

FiSMA 1.1 Functional Size Measurement Method Guideline for Graphical User Interface

1. General principles for measuring user interface

Generally, in FiSMA 1.1 method there are some principles which apply to any type of user interface: First, we *measure the software by one application at the time*. In the multi-tier architecture that means in practice measuring the user interface separately from rest of the software and taking into account internal messages between user interface and other tiers.

The second principle is to *take into account all unique visible data elements*. This is called WYSIWYC principle (What You See Is What You Count). Notice that uniqueness of the elements is required for including the data element into the measurement (uniqueness is limited to the function to be measured). However, there might be some specified elements, which are not all the run-time visible, but need to be included. Such elements might be e.g. specified error messages. Also there may be hidden columns in a table, or hidden alternatives in a menu.

Some navigation and query functions may occur or stay visible on several views within the application, but they are counted separately as independent functional components. Such are:

- Login and logout functions
- Function designators (e.g. icons) and menus
- Help text function is counted as single browsing function per application.
- Selection list is counted as independent function and also as a single data element for the screen where it occurs. Unique selection lists are counted only once per application as an independent function.

2. Inclusive Data Elements

The user interface data elements consist of all the visible elements on the screen. Data element types to be recognized and counted are:

- Unique name of the screen
- Screen background with static text items is counted as one data element, so static screen texts like data field headings are not to be counted as unique elements
- Data field (one data element)
- Link (one data element)

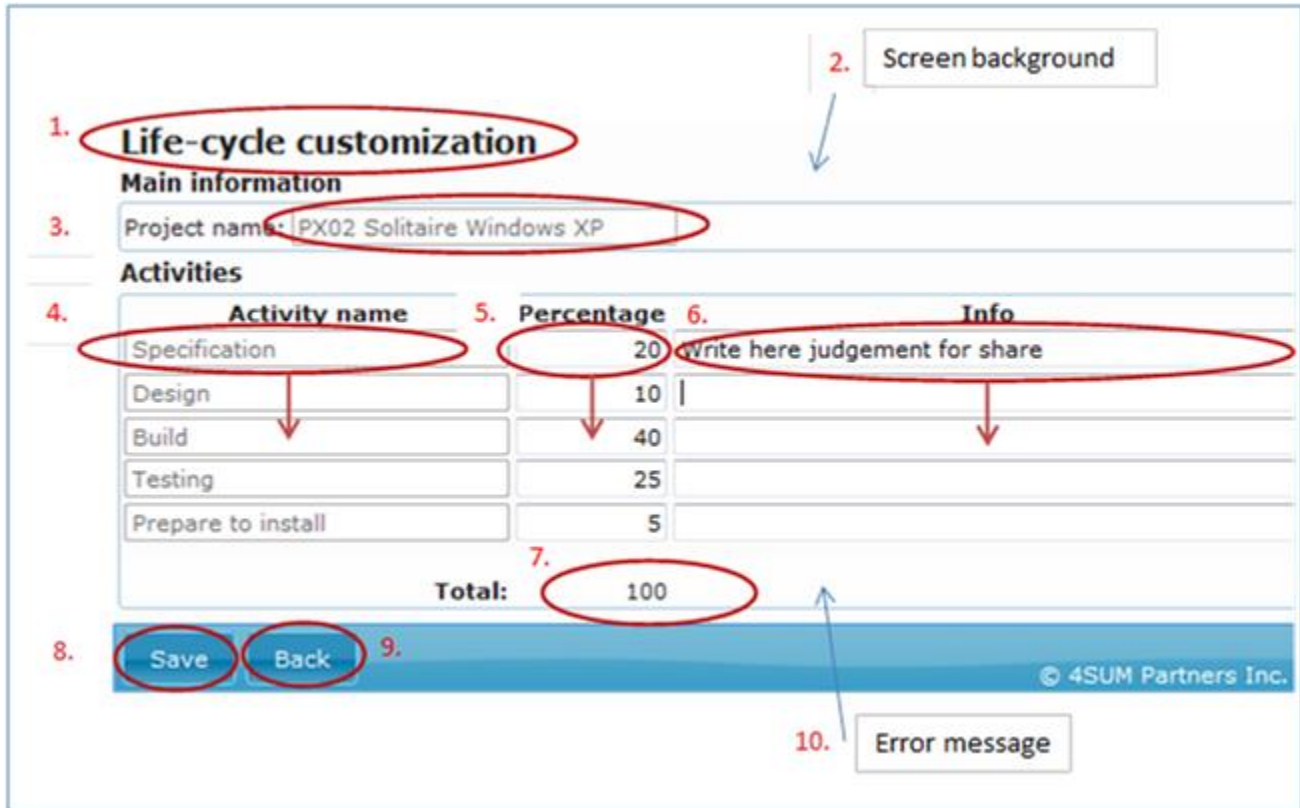
- If the screen presents a vertical table, the number of lines does not count, only the number of columns
- If the screen presents a horizontal table, the number of columns does not count, only the number of lines
- If the table is customizable or dynamic, the number of data elements is the total number of choices
- If a menu is customizable or dynamic, the number of data elements is the total number of choices
- If the contents in a data field may be a link, one additional data element is counted
- Sorting by table column content (one data element for sorting designator)
- Selection list (one data element)
- Radio button (one data element)
- Push button (one data element)
- Slider is counted as one data element (same with other graphical elements required by the user)
- Specified warnings and error messages that may occur outside the specified data fields (one data element per function).

3. Exclusive Elements

Graphical operating system services, which are not considered to take relevant implementation effort, are not counted as data elements. Such are:

- Basic elements like window frames and scrolling bars
- Basic window services like resizing, moving or closing
- Splitting a form into several panes.

4. Basic Example



1. **Life-cycle customization**

2. Screen background

3. Project name: PX02 Solitaire Windows XP

4. Activity name

5. Percentage

6. Info

Activity name	Percentage	Info
Specification	20	write here judgement for share
Design	10	
Build	40	
Testing	25	
Prepare to install	5	
Total:		100

8. Save Back 9.

10. Error message

© 4SUM Partners Inc.

Figure 1. Example screen.

The example in figure 1 has ten data elements. The 'Activities' table with columns 'Activity name', 'Percentage' and 'Info' is a repetitive data structure, so we count only the unique data elements (columns). The data items counted here are:

1. Screen title (Life-cycle customization)
2. Screen background
3. Data field (Project name)
4. Data field (Activity name column)
5. Data field (Percentage column)
6. Data field (Info column)
7. Data field (Total sum of percentages)
8. Save button
9. Back button
10. Error message (not visible normally, but based on functional user requirement).

5. Special issues concerning graphical user interfaces

Some user interface characteristics are considered as quality requirements. Definition of concepts of Functional Size Measurement (ISO/IEC 14143-1) state that a base functional component may not express quality requirements. This is the reason to not count characteristics that are required mainly for qualitative purposes. Examples of such characteristics are:

- tool tips, which show information or help text of a data element while moving the mouse cursor above the element (usability)
- requirement to limit the allowed character set of an input field (security, reliability)
- requirement to use certain color or make an element blinking (usability).