

Innovative Approach to FP Automation

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Agenda

- ✓ Know what already exists in the market
- ✓ Advantages and disadvantages of existing methodologies
- ✓ What the approach for such a tool is?
- ✓ Know what one needs to start off with this
- ✓ What technology can such a tool be developed on.
- ✓ Sample prototype of reports
- ✓ Advantages of such a tool
- ✓ Caveats

What already exists in the market?

✓ **Source Code based Automation:**

Provides a method wherein code from technologies can be directly mapped to technical objects.

Advantages:

- i. Automating using such a methodology uses up technically repeating patterns and hence is consistent.

Disadvantages:

- i. Technical objects do not always correspond to FP objects/entities.
- ii. Dependence on the type of technology being used

What already exists in the market? Continued...

✓ **UML Diagrams based Automation:**

This maps the UML objects of particular diagrams into FP elements.

Advantages:

- i. UML Diagrams like a use case diagram by their inherent quality of being closely related to the Business Functionality of the end user is a more efficient way of doing it.

Disadvantages:

- i. Identifying of Logical files also seems to be one of the drawbacks.
- ii. Not all organizations follow and maintain UML diagrams.

The Approach

The approach is delineated below

- ✓ This approach totally depends upon the HTML prototypes present in the Use case document
- ✓ The proposed tool uses the HTML objects of the prototype and scans thorough the list of objects present. It then does a comparison with the list of mapped keywords for FP entities and transactions. This then is combined with the concept of FP Lite™ to give the overall count of the system.
- ✓ FP Lite™ (explained in the subsequent slide) is used wherever needed to overcome the short comings if any.
- ✓ The technology used also has to be accommodative of reading the required objects clearly and without many confusing algorithms involved.

This methodology has been well illustrated in the paper named FP Lite™ -An alternate Approach to Sizing by Sheila Dennis and David Herron.

QUOTE

A recent study has shown that the adaptation of the FPA methodology FP Lite™ is a reasonable alternative to the detailed FPA method and in fact addresses many of the criticisms that have been levied in the past. This paper introduces the FP Lite™ methodology in correlation with two studies designed to statistically understand the accuracy of the FP Lite™ methodology in contrast to the detailed FPA method.

UNQUOTE

Reference:

<http://www.davidconsultinggroup.com/functionpoints/DCG%20WHITE%20PAPER%20FP%20LITE%202007.pdf>

How the automation is aligned to FPA

- ✓ **Type of Count**-Can be specified by the preparer.
- ✓ **Application Boundary/Scope**-Needs to be identified by the counter and the preparer
- ✓ **Data Functions**-This is a bulky chunk of the application counting process and comes under the functionality provided for by the tool.
- ✓ **Transaction Functions**-Same as above.
- ✓ **Value Adjustment Factor**-Needs to be identified as usual or also can be incorporated into the tool.

The elements of a standard Use Case Document

1. A brief description of the business requirement
2. The system Actors using the use cases
3. The actions to be performed by the Actors and the systems response to such an action with pre conditions and post conditions.
4. The alternate actions (if any that can be performed) and the systems response to such an action with pre conditions and post conditions.
5. Non Functional Requirements
6. Data Requirements
7. Activity Diagrams
- 8. Prototype Screens.**

Here it is being proposed to use the prototypes to deliver an automated count of the software system.

What are keywords set?

Keywords set are nothing but a set of keywords or literals. These are used and classified according to the type of function, which this key word might indicate.

These key words are used against the literal values obtained from the HTML prototypes. It is then that the Data Functions and Transaction functions can be identified based on what classification the matched keyword belongs to.

The key word set will contain two types of entries

1. Keywords to identify the nouns i.e. the entities (logical files) from the header of the screen.
2. Keywords that will help identify the primary intent of the functionality provided for by the screen.

Keywords Set for the Functions

TRANSACTION KEYWORDS	
External Inputs	Add, Save, Edit, Delete, Change, Submit, Approve, Reject, Ok
External Inquiries	View, View Report, View Details, Export, Generate, List
External Outputs	View, View Report, View Details, Export, Generate, List
DATA FILES KEYWORDS	
Internal Logical Files	Removing the transactional Key words from the headings and other sets of adjectives and articles etc used in the literals will give you the words for the data files.
External Interface Files	
OTHER KEYWORDS	
Exclusion Keywords	Close, Reset, Refresh, Cancel, of, and etc.
Calculation Keywords	- +,-,*, /, %, SUM, Aggregate, Average, Total, Net, Gross, Summary.

How to identify the transaction functions?

External Inputs (EI's)

- Check out all the buttons with Text not in 'Exclusion keywords'
- From the above list filter through only the list with matches in the list of EI keywords
- The header <H1></H1> and all other headers of the screen is then scanned
- From the header; remove the verbs
- Scan all the labels on the screen and count them to give the DET's
- The FTR numbers for the transactions are either averaged out based on the FP Lite™ methodology or are obtained from the header nouns.

How to identify the transaction functions? Contd..

