FUNCTION POINT ANALYSIS

"Determining the size of system functionality and measuring the performance of project teams is the basis of successful projects."

Currently, the most used method to determine the size of projects is Function Point Analysis (FPA). FPA is used by innumerable organisations world-wide. Over the years FPA is become a world standard. In many regions or counties user groups are active. The most important ones are the International Function Points User Group (IFPUG), the Netherlands Software Metrics Association (NESMA) and the Finnish SMA (FiSMA).

IFPUG

The mission of IFPUG is to be a recognised leader in promoting and encouraging the effective management

of application software development and maintenance activities through the use of Function Point Analysis and other software measurement techniques. IFPUG endorses FPA as its standard methodology for software sizing. In support of this, IFPUG maintains the Function Point Counting Practices Manual, the recognized industry standard for FPA. The latest release is "Function Point Counting Practices Manual, release 4.2".

The result of a Function Point Analysis is the basis for determining performance (productivity, speed-to-market and quality). The measurement method is especially suited for applications with strong data processing. Function Points Analysis measure software by quantifying its functionality provided to the user based primarily on the functional requirements. The measure is independent of the used development platform and the way the functionality is specified, the product delivered is driving the result.

ISO/IEC 14143

ISO/IEC standard 14143-1 describes the guidelines a method for Functional Size Measurement should meet. In January 2003 FPA is certified by ISO/IEC as a Functional Size Measurement Method on the basis method described as unadjusted FPA in the handbook

"Function Point Counting Practices Manual, release 4.2" (ISO/IEC 20926).

According the definitions of a functional sizing measurement method, in FPA the Functional User Requirements (FUR's) is the basis for sizing. The specifications of the FUR's are analysed and the relevant functional processes identified. After that the functional processes are split up in measurable units: the Base Functional Components (BFC). The BFC's are valued according the rules and definitions of the method. The score is the measure of size of the BFC. The sum of the scores indicates the size of the application.

Function Point Analysis

Function Point Analysis is measuring the size of the user functions (BFC's) of the software of the application or a part of it. The user functions are the components requested and recognised by the user. These components are retrieved from the specifications that describe what the software should do to fulfil users needs (FUR's). It's about the functionality the software should provide, not how it will be implemented. The size of a user function is determined based on complexity.

User functions
User functions are divided in two main groups:
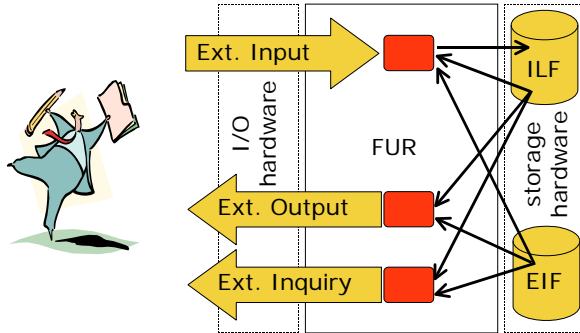• Logical Files;
• Transactions.

A logical file is a user identifiable group of logically related data. FPA recognises two types:
• Internal Logical File (ILF)
  a logical file residing entirely within the application boundary and is maintained through External Input;
• External Interface File (EIF)
  a logical file that is used for reference purpose only.

A transaction is a set consecutive actions seen as one cohesive unit of work.

FPA differentiates three types of transactions:

- External Input (EI)
  an elementary process in which data crosses the boundary from outside to inside;
- External Output (EO)
  an elementary process in which derived data crosses the boundary from inside to outside;
- External Inquiry (EQ)
  an elementary process in which retrieved data crosses the boundary from inside to outside.

The complexity of a user function is determined using the complexity table for each type. The complexity depends on the number of data elements (DET) and the number of logical file types referenced (FTR) identified in the user function. Three levels of complexity are distinguished: low, average and high.

After the complexity of the user function is determined, applying the rules described in the manual version 4.2, the number of function points will be allocated to the user function. In following complexity translation table the transformation values are shown.

	ILF	EIF	EI	EO	EQ
Low	7	5	3	4	3
Average	10	7	4	5	4
High	15	10	6	7	6

The size of the application is the sum of the function points of the included user functions.

Example

Invoices should be made as part of the financial settlement of week 40. These invoices relate to customer product deliveries in week 40. For the invoice all deliveries of week 40 will be collected. The invoice is kept in data storage to write off customer's payments. The customer receives a hard copy of the invoice.

The function is determined to be an External Output (derived data crosses boundary from inside to outside).

EO complexity		Data Element Types		
		<7	7-15	>15
File	<2	L	L	A
Types	2 - 5	L	A	H
Referenced	>5	A	H	H

Used FTR are counted 2 (deliveries, customer). The number of DET is more complicated but assumed to be more than 6 and less than 19.

Based on the analysis, the complexity of this function is identified as Average. According the complexity translation table, the size is 5 function points (fp).

The benefits at a glance

Function Point Analysis:

- gives insight in functionality, the size of the functionality and the required budget;
- supports drawing up a realistic planning;
- is objective and easy to use;
- supports communication between principal, user and supplier;
- complies with ISO 14143.

Galorath and FPA

Over the years Galorath has gained a lot of experience with FPA. In addition to the experiences in executing FPA, Galorath and associated partners do have the facilities to implement this method and to train employees.

Both Galorath and the partners are involved in the International and National User Groups. Certified employees can support customers in application, review and implementation.

In SEER for Software, Function Points is identified as one of the main drivers (the size of the application / program) for an estimate.

Like to know more?

We would like to tell you more about FPA. You can contact one of our consultants for a talk without any obligations. Just send an email to pi@galorath.com.
On www.galorath.com you will find a more extensive overview of the possibilities and services Galorath offers.

FPA documentation can be acquired through IFPUG (www.ifpug.org) or local SMA's. Some of the local organisations offer translated versions.

Estimate | Analyze | Plan | Control