Personnel motivating projects: reasons, implementation and risks

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Abstract: - Personnel motivation is an important aspect to consider building a successful organization especially in the highly technological sector as the software engineering is. The paper continues discussion on projects that are established specially to motivate personnel and which were proposed in one of our earlier papers. Here reasons and drivers of those projects are revised. The learning factor is proposed to be used selecting workers to be included into personnel motivating projects. Thereafter some important factors to ensure success are considered. This discussion is continued by describing risks that can occur during those projects or after those are finished and several methods to avoid unwanted consequences are shown.

Key-Words: - Personnel motivating, software engineering, learning factor

1 Introduction

Highly professional and motivated personnel are a key factor of the company success [1] in many sectors especially in the software engineering industry including organizations, where the software production team is just a supporting one. Unmotivated personnel can be seen as a major risk factor [2, 4] since workers either decrease their productivity or are going to leave the company. In the last case the company could loose knowledge and time, which will be required to train a new worker to the level of the retired one [6]. The software development is a highly technological sector [10] with a shortness of personnel resources in many countries at the moment and is requiring a lot of time to adopt new workers. Nowadays increasing competition between software vendors and much more demanding markets force companies to stabilize their productivity and improve their development process in all respects using all available techniques [5]. Personnel motivating projects could be a good method to achieve that [5] into addition to other common motivating factors proposed so far [2, 3, 4].

The paper is organised as follows. The section 2 describes what personnel motivating projects are. The following section discusses why such projects are proposed and who can be included into those, proposing different methods for the team members selection process. The 4th section concentrates on risks occurring during motivating projects and after those projects are finished. Some methods to avoid unwanted consequences arising because of described risks are also discussed. The last section concludes the paper.

2 Personnel Motivating Projects

The core idea of the personnel motivating software development is to establish a project (or a set of projects) that can motivate the organizational personnel in different ways, which are bounded to a specially run project and differs from common motivation approaches [2, 3, 4]. For example the developers can be motivated by opening for them new possibilities to learn modern technologies, programming languages and algorithmic approaches. Common motivation factors like a friendly environment, salary and so forth are well-studied and are not considered in this paper because companies are already skilled in addressing those. Notice that the paper doesn't propose to exclude those factors, but rather suggests one more (additional) motivation factor. This factor is motivational projects allowing making the possible motivation broader as developers, business analysts etc. are still changing workplaces, going sometimes to work-places with slightly smaller salaries despite motivation practices known so far. Notice that skilled developers, who are leaving companies, do create certain troubles for these companies in major cases as it takes several months or years to train a person replacing the left one decreasing the company's productivity. The more stable is the workers group the more stable is the company [6]. Therefore the proposed additional motivation factor is considered by the paper as very important one especially in the highly technological business sector as the software development is.

Notice that although motivating software development projects are mainly focused in those targets on programmers those goals are not restricted by motivating developers. A list of motivated workers (positions) can be easily extended to testers, business

analysts, software designers etc. The common method here is to offer somebody slightly another position than his/her current one that can be interesting for this person. The position can be located somewhere else either vertically, usually above the current position, like a position allowing making more decisions, or horizontally, which means another position on the same organizational layer.

3 Implementation

The personnel motivating projects are usually run in the following cases:

- The organization would like to encourage developers to learn something new that will be useful for the organization in the (near) future providing them with opportunities to learn including a dedicated project and necessary materials;
- The developers encourage an organization to move to another platform demonstrating a list of advantages and the organization is willing to accept this migration if those advantages will be shown during a pilot project.

Notice that a case when only employees wish to learn something new is not listed here since projects that are not supported by organization's strategic plans can cause rather problems than advantages as it will be described in the risks section below.

Comment: of course this is true only if a target of the project is not to let somebody to fail and to learn that his ideas were wrong, for example to implement something using some particular technology or try himself in a particular position.

So, it is hard to define which of those issues should be considered first of all running a motivating project: "whom to motivate" or "why to motivate" as it depends on an answer of the following question: "Is the primary reason to run the project an organizational or a personal (a team) wish?". There are examples of both cases, so please consider subchapters below in the order, which is relevant to your case if there is any.

3.1 Who can be included into the motivating project

If the primary reason to run a motivating project is employees' wishes then it is usually easy to select 80-100% of persons to participate in the project. Remaining team members (up to 20%) should be chosen from other persons to collect a qualified team, i.e. a team where all necessary positions will be filled. If the true reason to run the project is the organization's wish then the *learning factor* can be used to select motivating project team members in addition to the matrix matching employees and positions. Two more terms should be defined before the learning factor is explained.

A personnel of any company is not a set of totally identical persons, therefore those can be partitioned by their *ability to learn* something new into the following groups:

- Innovating;
- Slowly changing / slowly learning;
- Static [5].