External Inquiries (EQ's) and External Outputs (EO's)

- Check out all the buttons with Text not in 'Exclusion keywords'
- From this list obtained, see if the word matches with either EO's or EQ's keywords
- The header <H1></H1> and all other headers of the screen is then scanned
- Check all the text present in the HTML and see if there are any keywords from the set of Calculation keywords
- Follow the other steps mentioned for EI's to get the transaction names, FTR's and DET's

A sample EI transaction

Add Item

Cuisine	<input type="text"/>
Item Short Name	<input type="text"/>
Item Description	<input type="text"/>
Unit Rate	<input type="text"/>
Tax%	<input type="text"/>

Sample of a View with an EI transaction

View List Of Menu Items

S.no	Item Short Name	Unit Rate	Tax%	Net Amount
<input checked="" type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				

Delete

How to identify the Data functions?

Internal Logical Files (ILF) and External Interface Files (EIF)

Data Functions are a bit more complex and might introduce discrepancies in the automated count. This might require a bit more scrutiny after the results of the automated count are displayed. There are two options which the tool will provide for. One is the use of a different component of the Use case document i.e. the Data model diagrams if prepared in the form of UML diagram. Else the following method needs to be relied upon.

How to identify the Data functions?

Data Functions are nothing but a logical group of user defined data. These can be identified by

- Listing out all the header tags from HTML
- From the list of header items, remove the list of verbs for transaction functions and also the list of Exclusion keywords.
- Data Files used for the application as a whole can be got by summing up all the Data functions which are used in multiple screens .

Transaction Functions Report

Transaction Functions						
	Transaction Name	FTR	DET	Complexity	Remarks	Key word
External Inputs	Add Item	1	6	Low	-	Add
	Delete Item	1	2	Low	-	Delete
External Outputs	View Items	1	6	Low	-	View,Total
External Inquiries						

Data Functions Report

Data Functions						
	Function Name	RET	DET	Complexity	Remarks	Key word
Internal Logical File	Items	1	5	Low	-	Item
External Interface File						

Special Cases for both types of Functions

1. In the case of dropdowns, it is difficult to identify whether it is retrieved from code data and hence should be just a DET or it's retrieved from the database and hence needs to be counted as a transaction.

In such a case, the reports which are printed out at the end will have a special screen wherein the dropdowns will be listed as a special category and the Reviewer can go ahead and select whether the dropdown is to be counted as DET as it is being retrieved from code data or it can be counted as a transaction.

2. If accurate DET's need to be obtained for the DET's of Data functions, the tool can also accommodate the taking in of the ER diagrams as input and post out the count for the data functions (This is already an existing concept).

3. The distinction between an EO and EQ is dependant on other factors like updating of ILF or retrieval of derived data. The tool will provide a facility wherein the user can review the list obtained and make the judgment.

Report Sample-Transactional Functions

TRANSACTION FUNCTIONS						
Transaction Name	Prototype Name	Transaction Type	FTR	DET	FP Contribution	
						Edit
						Edit
						Edit
						Edit
						Edit
						Edit

Report Sample-Dropdown Exceptions

DROPDOWN LIST TRANSACTIONS

Dropdownlist ID	Prototype Name	Code Data(Yes/No)	FTR	DET	FP Contribution
		<input type="checkbox"/>			
		<input type="checkbox"/>			
		<input type="checkbox"/>			
		<input type="checkbox"/>			
		<input type="checkbox"/>			
		<input type="checkbox"/>			

Technological Factors

- The tool is proposed to be built on a web platform preferably an object oriented on which will have the incorporation of the logic for reading from a list of dictionary items or a collection class.
- This will then read the document and pull out the files of the prototype from the mentioned location in the Use Case Document .
- After this it will scan through the documentation. This is done by using the logical procedure mentioned previously to identify the type of objects , Button literals, header information to determine the Functions.
- Also this tool can be used for the publishing of the count reports using HTML or other third party reporting add ins. As much as the list of key words maintained in the application increases, the better and more accurate the count gets.

Advantages

- The effort is reduced as all this is proposed to be done with the help of an automated tool .The only effort the counter needs to do is to verify the count reports produced by the tool for accuracy of the count.
- Also the tool will keep on getting more and more intelligent as the organization keeps on adding to the standard sets of literals it uses for different applications/screens into the dictionary of the tool.

Limitations

- Customized verbs and literals used for Buttons and screens will not fit in the list of standard key words.
- For distinguishing ILF's from EIF's, human intervention will be needed by the tool.
- The headers might be too complicated to fit in into the list of keywords for Data Functions
- Not all applications (technologies) will have screens which will have the web based controls which can be manifested into the necessary prototypes e.g. legacy system screens.

Accuracy Factor

- Apart from the theoretical examples shown (which are shown to be the happy case where the variation in counts is low), the accuracy of the tool is still open to practical implementations. This needs to be done with the concept as a basis for the automated tool.

About the Author

Siddharth is an Engineer with a degree from National Institute of Technology, Durgapur, India. He has five years of IT industry experience during which he has been working on his core technology i.e. .Net with C# and developing Web Applications. Siddharth has been working on Function Point Analysis for past one & half years. During his stint with FP he has extensively worked on doing the Application Base lining and Enhancement sizing for various projects. He got his CFPS certifications in August 2009.

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