SURVEY ON THE APPLICATION OF AGILE METHODOLOGIES IN SOFTWARE DEVELOPMENT

Use of agile methodologies in Federal Public Administration

Over the years, outsourcing by federal public institutions for the construction of IT systems have been based on software development methodologies founded, in most cases, on the Unified Process (UP) of software development and its variations.

However, it has been observed an increase in the popularity of the use of agile methodologies for software development in the national and international market, which are primarily aimed to serve the needs of the customer by means of a continuous delivery of functional and quality software. This reality, together with frequent complaints arising from software development contracts caused by the current model use, has led some public institutions to believe that they can obtain better results with the use of agile methodologies for software development.

In this scenario, public institutions started to invest in this area, by training their employees and establishing within their IT teams, if possible, agile methods for the development of their solutions. According to this initial movement, some of these institutions began to enter into software development contracts, whether for specific projects or software factories, based on agile methodologies.

Audit purpose

The audit was aimed at interpreting the essence of agile methods, which are a methodology for software development, as well as describing how some federal public institutions are entering into outsourcing agreements using such methods, identifying some of the risks associated with this outsourcing process.

Within the audit, agile methodology for software development was defined as a set of methods, processes and frameworks guided by values and principles established in the Agile Manifesto.

The Survey was composed mainly by visits to some public institutions that had contracts whose object was of interest to this study. The visits served to gather information about the adoption of the paradigm of agile methodologies in their contracts, as well as to be acquainted with the content of bidding instruments, which gave rise to them.

Main findings of the Federal Court of Accounts (Tribunal de Contas da União – TCU)

As a result of the Survey, concepts were presented that cover the essence of agile methodologies in software development; the main methodologies currently used by the Brazilian public institutions visited were described; aspects of the agreements analyzed were reported; and finally, some inherent risks that could materialize in contracts with agile methodologies were listed.

Amongst those aforementioned, the main product of the Survey consisted of the identification of some risks associated with the acquisition of systems development using agile methods, highlighting that several of them are not exclusive to the use of these methods, but they also apply to the development contracts with other types of methodologies.

As in any outsourcing process, there are risks that must be considered and mitigated. However, in the specific case of adoption of agile methods, viewed as a novelty in the national specialized market, especially within the Federal Public Administration (Administração Pública Federal - APF), the management of risks inherent to the method deserves special attention, in the sense of allowing public institutions to make use of the practices without incurring noncompliance with regulations in force. The risks identified in the survey were gathered into three groups mentioned below.

Risks related to processes: Software development contracts with agile methodology adaptation that deviates them from their essence; change of agile methodology adopted in the bidding instrument during contract execution; lack of definition of artifacts or change of artifacts required from the contractor in the bidding instrument during contract execution; requirement of unnecessary artifacts or artifacts that become rapidly obsolete; use of contract for software development using traditional methodologies to develop software with agile methods.

Risks related to people: Lack of commitment or dissatisfactory collaboration in the development

of software by the person in charge appointed by the business area; lack of required knowledge regarding for software development on the part of the person appointed by the business area; excessive dependency on the views of the person appointed by the business area; lack of expertise in agile software development by the outsourced company's team; difficult communication between the contractor's development team and the person appointed by the business area.

Risks related to products: Constant change in the list of product functionalities; start of a new cycle without first validating the products built in a previous stage; lack of adequate planning of the software to be built; payment for the same software functionalities more than once, due to functionalities impossible to be implemented in a single cycle, or due to change in functionalities during software development; unavailability of the software in a production environment for use and assessment of actual users; payment form not based on results.

Hence, the analysis conducted during this audit showed the feasibility of the adoption of agile methodologies in contracts aimed at software development by APF institutions, as well as many other methodologies that have been widely used over the years.

Determination and recommendations of the TCU

The TCU ordered its IT Audit Department (Secretaria de Fiscalização de TI – Sefti) to conduct indepth studies and, if necessary, perform audits. The purpose is to identify more accurately the risks associated with the use of agile methods in software development contracts by the Federal Public Administration, according to the current outsourcing model, to guide properly the bodies under the Court's jurisdiction.

Expected benefits

This Survey allowed understanding the essence that guides agile methodologies in software development and served as instrument that will support future external control actions that address this topic to be conducted by the Court.

TCU Resolution

Court Decision 2.314/2013-TCU-Plenary Session
Rapporteur: José Múcio Monteiro
TC 010.663/2013-4

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