltips describing options if the names or icons are not clear**



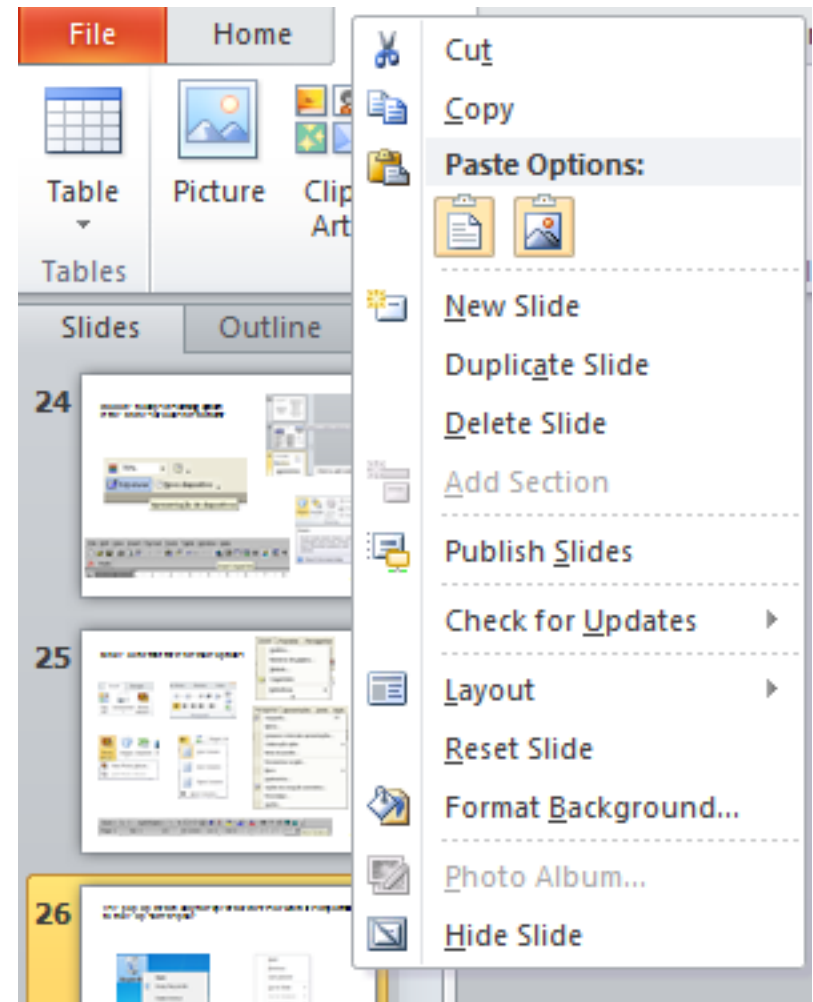
## Make clear that there are more options



**Use pop-up menus (context menus) only for experienced users or when it is very important not to take up screen space**



**(e.g.:  
during a Power Point presentation)**



# Main Bibliography

- Ben Shneiderman, C. Plaisant, M. Cohen, et al., *Designing the User Interface-Strategies for Effective Human–Computer Interaction*, Pearson, 6<sup>th</sup> edition, 2016
- Mads Soegaard, Interaction Styles, In: Soegaard, Mads and Dam, Rikke Friis (eds.). *The Encyclopedia of Human-Computer Interaction*, 2nd Ed. Aarhus, Denmark: The Interaction Design Foundation  
[http://www.interactiondesign.org/encyclopedia/interaction\\_styles.html](http://www.interactiondesign.org/encyclopedia/interaction_styles.html)
- William Hudson, Card Sorting. In: Soegaard, Mads and Dam, Rikke Friis (eds.). *The Encyclopedia of Human-Computer Interaction*, 2nd Ed.". Aarhus, Denmark: The Interaction Design Foundation [http://www.interaction-design.org/encyclopedia/card\\_sorting.html](http://www.interaction-design.org/encyclopedia/card_sorting.html)