iTip	**Guidance from the Non-functional Sizing Standards Committee on Topics Important to You**	SNAP Powered by IFPUG

Additional Examples for SNAP Sizing in Enhancement Projects

iTip # 06 – (Version 1.0, 06/18/2024)

iTips provide guidance on topics important to the SNAP sizing community. They explain the application of IFPUG SNAP in a particular situation. iTips are not rules, but interpretation of the rules, and provide guidance using a realistic example to explain the topic being covered.
This iTip is focused on describing the IFPUG SNAP as it applies to enhancement projects for bringing clarity by providing examples. This iTip includes a series of examples but is not an exhaustive examination of the subject. For further examples, please see the current SNAP APM.

Background

Chapter 6 in Part 1 of the current SNAP APM [IFPUG 2017] addresses determining the non-functional size for an enhancement project, but examples provided may not clearly enough bring out the distinction between components CHG, CHGA and CHGB. This may lead to wrong practices while sizing SNAP in enhancement projects. The purpose of this iTip is to provide additional examples and to address scenarios that may be encountered in real world.
The following are important formulae in the context of enhancement projects.

1. $ESP = ADD + CHG + DEL$

Where

ESP is the enhancement project SNAP size.

For each sub-category,

ADD is the size of the non-functional characteristics being added by the enhancement project,

CHG is the size of the changes made to existing sub-categories by the enhancement project,

DEL is the size of the non-functional characteristics deleted by the enhancement project.

2.   For a sub-category SC, the enhancement project SNAP size ESP_{SC},
$ESP_{SC} = ADD_{SC} + CHG_{SC} + DEL_{SC}$.

3. $ASPA = ASPB + (ADD + CHGA) - (CHGB + DEL)$

Where

ASPA is the application SP after the enhancement project,

ASPB is the application SP before the enhancement project,

ADD is the size of the non-functional requirements being added by the enhancement project,

CHGA is the size of the non-functional requirements being changed by the enhancement project – as they are/will be after implementation,

CHGB is the size of the non-functional requirements being changed by the enhancement project – as they are/were before the project commenced,

DEL is the size of the non-functional requirements deleted by the enhancement project.

Example 1: Sizing the enhancement project with changes to Multiple Output Methods

Let us assume that the current SNAP size of an application is 500. The certain enhancement project implements the following changes to the application.

- Newly created **Sales Summary Report** will have 15 DETs shown on screen. In addition, Sales Summary should be downloadable as JSON and/or XML objects.
- As of now, existing **Sales Detail Report** is shown on screen, downloadable as PDF and can be printed (Please note that, Print and PDF features are not provided by default by the system but specifically implemented as per technical requirements). After the enhancement project, user will be able to download the sales report in JSON, XML and Excel format as well. Sales detail report has 21 DETs and hence complexity is High (2.4 Multiple Output Methods).

Analysis

Sales Summary Report – On screen version is newly added, countable in function point and will be treated as base method while sizing SNAP. XML and JSON versions are additional output methods and will contribute to ADD component of enhancement SNAP size ESP and application SNAP size ASPA. As Sales Summary Report has 15 DETs, complexity is Average (2.4 Multiple Output Methods).

The non-functional size is ADD = 4*2 = 8.

Sales Detail Report – On screen version is base method (under 2.4 Multiple Output Methods), and there were 2 additional output methods already (PDF and printed format). JSON, XML and Excel formats are newly introduced additional output methods. Hence this change will contribute to CHG component of enhancement SNAP size ESP. CHG corresponds to addition of 3 output methods to the existing methods. Sales detail report has 21 DETs and hence complexity is High (2.4 Multiple Output Methods).

The non-functional size is CHG = 6*3 = 18.

As this is an enhancement project, let us try to derive CHGB and CHGA. As application already had 2 additional output methods (PDF and Printed), CHGB = 6*2 = 12. After the enhancement, sales report will have total of 5 additional outputs (PDF, Printed, JSON, XML and Excel) over the base output method of displaying on screen. Hence, CHGA = 6*5 = 30.

Now, calculation of ESP and ASPA is simpler.

ESP = ADD + CHG + DEL
= 8 + 18 + 0 = 26

ASPA = ASPB + (ADD + CHGA) - (CHGB + DEL)
= 500 + (8 + 30) − (12+0) = 526

Example 2: Sizing the enhancement project with changes to Logical and Mathematical Operations and User Interfaces

Existing page for **Tax inputs and calculations** on a **Revenue Department portal** undergoes enhancement. Currently the portal has a SNAP size of 1400. Tax inputs and calculations page is an External Input with 32 DETs and refers/maintains 6 FTRs. This process also involves lot of Logical and Mathematical Operations. Tax inputs and calculations page is enhanced with additional 5 DETs that will appear on screen and processing of these will require additional FTR to be referred.

A button and new Pop-up page are added to refer current year's **Tax Rates and Tax Rules** that are applicable as per the inputs in the Tax inputs and calculations page (assume this page had 20 unique properties, including those of other Buttons). Button properties to be configured are: *ButtonHighlight, ButtonText, BackgroundColor*. Click of the button opens the Pop-up page, which has 10 DETs and refers 3 FTR. UI Elements in the pop-up page are Header (*Text, Font size, font color, font type*), Details (*Text, Font size, font color, font type), Window (background color, active border, height, width*). Displaying of Tax Rates and Tax Rules are based on certain logical tests based on the user's inputs.