This segmentation can be used:

- as a part of the learning factor (see below);
- as a base to plan projects since the ability to learn defines how much time one or another person requires to adopt a material. So it can be used as a weight to multiple a standard (average) time needed to complete a task when assigning this task to a particular person;
- as a factor showing needs of a particular person, which s\he would like to have addressed by the organization – the static group of workers will probably dislike including into any pilot projects or may be into any projects with other technologies than they used to use and can leave a company if it will happen. At the same time innovating persons can be looking for any opportunities to learn something new up to the learning this new by been employed by another company.

Another important factor to consider is a person's willingness to learn either something new, for example a technology to be used in the project. This sort of parameter can be treated as an efficiency of the ability to learn something new that was shown above. If a person do not want to deal with something then the ability to learn will not be important any longer and another person with smaller ability to learn and higher willingness can easily outstrip him.

The *learning factor* for a person is defined by us as a multiplication of his ability to learn, willingness to learn and an organization's wish to learn (motivate) this particular person.

The same can be reformulated for a case when somebody is motivated to be in another position by a special project as: there is *a re-positioning motivation factor*, which is a multiplication of a person's potentiality to be in this new position, willingness to deal with this position's problems and making decisions, and the organization wish to learn (motivate) this particular person. This factor is used instead of the learning factor in projects dedicated either to encourage somebody to participate in different activities in compare to his standard activities or to check this person ability to do this another type of work.

The organization can choose employees to be included into the motivating project basing on those factors although other, specific for the organization, ways can also be possibly used.

3.2 Why to run a motivating project

As it was stated in the introduction of this chapter, the motivating projects are mainly run either by the organization that wants to encourage their workers to migrate to a new platform, fill new positions or learn something new to extend knowledge and skills or by developers looking for opportunities to apply themselves in modern technologies or new positions.

Organizations do consider running motivating projects mainly due the following reasons:

- Their product(s) becomes too old and customers need something new. It can happen either since the current technology is not supported any longer by the platforms used by customer (they replace older platforms for example) or because the product looks "old" fashion and nobody would like to invest into such product any longer;
- They have vacancies that are easier to fill using internal resources than external, for example if the position a worker to be moved from can be filled easier that the position he is going to be motivated for. Besides a person having a lot of knowledge of organization processes and products can be more interesting for the company that an outside person;
- The organization would like to cover new areas by a product using newer technologies. The new areas can mean both – new sectors of a market or new functions used by the parent organization if we deal with an IT department.
- The organization can produce a collaborative team (increase the collaboration) by putting different people to learn something new [9].

Of course, this list is not complete as there are other specific situations where organizations are looking for new opportunities via motivating projects, but usually those are variations of the listed reasons.

Looking on another participant of the motivating projects, i.e. employees, the following groups of reasons why they would like to be involved or even encourage the organization to run motivating projects can be formulated:

- They would like to learn something brand new since they like the learning process and want to be informed (including hands-on experience) about modern trends;
- They would like to learn modern technologies to ensure their future in case they will need to find a new workplace, for example because they will need to relocate etc.;
- They would like to demonstrate themselves (their abilities) to the organization hoping to achieve more than they have at the moment without leaving the organization.

It is important to notice into addition to the previously formulated list of reasons that any organization reaches its operational and strategic targets mainly via their employees work. Therefore the motivating project should not be concentrated just on providing benefits for employees, but should be motivated by the organizational needs (short and long-term) otherwise the organization resources are spent improperly and its personnel is not really motivated as nobody is interested in accepting, reviewing and continuing such projects.

Thereafter it is important to keep in mind that the motivating project should never be run as a standalone project if there are no foreseen possibilities to continue that and the new technology of the project means the major shift in the used standards, practices and software development languages. The involved workers are probably have spent a lot of efforts to become professional in this new technology and could either be unmotivated to do another similar projects trying to avoid spending a lot of energy on learning something nobody needs or will become enthusiastic about this technology and will migrate into another company as it is discussed in a risks' section below. At the same time local standalone projects without a foreseen need to support it in the future is an ideal platform to try smaller and more local technology shifts that do not require a lot of learning. Here the "try and forget if you fail" method is used.

4 Risks

The previous chapters of the paper were mainly dedicated to describe why motivating projects are run and what advantages of those projects are. This chapter is designed to discuss the backside of such projects, i.e. risks occurring during the motivating projects and after those are finished.

The motivation in earlier described approach is reached mainly by allowing developers to focus on other, more modern technologies than earlier used or do another, more interesting and challenging type of work. This re-focus on another, in compare to the standard activities, area could lead to varying grade unwillingness of there workers to support old systems or continue projects in "older" languages etc. This situation can occur if the motivation project was successful and has shown full range of strengths over the old way of

working having no restrictions or disadvantages. This risk can occur in different forms or with different consequences. First of all the worker could be unwilling to return to "old" projects trying to continue the current project at any cost. Another consequence can be in the decreased productivity as the "old" project is dis-motivating although this can be a temporary effect. If an organization is small from the software engineering department perspective then the worker(s) could make a decision to re-write the current system in a new language even having an unclear picture of the new technology limitations that could end-up in technological risks that are presented below. This activity can be described either as an un-planned or even an unauthorized one. The softer case of the previously discussed will occur if a worker (or workers) starts to stress the fact of a need to rewrite the current system having rather weak reasons for that (the true reason is the developer wish rather than a deep analyses). Such discussions can be first of all annoying for both sides (management and those developers) and can lead to a belief that management does not want to make "right" decisions.

