Software Development and Maintenance Outsourcing
How to manage without supervision?

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Introduction

Recently, I received a request for proposal for development and maintenance services for systems under the software factory for the federal government of Brazil. The following was established as a criterion for penalization: "When the lack of contract professionals is identified to a point where it can jeopardize the quality of service, this fact will be properly communicated to the contractor. If this communication occurs, it will be considered as an unsatisfactory grade for each case."

Apart from that, the importance of being able to define what is internal and external to contract management was identified. This is due to the fact that a mature contract management process establishes that there are no requirements that constitute an incorrect client intervention in the internal management of the contracted company. Some points can be highlighted by reference in establishing the border between what is internal and external in the management: a) the establishment of a subordination relationship with employees of the suppliers; b) the remuneration determination of supplier employees; c) person indication to make part up supplier personnel.

Observe that in all of the elements of mobilization of professionals in charge of contracted services is an exclusive management of the contracted company and none of the cited examples invade that realm. Why is that harmful to contract management? Because it covers through supervision mechanisms the lack of criteria definition by the stakeholders: the true objectives of measurement and analysis. These mechanisms are called: Service Level Agreement (SLA). These allow for the contract management through the evaluation of the external aspects to the development practices and the maintenance of systems that add value to the business.

What is the problem and where did it originate?

Between late 1980 and mid beginning of the XXI century, it became very common for the establishment of supervision relations in the systems development and maintenance contracts.

This implies that there wasn't particular product being generated by the contract, but did exist in the contracted labor in which what was acquired was the professional's availability. -A similar resource that is acquired when you hire an employee, without considering many of the responsibilities that derive from that. It is not our intention to talk about the various managerial, social security and judicial repercussions of this resource in the medium or long term. The software factory that defines a product unit (function point or a unit of software measurement) started to change this paradigm, but as you can see in the introduction of this article, there is still resistance in the assimilation of a model in which you cannot buy availability, yet a delivered product.

The first initiatives with the software factory model, due to the immaturity of the user community that provided the software services, were considered of low quality of the products delivered and the Service Level Agreements were presented as essential instruments in this 'new' model of management. I put 'new' in quotations for the field of software services, being that the result of the division of labor that practically impulses all of the production in our contemporary civilization, with a division of labor division orientation. The following are the fundamental divisions that should be covered by SLA:

a) Time
b) Capacity
c) Quality

Where is the effort and productivity in this list?

When we work with a supervisory model, one of the most important dimensions of production is the effort and its respective application to increase productivity. In the contracting model in which the product unit of measurement (ex. function points) the productivity is reflected in the price that is being change per function point. It is not the contractor's responsibility to supervise how the man-hours will be utilized. They will not be charged for effort, yet the production. It is the natural interest of the contractor to use the least amount of resources in the production and attention to the demands of the client.

I recommend that a principle be observed: there should be a relationship between the unit of measure being used and the effort used in the service. For example, using the function point defined by the International Function Point Users Group (IFPUG) when the contract involves systems development and maintenance implicates the benefits obtained in the maintenance demands that 'pay' the losses suffered in the development demands.

Assuming that there is equilibrium in the contract finances. To avoid this phenomenon, function points for improvement projects as defined by The Netherlands Software Metrics users Association (NESMA) or a simplification of the same as a good alternative. In our market, this is often called a 'deflator' that is applied to function points calculated in eliminated or modified functions in a maintenance.

For Example, a screen in particular that is to be modified has a result of 31 Function Points. With the use of a factor of 50% as a 'deflator' in modified functions, are only considered 15.5 equivalent FPs.

Habitual Focus of the first measurement objective: Duration

Today´s software is not related to support the business, yet it also takes part in the essence of the own business. One of the critical success factors in any business is the moment in which they launch their products. The perceived market value is directly tied to the innovation in relation to the competition, being that the product delivery duration is one of the requirements for that.

Duration is an external aspect to the software development and maintenance process and the establishment of pre-established duration goals in function (not necessarily a simple proportion) of the demand size; it is one of the instruments that tries to replace the function of supervising people in the demand management of software development and maintenance.

The following paths currently exist to plan and supervise duration:

a) Tables that relate size ranges such as demand deadline completion indexes, duration in accordance with intermediate managerial accompanying phases and duration for the mobilization and service start.
b) Mathematical relations (generally a mathematical exponential regression exercise) based in size and duration data from past projects.
c) Economic models such as "Constructive Cost Model" (COCOMOII) or the Software Lifecycle Management (SLIM).

Specifically in the case that a contract might include the same type of demand in terms of size range, it makes sense to use a proportional model where the rate of delivery is established in function points per man-day. Since the application of this delivery rate, the measurement or estimation of size of a given demand will establish the SLA duration. If there is nothing that is free, how can we decrease the price of the function points, avoiding the ability to be demanded?

Each established SLA includes an associated cost. At the end, the supplier, in order to fulfill the objectives defined in the SLA, should mobilize a team and an infrastructure. Imagine if there wasn´t an average capacity utilization expectation or a deadline for the supplier to mobilize to accomplish a given peak, for example, double that demand in a given time frame. Two scenarios appear: a) the supplier works under the risk of meeting the time frame defined in the SLA under the eventuality of peak times b) the supplier works with reserve resources taking into account the promptness when there is demand for it. Considering that this refers to a software factory and that there is a possibility of resource transfer between the distinct business units, both (a) 1A (b) are present and represent a value that will transferred to the price.

In order to allow for better contract management, it is recommended that a capacity SLA is generated with the required nominal capacity and the period of antecedence granted to the supplier in case that there are two periods where the administration anticipates peaks on top of that nominal capacity. Moreover, these peaks must be limited to a maximum capacity. This might not happen, but when it does occur, the supplier will not be penalized by the duration SLA.

The reason for this being, is not documenting more than 80% of the demands that are not in that state.

If that is not the case and the demands that are over the contracted capacity represent that 80% of the demand, it is necessary to verify if there is an internal problem of customer demand management, or if it's a contract planning problem where the use of contracted services were not adequately estimated.

Without quality there is no productivity!

There is no use in relating the effort, duration and capacity in accordance to scope if there are no mechanisms that motivate external and internal quality in the delivered products. Meanwhile, it is essential to establish a quality SLA. The definition of a "point of failure" that consider the errors (internal and external problems) in a unified manner and defects (external perception that the element did not act as expected).

This is not a contradiction – in the beginning of this article, I cited the beginning of the observation of the external aspects of contract management and I now recommend the creation of a unit that ponders the errors in the establishment in a SLA. Keep in mind that there is not supervision of people, yet there is a verification and validation of delivered products. These products cross the boundary of the contracted company management in alignment with the client management. This is important for two reasons: a) the tests (that identify defects) have a limited efficiency; b) internal quality is related to external quality. Meanwhile, it is recommended that the delivered products be examined according to the defined process and to the product in relation to the adherence to quality standards.

The idea of "point of failure" is to ponder the negative effects of identified problems in the previous evaluation that might repeat themselves and establish a SLA that relates the quantity "points of failure" calculated with the function points delivered.

Conclusion

When we work under the software factory regime, it's important to not simply adopt the function point as a production measurement unit, yet also establish criteria that make the suppliers share the same interests with the clients in terms of productivity and quality. The supervision does not mean the interests will be shared, it means that the supplier will behave… When and if someone is supervising them.