Analysis under 1.2 Logical and Mathematical Operations

Tax inputs and calculations page.

- First, we need to recalculate FTR density factor. Since only 1 FTR is added, complexity level will be Low.
- Since Tax processing is heavily mathematical, it will be classified as "Mathematical" Elementary process under SNAP Subcategory 1.2 Logical and Mathematical Operations.

SNAP points for this enhancement should be calculated based on newly added/modified DETs.

CHG $_{\text{Logical and Mathematical Operations}}$ = 3 * DETs = 3 * 5 = 15

Now, let us try to derive CHGB and CHGA (Logical and Mathematical Operations) for Tax inputs and calculations Page. As the Tax inputs and calculations Page already had 32 DETs, 6 FTRs; hence, CHGB = 4 * 32 = 128. After the enhancement, it will have total of 37 DETs, 7FTRs. Hence, CHGA = 4 * 37 = 148.

As Tax Rates and Tax Rules Pop-up page is new, it will be considered as ADD (Logical and Mathematical Operations) component.

- FTR density Factor: As there are 3 FTRs, Complexity Level will be Low.
- Elementary Process Type: Logical

ADD $_{\text{Logical and Mathematical Operations}}$ = 3 * DETs = 3 * 10 = 30

Analysis under Category 2: Interface Design, 2.1 User Interfaces.

Tax Inputs and Calculations Page

Unique properties: 3 (*ButtonHighlight, ButtonText, BackgroundColor*), hence UI complexity is Low.

Unique UI elements: 1 (Button).

CHG $_{\text{User Interfaces}}$ = 2 * 1 = 2

Now, let us try to derive CHGB and CHGA (User Interfaces) for Tax inputs and calculations Page. Assuming Tax inputs and calculations page already had some other buttons and controls, CHGA $_{\text{User Interfaces}}$ and CHGB $_{\text{User Interfaces}}$ will remain same. Assuming there were 8 unique properties and 6 Unique UI elements, CHGB $_{\text{User Interfaces}}$ = 2 * 6 = 12. After the enhancement, it will have same 8 unique properties and 6 Unique UI elements. Hence, CHGA $_{\text{User Interfaces}}$ = 2 * 6 = 12.

Tax Rates and Tax Rules Pop-up Page

Unique properties to be configured are: 8 (*Text, Font size, Font color, Font type, Background color, Active border, Height, Width*).

Unique UI elements: 3 (*Header, Detail, Window*).

ADD $_{\text{User Interfaces}}$ = 2 * 3 = 6

Calculation of ESP for the enhancement and ASPA of the **Revenue Department portal** is straight forward.

ESP = ADD + CHG + DEL

$ESP_{\text{Logical and Mathematical Operations}} = ADD_{\text{Logical and Mathematical Operations}} + CHG_{\text{Logical and Mathematical Operations}} + DEL_{\text{Logical and Mathematical Operations}}$

$= 30 + 15 + 0 = 45$

$ESP_{\text{User Interfaces}} = ADD_{\text{User Interfaces}} + CHG_{\text{User Interfaces}} + DEL_{\text{User Interfaces}}$

$= 6 + 2 + 0 = 8$

$ESP = ESP_{\text{Logical and Mathematical Operations}} + ESP_{\text{User Interfaces}}$

$= 45 + 8 = 53$

To calculate ASPA, calculate individual components as below.

$ADD = ADD_{\text{Logical and Mathematical Operations}} + ADD_{\text{User Interfaces}} = 30 + 6 = 36$

Similarly,

$CHGA = CHGA_{\text{Logical and Mathematical Operations}} + CHGA_{\text{User Interfaces}} = 148 + 12 = 160$

$CHGB = CHGB_{\text{Logical and Mathematical Operations}} + CHGB_{\text{User Interfaces}} = 128 + 12 = 140$

$ASPA = ASPB + (ADD + CHGA) - (CHGB + DEL)$

$= 1400 + (36 + 160) - (140 + 0) = 1456$

The purpose of these examples is to highlight the differences between sizing newly added processes or components (ADD) and sizing changed processes or components (CHG). While sizing newly added processes or components, that should be sized in its entirety. However, in case of changed processes or components, only relative changes (delta changes) are considered while sizing the subcategories. For instance, if only 5 DETs out of total 15 originally encrypted DETs are impacted by certain change in encryption algorithm, only 5 DETs should be taken into consideration while sizing the change under 1.3 Data Formatting.

CHGA and CHGB are calculated based on the parameters applicable before the enhancement and changes to all these parameters after the enhancement. Consideration must be given to overall impact of the changes on the situation that was prevailing before the enhancement (not only the delta change).

This significant change in the way CHG (based on the delta change brought in by the enhancement), CHGB (considering the situation before the enhancement) and CHGA (considering the overall situation after the enhancement) are calculated, indicates fundamental difference between the conceptual approaches of towards sizing the enhancement projects in case of FPA and SNAP. It is very important to master this subtle change in the methodology to successfully apply SNAP methods while sizing enhancement projects.

References

IFPUG, Software Non-functional Assessment Process (SNAP) Assessment Practices Manual Release 2.4. Princeton Junction, NJ, 08550, May 2017.

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