The following can be proposed to decrease this risk: the segmented team by the "ability to learn" often contains members that are not willing to migrate so quickly as pioneers do, so the organization should ensure that there will be enough team members to continue working with old systems even if pioneers willingness to return will be small.

All previously described can result in occurring the more general risk - workers will like the new language/technology/position and will migrate to other companies if there will be no way to use these new technologies / stay in this new position after the motivation project is over. Therefore workers that were motivated by a project should be ensured that it wasn't just a short-time try, but will be continued either immediately or in some predictable future. Here we return to the previous statement saying that the motivational project should not be casual and should produce benefits for the organization also. Normally such projects are run either to get new markets or to research migration possibilities as old technologies are either not supported any longer on newer platforms or are not welcomed by customers. The first case means that the organization will like to run new technology software in parallel to the existing one, while the second indicates a decision to rewrite the software entirely. So, the well-planned process should basically address this risk, while occasionally motivating projects could lead to a "back effect" producing varying size damage to the organization running such projects.

Continuing our talk about migrating to new technologies, notice that it is important to consider technological risks of this process. Risks could occur both during the motivating project containing the technological shift and during the general software migration process. Local project risks are mainly connected to the time that will be spent on this project. The technological change always means that developers will have to do something new for them, so the time to learn, try and implement can differ considerably from the same size projects' time on old platforms including the precision of estimations that a) can vary much more, b) have sufficiently larger risks of underestimating the needed time. Notice that the same can occur if you deal with assigning personnel to new positions instead of having a technological shift as workers will still have to do something new. In both cases some skilled persons, for example consultants, can revise estimations and correct those.

The migration process risks should also be carefully considered since a project failure could mean that we cannot continue using a language the motivated developers like and those could decide to leave (join a company where such projects are a reality). First of all notice, that technologies do not exist by themselves, but always are based on certain hardware, software platforms etc. Unfortunately nowadays newer technologies usually mean also increased requirements if the shift doesn't reside purely in the logic (i.e. other algorithms, organization of the software layers, principles of programming etc). Therefore it is important to analyze:

- What hardware, software the organization will have to purchase in order to meet increased requirements – cost and availability;
- What hardware and software requirements will have the new software to be built as those requirements affect your customers:
  - Will they be able to upgrade at all?
  - Will they like to upgrade or they wish to stay with current one?

The internal platforms migration problem, including the case when the only customer of your software team is the rest of your organization, can be verified and planned using the organization budget and amortization balances, so that the process of migration will be run no earlier than it can become real.

Another type of risks connected to the technology can be organizational risks like a need to support two different versions of software during the migration process, inexact estimations for the first several iterations and slightly decreased performance of developers until those are familiar with what they are doing.

Thereafter, one more risk is worth to mention, although it occurs relatively rarely – different conflicts can occur inside a team that becomes segmented by their

ability to learn, motivational stimulus etc. For example, "quick" learners could start to believe that they are "better" than the conservative part of the team. This could result in deterioration of attitudes and communication between team members. Therefore it is important to stress importance of each person work together with other "team building" activities to avoid this possible team destruction.

The earlier described risks can be reconsolidated in a form of the following list of common risks:

- Personnel become under motivated from old projects / positions perspective;
- Personnel can be motivated to "move" quicker than the organization can allow and therefore move to another companies;
- Technological risks.

5 Conclusion

Personnel is an important part of a successful company and should be carefully used, grown and motivated to ensure the whole company success [8]. The paper discusses projects that are established to motivate a company personnel by encouraging or allowing them to learn modern technologies and be in new positions. Organizations are usually start such projects when there is a risk for their current products, which are getting older and older, wish to upgrade a used technology or fill open positions using their current available personnel, so they encourage workers to participate in the project, learn something new and may be even become much more enthusiastic about working in this company during this process. Employees are mainly trying to motivate organizations to run those projects as they have internal needs to develop themselves or trying to ensure their future staying bounded to modern technologies etc. It is important to keep in mind here that the motivating projects should be run only if the organization can benefit from those and only if the major technology shift, which is applied (learned and verified) during such projects, can have foreseen continuation in other (future) projects.

A team formation question arises usually after the motivating project is decided to go with. The personnel can be divided into pioneers and conservatives and the last part of the team is not normally willing to participate in the new technology pilot projects. Therefore there is a need to build a new team and fill all positions before the motivating project can be started. The learning factor described in the article is proposed to be used as a selection criteria for compiling the team, which depends on a person's ability to learn something new, willingness to do that and the company's wish to motivate this particular person.

The last part of the paper is dedicated to risks arising in such projects. It is important to consider risks before running the motivating project otherwise the result can be opposite to the earlier declared motivating goals.

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