

## Functional Table

A function-interaction table provides a top-down analysis of your system by combining the set of objects within the system, as perceived by the user, the functions that the system can perform and the methods by which the user can access those functions, i.e. the interaction techniques. Two tables are used: the first identifies the key objects in the system and how they look in the interface, the second identifies the corresponding functionality and how it is triggered by the user.

The *table of objects* lists all the objects that are meaningful to the user (the conceptual objects), their properties, their graphical representation in the user interface and the functions that can be applied to them. Note that we are only interested in conceptual objects and their representations, not in the many interaction objects that populate graphical user interfaces. For example the « print » item in a menu is not a conceptual object but an interaction object used to specify the print command. The relevant conceptual object for printing is the physical printer, which may be represented in the interface as an icon.

The properties that are listed in the table of objects are those that are relevant for interaction. For example, relevant properties of a printer may be the list of jobs waiting for printing and the amount of paper left in the printer. Each property should be observable by the user, i.e. visible in at least one representation of the object. Most properties should also be editable, i.e. there should be an interaction to modify it. For example, for the printer, the user can add print jobs, and should also be able to cancel them. However, the amount of paper is not changeable through the interface and so there is no function to change this property.

An object may have multiple representations, which usually display different subsets of the object properties. For example, a folder can be shown as an icon or as a window with the list of files it contains.

The *table of functions* lists the set of functions available in the system and for each of them the object(s) it applies to. In general, there should be functions to create and delete the objects and edit the properties of each type of object in the object table. You may also need functions to show a different representation of an object, and to trigger actions with side effects beyond the properties of the object. For example, the print function results in a print job being sent to the printer.

The column labeled *Interaction* in the table of functions describes the physical actions that the user carries out to trigger the corresponding function and the feedback provided by the system. The column next to it (*Effect*) describes the result of the action. For example, deleting a file may be described by a drag-and-drop interaction, whereas the effect is that the file is deleted. Multiple interactions can be listed for a single function. For example, deleting a file can also be carried out with a keyboard shortcut.

The object and interaction tables must be *complete* and *consistent*: every function and every object that is listed in one table must appear in the other. Crosschecking the two tables typically helps finding missing features, inconsistent interactions and other problems. For example, one may want to make the various interactions for creating new objects similar.

## Exercise: Functional Table

Group: \_\_\_\_\_

As you develop your design concept, you will need to fill out a complete set of function- interaction tables. You do not need to fill them out in a particular order: you can start with objects, with functions, or even with interactions. Progressively fill out both tables and verify that they are complete and consistent. The following is an example of a table of objects, which define the characteristics of the objects the user will manipulate in the interface, and a table of functions, which describe the interaction techniques available to users for manipulating those objects:

Table 1: functional table

	Function	Object	Interaction	Effect
1	Scroll	Web page	Click on scrollbar	Scrolling of web page
			Keys Page Up/Down	Scrolling of web page
2	Follow a link	Link	Click on the link	Change the destination page

Table 2: object table

	Object	Property	Representation	Function
1	Web page	Html text	Window with page content	Scroll
		Links		Add to favorites
		Images		
2	Link	Page destination	Underlined text	Follow
				Bookmark

This example below shows a small subset of the object and function tables of a Web browser. Use this as an example as you ask the following questions: What are the conceptual objects in your system, from the user's perspective? What are their properties and how are they represented within the interface? What are the various functions associated with each object? Given a particular function, consider the ways the user can interact with an object to perform that function: what does the user do and how does the system respond?

For now, start with a simple list of objects and functions. Identify at least three objects of interest and three functions. Then, brainstorm at least three interaction techniques for each:

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	Object	Function	Interaction technique
1	song	search	scroll through a song list hum the song type the song name
2	playlist	assemble	tap on successive songs slider to restrict list drag song into playlist
3	artist	add	click on artist name type artists name slide artist to playlist