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Improvement of the compilation process of the Italian income certifications: an application on the tax model of the year 2016 (Part 2)

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Abstract

In this second part, the essay focuses on a real case about the functional decomposition of the application, already dealt in Part 1. The real case described here is about the system design process for the 2016 tax return certification compilation. The input elements of this functional decomposition process are the compilation instructions, the project constraints and the clusters of non-conformity. The proposed method enables to select, on each analysis level, the robust decomposition among the possible substantial decompositions, such as the configuration with the minimum data content. The measure of the system's data content was determined using the technique of function point. The aim is to provide software designers with a robust logical design of the system, in order to respect the fiscal deadlines, satisfying the user's requirements and guarantee a solution of the problems in the operating environment. The proposed application has a strong pro-active value, as it leads to the development of ad hoc solutions, avoiding the implementation of unnecessary data entry that does not provide any benefit neither for the taxpayer, nor to the withholding agent. This approach also allows having the necessary technical documentation at hand, to plan and monitor the implementation of the time of action, thus facilitating the system adaptation in the years to come.

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Keywords: Non-Conformities Reduction; Public Administration; Information content; Function Point.

1. Introduction

In many field the pro-active value of interventions has become increasingly important. Many attempts have been made by the authors in field such as the environmental impact of industrial product [1], the material selection and development [2,3], the road safety [4], and the non-conformities management connected with transactional processes [5-7]. In this framework the software development is a key factor to enable an effective proactive intervention in many transactional processes with special attention on the public sector and its relationship with citizen.

This article describes the functional decomposition method proposed in paper Part 1 for the compilation process of Italian income certifications of year 2016. Basically, the decomposition has been divided into successive levels corresponding to the structure of income certifications under the rules of the composition provided by the Revenue Agency's instructions [7]. We need to underline that the sections building the income certifications are made of more sections. Those sections may be composed of multiple subsections. Each dataset consists of a homogeneous set of information, which has a specific goal in terms of certification and to which we can associate specific computing operations. Thus, areas, sections, and subsections can be positioned as functional requirements of different levels. At all levels, the decomposition cannot be done by remaining in a single domain. The zigzagging process yields a parallel decomposition of two adjacent domains. This decomposition must be carried out until all the information is identified at a level of detail required to start the software development by programmers [8-10]. At each level of decomposition, the designer must ensure the following features:

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- compliance with the design constraints;
- adaptation of the system with respect to the cluster of non-conformity catalogued by the tax assistance service[5,6];
- validity of the axiom of independence with respect to the decomposition matrix level. This ensures the consistency of the identified functional requirements;
- validity of the axiom of information as a selection of independent decomposition with lower information content.

This ensures the selection of the minimum functional configuration in terms of function points.

2. The Italian income certification of year 2016

The 2016 standard income tax return form (CUO) certifies the income paid and the taxes withheld for taxpayers who receive a salary as employees, pensions, salaries from self-employment activity and likewise. The CUO is composed of five main sections and various fields, as explained in the list below [7]. The 2016 simplified income and tax return form (CUS), instead, is a summary of the CUO [7]. It contains the earnings and the tax details regarding the taxpayer. It is made available by February 28 in order to inform earners about the amounts declared by the employers to the Revenue Agency. In general, the information contained in the CUO certification can be gathered as follows:

- Front cover. It displays any information on the type of submission, the substitute reference and the details of the submitting representative signatory;
- CT Section. It records any information deemed necessary to receive the application files from the Revenue Agency for tax adjustments from the tax assistance offices (730-4). It displays the refund due to the withholding agents based on the adjustments calculated with the tax return forms received;
- Personal details section. It lists the personal details in order to identify both the taxpayer and the withholding agent;
- Income from dependent employment section. It displays the fiscal and social security data regarding dependent employment certifications and likewise, plus tax assistance;
- Self-employment section. This area displays the fiscal details regarding the fees paid for services provided by taxpayers with a different business collaboration.

3. First level decomposition

The AD methodology is top-down. Thus, we need to start from the highest logical level. In this case, FR = compiling the CUO and CUS income certifications. It follows that: FR=A*DP, where DP is the necessary data for the compilation of income certifications. This data is present under a coded form in the environment of data exchange with the payment procedures. Instead, A refers to extraction methods of data from such interchanging environments and the processing procedures on that data. Furthermore, it must meet the design constraints (C). In this case, the CUO certifications must be submitted to the Revenue Agency by March 7, while the CUS certifications must be made available to taxpayers by February 28. This design constraint is respected by ensuring that the application can retrieve the data directly from the payrolls of the monthly payments. With regard to the cluster of non-conformity (CN) identified by the service, they are not applicable at this level because the level of abstraction is too high.

4. Second level decomposition

We proceed with the decomposition at a lower level. The decomposition is summarized in Table 1. We can define the production of CUO and CUS certifications as second level macro-functional requirements.

Table 1. Level 2 decomposition table

FR	Mapping (A)	DP
CUO production	Compilation	CUO Data
CUS production	Compilation	CUS Data

4.1. Respect of project constraints verification

The design constraint of the CUS 2016 income tax certifications is that the precompiled forms must be made available online by February 28. For the CUO 2016 certification, the deadline is set to March 7. Despite this fact, CUS certifications are a summary of the CUO certifications. This regulatory constraint is respected by compiling the CUO certification first, using the elementary information present in the payment systems as its basis. The interoperability allows the CUO management system to have available the data of payment systems, immediately after each payment is closed. In this case, different systems share objects / data (components) [11]. CUO data feedings are due every month. At the end of the year, the data process and upload for tax calculation must be started, according to the Revenue Agency's instructions.

4.2. Preventive system adjustment on the basis of non-conformity clusters

Some non-mandatory social benefits (supplementary pensions, university years' fees buybacks, re-joining of different contribution periods) are delivered to citizens through the payment of a financial contribution from the beneficiaries. These sums can be deducted directly from salary and are withheld for the tax deduction for the citizen. These amounts are reported in the income certification. In addition, these payments must be paid to social security institutions, that are obliged to declare the amounts electronically to the Revenue Agency by February 28 [12, 13]. For social security institutions, clusters of non-conformity may occur due to the mismatch between what is declared in the income certification (such as social security