

# Theoretical Count of Function Points for Non-Measurable Items

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## ABSTRACT

*This paper studies and proposes an extended technique of function point counting for items classified as non-measurable. The main objective is to expand the conventional technique of counting to ensure that it comprises consistently the tasks involved in building portals and sites in general. In addition, it also applies to measure the cost of continued activities related to these web applications. The extended technique is potentially useful to measure several products associated with information systems, including periodicals publishable in intranets.*

*Keywords:* Econophysics, Function Points, Inertia of Development, Intellectual Effort, Lagrangian Dynamics, Metrics

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## INTRODUCTION

*You can not imagine how everything is vague until try to do it accurately.* - Bertrand Russell

The function point analysis (FPA) is a standardized technique for measuring software development, aiming to establish a gauge of the software size based on the functionalities to be implemented, considering the viewpoint of the user (IFPUG, 2000). Some usage thoughts have been made to the extent that software systems are becoming more complex (Micro Focus, 2008), such as:

1. “Function points are not a very good measure when sizing maintenance efforts (fixing problems) or when trying to understand the performance issues. Much of the effort

associated with fixing problems (production fixes) is due to trying to resolve and understand the problem (detective work)”;

2. “FP analysis (FPA) is not useful to size Web Design. FPA is useful to size web development, but not web design. [...] FPA is not useful in estimating the time necessary to create graphics, images, page layouts, so on and so forth”.

During the eighties and until the beginning of the 21st century, a number of authors have discussed the metric procedures in vogue (Albrecht, 1983; Dreger, 1989), analyzing its applicability to object-oriented software (Whitmire, 1993), its advantages and disadvantages (Jones, 1994). Also, Kemerer (1993) studied the reliability of the FPA technique. Important contributions to understanding the complexity inherent to software engineering were brought by Indian school (Jalote, 1998; Ram *et al*, 2000).

DOI: 10.4018/jitpm.2013010104

More enthusiastic works about FPA appeared since 2000 (Garmus & Herron, 2001).

The function points measurement technique has generated much controversy since its dissemination as an ISO recognized tool to size information systems, both as regards its general purposes (does it measure productivity, size, complexity or functionality?) and in relation to mathematical rigor under the concept of metric. In particular, with respect to the latter, being the number of function points a dimensionless quantity, some authors claim that there was no way to analyze and seek information from numbers not associated with a reference system (Abran & Robillard, 1994). This is not entirely true. In science there are many dimensionless numbers widely applied in several fields as hydrodynamics, geophysics, optics and others. A dimensionless metric, being independent of the reality beneath evaluation, is useful to compare two or more objects abstracting a lot of details of these objects, placing them in the same plane of observation and providing a perspective that would be inconceivable without a standardized approach. Perhaps the difficulty is to precise the mathematical structure and the semantics of the metric, that is, what the metric formally measures.

One of the major contractual problems faced both in the governmental sphere and in the context of private enterprise is the remuneration of the activities not measurable by the technique of function point analysis. Some devices have been adopted, but with high degree of arbitrariness, making the calculation uncertain and often unfair, and vulnerable to critical assessments of the organs of control. In addition, an arbitrary control of the estimates may be evidence of unprofessional management. Also, something more is missed out as observed by Lokan (2008):

*“Function points are oriented towards data-strong systems, typified by business software. Processing in these systems is simple. Most effort goes into defining data structures. Not all systems fit this pattern. Scientific and engineering software is often function-strong:*

*dominated by the internal processing required to transform inputs to outputs”.*

The present model, although it stemmed from the need to measure the development effort of sites and portals, aims to incorporate not just the typical non-measurable items but all function-strong software processes, including operational system migrations.

It is susceptible to broad questioning the measurement of all the tasks required in the design and development of web applications (especially portals), now applied to the Ministry of Work and Employment in Brazil (hereafter MTE), not only by the aesthetic and functional aspects but also by the technology of the software resources in use. It should also consider that there is here, as in other IT activities, a significant amount of intellectual effort that, while difficult to measure in any area, must be properly computed and paid even so by an indirect and approximate manner.

There are creative works published on the techniques of scoring for web systems (Abrahão & Pastor, 2003), (Drach, 2005), and for situations in which *a priori* non-measurability is compensated by a technique to perform FPA based on the source code (Mustafa *et al*, 2005). Also, recent analytical studies call attention to important issues that remain unresolved and that should attract greater interest from the international community of IT (Hernández-López *et al*, 2011). It draws attention, however, the fact that none of them is the proposition of a complete formalism that includes the representation of the intellectual effort, the hours worked and productivity of the tool applied, the most relevant of the few benchmarks for web systems. Indeed, the size in function points is not intended to measure productivity and development effort, but to measure software in terms of its functionality. Nevertheless, from the moment that we focus on the trinomial quality-cost-time it is imperative to compute the assets embedded in the engineering itself. It is noteworthy, as well pointed Aramo-Immonen *et al*. (2011), the influence that cultural differences have on the productivity in globalized software engineering,

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